EN

hera® Laborsysteme GmbH

THE CHOICE OF ENGINEERS

Made in Germany

Systems for Electric**LAB** Electric**EDUCATION** Electric**WORKSHOP**

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THE CHOICE OF ENGINEERS

Made in Germany

CHAPTER 1: **WHO WE ARE!**

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INNOVATION
AND TRADITION

In 1959 our founder, Hermann Rapp, was the first with the idea to do special furniture for electronic professions. Since that time hera develops and manufactures innovative solutions for electric and electronic workstations. The furniture program EASY in combination with the modular LS2000 bench rack system soon was standard for electronic laboratories. In all those years we gained valuable expertise in countless projects for training centers and industrial customers from A like Airbus to Z like Zeppelin. All those experiences were elaborately used to develop new products. Hence, the result is our most successful and highly modular laboratory system PROFI, now even with high speed data bus communication modules in 19“ technology.

1965

EASY Electronic Workstation of 1965 with the LS2000 Bench Rack System.

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2017

Laboratory System PROFI
with network series IMOD

1959
Founded by
Hermann Rapp

1972
Moving from the Radio-/
TV shop into todays head
quarter

1975
Invention of
LS2000 System

1995
Integration into ZECH
Unternehmensgruppe

1999
Invention of
PROFI System

2000
Expansion: Extra Building
for Shipping Department

2006
Product launch
**Technical Trai-
ning Systems**

2010
Invention of Workshop
System FLEX

2017
Development
of our **network
operated
device series
IMOD**

2017/18
Expansion in new Facilities
(3.200 m²)

EXPANSION TO KEEP TRACK
WITH CUSTOMERS REQUIREMENTS

Our philosophy is to keep all key processes within our own company to grant our customers highest possible quality and flexibility.
Our motivated personel develop, design, manufacture, test and assemble furnitures, electrical instruments and training systems for laboratories, classrooms and workshops. All processes are done in a modern mechanical and electrical manufacturing plant with high-tech machinery.

Head quarter with Adiminstration and Development

2017: new Shipping Dept. with 1.600 m²

2018: new Mechanical Plant with 1.600 m²

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COMPETENCE IN MANUFACTURING, INSTALLATION AND SERVICE

hera not only distributes laboratory -, educational -, and workshop systems with its accessories, we also manufacture these - including the electrical devices. And that for more than 40 years.
In all those years we gained a deep understanding for your requirements. You will benefit from this fact with each development, construction, production, installation and calibration. The last two points are done from our well-experienced service team - if needed- even at your site.

Mechanical Manufacture with own Powder Coating Plant

We can guarantee permanently high quality, as all our metal housings and front panels are done on modern machinery with own powder coating and silk-screen printing.

High Quality Electronic Manufacturing

We produce all electric devices and all bench racks in qualified teams. Each electric device is 100% tested on safety and functionality; test reports are available on demand.

Wire Harness and Circuit Board Manufacturing

Our manufacture for wire harness and circuit boards is experienced and well equipped.

EXPERTISE IN THE REALIZATION OF CUSTOMIZED PROJECTS

From experience we know, that most projects can be realized with our wide range of standard products. None the less, many customers ask for special solutions for their application only. Due to lean structures and the expertise of more than half a century of manufacturing we are able to do customized projects in reasonable times and to full customer‘s satisfaction.

Professional Bench Rack Installation

The modular equipped bench racks are 100% tested by qualified engineers on functionality and electrical safety before leaving our house.

Innovative Profile Machining

Benefit from our high-tech machines for processing aluminium profiles and tubular steel.

Service and Installation

If desired, we supply completely assembled or install your laboratory set-ups on your site.

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CERTIFIED QUALITY

The consequent compliance with ISO 9001 guarantees a complete and comprehensive documentation, as well as a permanently high quality standard. Even for customized solutions! All electrical equipment is tested on functionality, EMC and electrical safety.

GTÜ CERTIFICATION

Certificate

GTÜ Zertifizierungsstelle GmbH
herewith certifies that

hera-Laborsysteme GmbH
Hermann-Rapp-Str. 40
D - 74572 Blaufelden

Areas of activity: Sales, Development, Planning, Manufacturing, Service, Repair and Installation of Laboratory – and Calibration Systems.

has established and employs

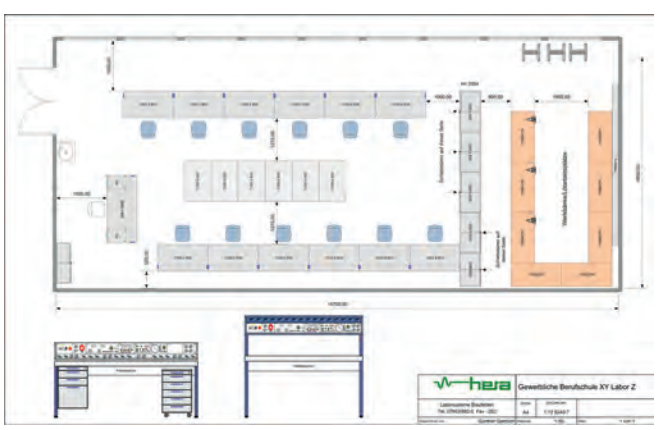
a quality management system according to
DIN EN ISO 9001

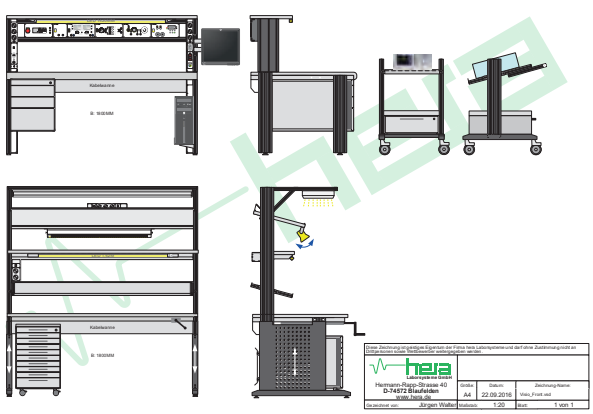
Edition: December 2008

A quality certification audit performed by GTÜ-Zertifizierungsstelle has shown that the QM system complies with the requirements of the above standard.

STANDARD
2D- AND 3D-PLANNING

Because our configuration should adapt to your requirements and not vice-versa, we help you with suitable plannings in 2D or 3D.
Always considering applicable VDE regulations, the latest criterias on functionality and ergonomy, we design your individual configuration in accordance with your desires.





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OUR MAIN COMPETENCES ARE:
LABS, EDUCATION & WORKSHOPS

Our main competences are electronic laboratories, technical classrooms and mechanical workshops. In these fields, we offer a wide product range, that can be combined in most astonishing ways. See how the modular set-up turns into your individual laboratory workstation, workshop or classroom equipment with all required functions.

IF YOU HAVE QUESTIONS, FEEL FREE TO CONTACT US:

Sales Department +49 7953 / 882-0 or sales@hera.de

CONFIGURE YOUR **INDIVIDUAL LABORATORY SYSTEM!**

Choose from different benches, shelves, bench racks and various kinds of lamps until finally the set-up turns into your individual laboratory workstation. Step by step we show you the various possibilities on following pages.

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GET **INSPIRED!**

The wide product range offers countless possibilities for individual room concept, no matter what module system you are favouring, we help you with an uncompromizing solution.

PROFI Laboratory Bench

- 19“ cassette rack 3HE with modular device equipment, below with Energy Channel for conventional lamp
- 1OH shelf rack with sliding doors for enough storage at the workstation

EASY Laboratory Bench

- with bench top frame and modular equipped wooden Energy Board
- the bench top frame is also available in height adjustable version

PROFI Bench with Cantilever

- height adjustable bench with either hand crank or electric drive
- available as retrofitting set for regular PROFI benches

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PROFI Bench with Power Legs

- Bench with power legs and shelf with LED workstation lamp
- In the background PROFI laboratory bench with 19“ bench rack 7HE

PROFI Laboratory Bench

- Media supply with the horizontally installed ENERGY profile and all modules of the KP system
- Shelves with cutout for the extensions provides a gapless shelf surface for bench groups
- Extensions with overhead frame for the installation of a conventional lamp

PROFI Lab Combination

- PROFI bench with system independent bench rack and suspended rack, as well as equipped ENERGY extensions, with perforated backplane
- left and right of the benches are 19“ racks for the installation of standard or customized 19“ devices in same design

LET‘S GET INTRODUCED TO OUR **DIFFERENT KINDS OF BENCHES!**

Not all benches are the same. Especially if you plan a laboratory set-up. The bench is elementary as it provides the possibilities with regard to accessory attachment, to cable run and with regard to height adjustability or movability.

EASY **Workbench**

SOLID WITH CONVINCING PRICE

- economical bench type
- surrounded by stable bench frame, made of tubular steel 40 x 40mm
- screw-fixed bench legs with levellers
- hardwearing 30mm HPL layered bench top
- available even in ESD and with mechanical work tops

see page 130

EASY **C-Lift-Bench**

BUDGETARY AND HEIGHT ADJUSTABLE

- frameless bench configuration and thus budgetary, not suitable for bench rack set-ups
- two fully synchronized electrical lifts
- lifting range: 630mm - 1280mm. force: 2x 800N

see page 142

PROFI **Laboratory Bench**

FLEXIBLE

- screw-fixed bench legs made of hera aluminium profile
- rear side with cable tray and different flap types
- SINGLE / MULTI profile with slots for flexible attachment of accessorys, with cable channels for hidden cable runs
- rear bench legs prepared for extensions, for the acceptance of bench racks

see page 056

PROFI **Laboratory Bench with Power Legs**

SPACIOUS PROFILES

- same features than PROFI Laboratory Bench
- rear bench legs made of equipable ENERGY profile
- solid attachment for accessory due to 7 surrounding slots, spacious cable runs in 125 x 102mm channels and a broad selection of KP modules

- **see page 058**

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Option PROFI **Cantilever Legs**

- Option PROFI Workbench or Laboratory Bench with cantilever legs, can be retrofitted
- manually, with hand crank or electrically
- adjusting range: 300mm, 400mm or 500mm
- lifting force max. 350kg

see page 062

PROFI **C-Lift-Bench**

- same features like PROFI Laboratory Bench
- height adjustable with fully synchronized lifts
- lifting range: 450mm, enormous lifting force up to 640kg
- extrem high traversal rigidity due to special frame with extra stiffening
- with surrounding slots for PC supports, containers and other accessory
- **see page 064**

PROFI **4-Lift-Bench**

- height adjustable, like the PROFI C-Lift-Bench with cable tray and different flap types
- stability due to 4 fully synchronized telescopic lifts
- impressing height adjustable range of 670mm, lifting speed max. 43mm/sec., lifting force max. 480kg

see page 066

PROFI **Cantilever Bench**

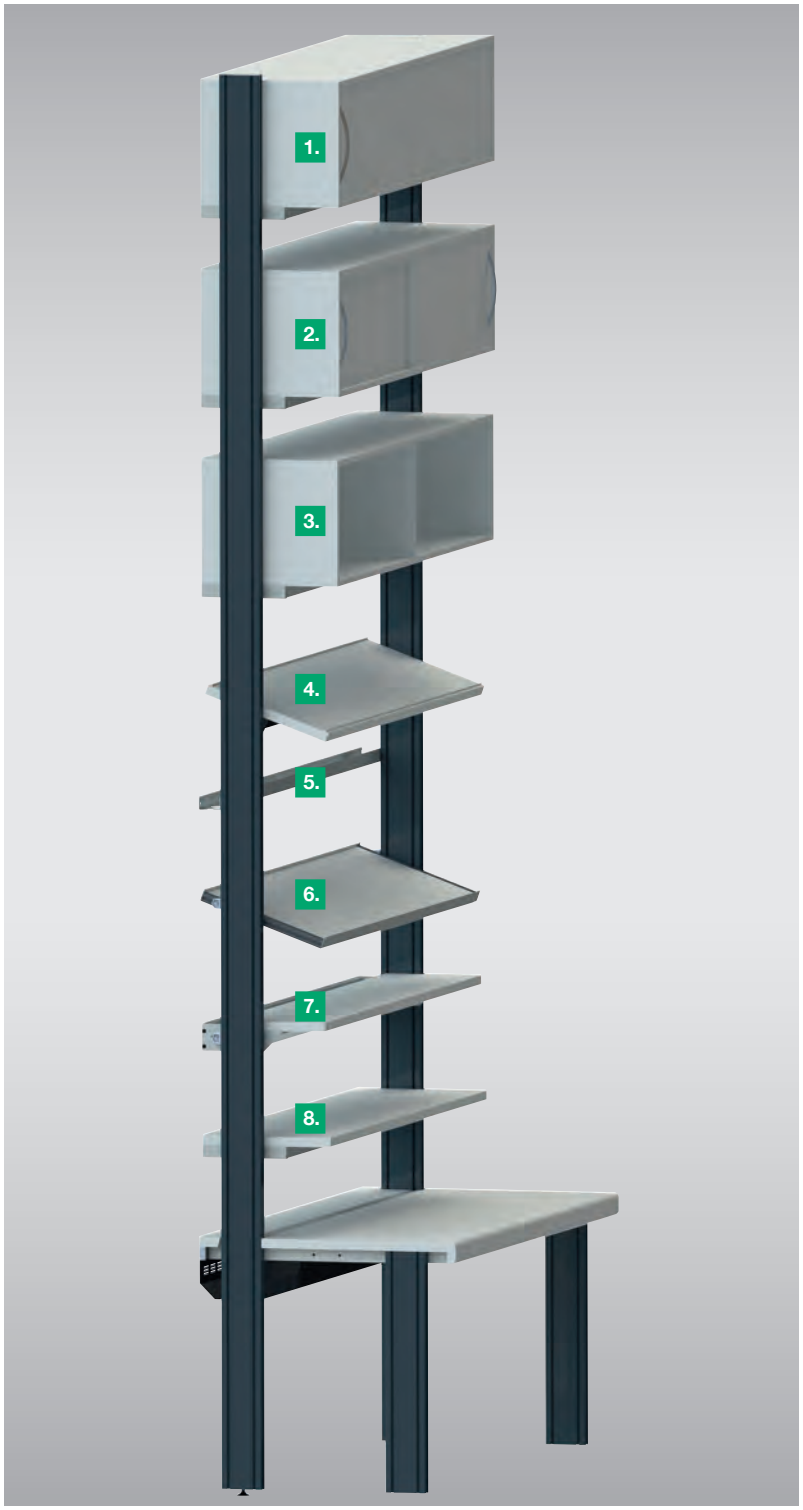
- economical bench type with only bench top height adjustment
- manual (hand crank) or electric height adjustment
- longer SINGLE profiles at the rear side, modular extendable for set-ups with rack or shelves

see page 068

BENCH RACKS SUSPENDED OR BENCH TOP MOUNTED: **IT IS YOUR CHOICE!**

SUSPENDED

The advantage of suspended bench racks is, that the whole bench top is available and the rack can be placed on variable height.



1. Roller Shutter Rack with Heavy Duty Support
▸ see page 109

2. Sliding Door Rack with Heavy Duty Support
▸ see page 108

3. Shelf Rack with Heavy Duty Support
▸ see page 107

4. Swivel Shelf with tiltable support and stop edge
▸ see page 098

5. Cable Tray for Shelf
▸ see page 102

6. Functional Shelf with adjustable tilt and depth, front and rear side with sheet steel stop edge
▸ see page 100

7. Shelf with flexibly equipped Multimedia Support
▸ see page 093

8. Shelf with Support or Heavy Duty Support
▸ see page 097

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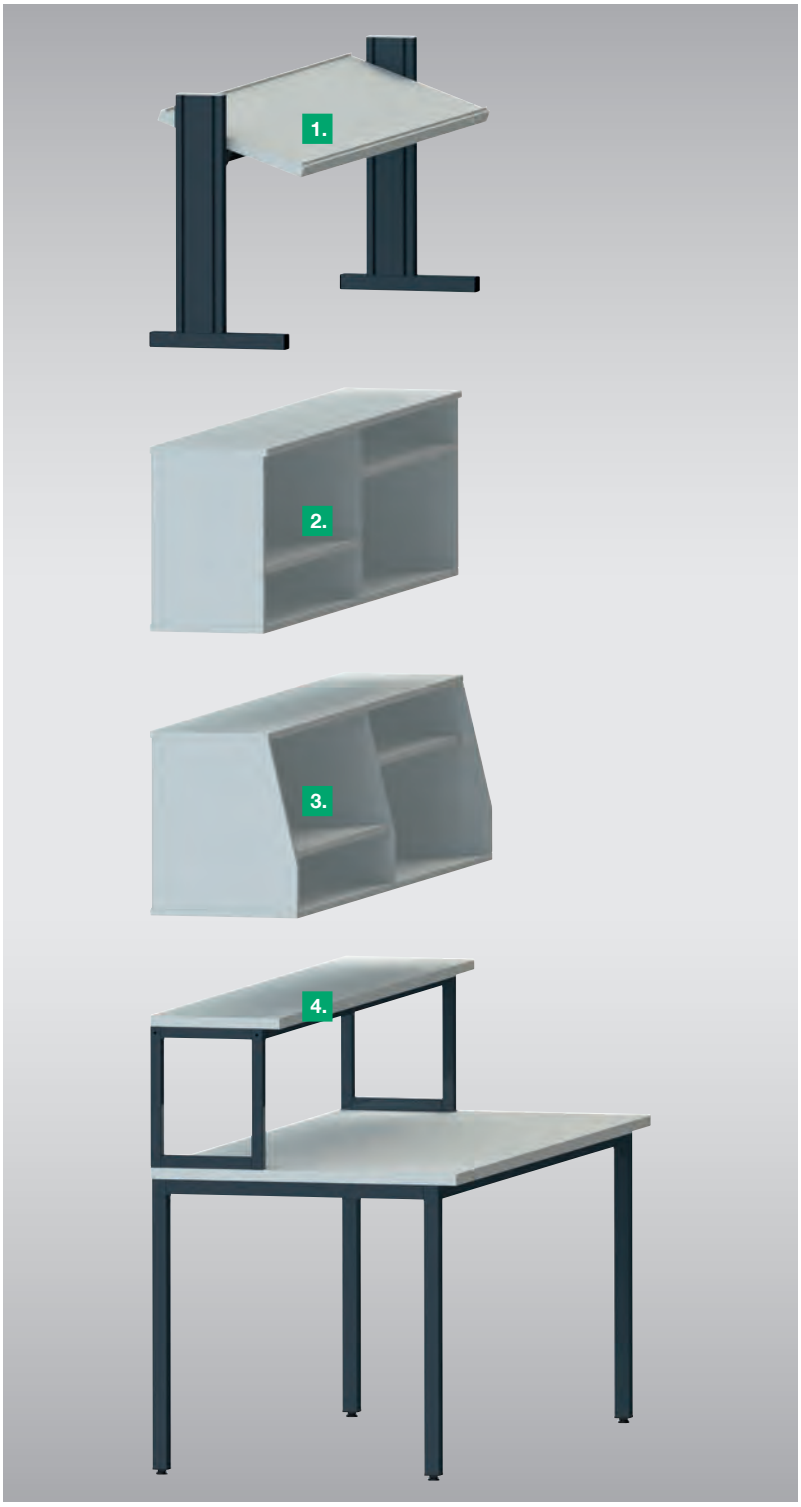
BENCH TOP MOUNTED

The shelfs and racks for bench tops are suitable for all kind of benches. Adaption and connection is your choice.



1. PROFI Extensions and Shelf or Swivel Shelf
▸ see page 091

2. EASY Shelf Rack
▸ see page 150

3. EASY Shelf Rack with tilted front
▸ see page 150

4. EASY Bench Top Frame with Shelf
▸ see page 147

WE MAKE ROOM
FOR YOUR ELECTRICAL DEVICES!

The great variety of bench racks makes sure, that all your electrical devices are within convenient reach and sight, never mind if you choose a bench top mounted or a suspended system.

SUSPENDED

1. Flexible equipped Multimedia Support with 19“ System Rack on top for the acceptance of 3, 5 or 7HE modules

2. 19“ Bench Rack 7HE with tilted front and powder coated ventilation panel for the acceptance of 19“ modules in chapter 11 and other 19“ instruments with a max. depth of 400mm

3. MP Rack 5HE with tilted front and powder coated ventilation panel for the acceptance of MP modules in chapter 10

4. 19“ Cassette Rack 3HE with tilted front and powder coated ventilation panel for the acceptance of 19“ cassettes in chapter 11

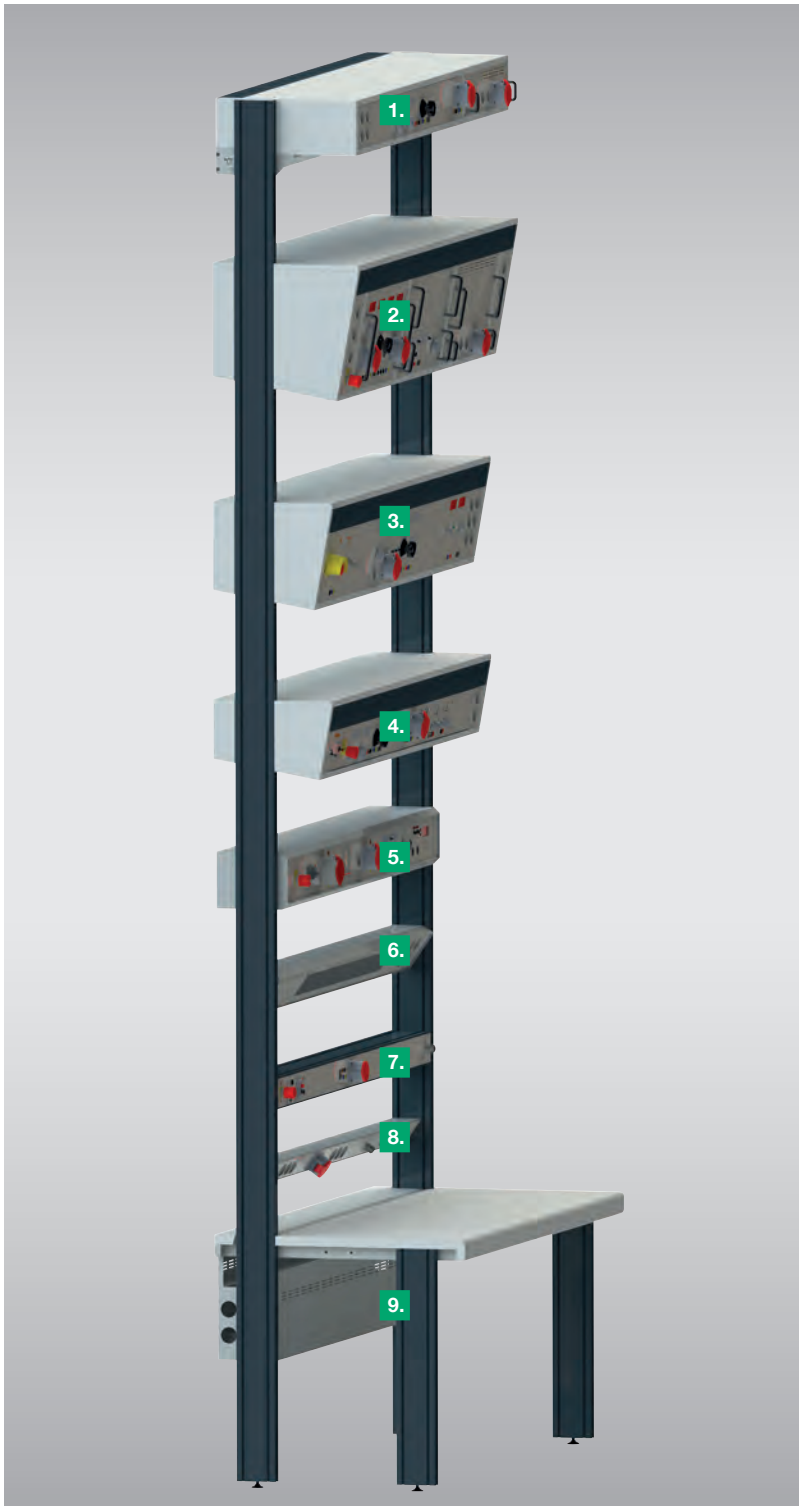
5. Sheet Steel Energy Board or Aluboard (aluminium profile) for the acceptance of EP modules in chapter 10

6. Sheet Steel Energy Channel for the acceptance of EP modules in chapter 10

7. ENERGY Profile for the acceptance of KP modules in chapter 9

8. Compact Terminal for the acceptance of KK modules in chapter 9

9. Under Bench Energy Board for the acceptance of EP modules in chapter 10



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BENCH TOP MOUNTED

1. LS2000 Bench Rack with powder coated aluminium frame for LS2000 plug-in units and modules in chapter 12

2. 19“ Bench Rack with tilted front for 19“ modules in chapter 11 and below with straight front for EP modules in chapter 10

3. MEP Bench Rack with tilted front for 19“ modules in MP raster and below with straight front for EP modules in chapter 10

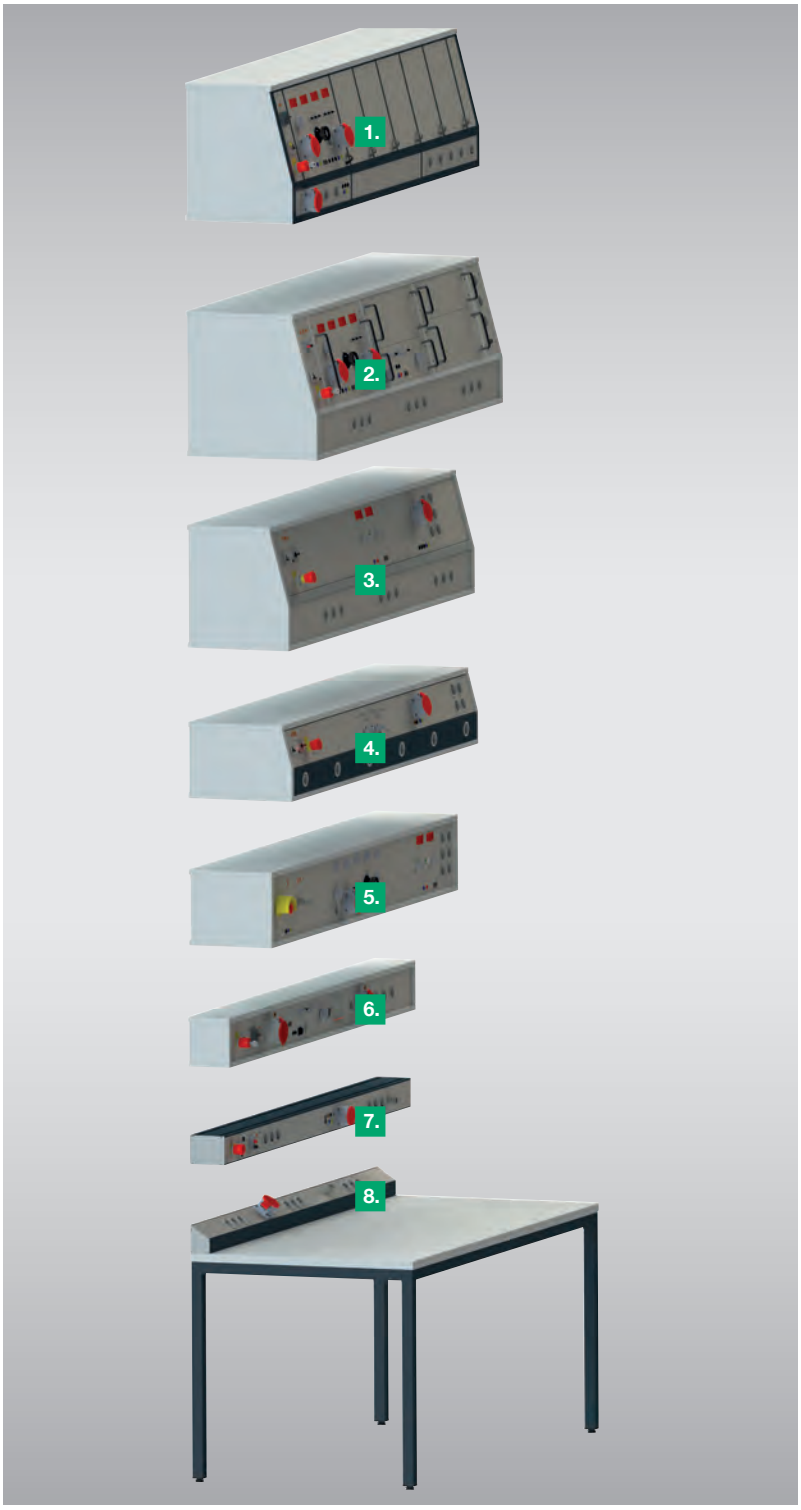
4. 19“ Cassette Rack 3HE with tilted front for 19“ cassettes in chapter 11 and powder coated panel with sockets

5. EASY Bench Rack 5HE wooden or Aluboard (aluminium profile) for the acceptance of MP modules in chapter 10

6. EASY Energy Board 3HE wooden or Aluboard (aluminium profile) for the acceptance of EP modules in chapter 10

7. ENERGY Profile (aluminium profile) for KP modules in chapter 9

8. Compact Terminal made of aluminium for KK modules in chapter 9



A SUITABLE INSTRUMENT FOR EACH APPLICATION!

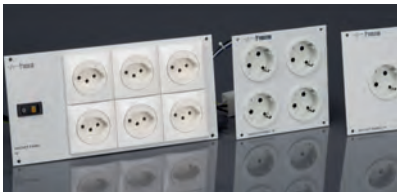
In order to meet all your requirements, many types of electrical modules are available for our bench rack systems. This ranges from mains panels, sockets and jacks to more technical modules e.g. lab power supplies, AC supplies or frequency converters.

Mains Module

The mains module is for the central protection of our different bench rack types and of cause with respect to the country-specific electric grid. Various emergency stop buttons, circuit breakers with conductors or motor circuit breakers with undervoltage realeases and RCDs type A or B are available.

Socket Module

Modules with receptacles of international standards, with and without protective earth contact, CEE sockets, safety jacks, all either with or without switch.



Interface Module

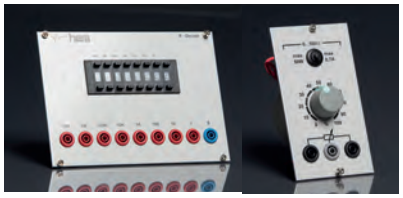
RJ45 connector for CAT5 to CAT7, USB-Hub 2 and 3.0, all standard graphic interfaces (VGA, DVDI, HMI) etc.

Continuity Tester, Multimeter and Oscilloscope

Pure continuity testers or various multimeters, from simple standard types to hightec precision multimeters with different interfaces.

R / L / C Decade and Load Resistance

Precise resistance -, capacitance - and induction decades.
Variable load resistances between 50W and 300W.



Soldering Station or Soldering / Desoldering Station

Modules with soldering stations or the 2-channel repair station UNIVERSAL with soldering/ desoldering station.

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1Phase AC Source

Insertions with isolated transformers and variacs, equipped with different readings (analogue, digital or multifunctional display) and different jacks or sockets for tapping off either foating or non-floating voltage.

3Phase AC Source and Motor Tester

Insertions with 3phase variacs with or without downstream connected isolated transformers, as well as motor testers with and without frequency converters.

Fixed DC Supply and Laboratory Power Supply

Different modules for the supply of fixed DC voltages and currents, as well as highly precise laboratory power supplies with single or double channel, equipped with different readings. Optionally network operated with USB - or LAN interface.

Function Generator and Sinus Frequency Converter

Different types of function generators from simple to high precision devices with interface and power amplifier.
Sinus frequency converter 1phase or 3phases for frequencies up to 400Hz.

Pneumatic Supply and Calibrator

Pneumatic modules for various pressures and different accuracies with analogue or digital readings. Komplex process calibrators with norm signal generators and interfaces.

Electrical Safety Tester

High voltage testers, insulation testers and protective contact testers as well as device testers according to VDE 0701/702.

OPTIMAL ILLUMINATION
FOR EACH OPERATION!

Optimal illumination can increase the quality of work. For this reason it is important to choose the right lamp, suitable for your workstation and your type of work.

PROFI **LED Workstation Lamp**

Extra slim lamp made of anodized aluminium profile (diameter 25mm) with tiltable optics. It is perfect for the installation bellow shelves and bench racks. Homogenous, glarefree illumination due to narrow LED assemblies and diffusor.

see page 112

PROFI LED **with Gooseneck**

A highly flexible gooseneck enables a completely variable and accurate positioning of the LED lamp. The gooseneck can be connected either under a bench rack or to the aluminium extensions.

see page 114

Universal **LED Flat Light**

Very flat and nicely shaped design made of anodized aluminium with integrated power supply and switch. Dimensions: 40 x 15mm (DxH)

see page 116

PROFI **Overhead Lamp**

Overhead lamp with parabolic mirror-louvre and two fluorescent tubes (D: 197mm; H: 75mm). For direct illumination from above, the lamp can be installed in an overhead frame.

see page 124

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HERA OFFERS ALL
THAT IS NEEDED FOR AN INNOVATIVE TRAINING CENTER!

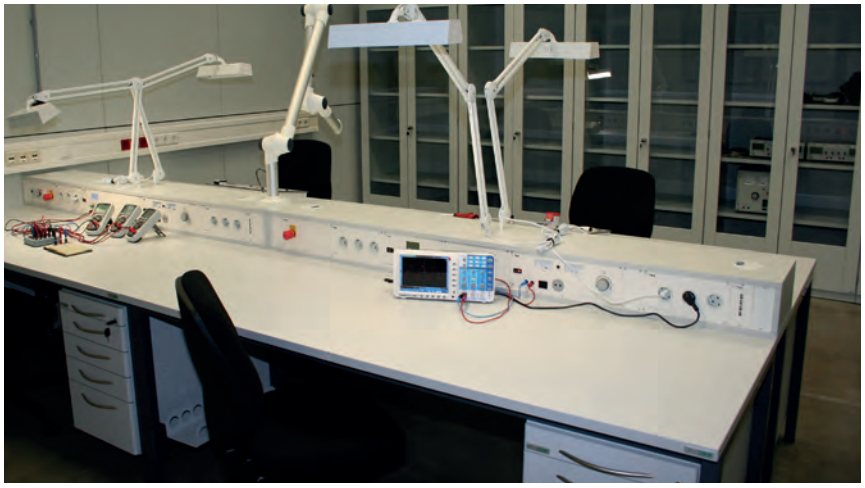
We from hera know exactly what equipment is needed for a qualified electrical education. For this reason we offer multipurpose classroom solutions with retractable network-linked bench racks. No matter if you prefer single or team workstations, we offer perfect set-ups for successful learning.
More details on the following pages.

BE INSPIRED BY
HERA ELECTRIC EDUCATION!

Individual lessons need individual classroom designs, either as single set-ups or team workstations. Especially for educational purpose we offer modules with protective low voltage and central controlled devices.

PROFI **Laboratory Bench**

- PROFI bench group with both sides equipped ENERGY board
- upper side of the ENERGY board is with adapter sleeve for lamps
- all team emergency stop buttons are linked to one mains supply panel, this saves money and provides fullest protection



PROFI **Laboratory Bench**

- PROFI bench group with TFT monitors, slidable from side to side
- 2-level training system frame with supply channel for the training systems on top

PROFI **Laboratory Bench**

- PROFI benches positioned in a raw with training system frames and Energy Boards on top
- front bench legs are recessed for a maximum of leg room

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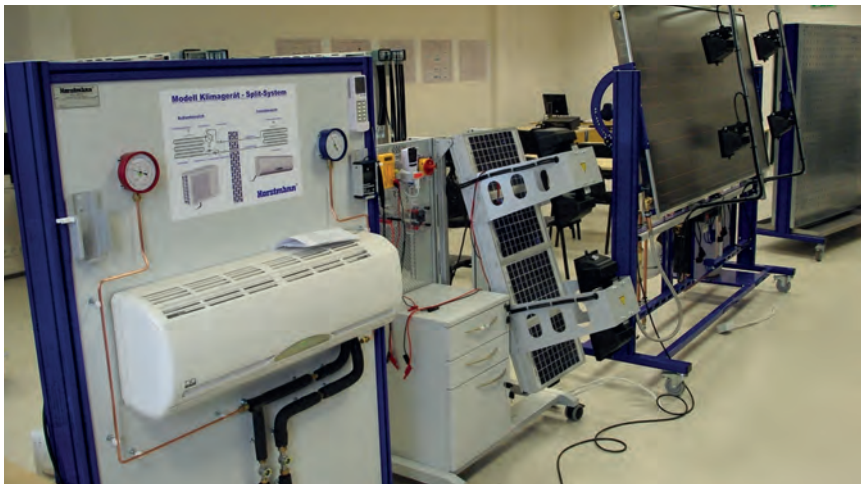
PROFI **Laboratory Bench**

- Electrical classroom with sheet steel Energy Board and 2-level training system on top
- cord holder attached to the profiles
- some of the PROFI extensions are longer for the acceptance of the feeding cables directly from the ceiling

RENEWABLE
Energies and HVAC

- we offer systems for Photovoltaics and Wind Power
- please also ask for our HVAC training systems from the Berthold Horstmann product range



PROFI **Photovoltaics**

- Energy Board with dimmer for the adjustable lighting unit
- tiltable training system frame with reading for the angle of sun beam
- various components are available for tests to on-grid and off-grid systems

THEORY OR PRACITCAL EXERCISE? - THIS BENCHES ADAPT TO YOUR LESSON.

You would like to furnish a classroom or training center, that is most useful for theoretical and practical lessons?- Learn more about our multifunctional classroom benches on the following pages.

PROFI **Foldaway Bench Rack** with Sliding Mechanics

- Flush into the bench top integrated Energy Board, that can be electrically lifted up and down
- Double rubber lip to avoid bruising
- Up- and down mechanism with two silent-running electric lifts with automatic switch off

see page 303

Chest with **Hideaway Energy Board**

- Chest with integrated Energy Board and detachable service flap at the front
- Double rubber lip to avoid bruising
- Up - and down mechanism with two silent-running electric lifts with automatic switch off

see page 303

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Hideaway **Hexagonal Bench Rack**

- Chest with integrated Energy Board and detachable service flap
- Double rubber lip to avoid bruising
- Up - and down mechanism with four silent-running electric lifts with automatic switch off
- 2-level enabling: fist level for 1phase supply, second level for 3phase supply

see page 304

TFT Chest

- Electrically retractable VESA adapter for flat screens with max. 24“
- Storage room for keyboard and mouse
- Automatically operated flap, optionally with electric locking

see page 151

KEEP CONTROL
OF EACH WORKSTATION!

It is your decission how much influence you would like to have on your trainees: either you allow enabling each workstation locally by pushbutton, or you keep the control with RC or LAN/ WLAN and maybe even with visualizing and control software. There are no limits at all!

Power Distribution for Instructor Bench

19“ module integrated into a 19“ rack and placed under the instructor bench for central protection, power distribution and control of all trainee benches. This module is individually configurated for each classroom.

▸ **see page 371**

LAN / **WLAN**

Network-linked devices of the series REMOTE with LAN interface and the tailored classroom software WinRemote for the control of all devices from a local computer. Also applicaple for tablet computers.

▸ **see page 371**

Remote Control

Into the trainee benches integrated remote units receive the signals of a central handheld transmitter. With this technology, low and mains voltage can be enabled and bench racks can be lifted up or down.

▸ **see page 371**

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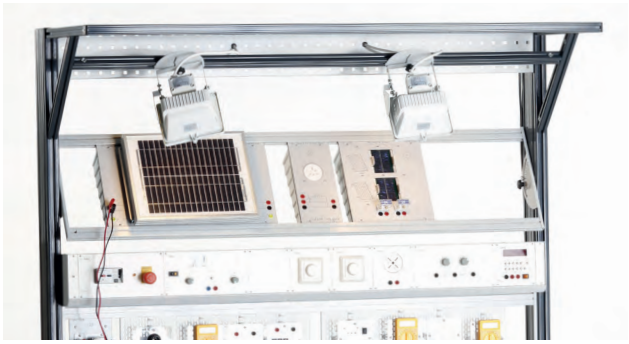
TRAINING SYSTEM SUPPORTS
FOR YOUR INDIVIDUAL CIRCUITS!

For our different kind of training systems e.g. A4 panels, training boxes or individual set-ups with installation dowels, we offer the right supporting system. See the possibilities below.

DIN A4 Training System Frame

- H-Profile in DIN A4 heights, for hooking in DIN A4 Panels of hera or other brands
- an integrated brush guarantees clatter-free workings
- with extra slot for sliding nuts
- for the assembly between PROFI extensions or to the EASY portable support

see page 118



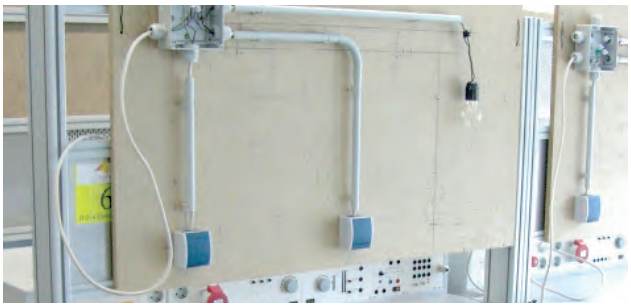
Installation Wall for Training Boxes

- perforated grid wall made of powder coated sheet steel for the flexible hook-in of hera training boxes or other brands
- suitable for installations with installation dowels
- for the assembly between PROFI extensions or to the EASY portable support

see page 153

Wooden Board for Training System Frames

- chipbaord panels for wall installations with installation nails
- usable from both sides and replacable when worn out



Installation **Cabin**

- movable or firmly installed and available with modular supply channel

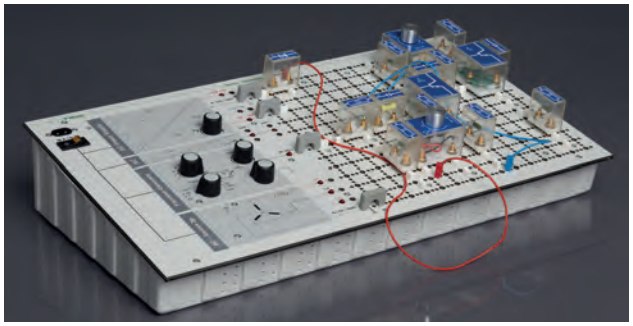
see page 154

EXPLOIT OUR VARIETY OF TRAINING SYSTEMS **FOR UTMOST INTERESTING LESSONS!**

We offer training systems for electric/ electronic professions. For more information ask for our separate catalogue. Below you can see the different topics and available training systems.

Basics of **Electric/ Electronic Engineering**

- Easy Electronics „First Step Into Electronics“
- Basic Electric Panel and Addition Electric Panel
- Basic Electronic Panel and Addition Electronic Panel
- Plug-In Components
- Software „AC Technoloy RCLwin“

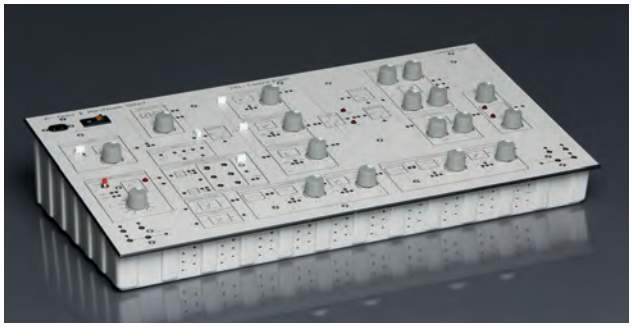


Analogue and Digital Technology, **Power** Electronics

- Analogue Electronic Panel
- Digital Panel / Digital Socket Panel
- Power Electronic Panel
- Step Motor Panel

Closed Loop Technology

- PID-Control Panel
- PID-C Motor Panel with Light and Temperature Sensor
- Fill Level Plant
- Software „Practical Training of Control Engineering“



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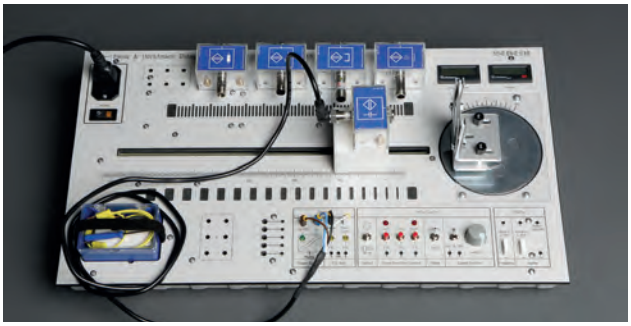
Sensor Technology

- Sensorics Test Panel



Microcontroller- and Network Technology

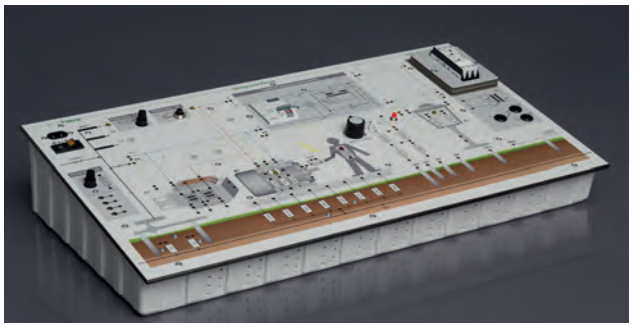
- Microcontroller Panel
- LAN Panel

Transformers and Motors

- Transformer Panel
- Basic Motor Panel

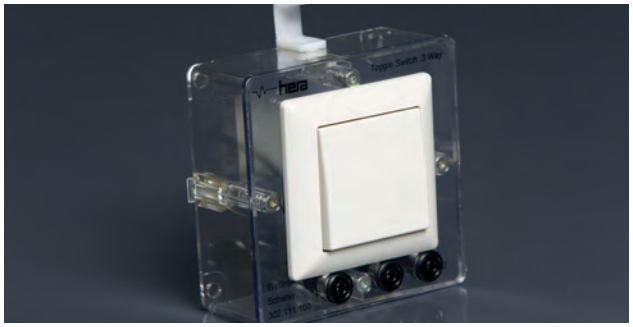
Electric **Protective Measures**

- Safeguard Panel
- Installation Test Panel
- RCD Test Panel



Installation Technology

- Compact Panel Basic Installation
- Component Panels Installation Technology
- Training Boxes Installation Technology
- Component Panels and Training Boxes
  Door Bell and Intercom System



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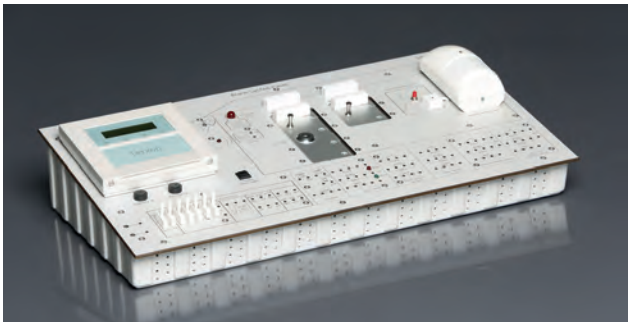
Lighting Technology

- Compact Panel Lighting
- Component Panels and Training Systems Lighting Technology
- Compact Panel Halogen Lamps
- Compact Panel LED

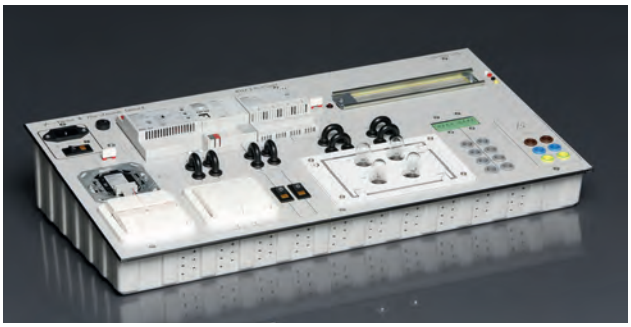
Building Security Technology

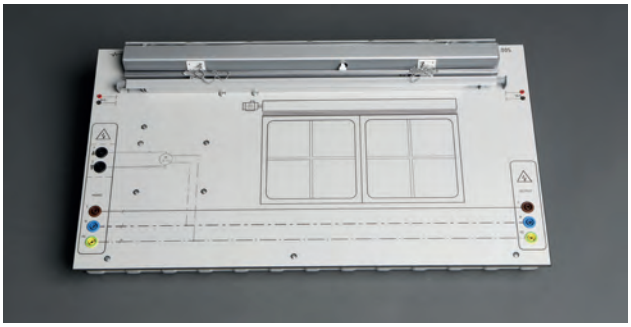
- Compact Panel Intruder Alarm System
- Compact Panel Fire Alarm System



KNX EIB (European Installation Bus)

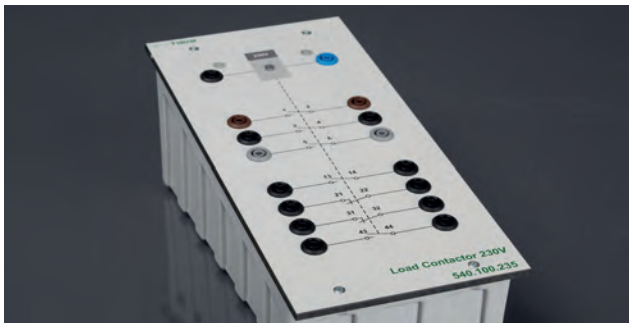
- Compact Panel KNX EIB
- Component Panels Add-On to KNX EIB
- Software EIB





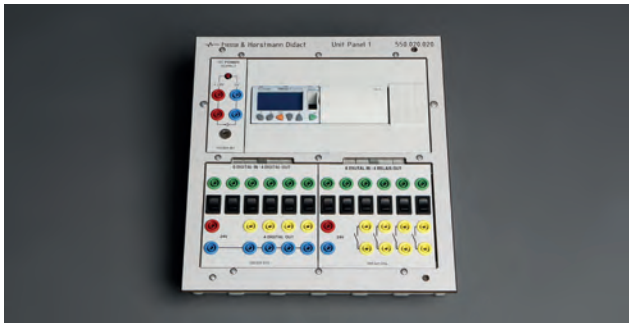
Control Engineering

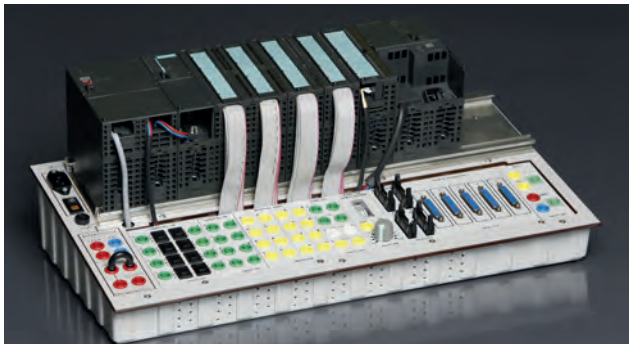
- Compact Panel Control Engineering
- Compact Panel Main Contactor
- Basic Motor Panel
- Component Panels Control Engineering
- Training Boxes Control Engineering



Programmable **Logic Controller**

- Training System LOGO
- Training System EASY
- Training System GRAFCET
- Unit Panel
- PLC Panel S7
- Software SIMATIC Step 7
- Touch - and Operator Panel





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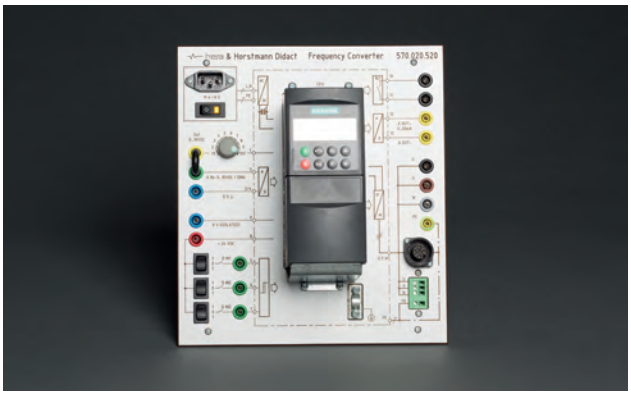
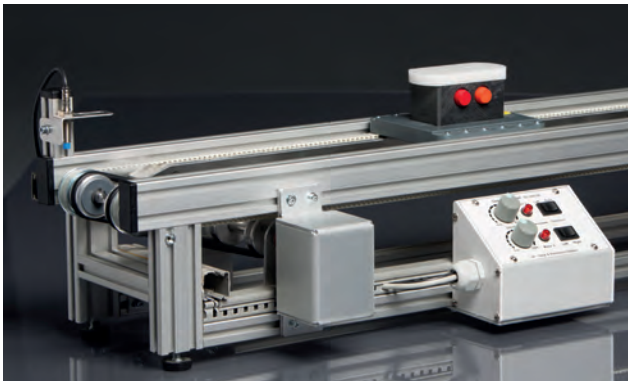
Controlled Systems

- Basic Motor Panel
- Multi Interface Panel
- Process Simulation Panel
- Operation with Profibus DB
- Frequency Converter
- Data Word I/O Panel
- AS-Interface-Bus
- Fill Level Plant



Mechatronics

- Transfer Systems with Different Drives
- Curve and Transfer Knot
- Component Magazines
- Pin Assembly and Pin Removal
- Sorting Station
- Sensor Test Station
- Camera Test Station
- Stacker Rack
- Mechatronic System COMPACT



Renewable Energies

- Grid Independent Photovoltaics System, Panels and Training Boxes
- Grid Connected Photovoltaics System, Panels and Training Boxes
- Photovoltaics Software PV*Sol-Pro
- Wind Power Panel
- Thermal Solar Trainers

CONFIGURE YOUR INDIVIDUAL **WORKSHOP BENCH!**

When configuring your individual workshop bench, you have the choice between EASY/ FLEX or PROFI. Both are optionally available in ESD and with height adjustment.

FLEX System

The economic FLEX system bases on solid benches with brace-set-ups made of sheet steel for the connection of all accessories. The braces are with keyhole perforation for the flexible acceptance of all components.

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PROFI System

The PROFI System is made of top quality materials only, like hardwearing wooden shelves and slotted aluminium profiles for the acceptance of accessory in flexible height. Even the height adjustable types offer different options, like up and down of the complete set-up or just the bench top.

BE INSPIRED BY
HERA MECHANIC WORKSHOPS!

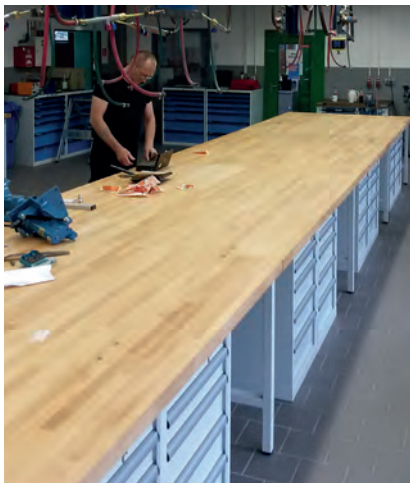
Specially for electronic workshops we developed our FLEX system. But you will also find amazing workshop solutions in our EASY and PROFI program.

EASY Workbench

- EASY bench with worktop made of solid beech
- EASY Power Board for an optimized utilization of the worktop, choose your modules from our EP and MP system

WORKSHOP Equipment

- left: EASY workbench with solid beech worktop and sheet steel container
- right: PROFI bench with beech decor top, sheet steel container, perforated back plane and suspended cabinet



PROFI Workstation

- a combination of mechanical and electrical workstation
- PROFI bench with flexibly equipped ENERGY profile for media supply
- bench top and shelf made in beech decor with LED workstation lamp
- combination with vices and soldering fume extraction

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EASY Workbench

- soldering laboratory equipped with EASY benches and LS2000 Bridge Bench Rack
- benches with mechanic height adjustment
- soldering fume extraction arms integrated in perforated backplane

MECHANICAL Workbench

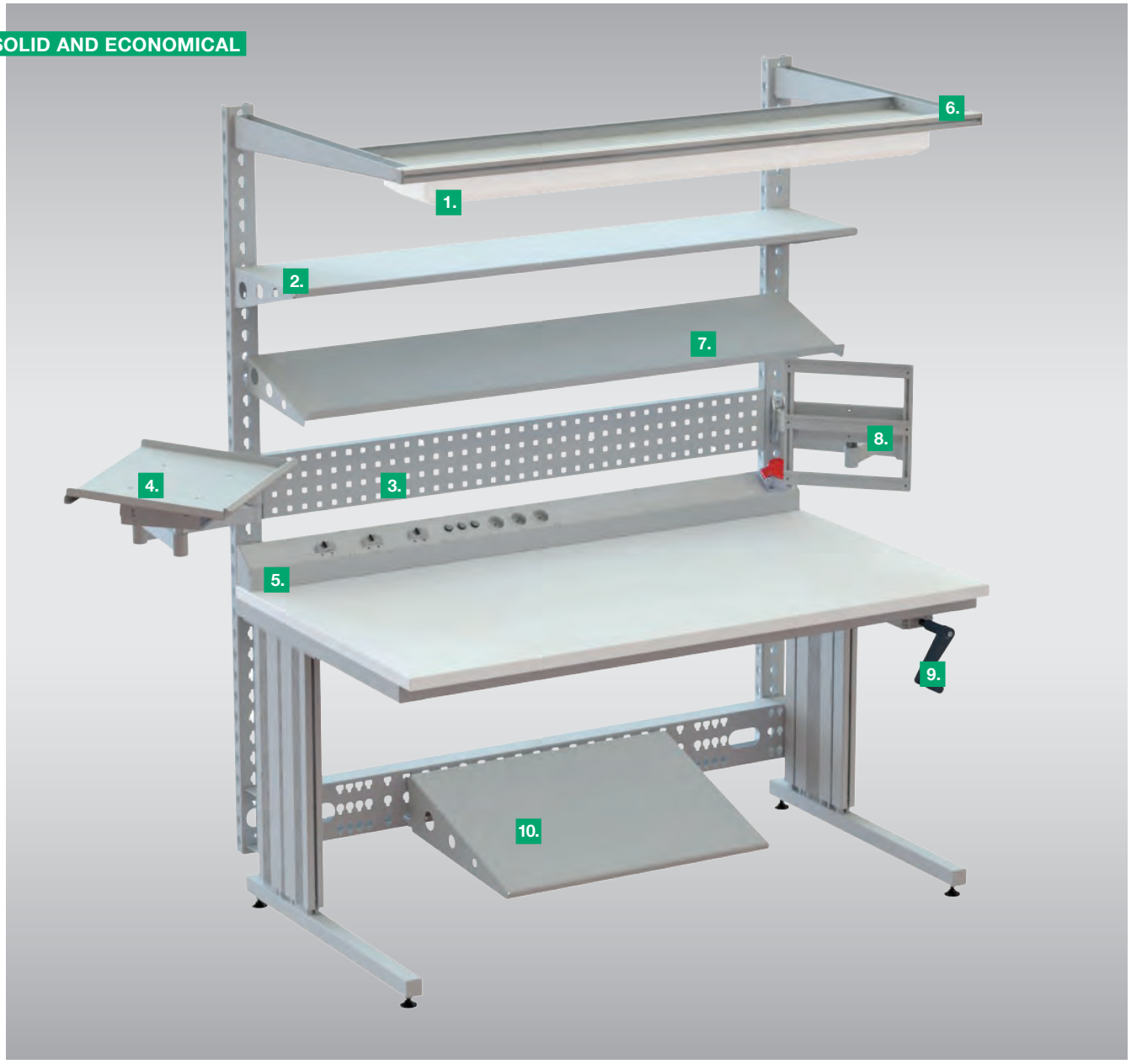
- with foldable vice
- PROFI extensions with shelf and compact terminal for media supply
- LED workstation lamp

FLEX Transfer System

- EASY workbench with FLEX set-up
- integration into transfer bands and roller beds for an easy material flow
- benches and transfer system are manually height ajdustable

The **FLEX** Workshop Bench

1. Overhead Lamp
2. ESD Sheet Steel Shelf
3. Perforated Back Plane
4. Cantilever Arm with Tiltable Tray
5. Modular Equipable Compact Terminal
6. Overhead Frame with Slider and Balancer
7. Swivel Shelf with Stop Edge
8. Cantilever Arm with Bin Support
9. Hand Crank for Bench Height Adjustment
10. Suspended and Tiltable Foot Rest



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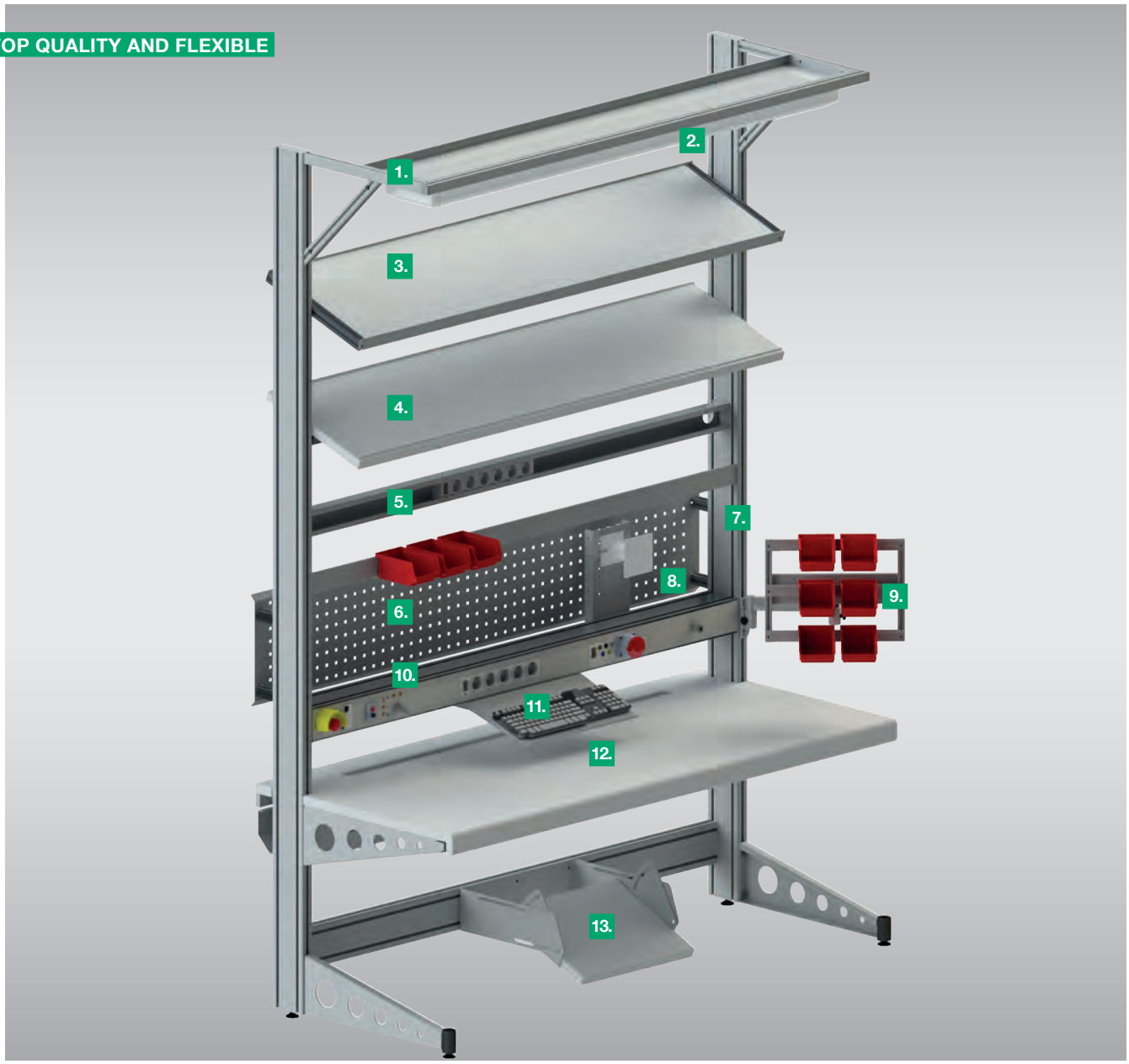
The **PROFI** Workshop Bench

1. Overhead Frame for the Acceptance of Slider and Balancer
2. Overhead Lamp
3. Functional Shelf with Metal Stop Edge for Magnets and Bins
4. Swivel Shelf, Tiltable without Tools
5. Backplane for Socket Strip
6. Backplane for Tool Holder
7. Bin Support
8. Horizontal movable TFT Support
9. Cantilever Arm with Bin Support
10. Modular Equipable ENERGY Profile
11. Horizontal movable Key Board Tray
12. PROFI Cantilever Bench with Height Adjustable Bench Top
13. Cantilever Foot Rest with Stepless Adjustable Tilt

TOP QUALITY AND FLEXIBLE



OUR MOBILES WILL **NEVER LET YOU DOWN!**

Never mind if for laboratory, education or workshop, our mobiles can be equiped for your individual purpose. See below some of the possibilities and ask for more!

PROFI **Mobile**
PROFI **Cart**

PROFI Cart with 19“ Rack

PROFI Mobile with 19“ Rack

PROFI Mobile, modular

PROFI Cord Holder, lockable

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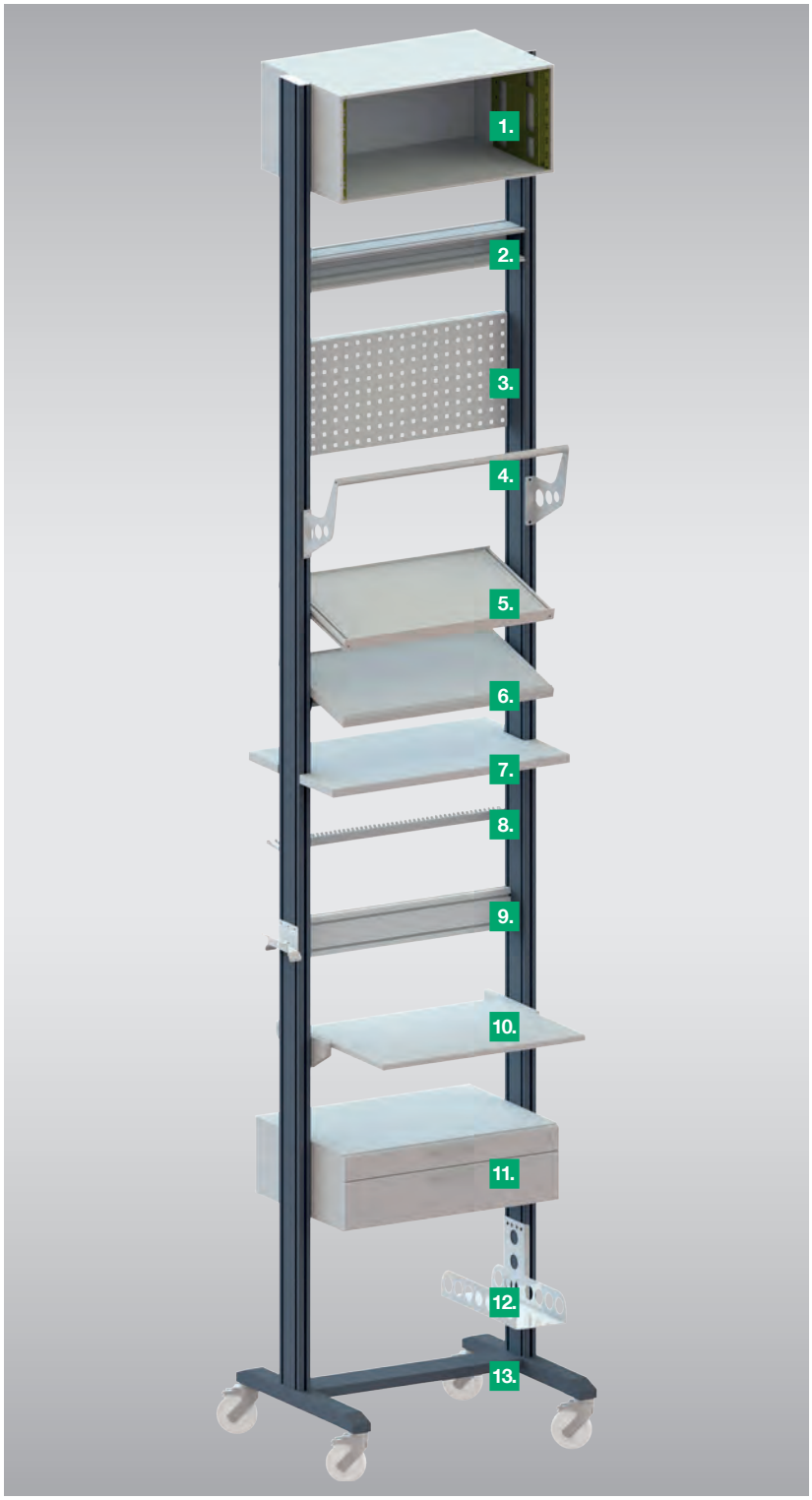
BOUNDLESS
TO THE TOP!

The mobile solutions of our PROFI system generally consist of a H-frame and two aluminium profiles in flexible length, that could be equipped with different shelves, drawers, racks and other modular components.

PROFI **Mobile**

▸ chapter 6



1. 19" Rack between 4 – 21HE
2. Modular equipable ENERGY Profile
3. Perforated Back Plane for Tool Holders
4. Handle Bar
5. Functional Shelf with Stop Edge
6. Swivel Shelf with tilt-adjustment (tool-less adjustable)
7. Shelf with and without Railing
8. Cord Holder with Cable Comb
9. Arched Cord Holder
10. Keyboard Tray optionally with extendable Mouse Pad
11. Drawer Container
12. PC Support
13. PROFI Mobile Base with Swivel Casters and Extensions

BE INSPIRED BY
HERA MOBILE SOLUTIONS!

Optically identical to all our stationary equipment you can choose the same components to create an individual mobile solution to round up your furnishings in a matching design.

LABORATORY

- left: PROFI Mobile with variable equipped ENERGY Profile for the supply of various electrical devices
- right: PROFI Mobile with 19“ insertions and foldable extensions
- choose from our wide range of components for your individual configuration

EDUCATION

- Didact Mobile for the storage of training systems, with Energy Board for the test proceeding and A4 training system frame
- Storage cart for transportation and storage of A4 training systems

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WORKSHOP

- left: FLEX Mobile with keyhole perforation for the height variable acceptance of components
- right: EASY Cart in same height than the workshop benches, to ajoin the benches for buffering and internal transportation

TESTING

- Mobile testing equipment for the connection of several test items, selectable jacks for the connection of various primary voltage, with signal lamp for ongoing test proceedings
- Standardized head rail and 19“ rack for the flexible acceptance of test items or test devices
- Suspended container with 19“ drawers, that can be substituded by 19“ electric insertions if needed

COUNTLESS OTHER POSSIBILITIES!

In addition to our three standard fields of application, the considerable range of products can be used for special customized projects. Besides the standard program please ask for our solutions for bureau equipment or control room applications.
Please contact us for more details: sales@hera.de.

PROFI **Packing Bench**

- standard products from our PROFI program with extra components like roll holders, cutting unit for packing material and box supports and you have a functional packing station
- ask for other possibilities

SYSTEM **Cabinets**

- we offer countless possibilities for the set-up of your individual cabinet wall, you can choose from different drawers, different doors and many more
- ask for greenboard -, white-board and magnetic surface

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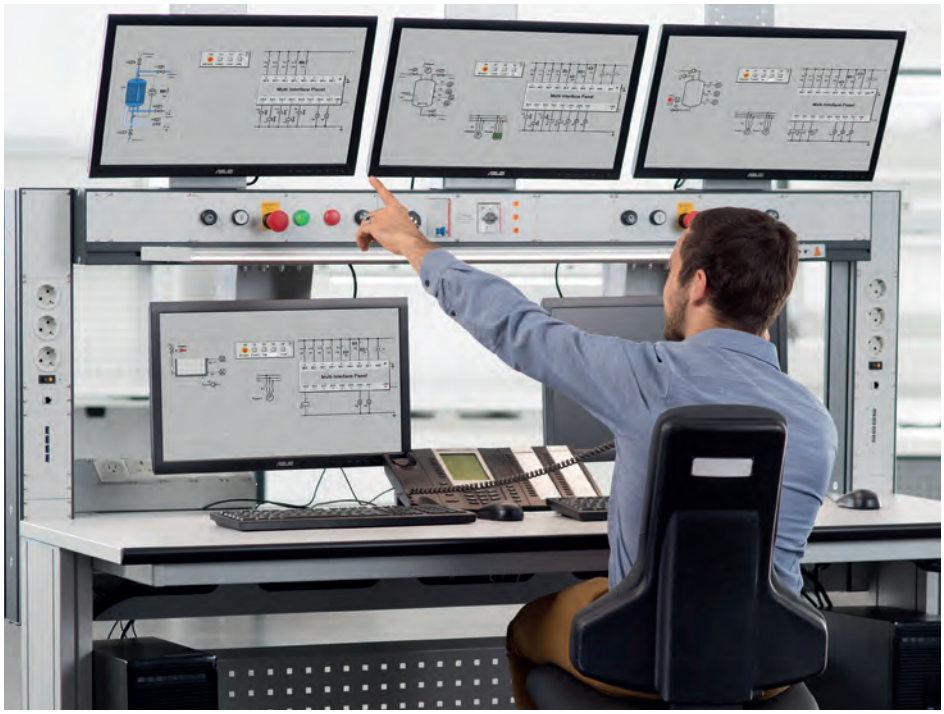
PRESSURE
Calibration Station

- PROFI C-Lift-Bench with double bench rack
- electronic laboratory - and measuring instruments
- modular process calibrator for measurement and generation of pressure and standard signals

PROFI **Control Station**

- PROFI C-Lift-Bench with spacious channels for cable management
- two levels of slide- and tiltable monitors
- power supply from the ceiling, hidden by an extended PROFI profile



TEST Station

- test station with lift-to-open cabin, the cabin is automatically locked by electromagnet or contact switch during the test proceeding for a maximum of safety

SPECIAL Solution

- Laboratory workstation with sink and laboratory tap, besides our standard bench tops we offer solid HPL tops, ceramics, sheet steel and other surfaces

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CHAPTER 2: **PROFI BENCHES**

054 Recommended Colours
056 Workbench
058 Laboratory Bench
060 Bench with Power Legs
064 Option Cantilever Lift
066 C-Lift-Bench
068 4-Lift-Bench
070 Cantilever Bench
072 Attachment - and Intermediate Bench
073 Stiffenings for Benches with Casters
075 Cable Tray and Rear Paneling
076 PROFI Cross Profile and Foot Rest
078 Corner Element
080 Additional Bench Legs
081 Cable Tray for PROFI Corner Element
082 Attachment Element and ESD Bistro-Style Table
083 Height Adjustable PROFI Corner Combination
084 Cable Access, Ventilation Inserts
085 Socket Strips
086 Slot Cover, Cable Clamp and Brush Channel
087 PC Support, Keyboard Extension
088 Height Adapter and Heavy Duty Leveller
089 Bench Connectors, Floor Fixation and Upstand
090 Slot Cover and Extra Cable Guide

THREE STRONG PROFILES
FOR INCOMPARABLE FLEXIBILITY

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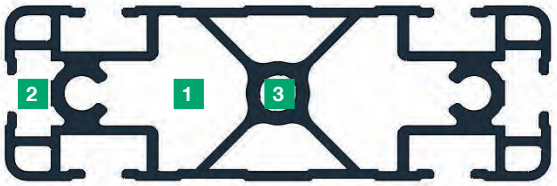
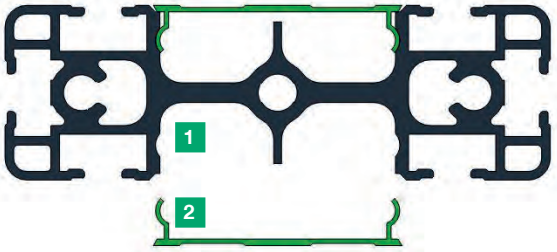
SINGLE Profile

1. very stable closed aluminium profile 125 x 40mm with four cable channels
2. six vertical slots, size 8 for all standard sliding nuts
3. central bore M10 and two fixing holes for a solid, invisible profile extension



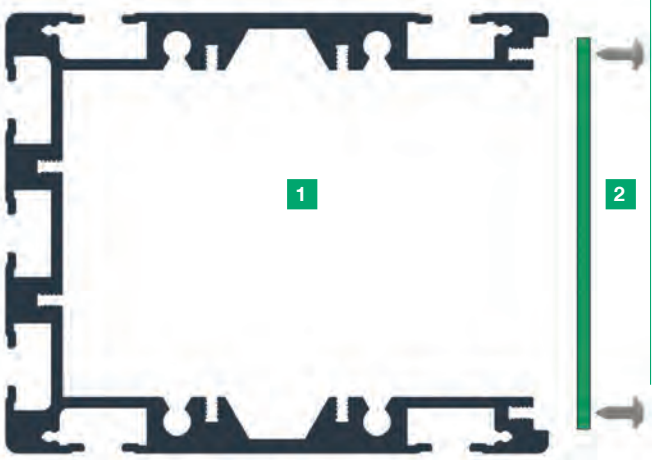
MULTI Profile

1. open aluminium profile, with same outline and stability than the SINGLE profile
2. both sides with detachable aluminium covers for the cable channels, thus cable outlet is variable without damaging the profile, access to the cables is always possible, this gives the profile its uncompared flexibility



ENERGY Profile

1. equipable aluminium profile 125 x 102mm
2. for the modular acceptance of KP modules at the front, due to the compatibility with the profile SINGLE and MULTI, the ENERGY profile could be installed horizontal between the extensions, or as power legs at the rear side



RECOMMENDED COLOURS
FOR THE PROFI SYSTEM

All chipboard parts as well as frame - and supporting parts are light grey RAL7035 in standard. Aluminium profiles and channels or ventilaton panels for channels can be made in any RAL colours according to your demand. Recommended colours are available without surcharge, for other colours wishes please ask for price and possibility. Powder coatings are available in fine structured or glossy and either standard or ESD!

RAL7016 (anthracite)
fine structur or glossy

RAL7035 (light grey)
fine structur or glossy

RAL7042 (traffic grey A)
glossy

RAL9006 (white aluminium)
glossy

RAL5002 (ultramarine)
fine structur or glossy

RAL5014 (pidgeon blue)
glossy

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RAL5010 (gentian blue)
glossy

RAL5023 (distant blue)
fine structure

RAL5012 (light blue)
glossy

RAL5003 (saphire blue)
glossy

RAL5018 (turquoise)
glossy

RAL6029 (mint green)
fine structure

RAL3020 (traffic red)
glossy

RAL3003 (ruby red)
glossy

A GOOD BASE TO BUILD ON: **SOLID AND VIBRATION-FREE.**

PROFI **WORKBENCH**

- Bench height: 780mm.
- Extremely solid bench frame, made of tubular steel and middle section. Sides with sleeves for a vibration-free and flush connection of the bench legs. Both sides with thread inserts for the assembly of suspended containers.
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.
- Four aluminium bench legs with 6 surrounding slots, integrated cable channels, channel covers and levellers.
- Front legs are made of profile SINGLE and can be placed further to the rear, thus corner combinations have unhindered leg room. Bench top with cutouts for the modular extension of the rear bench legs. Optionally the rear bench legs can be in MULTI for variable cable outlet.
- Durable light grey powder coating. Extensions according to RAL code on demand.

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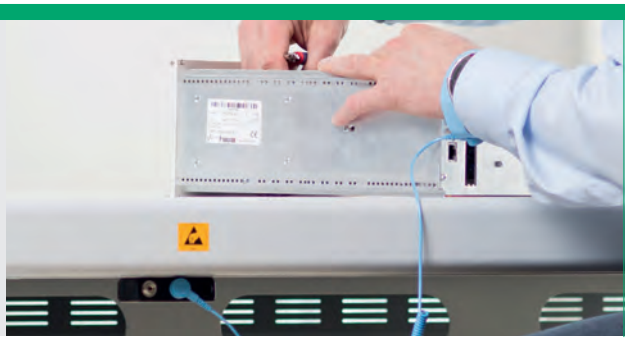
Your adventages with this bench frame:

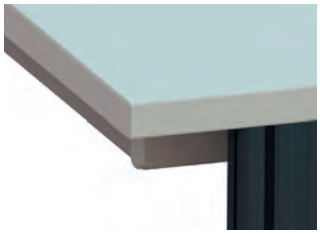
- extremely stable due to solid square steel tube
- extra middle section
- uniformally distributed load (UDL) max. 500kg
- durable powder coating

ESD Version

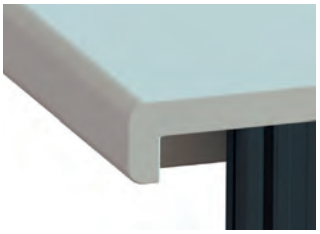
- Earthing box with press studs for wrist bands. Optionally mounted left or right under the bench frame.
- Surface - and volume conductive bench top (according to DIN EN 61340).
- Bench legs with conductive metal levellers.



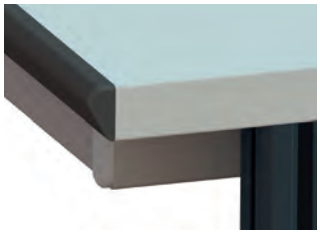
V Front Edge



PP plastic edge
sturdy PP plastic edge with 3mm radius, in bench top colour



70mm drop edge
HPL layer stretched 70mm downwards for a covered bench frame, 15mm radius and thus very ergonomic for forearms



PROFItec edge
extremely impact resistant and replacable front edge made of plastic, with 10mm radius

PROFI Workbench 40 T . BB V .90 H

T Depth	BB Width	V Front Edge	H Rear Profile
6 800mm	08 800mm	**PP plastic edge**	**for SINGLE/ MULTI extensions**
7 900mm	09 900mm	0 Standard	1 SINGLE
8 1000mm	10 1000mm	5 ESD	3 MULTI
	12 1200mm		
	13 1295mm	**70mm drop edge**	**for ENERGY extensions**
	15 1500mm	1 Standard	2 SINGLE
	16 1600mm	6 ESD	4 MULTI
	18 1800mm		
	20 2000mm	**PROFItec edge**	
	23 2303mm	2 Standard	
		7 ESD	

THE LABORATORY BENCH WITH **SPACIOUS CABLE TRAY**

PROFI **LABORATORY BENCH**

- Bench height: 780mm.
- Extremely solid bench frame, made of tubular steel with middle section. Sides with sleeves for a vibration-free and flush connection of the bench legs. Both sides with thread inserts for the assembly of suspended containers.
- Sheet steel cable tray (200 x 170mm) with rear sides ventilation slots and ergonomic bevelling. Durable light grey powder coating.
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.
- Cable flap at the rear bench top with double sided rubber lip for flexible cable outlet from cable tray to the bench top, offers strain-relief for cables when the flap is closed. Flaps with 1200mm and more are sectioned in the middle so the bench top could be used optimal.
- Front legs are made of aluminium profile SINGLE and can be placed further to the rear, thus corner combinations have unhindered leg room. For flexible cable runs, the rear bench legs are made of the profile MULTI with cable channels and detachable aluminium covers. The lengths of the covers are customized, so continuous extensions are possible.
- Durable light grey powder coating. Extensions according to RAL code on demand.

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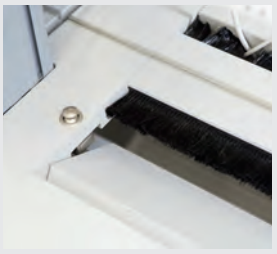
Your adventages with the PROFI cable tray / choice of flaps:

spacious cable tray 200 x 170mm for cable bundles or battery chargers, etc.

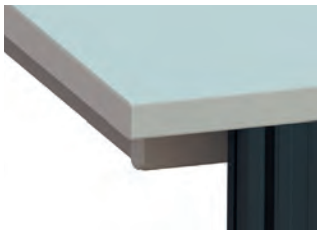
flap sectioned in the middle

strain-relieving and easy to clean rubber lip

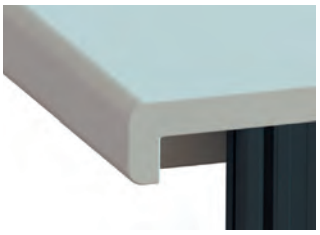


on demand brush strip instead of rubber lip

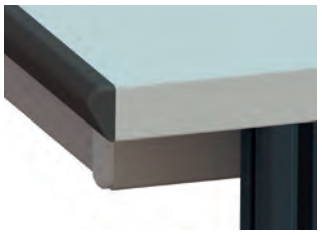
V Front Edge



PP plastic edge
sturdy PP plastic edge with 3mm radius in bench top colour

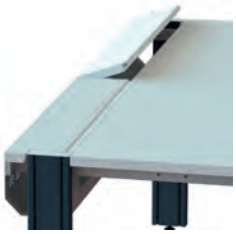


70mm drop edge
HPL layer stretched 70mm downwards for a covered bench frame, 15mm radius and thus very ergonomic for forearms

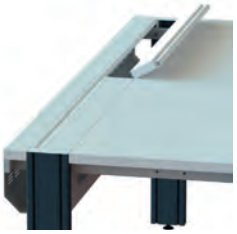


PROFItec edge
extremely impact resistant and replacable front edge made of plastic, with 10mm radius

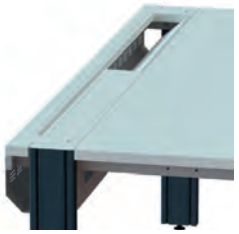
K Cable Flap



standard flap
90° to the rear opening flap with special high quality hinges, which open gapless



180° flap
to the front opening flap, good accessable due to the big opening angle of 180°



downward opening flap
with push locks

PROFI Laboratory Bench 41 T . BB V .9 K 1

T Depth		BB Width		V Front Edge	K Cable Flap
0	800mm	08	800mm	0 70mm drop edge	**for SINGLE/MULTI extensions**
1	900mm	09	900mm	1 PP plastic edge	0 standard flap
2	1000mm	10	1000mm	2 PROFItec edge	1 180° fap
		12	1200mm		2 downward opening flap
ESD		13	1295mm		
4	800mm	15	1500mm		**for ENERGY extensions**
5	900mm	16	1600mm		7 standard flap
6	1000mm	18	1800mm		8 180° flap
		20	2000mm		9 downward opening flap
		23	2303mm		

THE LABORATORY BENCH WITH **EXTENDABLE ENERGY PROFILE**

PROFI BENCH WITH **POWER LEGS**

- Bench height: 780mm (equipable with: 2x 16KP).
- Extremely solid bench frame, made of tubular steel with middle section. Sides with sleeves for a vibration-free and flush connection of the bench legs. Both sides with thread inserts for the assembly of suspended containers.
- Front legs are made of aluminium profile SINGLE and can be placed further to the rear, thus corner combinations have unhindered leg room.
- The rear legs are made of the heavy duty ENERGY aluminium profile (width: 102mm, depth: 125mm) with 7 slots, size 8. The front side can be modular equipped with the wide range of KP modules (see chapter 9), which offers sockets, interfaces, 4poles RCD, laboratory power supplies and many more.
- For complete hidden cable runs from floor to cable tray and bench rack, the profile can be continuously extended without loss in stability.
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.
- Optional with rear sided cable flap and double sided rubber lip, as well as the spacious sheet steel cable tray (200 x 170mm) with rear sides ventilation slots and ergonomic bevelling.
- Durable light grey powder coating. Extensions according to RAL code on demand.

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Your adventages for the PROFI bench with power legs:

- rear with extendable heavy duty aluminium profile ENERGY, compatible to the profiles SINGLE and MULTI
- solid connection due to 7 slots size 8
- spacious cable tray, dimension 125 x 102mm
- wide range of modules, even 4poles RCD
- the complete length, even next to the shelves can be equipped due to the straight form

PROFI Bench with Power Legs 41 T . BB V .3 K 1

T Depth	BB Width	V Front Edge	K Cable Flap
0 800mm	08 800mm	0 70mm drop edge	0 standard flap
1 900mm	09 900mm	1 PP plastic edge	1 180° flap
2 1000mm	10 1000mm	2 PROFItec edge	2 downward opening flap
	12 1200mm		5 no flap
ESD	13 1295mm		
4 800mm	15 1500mm	Details: see page 055	Details: see page 057
5 900mm	16 1600mm		
6 1000mm	18 1800mm		
	20 2000mm		
	23 2303mm		

SITTING OR STANDING: **THESE BENCHES DO NOT SHAKE!**

Basically our height adjustable benches vary in the number of lifting columns and if only bench top or complete construction is moved. And of cause in the mechanics. We offer manual height adjustability, with hand crank or electrically.
No matter what solution you prefer, you can be sure to get a solid height adjustable workplace system that does not shake!

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HEIGHT ADJUSTMENT
EVEN FOR RETROFITTING

OPTION CANTILEVER LIFT FOR PROFI BENCH

Each PROFI workbench or laboratory bench can be equipped with this cantilever lift, even as later-on modification with reasonable effort. For safety reasons spacers should be used to avoid squeezing.

Due to the fact that the legs of all PROFI benches can be placed more to the rear, the benches can be equipped, even enhanced with height adjustable cantilever legs.
This special and precise guiding meachanism provides extraordinary stability.
Height adjustment is either manually with locking bolt mechanism, by hand crank or electric driven with integrated hydraulic lifts.

Option Cantilever Lift for PROFI Bench consisting of:

- Nicely shaped cantilever base with levellers and integrated glides for an easy and stable height adjustment.
- Rear side with perforated backplane (H: 300mm) for even more lateral stability.
- 2 or 4 lifting cylinders.
- Central hydraulik pump, hiddenly installed under the bench top or in the cable tray. Either for hand crank operation or electrically driven.
- Lowest height: 750mm, if height adjustment is upgrated later on, then the lowest height is the initial bench height.

PROFI Laboratory Bench with option PROFI Cantilever Lift and Electric Height Adjustment (range 500mm)

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Hand Crank Adjustment

- Two (bench depth: 800/900) or four (bench depth: 900/1000) hydraulic cylinders with decorative side parts durable powder coated according to RAL Code.
- Central hydraulic pump, hiddenliy installed under the bench top.
- Hand crank driven, the crank can be folded under the bench top.
- Stroke: 5mm / per rotation.
- Complete set of hoses hidden under the bench top or in the cable tray.

Electric Adjustment

- Two (bench depth: 800/900) or four (bench depth: 900/1000) hydraulic cylinders with decorative side parts durable powder coated according to RAL Code.
- Central hydraulic pump, hiddenliy installed under the bench top.
- Speed: 15mm / sec.
- Control with overload protection and up/down button.
- Complete set of hoses hidden under the bench top or in the cable tray.

Option Cantilever Leg for PROFI Bench 400. BB T . HH V

BB Width

08	800mm
09	900mm
10	1000mm
12	1200mm
13	1295mm
15	1500mm
16	1600mm
18	1800mm
20	2000mm
23	2303mm

Spacer (40mm):

419.021.100 Raw Set-Up

419.022.100 Back-to-Back Set-Up

T Depth

0	800mm
1	900mm
2	1000mm

HH Height Adjustment

10	manual height adjustment (750 - 1250mm)
23	hand crank with 2x lifts (3000N) lifting height: 300mm
24	hand crank with 2x lifts (3000N) lifting height: 400mm
25	hand crank with 2x lifts (3000N) lifting height: 500mm
43	hand crank with 4x lifts (6000N) lifting height: 300mm
44	hand crank with 4x lifts (6000N) lifting height: 400mm
45	hand crank with 4x lifts (6000N) lifting height: 500mm
33	electric drive with 2x lifts (3000N) lifting height: 300mm
34	electric drive with 2x lifts (3000N) lifting height: 400mm
35	electric drive with 2x lifts (3000N) lifting height: 500mm
53	electric drive with 4x lifts (6000N) lifting height: 300mm
54	electric drive with 4x lifts (6000N) lifting height: 400mm
55	electric drive with 4x lifts (6000N) lifting height: 500mm

V Type

0	installed
5	later-on

410.004.907
Synchroning cable for bench combinations with more lifts

410.004.908
Control unit with memory function (4 positions with digital height indication)

PROFI C-LIFT-BENCH, **THE POWERFUL**

PROFI **C-LIFT-BENCH**

- Height adjustable between 740 - 1190mm (stroke: 450mm).
- Heavy duty columns made of anodized aluminium.
- Extrusions with smooth running spindle drive, profile dimensions: 60 x 240mm. Six surrounding T-slots, matching the slots of the PROFI profiles, for acceptance of accessories (e.g. PC supports, etc.).
- Fully synchronized and hidden under the bench top with invisible cable runs between control unit, control box and lift columns. Variably programmable end positions.
- Extremely solid bench frame, made of tubular steel and middle section. Sides with sleeves for a vibration-free and flush connection of the bench legs. Both sides with thread inserts for the assembly of suspended containers.
- Rear side with perforated backplane (H: 300mm) for an even better lateral stability.
- Cantilever base, backplane and adapters are durable powder coating according to customer‘s choice (RAL No.).
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.
- Optional with rear sided cable flap and double sided rubber lip, as well as the spacious sheet steel cable tray (200 x 170mm) with rear sides ventilation slots and ergonomic bevelling.

PROFI C-Lift-Bench with Energy Board, Multimedia Support, Instrument Shelf and Swivel Shelf

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412.180.701 PROFI C-Lift-Bench with to the rear side opening standard flap and 70mm drop edge (lifting columns have to be ordered separately)

Your adventages with our heavy duty lifts:

- fully synchronized up to 640kg
- extremely high lateral stability due to special bench frame and extra backplane
- all sides with slots for the acceptance of PC support, container, etc.

Option
410.003.910

cable carrier between cable tray and cantilever base

PROFI C-Lift-Bench without Columns 41 T . BB V .7 K F

T Depth

0	800mm
1	900mm
2	1000mm
ESD	
4	800mm
5	900mm
6	1000mm

BB Width

08	800mm
09	900mm
10	1000mm
12	1200mm
13	1295mm
15	1500mm
16	1600mm
18	1800mm
20	2000mm
23	2303mm

V Front Edge

0	70mm drop edge
1	PP plastic edge
2	PROFItec edge

▸ **Details: see page 055**

K Cable Flap

0	standard flap
1	180° flap
2	downward opening flap
5	no flap

▸ **Details: see page 057**

F Rear Profile

1	MULTI / SINGLE
3	ENERGY 45°
5	ENERGY 45° MULTI

▸ **Details: see page 057**

Accessory

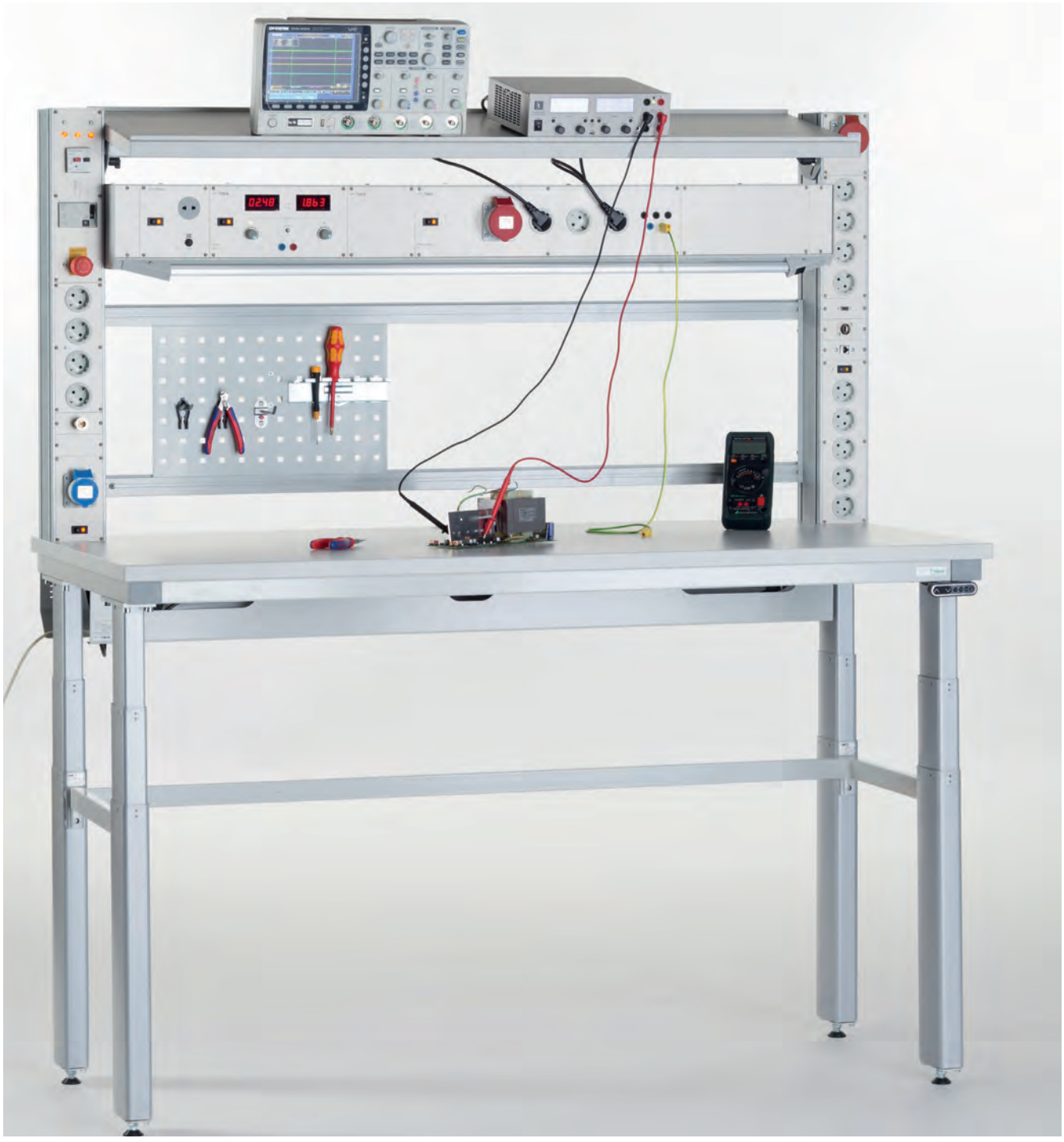
410.003.907	Synchron Cable for Bench Combinations
410.003.909	Programming Cable
410.003.910	Cable Carrier
419.021.100	Spacer for Row Set-Up
419.022.100	Spacer for Back-to-Back Set-Up

Columns	Force	Speed
410.003.160	2x 800N	max. 18mm/s
410.003.320	2x 1600N	max. 9mm/s
410.003.321	2x 1600N	max. 18mm/s
410.003.640	2x 3200N	max. 9mm/s
410.003.000	no lifting mechanism	C-Leg-Bench (only outer shell of lifting coulums)

Control unit with memory function and display for height indication (4x memories)

FOUR LIFTS AND AN IMPRESSING
670MM ADJUSTMENT

PROFI **4-LIFT-BENCH**



PROFI 4-Lift-Bench, Extension ENERGY, Energy Board with LED Lamp and Swivel Shelf

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Your adventages with the telescopic lifts:

- amazing stroke of 670mm
- fast (up to 43mm/s) and silent running lifts
- programmable with interface cable

- Height adjustable between 680 - 1350mm (stroke: 670mm).
- Four telescopic lifts with smooth running chain drive, white aluminium powder coated. Column dimensions: 58 x 110mm at 700N and 50 x 80mm at 1200N.
- Fully synchronized and hidden under the bench top with invisible cable runs between control unit, control box and lift columns. Variably programmable end positions and anti-collission function (programmable shut-off force in case of collission, with stop and reverse function).
- Extremely solid bench frame, made of tubular steel with middle section. Durable light grey powder coated.
- Bench frame ready for the acceptance of SINGLE / MULTI or ENERGY extensions with hidden cable run into the cable tray.
- U-brace made of tubular steel for a very good lateral stability even in telescoped stage.
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.
- Optional with rear sided cable flap and double sided rubber lip, as well as the spacious sheet steel cable tray (200 x 170mm) with rear sides ventilation slots and ergonomic bevelling.
- **Please note:** this bench is not suitable for the acceptance of suspended containers!

PROFI 4-Lift-Bench 41 T . BB V . H K F

T Depth	BB Width	V Front Edge	H Lifting Columns	K Cable Flap	F Extensions
0 800mm	08 800mm	0 70mm drop edge	8 4x 700N max. 43mm/s	0 standard flap	1 MULTI / SINGLE
1 900mm	09 900mm	1 PP plastic edge	6 4x 1200N max. 38mm/s	1 180° flap	3 ENERGY
2 1000mm	10 1000mm	2 PROFItec edge		2 downward opening flap	
	12 1200mm			5 no flap	
ESD	13 1295mm	▸ Details: see page 055		▸ Details: see page 057	▸ Details: see page 057
4 800mm	15 1500mm				
5 900mm	16 1600mm				
6 1000mm	18 1800mm				
	20 2000mm				
	23 2303mm				

410.005.000	Option cable carrier between cable tray and U-brace
410.005.908	Control unit with memory function (3x memories)
410.005.909	Software and cable for the programming of the lifts

STATIONARY RACK, **MOVABLE BENCH TOP**

PROFI **CANTILEVER BENCH**

Your would like to work in standing position and all tools should be within convenient reach?
For this application we developed our PROFI Cantilever Bench. Only the bench top moves when pushing the button.
Tools, shelves and instruments remain in the same height.

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Electric Height Adjustment

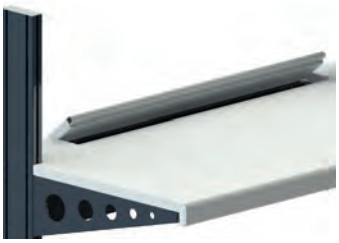
- Height adjustable between 700 – 1370mm (stroke: 670mm).
- Variably programmable end positions and anti-collission function.
- Two synchronized electromechanical telescopic lifts.
- Column dimension: 58 x 110mm at 700N and 50 x 80mm at 1200N.
- Control box fixed unter the bench top.
- Ergonomic positioned up -/down button at the front edge.

Hand Crank Adjustment

- Two anodized hydraulic cylinders for the height adjustment between 750 – 1150mm (stroke: 400mm).
- Hydraulic pump centrally mounted under the bench top.
- Hand crank driven, the crank could be folded under the bench top.
- Complete set of hoses is hidden in the cable tray.

PROFI Cantilever Bench, manually adjustable

PROFI Cantilever Bench with two lifts for hand crank or electric height adjustment



Option cable flap

- Total height inclusive extensions: 1400mm.
- Height adjustable in the whole range due to sliding mechanism within the profile slots. This mechanism withstands high longitudial and transverse forces.
- Cantilever base made of sheet steel with metal levellers and two legs made of SINGLE profile.
- Height adjustable bench frame with cable tray.
- The brace at the rear side is formed to a spacious cable tray.
- Durable powder coating according to customers‘ choice (RAL No.).
- Hardwearing, light grey 30mm thick bench top (multilayered chipboard) according to DIN 68761. Surface with 0,8mm HPL hard laminate according to DIN 16926 and 53799), edges with PP plastic. Three different types of front edges are available.

PROFI Cantilever Bench 40 **T** . **BB** **A** .90 **H**

T Depth		**BB** Width		**A** Type		**H** Height Adjustment	
3	800mm	**08**	800mm	**PP plastic edge**		**1**	manual
4	900mm	**09**	900mm	**0**	Standard	**2**	hand crank 3000N, 5mm/U
		10	1000mm	**5**	ESD	**3**	electric 2x 700N, max. 43mm/s
		12	1200mm			**4**	electric 2x 1200N, max. 38mm/s
		13	1295mm	**70mm drop edge**			
		15	1500mm	**1**	Standard		
		16	1600mm	**6**	ESD		
		18	1800mm				
		20	2000mm	**PROFItec edge**			
				2	Standard		
				7	ESD		

403.000.000 Option standard flap (90° opening to the rear)

403.000.100 Option cable carrier between cable tray and lower stiffening brace

PROFI **ATTACHMENT** BENCH

- When positioned in a row, all PROFI benches can be done as attachment benches, without the left pair of legs.
- Absolutly stable bench frame with the left side flush to the bench top.
- Bench width is reduced by 40mm.
- Note: Attachment benches cannot hold suspended bench racks.

PROFI Attachment Bench	4XX.XXX.905

PROFI **INTERMEDIATE** BENCH

- When placed in a row of at least three PROFI benches, the middle bench can be done as intermediate bench, without bench legs.
- Absolutly stable bench frame with flush to the frame mounted bench top.
- Bench width is reduced by 80mm.
- Note: Intermediate benches cannot hold bench racks with cutout for extensions.

PROFI Intermediate Bench	4XX.XXX.906

PROFI **COMPENSATION PLATE**

- Width: customized (please state).
- Hardwearing, light grey 30mm thick bench top, edges with PP plastic. Three different types of front edges are available.
- Two steel brackets with durable light grey powder coating, incl. assembly set.

PROFI Compensating Plate	41	T	.520. 0	V	0

T Depth

		ESD	
0	800mm	4	800mm
1	900mm	5	900mm
2	1000mm	6	1000mm

V Front Edge

0	70mm drop edge
1	PP plastic edge
2	PROFItec edge

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CROSS STIFFENING FOR PROFI BENCH

- Stable brace made of sheet steel.
- For the flexible assembly between the rear bench legs.
- Durable powder coating according to RAL Code.
- Dimensions: 120 x 30mm (DxH).

Width		Width	
720mm	419.050.901	1420mm	419.053.901
820mm	419.057.901	1520mm	419.053.906
920mm	419.051.901	1720mm	419.054.901
1120mm	419.059.906	1920mm	419.055.901
1215mm	419.052.901	2223mm	419.056.901

SIDE STIFFENING FOR PROFI BENCH

- Two aluminium extrusions (40 x 40mm).
- For the flexible assembly between front and rear bench legs.
- Durable powder coating according to RAL Code.

Side Stiffening (for bench depth)	
800 (L: 385mm)	419.058.901
900 (L: 485mm)	419.060.901
1000 (L: 585mm)	419.059.901

OPTION MOBILE PROFI BENCH

- Four twin swivel casters, two with brakes.
- Total bench height: 780mm.
- Load capacity per bench: 300kg.
- Incl. assembly set.

Note:
Mobile benches with caster-dimensions of 100mm and 125mm cannot hold suspended containers.

Mobile PROFI Bench	419. D 4 A . 00 P		
D Casters		**A Version**	**P Profile**
0 75mm		1 Standard	0 SINGLE
1 100mm		2 ESD	3 MULTI
2 125mm			

75mm standard
no brake

75mm ESD
with brake

100mm heavy duty
with brake

BENEFIT FROM COMPLETELY **HIDDEN CABLE RUNS**

With following details, like suspended cable trays, covers and panelings, we rounded up what we started with our spacious profiles: the completely hidden cable runs. This gives not only a perfect look to your combinations but also minimizes the risks at work and reduces disturbing factors. Do not miss this advantage!

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PROFI SUSPENDED **CABLE TRAY**

- Stable and spacious cable tray made of sheet steel, rear side with ventilation slots, ergonomic bevelling and cable access to the front and downwards.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation at the bench legs.

standard

with brush strip

PROFI Suspended Cable Tray 419. BB 0. F 2 A

BB Width

08	800mm	**15**	1500mm
09	900mm	**16**	1600mm
10	1000mm	**18**	1800mm
12	1200mm	**20**	2000mm
13	1295mm	**23**	2303mm

F Rear Profile

0	**with cutout for** SINGLE / MULTI
9	no cutout for SINGLE / MULTI
1	**with cutout for** ENERGY
8	no cutout for ENERGY
2	**with cutout for** C-Lift Benches
7	no cutout for C-Lift Benches

A Version

0	Standard
5	with Brush Strip (60mm rear overhang)

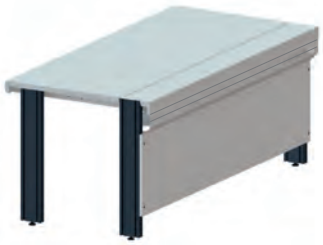
COVERS FOR CABLE TRAY, PAIR

- Two covers (left and right) made of sheet steel.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation at the bench legs.

Covers for Cable Tray, pair	
419.035.000	for Standard Cable Tray
419.035.005	for Cable Tray with Brush Strip

REAR PANELING FOR PROFI BENCH

- Light grey 19mm thick melamine resin covered chipboard with 2mm PP plastic edge.
- Incl. spacer sleeve for the flexible assembly at the rear bench legs.


height 450mm

height 650mm

height 1300mm

Rear Paneling 418. BB H .00 A

BB Width

08	800mm	**15**	1500mm
09	900mm	**16**	1600mm
10	1000mm	**18**	1800mm
12	1200mm	**20**	2000mm
13	1295mm	**23**	2303mm

H Height

4	450mm
6	650mm
9	1300mm

A Version

0	Standard
5	ESD

REAR BENCH TOP **UPSTAND**

- Light grey 30mm thick melamine resin covered 3mm PP plastic edge, doweled to the bench top.
- Height: 50mm.

Rear Bench Top Upstand	
419.700.000	Standard per meter
419.700.050	ESD per meter

PROFI **CROSS PROFILE**

- The PROFI cross profile is horizontally assembled between the PROFI bench legs, it is for the flexible acceptance of foot rests.
- Made of the profile SINGLE and assembled in the slots of the bench legs.
- Durable powder coating according to RAL Code.

PROFI Cross Profile 419.07 B .900

B Width

0	720mm	**2**	1215mm	**5**	1920mm
7	820mm	**3**	1420mm	**6**	2223mm
1	920mm	**8**	1520mm		
9	1120mm	**4**	1720mm		

PROFI **FOOT REST** FOR THE CROSS PROFILE, HEIGHT ADJUSTABLE

- Two profiles made of anodized aluminium, assembled to the cross profile. Foot plate with surrounding frame and rubber mat 620 x 540mm (WxD).
- Spring-balanced mechanism for a convenient height adjustment in sitting position. The foot plate is also depth adjustable.
- Height adjustable: floor and 400mm up.

PROFI Foot Rest, height adjustable	
491.090.100	Standard
491.095.100	ESD

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COMBINE NUMEROUS ELEMENTS TO AN ENTIRE BENCH PANORAMA

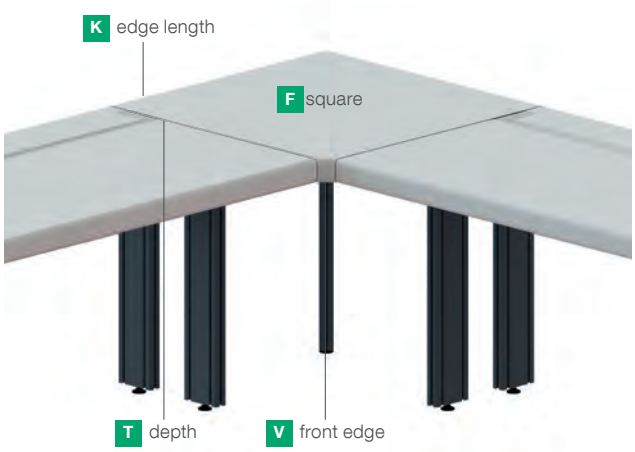
Our PROFI system offers countless components for the realization of individual bench configurations, later-on enhancements are always possible.

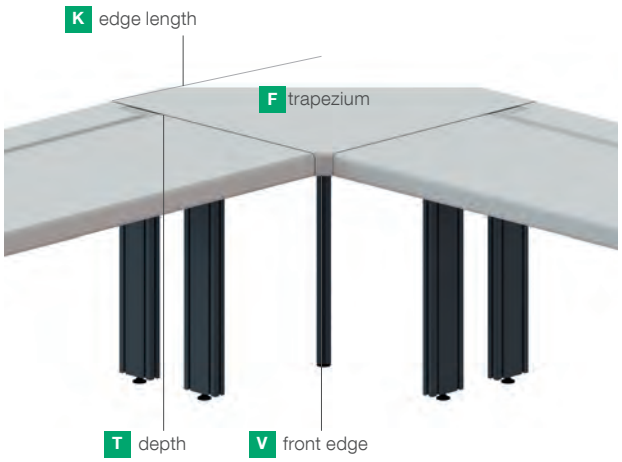
PROFI **CORNER ELEMENT** SYMMETRIC

- Total height: 780mm.
- Hardwearing 30mm thick light grey corner plate with 3mm PP plastic edge.
- Two steel brackets with durable light grey powder coating, incl. assembly set.
- Incl. PROFI bench leg for corner element, durable powder coated according to customers‘ choice (RAL No.). With mounting plate for the assembly at the corner elements.

Front edge at (edge length/bench depth):

582mm (1213/800); 331mm (1035/800); 50mm (835/800)
441mm (1213/900); 190mm (1035/900); 50mm (935/900)
300mm (1213/1000); 50mm (1035/1000)





PROFI Corner Element symmetric 4 F T . 50 K A V 3

F Form		T Depth		K Edge Length		A Version		V Front Edge	
0	square	0	800mm	0	1213mm	0	Standard	0	70mm drop edge
1	trapezium	1	900mm	1	1035mm	5	ESD	1	PP plastic edge
		2	1000mm	2	935mm			2	PROFItec edge
				4	835mm				

Bench combination with trapezium corner element

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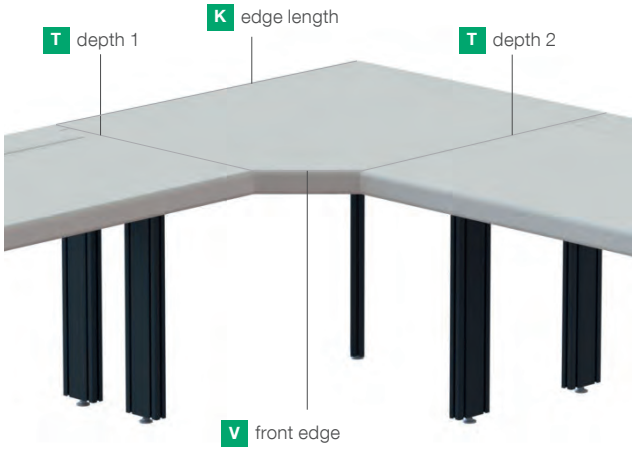
PROFI **CORNER ELEMENT** ASYMMETRIC

- Bench depth left / right (please state).
- Hardwearing 30mm thick light grey corner plate with 3mm PP plastic edge.
- Two steel brackets with durable light grey powder coating, incl. assembly set.
- Incl. PROFI bench leg for corner element, durable powder coated according to customers‘ choice (RAL No.). With mounting plate for the assembly at the corner elements.



PROFI Corner Element asymmetric 40 **T** . 50 **K** . **A** **V** 3

T Depth 1 / 2		**K** Edge Length		**A** Version		**V** Front Edge	
3	800 / 900mm	**0**	1200 x 1000mm	**0**	Standard	**0**	70mm drop edge
4	800 / 1000mm	**1**	depth + 35mm	**5**	ESD	**1**	PP pastic edge
5	900 / 800mm					**2**	PROFItec edge
6	900 / 1000mm						
7	1000 / 800mm						
8	1000 / 900mm						

PROFI **CORNER ELEMENT** TRIANGLE

- Hardwearing 30mm thick light grey corner plate with 3mm PP plastic edge.
- Two steel brackets with durable light grey powder coating, incl. assembly set.

Meeting Corner with PROFI Corner Element 270°

Bench Combination with PROFI Corner Element 45°

PROFI Corner Element triangle 4 **F** **T** 505 **A** **V** 3

F Form		**T** Depth		**A** Version		**V** Front Edge	
0	45°	**0**	800mm	**0**	Standard	**0**	70mm drop edge
1	270°	**1**	900mm	**5**	ESD	**1**	PP plastic edge
		2	1000mm			**2**	PROFItec edge

DIAGONAL **CABLE TRAY** FOR CORNER ELEMENT

- Stable and spacious cable tray made of sheet steel, optically identical to the cable trays of the PROFI laboratory benches.
- Rear side with ventilation slots and ergonomic bevelling, front and rear side with cable access for hidden cable runs.
- Durable light grey powder coating.
- Incl. assembly set for the height adjustable fixation to the PROFI bench legs.
- Dimensions: 195 x 200mm (WxH).

Edge Length		Edge Length	
835 x 835mm	419.500.002	1200 x 1000mm	419.512.002
935 x 935mm	419.501.002	1035 x 935mm	419.512.012
1035 x 1035mm	419.502.002	1035 x 835mm	419.512.022
1213 x 1213mm	419.504.002	935 x 835mm	419.512.032
1000 x 1200mm	419.510.002	835 + 45°	419.514.002
935 x 1035mm	419.510.012	935 + 45°	419.515.002
835 x 1035mm	419.510.022	1035 + 45°	419.516.002
835 x 935mm	419.510.032		

CORNER **CABLE TRAY** FOR PROFI CORNER ELEMENT

- Two stable and solid cable trays made of sheet steel, optically identical to the cable trays of the PROFI laboratory benches.
- Rear side with ventilation slots and ergonomic bevelling, front and rear side with cable access for hidden cable runs.
- Durable light grey powder coating.
- Incl. assembly set for the height adjustable fixation between PROFI corner leg and PROFI bench leg.
- Dimensions: 200 x 200mm (WxH).

Edge Length		Edge Length	
835 x 835mm	419.520.002	1200 x 1000mm	419.532.002
935 x 935mm	419.521.002	1000 x 1200mm	419.530.002
1035 x 1035mm	419.522.002	1213 x 1213mm	419.524.002

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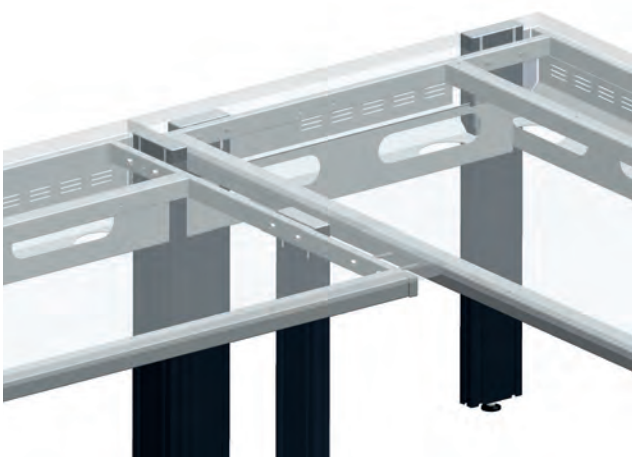
ASSMEBLY SET FOR **L-COMBINATION**

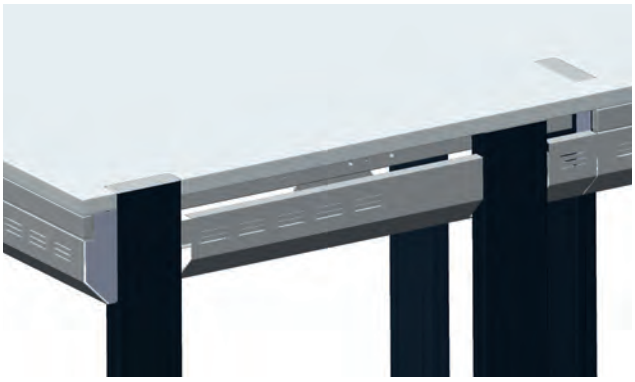
- Assembly set for the set-up of a L-Combination with two PROFI benches.
- Incl. bore at the front of the bench frame.



Assembly Set for L-Combination	**409.500.000**

CABLE TRAY L-COMBINATIONS

- Compensating Cable Tray for L-Combinations for the side of the attached bench to enable continuously hidden cable runs.
- Stabile and solid cable tray made of sheet steel, optically identical to the cable trays of the PROFI laboratory bneches.
- Durable light grey powder coating.
- Incl. assembly set for the height adjustable fixation between the PROFI bench legs.
- Abmessungen: 200 x 200mm (TxH).



Edge Length		Edge Length	
835 x 835mm	419.520.002	1200 x 1000mm	419.532.002
935 x 935mm	419.521.002	1000 x 1200mm	419.530.002
1035 x 1035mm	419.522.002	1213 x 1213mm	419.524.002

PROFI **BENCH LEG** WITH MOUNTING PLATE

- Bench leg made of PROFI profile with leveller and mounting plate, incl. assembly set.
- For the variable assembly at different bench top elements.
- Durable powder coating according to customers‘ choice (RAL No.).
- Height: 750mm.

PROFI Bench Leg with Mounting Plate	
401.000.900	Symmetric
401.001.900	Asymmetric

401.001.900

401.000.900

PROFI **MEETING CORNER**

- Hardwearing 30mm thick light grey bench top with 3mm PP plastic edge.
- Two steel brackets with durable light grey powder coating, incl. assembly set.
- Diameter is double bench depth.

Meeting Element with Half and Quarter Circle

Meeting Element with Full Circle

PROFI Meeting Corner 40 T .53 K . 000

T Depth

6	800mm
7	900mm
8	1000mm

K Type

quarter circle	**half circle**	**full circle**
0 Standard	**2** Standard	**4** Standard
5 ESD	**7** ESD	**9** ESD

ESD **BISTRO-TABLE**, HEIGHT ADJUSTABLE

- Height: 750 - 1150mm.
- Diameter of bench top: 750mm.
- Solid chromatized lifting column, diameter 75mm.
- Pneumatic spring, stepless blocking.
- Polished aluminium base with glides. Diameter: 70mm.
- Surface and volume conductive (according to DIN EN 61 340), all sides with 3mm PP plastic edge.

ESD Bistro-Table	**118.100.000**

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PROFI **C-LIFT-BENCHES** (HEIGHT ADJUSTABLE COMBINATIONS)

- Height adjustable corner combinations with two PROFI C-Lift-Benches in L-combination or coupled with an extra corner element.
- Both benches are additionally equipped with a perforated backplane, so the combination is of great stability even with telescoped lifts.
- Depending on the size and load of the combination, 4 or 5 lifts are integrated.
- The lifting columns are fully synchronized with one control box.

Details: see page 065 / C-Lift-Bench

Combination with corner element

Combination in L-form

PROFI **4-LIFT-BENCHES** (HEIGHT ADJUSTABLE COMBINATIONS)

- Height adjustable corner combinations with two PROFI 4-Lift-Benches in L-combination or coupled with an extra corner element.
- Both benches are with extra brace, so combination is of great stability even with telescoped lifts.
- Depending on the size and load of the combination, 5 or 7 lifts are integrated.
- The lifting columns are fully synchronized with one control box.

Details: see page 067 / 4-Lift-Bench

Combination with 7 lifts

Combination with 5 lifts

Heigth Adjustable Corner Combination with 4-Lift-Benches	
410.006.500	Option 5-Lift-Combination (L-form)
410.006.700	Option 7-Lift-Combination (corner element)
410.005.909	Software and Cable for Programming

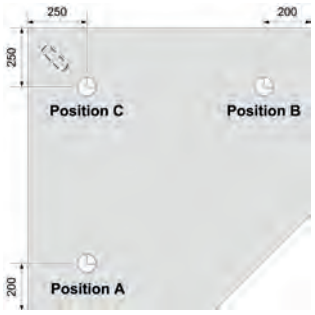
Height adjustable corner combination:

- up to 7 lifts fully synchronized
- max. load capacity up to 1200kg

CABLE ACCESS, ROUND

- Plastic outer ring with rotatable spring-flap.
- For inserting a cable with plug, the flap can be removed.
- Incl. bench top cutout.

Cable Access, round	
419.061.000	Ø 80/92mm, light grey
419.061.100	Ø 80/92mm, stainless steel colour
419.061.200	Ø 80mm, black
419.061.300	Ø 80/92mm, beige
419.062.000	Ø 60mm, light grey
419.062.100	Ø 60mm, stainless steel colour
419.062.200	Ø 60/72mm, black
419.062.300	Ø 60/72mm, beige
419.062.900	Ø 60mm, with 3x USB-Hub and 2x audio jacks, black



Please state position A, B or C

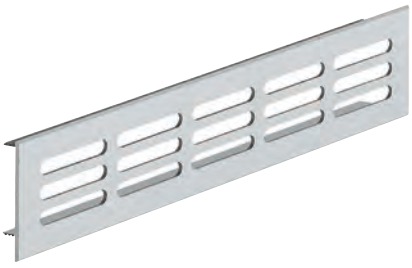
PLASTIC **VENTILATION INSERT**

- Made of plastics.
- Incl. bench top cutout.

Plastic Ventilation Insert	
419.063.900	55/50mm round, white
419.064.000	65/60mm round, white
491.064.100	155/131mm squared, white

METAL **VENTILATION INSERT**

- Made of anodized aluminium with 40 x 7,5mm grid.
- Incl. bench top cutout.



Metal Ventilation Insert	
419.065.025	250 x 100mm
419.065.040	400 x 100mm
419.065.100	1000 x 100mm

CABLE ACCESS, RECTANGULAR

- Bench top insert, made of brushed aluminium with brush strip.
- Dimensions: 276 x 80mm.
- Incl. bench top cutout.

Cable Access, rectangular	419.063.100

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FLEX **SOCKET STRIP**

- Socket strip made of impact-proofed plastics, sides with mounting flange.
- Connecting cable H05VV-F3G 1,5mm².
- Optionally with illuminated switch.
- Dimensions: 56 x 41mm (WxH).

FLEX Socket Strip 293 . 6 **A** **S** . **Z** 0 **F** (not all types available, see chapter 13)

A Sockets/ Length		**S** Switch		**Z** Cable		**F** Colour	
3	3 sockets (185mm)	**0**	no switch	**0**	no cable	**0**	white
4	4 sockets (288mm)	**1**	with switch	**1**	1,5m cable	**1**	black
6	6 sockets (340mm)			**3**	3m cable	**2**	red
				5	5m cable		

293.600.000	mounting plate for FLEX socket strip
293.600.010	optionally socket strip connected to the mains panel in bench rack

SOCKET STRIP „INDUSTRY“

- High-quality socket strip with silver coloured plastic housing and black Schuko sockets with child protection (45° position), black side caps and mounting flange.
- Black connecting cable H05VV-F 3G1,50mm² (length 2m) with angled plug.
- Dimensions: 70 x 45mm (WxH).

Industry Socket Strip

293.204.100	4 sockets with switch (L: 355mm)	293.209.100	9 sockets with switch (L: 570mm)
293.206.100	6 sockets with switch (L: 440mm)	293.212.100	12 sockets with switch (L: 700mm)

SOCKET STRIP 19" 1HE

- Anodized aluminium profile with light grey Schuko sockets (45° position) and stainless steel brackets with 19“ fixing holes (rotatable in 90° raster).
- Black connecting cable H05VV-F 3G1,50mm² (length 2m) with angled plug.

Socket Strip 19" 1HE

293.405.400	5 sockets with switch and overvoltage protection, with mains and frequency filter	293.407.300	7 sockets with switch and overvoltage protection (optical operation and failure indication)
293.406.500	6 sockets with RCD 30mA, 2poles	293.408.200	8 sockets with switch
293.406.600	6 sockets with circuit breaker B 16A, 2poles	293.409.100	9 sockets, no switch

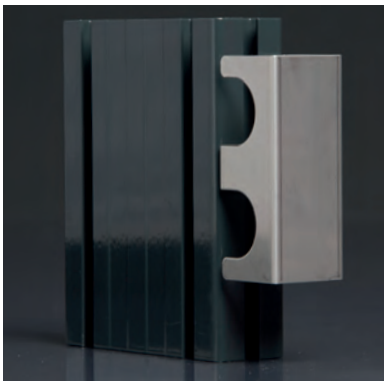
PROFI **JUNCTION BOX** FOR CABLE TRAY

- Plastic housing for the assembly in the PROFI cable tray.
- Strain-relieved terminal block.
- Incl. 2x Schuko sockets, wired to terminal block.
- Cable outlet from bench rack is strain reliefed.

Junction Box	419.081.001

PROFI **CABLE CLAMP**

- Clamp made of stainless steel with semi-circular cutouts, ready to clip into the slots of the PROFI profile.
- Durable powder coating according to RAL-No.
- Dimensions: 40 x 40 x 100mm (WxDxH).



PROFI Cable Clamp	419.032.900

BRUSH CHANNEL

- Cable channel, closed with brush strip, made of sheet steel, for a flexible cable run in parallel to the PROFI profile.
- The brush channel guarantees a clear and hidden cable run even with permanently changing cables.
- Depth: 70mm.

for ENERGY (closed)

for SINGLE/MULTI (slotted)

for SINGLE/MULTI (closed)

Brush Channel	401.0 HH. A F 0

HH Height

03 300mm	**05** 500mm	**07** 700mm	**09** 900mm	**11** 1100mm
04 400mm	**06** 600mm	**08** 800mm	**10** 1000mm	**12** 1200mm

A Version

5 closed
6 slotted

F Extensions

0 SINGLE/MULTI (W:40mm)
1 ENERGY (W: 102mm)

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PROFI **PC SUPPORT**

- Suspended PC support made of sheet steel.
- Stepless adjustable width.
- The PC support can be mounted left or right and in variable height at the PROFI bench legs.
- Durable, light grey powder coating.
- Dimensions: 440 x 290mm (DxH).

PROFI PC Support	491.08 F . B 00

F Bench Leg		B PC Width	
0	SINGLE / MULTI / ENERGY	1	160-210mm
1	C-Lift	2	90-130mm

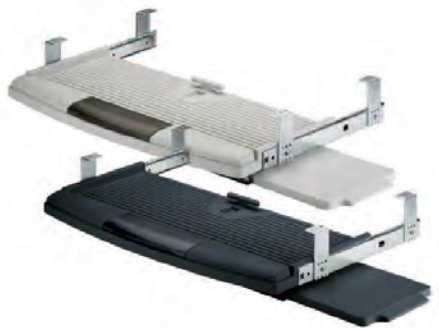
PROFI **KEYBOARD EXTENSION**

- Ready for assembly under the bench top.
- Maximum keyboard height: 75mm (adjustable).
- Light grey 19mm thick melamine resin covered shelf with 2mm PP plastic edge.
- Two telescopic metal rails (extension: 279mm) with end position locking.
- Dimension: 680 x 400 x 100mm (WxDxH).

PROFI Keyboard Extension	
491.068.501	Standard
491.068.551	ESD

PROFI **KEYBOARD EXTENSION** WITH MOUSE PAD

- For the assembly under the bench top, for 3 different heights (93, 104, 116mm).
- Width: 600mm (max. keyboard width 555mm).
- Adjustable keyboard catch.
- Incl. telescoping mouse pad.
- Small parts tray.



Keyboard Extension with Mouse Pad	
491.060.000	grey
491.060.005	black

PROFI **HEIGHT ADAPTER**

- Four extensions 50mm height, for the modular heightening of the bench legs.
- Durable powder coating according to RAL Code.
- Incl. assembly set.

PROFI Height Adapter, set	**401.200.900**

PROFI BENCH **LEG SHELL**

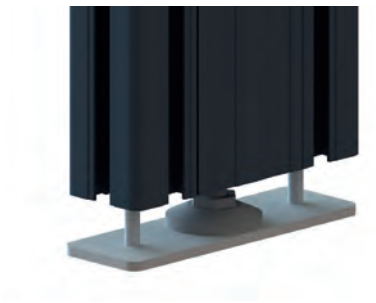
- Eight half shells made of aluminium sheet.
- Durable powder coating according to RAL Code.
- Incl. assembly set for the height variable fixation at the PROFI bench legs.

PROFI Bench Leg Shell, set	**401.300.900**

HEAVY DUTY LEVELLERS FOR PROFI BENCH

- Stainless steel plate with two bolts to insert into the fixing holes of the bench legs.
- For a minimum of punctual load on sensitive floors.

Heavy Duty Levellers, pcs.	**419.015.000**



VIBRATION DAMPED LEVELLER FOR PROFI BENCH

- Four metal levellers with integrated rubber dampers.

Vibration Damped Leveller, pcs.	**419.017.000**

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CONNECTORS FOR PROFI BENCHES, SET

- Connects two PROFI benches at the legs.
- Two connecting sheet steel plates.
- Durable, light grey powder coating.
- Incl. assembly set.

set-up in a row

back-to-back set-up

set-up with head bench

Connectors for PROFI Benches, Set					
419.021.000	row	419.022.000	back-to-back	419.023.000	head bench
419.021.100	row for C-Lift-Benches	419.022.100	back-to-back for C-Lift-Benches		

FLOOR FIXATION FOR PROFI BENCH

- Two sheet steel brackets for the fixed installation of the PROFI bench to the floor.
- Durable, light grey powder coating.
- Incl. assembly set.

Floor Fixation, pair	419.011.000

PROFI **BOTTLE HOLDER**

- 2-pcs. support made of aluminium for a max. bottle diameter of 94mm.
- Incl. assembly set for a height variable assembly at PROFI or FLEX profiles.
- Durable, light grey powder coating.
- Diameter: 117 x 120mm (DxH).

PROFI Bottle Holder	
468.200.102	1x bottle, width 114mm
468.200.202	2x bottle, width 210mm

PROFI **SLOT COVER**

- Suitable for all slots of the PROFI profile.
- Material: Hard-PVC.
- Width: 10mm
  (max. length: 2,5m).

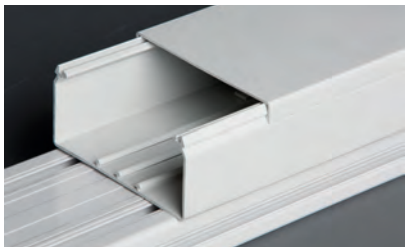
PROFI Slot Cover / per meter	
419.001.500	grey
419.001.100	black

PROFI **EXTRA CABLE GUIDE**

- For cable runs outside the PROFI profiles, with detachable cover and cable access.
- Incl. assembly set.

cable guide 15 x 15mm

cable guide 40 x 40mm



cable guide 110 x 60mm

PROFI Extra Cable Guide, per meter			
419.030.015	15 x 15mm (WxH) plastics, light grey	419.033.900	100 x 60mm (WxH) sheet steel, chromated, powder coated
419.030.040	40 x 40mm (WxH) plastics, light grey		
419.030.110	110 x 60mm (WxH) plastics, light grey	419.034.900	125 x 50mm (WxH) sheet steel hood, powder coated for the assembly at the PROFI profile, incl. sliding nuts and bolts
419.031.000	40 x 40mm (WxH) aluminium, anodized		
419.031.900	40 x 40mm (WxH) aluminium, powder coated		

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CHAPTER 3: **PROFI SET-UPS AND RACKS**

090 Extensions MULTI and SINGLE
091 Extensions ENERGY and ENERGY 45°
093 Multimedia Support
094 Cross Profile with TFT Support
096 Support and Heavy Duty Support
097 Shelf
098 Swivel Shelf
100 Functional Shelf
101 Brush Channel
102 Cable Tray for Shelf
104 Cable Clearance Drawer
105 Corner Support and Corner Shelf
106 Cable Tray for Corner Shelf
107 Shelf Rack
108 Shelf Rack with Sliding Doors
109 Shelf Rack with Roller Shutters
110 Shelf Rack with tilted Front
112 LED Workstation Lamp ST (Standard)
113 LED Workstation Lamp PR (PREMIUM)
114 LED Workstation Lamp with Gooseneck
115 LED Workstation Lamp IP67
116 Workspace Lamp and Universal Flat Light
118 Training System Frame and Sliding Mechanics
119 Installation Wall for Training Boxes
122 PROFI Cantilever Arm
124 Overhead Frame and Overhead Lamp
127 Perforated Backplane
128 Cross Profile and Backplane for Socket Strip
129 Document Protector and Bottle Support
130 Cord Holder and Cable Support

PROFI EXTENSIONS **SINGLE / MULTI**, PAIR

- PROFI Extensions are for combinations with bench racks or shelves. The profile is with 6 surrounding slots and four cable channels.
- Dimensions: 125 x 40mm.
- Continuously extendable.
- Durable powder coated according to RAL-Code.

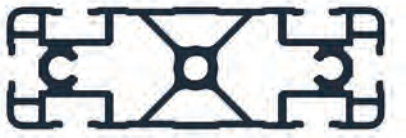
Aluminium Profile MULTI:

- Open aluminium profile with 2 detachable aluminium covers.
- Ideal for set-ups with bench racks and various cables. Cable access can be realized at variable positions.
- The aluminium extensions are connected to the bench legs with a solid screw-bolt combiantion. The connection is completely hidden by the aluminium covers.

Aluminium Profile MULTI

Aluminium Profile SINGLE:

- Closed aluminium profile.
- Ideal for set-ups with no or just minor cables.
- Solid and easy assembly with screw-bolt connection.



Aluminium Profile SINGLE

PROFI Extensions SINGLE/MULTI **401.0 HH.9 A P**

HH Height (in 100mm raster)

02	200mm	**10**	1000mm
03	300mm	**11**	1100mm
04	400mm	**12**	1200mm
05	500mm	**13**	1300mm
06	600mm	**14**	1400mm
07	700mm	**15**	1500mm
08	800mm	**16**	1600mm
09	900mm	**18**	1800mm

A Connection

0	for PROFI Bench
1	for EASY Bench/Mech. Workbench (lower side with 2xM8 threads)

P Profile

0	MULTI
2	SINGLE

SINGLE/ MULTI ADAPTION FOR EASY BENCHES OR OTHERS

with cable access from bench top into profile

Two aluminium profiles 40 x 40mm, length: 350mm

EASY Bench prepared for PROFI Extensions

401.100.000	prepared for SINGLE/ MULTI profile
401.110.000	prepared for ENERGY profile

Adapter for PROFI Extensions

401.100.900	for SINGLE/MULTI profile

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PROFI EXTENSIONS **ENERGY**, PAIR

- Two vertical ENERGY profiles made of aluminium extrusions for the assembly to PROFI or EASY benches.
- For the flexible acceptance of modules in KP raster.
- With 7 surrounding slots for the assembly of PROFI shelves and PROFI bench racks.
- Durable powder coated according to RAL-No.

Aluminium Profile ENERGY, standard:

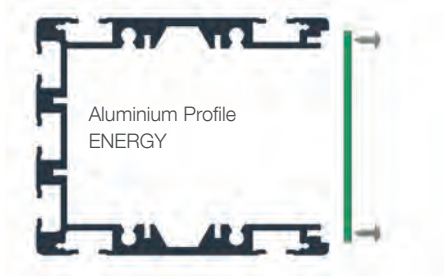
- Dimensions: 102 x 125mm (WxD).

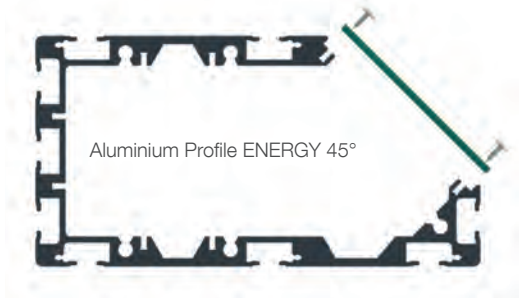
Aluminium Profile ENERGY 45°:

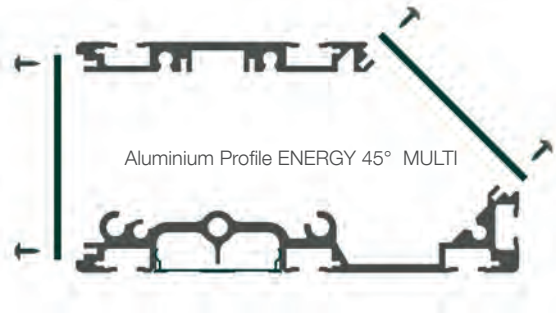
- Dimensions: 102 x 195/130mm (WxD).
- Extra slot at the front for the acceptance of TFT supports, etc.

Aluminium Profile ENERGY 45° MULTI:

- Front - and rear side can be equipped with modules in KP raster.
- Separate cable channels with detachable aluminium covers.







B Bench Type

5 EASY Bench / mech. Workbench

6 PROFI Bench

7 PROFI Bench with Power Legs

PROFI Extensions ENERGY 320. **HH** **B**.9 **A** 0

HH Height (in 100mm raster)

02 2x 4KP H: 200mm	**07** 2x 16KP H: 700mm	**12** 2x 29KP H: 1200mm
03 2x 6KP H: 300mm	**08** 2x 19KP H: 800mm	**13** 2x 31KP H: 1300mm
04 2x 9KP H: 400mm	**09** 2x 21KP H: 900mm	**14** 2x 34KP H: 1400mm
05 2x 11KP H: 500mm	**10** 2x 24KP H: 1000mm	**15** 2x 36KP H: 1500mm
06 2x 14KP H: 600mm	**11** 2x 26KP H: 1100mm	

B Connection

5	EASY Bench
6	PROFI Bench
7	Bench with Power Legs

A Type

0	Standard
5	45°
6	45° MULTI

ALL CONNECTORS **IN CONVENIENT REACH**

Modern laboratory instruments mostly require network- or PC-connection.
For this application the Multimedia Support with modular equipped rear channel for LAN, USB, pneumatics, etc. offers the perfect solution. Besides supporting your shelf it even offers completely hidden cable runs.

Your adventages with the Multimedia Support:

- customized equipable rear side
- heavy duty support for shelves and space for completely hidden cable runs
- front prepared for the modular acceptance of our LED workstation lamp

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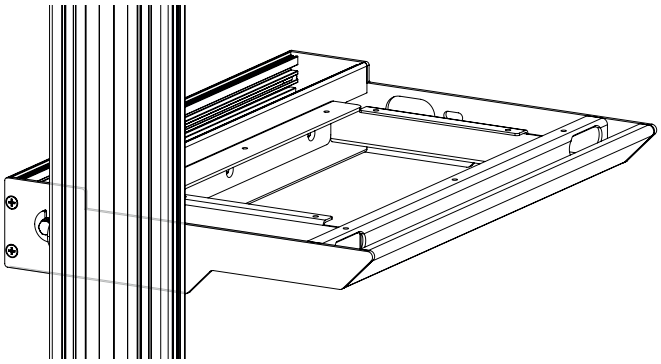
MULTIMEDIA SUPPORT



Heavy duty support with modular equipped channel at the rear side for completely hidden cable runs.

- Rear side with compact terminal for the modular equipment with modules of the KK system.
- Surrounding heavy duty steel frame with completely hidden cable run into the PROFI profile.
- Front brace with ergonomic bevelling and prepared for the assembly of the LED workstation lamp.
- Durable conductive powder coating in light grey or anthracite.
- Dimensions: 390 x 84/40mm (DxH).

Multimedia Support (modular equipped with KK modules) with shelf and LED workstation lamp

PROFI Multimedia Support 424.0 BB .8 F 0

BB Width and Equipping Width (MULTI/ ENERGY)

05	500mm (39cm / 26cm)	**13**	1295mm (118cm / 105cm)
06	603mm (49cm / 36cm)	**15**	1500mm (139cm / 126cm)
08	800mm (69cm / 56cm)	**16**	1600mm (149cm / 136cm)
09	900mm (79cm / 66cm)	**18**	1800mm (169cm / 156cm)
10	1000mm (89cm / 76cm)	**20**	2000mm (189cm / 176cm)
12	1200mm (109cm / 96cm)	**23**	2303mm (219cm / 206cm)

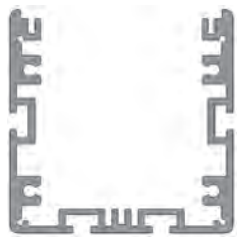
F Extensions

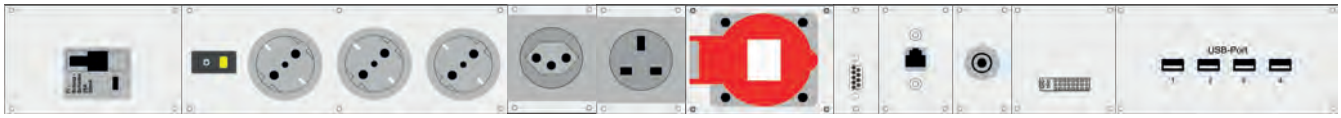
0	between SINGLE / MULTI
1	between ENERGY

Modules for the Multimedia Support:

The rear side of the Multimedia Support consists of the straight compact terminal and is prepared for the acceptance of modules in KK raster.

Examples for KK modules:





Residual Current Device (RCD) | Switch and Schukos | International Sockets | CEE-Sockets | RS232 | RJ45 | Pneumatic | DVI | USB-Hub

▸ see capter 9 for all KK modules

PROFI **CROSS PROFILE**

- The PROFI Cross Profile is mounted horizontally between the rear extensions and can accept monitor supports.
- Made of the SINGLE profile, for the height adjustable assembly within the extenions.
- Durable powder coating according to RAL-No.

PROFI Cross Profile 419.0 BB .9 F 0			
BB Bench Width			**F Extensions**
59 500mm	**73** 1500mm		**0** SINGLE/MULTI (-80mm)
69 603mm	**78** 1600mm		**5** ENERGY (-204mm)
70 800mm	**74** 1800mm		
77 900mm	**75** 2000mm		
71 1000mm	**76** 2303mm		
72 1295mm			

PROFI **TFT SUPPORT**

- Horizontally movable sheet steel support with integrated sliders, durable light grey powder coated.
- VESA perforation (100x100 and 75x75mm) for the firm assembly of TFT monitors and extra perforation for TFT swivel heads.

491.053.050 + 491.052.100

491.053.150

491.053.250

PROFI TFT Support without Swivel Head	
491.053.050	for frontside assembly to PROFI Cross Profile
491.053.150	for rearside assembly to ENERGY Profile
491.053.250	for frontside assembly to ENERGY Profile
491.053.550	for assembly to the Multimedia Support

TFT Swivel Head for PROFI TFT Support	
491.052.100	TFT Swivel Head PLUS tilt - and swivel function (110mm reach; 15kg max. load)
491.057.100	TFT Swivel Head TSS ball-joint head with quick connector (105mm reach; 15kg max. load)

491.057.100

491.053.550

PROFI **KEYBOARD TRAY**

- Tilted tray with stop edge.
- Horizontally slideable.
- Durable light grey powder coated.
- Dimensions: 470 x 250mm.

PROFI Keyboard Tray	
320.009.600	for ENERGY Profile
940.123.400	for Cross Profile

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STAY FLEXIBLE WITH THESE SHELVES **AND SHELF RACKS**

The PROFI system offers a considerable variety of shelves, distinguished in material, load capacity, function, etc.
See following pages to find out what kind of shelf is the ideal one for you.
If you have any doubt, we will be happy give advice!

PROFI **SUPPORT**

- Sheet steel stiffening for the assembly under shelves or suspended cabinets, if no Energy Channel or Energy Board is mounted below.
- Durable, light grey powder coating.
- Incl. assembly set.
- Dimension: 140 x 30mm (DxH).

PROFI Support 424. 0 **BB** .0 **F** 0

BB Bench Width

05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm

F Extensions

0	between SINGLE / MULTI
1	between ENERGY

PROFI **HEAVY DUTY** SUPPORT

- Heavy duty support for heavily loaded shelves or bench racks with heavy instruments. Closed frame made of tubular steel. Sides with sleeves for a solid connection to the extensions.
- Durable, light grey powder coating.
- Incl. assembly set.
- Dimensions: 260 x 40mm (DxH).

PROFI Heavy Duty Support 424.0 **BB**. 5 **F** 0

BB Bench Width

05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm

F Extensions

0	between SINGLE / MULTI
1	between ENERGY

PROFI **ANGLE STIFFENER**

- Universal brackets made of sheet steel with slotted holes for the assembly to the PROFI profile.
- Durable, light grey powder coating.
- Incl. assembly set.
- Dimensions: 123 x 123 x 30mm.

PROFI Angle Siffener (pcs.) 424.029.000

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PROFI **SHELF**

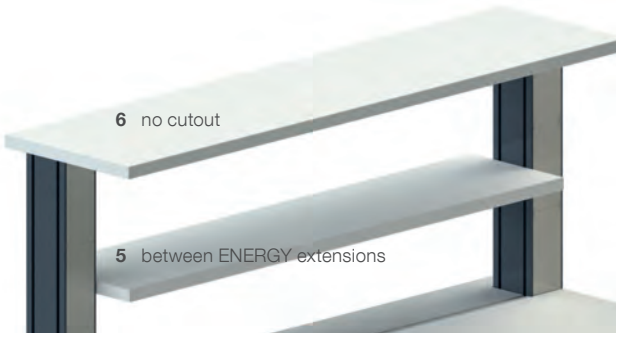
- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge and cutout for PROFI extensions. Lower side with thread inserts for the assembly to a stiffener.
- The shelf csn be supported by Energy Channel, Energy Board or Sheet Steel Support.

ESD Version:

- Surface and volume conductive chipboard, (according to DIN EN 61340), sides with 3mm PP plastic edge.
- Conductive connected to the support.

F Version:

SINGLE / MULTI profile



ENERGY profile

PROFI Shelf 328 . **BB** **T** . **F** **B** **A**

BB Width		**T** Depth		**F** Extensions		**B** Stiffener		**A** Version	
05	500mm	**3**	300mm	**0**	with SINGLE/ MULTI cutout	**0**	Stiffener (Support, ENERGY profile, Energy Channel or - Board)	**0**	Standard
06	603mm	**4**	400mm	**1**	between SINGLE/ MULTI			**5**	ESD
08	800mm	**5**	500mm	**4**	with ENERGY cutout	**1**	Heavy Duty Support		
09	900mm			**5**	between ENERGY	**2**	Multimedia Support (usable depth of shelf -85mm)		
10	1000mm			**6**	no cutout				
12	1200mm								
13	1295mm								
15	1500mm								
16	1600mm								
18	1800mm								
20	2000mm								
23	2303mm								

424.029.500: Option Integrated Stop Edge (height: 6mm)

PROFI **SWIVEL SHELF**

- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Lower side with thread inserts for the assembly to the swivel support.
- Front and rear side of the shelf with stop edge (height: 6mm), preventing instruments from dropping down in tilted position.
- Swivel support made of sheet steel with durable, light grey powder coating.
- Stepless adjustable height and tilt (0-37°).
- Dimension: 140 x 30mm (DxH).

ESD Version:

- Surface and volume conductive shelf, (according to DIN EN 61340), sides with 3mm PP plastic edge.
- Incl. assembly set for a continuously conductive connection between shelf, swivel support and extensions.

PROFI Swivel Shelf 329 . **BB** **T** . **F** **0** **A**

BB Width						**T** Depth		**F** Extensions		**A** Version	
05	500mm	**10**	1000mm	**16**	1600mm	**3**	300mm	**5**	between SINGLE / MULTI	**0**	Standard
06	603mm	**12**	1200mm	**18**	1800mm	**4**	400mm	**0**	between ENERGY	**5**	ESD
08	800mm	**13**	1295mm	**20**	2000mm	**5**	500mm				
09	900mm	**15**	1500mm	**23**	2303mm			**329.000.000** Option Shelf prepared for compact terminal			

Option: Shelf prepared for compact terminal

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PROFI ESD SHEET STEEL **SWIVEL SHELF**

- Shelf made of sheet steel with durable, conductive powder coating in light grey.
- Front with 15mm stop edge and rear with 30mm stop edge.
- With swivel support, made of sheet steel with durable, conductive powder coating in light grey.
- Stepless adjustable height, tilt (0-37°) and detph (+/- 25mm).

PROFI ESD Sheet Steel Swivel Shelf 428 .BB T .00 F

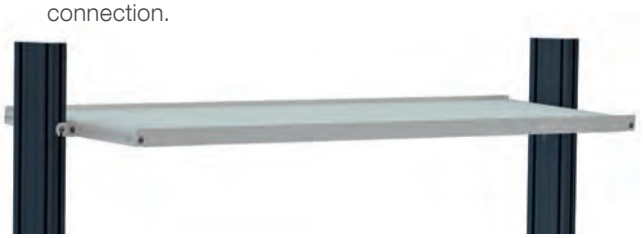
BB Width						T Depth		F Extensions	
05	500mm	**10**	1000mm	**16**	1600mm	**1**	300mm	**1**	between SINGLE / MULTI
06	603mm	**12**	1200mm	**18**	1800mm	**0**	400mm	**5**	between ENERGY
08	800mm	**13**	1295mm	**20**	2000mm				
09	900mm	**15**	1500mm	**23**	2303mm				

PROFI **FUNCTIONAL SHELF**

- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Front and rear side with sheet steel stiffening (light grey powder coated), usable as stop edge (total height: 40mm).
- Sides made of anodized aluminium profiles 30 x 30mm with slots for sliding nuts.
- Adjusting mechanism with four mounting brackets, that connect the side profiles of the shelf to the extensions, thus the shelf is height -, tilt - and depth adjustable.
- Incl. assembly set for the flexible fixation to the PROFI extensions.

ESD Version:

- Surface and volume conductive chipboard, (according to DIN EN 61340), sides with 3mm PP plastic edge.
- Incl. assembly set for a continuous conductive connection.



PROFI Functional Shelf 427. BB T . F 0 A

BB Width						T Depth		F Extensions		A Version	
05	500mm	10	1000mm	16	1600mm	3	300mm	1	between SINGLE / MULTI	0	Standard
06	603mm	12	1200mm	18	1800mm	4	400mm	5	between ENERGY	5	ESD
08	800mm	13	1295mm	20	2000mm	5	500mm				
09	900mm	15	1500mm	23	2303mm	6	600mm				

OPTION **ALUMINIUM RAIL** FOR PROFI SHELF

- Matt anodized aluminium profile 30 x 30mm, for the assembly to shelves; with slots for the acceptance of sliding nuts.
- With mounting bores for the frontside assembly to all shelves.

Option Aluminium Rail for PROFI Shelf 427. BB 9. F K 0

BB Bench Width						F Type		K Extensions	
05	500mm	10	1000mm	16	1600mm	0	anodized	0	no cutout (-0mm)
06	603mm	12	1200mm	18	1800mm	9	powder coated	2	between SINGLE /MULTI (-80mm)
08	800mm	13	1295mm	20	2000mm			4	between ENERGY (-204mm)
09	900mm	15	1500mm	23	2303mm				

SEPERATOR FOR FUNCTIONAL SHELF

- Seperator made of sheet steel, movable assembled to the functional shelf.
- Durable, conductive powder coating in light grey.
- Height: 400mm.

Shelf Depth

400mm	427.000.040	600mm	427.000.060
500mm	427.000.050		

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BRUSH CHANNEL

- Sheet steel cable channel closed with brush strip, for a flexible cable run in parallel to the PROFI extensions, ENERGY extensions or bench rack.
- The simple cable arrangement within the brush channel enables clear cable runs even for frequently changing test set-ups.
- Depth: 70mm.

for ENERGY (closed)

for SINGLE/MULTI (slotted)

for SINGLE/MULTI (closed)

Brush Channel vertical 401.0 **HH** . **A** **F** 0

HH Height

03	300mm	**05**	500mm	**07**	700mm	**09**	900mm	**11**	1100mm
04	400mm	**06**	600mm	**08**	800mm	**10**	1000mm	**12**	1200mm

A Type

5	closed
6	slotted

F Extensions

0	SINGLE / MULTI
1	ENERGY

Brush Channel horizontal 401.0 **BB** . **A** 50

BB Width

05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm

A Type

5	closed
6	slotted

CABLE TRAY FOR PROFI SHELF

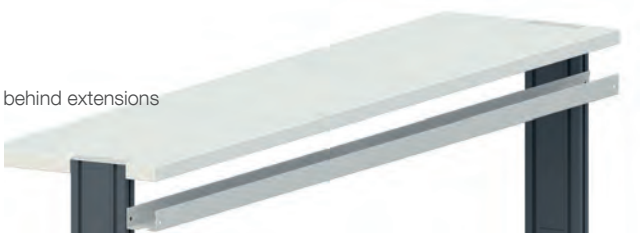
- Cable trays made of sheet steel with openings for cable access.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation to the PROFI extensions.

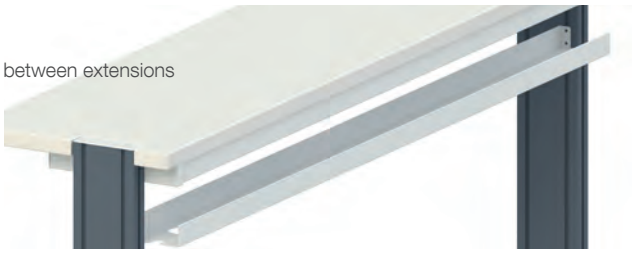
behind extensions:

- Dimensions: 70 x 40mm (WxD).
- Width = Bench Width.

between extensions:

- Dimensions: 102 x 40mm (WxD).
- Width = Bench Width - 80 / -204mm.





BB Bench Width

05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm

A Type

2	behind the extensions
3	between SINGLE/ MULTI extensions
4	between ENERGY extensions

POWER STRIP FOR SHELF CABLE TRAY

- 10x Schuko sockets (45° positioned) with illuminated switch.
- Black power cord H05VV-F 3G1,50mm² (length 3m) with angled Schuko plug.
- Dimensions: 530 x 70 x 60mm (LxWxH).

Power Strip with 10x Schuko Sockets	**293.210.200**

CABLE CLEARANCE COMB

- Cable Clearance Comb, made of sheet steel with gaps for cables and mounting bores, for perfectly organized cable runs between bench top and bench rack. In combination with magnets it can be used as document holder.
- Durable, light grey powder coating.
- Dimensions: 60 x 35mm (DxH).

Cable Clearance Comb	**424.BB 9. 0 K 0**

BB Bench Width

05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm

K Extensions

0	no cutout
2	between SINGLE/ MULTI (-80mm)
4	between ENERGY (-204mm)

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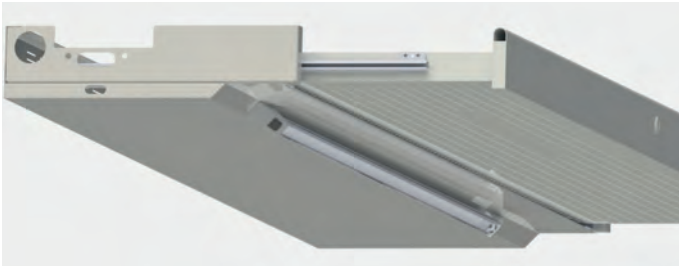
PLENTY OF ROOM
FOR MEASURING CORDS AND CABLES

There is different accessory for our 19“ bench racks, like brush channels or cable clearance combs. This helps you to keep your workstation clear of cables. If, however, the great complexity of electrical devices calls for an even more spacious cable management, we recommend our cable clearance flap or cable clearance drawer. Both solutions guarantee well organized workstations even if you are working with lots or long measuring cords.

CABLE **CLEARANCE DRAWER**

- For the acceptance of very long measuring leads, which would block precious space on the bench top.
- Suitable for the modular assembly under Bench Racks, Energy Boards and Shelves with Sheet Steel Support.
- Sheet steel drawer with ballbearing guided telescopic full extension. Durable, light grey powder coated.
- Sides and bottom made of sheet steel, durable light grey powder coating and ergonomically bevelled for the optional acceptance of the LED Workstation Lamp.
- Front made of 19mm thick melamine resin covered light grey chipboard with rubber lip and lock.
- Dimensions: 390 x 85/105mm (WxH).



Cable Clearance Drawer **420. BB 0.0 K 5**

BB Bench Width

05	500mm	**10**	1000mm	**16**	1600mm
06	603mm	**12**	1200mm	**18**	1800mm
08	800mm	**13**	1295mm	**20**	2000mm
09	900mm	**15**	1500mm	**23**	2303mm

K Extensions

0	SINGLE/ MULTI (-80mm)
1	ENERGY (-200mm)

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PROFI **CORNER SUPPORT**

- Sheet steel stiffening for corner shelf without Energy Channel or Energy Board.
- Durable, light grey powder coating.
- Incl. assembly set.

PROFI Corner Support 424.05 K . V 00

K Edge Length

0	1213 x 1213mm	**5**	935 x 935mm	**4**	1000 x 1200mm		
1	835 x 835mm	**2**	1035 x 1035mm	**3**	1200 x 1000mm		

V Type

0	Support
5	Heavy Duty Support

PROFI **CORNER SHELF** RECTANGLE

- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
  Lower side with thread inserts for the assembly of the stiffener, with supportive leg.
- Energy Channel, Energy Board or Support could be the stiffener for the corner shelf.
- Supportive leg made of PROFI profile (please state height). Durable powder coating according to RAL-No.

PROFI Corner Shelf Rectangle 424. T K A .901

T Depth

3	300mm
4	400mm

K Edge Length

0	1213 x 1213mm	**2**	935 x 935mm	**4**	1000 x 1200mm		
1	835 x 835mm	**3**	1035 x 1035mm	**5**	1200 x 1000mm		

A Version

0	Standard
5	ESD

PROFI **CORNER SHELF** TRAPEZIUM

- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
  Lower side with thread inserts for the assembly of the stiffener.
- The self could be supported by Energy Channel, Energy Board or the Corner Support.

PROFI Corner Shelf Trapezium **424. T K A .001**

T Depth		**K** Edge Length						**A** Version	
3	300mm	**0**	1213 x 1213mm	**2**	935 x 935mm	**4**	1000 x 1200mm	**0**	Standard
4	400mm	**1**	835 x 835mm	**3**	1035 x 1035mm	**5**	1200 x 1000mm	**5**	ESD

CABLE TRAY FOR PROFI CORNER SHELF

- Cable tray made of sheet steel with access for cables.
- Durable, light grey powder coating.
- Dimensions: 70 x 95mm (DxH).

	Width		Width		Width
426.519.000	835 x 835	426.529.000	1035 x 1035	426.549.000	1000 x 1200
426.559.000	935 x 935	426.539.000	1200 x 1000	426.509.000	1213 x 1213

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PROFI **SHELF RACK**

- Depth: 425mm.
- Colour: light grey, pearl structure.
- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Solid incorporated, decorative rear wall (13mm thick).
- Sides and intermediate wall with 32mm hole line.
- Height adjustable shelf boards for the rack compartments.

ESD Version:

- Surface and volume conductive chipboard, (according to DIN EN 61340), sides with 3mm PP plastic edge.
- Conductive shelf boards.
- Continuous conductive connection between all parts, earthed by the bench legs.

PROFI Shelf Rack 423. BB H .0 F A

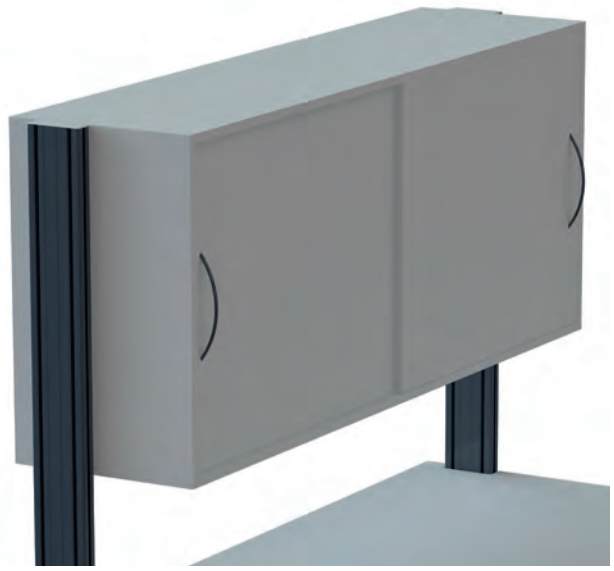
BB Width				H Height		F Extensions		A Version	
05	500mm	13	1295mm	2	380mm (1OH)	0	with SINGLE / MULTI cutout	1	Standard
06	603mm	15	1500mm	3	720mm (2OH)	1	between SINGLE / MULTI extensions	6	ESD
08	800mm	16	1600mm			5	between ENERGY extensions		
09	900mm	18	1800mm			6	no extensions		
10	1000mm	20	2000mm						
12	1200mm	23	2303mm						

PROFI Corner Shelf Rack 23.5 K H . 00 A

K Edge Length		H Height		A Version	
0	1213 x 1213mm	2	380mm (1OH)	1	Standard
1	835 x 835mm	3	720mm (2OH)	6	ESD
5	935 x 935mm				
2	1035 x 1035mm				

PROFI SHELF RACK **WITH SLIDING DOOR**

- Depth: 425mm.
- Colour: light grey, pearl structure.
- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Solid incorporated, decorative rear wall (13mm thick).
- Sides and intermediate wall with 32mm hole line. Sliding doors with easy running plastic roller guide.
- Central lock (master key system) with two keys and metal handles.
- Height adjustable shelf boards for the rack compartments.



PROFI Shelf Rack with Sliding Doors 423. **BB** **H** .0 **F** **A**

BB Width				**H** Height		**F** Extensions		**A** Version	
05	500mm	**13**	1295mm	**4**	380mm (1OH)	**0**	with SINGLE / MULTI cutout	**1**	Standard
06	603mm	**15**	1500mm	**5**	720mm (2OH)	**1**	between SINGLE / MULTI extensions	**6**	ESD
08	800mm	**16**	1600mm			**5**	between ENERGY extensions		
09	900mm	**18**	1800mm			**6**	no extensions		
10	1000mm	**20**	2000mm						
12	1200mm	**23**	2303mm						

PROFI Corner Shelf Rack with Sliding Doors 423.5 **K** **H** .00 **A**

K Edge Length		**H** Heigth		**A** Version	
0	1213 x 1213mm	**4**	380mm (1OH)	**1**	Standard
1	835 x 835mm	**5**	720mm (2OH)	**6**	ESD
5	935 x 935mm				
2	1035 x 1035mm				

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PROFI SHELF RACK **WITH ROLLER SHUTTER**

- Depth: 425mm.
- Colour: light grey, pearl structure.
- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Solid incorporated, decorative rear wall (13mm thick).
- Sides and intermediate wall with 32mm hole line. Roller shutter rolling up to the side.
- Central lock (master key system) with two keys and metal handles.
- Height adjustable shelf boards for the rack compartments.

PROFI Shelf Rack with Roller Shutter 423. **BB** **H** .0 **F** **A**

BB Width				**H** Height		**F** Extensions		**A** Version	
05	500mm	**13**	1295mm	**6**	380mm (1OH)	**0**	with SINGLE / MULTI cutout	**1**	Standard
06	603mm	**15**	1500mm	**7**	720mm (2OH)	**1**	between SINGLE/ MULTI extensions	**6**	ESD
08	800mm	**16**	1600mm			**5**	between ENERGY extensions		
09	900mm	**18**	1800mm			**6**	no extensions		
10	1000mm	**20**	2000mm						
12	1200mm	**23**	2303mm						

PROFI Corner Shelf Rack with Roller Shutter 423.5 **K** **H** .00 **A**

K Edge Length		**H** Height		**A** Version	
0	1213 x 1213mm	**6**	380mm (1OH)	**1**	Standard
1	835 x 835mm	**7**	720mm (2OH)	**6**	ESD
5	935 x 935mm				
2	1035 x 1035mm				

Shelf Rack with Roller Shutter 2OH

PROFI SHELF RACK **WITH TILTED FRONT**

- Dimensions: 468/407 x 422/352mm (DxH).
- Colour: light grey, pearl structure.
- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Solid incorporated, decorative rear wall (13mm thick).
- With intermediate walls and 32mm hole line.
- Height adjustable shelf boards for the rack compartments (tilt adjustable).

PROFI Shelf Rack with Tilted Front 423. **BB** **A** .001

BB Width

08	800mm	**15**	1500mm
09	900mm	**16**	1600mm
10	1000mm	**18**	1800mm
12	1200mm	**20**	2000mm
13	1295mm	**23**	2303mm

A Version

0	Standard
1	ESD

PROFI Corner Shelf Rack with Tilted Front 423.5 **K** **A** . 001

K Edge Length

0	1213 x 1213mm
1	835 x 835mm
2	935 x 935mm
3	1035 x 1035mm

A Version

0	Standard
1	ESD

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THE RIGHT LIGHT FOR EACH PROCESS

Not matter if in laboratories, workshops or technical classrooms, workings have to be done very carefully. For this reason it is important, that the complete workspace is perfectly illuminated without dazzling anyone. Choose the right light for your individual application from our considerable range of lighting systems.

PROFI **LED WORKSTATION LAMP** ST (STANDARD)

Slim design made of anodized aluminium profile with integrated optics, thus optimal for installation at shelves and racks.

- Anodized aluminium profile with cooling ribs.
- Body 320° tiltable, ø 25 mm.
- Both sides with triangled brackets (W: 95mm) for complete hidden cable runs, with switch.
- Incl. supply unit 24V.
- Completely assembled.
- No cooling required.
- Continuous LED strip in different length with narrow LED pattern for an absolutely homogenous workspace illumination.

0...100 % DIMMABLE

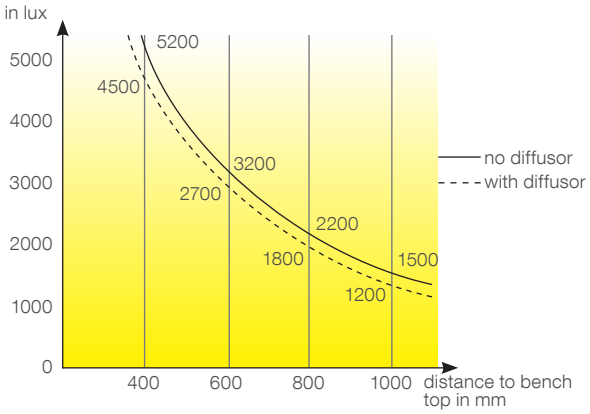
320° ROTATABLE

Installation:

- Firmly connected Install Unit with open frame supply unit for bench rack integration.
- Attachment Unit firmly connected with capsuled supply unit, used for bench combinations WITHOUT bench racks.
- Add-on Unit with plug-connection to the capsuled supply unit. Retrofitting unit.

DIMMABLE:

- Optionally with dimming function due to microcontroller-controlled PWM button, selective brightness 0…100%.



Technical data:

- Module length: 300mm, consisting of 28 LEDs, gapless positioned, module power: 14,4W.
- Brightness: 2.000lm (>3.300 lux at 500mm distance).
- Emitting angle: 120°.
- Colour reproduction RA: typ. 85.
- Colour temperature: 5.000 K (daylight white).
- Colour quality: Single binning according to ANSI (purely selected LEDs for a constant light colour).

Capsuled LED supply unit under shelf 365 x 68 x 38mm (WxDxH)

LED with diffusor/ LED without diffusor

LED Workstation Lamp ST 456. **B** 61. **M** 0 **A**

B Width (Brightness)		**M** Installation		**A** Version	
1	500mm (2.000lm)	0	INSTALLATION UNIT, not dimmable	1	without diffusor
2	800mm (4.000lm)	2	ATTACHMENT UNIT, not dimmable	2	with diffusor
3	1100mm (6.000lm)	1	ADD-ON UNIT, not dimmable	3	waterproof IP67, LED potted in two component PU
4	1400mm (8.000lm)	5	INSTALLATION UNIT, dimmable		
5	1700mm (10.000lm)	6	ATTACHMENT UNIT, dimmable		
6	2000mm (12.000lm)	7	ADD-ON UNIT, dimmable		

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PROFI **LED WORKSTATION LAMP** PR (PREMIUM)

Slim design made of anodized aluminium profile with integrated optics, thus optimal for installation at shelves and racks.

- Anodized aluminium profile with cooling ribs.
- Body 320° tiltable, ø 25 mm.
- Both sides with triangled brackets (W: 95mm) for complete hidden cable runs, with switch.
- Incl. supply unit 24V.
- Completely assembled.
- No cooling required.
- Continuous LED strip in different length with narrow LED pattern for an absolutely homogenous workspace illumination.

Installation:

- Firmly connected Install Unit with open frame supply unit for bench rack integration.
- Attachment Unit firmly connected with capsuled supply unit, used for bench combinations WITHOUT bench racks.
- Add-on Unit with plug-connection to the capsuled supply unit. Retrofitting unit.

2-Channel DIMMER with adjustable white:

- Adjustable brightness between 0…100%
- Stepless adjustable colour temperature between 2.700K (daylight white) to 5.500K (cool white).
- With 2-channel microcontroller-controlled PWM dimmer with double rocker switch.

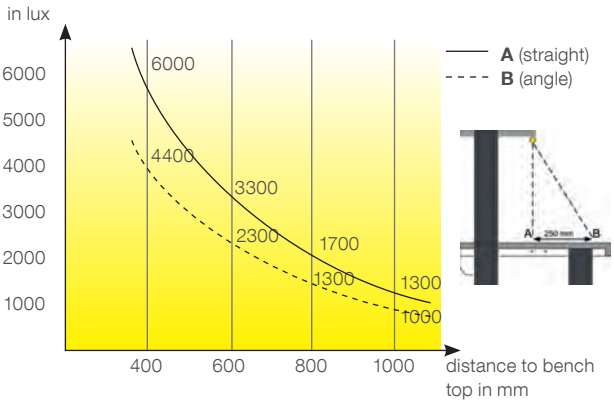
Technical data:

- Module length: 400mm, consisting of 42 LEDs, gapless positioned, module power: 23W.
- Brightness: 3.000lm (> 4.500 lux at 500mm distance).
- Emitting angle: 120°.
- Colour reproduction RA: typ. 85.
- White colour temperature adjustable due to alternately arranged 2.700K (daylight white) and 5.500K (cold white) LEDs.

0...100 % DIMMABLE

320° ROTATABLE

ADJUSTABLE COLOUR TEMPERATURE



adjustable colour between: cold white (5.500k)

daylight white

and warm white (2.700K)

LED Workstation Lamp	PR 456. B 81. M 0 A

B Width (Brightness)

1	600mm (3.000lm)
2	1000mm (6.000lm)
3	1400mm (9.000lm)
4	1800mm (12.000lm)

M Installation

0	INSTALLATION UNIT
2	ATTACHMENT UNIT
1	ADD-ON UNIT

A Version

1	without diffusor
2	with diffusor
3	waterproof IP67, LED potted in two component PU

PROFI LED WORKSTATION **LAMP WITH GOOSENECK**

- The highly flexible gooseneck allows a completely variable positioning of the lamp head.
- Lamp housing with push buttons.
- Rotatable LED made of aluminium profile with cooling rips.
- LED strip with gapless LED modules and diffusor.
- Extra 24V power supply with integrated dimmer in sheet steel housing 365 x 68 x 38mm (WxDxH).

0...100 % DIMMABLE

ADJUSTABLE COLOUR TEMPERATURE

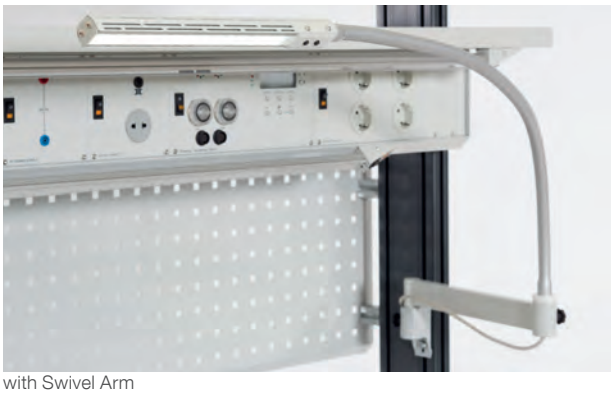
Installation:

- Adapter for PROFI Sleeve suitable for PROFI Swivel Arm (491.002.000).
- Bench clamp with a max. span width of 90mm.
- Sliding Adapter for the assembly to the ENERGY profile or the Multimedia Support.
  Thus the LED Workstation Lamp is movable across the whole bench width.

Technical Data to LED:

- ST Type see page 112.
- PR Type see page 113.

with Dimmer and White Adjustment



with Swivel Arm

see page 122 for suitable Swivel Arms

Bench Clamp

Sliding Adapter for ENERGY Profile

Sliding Adapter for Multimedia Support

PROFI LED Workstation Lamp with Gooseneck 456. **L** **A** 1. **M** **S** .2

L Length LED Module		**A** Type		**M** Installation		**S** Length Gooseneck	
0	ST:75 / PR:133	**6**	Standard (ST)	**1**	Adapter for PROFI Sleeve	**4**	500mm
1	ST:150 / PR:266	**8**	Premium (PR)	**2**	Bench Clamp	**5**	800mm
2	ST: 300 / PR:400			**3**	Sliding Adapter for ENERGY Profiile		
				4	Sliding Adapter for Multimedia Support		

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DAZZLE PROTECTOR FOR PROFI LED WORKSTATION LAMP

Especially for height adjustable workstations, looking directly into bright light when adjusting the bench height or the emitting angle of the lamp, could not alway be prevented. For this reason we offer dazzle protectors.
They are easily attached to the cooling rips of the lamp.

Dazzle Protector 456.0 BB .001

BB Width

05	ST 500mm	**14**	ST/PR 1400mm
06	PR 600mm	**17**	ST 1700mm
08	ST 800mm	**18**	PR 1800mm
10	PR 1000mm	**20**	ST 2000mm
11	ST 1100mm		

OPTION **HIDDEN CABLE RUN**

- Milled slot with light grey plastic cover for hidden cable runs in shelves and shelf racks.

Option Hidden Cable Run	**458.000.000**

OPTION **MAGNETIC HOLDER**

This option is for the ADD-ON Unit of the LED Workstation Lamp and is ideal for installation to sheet steel shelves.
This option consists of:

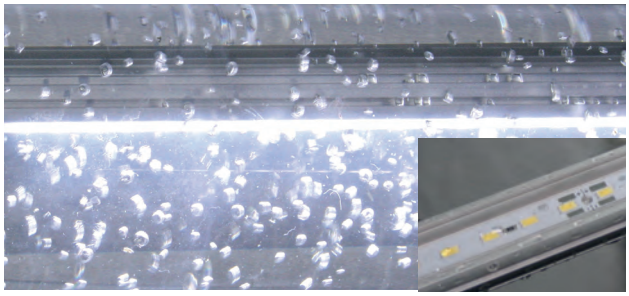
- Magnets for the LED lamp.
- Magnets for the supply unit.
- Magnets for the cable channel 10x10mm.

Option Magnetic Holder	**456.000.000**

FULLY POTTED **LED IP67**

consisting of:

- LED module strips completely potted in lamp by engased two component compound.
- Aluminium brackets with encapsuled power cord.



▸ **PROFI LED Workstation Lamp ST and PR**

WORKSPACE LAMP

- 180° tiltable sheet steel housing, sides with mounting brackets.
- With glare-free parabolic reflector.
- 36 Watt compact fluorescent lamp.
- Front with illuminated switch.
- Rear side with cable outlet and 3m power cord with open ends.
- Durable, light grey powder coating.
- Dimension: 70 x 95/45mm (DxH).

Workspace Lamp	458.0 BB . V 00

BB Width		V Version	
36	490mm (1x 36W)	**0**	VVG (low-loss ballast)
72	980mm (2x 36W)	**3**	EVG (electronic ballast)
		5	EVG with dimmer

UNIVERSAL **LED FLATLIGHT**

- Extra flat and nicely shaped LED lamp with integrated power supply and switch.
- Dimensions: 40 x 15mm (DxH).
- Homogeneous, glare-free illumination due to narrow placed LEDs and diffusor.
- Durable 80mW LEDs (approx. 30.000h operating hours).
- Energy efficiency of lamp: 1430 lm/m (80 lm/W).
- Color representation: Ra/CRI > 80.
- Light colour: neutral white approx. 4.000K.

Universal LED Flatlight	
299.106.045	Length 450mm / 8 Watt
299.106.060	Length 600mm / 10 Watt
299.106.090	Length 900mm / 15 Watt
299.106.120	Length 1200mm / 18 Watt

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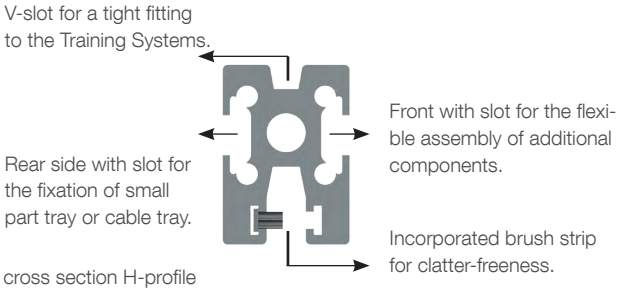
WE PROVIDE EXCELLENT CONDITIONS FOR TECHNICAL TRAINING

Your vocational training center should be state-of-the-art and wear-resilent even if excessively used. PROFI is extraordinarily sturdy and made for a lifetime, you will never have any regrets if you decide for this system.

TRAINING SYSTEM FRAME (DIN A4)

- H-Profile positioned in DIN A4 height, to hook-in DIN A4 Training Systems and hera accessories. Durable powder coated according to RAL-No.
- Lower side with incorporated brush strip for clatter-free utilization.
- Upper side with V-slot for Training Systems with front panels of max. 6mm.
- Front - and rear side with slots for sliding nuts.
- With side braces, prepared for the assembly between PROFI extensions.
- Dimensions: 26 x 37mm (WxH).



Training System Frame	461. BB H .9 F 2

BB Width

05	500mm	**09**	900mm	**13**	1295mm
06	603mm	**10**	1000mm	**15**	1500mm
08	800mm	**12**	1200mm	**16**	1600mm

H Levels / Height

0	1x H-Profile
1	2x H-Profile / 360mm
2	3x H-Profile / 680mm
3	4x H-Profile / 1000mm

F Extensions

0	between SINGLE / MULTI
3	for sliding mechanics
5	between ENERGY

PROFI **SLIDING MECHANICS** FOR TRAINING SYSTEM FRAME

- Two linear sliding rails, made of anodized aluminium profile.
- Mounted at the sides of the bench tops.
- Two slides made of anodized aluminium profiles (40 x 300 x 20mm) for the assembly to the PROFI extensions.
- With locating pins, to lock the slides in defined positions.
- Stiffening and small parts tray, assembled bellow the training system frame.

PROFI Sliding Mechanics	
461.008.001	for bench depth: 800mm
461.009.001	for bench depth: 900mm
461.010.001	for bench depth: 1000mm

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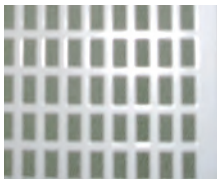
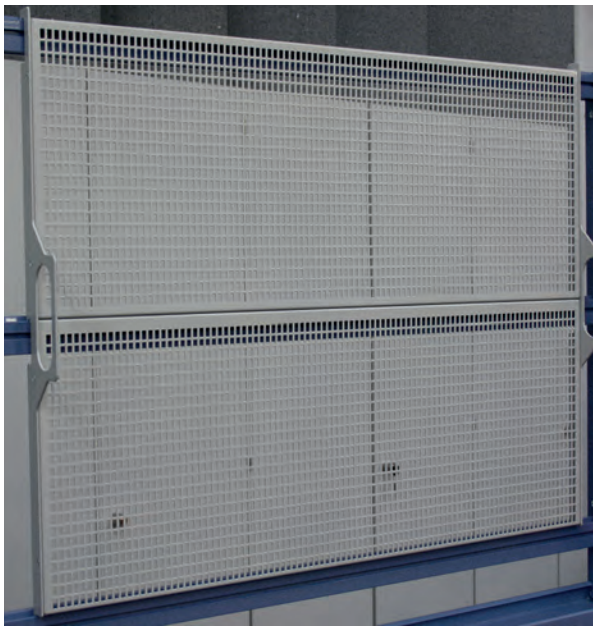
INSTALLATOIN WALL FOR TRAINING BOXES

- Sheet steel with raster perforation, for installations with training boxes, surrounding reinforcement.
- Installation wall can be hooked into the A4 training system frame.
- Durable, light grey powder coating.

hera-Raster



E-Raster

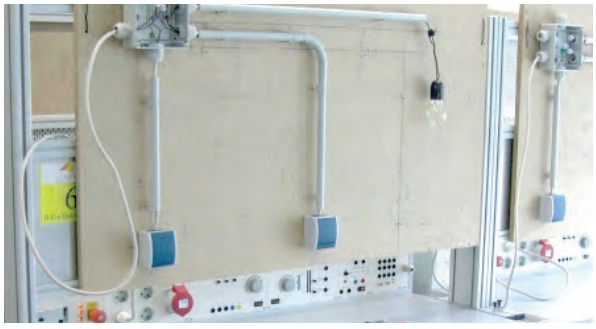


Installation Wall for Training Boxes 461. BB E .10 R

BB Width		E Levels		R Raster	
06	600mm	1	1 level	3	hera-Raster 12 x 5mm
08	800mm	2	2 level	4	E-Raster 10 x 5mm

WOODEN INSTALLATION WALL FOR TRAINING SYSTEM FRAME

- 19mm wood core plywood.
- Incl. brackets and screws to fix in hera Training System Frame.

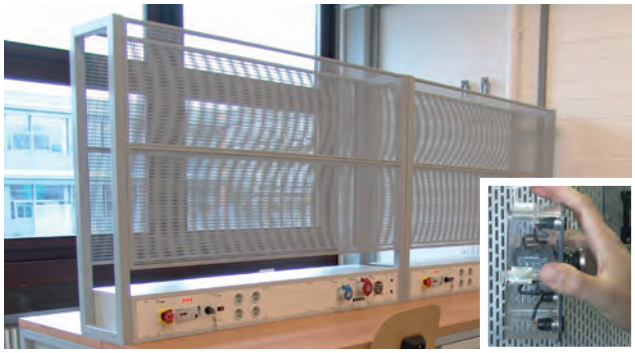


Wooden Installation Wall 461. BB E .800

BB Width		E Levels	
08	800mm	2	2 Levels (H: 680mm)
12	1200mm	3	3 Levels (H: 1000mm)

INSTALLATION WALL, FIRMLY ASSEMBLED

- Installation wall made of sheet steel, completely with surrounding reinforcement.
- All common training boxes could be hooked-in; applicable as installation wall with installation dowels.
- The installation walls fit between PROFI extensions, into EASY A4 training system frames or into the bench top frame.
- Durable, light grey powder coating.



Installation Wall, firmly assembled 461. BB H .1 F R

BB Width						H Height		F Extensions		R Raster	
05	500mm	10	1000mm	16	1600mm	1	360mm	0	between SINGLE/ MULTI	0	hera-Raster
06	603mm	12	1200mm	18	1800mm	2	680mm	3	for sliding mechanics	1	E-Raster
08	800mm	13	1295mm	20	2000mm	3	1000mm	5	between ENERGY		
09	900mm	15	1500mm								

CABLE TRAY FOR A4 TRAINING SYSTEM FRAME

- Made of sheet steel, for acceptance of measuring leads and small parts.
- Durable powder coated according to RAL-No.
- Dimensions: 100 x 20mm (DxH).

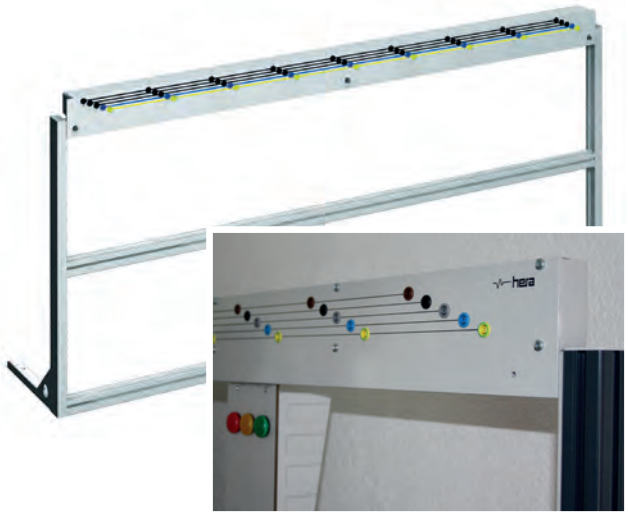
Cable Tray for Training System Frame 461. BB 5.902

BB Width

08	800mm	**10**	1000mm	**13**	1295mm	**16**	1600mm
09	900mm	**12**	1200mm	**15**	1500mm	**18**	1800mm
						20	2000mm

DISTRIBUTION STRIP FOR A4 TRAINING SYSTEM FRAME

- For a clearly arranged circuit wiring, for power distribution or any other multiple connections. Hazadours touch protected.
- 5 socket connectors (completely wired) to 4mm safety jacks.
- Durable, light grey powder coating.
- Dimensions: 50 x 90mm (WxH).



Distribution Strip for Training System Frame 461. BB 6.902

BB Width

08	800mm	**10**	1000mm	**13**	1295mm	**16**	1600mm
09	900mm	**12**	1200mm	**15**	1500mm	**18**	1800mm
						20	2000mm

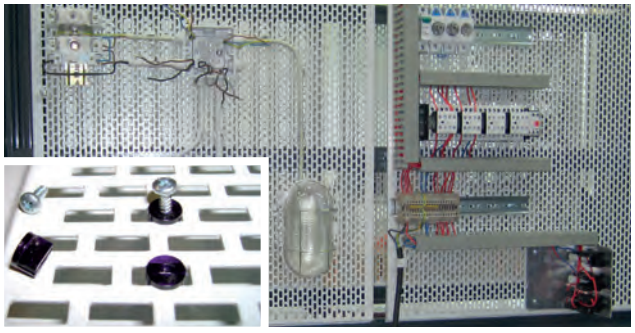
INSTRUMENT SHELF FOR TRAINING SYSTEM FRAME

- Shelf dimensions: 378 x 290mm (WxD).
- Frame with tiltable shelf to hook into A4 training system frame; made of sheet steel.
- The tiltable shelf has two lock positions and stop edges.
- Durable, light grey powder coating.

461.930.000	**Instrument Shelf**

DOWELS FOR INSTALLATION

- 100 pcs. dowels for the use with installation walls.
- Incl. pan head screw.
- Length: 9,5mm.



301.150.100	**Installation Dowels**

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COUNTLESS CONFIGURATIONS
BUT ALWAYS SOLID

Characteristic for a hera workshop bench is, that all required tools, connectors and bins are positioned within convenient reach. If more space is needed you can always add a shelf or a cantilever arm.

PROFI **CANTILEVER ARM** WITH SLEEVE FOR LAMPS

- Solid steel beams with absolut stable sleeve/ bolt combination.
- Max. load: 50kg.
- Modular configurable with:
  - sleeve for the assembly to the PROFI profiles
  - cantilever arm with bolt, sleeve and locking screw (available in different length with cord holder)
  - different end pieces with bolts.

PROFI Cantilever Arm

PROFI Sleeve

PROFI Cantilever Arm with Sleeve for Lamps	
491.002.000	Sleeve for PROFI Cantilever Arm Ø 25mm
491.003.000	PROFI Cantilever Arm / Reach: 250mm
491.004.000	PROFI Cantilever Arm / Reach: 300mm
491.005.001	PROFI Cantilever Arm / Reach: 500mm
491.002.100	Set 1: Sleeve + Cantilever Arm 300mm
491.010.100	Set 2: Sleeve + Cantilever Arm 300 + 250mm

TRAY FOR PROFI CANTILEVER ARM

- Rotatable sheet steel tray with spherical head and surrounding stop edges.
- Durable conductive powder coating in light grey.
- Bolt (Ø 25mm).

Tray for PROFI Cantilever Arm	
491.026.100	300 x 300 x 10mm (WxDxH)
491.026.110	400 x 400 x 10mm (WxDxH)
491.026.120	500 x 500 x 10mm (WxDxH)

TILTABLE TRAY FOR PROFI CANTILEVER ARM

- Tiltable tray made of sheet steel for the assembly to the cantilever arm.
- Front and sides with 20mm stop edge. Tiltable in three angles (0° / 5° / 10° / 15°).
- Durable conductive powder coating in light grey.

Tiltable Tray for PROFI Cantilever Arm	
491.027.110	300 x 250mm (WxD)
491.027.130	450 x 350mm (WxD)
491.027.150	650 x 500mm (WxD)

BIN SUPPORT FOR PROFI CANTILEVER ARM

- Accepting rail made of steel to hook in storage bins.
- Durable, light grey powder coating.
- Bolt (Ø 25mm).

Width	1 Level	3 Level
300mm	491.022.101	491.022.300
400mm	491.022.111	491.022.310
500mm	491.022.121	491.022.320

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PERFORATED BACKPLANE FOR PROFI CANTILEVER ARM

- For the acceptance of different tool -, bin supports and shelves.
- Perforated swivel-plate made of sheet steel, 1,5mm thick with surrounding reinforcement.
- Durable, light grey powder coating.

Perforated Backplane	
491.024.101	300 x 290mm (WxD)
491.024.111	300 x 130mm (WxD)
491.024.121	550 x 290mm (WxD)
491.024.131	550 x 130mm (WxD)

TFT - AND KEYBOARD SUPPORT FOR PROFI CANTILEVER ARM

- Solid swivel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Adapter plate in VESA standard (100x100mm and 75x75mm).
- Keyboard tray 470 x 220 x 320mm (WxDxH).
- Swiveling Mouse Pad 200x200mm.
- Durable, light grey powder coating.

TFT - and Keyboard Support	
491.028.101	TFT Support
491.028.111	TFT Support with Keyboard Tray
491.028.121	TFT Support with Keyboard Tray and Mouse Pad

491.028.101

491.028.121

NOTEBOOK - AND KEYBOARD SUPPORT FOR PROFI CANTILEVER ARM

- Solid swivel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Sheet steel swivel tray with front side stop edge.
- Notebook Support: 400 x 300mm (WxD).
- Keyboard Support: 470 x 200mm (WxD).
- Durable, light grey powder coating.

Notebook - and Keyboard Support	
491.028.320	Notebook Support
491.028.330	Keyboard Support
491.028.340	Option Mouse Pad for Keyboard Support

491.028.330

491.028.320

PROFI **OVERHEAD FRAME**

- Cross brace made of aluminium profile 30 x 30mm for the acceptance of sliders.
- Type SD (only in light grey powder coating):
  Depth braces made of sheet steel.
  Durable, light grey powder coating.
  Height: 75/30mm.
- Type PD (powder coated according to RAL-No.):
  Depth braces with 45° aluminium profile braces 30 x 30mm.
  Durable powder coated to RAL-No.
  Height: 230mm.

Type SD

Type PD

PROFI Overhead Frame 450. **BB** **T** . **A** 00

BB Width

09	900mm	**13**	1295mm	**18**	1800mm
10	1000mm	**15**	1500mm	**20**	2000mm
12	1200mm	**16**	1600mm	**23**	2303mm

T Depth

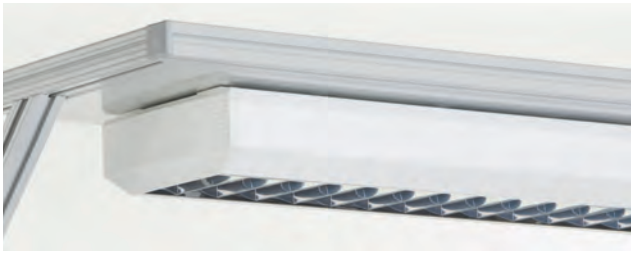
0	500mm (for bench depth 800)
1	600mm (for bench depth 900)
2	700mm (for bench depth 1000)

A Type

0	Type SD
9	Type PD

PROFI **OVERHEAD LAMP**

- Glare-free overhead lamp made of sheet steel with parabolic reflector.
- Hidden cable run within the overhead frame.
- Durable powder coating in light grey.



Overhead Lamp with Fluorescent Illuminant:

- Lamp housing: 197 x 75mm (DxH).
- Two conventional fluorescent tubes.
- Electric ballast.
- Light temperature: 4.000K .
- Operating hours: approx. 20.000h.

Bench Width: <= 1600mm:

- Power: 2x 36W.
- Brightness: 2x 3.350lm.

Bench Width: >= 1800mm:

- Power: 2x 58W.
- Brightness: 2x 5.240lm.

Overhead Lamp with LED:

- Lamp housing: 290 x 70mm (DxH).
- Multi-LED-Converter for an adjustable brightness.
- Adjustable in 3 steps within the lamp housing.
- Licht temperature: 4.000K.
- Colour reproduction: Ra: >80.

Bench Width: <= 1600mm (lamp width: 1220mm):

- Power: 51W (can be reduced to 24W or 35W).
- Brightness: 7.600lm (reduced: 4.000lm or 5.600lm).

Bench Width: >= 1800mm (lamp width: 1520mm):

- Power: 63W (can be reduced to 30W or 44W).
- Brightness: 9.600lm (reduced 5.100lm or 7.100lm).

PROFI Overhead Lamp 455. **BB** 0.0 **L** **A**

BB Bench Width

13	1295mm	**18**	1800mm
15	1500mm	**20**	2000mm
16	1600mm	**23**	2303mm

L Lamp

0	Fluorescent
5	LED

A Overhead Frame

2	Type PD
3	Type SD

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PLASTIC SLIDER WITH SNAP HOOK

- For hooking up tools in ergonomic reach, movable over the whole bench width.
- Width: 60mm, Bore-Ø: 8mm.
- Colour: black.

Plastic Slider with Snap Hook	**459.100.100**

BALANCER

- Balancers help to organize the workstation and make workings with electric or pneumatic tools more safe and easy.
- Adjustable pulling force.
- Rope pull (max. 1,6m) with snap hook.

Balancer	
459.100.190	0,4 - 1,0kg
459.100.200	1,0 - 2,0kg
459.100.210	2,0 - 3,0kg

SLIDER RAIL FOR OVERHEAD FRAME

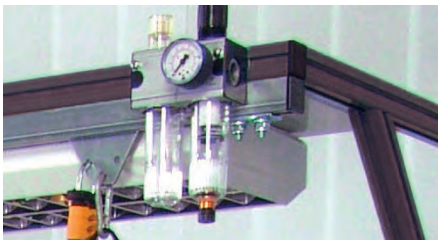
- C-shaped rail made of anodized steel with stop-end and plastic caps.
- Easy running slider for C-shaped rail. Anodized steel plate and four ball bearing rollers and snap hook.
- Assembly set for the installation to the PROFI overhead frame.
- Dimensions: 30 x 32 x 2mm.

Length		**Length**	
1295mm	451.130.000	1800mm	451.180.000
1500mm	451.150.000	2000mm	451.200.000
1600mm	451.160.000	2303mm	451.230.000
451.000.000	Slider without C-shaped rail		

PRESSURE REGULATOR WITH FILTER

- For the assembly to the PROFI overhead frame.
- Two-piece service unit consisting of a reversible diaphragm pressure regulator, independent of input pressure, with self-relieving design, combined with a centrifugal separator and a proportional lubricator.
- Output with quick-fastener NW 7,2.

Pressure Regulator with Filter	**459.200.100**



SPIRAL HOSE-COUPLING-KIT

- Hose made of polyurethane with coupler NW 7,2 for medium temperature -20°C to +60°C.
- Diameter: approx. 50mm.
- Service length: 4m.
- Operating pressure: max. 10bar.

Spiral Hose -Coupling-Kit	**459.200.150**

TAKE ADVANTAGE OF THE HIGH **VARIABILITY FOR WORKSHOPS WITHIN** THE PROFI RANGE

Depending on your manufacturing order, you need differerent electrical equipment, different tools, a certain number of storage bins, more than one monitior or sometimes none. What workstation is flexible enough to go with all those requirements? - Ours is!
Change shelves, cantilever arms or any other components almost effortlessly. You will keep flexibility from project to project.

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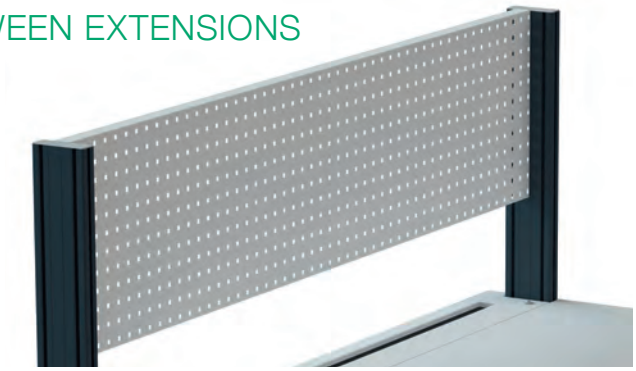
PROFI **PERFORATED BACKPLANE** BETWEEN EXTENSIONS

- For the assembly between the extensions. The back plane is perforated for the acceptance of different hooks, supports and small shelves.
- Perforated sheet steel (1,5mm thick) with surrounding reinforcement.
- Durable, light grey powder coating.
- Incl. assembly set.
- Depth: 40mm.

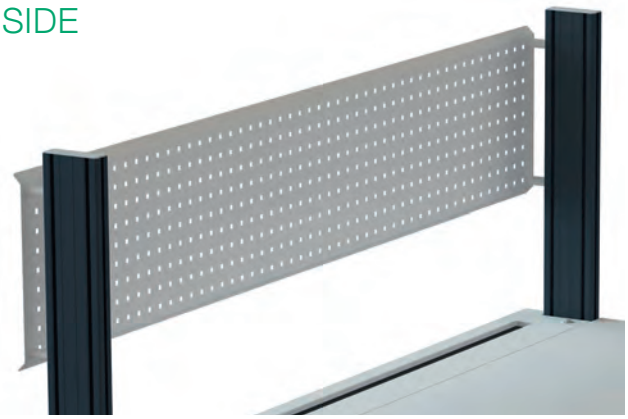


PROFI Perforated Backplane between Extensions **460. BB H .9 F 1**

BB Bench Width								H Height		F Extensions	
05	500mm	**09**	900mm	**13**	1295mm	**18**	1800mm	**0**	150mm	**0**	between SINGLE/ MULTI
06	603mm	**10**	1000mm	**15**	1500mm	**20**	2000mm	**5**	350mm	**5**	between ENERGY
08	800mm	**12**	1200mm	**16**	1600mm	**23**	2303mm				

PROFI **PERFORATED BACKPLANE** REAR SIDE

- For the assembly to the rear side of the extensions, spacers for a flush installation to the rear bench edge. The backplane is perforated for the acceptance of different hooks, supports and small shelves.
- Perforated sheet steel (1,5mm thick), top - and lower side with 45° bending.
- Durable, light grey powder coating.
- 4x spacers made of 40 x 40mm aluminium profile, incl. assembly set.



PROFI Perforated Backplane, rear side **460. BB H .902**

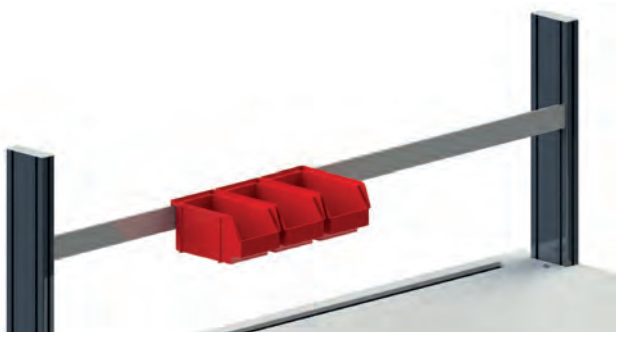
BB Bench Width										H Height	
08	800mm	**10**	1000mm	**13**	1295mm	**16**	1600mm	**20**	2000mm	**0**	150mm
09	900mm	**12**	1200mm	**15**	1500mm	**18**	1800mm	**23**	2303mm	**5**	350mm

▸ **see page 484 for accessory**

PROFI **SUPPORT** FOR STORAGE BINS

- Made of double-folded 2mm thick sheet steel, very torsion-resilent on the whole width.
- Incl. assembly set for the fixation between the PROFI extensions.
- Durable, light grey powder coating.
- Dimensions: 30 x 60mm (WxH).

see page 484 for bins



PROFI Support for Storage Bins **462. BB 0. 0 F 0**

BB Bench Width

08	800mm	**10**	1000mm	**13**	1295mm	**16**	1600mm	**20**	2000mm
09	900mm	**12**	1200mm	**15**	1500mm	**18**	1800mm	**23**	2303mm

F Extensions

0	between SINGLE / MULTI
5	between ENERGY

PROFI **BACKPLANE** FOR SOCKET STRIP „INDUSTRY“

- The backplane is for the height variable assembly between the PROFI extensions.
- Made of sheet steel with light grey powder coating and cutouts for cable access.
- Dimensions: 46 x 76mm (DxH).

PROFI Backplane for Socket Strip „INDUSTRY“ **463. BB 0.0 F 0**

05	Width: 420mm	**15**	Width: 1420mm	**0**	between SINGLE/ MULTI
06	Width: 523mm	**16**	Width: 1520mm	**5**	between ENERGY
08	Width: 720mm	**18**	Width: 1720mm		
10	Width: 920mm	**20**	Width: 1920mm		
12	Width: 1120mm	**23**	Width: 2223mm		
13	Width: 1215mm				

Socket Strip „INDUSTRY“

293.204.100	4 sockets with switch (L: 355mm)
293.206.100	6 sockets with switch (L: 440mm)
293.209.100	9 sockets with switch (L: 570mm)
293.212.100	12 sockets with switch (L: 700mm)

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ESD DOCUMENT PROTECTOR DIN A4

- 10x DIN A4 document bags consisting of a black metal frame with transparent conductive polyetylene bags.
- Support made of stainless steel incl. assembly set for the fixation at the PROFI extensions.

ESD Document Protector DIN A4	**468.100.100**

PROFI **BOTTLE HOLDER**

- 2-pcs. support made of aluminium for a max. bottle diameter of 94mm.
- Incl. assembly set for a height variable assembly at PROFI or FLEX profiles.
- Durable, light grey powder coating.
- Diameter: 117 x 120mm (DxH).

PROFI Bottle Holder	
468.200.102	1x bottle, width 114mm
468.200.202	2x bottle, width 210mm

PROFI **SWITCH MODULE**

- Mounting plate made of sheet steel with durable light grey powder coating and top-mount toggle switch for the assembly to the PROFI profile.
- Hidden cable run within the cable channels of the PROFI profile.
- Completely wired and with assembly set.

PROFI Switch Module	**468.300.000**

INTEGRATED SWITCH IN MULTI PROFILE

- Into the MULTI profile integrated illuminated switch.
- Completely wired.

Integrated Switch in MULTI Profile	
940.144.300	1x switch
940.268.500	2x switches

CORD HOLDER FOR PROFI PROFILES

- Cable comb made of aluminium sheet, with different gaps for the acceptance of cables with max. 12mm diameter.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation to the PROFI profiles.
- Height: 30mm.

Depth	Width / Gaps 300/17	500/31	603/37	800/48	1000/56
80mm	448.160.000	448.180.000	448.200.000	448.220.000	448.240.000
160mm	448.170.000	448.190.000	448.210.000	448.230.000	448.250.000

PROFI **CABLE SUPPORT**

- Cable support with bow and integrated cable comb, made of 3mm thick aluminium sheet.
- Cable comb suitable for laboratory cords, power cords, etc.
- Durable, electrical conductive powder coating in light grey.
- Dimensions: 160 x 100 x 65mm (WxDxH).

PROFI Cable Support	**299.221.501**

PROFI **HOSE - AND CABLE SUPPORT**

- Hose support made of aluminium die-cast.
- For the storage of hoses and cables.
- Dimensions: 190 x 70mm (WxD).

PROFI Hose - and Cable Support	**940.196.400**

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CHAPTER 4: **EASY LABORATORY SYSTEM**

132 Workbench Standard and ESD
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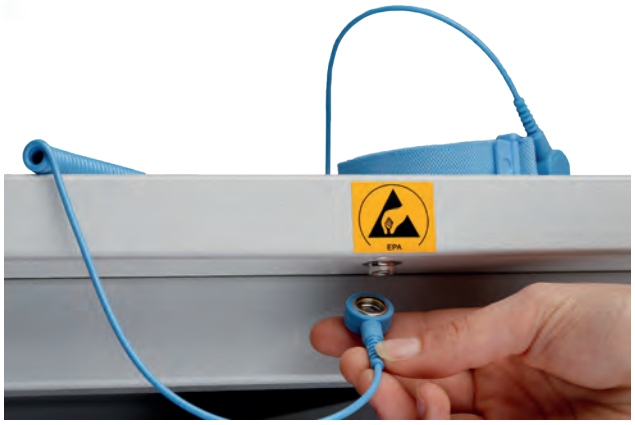
149 Shelving Rack
150 Shelf Rack
151 TFT Chest with Lifting Mechanism
153 Training System Frame
154 Installation Cabin

EASY **WORKBENCH** STANDARD AND ESD

- Bench height: 780mm.
- Highly stable bench frame made of durable powder coated tubular steel 40 x 40mm.
- Hardwearing, 30mm thick bench top (multilayer-chipboard according to DIN 68761). Surface with 0,8mm thick HPL layer according to DIN 16926 and 53799).
- Sides with 3mm PP plastic edge.
- Four bench legs made of 40 x 40mm tubular steel with levellers, connected to the bench frame with torsion-resistant corner joints.



ESD Version:

- Right and left front side with press studs for the connection of wrist bands.
- Rear side with defined connecting point to ground.
- Surface and volume conductive bench top (according to DIN EN 61 340), all sides with 3mm PP plastic edge. Conductive connection to bench frame.
- Bench legs with conductive metal levellers.

EASY Workbench

- highly stable bench frame
- surrounding tubular steel frame 40 x 40mm
- flexible and vibration-free bench legs due to aluminium corner joints
- uniformally distributed load (UDL) max. 300kg

front with 50mm overhang

bench leg connection

surface & volume conductive bench top and standard bench top

standard leveller

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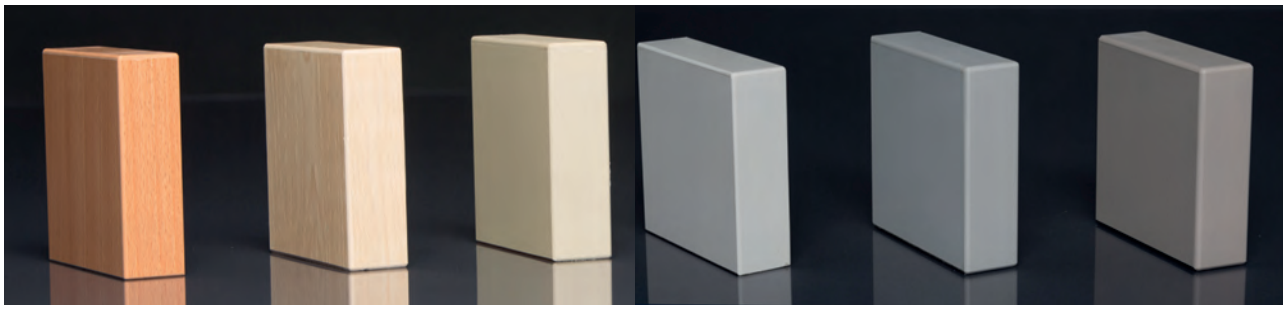
EASY **BENCH TOP** STANDARD AND ESD

F Decor



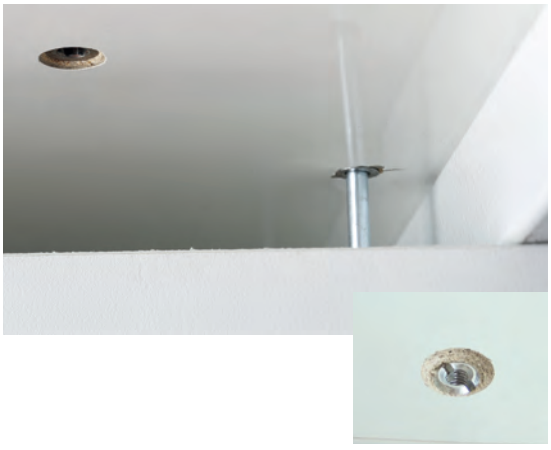
beech | maple | pebble | light grey optional: | with optional: | indus grey optional:

EASY Bench 1 **TT** . **BBB** . **F** 00

TT Depth		**BBB** Width		**F** Colour: Bench Top / Frame	
06	600mm	**060**	600mm	**1**	pebble / anthracite
10	800mm	**080**	800mm	**5**	light grey / light grey
11	900mm	**090**	900mm	**7**	light grey / anthracite
12	1000mm	**100**	1000mm	**8**	decor (beech/maple) / RAL-No.
		120	1200mm	**9**	light grey or white or indus grey / RAL-No.
ESD		**126**	1260mm		
37	600mm	**129**	1295mm	**Accessory for ESD**	
07	800mm	**148**	1485mm	**299.890.110**	wrist band with spiral cable
27	900mm	**150**	1500mm	**299.890.120**	wrist band
17	1000mm	**160**	1600mm	**299.890.130**	spiral cable
		180	1800mm		
		200	2000mm		
		230	2303mm		

OPTION THREAD INSERTS FOR SUSPENDED CONTAINER

- Lower side of the bench top right and left, each with four thread inserts for the assembly of suspended containers.
- Metal thread inserts M6, pull-out safe even with heavy loaded containers.



Option Thread Inserts for Suspended Container	
100.110.570	for PROFI Container, depth: 580
100.110.770	for PROFI Container, depth: 780
100.120.500	for EASY Container
100.130.400	for Sheet Steel Container

EASY **TRAPEZIUM BENCH** 60°

- Bench height: 780mm.
- Surrounding bench frame with bench legs made of 40 x 40mm tubular steel, completely welded.
- Durable powder coated steel parts.
- Realization of hexagonal team workstations with 60° trapezium benches.

EASY Trapezium Bench 1 **TT**. **BBB**. **F** 50

TT Depth

06	600mm
10	800mm
11	900mm
12	1000mm

BBB Width

126	1260mm	**160**	1600mm
130	1295mm	**180**	1800mm
148	1485mm	**200**	2000mm
150	1500mm		

F Colour: Bench Top / Frame

1	pebble grey / anthracite
5	light grey / light grey
7	light grey / anthracite
9	light grey / RAL-No.

EASY **EMC BENCH**

- Bench top made of oiled beech multiplex, 40mm thick with chamfered edges.
- Bench base made of solid beech, multible sanded and laquered.
- Load capacity: 100kg.
- Optionally with various surfaces:
  - anodized sheet steel 1,5mm
  - stainless steel 1,5mm
  - copper 1mm
  - aluminium 2mm

  The surfaces are either screwfixed or glued-on and with earth connection.
- Optionally with 4 steering casters, two with brakes.

EASY EMC Bench 1 **TT**. **BB** 1. **A** 0 **F**

TT Depth

10	800mm
11	900mm
12	1000mm

BB Width

12	1200mm
16	1600mm
18	1800mm
20	2000mm

A Top

0	Wood
1	Anodized Steel
2	Copper
3	Aluminium
4	Stainless Steel

F Casters

0	no
5	with Casters

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CABLE TRAY FOR EASY BENCH

- Made of sheet steel, for height variable assembly at the EASY bench legs.
- Durable powder coated steel parts.

standard

with brush strip

EASY Cable Tray 113 . **BBB** . **F** 0 **A**

BBB Width					
080	800mm	**126**	1260mm	**160**	1600mm
090	900mm	**129**	1295mm	**180**	1800mm
100	1000mm	**148**	1485mm	**200**	2000mm
120	1200mm	**150**	1500mm	**230**	2303mm

F Colour	
1	anthracite
5	light grey
9	RAL-No.

A Type	
1	Suspended Cable Tray
5	Cable Tray with Brush Strip (60mm rear overhang)

CABLE ACCESS, ROUND

- Plastic outer ring with rotatable spring flap.
- To insert a cable with plug, the flap can be detached.
- Incl. bench top cutout.

Cable access, round

419.061.000	Ø 80/92mm, light grey
419.061.100	Ø 80/92mm, stainless steel colour
419.061.200	Ø 80/92mm, black
419.061.300	Ø 80/92mm, beige
419.062.000	Ø 60/72mm, light grey
419.062.100	Ø 60/72mm, stainless steel colour
419.062.200	Ø 60/72mm, black
419.062.300	Ø 60/72mm, beige
419.062.900	Ø 60/72mm, with 3x USB-Hub and 2x audio jack, black

▸ please state the position

EASY **BENCH STIFFENER**

- Recommended for extremely heavy loads or bench with casters.
- Consisting of two side braces and one middle brace, made of tubular steel 40 x 40mm.
- Durable powder coated steel parts.
- Assembly height: 100mm.
- Leg room: 680mm.

EASY Bench Stiffener 191.**BB** **T** . **F** 50

BB Width

06	600mm	**12**	1200mm	**16**	1600mm
08	800mm	**13**	1260mm	**18**	1800mm
09	900mm	**14**	1485mm	**20**	2000mm
10	1000mm	**15**	1500mm	**23**	2303mm

T Depth

6	600mm
8	800mm
9	900mm
1	1000mm

F Colour

1	anthracite
5	light grey
9	RAL-No.

EASY BENCH **WITH CASTERS**

- Shortened set of bench legs with welded thread inserts for a stable connection of the casters.
- Four swivel casters, two with brakes.
- Leg room: 680mm.
- Total height: 780mm.

75mm standard

with brake

EASY Bench with Casters 191 . 07 **A** . **F** **R** 0

A Version

1	Standard	
2	ESD	ESD

F Frame

1	anthracite
5	light grey
9	RAL-No.

R Caster Diameter

0	100mm
1	75mm
2	125mm

EASY **PC SUPPORT**

- Suspended PC support made of sheet steel with tubular mounting sleeve and stepless adjustable width (160 - 210mm).
- The PC support can be mounted height adjustable at the left or right EASY leg.
- Durable powder coated steel parts.
- Dimensions: 160-210 x 400 x 160mm (WxDxH).

EASY PC Support	
191.080.101	anthracite
191.080.501	light grey
191.080.901	RAL-No.

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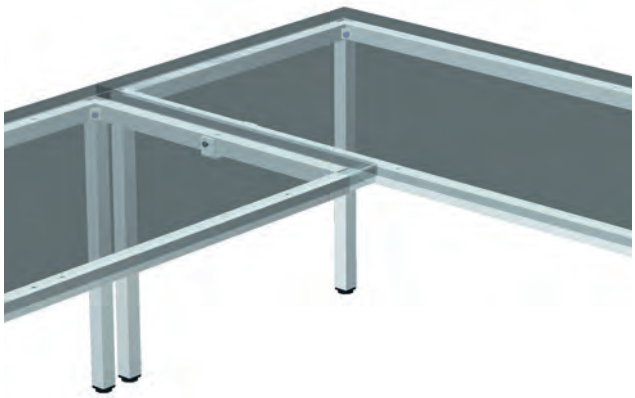
MOUNTING KIT L-COMBINATION WITH EASY BENCHES

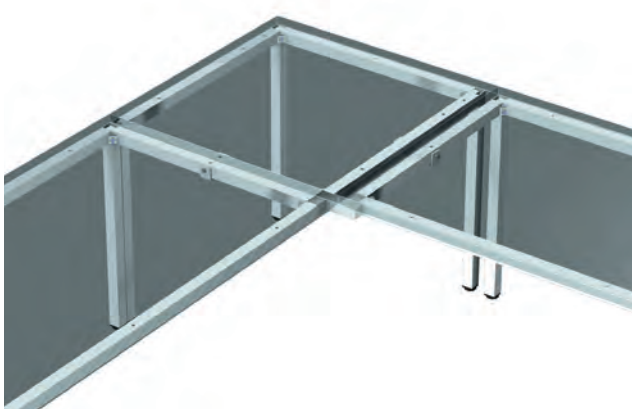
- For this leg-reduced corner combination you need two workbenches and the mounting kit.
- Durable powder coated steel parts.



Mounting Kit L-Combination for EASY Benches	
191.027.100	anthracite
191.027.500	light grey
191.027.900	RAL-No.

MOUNTING KIT CORNER BENCH FOR EASY BENCHES

- For this leg-free corner combination you need two workbenches, one squared corner bench and the mounting kit.
- Durable powder coated steel parts.



Mounting Kit Corner Bench for EASY Benches	
191.028.100	anthracite
191.028.500	light grey
191.028.900	RAL-No.

EASY PC **CORNER BENCH**

- Special bench frame for solid leg-free corner combination.
- Incl. corner leg and two receded bench legs with levellers.
- Hardwearing 30mm thick bench top, sides with 3mm PP plastic edge.
- Durable powder coated steel parts.
- Front edge: 440mm (900), 300mm (1000).
- Outer dimensions: 1213 x 1213mm.

EASY PC Corner Bench 1 **BB** . 500. **F** 00

BB Width

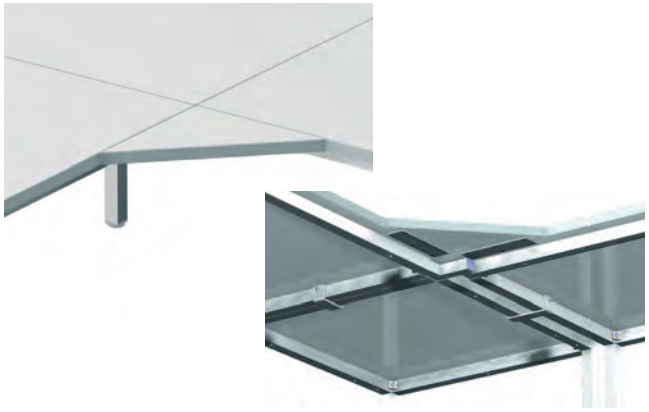
		ESD	
10	800mm	**07**	800mm
11	900mm	**27**	900mm
12	1000mm	**17**	1000mm

F Colour: Bench Top / Frame

1	pebble / anthracite
5	light grey / light grey
7	light grey / anthracite
9	light grey / RAL-No.

TRIANGLE ELEMENT FOR EASY CORNER COMBINATION

- The triangle element is made of 30mm thick bench top, sides with 3mm PP plastic edge and two mounting plates for a hidden connection between two benches.
- Front edge: 500mm, sides: 350mm.



Triangle Element for EASY Corner Combination		
		ESD
light grey	191.029.500	191.030.500
pebble	191.029.700	191.030.700

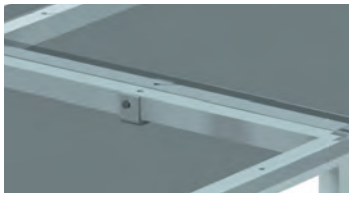
EASY BENCH LEG FOR LEG-FREE BENCH ROWS

- Bench leg with leveller and top-mount connector (span: 85mm), to connect two bench frames.
- Durable powder coated steel parts.
- Height: 710mm (total bench height: 780mm).

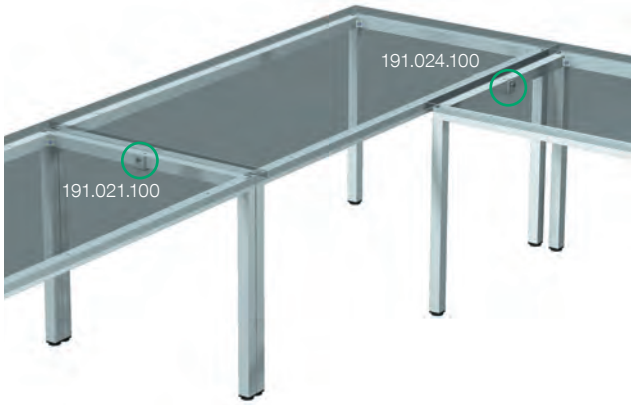
EASY Bench Leg for leg-free Bench Rows		
		ESD
anthracite	191.022.100	191.023.100
light grey	191.022.500	191.023.500
RAL-No.	191.022.900	191.023.900

EASY BENCH CONNECTOR

- Nickel-plated clamp with locking screw.
- To connect two frames of EASY benches.



EASY Connctor	
191.021.100	span width: 85mm
191.024.100	span width: 130mm



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FLOOR FIXATION FOR EASY BENCH

- For a fixed installation of EASY benches to the floor.
- Durable powder coated tubular steel sleeve with latch and floor dowel.

Floor Fixation for EASY Bench	
191.011.100	anthracite
191.011.500	light grey
191.011.900	RAL-No.

EASY BENCH LEG WITH MOUNTING PLATE

- Durable powder coated tubular steel 40 x 40mm with leveller and mounting plate.
- The bench leg can be positioned at any position under the bench top.
- Height: 750mm.

EASY Bench Leg with Mounting Plate	
123.000.100	anthracite
123.000.500	light grey
123.000.900	RAL-No.

EASY H-LEG

- Completely welded H-shaped steel leg made of tubular steel 40 x 40 x 2mm and massive mounting plate.
- Incl. assembly set and levellers.
- Durable powder coated steel parts.
- Height: 750mm.

EASY H-Leg	123.0 TT . F 00

TT Depth		F Colour	
20	620mm	1	anthracite
10	750mm	5	light grey
		7	RAL-No.

DIRECT COVERED BENCH TOP

- Melamine resin covered 3-layer-chipboard.
- Sides with 3mm PP plastic edge.
- Customized dimensions (max. 2700 x 2000mm).

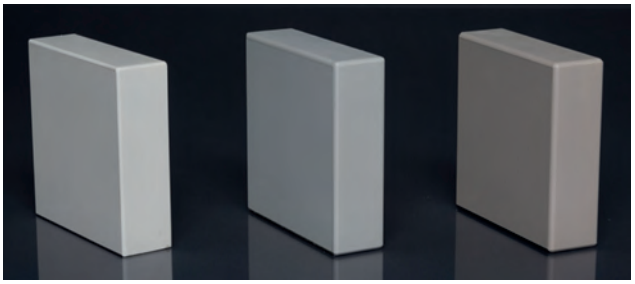
ESD Version:

- Volume conductive 3-layer-chipboard with conductive laminated surface according to DIN-EN 61340-5-1.

Direct Covered Bench Top 10 **A** .0 **ST** . **F** 00

A Version		**ST** Thick		**F** Colour	
1	Standard	**08**	8mm	**5**	light grey
8	ESD	**19**	19mm	**7**	pebble (not in ESD)
		25	25mm	**8**	indus grey / white
		00	28mm	**9**	maple / beech (not in ESD)

beech maple pebble



white indus grey light grey

HARDLAMINATED BENCH TOP

- 3-layer-chipboard with hardwearing HPL layer (multilayer-chipboard according to DIN 68761. Surface with 0,8mm thick HPL layer according to DIN 16926 and 53799).
- Sides with 3mm PP plastic edge.
- 30mm thick.

ESD Version:

- Volume conductive 3-layer-chipboard with conductive hardlaminated surface according to DIN-EN 61340-5-1.

Hardlaminated Bench Top 10 **A** .000. **F** 00

A Version		**F** Colour	
0	Standard	**5**	light grey
7	ESD	**7**	pebble (not in ESD)
		8	indus grey / white
		9	maple / beech (not in ESD)

conductive hardlaminated directly covered

MECHANICAL BENCH TOP

- Multiplex or plywood tops made of beech.
- Multiple sanded and oiled or lacquered.
- Chamfered edges.

Mechanical Bench Top 10 **A** .0 **ST** .000

A Version		**ST** Thick	
4	Beech Multiplex	**20**	20mm (only multiplex)
5	Beech Plywood	**30**	30mm
		40	40mm
		50	50mm (only plywood)

beech plywood beech multiplex

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BENCH TOP WITH **BEVELLED FRONT**

- Hardlaminated bench top with drop edge (bevelled edge covered with stretched hardlaminate) or PROFItec edge (impact-resistant, replacable front edge made of solid durable plastics with 10mm radius).
- Other sides with 3mm PP plastic edge.
- Customized dimensions (max. dimension: 3600 x 1100mm).
- 30mm thick.
- Light grey (white on demand).

ESD Version:

- Volume conductive 3-layer-chipboard with conductive hardlaminated surface according to DIN-EN 61340-5-1.

3mm PP plastic edge | P26 edge | PROFItec edge | P45 edge (drop edge)

Bench Top with Bevelled Front	10 **A** .0 **V** 0.500

A Version		**V** Front Edge	
0	Standard	**1**	PROFItec edge
7	ESD	**2**	P26 edge
		4	P45 edge

SPECIAL BENCH TOP

- Bench top with adhesive bonding and 3mm PP plastic edge.
- White ceramics or red-brown stoneware tiled chipboard, optionally with bulged rim.
- Trespa bench top (extremely hardwearing solid core) with bevelled edges, black core and light grey surface. Optional with bulged rim 20/27mm made of epoxy.
- Stainless steel bench top folded on V100 chipboard and bulged rim (optional).

bench top with linoleum surface | trespa bench top | trespa bench top with bulged rim | tilted bench top with bulged rim

Special Bench Top			
103.000.000	Bench top with linoleum surface	106.000.000	Trespa bench top
103.100.000	Bench top with 2mm ESD mat	106.100.000	Trespa bench top with bulged rim
109.000.000	Bench top with white ceramics tiles	108.000.000	Bench top with stainless steel surface
109.100.000	Bench top with red-brown stoneware tiles	108.100.000	Bench top with stainless steel surface and sink

THIS MECHANICAL WORKBENCH **DEFYS ANY IMPACT**

The surrounding steel frame with extra H-shaped stiffener made of tubular steel 40 x 40mm gives the EASY mechanical workbench its extraordinary stability. For a perfectly arranged work place, sheet steel containers can be added and the bench is designed for the acceptance of a vice.

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EASY **MECHANICAL WORKBENCH**

- Highly stable and durable powder coated frame with extra H-shaped stiffener made of 40 x 40mm tubular steel.
- 40mm thick solid beech top, multiple oiled or lacquered.
- Total height: 790mm, depth: 700mm.

multiplex plywood

EASY Mechanical Workbench	11	A	.1	B	0.	F	00

A Type		B Width		F Colour	
4	Beech multiplex top	2	1200mm	1	anthracite
5	Beech plywood top	5	1500mm	5	light grey
		8	1800mm	9	RAL-No.

SHELF FOR MECHANICAL WORKBENCH

- For the assembly to the H-shaped stiffener.
- 20mm thick beech multiplex, oiled.
- Depth: 400mm.

Shelf for EASY Mechanical Workbench	
190.051.000	width 1200mm
190.052.000	width 1500mm
190.053.000	width 1800mm

RAISED EDGE FOR SOLID BEECH TOP

- Mounted at the rear and/ or the sides to the solid beech top.
- 19mm thick beech multiplex, oiled.
- Height: 70mm.

Raised Edge per Meter	190.050.000

OPTION **MECHANICAL HEIGHT ADJUSTMENT** FOR EASY BENCH

- Adjustable bench height between 740 - 960mm.
- Bench legs are replaced by four solid and exactly fitting tube-in-tube legs.
- Outer tube 40 x 40mm with adjusting holes in 20mm raster.
- Inner tube 35 x 35mm with thread insert and metal leveller.
- Durable powder coated steel parts.

Mechanical Height Adjustment for EASY Bench	
191.092.100	anthracite
191.092.500	light grey
191.092.900	RAL-No.

OPTION **HYDRAULIC HEIGHT ADJUSTMENT** FOR EASY BENCH

- Oilfree into bench legs installed hydraulic cylinders and under the bench top mounted hydraulic pump, no visible hoses.
- Operated by hand crank or electric drive.
- Height adjustable between 750 - 1150mm (stroke of hand cank: 400mm / stroke of electric: 380mm).
- Total lifting force: 3500N.
- Synchronized by 4-chamber-hydraulic-pump.
- **Electric**: up/ down button is positioned ergonomically under the front edge.
- **Manual**: the hand crank is positioned ergonomically under the front edge and could be folded under the bench top.

Hydraulic Height Adjustment for EASY Bench		
191.061.500	Hand crank	5mm/U
191.062.500	Electric drive	15mm/s

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EASY **C-LIFT-BASE**

Heigth adjustable bench base consisting of:

- Two fully synchronized electro-mechanical lifts.
  Lifting height: 630mm - 1280mm.
  Lifting force: 2 x 800N.
- Nicely shaped and stable cantilever base with levellers.
  Depth: 700mm.
- Stiffener made of sheet steel, mounted between the legs.
- Stable mounting brackets for the fixation of the bench top.
- Programmable synchron control, installed under the bench top.
- Control unit positioned under the right front edge of the bench top.
- Durable powder coating in white aluminium RAL 9006.
- Completely assembled with hidden cables.

EASY C-Lift-Base **193. BB 0.000**

BB Width

05	500mm	**09**	900mm	**12**	1200mm
08	800mm	**10**	1000mm	**16**	1600mm

▸ **see page 140 - 141 for suitable bench tops**

OPTION LIFTING CASTERS FOR EASY BENCH

- Mechanic lifting mechanism for EASY bench.
- Two height adjustable steel frames with synchron shaft and eccentric lever.
- 75mm steering casters with brakes.

Option Lifting Casters **193. BB T .900**

BB Width				**T Depth**	
06	600mm	**13**	1260mm	**6**	600mm
08	800mm	**14**	1485mm	**8**	800mm
09	900mm	**15**	1500mm	**9**	900mm
10	1000mm	**16**	1600mm	**1**	1000mm
12	1200mm	**18**	1800mm		

CONFIDENT STABILITY
WITH EASY BENCH TOP MOUNTINGS

The EASY bench top frame and all EASY shelf racks fit ideally on each EASY bench and mechanical workbench, the connection is solid screw fixing. You want to combine these elements to an existing non hera brand? - No problem!

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EASY **BENCH TOP FRAME**

- Two side parts with two middle sections made of tubular steel 30 x 30mm. Bores with countersink for the bench top mounting and shelf or paneling assembly.
- Durable powder coated steel parts.
- Dimensions 295 x 355mm (DxH).

EASY Bench Top Frame 198. BBB . F 00

BBB Width

080	800mm	**148**	1485mm
090	900mm	**153**	1500mm
100	1000mm	**160**	1600mm
120	1200mm	**180**	1800mm
126	1260mm	**200**	2000mm

F Colour

1	antracite
5	light grey
9	RAL-No.

EASY **BENCH TOP FRAME**, HEIGHT ADJUSTABLE

- Two side parts, made of tube-in-tube steel with 20mm hole raster and screw connection.
- Two middle sections made of tubular steel 30 x 30mm.
- Durable powder coated steel parts.
- Dimensions: 295 x 355-605mm (DxH).

EASY Bench Top Frame, height adjustable 198.BBB . F 00

BBB Width

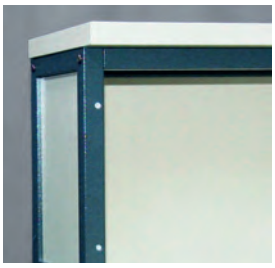
082	800mm	**150**	1485mm
092	900mm	**152**	1500mm
102	1000mm	**162**	1600mm
122	1200mm	**182**	1800mm
128	1260mm	**202**	2000mm

F Colour

1	anthracite
5	light grey
9	RAL-No.

EASY **BENCH TOP FRAME**, PANELED

- Two side parts with middle section made of tubular steel 30 x 30mm. Bores with countersink for bench top mounting and shelf or paneling assembly.
- Integrated rear and side paneling made of 19mm thick melamine resin covered chipboard.
- Durable powder coated steel parts.
- Dimensions 295 x 355mm (DxH).



EASY Bench Top Frame, paneled — 198.**BBB**.**F**00

BBB Width

081	800mm	**149**	1485mm
091	900mm	**151**	1500mm
101	1000mm	**161**	1600mm
121	1200mm	**181**	1800mm
127	1260mm	**201**	2000mm

F Colour

1	pebble / antracite
5	light grey / light grey
7	light grey / anthracite
8	indus grey / anthracite
9	RAL-No.

SHELF FOR EASY BENCH TOP FRAME

- Melamine resin covered shelf, 28mm thick.
- Sides with 3mm PP plastic edge.
- Depth: 340mm.

ESD Version:

- Volume conductive 3-layer-chipboard with conductive laminated surface according to DIN-EN 61340-5-1.

Shelf for EASY Bench Top Frame — 199.**BBB**.**F**00

BBB Standard

080	800mm	**148**	1485mm
090	900mm	**150**	1500mm
100	1000mm	**160**	1600mm
120	1200mm	**180**	1800mm
126	1260mm	**200**	2000mm

BBB ESD

081	800mm	**149**	1485mm
091	900mm	**151**	1500mm
101	1000mm	**161**	1600mm
121	1200mm	**181**	1800mm
127	1260mm	**201**	2000mm

F Colour

5	light grey
7	pebble
8	indus grey

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EASY **SHELVING RACK**

Modular configurable with:

- L-shaped base made of sheet steel with conductive light grey powder coating. With slot pattern (raster width 40mm) for cantilvers, mounting holes for bench top fixation.
  Dimensions 40 x 300 x 800mm (WxDxH).
- Perforated panel for the fixation between the L-shaped base and for the acceptance of tool holders, bins or socket strips.
- The cantilevers are conductive light grey powder coated and could be assembled in different angles to support the shelves.
  Dimensions 30 x 280mm (WxD).
- Light grey shelf made of 28mm thick chipboard. Sides with 3mm PP plastic edge. Front with 6mm high stop edge.
- Depth: 340mm.

ESD Version:

- Volume conductive 3-layer-chipboard with conductive laminated surface according to DIN-EN 61340-5-1.

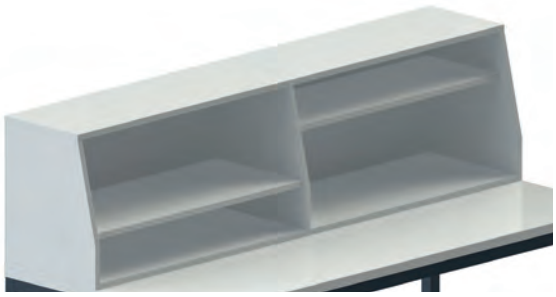
Example: modular configured EASY Shelving Rack consisting of: 1x 198.180.505 + 2x 198.180.510 + 2x 199.180.510

EASY Shelving Rack

Width	Shelving Rack	Cantilevers for Shelf	Shelf with Stop Edge	
			Standard	ESD
800mm	198.080.505	198.080.510	199.080.510	199.081.510
1000mm	198.100.505	198.100.510	199.100.510	199.101.510
1260mm	198.126.505	198.126.510	199.126.510	199.127.510
1485mm	198.148.505	198.148.510	199.148.510	199.149.510
1600mm	198.160.505	198.160.510	199.160.510	199.161.510
1800mm	198.180.505	198.180.510	199.180.510	199.181.510
2000mm	198.200.505	198.200.510	199.200.510	199.201.510

EASY SHELF RACK **WITH TILTED FRONT**

- Tilted front, shaped like LS2000 bench racks.
- Body made of 19mm thick melamine resin covered chipboard.
- Depth: 300/385mm, height: 468mm.
- One shelf board for height variable assembly per compartment.



EASY Shelf Rack with tilted front **215. BBB . F 00**

BBB Width

080	800mm	**120**	1200mm	**160**	1600mm
090	900mm	**126**	1260mm	**180**	1800mm
100	1000mm	**148**	1485mm	**200**	2000mm

F Colour

1	orange	**7**	pebble
5	light grey	**8**	indus grey

EASY SHELF RACK **WITH STRAIGHT FRONT**

- Body made of 19mm thick melamine resin covered chipboard.
- Depth: 300mm, height: 470mm.
- One shelf board for height variable assembly per compartment.

EASY Shelf Rack with Straight Front **215. BBB . F 00**

BBB Width

081	800mm	**121**	1200mm	**161**	1600mm
091	900mm	**127**	1260mm	**181**	1800mm
101	1000mm	**149**	1485mm	**201**	2000mm

F Colour

1	orange	**7**	pebble
5	light grey	**8**	indus grey

EASY SHELF RACK **WITH LAMP**

- Tiltet front, for the assembly on LS2000 bench racks or EASY bench top frames.
- Body made of 19mm thick melamine resin covered chipboard.
- Depth: 500/300mm, height 470mm.
- One shelf board for height variable assembly per compartment.
- Top panel with integrated fluorescent lamp 36 Watts and switch.

EASY Shelf Rack with Lamp **215. BBB . F 00**

BBB Width

082	800mm	**122**	1200mm	**162**	1600mm
092	900mm	**128**	1260mm	**182**	1800mm
102	1000mm	**150**	1485mm	**202**	2000mm

F Colour

1	orange	**7**	pebble
5	light grey	**8**	indus grey

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TFT CHEST

- Electric driven retractable VESA adapters for monitors up to 24“ and a max. depth of 80mm.
- Storing room for key board and mouse.
- Firmly installed cable remote unit for the operation of the up/ down function of the monitor.
- Body made of light grey 19mm melamine resin covered chipboard with cable access and service flap.
- Automatic closing mechanism of the chest lid, optionally with electric locking function.
- Dimensions: 170 x 780mm (DxH).

TFT Chest	
425.900.200	2 monitors (width: 1800 or 2000mm)
425.900.210	1 monitor (width: 900 or 1000mm)
425.900.290	Option electric lock for chest lid

Theoretical - and **IT Bench**

- fast and silent running monitor lifts
- theft protection due to lockable chest lid

MORE ROOM FOR FLEXIBLE AND **EFFICIENT LEARNING**

Not only monitors, but also complete bench racks with educational instruments could be retracted within our lift-driven chests.
This guarantees a maximum of protection for the instruments, clearly arranged bench tops and enough room for theoretical and practical lessons.

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EASY SUPPORT FOR A4 TRAINING SYSTEM FRAME

- Two L-shaped braces made of tubular steel 40x40mm.
- Din A4 training system frame has to be ordered separately.
- Durable powder coating.
- Depth: 295mm.

EASY Support for A4 Training System Frame	
170.001.901	1 level H: 360mm
170.002.901	2 levels H: 680mm
170.003.901	3 levels H: 1000mm

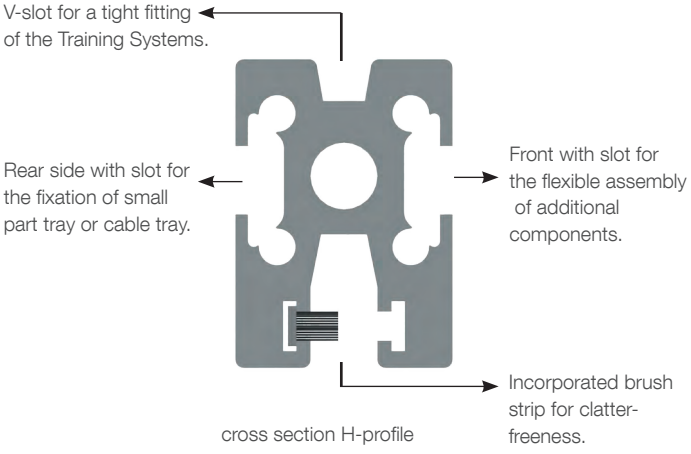
PORTABLE SUPPORT FOR A4 TRAINING SYSTEM FRAME

- Two T-shaped braces made of tubular with rubber pads.
- Din A4 training system frame has to be ordered separately.
- Durable powder coating.
- Depth: 300mm.

Portable Support for A4 Training System Frame	
171.001.900	1 level H: 360mm
171.002.900	2 levels H: 680mm
171.003.900	3 levels H: 1000mm

A4 TRAINING SYSTEM FRAME

- H-Profile positioned in DIN A4 height, to hook-in DIN A4 Training Systems and hera accessories. Durable powder coated according to RAL-No.
- Lower side with incorporated brush strip for clatter-free utilization.
- Upper side with V-slot for Training Systems with front panels of max. 6mm.
- Front - and rear side with slots for sliding nuts.
- With side braces, prepared for the assembly between PROFI extensions.
- Dimensions: 26 x 37mm (WxH).



cross section H-profile

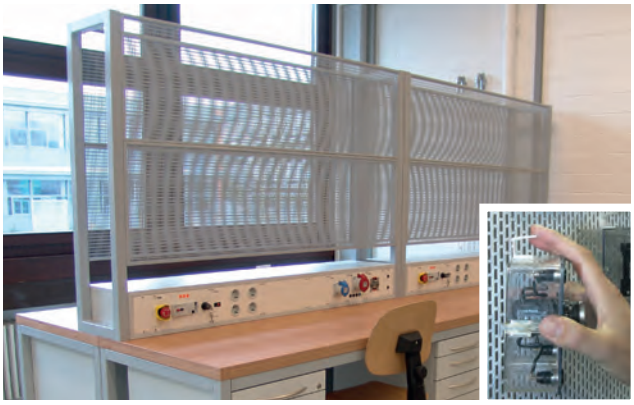
Training System Frame 461. BB H .902					
BB Width				**H Levels / Height**	
05	500mm	**13**	1295mm	**1**	360mm
06	603mm	**15**	1500mm	**2**	680mm
08	800mm	**16**	1600mm	**3**	1000mm
09	900mm	**18**	1800mm		
10	1000mm	**20**	2000mm		
12	1200mm	**23**	2303mm		

H-profile for training system frame

- clatter-fee due to incorporated brush strip
- front and rear side with T-slot

INSTALLATION WALL, FIRMLY ASSEMBLED

- Sheet steel with perforation grid, for installations with training boxes.
- All common training boxes can be hooked in the installation wall.
- Applicable for installations with installation dowels.
- The installation wall can be mounted
  - between PROFI extensions
  - in the EASY support for A4 training systems
  - into the portable support for A4 training systems.
- Durable, light grey powder coating.



Installation Wall 461. **BB** **H** .10 **R**

BB Width						**H** Levels / Height		**R** Raster	
05	500mm	**10**	1000mm	**16**	1600mm	**1**	360mm	**0**	hera-Raster
06	603mm	**12**	1200mm	**18**	1800mm	**2**	680mm	**1**	E-Raster
08	800mm	**13**	1295mm	**20**	2000mm	**3**	1000mm		
09	900mm	**15**	1500mm						

INSTALLATION **CABIN**

- The installation cabin is made for practice-oriented trainings in electrical technologies.
- Construction made of anodized aluminium profile with inserted installation walls.
- Durable, light grey powder coating.
- Dimensions: 1200 x 1000 x 2000mm (WxDxH).

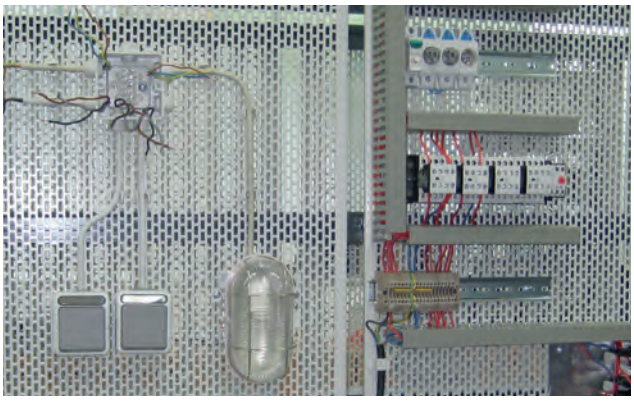
▸ other dimensions on demand

Installation Cabin	**461.600.000**

DOWELS FOR INSTALLATION WALL

- 100 pcs. dowels for installation wall.
- Incl. pan head screw.
- Length: 9,5mm.

Installation Dowels	**301.150.100**



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CHAPTER 5: **FLEX SYSTEM FOR WORKSHOPS**

157 Base for FLEX Workshop Bench
158 Base for EASY Workbench
159 Bench Tops and Mechanical Bench Tops
160 Upright Sections
161 Cross Brace
162 Foot Rest
163 PC Support and Bench Enlargement
165 Shelf and Swivel Shelf
166 FiFo Shelf
169 Backplane
170 Cross Bar for Storage Bins
171 Overhead Frame
172 FLEX Overhead Lamp and Workspace Lamp
173 FLEX Backplane and Socket Strip
174 Cantilever Arm
176 PROFI Bottle Holder, Tool Holder and Turntable
178 Transfer Systems
179 Cylindric Heavy Duty Rollers and Roller Strip
180 Stopper and Rollers

A COMBINATION OF **EASY AND FLEX**

The basic elements of the FLEX workshop system can either be used in combination with FLEX benches or with EASY benches. Depending on your choice, there are different options with respect to height adjustability and other features.

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FLEX **BASE FOR WORKSHOP BENCH**, HEIGHT ADJUSTABLE

- Solid cantilever base, manually height adjustable between 690 - 1150mm in 20mm raster.
- Two cantilevers with sheet steel legs and metal levellers.
- Surrounding bench frame made of tubular steel. Rear side prepared for the fixation of the upright sections from the FLEX program.

ESD Version:

- All steel parts are durable conductive powder coated in light grey.

FLEX Base for Workshop Bench	116 .BB T .00 V

BB Width

08	800mm	**12**	1200mm	**16**	1600mm
09	900mm	**13**	1295mm	**18**	1800mm
10	1000mm	**15**	1500mm	**20**	2000mm

T Depth

6	600mm
7	700mm
8	800mm

V Version

0	manual height adjustment
5	for Option hydraulic height adjustment

OPTION **HYDRAULIC HEIGHT ADJUSTMENT** FOR FLEX BENCHES

- Two height adjustable aluminium lifting columns. Adjustment by hand crank or electric drive.
- Height adjustable between 750 - 1150mm (hand crank-stroke: 400mm / electric stroke: 380mm).
- Total lifting force: 3000N.
- Two anodized aluminium columns with slots, parallel guided and with integrated hydraulic cylinder.
- Central 2-chamber-hydraulic pump for synchron operation, mounted under the bench top.
- Complete set of hoses is hidden in the columns.
- The version with electric drive has the up / down button ergonomically positioned under the front edge of the bench top.
- The hand crank can be folded under the bench top after use.

sitting position

standing position

Option Hydraulic Height Adjustment for FLEX Benches		
191.065.500	hand crank	5mm/U lifting speed
191.066.500	electric drive	15mm/s lifting speed

EASY **WORKBENCH** BASE

- Highly stable bench frame made of 40 x 40mm tubular steel.
- Four bench legs made of tubular steel with levellers, connected to the bench frame with torson-resilent corner joints.
- All steel parts are durable conductive powder coated in light grey.

EASY Workbench Base 1 **TT** . **BBB** .520

TT Depth

06	550mm
10	750mm
11	850mm
12	950mm

BBB Width

060	600mm
080	800mm
090	900mm
100	1000mm
120	1200mm
126	1260 mm
129	1295mm
148	1485mm
150	1500mm
160	1600mm
180	1800mm
200	2000mm
230	2303mm

▸ **see page 136 for stiffeners**
▸ **see page 144 for height adjustment**

DIRECT COVERED BENCH TOP

- Melamine resin covered 3-layer-chipboard.
- Sides with 3mm PP plastic edge.
- Customized dimensions (max. 2700 x 2000mm).

ESD Version:

- Volume conductive 3-layer-chipboard with conductive laminated surface according to DIN-EN 61340-5-1.

beech maple pebble

Direct Covered Bench Top 10 **A** .0 **ST** . **F** 00

A Version

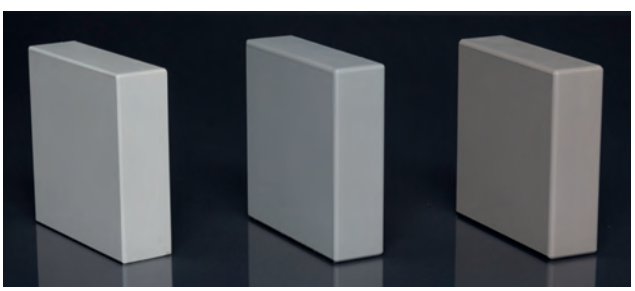
1	Standard
8	ESD

ST Thick

08	8mm
19	19mm
25	25mm
00	28mm

F Colour

5	light grey
7	pebble (not in ESD)
8	indus grey / white
9	maple / beech (not in ESD)



white indus grey light grey

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HARDLAMINATED BENCH TOP

- 3-layer-chipboard with hardwearing HPL layer (multilayer-chipboard according to DIN 68761. Surface with 0,8mm thick HPL layer according to DIN 16926 and 53799).
- Sides with 3mm PP plastic edge.
- 30mm thick.

Hardlaminated Bench Top 10 **A** .000. **F** 00

A Version

0	Standard
7	ESD

F Colour

5	light grey
7	pebble (not in ESD)
8	indus grey / white
9	maple / beech (not in ESD)

ESD Version:

- Volume conductive 3-layer-chipboard with conductive hardlaminated surface according to DIN-EN 61340-5-1.

conductive hardlaminated directly covered

MECHANICAL BENCH TOP

- Multiplex or plywood tops made of beech.
- Multiple sanded and oiled or lacquered.
- Chamfered edges.

Mechanical Bench Top 10 **A** .0 **ST** .000

A Version

4	Beech Multiplex
5	Beech Plywood

ST Thick

20	20mm (only multiplex)
30	30mm
40	40mm
50	50mm (only plywood)

beech plywood beech multiplex

BENCH TOP WITH **BEVELLED FRONT**

- Hardlaminated bench top with drop edge (bevelled edge covered with stretched hardlaminate) or PROFItec edge (impact-resistant, replacable front edge made of solid durable plastics with 10mm radius).
- Other sides with 3mm PP plastic edge.
- Customized dimensions (max. dimension: 3600 x 1100mm).
- 30mm thick.

Bench Top with Bevelled Front 10 **A** .0 **V** 0.500

A Version

0	Standard
7	ESD

V Front Edge

1	PROFItec edge
2	P26 edge
4	P45 edge

ESD Version:

- Volume conductive 3-layer-chipboard with conductive hardlaminated surface according to DIN-EN 61340-5-1.

3mm PP plastic edge P26 edge PROFItec edge P45 edge (drop edge)

FLEX **UPRIGHT SECTION** (PAIR)

- Pair of braces, 3 sides with key hole pattern (50mm raster) for variable configurations.
- Made of sheet steel with durable conductive powder-coating in light grey.
- Dimensions: 70 x 40mm (WxD).

<u>for rearside assembly to the cross brace:</u>

- total length = height over bench top + 650mm

<u>for bench top assembly in L-form:</u>

- with solid angled brackets, 300mm reach

FLEX Upright Section 140.0 HH .000

HH Height over bench top					
03	300mm	**08**	800mm	**12**	1200mm
04	400mm	**09**	900mm	**13**	1300mm
05	500mm	**10**	1000mm	**14**	1400mm
06	600mm	**11**	1100mm	**15**	1500mm
07	700mm				

FLEX Upright Section in L-Form 140.0 HH .500

HH Height over bench top					
03	300mm	**08**	800mm	**12**	1200mm
04	400mm	**09**	900mm	**13**	1300mm
05	500mm	**10**	1000mm	**14**	1400mm
06	600mm	**11**	1100mm	**15**	1500mm
07	700mm				

BRUSH STRIP (PAIR)

- For a flexible and hidden cable run within the FLEX upright section.

Brush Strip 140.0 HH .100

HH Height over bench top					
03	300mm	**08**	800mm	**12**	1200mm
04	400mm	**09**	900mm	**13**	1300mm
05	500mm	**10**	1000mm	**14**	1400mm
06	600mm	**11**	1100mm	**15**	1500mm
07	700mm				

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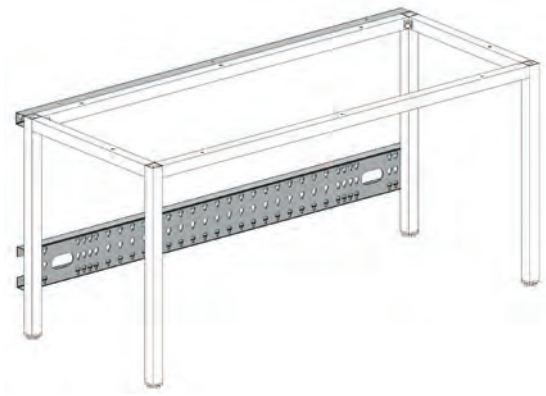
FLEX **CROSS BRACE**

- Rear side mounted brace for a stable 2-point-connection of the FLEX upright sections; even applicable as cable tray.
- With key hole pattern for the fixation of the foot rest and PC support.
- Made of sheet steel with durable conductive powder coating in light grey.
- Dimensions: 140 x 70mm (HxD).

FLEX Cross Brace for FLEX Bench 116. BB 0.010

BB Width

08	800mm	**12**	1200mm	**16**	1600mm
09	900mm	**13**	1295mm	**18**	1800mm
10	1000mm	**15**	1500mm	**20**	2000mm



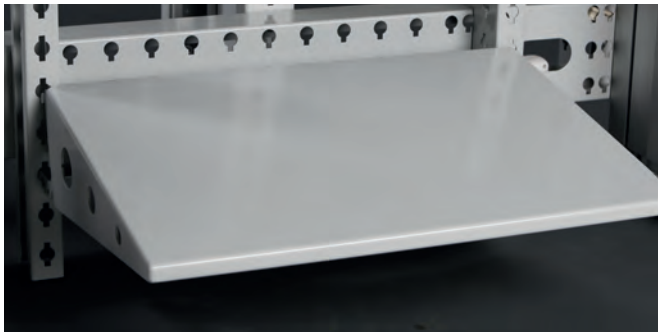
FLEX Cross Brace for EASY Bench 116. BB 0.510

BB Width

08	800mm	**12**	1200mm	**16**	1600mm
09	900mm	**13**	1295mm	**18**	1800mm
10	1000mm	**15**	1500mm	**20**	2000mm

FLEX **FOOT REST**

- Suspended foot rest to hook into the FLEX cross brace of the benches.
- Tiltable in three positions (0° / 9° / 18° / 27°) for an ergonomic sitting position.
- Made of sheet steel with durable conductive powder coating in light grey.



FLEX Foot Rest 116.3 B T .000

B Width		**T Depth**	
4	400mm	**3**	300mm
5	500mm	**4**	400mm
6	600mm	**5**	500mm
7	700mm		

FLEX BRACES FOR FOOT REST (PAIR)

- For the height adjustable acceptance of the FLEX foot rest.
- Two braces with key holes in 50mm raster.
- Made of sheet steel with durable conductive powder coating in light grey.
- Dimensions: 70 x 40mm (WxD).

FLEX Braces for Foot Rest	116.30 H .000

H Height

2	200mm	**4**	400mm
3	300mm	**5**	500mm

FLEX **L-SUPPORT** FOR FOOT REST (STANDING)

- Two L-shaped braces with metal levellers and cross braces.
- Height adjustable with key hole pattern (50mm raster).
- Dimension: 300 x 400mm (WxH).
- Made of sheet steel with durable conductive powder coating in light grey.

FLEX L-Support for Foot Rest	116.40 B .500

B Width

4	400mm	**6**	600mm
5	500mm	**7**	700mm

CONTINUOUS FOOT REST FOR FLEX WORKSHOP BENCH

- For the height - and tilt adjustable assembly to the sheet steel legs.
- Made of sheet steel with durable conductive powder coating in light grey.
- Depth: 300mm.

Continuous Foot Rest	116. BB 0.050

BB Width

08	800mm	**12**	1200mm	**16**	1600mm
09	900mm	**13**	1295mm	**18**	1800mm
10	1000mm	**15**	1500mm	**20**	2000mm

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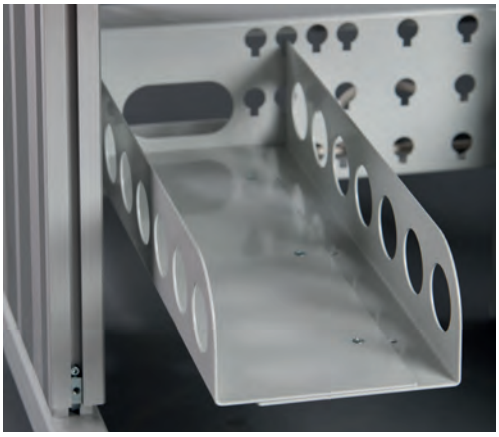
PC SUPPORT FOR FLEX WORKSHOP BENCH

- Suspended PC support to hook into the cross brace of the FLEX workshop benches.
- Width adjustable: 135 / 160 / 185 / 210 / 235mm.
- Made of sheet steel with durable conductive powder coating in light grey.



PC Support	**191.080.000**

BENCH ENLARGEMENT, FOLDABLE

- Solid bench enlargement, sheet steel support with folding mechanism and guiding rails for extension. Prepared for the installation to the FLEX Workshop Bench.
- 2x telescopic full extension rails, extensional length 600mm.
- Bench top not included, please select on page 142.
- Width: 300mm.

Bench Enlargement, foldable	**191.090.500**

ORDERLY -
ONE AFTER THE OTHER

Our „first in – first out“-solutions within the FLEX product range guarantee that products with the longest period in stock will go into production first. Thus FLEX provides the optimal solution for a structured stock turnover. FiFo components are available for all benches or mobiles of the FLEX system.

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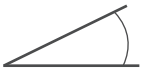
FLEX **SHELF**

- Shelf for the flexible assembly to the FLEX upright section.
- Made of sheet steel with durable conductive powder coating in light grey.

FLEX Shelf	140.1 BB .0 T 0				
BB Width				**T Depth**	
05	500mm	**13**	1295mm	**3**	300mm
06	600mm	**15**	1500mm	**4**	400mm
08	800mm	**16**	1600mm		
09	900mm	**18**	1800mm		
10	1000mm	**20**	2000mm		
12	1200mm				

FLEX **SWIVEL SHELF**

- Swivel shelf to hook into the FLEX upright sections.
- Front edge with 20mm stop edge.
- Adjustable in four positions (0° / 9° / 18° / 27°).
- Made of sheet steel with durable conductive powder coating in light grey.



FLEX Swivel Shelf	140.2 BB .0 T 0				
BB Width				**T Depth**	
05	430mm	**13**	1225mm	**3**	300mm
06	530mm	**15**	1430mm	**4**	400mm
08	730mm	**16**	1530mm		
09	830mm	**18**	1730mm		
10	930mm	**20**	1930mm		
12	1130mm				

FLEX FIFO **SWIVEL SHELF**

- Swivel shelf made of sheet steel with durable conductive powder coating in light grey.
- Front edge with 20mm stop edge.
- Lower side with support for stepless adjustable tilt and depth.

FLEX FiFo Swivel Shelf 140.2 **BB** .5 **T** 0

BB Width

05	360mm	**13**	1155mm	**4**	400mm
06	460mm	**15**	1360mm	**5**	500mm
08	660mm	**16**	1460mm	**6**	600mm
09	760mm	**18**	1660mm		
10	860mm	**20**	1860mm		
12	1060mm				

T Depth

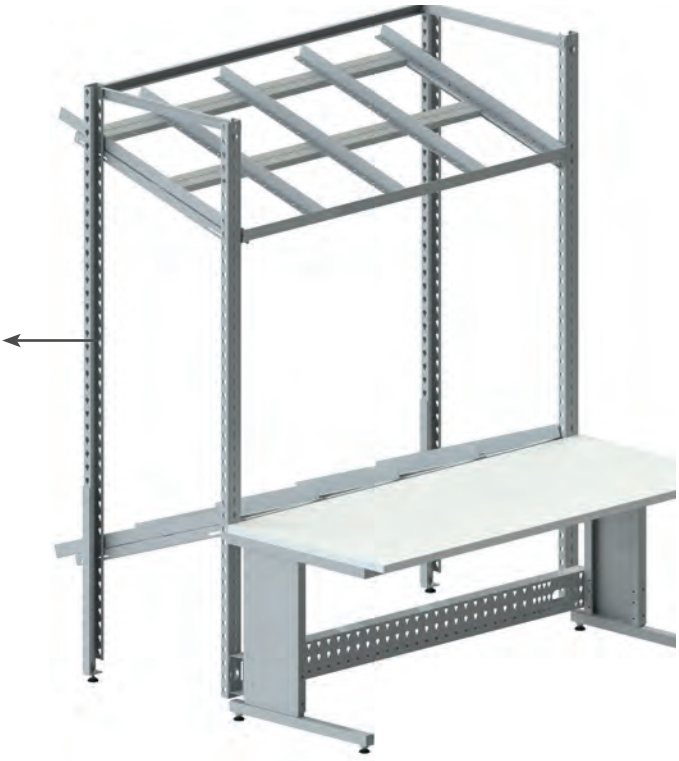
FLEX FiFo Shelf Guide 140.460.0 **TT**

TT Depth

04	400mm	**05**	500mm	**06**	600mm

FLEX FIFO **ATTACHMENT BRACE**

- Pair of FLEX attachment braces with levellers and connecting element.
- Made of sheet steel with durable conductive powder coating in light grey.



FLEX FiFo Attachment Brace 141.400.**HH** 0

HH Height
over bench top

05	500mm	**09**	900mm	**13**	1300mm
06	600mm	**10**	1000mm	**14**	1400mm
07	700mm	**11**	1100mm	**15**	1500mm
08	800mm	**12**	1200mm		

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FLEX FIFO **SWIVEL SUPPORT**

- Two (left/ right) side braces, assembled to the inner side of the FLEX brace and the FiFo attachment brace.
- Made of sheet steel with durable conductive powder coating in light grey.

FLEX FiFo Swivel Support 140.400.0 TT

TT Depth

06	600mm	**10**	1000mm
08	800mm	**12**	1200mm

FLEX FIFO **CONNECTING BRACE**

- Connecting brace for the assembly to the swivel support with mounting holes, for the acceptance of the FiFo roller strips, FiFo edge guide or FiFo stop edges.
- Made of sheet steel with durable conductive powder coating in light grey.

FLEX FiFo Connecting Brace 140.4 BB.000

BB Width

09	760mm	**15**	1360mm
10	860mm	**16**	1460mm
12	1060mm	**18**	1660mm
13	1155mm	**20**	1860mm

FLEX FIFO **STOP EDGE**

- Stop edge for the assembly of the FiFo connecting braces.
- Made of sheet steel with durable conductive powder coating in light grey.
- Height: 20mm.

FLEX FiFo Stop Edge 140.4 BB.200

BB Width

09	760mm	**15**	1360mm
10	860mm	**16**	1460mm
12	1060mm	**18**	1660mm
13	1155mm	**20**	1860mm

FLEX FIFO **EDGE GUIDE**

- Two edges (right/ left) for the flexible assembly to the connecting braces.
- Made of sheet steel with durable conductive powder coating in light grey.

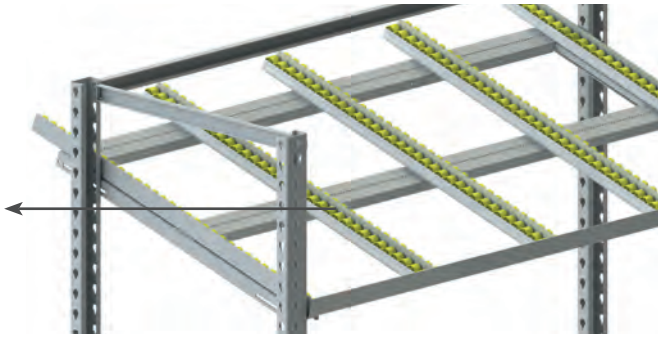
FLEX FiFo Edge Guide	140.460.0 TT

TT Depth

06	600mm	**10**	1000mm	**12**	1200mm

FLEX FIFO **ROLLER STRIP**

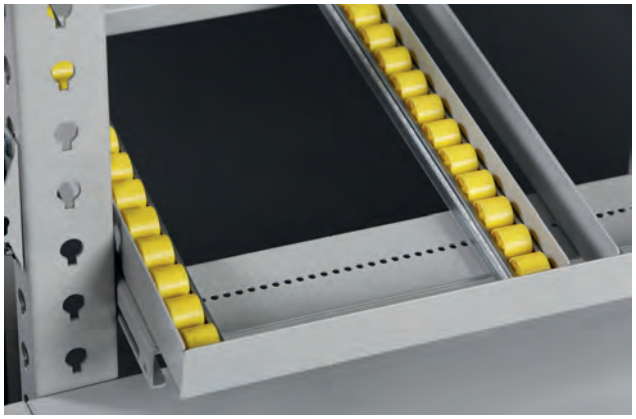
- Two strips (right/ left) with easy running synthetic rollers (diameter: 25mm) in guiding rails.
- For the flexible assembly to the connecting braces.
- Made of sheet steel with durable conductive powder coating in light grey.

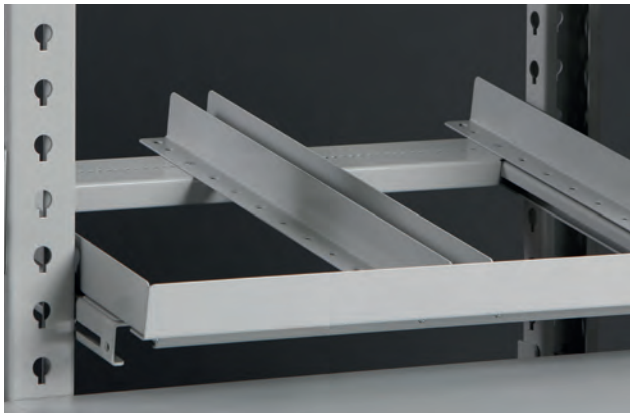


FLEX FiFo Roller Strip	140.450.0 TT

TT Depth

10	1000mm	**12**	1200mm





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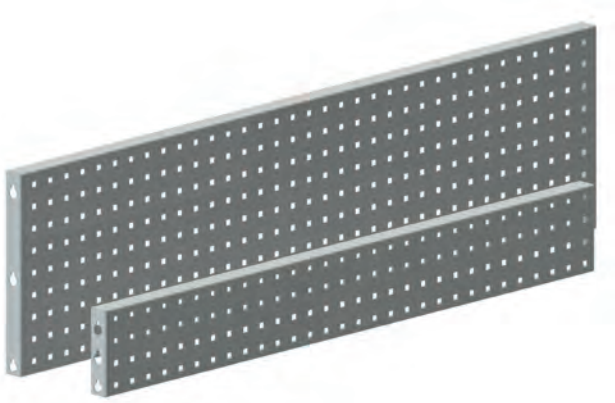
FLEX **PERFORATED BACKPLANE**

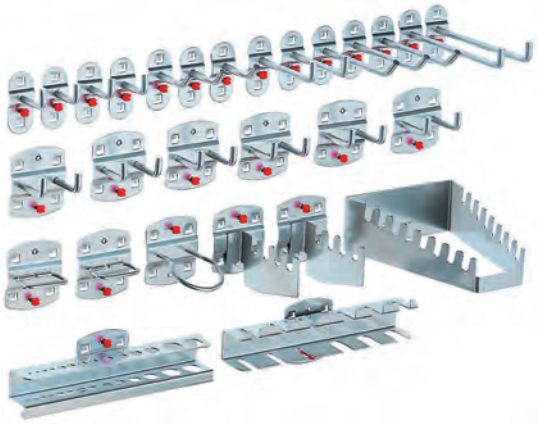
- Perforated sheet steel plate for the assembly to the inner side of the FLEX upright sections.
- With squared perforation 10 x 10mm, in 38mm raster.
- Made of 1,5mm thick sheet steel with durable conductive powder coating in light grey.



FLEX Perforated Backplane	140.5 BB .0 T 0				
BB Width				**T Depth**	
05	360mm	**13**	1155mm	**1**	150mm
06	460mm	**15**	1360mm	**3**	350mm
08	660mm	**16**	1460mm		
09	760mm	**18**	1660mm		
10	860mm	**20**	1860mm		
12	1060mm				

TOOL HOLDERS FOR PERFORATED BACKPLANE

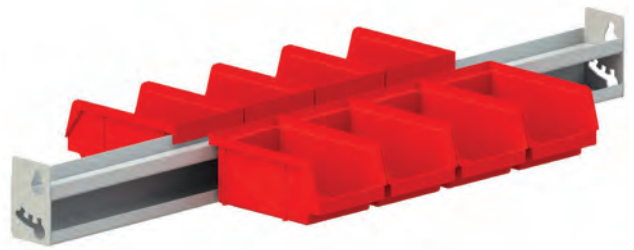
- To hook into the perforated backplane and lockable by screw.
- Made of aluminium coloured steel, durable plastic coated.



Tool Holders for Perforated Backplane	
469.900.010	12 pcs.
469.900.020	18 pcs.
469.900.030	28 pcs.
469.900.040	40 pcs.

FLEX SUPPORT FOR STORAGE BINS

- Support made of double folded sheet steel, for the assembly to the FLEX upright section.
- Made of 2mm thick sheet steel with durable conductive powder coating in light grey.
- Dimensions: 30 x 60mm (DxH), tiltable (0° / 15° / 30°) and both sides equipable.



FLEX Support for Storage Bins 140.6 BB .000

BB Width

05	360mm	**13**	1155mm
06	460mm	**15**	1360mm
08	660mm	**16**	1460mm
09	760mm	**18**	1660mm
10	860mm	**20**	1860mm
12	1060mm		

STORAGE BINS

- Storage bin made of polyethylen with hooking strip for supports.
- Stackable with label holder.
- Available in the colours grey (standard) green, blue, red and yellow.

ESD Version:

- Made of conductive special plastics in black (with carbon fibres).

Standard

ESD

Storage Bin 296. GGG . E 01

GGG Size (W x D x H)		**A Version**	
050	290x140x130	**1**	Standard
075	230x140x130	**2**	ESD
100	160x105x75		
125	85x105x45		

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FLEX **OVERHEAD FRAME**

- Two stable depth braces for the guidance of media connections (cables, hoses, etc.) to the FLEX upright sections. Suitable for pressured air adapters.
- 1x cross brace made of anodized aluminium profile 30 x 30mm, for the acceptance of sliders.
- Made of sheet steel with durable conductive powder coating in light grey.
- Height: 75 / 30mm.

FLEX Overhead Frame	140.7 BB .0 T 0				
BB Width				**T** Depth	
05	500mm	**13**	1295mm	**5**	500mm
06	600mm	**15**	1500mm	**6**	600mm
08	800mm	**16**	1600mm	**7**	700mm
09	900mm	**18**	1800mm	**8**	800mm
10	1000mm	**20**	2000mm		
12	1200mm				

SLIDER WITH SPRING HOOK FOR THE FLEX OVERHEAD FRAME

- Tools can be hooked to the overhead frame and moved over the whole width of the bench.
- Colour: black.
- Width: 60mm, hole: 8mm (diameter).

Slider with Spring Hook	459.100.100

BALANCER

- Balancers help to organize the workstation and make workings with electric or pneumatic tools more safe and easy.
- Adjustable pulling force.
- Rope pull (max. 1,6m) with snap hook.

Balancer	
459.100.190	0,4 - 1,0kg
459.100.200	1,0 - 2,0kg
459.100.210	2,0 - 3,0kg

FLEX **OVERHEAD LAMP**

- Glare-free overhead lamp made of sheet steel with parabolic reflector.
- Hidden cable run within the overhead frame.
- Durable powder coating in light grey.

Overhead Lamp with Fluorescent Illuminant:

- Lamp housing: 197 x 75mm (DxH).
- Two conventional fluorescent tubes.
- Electric ballast.
- Light temperature: 4.000K .
- Operating hours: approx. 20.000h.

Bench Width: <= 1600mm:

- Power: 2x 36W.
- Brightness: 2x 3.350lm.

Bench Width: >= 1800mm:

- Power: 2x 58W.
- Brightness: 2x 5.240lm.

Overhead Lamp with LED:

- Lamp housing: 290 x 70mm (DxH).
- Multi-LED-Converter for an adjustable brightness.
- Adjustable in 3 steps within the lamp housing.
- Licht temperature: 4.000K.
- Colour representation: Ra: >80.

Bench Width: <= 1600mm (lamp width: 1220mm):

- Power: 24, 35 or 51W .
- Brightness: 4.000, 5.600 or 7.600lm

Bench Width: >= 1800mm (lamp width: 1520mm):

- Power: 30, 44 or 63W.
- Brightness: 5.100, 7.100 or 9.600lm.

FLEX Overhead Lamp 140.8 BB .0 L 0

BB Bench Width

13	1295mm	**18**	1800mm
15	1500mm	**20**	2000mm
16	1600mm	**23**	2303mm

L Type

0	Fluorescent
5	LED

WORKSPACE LAMP

- 180° tiltable sheet steel housing, sides with mounting brackets.
- With glare-free parabolic reflector.
- 36 Watt compact fluorescent lamp.
- Front with illuminated switch.
- Rear with 3m cable, no plug.
- Durable, light grey powder coating.
- Dimensions: 70 x 95/45mm (DxH).

Workspace Lamp 458.0 BB . V 00

BB Width

36	490mm (1x 36W)
72	980mm (2x 36W)

V Version

0	VVG (low-loss ballast)
3	EVG (electronic ballast)
5	EVG with dimmer

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FLEX BACKPLANE FOR SOCKET STRIP „INDUSTRY“

- Provides Schuko sockets to the whole width of the bench.
- Mounted between the FLEX upright sections.
- Made of sheet steel with durable, conductive powder coating in light grey. With cable access.
- Dimensions: 46 x 76mm (DxH).

FLEX Backplane for Socket Strip „INDUSTRY“ 141.1 BB .000

BB Width

05	360mm	**10**	860mm	**16**	1460mm
06	460mm	**12**	1060mm	**18**	1660mm
08	660mm	**13**	1155mm	**20**	1860mm
09	760mm	**15**	1360mm		

SOCKET STRIP “INDUSTRY“

- High quality socket strip made of silver coloured plastic housing with black Schuko sockets and child protection (45° position), black side-caps and mounting flange.
- Black connecting cable H05VV-F 3G1,50mm² (length 2m) with angled plug.
- Dimensions: 70 x 45mm (WxH).

Socket Strip „INDUSTRY“

293.204.100	4 sockets with switch (L: 355mm)
293.206.100	6 sockets with switch (L: 440mm)
293.209.100	9 sockets with switch (L: 570mm)
293.212.100	12 sockets with switch (L: 700mm)

FLEX **SOCKET STRIP**

- Screwfixed socket strip made of impact resistant plastics with mounting flanges at the sides.
- Power cord H05VV-F3G..
- Illuminated switch, two poles, 16A.
- Dimensions: 56 x 41mm (WxH).

FLEX Socket Strip 293. 6 A S . Z 1 F

A Sockets / Length		**S** Switch		**Z** Cable		**F** Colour	
3	3 sockets (185mm)	**0**	no switch	**0**	no cable	**0**	white
4	4 sockets (288mm)	**1**	with switch	**1**	1,5m cable	**1**	black
6	6 sockets (340mm)			**3**	3m cable	**2**	red
				5	5m cable		

PROFI **CANTILEVER ARM**

- Solid steel beams with absolut stable sleeve/ bolt combination.
- Max. load: 50kg
- Modular configurable with:
  - sleeve fot the assembly to the FLEX braces
  - cantilever arm with bolt, sleeve and locking screw (available in different length with cord holder)
  - different end pieces with bolts

PROFI Cantilever Arm

PROFI Sleeve

PROFI Cantilever Arm with Sleeve for Lamps	
491.002.000	Sleeve for PROFI Cantilever Arm Ø 25mm
491.003.000	PROFI Cantilever Arm / Reach: 250mm
491.004.000	PROFI Cantilever Arm / Reach: 300mm
491.005.001	PROFI Cantilever Arm / Reach: 500mm
491.002.100	Set 1: Sleeve + Cantilever Arm 300mm
491.010.100	Set 2: Sleeve + Cantilever Arm 300 + 250mm

TRAY FOR PROFI CANTILEVER ARM

- Rotatable sheet steel tray with spherical head and surrounding stop edges.
- Durable conductive powder coating in light grey.
- Bolt (Ø 25mm).

Tray for PROFI Cantilever Arm	
491.026.100	300 x 300 x 10mm (WxDxH)
491.026.110	400 x 400 x 10mm (WxDxH)
491.026.120	500 x 500 x 10mm (WxDxH)

TILTABLE TRAY FOR PROFI CANTILEVER ARM

- Tiltable tray made of sheet steel for the assembly to the cantilever arm.
- Front and sides with 20mm stop edge. Adjustable in four angles (0° / 5° / 10° / 15°).
- Durable conductive powder coating in light grey.

Tiltable Tray for PROFI Cantilever Arm	
491.027.110	300 x 250mm (WxD)
491.027.130	450 x 350mm (WxD)
491.027.150	650 x 500mm (WxD)

BIN SUPPORT FOR PROFI CANTILEVER ARM

- Accepting rail made of steel to hook in storage bins.
- Durable, light grey powder coating.
- Bolts (Ø 25mm).

Width	1 Level	3 Level
300mm	491.022.101	491.022.300
400mm	491.022.111	491.022.310
500mm	491.022.121	491.022.320

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PERFORATED BACKPLANE FOR CANTILEVER ARM

- For the acceptance of different tool -, bin supports and shelves.
- Perforated swivel plate made of sheet steel, 1,5mm thick with surrounding reinforcement.
- Durable, light grey powder coating.
- Bolt (Ø 25mm).

Perforated Backplane for Cantilever Arm	
491.024.101	300 x 290mm (WxD)
491.024.111	300 x 130mm (WxD)
491.024.121	550 x 290mm (WxD)
491.024.131	550 x 130mm (WxD)

TFT - AND KEYBOARD SUPPORT FOR CANTILEVER ARM

- Solid swivel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Adapter plate in VESA standard (100x100mm and 75x75mm).
- Keyboard tray 470 x 220 x 320mm (WxDxH).
- Swiveling Mouse Pad 200x200mm.
- Durable, light grey powder coating.

491.028.121

TFT Support for Cantilever Arm	
491.028.101	TFT Support
491.028.111	TFT Support with Keyboard Tray
491.028.121	TFT Support with Keyboard Tray and Mouse Pad

NOTEBOOK - AND KEYBOARD SUPPORT FOR CANTILEVER ARM

- Solid swivel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Sheet steel swivel tray with front side stop edge.
- Notebook Support: 400 x 300mm (WxD).
- Keyboard Support: 470 x 200mm (WxD).
- Durable, light grey powder coating.

491.028.320

Notebook and Keyboard Support	
491.028.320	Notebook Support
491.028.330	Keyboard Support

FLEX **BOTTLE HOLDER**

- 2-pcs. support made of aluminium for a max. bottle diameter of 94mm.
- Incl. assembly set for a height variable assembly at PROFI or FLEX profiles.
- Durable, light grey powder coating.
- Dimensions: 117 x 120mm (DxH).

PROFI Bottle Holder	
468.200.102	for 1x Bottle, W: 114mm
468.200.202	for 2x Bottles, W: 210mm

TOOLHOLDER

- All tools within easy reach.
- Easily push in or pull out the tools from plastic rings.
- Colour: black.
- Dimensions: 44 x 35 x 30mm (LxHxD).

Toolholder	461.912.000

TURNTABLE FOR HEAVY PARTS

- Stainless steel plate with ripped rubber surface.
- Load capacity: 180kg.
- Height: 20mm.
- Position lock with pin in 45° raster, free-wheeling possible.

ESD Version:

- Conductive rubber surface and earthing cable.

Turntable 299.62 **A** . **D** 0 **T**		
A Version	**D** Diameter	**T** Type
0 Standard	**3** 380mm	**0** with position lock
5 ESD	**5** 500mm	**5** no position lock

ESD DOCUMENT PROTECTOR DIN A4

- 10x DIN A4 document bags consisting of a black metal frame with transparent conductive polyethylene bags.
- Support made of stainless steel incl. assembly set for the fixation at the FLEX braces.

ESD Document Protector DIN A4	468.100.100

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KEEP THINGS **ROLLING!**

You would like to establish a highly efficient and ergonomically valuable manufacturing line? - Our FLEX transfer lines offer so much equipment to set-up an individual solution just for you. The configuration can be modified even later on, if the demands on your system change.

FLEX **4-LEG-BASE**

- Height: 750mm.
- Highly stable frame made of durable powder coated tubular steel 40 x 40mm.
- Four bench legs made of 40 x 40mm tubular steel with levellers, connected to the frame with torsion-resistant corner joints.
- Durable, conductive powder coating in light grey.

FLEX 4-Leg-Base **116. LL B .500**

LL Length				**B** Width	
06	600mm	**16**	1600mm	**4**	400mm
08	800mm	**18**	1800mm	**5**	500mm
10	1000mm	**20**	2000mm	**6**	600mm
12	1200mm	**25**	2500mm	**7**	700mm
14	1400mm	**30**	3000mm	**8**	800mm

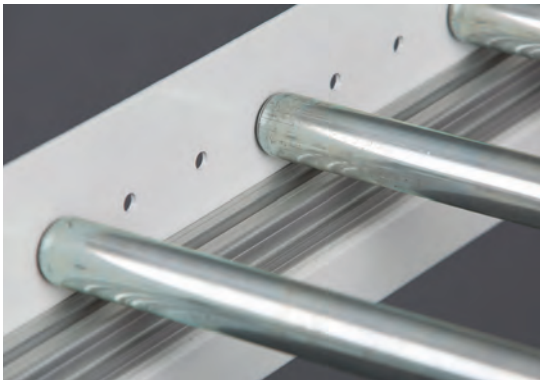
OPTION **HEIGHT ADJUSTMENT**

- Four stable tube-in-tube legs with metal levellers.
- Adjustable bench height between 740 - 960mm in 20mm steps.
- Durable, conductive powder coating in light grey.

Option Height Adjustment **191.092.500**

TRANSFERLINE SIDE PARTS

- Prepared for the assembly to the 4-Leg-Base.
- Anodized aluminium profile 30 x 30mm, surrounding slots.
- Durable light grey powder coated sheet steel parts with mounting holes for heavy duty rollers.
- Height: 100mm.



Side Parts for Transferline **116. LL 1.000**

LL Length					
06	600mm	**14**	1400mm	**20**	2000mm
08	800mm	**16**	1600mm	**25**	2500mm
10	1000mm	**18**	1800mm	**30**	3000mm
12	1200mm				

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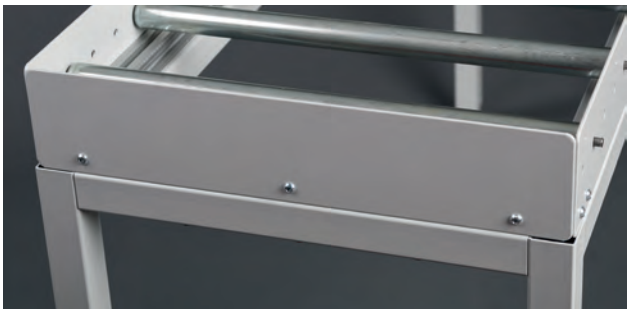
TRANSFERLINE STOP-END

- Stop-end for the assembly to the side parts.
- Sheet steel with durable light grey powder coating.
- Height: 100mm.



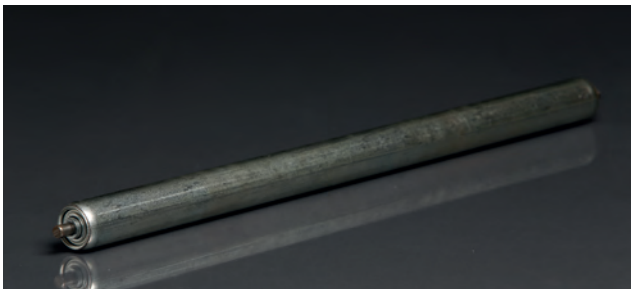
Transferline Stop-End	116.00 **B** .500

B Width

4	400mm	**6**	600mm	**8**	800mm
5	500mm	**7**	700mm		

CYLINDRIC **HEAVY DUTY ROLLER**

- Diameter of roller: 30mm.
- Spring axle with 6mm diameter.



Cylindric Heavy Duty Roller	102.00 **B** . **M** 00

B Width

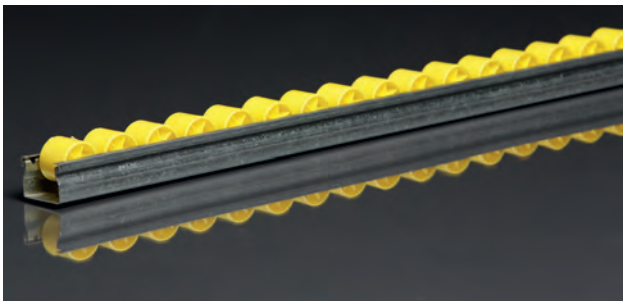
4	400mm	**7**	700mm
5	500mm	**8**	800mm
6	600mm		

M Material

2	anodized steel	**4**	aluminium
3	stainless steel	**5**	plastics

ROLLER STRIP

- Rollers made of precious thermo-plastics (polypropylen).
- Optional with wheel flange.
- Easy replacement of the rollers.
- U-shaped guidance made of anodized sheet steel.
- Diameter of rollers: 30mm.
- Diameter of wheel flange: 44mm.
- Roller width: 25mm.
- Total height: 40mm.
- Load: 12kg.



Roller Strip	102. **LL** 0. **S** **RR**

LL Length

06	600mm	**12**	1200mm
08	800mm	**14**	1400mm
10	1000mm		

S Wheel Flange

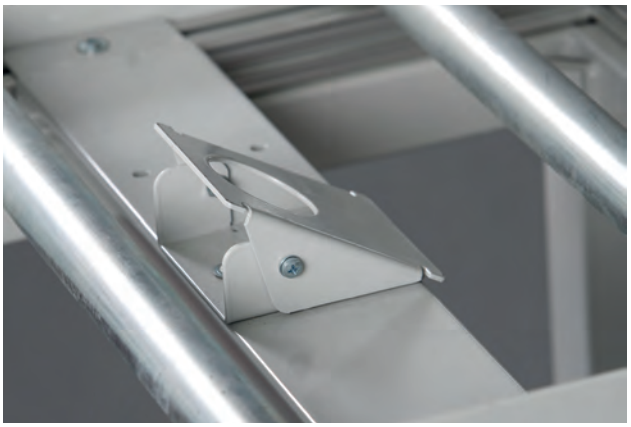
0	no wheel flange
5	with wheel flange

RR Roller Gaps

03	33mm (only without wheel flange)
05	50mm
10	100mm

STOPPER

- Support for the assembly to the side parts with gravity stopping mechanism.
- Made of sheet steel with durable light grey powder coating.



Stopper 116.00 B .700					
B Width					
4	400mm	**6**	600mm	**8**	800mm
5	500mm	**7**	700mm		

SHEET STEEL BED FOR ROLLER BALLS

- Sheet steel with folded border and customized hole pattern for the acceptance of roller balls.
- Incl. assembly set for the fixation to the side parts.
- Durable, conductive powder coating in light grey.

Sheet Steel Bed for Roller Balls 116.0 L B .000							
L Length				**B** Width			
4	400mm	**7**	700mm	**4**	400mm	**7**	700mm
5	500mm	**8**	800mm	**5**	500mm	**8**	800mm
6	600mm			**6**	600mm		

ROLLER BALL

- Big stainless steel ball, easy running on little balls within an anodized shell.
- Outer diameter 31mm.
- Ball diameter 15,8mm.
- Dirtresistant due to circular sealing.

Roller Ball, pcs.	102.100.000

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CHAPTER 6: **MOBILES AND CARTS**

182 PROFI Carts
185 Base for PROFI Mobile
186 Shelf for PROFI Mobile
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188 Shelf for PROFI Mobile ENERGY
189 Functional Shelf for PROFI Mobile
190 Short Container
191 19“ Rack and Brush Channel
192 Cross Profile with TFT Support and Keyboard Tray
193 Notebook Drawer and Handle Bars
194 Cable Dispenser
195 Cord Holder and Socket Strip
196 PROFI Mobile Cord Holder
197 PROFI Mobile Top Shelf and Shelf Box
199 EASY Cart
200 EASY Storage Cart
201 EASY Mobile Cord Holder
203 EASY Mobile Cabinet and Storage Cart for Training Systems
205 Base for FLEX Mobile
206 Swivel Shelf and Backplane for FLEX Mobile
207 Bin Cross Bar and Cable Dispenser for FLEX Mobile
208 Easy Click Shelving System

PROFI **CART**

- Height: 780mm.
- Solid frame made of tubular steel, durable powder coating in light grey.
  Lower side with thread inserts for the assembly of suspended containers. Sides with sleeves for the flush and stable connection of the bench legs.
- Hardwearing 30mm thick bench top with 3mm PP plastic edge and cutouts for the rear bench legs.
- Height adjustable 28mm thick intermediate shelf.
- Four aluminium bench legs with 6 surrounding slots and integrated cable channels and detachable aluminium covers.
- Durable powder coating according to RAL-No.
- Four swivel casters (diameter: 75mm), two with brake.
- Maximum load: 150kg.

ESD Version:

- Surface - and volume conductive top and intermediate shelf, with 3mm PP plastic edge.
- Conductive swivel casters.

PROFI Cart 44 **T** .11 **B** . 9 **V** 1

T Depth		**B** Width		**V** Front Edge	
0	800mm	**1**	500mm	**0**	PP plastic edge
1	900mm	**2**	603mm	**5**	70mm drop edge
2	1000mm	**3**	800mm	**7**	PROFItec edge
ESD					
4	800mm				
5	900mm				
6	1000mm				

75mm standard
no brake

75mm ESD
with brake

100mm heavy duty
with brake

INTERMEDIATE SHELF FOR PROFI CART

- Light grey 28mm thick melamine resin covered chip-board, all sides with 3mm PP plastic edge.
- Mounting brackets with durable, light grey powder coating.
- Incl. assembly set for a height adjustable fixation between the PROFI profiles.

Intermediate Shelf 44 **T** .11 **B** .001

T Depth				**B** Width	
Standard		**ESD**			
0	630 for 800mm	**4**	630 for 800mm	**1**	420 for 500mm
1	730 for 900mm	**5**	730 for 900mm	**2**	523 for 603mm
2	830 for 1000mm	**6**	830 for 1000mm	**3**	720 for 800mm

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HEAVY DUTY CASTERS

- Recommended for uneven grounds.
- Four swivel casters on ball bearings (diamenter: 100mm), two with brake and position lock.
- The legs of the PROFI cart are adapted to a total height of 780mm.
- Load capacity: max. 300kg.

Heavy Duty Casters		
440.001.900	Standard	
440.002.900	ESD	

SHORT CONTAINER FOR PROFI CART

- Depth: 580mm.
- Body made of light grey 19mm thick melamine resin covered chipboard with 2mm PP plastic edge.
- Central lock (master key system) with two keys.
  Front made of 19mm melamine resin covered chipboard, ergonomically bevelled with metal handles, matt nickel-plated.
  Optionally with durable powder coating according to RAL-No.
- Width 420mm:
  with ORGA sheet steel drawers (s. PROFI Container).
- Width 523mm and 720mm: (partial extension 25kg) spacious wooden drawers with roller guides (not organizable).

ESD Version:

- Body and drawers completely conductive.

Option Full Extension per Drawer	
439.100.103	Drawer width 420mm
439.100.203	Drawer width 523mm + 720mm

Short Container for PROFI Cart						
Width	**1x Drawer (height 170mm)**		**2x Drawers (height 290mm)**		**2x Drawers + Small Part Tray (height 340mm)**	
420mm	431.120.003	433.120.003	431.230.003	433.230.003	431.220.003	433.220.003
523mm	431.120.013	433.120.013	431.230.013	433.230.013		
720mm	431.120.023	433.120.023	431.230.023	433.230.023		

see page 198 for handles

WE WILL MOVE YOUR VALUABLE **EQUIPMENT WITHOUT THE** SLIGHTEST RISK

Often there are vibration-sensitive instruments in laboratories or fully loaded small part bins on workshop benches. For this reason we developed mobile solutions with extra stiffenings and special casters for different applications. So no matter what kind of equipment should be moved in your laboratory or workshop, we offer the right combination for a safe transport, even on uneven floors.

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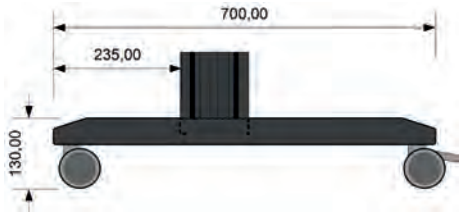
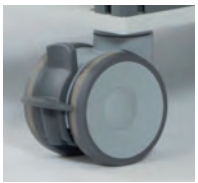
BASE FOR PROFI MOBILE

- Flat and very stable H-frame made of sheet steel, with thread inserts for swivel casters.
- Reinforced mounting holes for the acceptance of the aluminium extensions.
- Durable powder coating according to RAL-No.
- Four swivel casters (diameter: 75mm), two with brakes.



Standard 75mm
max. load: 150kg
height: 130mm

Heavy Duty: 100/125mm
max. load: 300kg
height: 190/210mm



Design 100mm
max. load: 300kg
height: 120mm

Base for PROFI Mobile 44 **A** .11 **B** . 900

A Version

0	Standard	
4	ESD	⚠

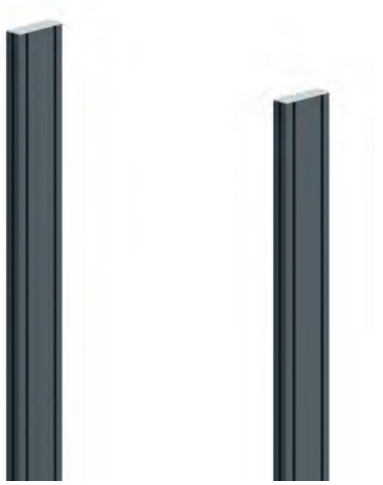
B Width

4	510mm	**7**	1010mm
5	613mm	**8**	1305mm
6	810mm		

Option Casters	Heavy Duty Ø 100mm	Heavy Duty Ø 125mm	Design Ø 100mm
Standard	440.001.000	440.003.000	440.001.050
ESD ⚠	440.002.000	440.004.000	440.002.050

EXTENSIONS FOR PROFI MOBILE

- Two hera aluminium profiles SINGLE with 6 surrounding slots and two integrated closed cable channels.
- Incl. two caps and assembly set.
- Durable powder coating according to RAL-No.
- Dimensions: 125 x 40mm (WxD).



Height		Height	
500mm	402.005.900	1000mm	402.010.900
600mm	402.006.900	1100mm	402.011.900
700mm	402.007.900	1200mm	402.012.900
800mm	402.008.900	1500mm	402.015.900
900mm	402.009.900	2000mm	402.020.900

BASE SHELF FOR PROFI MOBILE

- Depth: 500mm.
- Positioned on the base of the PROFI Mobile.
- Light grey 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Sides with cutout for the modular assembly of PROFI extensions.

Width	Standard	ESD ⚠
500mm	443.058.001	443.558.001
603mm	443.068.001	443.568.001
800mm	443.088.001	443.588.001
1000mm	443.108.001	443.608.001
1295mm	443.138.001	443.638.001

SHELF FOR PROFI MOBILE

- Light grey 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Lower side with thread inserts for the assembly of the sheet steel support.
- Sheet steel support durable light grey powder coated, with mounting bores for the height adjustable assembly between the PROFI extensions.
- Dimensions: 275 x 10mm (DxH).

Shelf for PROFI Mobile 443. BB T .001

BB Width		ESD		T Depth	
05	500mm	**55**	500mm	**5**	500mm
06	603mm	**56**	603mm	**6**	600mm
08	800mm	**58**	800mm	**7**	700mm
10	1000mm	**60**	1000mm		
13	1295mm	**63**	1295mm		
424.029.500:		Option Integrated Stop Edge (height: 6mm)			

see page 097 for more shelves

SHELF RAILING FOR PROFI MOBILE

- Shelves can be modularly boardered with railings to prevent instruments from dropping down.
- Two-part sheet steel railing for the height adjustable assembly between the PROFI extensions.
- Durable, light grey powder coating.
- Height: 30mm.

Shelf Railing for PROFI Mobile 443. BB T .001

BB Width		T Depth	
85	500mm	**5**	500mm
86	603mm	**6**	600mm
88	800mm	**7**	700mm
90	1000mm		
93	1295mm		

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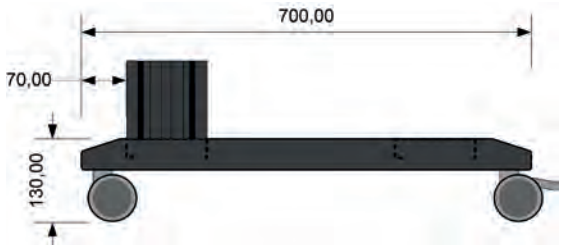
BASE FOR PROFI MOBILE ENERGY

- Flat and very stable H-frame made of sheet steel, with thread inserts for swivel casters.
- Reinforced mounting holes for the acceptance of the aluminium extensions.
- Durable powder coating according to RAL-No.
- Four swivel casters (diameter: 75mm), two with brakes.
- Dimensions: 700 x 130mm (DxH).
- Maximum load: 150kg or 300kg (with heavy duty casters).



Base for PROFI Mobile	44 **A** .11 **B** .950

A Version

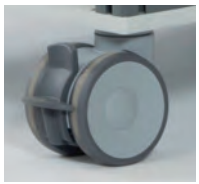
0	Standard	
4	ESD	⚠

B Width

4	500 / 535 mm
5	603 / 638 mm
6	800 / 835 mm
7	1000 / 1035 mm
8	1295 / 1330 mm

Standard 75mm
max. load: 150kg
height: 130mm

Heavy Duty: 100/125mm
max. load: 300kg
height: 190/210mm



Design 100mm
max. load: 300kg
height: 120mm

Option Casters	Heavy Duty Ø 100mm	Heavy Duty Ø 125mm	Design Ø 100mm
Standard	440.001.000	440.003.000	440.001.050
ESD ⚠	440.002.000	440.004.000	440.002.050

PROFI EXTENSION **ENERGY**

- Two vertical aluminium profiles with surrounding 6 vertical slots.
- Front for the flexible acceptance of modules in KP raster.
- Durable powder coating according to RAL-No.
- Dimensions: 125 x 100mm (DxH).

Height		Height	
500 (2x 11KP)	320.055.900	1000 (2x 24KP)	320.105.900
600 (2x 14KP)	320.065.900	1100 (2x 26KP)	320.115.900
700 (2x 16KP)	320.075.900	1200 (2x 29KP)	320.125.900
800 (2x 19KP)	320.085.900	1500 (2x 36KP)	320.155.900
900 (2x 21KP)	320.095.900	2000 (2x 49KP)	320.205.900

▸ see capter 9 for KP modules

SHELF FOR PROFI MOBILE ENERGY

- Light gray 28mm thick melamine resin covered chip board with 3mm PP plastic edge and rear sided cutouts for the ENERGY profile.
- Sheet steel support with durable light grey powder coating, prepared for the assembly to the ENERGY profile in variable height.
- Height: 50/130mm.

Shelf	443. BB T .151

BB Width				T Depth	
05	500mm	10	1000mm	4	400mm
06	603mm	13	1295mm	5	500mm
08	800mm			6	600mm

INSTRUMENT SHELF FOR PROFI MOBILE ENERGY

- Solid sheet steel shelf, durable conductive powder coating in light grey.
- For the assembly between the ENERGY profile in variable height.
- Rear side with 20mm stop edge.
- Width: mobile width - 204mm.
- Height: 20/100mm.

Instrument Shelf	443. BB T .051

BB Width				T Depth	
05	500mm	10	1000mm	4	400mm
06	603mm	13	1295mm	5	500mm
08	800mm			6	600mm

BASE SHELF FOR PROFI MOBILE ENERGY

- Depth: 500mm.
- Positioned on the base of the PROFI Mobile.
- Light grey 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Sides with cutout for the modular assembly of PROFI extensions.

Width	Standard	ESD
500mm	443.058.051	443.558.051
603mm	443.068.051	443.568.051
800mm	443.088.051	443.588.051
1000mm	443.108.051	443.608.051
1295mm	443.138.051	443.638.051

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FUNCTIONAL SHELF FOR PROFI MOBILE

- Light grey, 28mm thick melamine resin covered chip-board, sides with 3mm PP plastic edge.
- Front and rear side with sheet steel stiffening (light grey powder coated), usable as stop edge (total height: 40mm).
- Sides with aluminium profiles 30 x 30mm with slots for sliding nuts, matt anodized.
- Adjusting mechanism with four mounting brackets, that connect the side profiles of the shelf to the extensions, thus the shelf is height -, tilt - and depth adjustable.
- Incl. assembly set for the flexible fixation at the PROFI extensions.

with adjustable stop edge for instruments

PROFI Functional Shelf 427.BB T . F 0 A

BB Width				T Depth		F Extensions		A Version	
05	500mm	09	900mm	3	300mm	1	between SINGLE / MULTI	0	Standard
06	603mm	10	1000mm	4	400mm	5	between ENERGY	5	ESD
08	800mm	13	1295mm	5	500mm				

427.BB0.000: Option Adjustable Stop Edge

for more swivel shelves see page 098

CABLE TRAY FOR PROFI SHELF

- Cable tray made of sheet steel with access for cables.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation to the rear side of the PROFI profiles.
- Dimensions: 70 x 40mm (DxH).

Width		Width	
500mm	426.059.002	900mm	426.099.002
603mm	426.069.002	1000mm	426.109.002
800mm	426.089.002	1295mm	439.139.002

Power Strip with 10x Schuko Sockets	293.210.200

for more power strips see page 195

SHORT CONTAINER FOR PROFI MOBILE

- Depth: 580mm.
- Body made of light grey 19mm thick melamine resin covered chipboard with 2mm PP plastic edge.
- Central lock (master key system) with two keys.
  Front made of 19mm melamine resin covered chip-board, ergonomically bevelled with metal handles, matt nickel-plated.
  Optionally with durable powder coating according to RAL-No.
- Width 420mm:
  With ORGA sheet steel drawers (s. PROFI Container).
- Width 523mm and 720mm: (partial extension 25kg).
  Spacious wooden drawers with roller guides
  (not organizable).

ESD Version:

- Body and drawers completely conductive.

Short Container for PROFI Mobile

Width	1x Drawer (height 170mm)		2x Drawer (height 290mm)		2x Drawer + Small Part Tray (height 340mm)	
		ESD		ESD		ESD
420mm	431.120.006	433.120.006	431.230.006	433.230.006	431.220.006	433.220.006
523mm	431.120.016	433.120.016	431.230.016	433.230.016		
720mm	431.120.026	433.120.026	431.230.026	433.230.026		

Option Full Extension per Drawer

439.100.103	Drawer width 420mm
439.100.203	Drawer width 523mm + 720mm

Option Container with Railing

431.000.100	Standard
433.000.100	ESD

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19" PROFI **MOBILE RACK**

- Light grey body made of 19mm melamine resin covered chipboard.
- Sides with fixing holes.
- Rear panel made of powder coated perforated sheet steel with two cable glands.
- 19“ HE Panels sections with raster profile, cage nuts and guiding rails.
- Rear side connecting rail with Schuko sockets.
- Width: 523mm, depth: 468mm

19" PROFI Mobile Rack 420.06 H .000

H Height

2	216mm / 4HE	**6**	661mm / 14HE
3	351mm / 7HE	**8**	973mm / 21HE
4	483mm / 10HE		

▸ **alternatively all channels of chapter 9,10 and 11**

PROFI Mobile with 19" Rack 7HE

PROFI Cart with 19" Rack 10HE

BRUSH CHANNEL

- Cable channel closed with brush strip, made of sheet steel, for a flexible cable run in parallel to the PROFI profile.
- The brush channel guarantees a clear and hidden cable run even with frequently changing cable runs.
- Depth: 70mm.

Brush Channel 401.0 HH.5 F 0

HH Height

03	300mm	**05**	500mm	**07**	700mm	**09**	900mm	**11**	1100mm
04	400mm	**06**	600mm	**08**	800mm	**10**	1000mm	**12**	1200mm

F Extensions

0	for SINGLE / MULTI
1	for ENERGY

PROFI **CROSS PROFILE**

- The PROFI Cross Profile is mounted horizontally between the rear extensions and can accept monitor supports.
- Made of the hera profile SINGLE, for the height adjustable assembly within the profile slots.
- Durable powder coating according to RAL-No.

491.053.050 + 491.052.100

PROFI Cross Profile 419.0 BB .9 F 0					
BB Width				**F Extensions**	
59	500mm	**77**	900mm	**0**	between SINGLE / MULTI
69	603mm	**71**	1000mm	**5**	between ENERGY
70	800mm	**72**	1295mm		

PROFI **TFT SUPPORT**

- Horizontally movable sheet steel support with integrated sliders, durable light grey powder coated.
- VESA perforation (100x100 and 75x75mm) for the firm assembly of TFT monitors and extra perforation for TFT swivel heads.

PROFI TFT Support and Swivel Head	
491.053.050	for frontside assembly to PROFI Cross Profile
491.053.150	for rearside assembly to ENERGY Profile
491.053.250	for frontside assembly to ENERGY Profile
491.052.100	TFT Swivel Head PLUS tilt - and swivel function
491.057.100	TFT Swivel Head TSS ball-joint head

491.052.100

491.057.100

KEYBOARD TRAY FOR PROFI MOBILE

- Depth: 385mm.
- Light grey 28mm thick melamine resin covered plate, sides with 3mm PP plastic edge.
- Two telescopic metal rails (extension: 250mm).

Option Mousepad, extendable:

- Light grey 19mm thick melamine resin covered plate (200 x 200mm), sides with 2mm PP plastic edge, with metal rails and grip plate.
- For the flexible assembly to the lower side of shelves and keyboard trays.

Width	Standard	ESD
420mm	443.059.001	443.059.501
523mm	443.060.001	443.060.501
720mm	443.080.001	443.080.501
920mm	443.100.001	443.100.501
Mousepad	439.300.002	439.300.502

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NOTEBOOK DRAWER

- Completely assembled light grey wooden drawer with flap and key.
- Rear panel made of sheet steel with Schuko cable and integrated 3x Schuko sockets.
- Tray on telescopic rails, with end positon lock. Side with telescopic mouse pad.
- Rear side of the tray with socket strip.
- Dimensions: 170 x 580mm (HxD).

Width		Width	
420mm	443.159.000	720mm	443.180.000
523mm	443.160.000		

HANDLE FOR PROFI MOBILE, CURVED

- The handle is modular assembled to the PROFI profile.
- Two side pieces made of sheet steel.
- Handle bar made of tubular steel.
- Durable powder coating according to RAL-No.

Width		Width	
500mm	440.009.000	800mm	440.011.000
603mm	440.010.000	1000mm	440.012.000

HANDLE FOR PROFI MOBILE, STRAIGHT

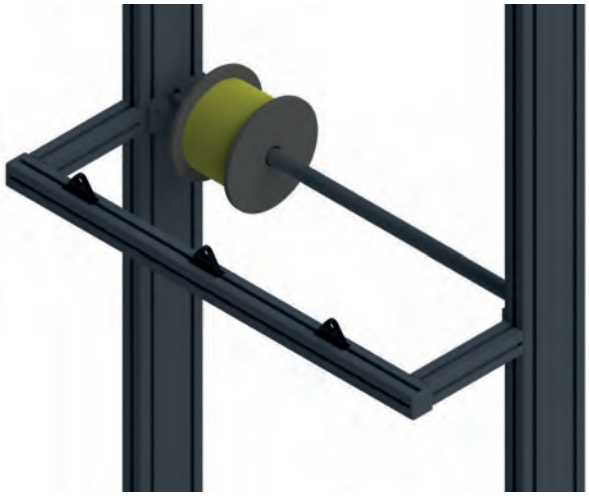
- Two side pieces made of 30 x 30mm aluminium profiles.
- Handle bar made of tubular steel, diameter: 25mm.
- Hidden connectors for the assembly to the PROFI profiles.
- Durable powder coating according to RAL-No.

Handle, straight **440. 05 B . T 01**

B Width		**T** Depth			
1	500mm	**4**	1000mm	**0**	175mm (for PROFI cart)
2	603mm	**5**	1295mm	**1**	385mm (for PROFI mobile)
3	800mm				

SHAFT FOR CABLE DISPENSER

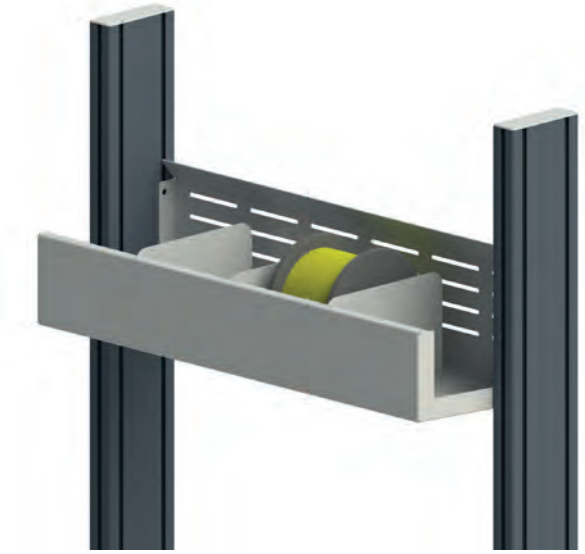
- 2x solid synthetic connectors (110x50x20mm), assembled to the extensions with sliding nuts.
- Metal shaft (diameter: 20mm).
- Cable guiding bracket made of 30x30 aluminium profile with 3 slideable cable eyes.
- Depth: 180mm.



Width		Width	
420mm	448.050.800	920mm	448.100.800
523mm	448.060.800	1215mm	448.130.800
720mm	448.080.800		

PROFI **CABLE DISPENSER**

- Sheet steel trough with slotted front for cable outlet.
- Bottom of trough with slots for a modular separation and individual width of cable reels.
- Sides with mounting bores for the height adjustable assembly between the PROFI extensions and rear side with hooks for the connection to perforated back-planes.
- Max. diameter of cable reel: 220mm.
- Durable, light grey powder coating.
- Diameter: 260 x 200mm (DxH).



Width		Width	
420mm	448.050.900	920mm	448.100.900
523mm	448.060.900	1215mm	448.130.900
720mm	448.080.900		

PROFI **CABLE ROLLER MOVABLE**

- Sheet steel support with durable, light grey powder coating.
- For a width variable installation to the PROFI cross profile or ENERGY profile, slidable due to gliders.
- Max. reel diameter: 220mm.

max. Reel Width	
80mm	448.008.600
170mm	448.017.600
260mm	448.026.600

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CORD HOLDER FOR PROFI MOBILE

- Cable comb made of aluminium sheet, with different gaps for the acceptance of cables up to 12mm thick.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation to the PROFI profiles.
- Height: 30mm.

Depth	Width / no. of gaps 300/17	500/31	603/37	800/48	1000/56
80mm	448.160.000	448.180.000	448.200.000	448.220.000	448.240.000
160mm	448.170.000	448.190.000	448.210.000	448.230.000	448.250.000

PROFI **CABLE SUPPORT**

- Cable support with bow and integrated cable comb, made of 3mm thick aluminium sheet.
- Cable comb suitable for laboratory cords, power cords, etc.
- Durable, electrical conductive powder coating in light grey.
- Dimensions: 160 x 100 x 65mm (WxDxH).

PROFI Cable Support	**299.221.501**

FLEX **SOCKET STRIP**

- Socket strip made of impact-proofed plastics, sides with mounting flange.
- Connecting cable H05VV-F3G 1,5mm².
- Optionally with illuminated 2poles switch 16A.
- Dimensions: 56 x 41mm (WxH).

FLEX Socket Strip **293 . 6 A S . Z 0 F** **(not all types available, see chapter 13)**

A Sockets/ Length		**S** Switch		**Z** Cable		**F** Colour	
3	3 sockets (185mm)	**0**	no switch	**0**	no cable	**0**	white
4	4 sockets (288mm)	**1**	with switch	**1**	1,5m cable	**1**	black
6	6 sockets (340mm)			**3**	3m cable	**2**	red
				5	5m cable		

293.600.000 mounting plate for FLEX socket strip

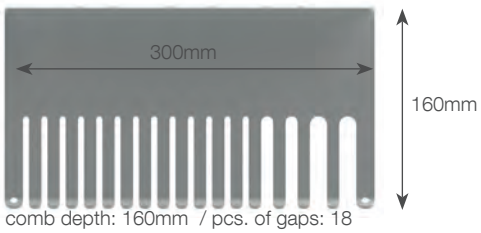
PROFI **MOBILE CORD HOLDER**

- Two sheet steel made V-braces with PROFI extension in variable height.
- Four swivel casters (diameter: 75mm), two with brakes.
- Alternatively with height adjustable glides (diameter: 40mm).
- Base: 620 x 530mm.
- Cable comb made of aluminium sheet with different gaps for a max. cord diameter of 12mm.
- Optionally with lockable bracket or lockable hood to prevent unauthorized removal of measuring leads and other cords.
- Durable, light grey powder coating.

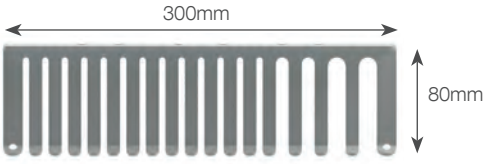
Extension	Height	Extension	Height
401.106.900	600	401.112.900	1200
401.107.900	700	401.113.900	1300
401.109.900	900	401.114.900	1400
401.110.900	1000	401.116.900	1600
401.111.900	1100	401.118.900	1800

Base	
440.117.000	Base with Swivel Casters
440.117.100	ESD Base with Swivel Casters
440.117.200	Base with Glides
440.117.300	ESD Base with Glides

width / pcs. of gaps	comb basic version depth: 80mm	depth: 160mm	lockable bracket for basic version	comb for lockable hood depth: 160mm	lockable hood depth: 160mm
300 / 18	448.160.000	448.170.000	448.170.700	448.170.100	448.170.500
500 / 32	448.180.000	448.190.000	448.190.700	448.190.100	448.190.500
603 / 37	448.200.000	448.210.000	448.210.700	448.210.100	448.210.500
800 / 47	448.220.000	448.230.000	448.230.700	448.230.100	448.230.500
1000 / 57	448.240.000	448.250.000	448.250.700	448.250.100	448.250.500



comb depth: 160mm / pcs. of gaps: 18



comb depth: 80mm / pcs. of gaps: 18

comb with lockable hood 448.210.100 + 448.210.500

comb with lockable bracket 448.200.000 + 448.210.700

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TOP SHELF FOR PROFI MOBILE

- Light grey 28mm thick melamine resin covered chip-board, with 3mm PP plasic edges.
- Lower side with thread inserts for the fixation of the mounting brackets.
- Two sheet steel mounting brackets, durable light grey powder coated with bores for the fixation at the PROFI extensions.

Top Shelf for PROFI Mobile	
440.210.001	square 500 x 500mm
440.210.002	round 500mm

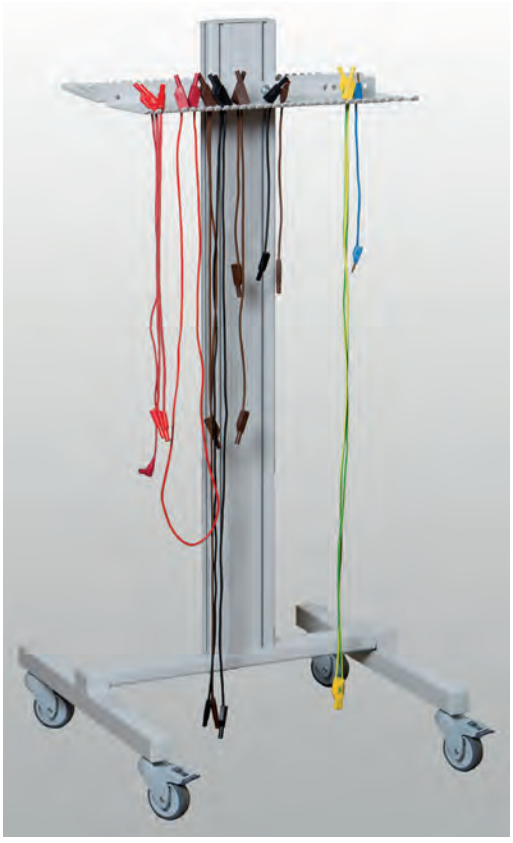
SHELF BOX FOR PROFI MOBILE

- Made of sheet steel, with bores for top or side assembly at the PROFI extension.
- Durable, light grey powder coating.

Shelf Box for PROFI Mobile	
440.310.001	300 x 200 x 20mm (WxDxH)

PROFI MOBILE **CORD HOLDER LC**

- Solid tubular steel base with 4 steerable casters (70mm diameter), two with brakes.
- Aluminium extension with 2x cable comb made of aluminium sheet, each with 29 slots for the acceptance of laboratory cords (5mm diameter).
- Durable light grey powder coating.
- Dimensions: 600 x 600 x 1290mm (WxDxH).



PROFI Mobile Cord Holder	940.131.909

A FUNCTIONAL ASSISTANT
WITH SURROUNDING STEEL FRAME

The carts of our EASY program offer sufficient room and stability for various components that have to be stored or moved within a company. With the easy running casters, the surrounding steel frame and the solid handle bar, this cart is always a functional assistant. Cart height is identical to bench height which makes transportation from workstation to workstation more than convenient.

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EASY **CART**

- Surrounding frame made of tubular steel 30 x 30mm.
- Four legs of tubular steel 30 x 30mm, connected to the frame with torsion-resistant corner joints.
- Hardwearing 30mm thick top board, sides with 3mm PP plastic edge.
- 28mm shelf board mounted on tubular steel braces 30 x 30mm.
- Four swivel casters (dimension: 75mm), two with brakes.
- Durable powder coated steel parts.
- Max. load: 200kg.
- Height: 780mm; width: 610mm.

ESD Version:

- Surface and volume conductive chipboard, sides with 3mm plastic edge.
- Conductive swivel casters.

EASY Cart 1 **TT** .10 **A** . **F** **R** 0

TT Depth

19	800mm
20	900mm
21	1000mm

A Version

2	Standard
7	ESD (not pebble)

F Colour: Board / Frame

1	pebble / anthracite
5	light grey / light grey
7	light grey / anthracite
8	indus grey / anthracite
9	light grey / RAL-No.

R Casters

0	75mm
1	100mm
2	125mm

DRAWER FOR EASY CART

- Completely assembled light grey wooden body.
- Central lock (master key system) with 2 keys.
- Wooden drawer with roller guide, front with grip bar on the whole width.
- Dimensions: 540 x 620 x 120mm (WxDxH).

Drawer for EASY Cart	
120.112.100	pebble / orange
120.112.500	light grey
120.112.800	indus grey

HANDLE FOR EASY CART

- Curved handle made of aluminium tube for the assembly on the cart frame.
- Colour: black anodized.
- Width: 400mm, diameter: 20mm.

Handle for EASY Cart	120.100.100

EASY STORAGE CART

- Top with surrounding tubular steel frame 30 x 30mm.
- Four legs of tubular steel 30 x 30mm, with bores in 50mm raster, for the assembly of the shelf boards.
- Hardwearing 30mm thick top shelf, sides with 3mm PP plastic edge.
- 30mm thick bottom shelf, assembled on the 30 x 30mm tubular steel braces.
- Four swivel casters (dimension: 75mm), two with brakes.
- Durable powder coated steel parts.
- Max. load: 200kg.
- Dimensions: 1500 x 610mm (H x W).

ESD Version:

- Surface and volume conductive chipboard, sides with 3mm plastic edge.
- Conductive swivel casters.

EASY Storage Cart 1 TT .15 A . F R 0

TT Depth

19	800mm
20	900mm
21	1000mm

A Version

2	Standard
7	ESD

F Colour

1	pebble / anthracite (not ESD)
5	light grey / light grey
7	light grey / anthracite
8	indus grey / anthracite
9	light grey / RAL-No.

R Casters

0	75mm
1	100mm
2	125mm

INTERMEDIATE SHELF FOR EASY STORAGE CART

- Hardwearing 30mm thick intermediate shelf, sides with 3mm PP plastic edge.
- Two durable powder coated tubular steel braces 30 x 30mm.
- Width: 610mm.

Intermediate Shelf for EASY Cart 122. TT A . F 00

TT Depth

08	800mm
09	900mm
10	1000mm

A Version

0	Standard
5	ESD

F Colour

1	pebble / anthracite (not ESD)
5	light grey / light grey
7	light grey / anthracite
8	indus grey / anthracite
9	light grey / RAL-No.

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EASY **MOBILE CORD HOLDER**

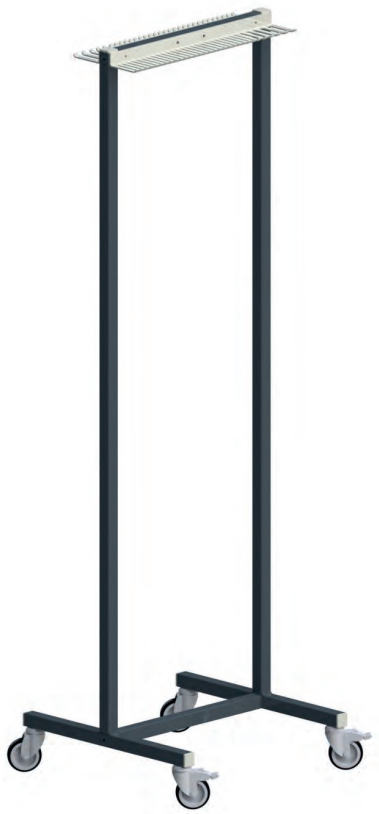
- Solid tubular steel base.
- Four swivel casters (diameter: 75mm), two with brakes.
- Durable powder coated steel parts.
- Dimensions: 500 x 500 x 1650mm (WxDxH).

Type with plastic tines:

- both sides with U-shaped profile with 34 tines, for variable cable diameters

Type with aluminium comb:

- both sides with durable powder coated aluminium comb
  nos. of gaps / width of gaps:
  2x 12mm / 3x 8mm / 25x 4mm.



EASY Mobile Cord Holder	299.22 A . F 00

A Type

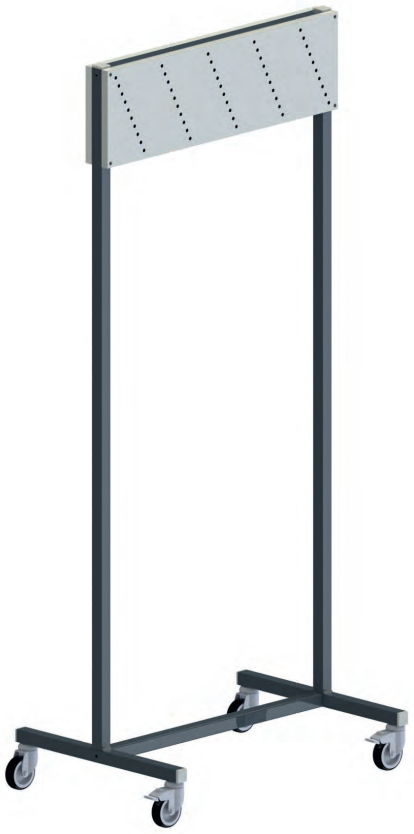
2	Type with plastic tines
3	Type with aluminium comb

F Colour

1	anthracite
5	light grey
9	RAL-No.

EASY **MOBILE CORD HOLDER (PLUG BOARD)**

- Solid tubular steel base.
- Four swivel casters (diameter: 75mm), two with brakes.
- Both sides with melamine resin covered chipboard with holes for the acceptance of 50x measuring leads each.
- Durable powder coated steel parts.
- Dimensions: 710 x 500 x 1650mm (WxDxH).



EASY Mobile Cord Holder (Plug Board)	299.20 A . F 00

A Type

1	for 2mm measuring leads
2	for 4mm measuring leads
4	for 4mm safety measuring leads

F Colour

1	pebble / anthracite
5	light grey / light grey
7	light grey / anthracite
8	indus grey / anthracite
9	light grey / RAL-No.

NOTHING IS LEFT FOR CHANCES **WITH THIS MOBILES**

With the EASY mobiles you are well prepared for each practical lesson. All training systems and even the necessary power supplies are always within good reach. This mobile will follow you from room to room. Finally the time-consuming classroom preparations belong to the past!

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EASY **MOBILE CABINET**

- Completely assembled light grey wooden body made of 19mm thick melamine resin covered chipboard with 2mm PP plastic edge.
- Top and bottom 30mm thick.
- Solid incorporated 13mm thick decorative rear wall.
- Four swivel casters on ball bearings two with brake and position lock.
- Depth: 625mm.

Double Door

- Surrounding rubber lip for dust shield.
- Metal hinges with 180° opening angle.
- Espagnolette lock (master key system) with handle knob and two keys.

Sliding Doors

- Sliding doors with easy running roller guides.
- Cylindric push lock (master key system) and metal handles.

Shelf Boards and Drawers

- See page 246 for suitable shelf boards.
- 2x drawers with central lock.

ESD Version:

- Surface and volume conductive body and doors.
- Conductive casters.

EASY Mobile Cabinet 440.8 BB . F H A

BB Width		T Doors		H Height				A Version	
				with Shelves		with Drawers			
08	800mm	0	Double Doors	0	780mm	2	780mm	0	Standard
10	1000mm	1	Sliding Doors					5	ESD
12	1200mm			1	1200mm	3	1200mm		

STORAGE CART FOR TRAINING SYSTEMS

- Solid body made of melamine resin covered chipboard.
- 100mm heavy duty steering casters with brakes.
- Inner sides with slotted mats for the compact storage of all common A4 training systems.
- Optionally available are slotted sheet steel boxes, equippable with dividers.

Storage Cart for Training Systems 940.256.100

Slotted Sheet Steel Boxes 940.256.200

WE OFFER MOBILITY
TO YOUR STOCKS

Our mobile solutions of the FLEX system make it easy to get your stocked products, tools and other equipment conveniently from A to B. Even if your floors are uneven, everything stays in place. Firmly assembled shelves with stop edges and suitable casters for each application assure so.

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BASE FOR FLEX MOBILE

- Solid H-frame made of squared steel tube with thread inserts for steering casters. Screwed-in upright section with 3-sided key hole pattern.
- Durable, conductive powder coating in light grey.
- Depth: 700mm.

Base for FLEX Mobile 141.5 **BB** . **HH** 0

BB Width

06	566mm
08	766mm
10	966mm
12	1166mm
13	1261mm

HH Height

06	600mm	**11**	1100mm	**15**	1500mm
07	700mm	**12**	1200mm		
08	800mm	**13**	1300mm		
09	900mm	**14**	1400mm		
10	1000mm				

BRUSH STRIP FOR FLEX BRACE, PAIR

- For a completely hidden cable run with flexible cable outlet within the FLEX brace.

Brush Strip for FLEX Brace 140.0 **HH** .100

HH Height

06	600mm	**10**	1000mm	**13**	1300mm
07	700mm	**11**	1100mm	**14**	1400mm
08	800mm	**12**	1200mm	**15**	1500mm
09	900mm				

CASTERS/ LEVELLERS FOR THE FLEX MOBILE, SET

- Four swivel casters, two with brakes or alternatively levellers.

Casters/ Levellers for FLEX Mobile, Set 141.50 **A** . **DDD**

A Version

0	Standard
1	ESD

DDD Diameter

000	Levellers; H: 15mm
075	Casters 75mm; load: 180kg, H: 100mm
100	Casters 100mm; load: 300kg, H: 135mm
125	Casters 125mm; load: 360kg, H: 160mm

FLEX **HANDLE**

- Durable, black plastic handle.
- Incl. assembly set for the variable fixation to the FLEX upright sections.
- Dimensions: 122 x 33 x 19mm (LxWxH).

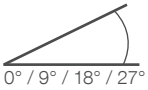
FLEX Handle	468.400.100

SWIVEL SHELF FOR FLEX MOBILE

- Swivel shelf to hook into the FLEX upright sections.
- Front with 20mm stop edge.
- Adjustable in four positions (0° / 9° / 18° / 27°).
- Made of sheet steel with durable, conductive powder coating in light grey.

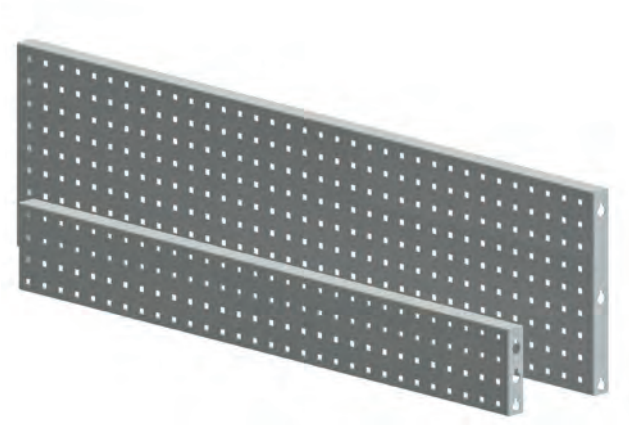
Swivel Shelf for FLEX Mobile	140.2BB.0T0

BB Width				T Depth	
06	530mm	10	930mm	3	300mm
08	730mm	12	1130mm	4	400mm
				5	500mm



PERFORATED BACKPLANE FOR FLEX MOBILE

- Backplane for the assembly to the FLEX upright sections.
- With squared perforation 10 x 10mm, 38mm raster.
- Made of sheet steel with durable, conductive powder coating in light grey.



Perforated Backplane for FLEX Mobile	140.5BB.0H0

BB Width				H Height	
06	460mm	10	860mm	1	150mm
08	660mm	12	1060mm	3	350mm

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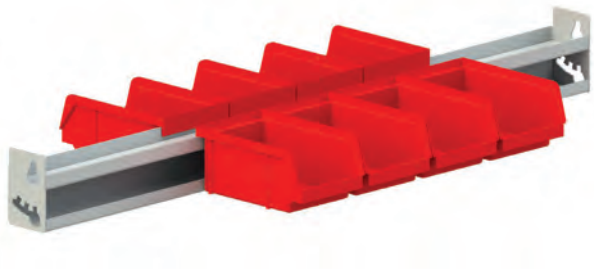
STORAGE BIN SUPPORT FOR FLEX MOBILE

- Made of double-folded 2mm sheet steel for the assembly between the FLEX upright sections.
- Durable, conductive powder coating in light grey.



Storage Bin Support for FLEX Mobile 140.6 BB.000

BB Width

06	460mm	**10**	860mm
08	660mm	**12**	1060mm

CABLE DISPENSER FOR FLEX MOBILE

- Sheet steel trough with slotted front for cable outlet.
- Bottom of trough with slots for a modular separation suitable for individual width of cable reels.
- Sides with mounting bores for the height adjustable assembly between the FLEX upright sections and rear side with hooks for the connection to perforated back-planes.
- Made of sheet steel with durable, conductive powder coating in light grey.

Cable Dispenser for FLEX Mobile 141.2 BB.000

BB Width

06	460mm	**10**	860mm
08	660mm	**12**	1060mm

FIFO SWIVEL SHELF FOR FLEX MOBILE

- Swivel shelf made of sheet steel with durable, conductive powder coating in light grey.
- Front with 20mm high stop edge.
- Lower side with swivel suport for stepless adjustable tilt and depth.

FLEX Swivel Shelf 140.2 BB.0 T 0

BB Width

06	460mm	**10**	860mm
08	660mm	**12**	1060mm

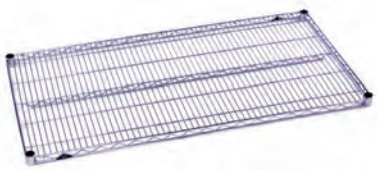
T Depth

3	300mm
4	400mm

EASY CLICK **SHELVING SYSTEM**

consisting of:

- Chromatized poles with levellers for the toolless assembly of shelf boards in 25mm raster (inprinted numbers for an easy height orientation).
- Modular equipable with chromatized meshed shelf boards (suitable for clean room application) or regular galvanized shelf boards.
- Shelf board incl. set of coned plastic clamps.
- Load per shelf board: 150kg.



meshed shelf board for a minimum of dust, for clean room application

galvanized shelf board, corners made of aluminium die-cast

two-part cone clamp for safe and easy installations

Poles	Length
488.500.069	699 mm
488.500.087	875 mm
488.500.138	1385 mm
488.500.159	1590 mm
488.500.189	1895 mm
488.500.220	2200 mm

Casters	
488.501.127	127mm steering caster, no brake
488.502.127	127mm steering caster WITH brake
488.503.127	127mm fixed caster
488.501.152	152mm steering caster, no brake
488.502.152	152mm steering caster WITH brake
488.503.152	152mm fixed caster

Shelf Board **488.5 BB. T A 0**

BB Width

06	610 mm
07	760 mm
09	914 mm
10	1066 mm
12	1219 mm
15	1524 mm

T Depth

3	355 mm
4	457 mm
5	530 mm
6	610mm

A Version

0	meshed shelf board
1	galvanized shelf board

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CHAPTER 7: **CONTAINERS**

210 PROFI Container
210 LC Container (9HE)
212 PROFI Container (11HE)
214 PROFI Pedestal Container (13HE)
215 PROFI Short Container
216 PROFI Narrow Container and Wide Container
217 PC Container
218 PROFI Separator and Partition
219 Key and Lock for PROFI Container

221 EASY Container
222 EASY Container: Mobile and Suspended
223 EASY Pedestal Container
224 EASY Suspended PC Container
225 EASY Drawer Inserts
226 Sheet Steel Container
228 Sheet Steel Container: Mobile and Suspended
229 Sheet Steel Pedestal Container
230 Sheet Steel Short Container
231 Tool Set

LC **CONTAINER (9HE)**

F Form Standard

- Solid body made of melamine resin covered 19mm chipboard with 2mm PP plastic edge. Solid top - and bottom plate for a maximum of stability.
- Robust ORGA metal drawer with single-drawer-blocking-system (load capacity: 25kg).
- Front in HE Raster (1HE = 50mm) with nickel plated metal handle.
- Central locking (master-key-system) with two keys.
- Mobile container and four steerable twin-casters (diameter: 50mm), two with brakes.
- Suspended container with top plate and mounting holes.
- Inner dimensions of drawer: width: 327mm / depth: 490mm (D: 580/680) / 690mm (D: 780) height: 80mm.
- Dimensions: width: 420mm; depth: 580 / 680 / 780mm; height: 575mm (mobile) / 490mm (suspended).

F Form Design

The Design version differs from the standard container in following issues:

- handle-free bevelled front panel
- both sides with vertical grip strip
- mobile container with 70mm design twin-casters
- **full extension and SoftStop as standard**

Design version

- ergonomically bevelled front panel
- nicely shaped and easy running 70mm twin-casters
- elegant handle-free design

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A Version

Mobile Container

Suspended Container

ESD Version

Body made of surface and volume conductive chipboard, conductive metal drawers with conductive bevelled fronts and steerable twin-casters.

O Top drawer

- with lock and small part tray
- pencil drawer with lock 1HE

Small Part Tray

Pencil Drawer

E Features

- Drawers in HE raster (1HE = 50mm)
- with door instead of drawers

3HE + 6HE with Small Part Tray

3HE + 2HE + 4HE with Small Part Tray

3HE + 2HE+ 2HE + 2HE with Small Part Tray

Cabinet with right hinged Door

1HE + 2HE + 6HE with Pencil Drawer

1HE + 2HE + 3HE + 3HE with Pencil Drawer

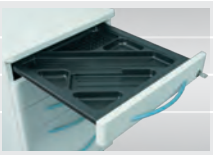
1HE +2HE + 2HE + 2HE + 2HE with Pencil Drawer

Container with Door, left hinged

LC Container 43 **A** . **E** **O** **T** . **F** 03

A Version		**E** Features		**O** Top Drawer		**T** Depth		**F** Form	
1	Suspended Container	**2**	2x Drawers	**5**	3HE with lock and small part tray	**0**	580mm	**0**	Standard
2	Mobile Container	**3**	3x Drawers	**6**	1HE pencil drawer + 2HE drawer	**1**	680mm	**2**	Design
3	ESD Suspended	**4**	4x Drawers				(only suspended)		
4	ESD Mobile	**0**	Door, left hinges			**2**	780mm		
		1	Door, right hinges						

439.100.103	Option full extension (per drawer) load: 45kg
439.100.003	Option drawer closing with SoftStop (per drawer)
439.100.903	Option handle powder coated according to RAL-No. (per drawer)



PROFI **CONTAINER (11HE)**

- Solid body made of melamine resin covered 19mm chipboard with 2mm PP plastic edge.
- Robust ORGA metal drawer with single-drawer-blocking-system in HE raster (1HE = 50mm).
- Pencil drawer 1HE with central locking (master-key-system) and two keys.
- Mobile container with metal base and four steerable twin-casters, two with brakes.
- Pedestal containers with four glides.
- Inner dimensions of drawers:

  width: 327mm

  depth: 490mm (D: 580/680) / 690mm (D: 780)

  height: 80mm
- Dimensions:

  width: 420mm

  depth: 580 / 680 / 780mm

  height: 675mm (mobile container)

  625mm (pedestal container)

  585mm (suspended container)

Drawers:

- Ballbearing roller guides with telescopic extension, load capacity: 25kg; optional with telescopic full extension (VA) load capacity: 45kg.
- Organizable with separators, dividers and drawer inserts.
- Self-closing drawer runners.
- Single-drawer-blocking-system.
- Ergonomically bevelled front panel made of 19mm melamine resin covered chipboard and nickel-plated metal handles. Optionally powder coated according to RAL-No.

Design Version:

- Handle-free bevelled front panel.
- Both sides vertical grip strip.
- Mobile container with 70mm design twin-casters.

Standard Mobile Container

Design Pedestal Container BiColor

Standard Suspended Container

Container

- absolutly solid connection to casters due to metal base
- key with ergonomically foldable handle

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A Version:

Mobile Container

Pedestal Container

Suspended Container

ESD Version
Body made of surface and volume conductive chipboard, conductive metal drawers with conductive bevelled fronts and steerable twin-casters.

EE Features (drawers):

- in HE raster (1HE = 50mm)
- containers with doors are not available with pencil drawers

32 2x 2HE + 1x 6HE VA

33 1x 2HE + 2x 4HE

42 3x 2HE + 1x 4HE

43 2x 2HE + 2x 3HE

52 5x 2HE

01 Door, left hinged

02 Door, right hinged

PROFI Container (11HE) 43 **A** . **EE** **T** . **F** 03

A Version		**EE** Features		**T** Depth		**F** Form	
2	Mobile Container	**32**	2x 2HE + 1x 6HE VA	**0**	580mm	**0**	Standard
7	Pedestal Container	**33**	1x 2HE + 2x 4HE	**1**	680mm	**2**	Design
1	Suspended Container	**42**	3x 2HE + 1x 4HE		(only suspended)		
4	ESD Mobile	**43**	2x 2HE + 2x 3HE	**2**	780mm		
8	ESD Pedestal	**52**	5x 2HE				
3	ESD Suspended	**01**	Door, left hinged (with shelf board)				
		02	Door, right hinged (with shelf board)				

439.100.103 Option full extension (per drawer) load: 45kg

439.100.003 Option drawer closing with SoftStop (per drawer)

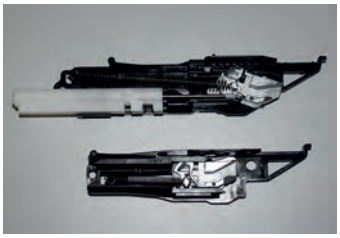
439.100.903 Option handle powder coated according to RAL-No. (per drawer)

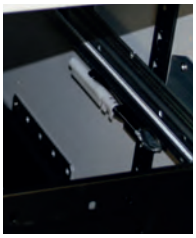
439.100.103: Option full extension

- extensional length:
  535mm (depth: 580) / 735mm (depth: 780)
  load capacity: 45kg / over extension: 45mm

439.100.003: Option SoftStop

- self closing drawers with damping cylinders





PROFI **PEDESTAL CONTAINER** (13HE)

- See the details on page 212.
- Top plate for side standing containers on page 142.

- Width: 420mm
  Depth: 580 / 780mm.

V Type:

Under Bench
- with four glides
- height: 710mm

Side Standing
- base with levelling feet
- height: 750mm

EE Features (drawers) in HE raster (1HE = 50mm)
Containers with door have no pencil drawer but shelf board

22 32 42 43 44 52 53 62 01 02

PROFI Pedestal Container (13HE) 43 A . EE T . F V 3

A Version		**EE** Features		**T** Depth		**F** Form		**V** Type	
5	Standard	**22**	2x 6HE VA	**0**	580mm	**0**	Standard	**0**	Under Bench
6	ESD	**32**	2x 3HE + 1x 6HE VA	**2**	780mm	**2**	Design	**1**	Side Standing
		42	3x 2HE + 1x 6HE VA						
		43	2x2HE + 2x 4HE						
		44	4x 3HE						
		52	3x 2HE + 2x 3 HE						
		53	4x 2HE + 1x 4HE						
		62	6x 2HE						
		01	Door, left hinged						
		02	Door, right hinged						

Options

439.100.103	Option full extension (per drawer) load: 45kg
439.100.003	Option drawer closing with SoftStop (per drawer)
439.100.903	Option handle powder coated according to RAL-No. (per drawer)

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PROFI **SHORT CONTAINER**

- See the details on page 212.
- Width: 420mm
  Depth: 580 / 780mm.

EE Features (drawers) in HE raster (1HE = 50mm)
Containers with door have no pencil drawer but shelf board

12

23

22 / 24

13

14

PROFI Short Container 43 A . EE T . F 03

A Version		EE Features		T Depth	F Form	
1	Standard	12	1x Drawer, height: 170mm	0	580mm	0 Standard
3	ESD	23	2x Drawers, height: 290mm	1	680mm	2 Design
		13	Door, left hinged, height: 340mm	2	780mm	
		14	Door, right hinged, height: 340mm			
		22	1x 1HE Pencil Drawer + 1x 2HE+ 1x 3HE			
		24	1HE Extendable Tray with VA + 1x 2HE + 1x 3HE			

Options

439.100.103	Option full extension (per drawer), load: 45kg
439.100.003	Option drawer closing with SoftStop (per drawer)

PROFI **NARROW CONTAINER**

- Available with all drawer features, not available in ESD.
- Load capacity: 25kg.
- Width: 320mm.

PROFI Narrow Container	**xxx.xxx.004**

PROFI **WIDE CONTAINER**

- All drawers with full extension and stationary locking panel, without pencil drawer.
- Load capacity: 70kg.
- Width: 600mm.
- Separators and dividers see page 220.

PROFI Wide Container	**xxx.xxx.005**

PROFI Wide Container

PROFI Narrow Container

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PC CONTAINER

- Solid body made of 19mm thick melamine resin covered chipboard with 2mm PP plastic edge.
- Side with detachable inspection flap with lock.
- Rear wall with cable access.
- Suspended container with mounting bores on top.
- Pedestal container with plastic glides.
- Width: 270mm
  Depth: 580 / 680 / 780mm
  Height: 585mm (suspended container)
  710mm (pedestal container)

PC Container	43 **A** .0 **S** **T** . 003				
A Type		**S** Bench Side		**T** Depth	
1	Suspended	**3**	left	**0**	580mm
5	Pedestal	**4**	right	**1**	680mm
				2	780mm

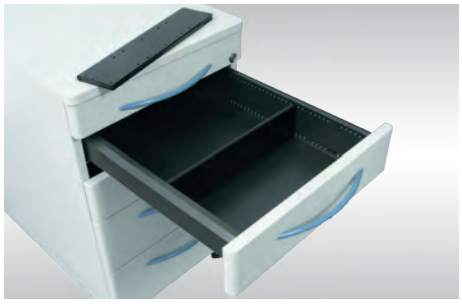
DOOR FOR PC CONTAINER

- Metal hinges and lock with two keys (master key system).
- Metal handle or vertical grip strip (design).

Door for PC Container	43 **A** .03 **M** . **F** 03				
A Type		**M** Material		**F** Form	
1	Suspended	**8**	Wood door with bevelled front	**0**	Standard
5	Pedestal			**2**	Design
		9	6mm Safety Glass		

PROFI **SEPARATOR**

- Made of powder coated double sheet steel.
- Sides with latches and bores for the acception of dividers.
- Dimensions: 10 x 77mm (DxH).



PROFI Separator	
439.001.103	for Standard Container (W: 327mm)
439.001.203	for Narrow Container (W: 227mm)

PROFI **DIVIDER**

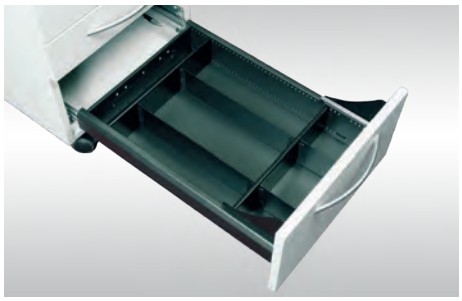
- Made of powder coated sheet steel.
- Sides with latches.
- Height: 77mm.

PROFI Divider	
439.002.103	A4 (310mm)
439.002.203	A5 (210mm)
439.002.303	A6 (150mm)
439.002.403	A7 (110mm)

PROFI **UNIVERSAL PARTITION**

consisting of:

- 2x Separator
- 2x Divider A4
- 2x Divider A7

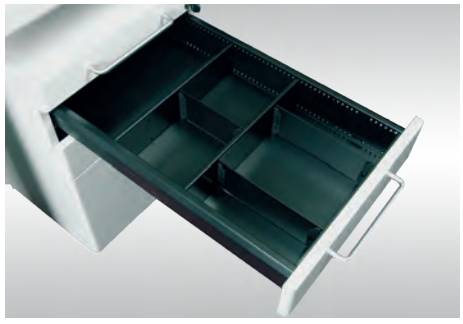


PROFI Universal Partition	439.002.003

PROFI **PARTITION 780MM**

consisting of:

- 2x Separator
- 1x Divider A6
- 2x Divider A4

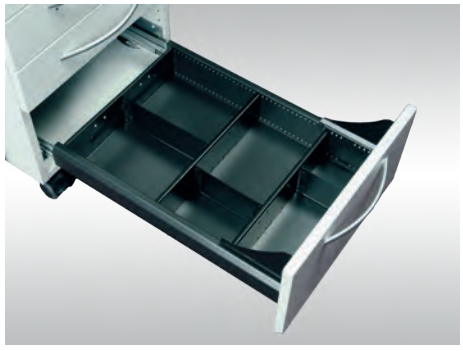


PROFI Partition 780mm	439.002.023

PROFI **PARTITION 580MM**

consisting of:

- 2x Separator
- 1x Divider A5
- 1x Divider A6
- 1x Divider A7



PROFI Partition 580mm	439.002.043

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PROFI **FILING FRAME** DIN A4

- Plugable steel filing frame.
- Suitable for 6HE drawers.

PROFI Filing Frame DIN A4	
439.004.103	DIN A4 Filing Frame for depth: 580mm
439.004.203	DIN A4 Filing Frame for depth: 780mm
439.004.300	Bridge for Filing Frame

PROFI **DRAWER INSERT**

made of grey deep-drawn plastics.

Type 1: Dimensions: 327 x 475 x 45mm (WxDxH)
4x Compartments: 202 x 75mm
4x Compartments: 262 x 75mm

Type 2: Dimensions: 327 x 195 x 45mm (WxDxH)
3x Compartments: 188 x 102mm

Type 3: Dimensions: 327 x 240 x 45mm (WxDxH)
5x Compartments: 154 x 59mm
5x Compartments: 70 x 59mm

Type 4: Dimensions: 327 x 240 x 45mm (WxDxH)
15x Compartments: 73 x 59mm

439.050.100

439.050.200

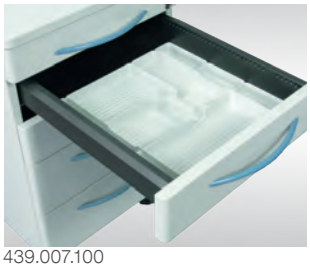
439.051.100

439.051.200

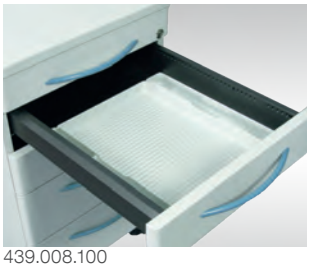
PROFI Drawer Insert	
439.050.100	Type 1 (depth: 475 / 8 compartments)
439.050.200	Type 2 (depth: 195 / 3 compartments)
439.051.100	Type 3 (depth: 240 / 10 compartments)
439.051.200	Type 4 (depth: 240 / 15 compartments)

PROFI **DRAWER INSERT** AND MATERIAL TRAY

- Drawer inserts made of light grey plastics.
  Dimensions: 330 x 327 x 30mm (WxDxH).
- Material trays made of plastics according to customers choice more material trays can be fit together.
  Dimension: 327 x 212 x 35mm (WxDxH).



439.007.100



439.008.100

PROFI Drawer Insert and Material Tray	
439.007.100	Drawer Insert with 10 compartments
439.008.100	Insert with DIN A4 size and 3 small compartments
439.005.100	Material Tray

SPARE PARTS FOR PROFI CONTAINER

- Master -, group - or single key systems are possible.
- A service key is needed for changing the lock.

Spare Parts for PROFI Container	
499.700.000	Spare Key (please state lock No.)
499.700.010	Lock with two Keys
499.700.020	Master Key for Locking System 7000
499.700.030	Service Key for Locking System 7000

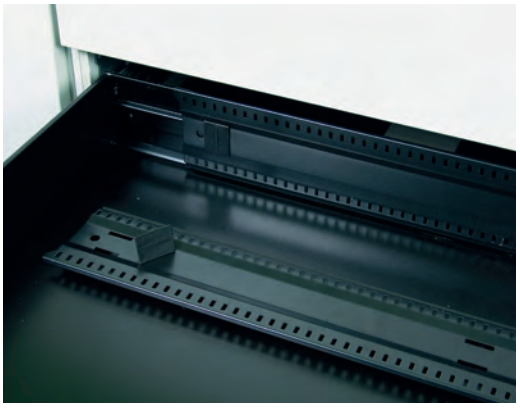
SOFTSTOP **FOR WIDE CONTAINER**

- Self closing mechanism for drawer with two dampers.

SoftStop per Drawer	**486.502.000**

SET OF PERFORATED PANELS **FOR WIDE CONTAINER**

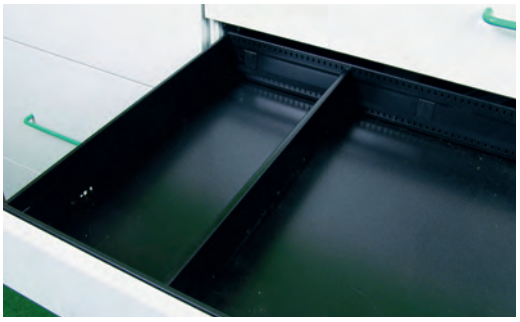
- Mandatory if cabinet drawers should be equipped with partitions and dividers.
- 2x perforated sheet steel panels with black powder coating.
- 6x drawer clips.



Set of Perforated Panels	**486.506.000**

DIVIDER **FOR WIDE CONTAINER**

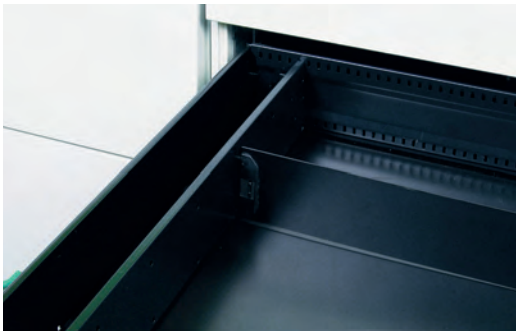
- For dividing the drawers between the perforated panels or between drawer clips.
- With mounting holes for the installation of partitions.
- Double walled sheet steel with black powder coating.



Divider for Wide Container	**486.520.000**

PARTITION FOR **WIDE CONTAINER**

- For the lengthwise separation between the dividers.
- Sheet steel with black powder coating.



Partition for Wide Container	
486.524.000	Partition A4 (310mm)
486.525.000	Partition A5 (210mm)
486.526.000	Partition A6 (150mm)
486.527.000	Partition A7 (110mm)

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UNBELIVABLE,
EVERYTHING FITS IN HERE

Characteristically for the containers of our EASY program is the ergonomic handle strip, as well as the enormous storage capacity. Like the PROFI containers, all EASY containers are available in mobile, suspended and pedestal form.

EASY **MOBILE AND SUSPENDED** CONTAINER

- Solid body made of melamine resin covered chipboard.
- Central lock (master-key-system) with two keys.
- Extendable tray.
- Very spacious wooden drawers on roller guides.
- Drawer fronts with whole width handle strip (front height in mm).
- Inner dimension of drawer: width: 460mm / depth: 560mm.
- Dimensions:
  Width: 540mm / depth: 620mm
  Depth: 680mm (suspended container)
  550mm (mobile container)

Mobile Container:

- 30mm top plate.
- Four steerable casters (dimensions: 75mm), two with brakes.

A Type:

Mobile Container

Suspended Container

EEE Features (Drawers in mm):

2x 120 + 1x 235

4x 116

2x120 + 1x 286 VA
no extension tray

3x 96 + 1x 186

5x 92

door, left hinged

door, right hinged

drawer and door, left hinged

drawer and door, right hinged

EASY Mobile and Suspended Container 13 A . EEE . F 00

A Type		**EEE** Features			**F** Colour	
2	Mobile Container	**320**	2x 120 + 1x 235	**001** Door, left hinged	**1**	pebble / orange
1	Suspended Container	**420**	4x 116	**002** Door, right hinged	**5**	light grey
		430	2x 120 + 1x 286 VA	**121** Drawer and Door, left hinged		
		440	3x 96 + 1x 186	**122** Drawer and Door, right hinged		
		520	5x 92			

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EASY **PEDESTAL CONTAINER**

- Solid body made of melamine resin covered chipboard.
- Central lock (master-key-system) with two keys.
- Extendable tray.
- Very spacious wooden drawers on roller guides.
- Drawer fronts with whole width handle strip (front height in mm).
- Dimensions: 540 x 620 x 690mm (WxDxH).
- Base with glides.

EEE Features (Drawers in mm):

2x 92 + 2x 233

2x 92 + 2x 116 + 1x 233

2x 92 + 4x 115

7x 92

door, left hinged

door, right hinged

EASY Pedestal Container	161. EEE . F 01

EEE Features

420	2x 92 + 2x 233	**620**	2x 92 + 4x 115	**001**	Door, left hinged
520	2x 92+ 2x 116 + 1x 233	**720**	7x 92	**002**	Door, right hinged

F Colour

1	pepple / orange
5	light grey

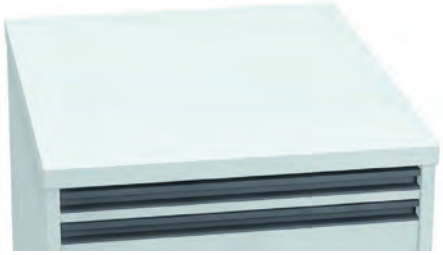
OPTION **BASE** FOR EASY PEDESTAL CONTAINER

- Surrounding wood frame with hidden metal levellers, adjustable by mounting bores in container bottom.
- Regular bench height of 780mm due to base and 30mm top plate.
- Dimensions: 540 x 600 x 60mm (WxDxH).

Option Base for EASY Pedestal Container	
161.000.101	orange
161.000.501	light grey
161.000.701	pepple

OPTION **TOP PLATE** FOR EASY PEDESTAL CONTAINER

- 30mm thick melamine resin covered bench top with 3mm PP plastic edge.
- Dimensions: 540 x 620 x 30mm (WxDxH).



Option Top Plate for EASY Pedestal Container	
169.111.500	light grey
169.111.700	pepple

EASY **DRAWER**

- Body made of melamine resin covered chipboard. Top with spacer strip for suspended installation.
- Central lock (master-key-system) with two keys.
- Very spacious wooden drawer on roller guides.
- Drawer front with whole width handle strip (front height 90mm).
- Dimensions: 540 x 620 x 115mm (WxDxH).

EASY Drawer	
142.054.100	pepple / orange
142.054.500	light grey

EASY **PC CONTAINER**, SUSPENDED

- Solid body made of melamine resin covered chipboard.
- Rear side with cable access.
- Dimensions: 270 x 620 x 550mm (WxDxH).

EASY PC Container, suspended	
131.005.100	orange
131.005.500	light grey
131.005.700	pepple

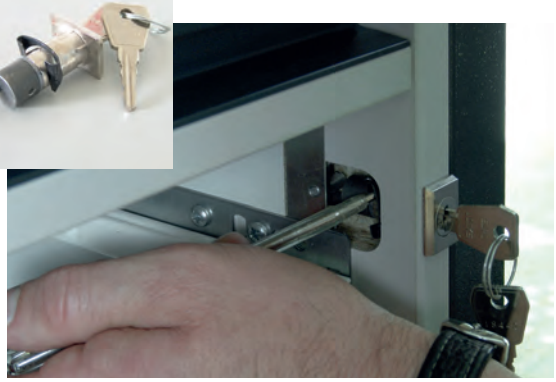
DOOR FOR EASY PC CONTAINER, SUSPENDED

- Metal hinges and lock with two keys (master-key-system).

Door for EASY PC Container, suspended	
131.006.500	light grey with handle strip and lock
131.006.700	pepple with handle strip and lock
131.006.000	6mm safety glass with handle and lock

SPARE PARTS FOR EASY CONTAINER

- Master -, group - or single key systems are possible.
- The lock is installed in the side wall of the container and can be replaced by removing the laminated spring.



Spare Parts for EASY Container	
299.700.000	Spare Key for Locking System M70, M71 or M78 (please state lock No.)
299.700.010	Lock with two Keys
299.700.020	Master Key for Locking System M70/71
299.700.030	Master Key for Locking System M78

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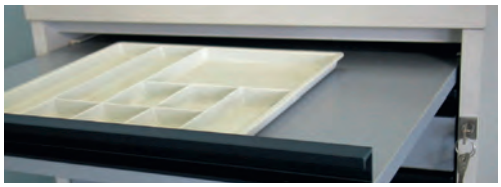
MOBILE SET FOR EASY CONTAINER

- To convert a suspended container into a mobile container.
- Four steerable casters (diameter: 75mm), two with brakes.
- Top plate 30mm.

Mobile Set for EASY Container	
132.000.500	light grey
132.000.700	pepple

SMALL PARTS TRAY FOR EASY

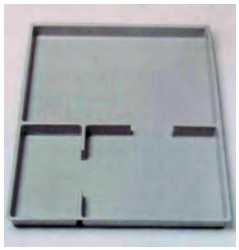
- To be placed on the extendable tray.
- Dimensions: 276 x 276mm (WxD).



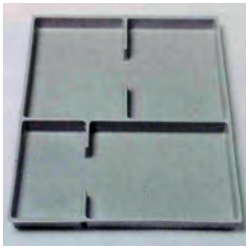
Small Parts Tray for EASY Container	192.011.100

EASY **DRAWER INSERT**

- Made of deep-drawn grey plastics.
- Dimensions: 462 x 560mm (WxD).



192.011.200



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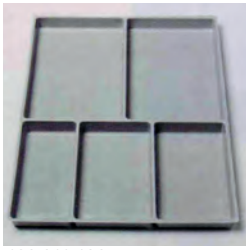

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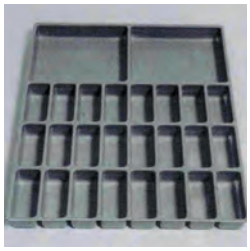

192.011.500

192.011.800

299.131.300 /
192.011.600
(without tools)

299.132.300 /
192.011.700
(without tools)

EASY Drawer Insert			
192.011.200	A3 + A4	192.011.700	for Mechanical Tools (2-pcs.)
192.011.300	3x A4	192.011.800	for hera Training Boxes
192.011.400	2x A4 + 2x A5	299.131.300	Set with Electric Tools 27-pcs.
192.011.500	for Small Parts	299.132.300	Set with Mechanic Tools 39-pcs.
192.011.600	for Electric Tools		

NO COMPROMISSES,
THIS STANDS ALL BURDENS

You need a container for really heavy burdens? Be on the safe side with this sheet steel containers. For example, if you would like to store heavy tools at your workbench. We even offer the right partitions, so your drawers are always well organized and you get exactly the tool you are searching for on first try. All drawers are with solid grip handles.

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CHARACTERISTICS AND ADVANTAGES OF SHEET STEEL CONTAINERS

- **High Stability and Perfect Smoothness**
  Differencial extension without crossbar for a load capacity of 75kg (ESD 50kg).

- **Max. Drawer Efficiency**
  Optimal drawer height (same as front panel) and full extension.

- **Convincing Safety**
  Single drawer blocking system and pull-out safety is standard.

- **Clear Arrangements and Organization**
  Various organizing material for the slotted drawers.

- **Professional Labelings**
  Drawer front with label tag and software for professional markings.

LOCKING SYSTEMS FOR SHEET STEEL CONTAINERS

Key Lock (standard)

- Replacable lock with 2 keys (key number).
- Master key system on demand (surcharge).
- Random key locks, same key locks on demand (surcharge).

Code Lock (optional)

- Locks with 4- to 6-digit codes, up to 100 codes available.
- Code management via Lock ID Code or software.
- Power supply via 2 standard AA batteries.
- Battery durability serveral years.
- Logfile of recent 50 results.

RFID Lock (optional)

- Features like Code Lock.
- Operation with RFID Badge or RFID Card.
- Simple user adding and removal with Mater Card, RFID Badge, RFID Card or software.
- Extra contact for external systems.

SHEET STEEL **MOBILE AND SUSPENDED CONTAINERS**

- Closed metal housing with durable light grey powder coating.
- Sheet steel drawers with full extension, load: 75kg.
- Drawer front in mm, with whole width handle strip (with lable holder - labeling software on demand).
- Side panels of the drawers with same height than drawer fronts, slots in 17mm raster for the acceptance of separators.
- Drawer blocking mechanism, prevents unintended opening of the drawers. Blocking mechanism removable if e.g. used as suspended container.
- Replacable lock with two keys.
- Code - and RFID Lock on demand (surcharge).
- Inner dimension of drawer:
  Width: 306 / 459mm (411 / 564mm)
  Depth: 459 / 612mm (572 / 725mm).

ESD Version:

- Conductive powder coating.
- Mobile Container with conductive casters.
- Load capacity: 50kg.

F Form

Mobile Container
- Lower side with 4 steerable casters (75mm), two with brakes.
- Top with 20mm raised edges and grooved rubber mat.
- Height: 670mm.

Suspended Container
- Top with four mounting holes.
- Height: 533mm.

E Features (drawers):

1x 100 + 1x 150 + 1x 200

2x 50 + 2x 100 + 1x 150

3x 50 + 4x 75

9x 50

Sheet Steel Mobile and Suspended Container 49 **F** . **B** 0 **E** .0 **T** **A**

F Form		**B** Width		**E** Features		**T** Depth		**A** Version	
2	Mobile Container	**4**	411mm	**3**	1x 100 + 1x 150 x 1x 200	**5**	572mm	**0**	light grey RAL7035
3	Suspended Container	**5**	564mm	**5**	2x 50 + 2x 100+ 1x 150	**7**	725mm	**1**	anthracite RAL7016
				7	3x 50 + 4x 75			**5**	ESD light grey
				9	9x 50			**6**	ESD anthracite

Option Handle with Surrounding Stop Edge

492.400.000 for width: 411mm

492.500.000 for width: 564mm

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SHEET STEEL **PEDESTAL CONTAINER**

- Closed metal housing with durable light grey powder coating.
- Sheet steel drawers with full extension, load: 75kg.
- Drawer front in mm, with whole width handle strip (with lable holder - labeling software on demand).
- Side panels of the drawers with same height than drawer fronts, slots in 17mm raster for the acceptance of separators.
- Replacable lock with two keys.
- Code - and RFID Lock on demand (surcharge).
- Inner drawer dimension:
  Width: 306 / 459mm (411 / 564mm)
  Depth: 459 /612mm (572 / 725mm).
- Clear drawer height: 600mm.
- Height: 700mm.

ESD Version:

- Conductive powder coating in grey (similar RAL 7036).
- Drawer load capacity: 50kg.

EE Features (drawers):

2x 75 + 1x 150 + 1x 300

6x 100

8x 75

7x 50 + 2x 75 + 1x 100

12x 50

Sheet Steel Pedestal Container 495. B EE 0 T A

B Width	**EE** Features	**T** Depth	**A** Version
4 411mm	**04** 2x 75 + 1x 150 + 1x 300	**5** 572mm	**0** light grey RAL7035
5 564mm	**06** 6x 100	**7** 725mm	**1** anthracite RAL7016
	08 8x 75		**5** ESD light grey
	10 7x 50 + 2x 75 + 1x 100		**6** ESD anthracite
	12 12x 50		

BASE FOR SHEET STEEL PEDESTAL CONTAINER

- The base is for height adaption, so in combination with a 30mm bench top the standard height of 780mm is achieved.
- Sheet steel in black coating.
- Height: 50mm.

Base for Sheet Steel Pedestal Container 495. B 00. T 0 A

B Width	**T** Depth	**A** Version
4 411mm	**5** 572mm	**0** Standard
5 564mm	**7** 725mm	**5** ESD

SHEET STEEL **SHORT CONTAINER**

- See the details on page 228.
- Clear drawer height: 200mm.
- Height: 283mm.

EE Features (drawers):

1x 50 + 1x 150

1x 50 + 2x 75

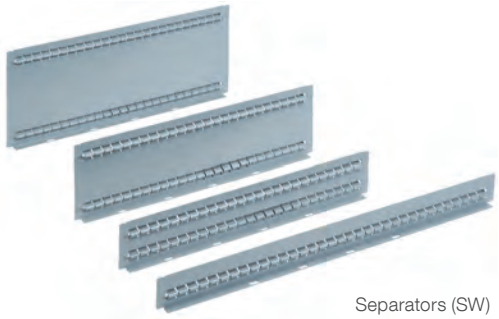
4x 50

Sheet Steel Short Container 494. B EE .0 T A

B Width		EE Features		T Depth		A Version	
4	411mm	02	1x 50 + 1x 150	5	572mm	0	light grey RAL7035
5	564mm	03	1x 50 + 2x 75	7	725mm	1	anthracite RAL7016
		04	4x 50			5	ESD light grey
						6	ESD anthracite

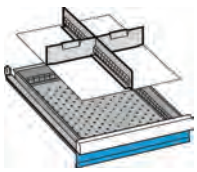
PARTITION SET FOR SHEET STEEL DRAWER

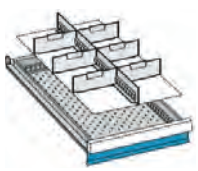
- Sets of separators and dividers in 17mm Raster (17mm = 1x E). Separators (SW) and dividers (TB) made of sheet steel.
- Suitable for the different container widths, - depths and drawer heights.

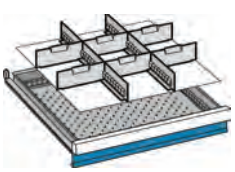


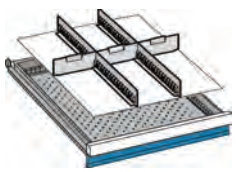
Separators (SW)

Dividers (TB)









Partition Set for Sheet Steel Drawers

Width x Depth	411 x 572mm	411 x 725mm	564 x 572mm	564 x 725mm
Partition Set	**1x SW + 2x TB**	**1x SW + 6x TB**	**2x SW + 6x TB**	**2x SW + 3x TB**
front height: 50mm	496.080.643	496.080.629	496.080.671	496.100.275
front height: : 75mm	496.080.644	496.080.630	496.080.672	496.100.276
front height: : 100mm	496.080.645	496.080.631	496.080.673	496.100.277
front height: : 150mm	496.080.646	496.080.632	496.080.674	496.100.278

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PLASTIC BIN FOR SHEET STEEL DRAWER

- Set of plastic bins made of polysyrol (red).
  ESD made of conductive polypropylen (black).
- Suitable for the different container widths, - depths and drawer heights.

standard version

ESD version

Plastic Bin for Sheet Steel Drawer

H x W x D	Standard / ESD	H x W x D	Standard / ESD	H x W x D	Standard / ESD
26 x 75 x 75mm	480.119.000 / 480.119.005	46 x 75 x 75mm	480.116.000 / 480.116.005	71 x 150 x 75mm	480.384.000 / 480.384.005
26 x 150 x 75mm	480.118.000 / 480.118.005	46 x 150 x 75mm	480.115.000 / 480.115.005	71 x 150 x 150mm	480.383.000 / 480.383.005
26 x 150 x 150mm	480.117.000 / 480.117.005	46 x 150 x 150mm	480.114.000 / 480.114.005		

ANTI-SLIP MAT FOR SHEET STEEL DRAWER

- Rubber mat for the safe storage of sensitive parts.
- Suitable as drawer inlay.
- Nylon / PVC mesh mat, anthracite.

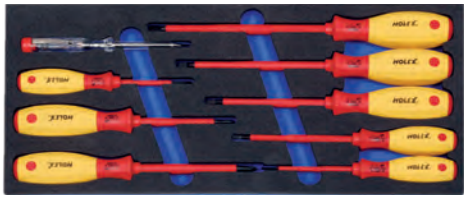
Anti-Slip Mat 496.30 **B** .0 **T** 0

B Width		**T** Depth	
4	411mm	**5**	572mm
5	564mm	**7**	725mm

TOOL SET **SCREWDRIVER, ISOLATED**

- Foam insert, cutable (176×390×30mm).
- Screwdriver, slot (size 2,5 – 3,5 – 4 – 5,5 – 6,5).
- Screwdriver, cross (size 0 – 1 - 2).
- Voltage tester (size 3).

Set of Screwdrivers, isolated, 9-pcs. **496.091.060**



TOOL SET **PLIERS, VDE ISOLATED**

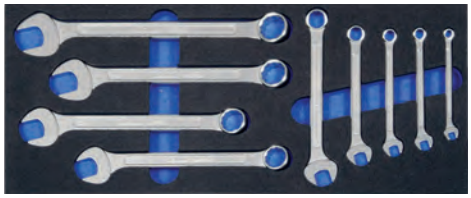
- Foam insert, cutable (176×390×30mm).
- Combination plier.
- Needle nose plier, straight.
- Wire cutter.
- Cable stripper.

Set of Pliers, VDE isolated, 4-pcs. **496.091.070**

TOOL SET **COMBINATION WRENCH**

- Foam insert, cutable (176×390×30mm).
- Set of combination wrench
  (5,5 - 7 - 8 - 10 - 13 - 16 - 17 -18 - 19).

Set of Combination Wrenches, 9-pcs.	496.091.010



TOOL SET **ALLEN WRENCH**

- Foam insert, cutable (176×390×30mm).
- Set of allen wrench.
- Screwdriver-short.

Set of Allen Wrenches, 15-pcs.	496.091.020

TOOL SET **HAMMER**

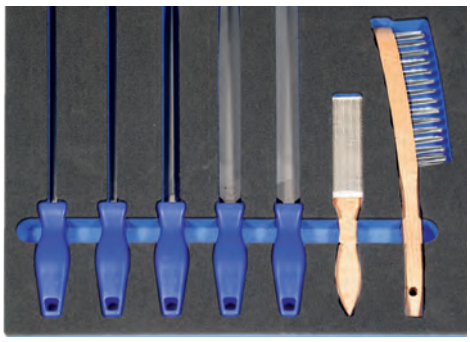
- Foam insert, cutable (176×390×30mm).
- Non-rebound plastic hammer.
- Machinist hammer.

Set of Hammers, 2-pcs.	496.091.030

TOOL SET **FILE**

- Foam insert, cutable (352×390×30mm).
- Engineer file 5-pcs.
- Wire brush size 3.
- File brush 100x25.

Set of Files, 7-pcs.	496.091.040



TOOL SET **SOCKET WRENCH 3/8“**

- Foam insert, cutable (176×390×30mm).
- Set of socket wrench
  (12-edged size 8 – 19, Inbus size3 - 10).

Set of Socket Wrenches 3/8“, 15-pcs.	496.091.050

TOOL SET **MEASURING TOOLS**

- Foam insert, cutable (176×390×30mm).
- Digital vernier caliper (size150mm).
- Flat angle (size 100x70mm).
- L-blade (size 120x150mm).
- Precision steel ruler (size 300mm).
- Tape measure (size 2,5).

Set of Measuring Tools, 5-pcs.	496.091.080

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CHAPTER 8: **CABINETS**

237 Base: Wood and Sheet Steel
238 Cabinet with Hinged Doors
239 Compartment Cabinet and Sliding Door Cabinet
240 Fully and Partially Glass Doors
241 Cabinet with Shutter Doors and Shelf
242 Intermediate Wall and Corner Cabinet
243 Cabinet Shelf Board: Wood and Sheet Steel
245 Book End; Extendable Shelf Board; Wardrobe Rail
246 Shelf Board for Training Systems
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248 Drawer Cabinet
249 Separators and Dividers for Drawer Cabinets
250 File Cabinet
251 Compensation Board and Pull-Out Tray Board
253 Cabinet Ladder System
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256 Partitions for Steel Sheet Drawer Cabinets
257 Sheet Steel Cabinets with Winged Doors
258 Sheet Steel Cabinets with Sliding Doors and Shelfs

COUNTLESS
COMBINATION POSSIBILITIES

The cabinet program of hera bases on a perfectly elaborate modular system, that allows the combination of various elements to an unique cabinet wall. The program offers various decors and features. The rear walls are decorative and allow set-up in room centers. All cabinets, except corner cabinets are supplied completely assembled, however, if shipped internationally, they may come in parts for economical reasons.

720mm	Cabinet 2OH	1264mm	Cabinet 3OH	544mm	Cabinet 1OH	1460mm	Cabinet 4OH	720mm	Cabinet 2OH
60mm	Base	60mm	Base	720mm	Cabinet 2OH	60mm	Base	20mm	Tray Board
				60mm	Base			720mm	Cabinet 2OH
								60mm	Base

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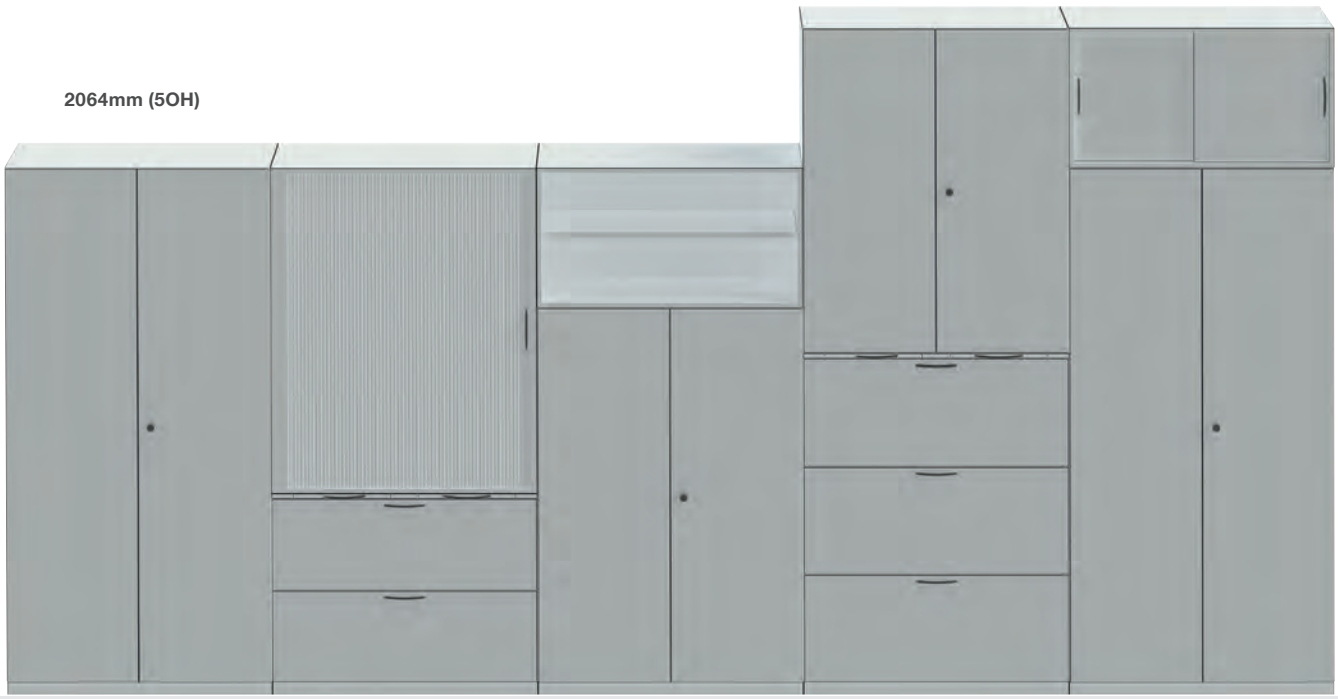
The modular cabinet system of hera

Modular cabinet program with:

- 4 widths: 420mm, 800mm, 1000mm, 1200mm
- 3 depths: 430mm, 525mm, 625mm
- 5 heights:
  1OH = 544mm, 2OH = 720mm,
  3OH = 1264mm, 4OH = 1460mm, 5OH = 2004mm

2608mm (6OH)

2064mm (5OH)



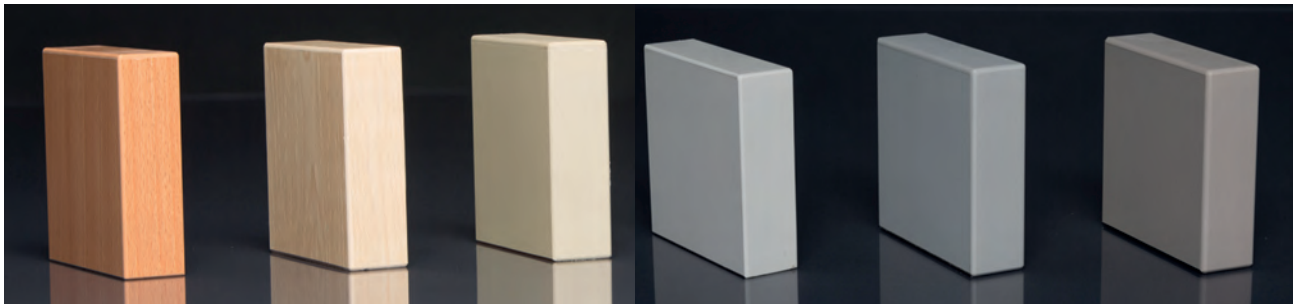
2004mm	Cabinet 5OH	1264mm	Cabinet 3OH	544mm	Cabinet 1OH	1264mm	Cabinet 3OH	544mm	Cabinet 1OH
60mm	Base	20mm	Tray Board	1460mm	Cabinet 4OH	20mm	Tray Board	2004mm	Cabinet 5OH
		720mm	Cabinet 2OH	60mm	Base	1264mm	Cabinet 3OH	60mm	Base
		60mm	Base			60mm	Base		

DECORS, IN STANDARD AND ESD

light grey

BiColor (light grey / anthracite)

DECORS



beech | maple | pebble | white standard and | light grey standard and | indus grey standard and

FUNCTIONAL DECORS

magnetic decor

greenboard decor

whiteboard decor

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WOOD BASE

- Surrounding frame 19mm melamine resin covered chipboard, all sides with 2mm PP plastic edge.
- Hiddenly incorporated metal levellers, adjustable by mounting holes within the cabinet body.
- Completely assembled to the cabinet.

adjustment of levellers

Wood Base	480.0 BB . T H A

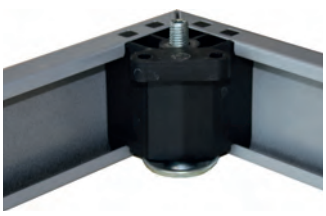
BB Width		T Depth		H Height		A Version	
04	420mm	0	595mm	0	60mm	0	Standard
08	800mm	4	400mm	3	30mm	5	ESD
10	1000mm	5	495mm				
12	1200mm						

STEEL BASE

- Surrounding frame made of folded steel with durable conductive powder coating in light grey.
- Hiddenly incorporated metal levellers, adjustable by mounting holes within the cabinet body. In ESD version the base is conductively connected to the cabinet body.
- Completely assembled to the cabinet.
- Absolutely rust-proof, even at high humidity and moist floor.
- Height: 50mm.

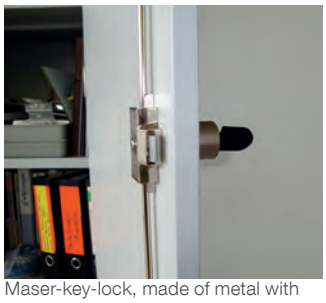
Steel Base	480.0 BB . T 55

BB Width		T Depth	
04	420mm	0	595mm
08	800mm	4	400mm
10	1000mm	5	495mm
12	1200mm		



CABINET WITH **HINGED DOORS**

- Body made of 19mm thick melamine resin covered chip board.
- Side walls with hole line in 32mm raster.
- Solid, decorative rear wall (13mm thick).
- Dust protected due to surrounding rubber lip.
- 270° opening hinges, completely made of metal.
- Right door with espagnolette lock (master-key-system) and handle knob.
- Left door with stopper and rubber lip.



Maser-key-lock, made of metal with replacable core

Metal hinge, opening 270°

Dust protected due to rubber lip

Cabinet with Hinged Doors **481. H BB. T F A**

H Height (excl. base)	**BB** Width	**T** Depth	**F** Form	**A** Version
1 1OH 544mm	**04** 420mm 1 door	**0** 625mm	**0** 2 doors or	**0** Standard
2 2OH 720mm	**08** 800mm 2 doors	**4** 430mm	1 door, right hinged	**5** ESD
3 3OH 1264mm	**10** 1000mm 2 doors	**5** 525mm	**1** 1 door, left hinged	
4 4OH 1460mm	**12** 1200mm 2 doors			
5 5OH 2004mm				

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COMPARTMENT CABINET

- Body made of 19mm thick melamine resin covered chip board.
- Side and intermediate walls with hole line in 32mm raster.
- Solid, decorative rear wall (13mm thick).
- Dust protected due to surrounding rubber lip.
- 180° opening hinges, completely made of metal.
- Doors with right hinges, lock (master-key-system) and handle knob.

Compartment Cabinet 487. H BB . T 0 A

H Height (excl. base)	BB Width	T Depth	A Version
2 2 lines (720mm)	08 800mm	0 625mm	0 Standard
3 3 lines (1264mm)	12 1200mm	4 430mm	5 ESD
		5 525mm	

CABINET WITH **SLIDING DOORS**

- Body made of 19mm thick melamine resin covered chipboard.
- Intermediate wall with hole line in 32mm raster.
- Solid, decorative rear wall (13mm thick).
- Low friction plastic rollers for sliding doors.
- Safety clylinder push-lock (master-key-system) and metal handles.

Cabinet with Sliding Doors 482. H BB . T 0 A

H Height (excl. base)	BB Width	T Depth	A Version
1 1OH 544mm	08 800mm	0 625mm	0 Standard
2 2OH 720mm	10 1000mm	4 430mm	5 ESD
3 3OH 1264mm	12 1200mm	5 525mm	
4 4OH 1460mm	16 1600mm		
5 5OH 2004mm			

OPTION **FULLY GLASSED DOORS** FOR CABINET

- Surcharge for cabinets with hinged doors or sliding doors made of safety glass, 6mm, clear.

Fully Glassed Doors for Cabinet	481. H BB .050	
H Height		**BB** Width
1 1OH 544mm	**4** 4OH 1460mm	**04** 420mm
2 2OH 720mm	**5** 5OH 2004mm	**08** 800mm
3 3OH 1264mm		**10** 1000mm
		12 1200mm

OPTION **PARTIALLY GLASSED DOORS** FOR CABINET

- Surcharge for cabinets with hinged doors or sliding doors.
- Wooden doors with safety glass inlay, 6mm clear.

Partially Glassed Doors for Cabinet	481. H BB .060	
H Height		**BB** Width
1 1OH 544mm	**4** 4OH 1460mm	**04** 420mm
2 2OH 720mm	**5** 5OH 2004mm	**08** 800mm
3 3OH 1264mm		**10** 1000mm
		12 1200mm

fully glassed doors

partially glassed doors

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CABINET WITH **ROLLER SHUTTER**

- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Side walls with hole line in 32mm raster.
- Solid, decorative rear wall (13mm thick).
- Roller shutter rolled-up in the right side (this reduces the usable width by 200mm).
- Safety cylinder push-lock (master-key-system) and metal handles.

Cabinet with Roller Shutter 483. H BB. T 0 A

H Height (excl. base)				BB Width		T Depth		A Version	
1	1OH 544mm	3	3OH 1264mm	08	800mm	0	625mm	0	Standard
2	2OH 720mm	4	4OH 1460mm	10	1000mm	4	430mm	5	ESD
				12	1200mm	5	525mm		

SHELF CABINET

- Body made of 19mm thick melamine resin covered chipboard, completely assembled.
- Side walls with hole line in 32mm raster.
- Solid, decorative rear wall (13mm thick).

Shelf Cabinet 484. H BB. T 0 A

H Height (excl. base)				BB Width				T Depth		A Version	
1	1OH 544mm	3	3OH 1264mm	04	420mm	10	1000mm	0	625mm	0	Standard
2	2OH 720mm	4	4OH 1460mm	08	800mm	12	1200mm	4	430mm	5	ESD
		5	5OH 2004mm					5	525mm		

OPTION **INTERMEDIATE WALL**

- Firmly assembled intermediate wall for all cabinets with two hinged doors, cabinets with roller shutters and shelf cabinets from width 800 - 1200mm.
- 19mm thick melamine resin covered chipboard and hole line in 32mm raster.

Intermediate Wall 480.10 **H** . **T** 0 **A**

H Height				**T** Depth		**A** Version	
1	1OH 544mm	**4**	4OH 1460mm	**0**	562mm (for cabinet depth: 625mm)	**0**	Standard
2	2OH 720mm	**5**	5OH 2004mm	**4**	367mm (for cabinet depth: 430mm)	**5**	ESD
3	3OH 1264mm			**5**	462mm (for cabinet depth: 525mm)		

CORNER SHELF AND CORNER CABINET WITH HINGED DOORS

- Body made of 19mm thick melamine resin covered chipboard.
- Base with incorporated metal levellers, incl. shelf boards, height adjustable.
- Cabinet available with one or two doors, with metal hinges, espagnolette lock (master-key-system) and handle knob.
- Dimensions: 1000 x 1000mm
  Front width: 500mm (D: 625)
  650mm (D: 525)
  800mm (D: 435)

Corner Shelf and Corner Cabinet with Hinged Doors 48 **F** . **H** 50. **T** 0 **A**

F Form		**H** Height		**T** Depth		**A** Version	
0	Corner Shelf	**1**	1OH 544mm	**0**	625mm	**0**	Standard
1	1 Door Corner Cabinet	**2**	2OH 720mm	**4**	430mm	**5**	ESD
2	2 Door Corner Cabinet	**3**	3OH 1264mm	**5**	525mm		
		4	4OH 1460mm				
		5	5OH 2004mm				

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WOOD SHELF BOARD

- Shelf board for cabinets with hinged doors, cabinets with sliding doors and with roller shutters, incl. 4 shelf clips.
- Melamine resin covered chipboard with 2mm PP plastic edge.
- Load capacity: 60kg/m² (19mm thick)
  90kg/m² (25mm thick)

metal shelf clip

Wood Shelf Board **480.3 BB . T S A**

BB Width		T Depth		S Thick		A Version	
03	370mm (for 800mm cabinet with intermediate wall)	**0**	560mm	**1**	19mm	**0**	Standard
04	380mm (for 420mm cabinet with intermediate wall)	**4**	365mm	**2**	25mm	**5**	ESD
05	470mm (for 1000mm cabinet with intermediate wall)	**5**	460mm				
06	570mm (for1200mm cabinet with intermediate wall or 800mm roller shutter cabinet)						
08	760mm (for 800mm cabinet or 1000mm roller shutter cabinet)						
10	960mm (for 1000mm cabinet or 1200mm roller shutter cabinet)						
12	1160mm (for 1200mm cabinet)						

SHEET STEEL SHELF BOARD

- Heavy duty shelf board for cabinets with hinged doors, cabinets with sliding doors, with roller shutters and shelf cabinets, incl. 4 shelf clips.
- Absolutly sturdy due to 3fold bending at front and rear side. From width of 900mm reinforced.
- Made of sheet steel with durable conductive powder coating in light grey.
- Load capacity: 125kg/m².
- Height: 24mm.

Sheet Steel Shelf Board

- load capacity 125kg/m²
- conductive powder coating

from width 900mm reinforced

Sheet Steel Shelf Board **480.3 BB . T 00**

BB Width		T Depth	
05	470mm (for 1000mm cabinet with intermediate wall)	**0**	560mm (for cabinet depth: 625mm)
06	570mm (for1200mm cabinet with intermediate wall or 800mm roller shutter cabinet)	**4**	365mm (for cabinet depth: 430mm)
08	760mm ((for 800mm cabinet or 1000mm roller shutter cabinet)	**5**	460mm (for cabinet depth: 525mm)
10	960mm (for 1000mm cabinet or 1200mm roller shutter cabinet)		
12	1160mm (for 1200mm cabinet)		

STORE YOUR MATERIALS **ORDERLY AND SAFE**

You are searching for a solution to store files, working clothes or sensible electrical devices in a professional way? The cabinet system of hera offers the right possibility for each application. For an ergonomic handling we offer not only the cabinets but also the internals like shelf boards, extensional cable supports, etc. See our details on the next pages with practical examples for applications.

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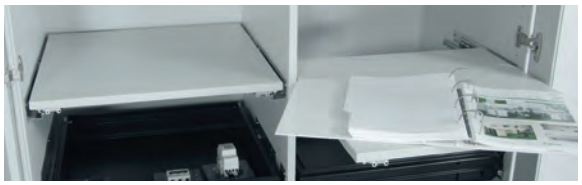
BOOKEND FOR SHELF BOARD

- The bookend is plugged to a sheet steel shelf board and is stepless movable.
- Made of sheet steel with durable light grey powder coating.
- Dimensions: 290 x 200mm (DxH).

Bookend for Shelf Board	480.350.003

EXTENDABLE **SHELF BOARD**

- Metal roller guides with fullextension..
- Shelf made of melamine resin covered chipboard, sides with 2mm PP plastic edge.
- Load capacity: 400N.



Extendable Shelf Board	480.6 BB . T 20

BB Width

03	370mm (for 800mm with intermediate wall)	**06**	570mm (for 1200mm with intermediate wall)
04	380mm (for 420mm cabinet)	**08**	760mm (for 800mm cabinet)
05	470mm (for 1000mm with intermediate wall)	**10**	960mm (for 1000mm cabinet)

T Depth

0	595mm (for cabinet depth: 625mm)
4	340mm (for cabinet depth: 430mm)
5	495mm (for cabinet depth: 525mm)

WARDROBE RAIL AND BRACKET

- Wardrobe rail made of oval chromed tube incl. metal support for the fixation to the side walls.
- Wardrobe bracket for cabinet depth 525mm.
- For the acceptance of hangers, so the cabinet could be partly used as wardrobe.

wardrobe rail

wardrobe bracket

Wardrobe Rail	480.4 BB .000

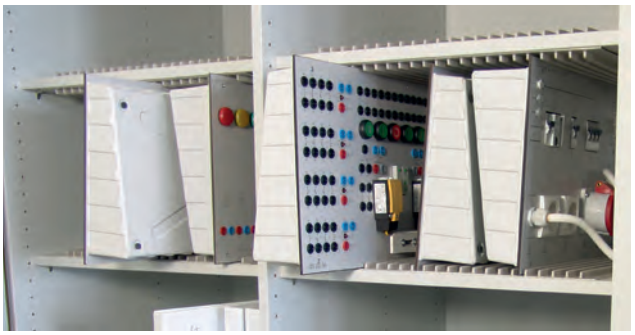
BB Width

03	370mm (for 800mm cabinet with intermediate wall)
04	380mm (for 420mm cabinet with intermediate wall)
05	470mm (for 1000mm cabinet with intermediate wall)
06	570mm (for1200mm cabinet with intermediate wall or 800mm roller shutter cabinet)
08	760mm (for 800mm cabinet or 1000mm roller shutter cabinet)
10	960mm (for 1000mm cabinet or 1200mm roller shutter cabinet)
12	1160mm (for 1200mm cabinet)

480.400.000	Wardrobe Bracket for Cloth Hangers

SHELF BOARD FOR TRAINING SYSTEMS

- Melamine resin covered 16mm thick wooden shelf board, sides with 2mm PP plastic edge.
- With slotted mat for the upright storage of DIN A4 training systems.



Shelf Board for Training System 480.6 **BB** . **T** 3 **A**

BB Width

04	380mm (for W: 420)
05	470mm (for W: 1000 w. intermediate wall)
06	570mm (for W:1200 w. interm. wall or 800mm roller shutter)
08	760mm (for W: 800 or 1000mm roller shutter)

T Depth

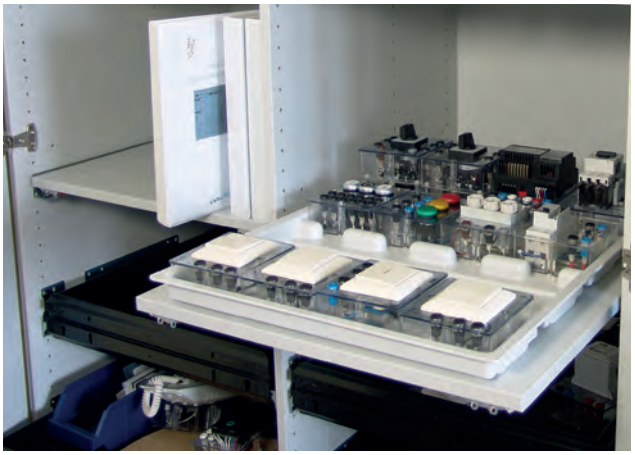
0	545mm (for D: 625mm)
4	350mm (for D: 430mm)
5	445mm (for D: 525mm)

A Version

0	one side with slotted mat
5	two sides with slotted mat

TRAY FOR TRAINING BOXES

- Solid tray made of deep-drawn plastics, for the storage of max. 16x hera training boxes.
- Incl. 2x guiding rails screwed to the inner side of the cabinet.
- Suitable for following cabinets with hinged doors and intermediate wall:
  1200 x 525mm (WxD)
  1000 x 625mm (WxD).
- Dimensions: 570 x 470mm.



Tray for Training Boxes and Guiding Rails 480.602.000

CORDHOLDER FOR CABINET

- Telescopic rail, locking in extended position.
- Cordholder made of aluminium sheet with durable, light grey powder coating. Comb depth: 80mm.
- Different gaps for cords with max. 12mm diameter.
- Length: 550 / 450 / 350mm.

Cordholder for Cabinet 480.600. **L** 00

L Length

0 550mm (for D: 625mm)	**4** 350mm (for D: 430mm)	**5** 450mm (for D: 525mm)

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INTEGRATION **DRAWER**

- Black powder coated sheet steel drawer with telescopic full extension, completely metal made. For the integration into cabinets.
- Approx. 33mm overextension.
- Load capacity: 700N.
- Height: 91mm.

Integration Drawer 480.7 **BB**. **T** 00

BB Width

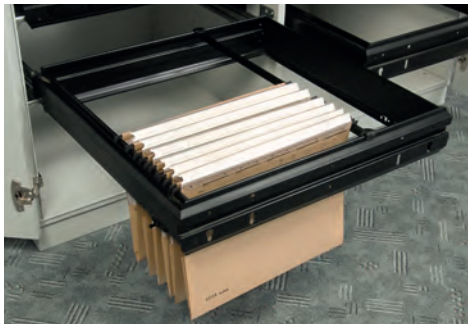
04	380mm (420mm cabinet)	**10**	960mm (1000mm cabinet)
06	570mm (1200mm cabinet + indermediate wall)	**12**	1160mm (1200mm cabinet)
08	760mm (800mm cabinet)		

T Depth

0	for cabinet depth: 625mm
4	for cabinet depth: 430mm

SUPPORT FOR **FOLDERS**

- Sheet steel frame with black powder coating for hanging folders, with telescopic full extension incl. steel divider.
- Approx. 33mm overextension.
- Load capacity: 700N.
- Height: 91mm.



Support for Folders 480.8 **BB**. **T** 00

BB Width

04	380mm (420mm cabinet)	**10**	960mm (1000mm cabinet)
06	470mm (1200mm cabinet + indermediate wall)	**12**	1160mm (1200mm cabinet)
08	760mm (800mm cabinet)		

T Depth

0	for cabinet depth: 625mm
4	for cabinet depth: 430mm

OPTION **DRAWER FRONT**

- If integration drawers or folder supports should be installed into a doorless cabinet or cabinet with glass-door.
- Light grey melamine resin covered chipboard with recessed grip.

Option Drawer Front 480.8 **BB** .7 **H** 0

BB Width

04	380mm	**10**	960mm
06	570mm	**12**	1160mm
08	760mm		

H Height

2	2HE	**4**	4HE
3	3HE	**6**	6HE

DRAWER **CABINET**

- Body made of 19mm thick melamine resin covered chipboard with 13mm decorative rear wall (comes completely assembled).
- Dust protection due to surrounding rubber lip.
- Durable black powder coated sheet steel drawer with telescopic full extension, completely metal made.
- Appox. 33mm overextension.
- Load capacity: 700N.
- Drawer fronts with metal handles, front height in HE (1HE = 64mm).
- Top front with central lock (master-key-system).
- With single drawer blocking system and integrated counter weight for absolute stability even if a heavy loaded drawer is open.

486.204.030

486.308.470

486.312.490

Drawer Cabinet **486. H BB . T S A**

H Height	**BB** Width	**T** Depth	**S** Drawers	**A** Version
2 2OH 720mm	**04** 420mm	**0** 625mm	**3** in height 720: 1x 3HE + 2x 4HE	**0** Standard
3 3OH 1264mm	**08** 800mm	**4** 430mm	**4** in height 720: 3x 3HE + 1x 2HE	**5** ESD
	10 1000mm		**5** in height 720: 1x 3HE + 4x 2HE	
	12 1200mm		in height 1264: 2x 3HE + 2x 4HE + 1x 5HE	
			6 in height 1264: 5x 3HE + 1x 4HE	
			7 in height 1264: 1x 3HE + 4x 2HE + 2x 4HE	
			8 in height 1264: 1x 3HE + 6x 2HE + 1x 4HE	
			9 in height 1264: 1x 3HE + 8x 2HE	

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CLOSING MECHANISM WITH SOFTSTOP

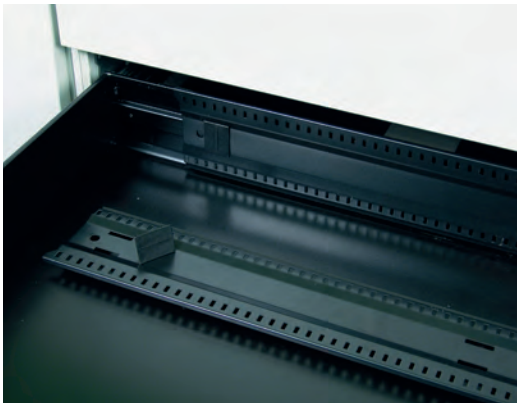
- Optionally self closing mechanism for drawer with two dampers.

SoftStop per Drawer	486.502.000

SET OF **PERFORATED PANELS** FOR CABINET DRAWER

- Mandatory if cabinet drawers should be equipped with partitions and dividers.
- 2x perforated sheet steel panels with black powder coating.
- 6x drawer clips.

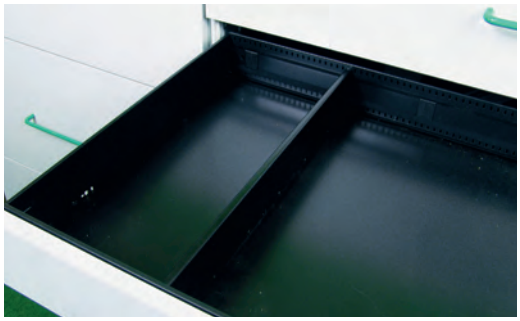
Set of Perforated Panels for Cabinet Drawer	
486.504.000	W: 371mm for cabinet width 420mm
486.506.000	W: 536mm for cabinet width 1200mm + intermediate wall
486.508.000	W: 736mm for cabinet width 800mm
486.510.000	W: 936mm for cabinet width 1000mm
486.512.000	W: 1136mm for cabinet width 1200mm



DIVIDER FOR DRAWER

- For dividing the drawers between the perforated panels or between drawer clips.
- With mounting holes for the installation of partitions.
- Double walled sheet steel with black powder coating.

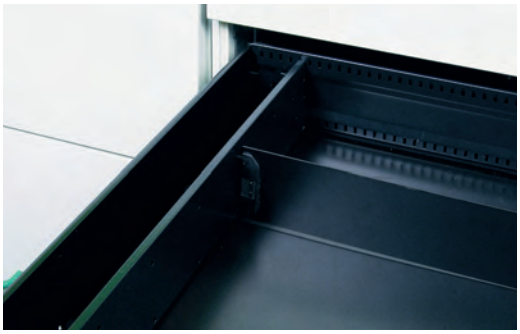
Divider for Cabinet Drawer	
486.520.000	D: 491mm for cabinet depth 625
486.520.400	D: 385mm for cabinet depth 430



PARTITION FOR DRAWER

- For the lengthwise separation between the dividers.
- Sheet steel with black powder coating.

Partition for Drawer	
486.524.000	Partition A4 (310mm)
486.525.000	Partition A5 (210mm)
486.526.000	Partition A6 (150mm)
486.527.000	Partition A7 (110mm)



FOLDER CABINET

- Body made of 19mm thick melamine resin covered chipboard (comes completely assembled).
- Decorative 13mm rear wall.
- Dust protection due to surrounding rubber lip.
- Metal support for hanging folders with telescopic full extension, 19mm thick front with metal handles.
- Upper front with central lock (master-key-system).
- With single drawer blocking system and integrated counter weight for absolute stabilization even with open drawer.

485.204.400

485.308.400

Folder Cabinet 485. **H** **BB** . **T** 0 **A**

H Height (excl. base)	**BB** Width		**T** Depth	**A** Version
2 2OH 720mm	**04** 420mm	**10** 1000mm	**0** 625mm	**0** Standard
3 3OH 1264mm	**08** 800mm	**12** 1200mm	**4** 430mm	**5** ESD

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COMPENSATING BOARD

- Melamine resin covered, light grey chipboard with 2mm PP plastic edges.
- 19mm thick between the cabinets or 30mm for top plates.

Compensating Board 480.2 BB . T AA

BB Width	T Depth	AA Version
04 420mm	0 625mm	00 19mm Standard
08 800mm	4 430mm	05 19mm ESD
10 1000mm	5 525mm	10 30mm Standard
12 1200mm		15 30mm ESD

EXTENSIONAL **TRAY BOARD**

- Compensting board with cutouts for the extensional tray boards, made of chipboard with 2mm PP plastic edge.
- Extensional tray board with metal handles and stop position.
- Colour: light grey, pearl structured.
- Height: 19mm.

Extensional Tray Board 480.2 BB . T 1 A

BB Width	T Depth	A Version
08 800mm	0 625mm	0 Standard
10 1000mm	4 430mm	5 ESD
12 1200mm	5 525mm	

STEP BY STEP
TO MORE STORAGE ROOM

You have lots of stuff in a room with high ceiling and trouble to get it all stored? - No problem: with our cabinets of 2608mm total height you can stow a lot. And best of all, it all stays in convenient reach due to the easy-to-install movable ladder system.

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RAIL FOR CABINET LADDER

- Rail incl. brackets and cabinet paneling.
- Panel suitable for cabinet (panel height: 160mm).
- Rail made of anodized aluminium with metal brackets.
- Prepared for easy installation on customers site.

Compensating Board 480.2 BB . T 0 A					
BB Width		**T Depth**		**A Version**	
04	420mm	**0**	625mm	**0**	Standard
08	800mm	**4**	430mm	**5**	ESD
10	1000mm	**5**	525mm		
12	1200mm				

CABINET **LADDER**

- Made of aluminium with 7 steps.
- The ladder requires approx. 550mm for pitch angle.

Cabinet Ladder	
480.510.000	with casters
480.515.000	extensional with casters
480.520.000	for hooking into rail
480.500.100	side part for storing the ladder if not used

480.510.000

480.520.000

rail system with extesional ladder and casters

rail system with hooked in ladder

SHEET STEEL CABINETS

CHARACTERISTICS AND ADVANTAGES

- **High Stability and Perfect Smoothness**
  Cabinets for up to 4000kg and a drawer load of 75kg (ESD 50kg).

- **Max. Drawer Efficiency**
  Optimal drawer height (same as front panel) and full extension).

- **Convincing Safety**
  Single drawer blocking system and pull-out safety is standard.

- **Clear Arrangements and Organization**
  Availability of various organizing material for the slotted drawers.

- **Professional Labelings**
  Drawer front with label tag and software for professional markings.

LOCKING SYSTEMS

Key Lock (standard)

- Replacable key lock with 2 keys (key number).
- Master key system on demand (surcharge).
- Random key locks, same key locks on demand (surcharge).

Code Lock (optional)

- Locks with 4- to 6-digit codes, up to 100 codes available.
- Code management via Lock ID Code or software.
- Power supply via 2 standard AA batteries.
- Battery durability serveral years.
- Logfile of recent 50 results.

RFID Lock (optional)

- Features like Code Lock.
- Operation with RFID Badge or RFID Card.
- Simple user adding and removal with Mater Card, RFID Badge, RFID Card or software.
- Extra contact for external systems.

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SHEET STEEL **DRAWER CABINET**

- Completely welded sheet steel housing with durable light grey powder coating.
- Metal drawers with full extension: 75kg load capacity.
- Sheet steel drawers with precision ball bearings.
- Sides of the sheet steel drawers with the same height than the front, with slotted strips in 17mm raster for partition.
- Drawer front in mm, with whole width handle strip (with lable holder - labeling software on demand).
- Code - and RFID locks on demand (surcharge).
- Inner dimensions of drawer:
  Width: 612 / 918mm (717 / 1023mm)
  Depth: 459 / 612mm (572 / 725mm).

ESD Version:

- Conductive powder coating in light grey.
- Load capacity: 50kg per drawer.

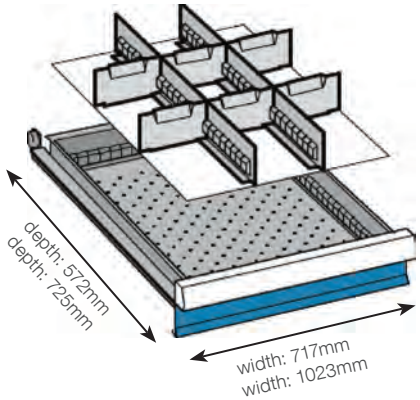
498.707.530

498.710.520

498.714.710

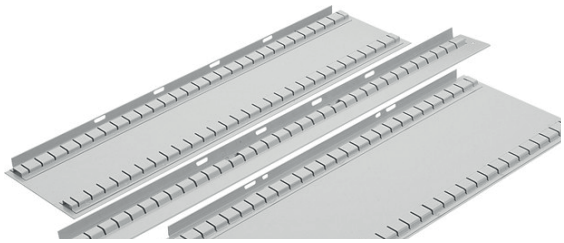
Sheet Steel Drawer Cabinet **498. B HH. T S A**

B Width	HH Height	T Depth	S Drawers	A Version
1 1023mm	07 700mm	5 572mm	1 8x 75 (H: 700)	0 light grey RAL7035
7 717mm	10 1000mm	7 725mm	10x 75 (H: 850)	1 anthracite RAL7016
	14 1450mm		12x 75 (H: 1000)	5 ESD light grey
			2 18x 75 (H: 1450)	6 ESD anthracite
			4x 75 + 2x 150 (H: 700)	
			4x 75 + 3x 100 + 1x 150 (H: 850)	
			3 4x 75 + 3x 100 + 2x 150 (H: 1000)	
			6x 75 + 3x 100 + 4x 150 (H: 1450)	
			2x 75 + 2x 100 + 1x 250 (H: 700) W: 1023mm not in ESD	
			4x 75 + 2x 100 + 2x 200 (H: 850)	
			4x 75 + 2x 150 + 1x 300 (H: 1000) W: 1023mm not in ESD	
			2x 75 + 4x 100 + 4x 200 (H: 1450)	



SLOTTED PARTITIONS FOR SHEET STEEL DRAWER

- For the lengthwise and crosswise partitioning of drawers.
- Slots in 17mm raster.
- Made of sheet steel with assembly set.
- Colour: grey.



Slottet Partitions for Sheet Steel Drawers

	front height			
	50	75	100	150
304mm	496.012.015	496.012.124	496.012.016	496.012.017
456mm	496.080.085	496.080.089	496.080.095	496.080.101
610mm	496.080.088	496.080.091	496.080.097	496.080.103

PLAIN PARTITIONS FOR SHEET STEEL DRAWER

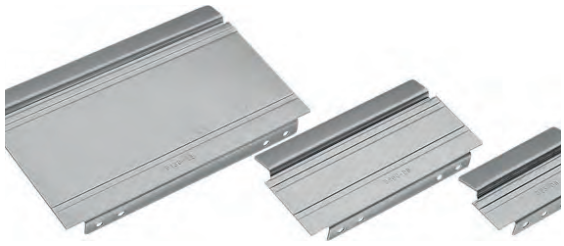
- For the length - and width partition of the drawers in 17mm steps.
- Made of sheet steel incl. assembly set.
- Colour: grey.

Plain Partitions for Sheet Steel Drawer

	front height			
	50	75	100	150
304mm	496.012.088	496.012.121	496.012.089	496.012.090
456mm	496.080.237	496.080.121	496.080.127	496.080.133
610mm	496.080.239	496.080.123	496.080.129	496.080.135

DIVIDERS FOR SHEET STEEL DRAWERS

- In combination with the partitions this enables an individual fine partitioning of drawers in 17mm raster.
- The slanted label holder fits across the whole width and accomodates label holders or barcode labels.
- Made of aluminium.



Divider for Sheet Steel Drawer

	front height			
	50	75	100	150
48mm	496.100.837	496.100.848	496.100.859	-
98mm	496.100.840	496.100.851	496.100.862	496.100.870
149mm	496.100.843	496.100.854	496.100.865	496.100.873
201mm	496.100.845	496.100.856	496.100.867	496.100.875
303mm	496.100.847	496.100.858	496.100.869	496.100.877

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TOP-MOUNT CABINET FOR DRAWER CABINET

- Top-mount cabinets are perfectly suitable for stacking on drawer cabinets and offer the same stability.
- Either with winged doors or space-saving sliding doors (only for W: 1023mm).
- Optional with partial acrylic glass for a clear view.
- Height: 1000mm (drawer height: 930mm).
- Incl. 1 anodized shelf board (load capacity: 60kg).

Top-Mount Sheet Steel Cabinet 498. B 0 A . T 0 A

B Width		A Type		T Depth		F Version	
1	1023mm	0	with winged doors	5	572mm	0	light grey RAL7035
7	717mm	1	with partial glass winged doors (only W: 1023)	7	725mm	1	anthracite RAL7016
		2	with sliding doors (only W: 1023)				
		3	with partial glass sliding doors (only W: 1023)				

SHEET STEEL CABINET WITH WINGED DOORS

- Solid steel construction with highest stability, load capacity: 500kg.
- 25mm raster for shelf boards.
- Sheet steel doors with 115° opening angle.
- Cylindric lock with 2 keys (master-key-system on demand).
- Incl. anodized shelf boards with 60kg load capacity.

Sheet Steel Cabinet with Winged Doors 497. H 10 . T 0 A

H Height		T Depth		A Version	
2	1000mm (2x shelf board)	4	400mm	0	light grey RAL7035
5	1950mm (4x shelf board)	5	500mm	1	anthracite RAL7016
				5	ESD light grey
				6	ESD anthracite

Extra Shelf Board:

depth: 400mm:	497.010.400
depth: 500mm:	497.010.500

standard lock

Code lock (on demand)

SHEET STEEL CABINETS WITH SLIDING DOORS

- Solid sheet steel construction for 500 - 950kg (from W: 1500mm).
- 25mm raster for shelf boards.
- Reinforced sliding doors with double bending.
- Cylindric lock with 2 keys (master-key-system on demand).
- Code lock on demand.
- Incl. anodized shelf boards with 60kg load capacity.

Sheet Steel Cabinet with Sliding Doors 497. H BB . T 1 A

H Height		BB Width		T Depth		A Version	
2	1000mm (2x shelf boards, from W: 1500 with intermediate wall and 4x shelf boads)	10	1000mm	4	400mm	0	light grey RAL7035
5	1950mm (4x shelf boards, from W: 1500 with intermediate wall and 8x shelf boards)	12	1250mm	5	500mm	1	anthracite RAL7016
		15	1500mm				
		20	2000mm				

SHEET STEEL SHELF

- Boltless shelf system with basic and add-on units for variable shelf rows.
- 25mm raster for shelf boards.
- Max bay capacity: 2.800kg.
- Shelf board (H: 25mm) capapcity: 160kg.

Basic Unit

Add-On Unit

Shelf Boards 496.49 B . T 0 A

B Width		T Depth		A Version	
0	1000mm	4	400mm	0	light grey RAL7035
3	1300mm	5	500mm	1	anthracite RAL7016
		6	600mm	5	ESD light grey
				6	ESD anthracite
				9	anodized

Safety Instructions:
Shelves with more than 1:5 (depth:height) must be secured in wall, ceiling or floor).
Each 3rd add-on unit needs a diagonal stiffening.

Sheet Steel Shelf 496. R H B T 0 A

R Shelf		H Height		B Width		T Depth		A Version	
2	Basic Unit (2x Brace Pair + 1x Diagonal Stiffening)	0	2000mm +5x Shelf Boads	0	1000mm	4	400mm	0	light grey RAL7035
3	Add-On Unit (1x Brace Pair)	2	2200mm +5x Shelf Boads	3	1300mm	5	500mm	1	anthracite RAL7016
		5	2500mm +6x Shelf Boads			6	600mm	5	ESD light grey
								6	ESD anthracite
								9	anodized

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CHAPTER 9: **COMPACT TERMINAL KK AND ENERGY PROFILE KP**

Compact Terminal with KK Modules

261 Compact Terminal
262 KK Module

ENERGY Profile with KP Modules

266 EASY ENERGY Profile
267 PROFI ENERGY Profile
269 Shelf and Perforated Backplane
270 TFT Support and Keyboard Tray
271 PROFI Extension ENERGY
272 Aluboard
273 Blank Panel and Cable Access
274 Cable Access and Emergency Stop Module
275 Mains Panel
277 Socket Panel
278 International Socket and Isolated Transformer
279 CEE Socket, 1phase, 3phases
280 Safety Jack, Selective Poles, Installation Enclosure
282 Interface and Continuity Tester
283 Pressured Air and Soldering Station
284 Soldering Station
285 Fixed DC Voltage
286 Laboratory Power Supply
287 IMOD Control-Unit
288 IMOD Function-Unit: AC Source, 1phase
289 IMOD Function-Unit: Laboratory Power Supply
290 IMOD Function-Unit: Multimeter and Function Generator

THE DELICATE COMPACT TERMINAL **FOR VARIOUS APPLICATIONS**

This small-dimensioned system suits lots of different applications. Due to its high rigidity, the flexible length and the mounting slot it can be installed on the bench top, in the cable tray, under or in the shelf and even between the PROFI extensions. The compact channel is unbeatable in its countless applications if only sockets, jacks and protection is needed.

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COMPACT TERMINAL

- Aluminium channel with durable light grey powder coating and side covers.
- Front side for the modular equipment with modules in KK raster.

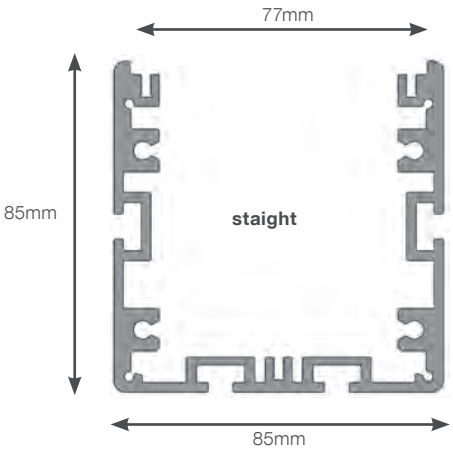
Straight Version:

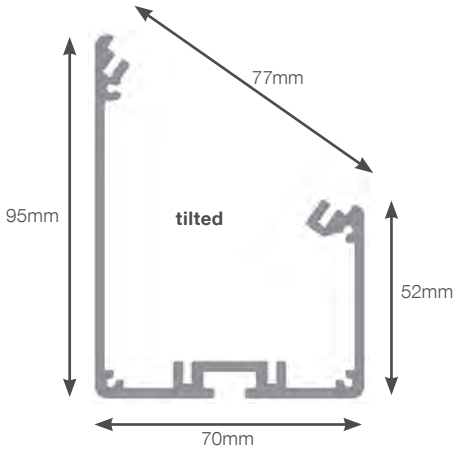
- For multimedia support, in cable tray, installed to the aluminium profile or directly on the bench top.

Tilted Version:

- For multimedia support, in cable tray, installed to the aluminium profile or directly on the bench top.

A Version





M Installation

1 on the bench

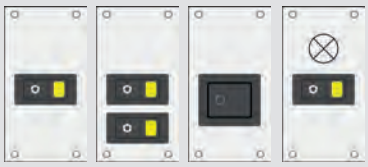
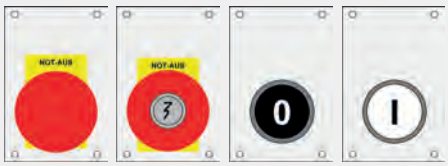
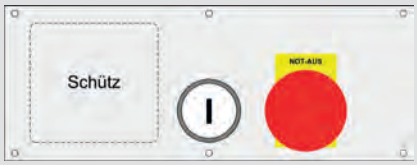
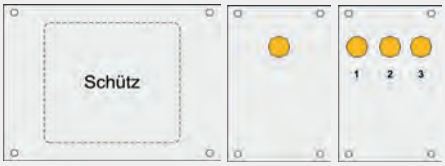
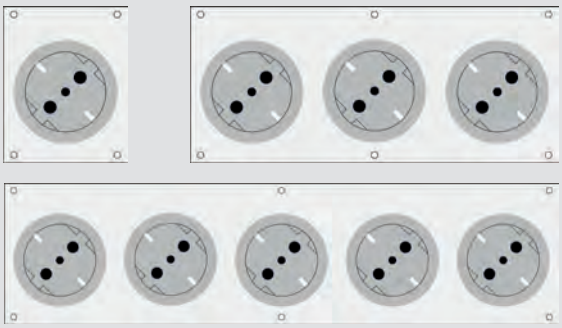
2 below the shelf

3 with mounting brackets
4 between extensions

Compact Terminal	29 **A** . **BBB** . **M** 00		
A Version		**BBB Equipable width**	**M Installation**
7 Compact Terminal tilted		Width in cm	**1** bench top mounted (equipable width = width -1cm)
8 Compact Terminal straight		(min. 10cm, max. 230cm)	**2** below the shelf (equipable width = width -1cm)
			3 with mounting brackets (equipable width = width -9cm)
297.000.000 : Customized Cable Outlet			**4** between extensions (equipable width = width)

KK MODULES

- The modules for the compact terminal are completely installed and wired.
  Before leaving our house, each compact terminal is tested to function and safety.
- Front plates are made of 3mm thick plastics in grey.
- On special request the front plates are made of aluminium and earthed.
- Fixed with nicely shaped screws.
- Height: 70mm.

Article No.	Equipment	Width	Picture
200.010.101 200.011.101 200.012.101 200.010.201	Illuminated 2poles switch 16A • 1x • 2x • 1x, no control lamp • with lamp symbol	4cm	
200.020.101 200.021.101 200.025.101 200.026.101	• Emergency Stop with rotation release • Emergency Stop with key release • Off Button with opener contact • On Button with closing contact	5cm	
200.030.101 200.031.101	Emergency Stop-Combination (On-Button, Emergency Stop, Contactor) • Emergency Stop with rotation release • Emergency Stop with key release	20cm	
200.040.101 200.041.101	• Residual Current Circuit Breaker 2poles 25A / 30mA • Automatic Circuit Breaker 16A/10mA (Over- and Leakage Current Protection)	14cm	
200.050.XX1 200.051.XX1	• Thermomagnetic Fuse XX = release current (1A - 16A) • Automatic Circuit Breaker B-Characteristic XX = release current (6, 10 or 16A)	6cm 14cm	
200.060.101 200.061.101 200.063.101	• Integrated Miniature Contactor • 1x Phase Control Lamp (L) • 3x Phase Control Lamps (L1, L2, L3)	10cm 5cm 5cm	
200.101.101 200.102.101 200.103.101 200.104.101 200.105.101	• 1x Schuko Socket • 2x Schuko Socket • 3x Schuko Socket • 4x Schuko Socket • 5x Schuko Socket	6cm 12cm 18cm 24cm 30cm	

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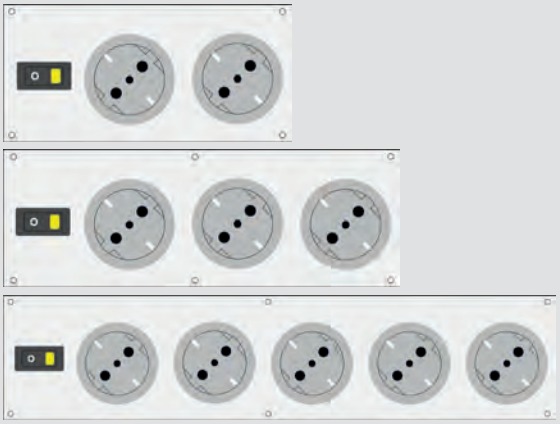
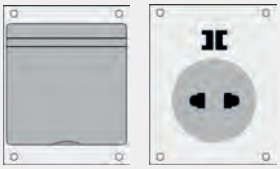
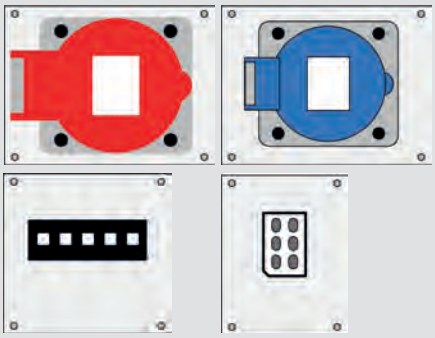
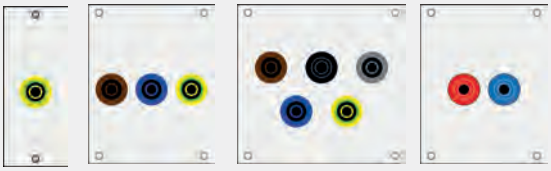
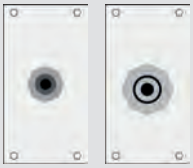
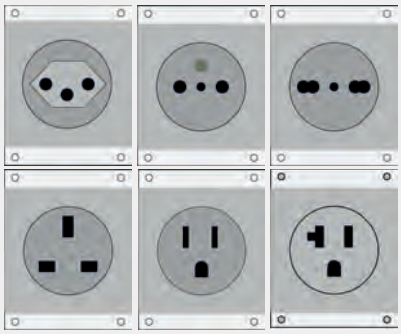
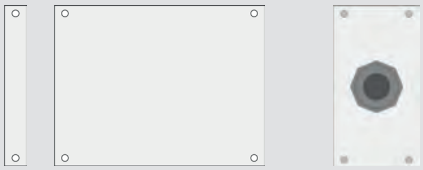
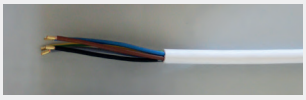
KK MODULES

Article No.	Equipment	Width	Picture
200.111.101 200.112.101 200.113.101 200.114.101 200.115.101	• 1x Schuko Socket • 2x Schuko Socket • 3x Schuko Socket • 4x Schuko Socket • 5x Schuko Socket incl. illuminated 2poles switch, for central on/off	10cm 16cm 22cm 28cm 34cm	
XXX.XXX.201 200.150.101	• Option Flap for Modules with Schuko Socket • Universal Socket for External Isolated Transformer	6cm 6cm	
200.205.101 200.203.101 200.205.201 200.205.301	• CEE Socket 5poles 16A red • CEE Socket 3poles 16A blue • Winsta Connector 5poles 16A • EP/ MP Connector 6poles 16A	10cm 10cm 8cm 6cm	
4mm Safety Jacks 200.301.101 200.303.101 200.305.101 200.302.101 200.302.201	 • PE-Buchse • 3poles (L, N, PE) • 5poles (L1, L2, L3, N, PE) • Output external DC Source (+/-) • Output external AC Source (L/N)	 6cm 8cm 6cm 6cm 6cm	
Pneumatic Quick Release Connector 200.401.101 200.401.201 200.401.301	 • for Hose 6/4 • NW 5 • NW 7,2	4cm	
RJ45 Connector 200.501.101 200.501.201 200.501.301 200.501.251 200.501.261	 • CAT5 (straight) • CAT6 (straight) • CAT6 (for firm connections) • CAT6 (left turned) • CAT6 (right turned)	 5cm 5cm 5cm 10cm 10cm	
2x RJ45 Connector CAT6 200.502.251 200.502.261 200.201.271	 • left turned • right turned • RJ45 for firm connections CAT6 (Insulation Displacement Contact)	 10cm 10cm 5cm	

KK MODULES

Article No.	Equipment	Width	Picture
200.521.101 200.524.101 200.525.101	• USB-A to USB-B Flange Connector • USB-Hub 4x 2.0 • USB-Hub 4x 3.0	4cm 15cm 15cm	
200.541.101 200.542.101 200.543.101 200.544.101	• Sub-D Socket 15poles VGA • Sub-D Socket 9poles RS232 • DVI-I-Socket • HDMI-Socket	3cm 3cm 7cm 10cm	
XXX.XXX.401 XXX.XXX.501 XXX.XXX.601 XXX.XXX.701 XXX.XXX.801 XXX.XXX.901	International Sockets (with and without switch) • Swiss Standard (10A) • Franco/Belgian Standard • Italian Standard (10A) • British Standard (13A) • NEMA 5-15R 125V / 15A • NEMA 6-20R 250V / 20A Some are only applicable with upstream fuse	6cm	
200.000.XX1 200.800.100 200.800.101 200.810.101	• Blank Panels XX = width in cm • Panel with cable gland M16 • Panel with cable gland M20 • Panel with cable gland M25	 4cm 4cm 4cm	
200.835.000	• 5m power cord (3x 1,5mm²) with open end	1cm	
200.835.100	• 3m power cord (3x 1,5mm²) with angled Schuko plug	1cm	
200.855.000	• 5m power cord (5x 2,5mm²) with open end	2cm	
200.855.100	• 5m power cord (5x 2,5mm²) with CEE plug 16A red	2cm	
200.XXX.XX5	• Version with front panel in aluminium, light grey matt powder coated incl. earthing		
200.XXX.XX6	• IT Sockets red with separate terminal block		

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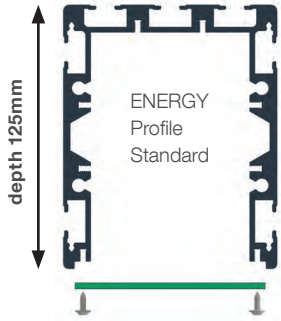
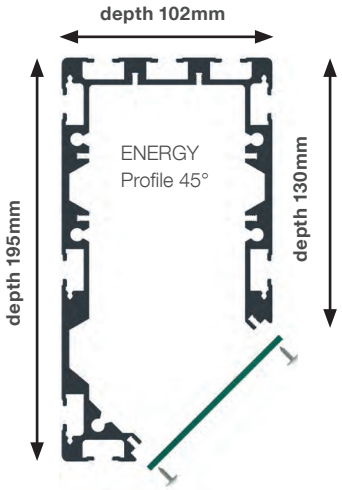
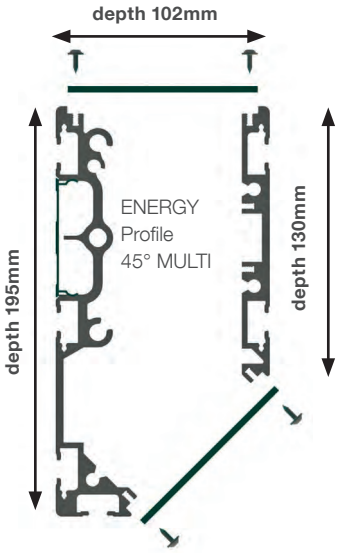
EFFECTIVE EITHER AS **POWER LEG OR HORIZONTAL** SUPPLY

The standard ENERGY profile or 45° tilted is the only modular channel, which can either be used as vertical - or horizontal channel. The convenient 45° tilt places all modules in an ergonomic angle no matter if installed as vertical exentsions, directly on the bench top or under a shelf. The MULTI version allows both sided equipment.







EASY ENERGY PROFILE

- Aluminium channel with durable, light grey powder coating.
- Front for the flexible acceptance of modules in KP raster (40mm).
- Sides with covers and cable access.

Standard Version:

- 7 surrounding slots.
- Dimensions: 125 x 102mm (DxH).

45° Version:

- 9 surrounding slots.
- Dimensions: 195/130 x 102mm (DxH).

45° MULTI Version:

- Front - and rear side are made for the acceptance of KP modules.

EASY ENERGY Profile	320.BBB.0A0

BBB Width

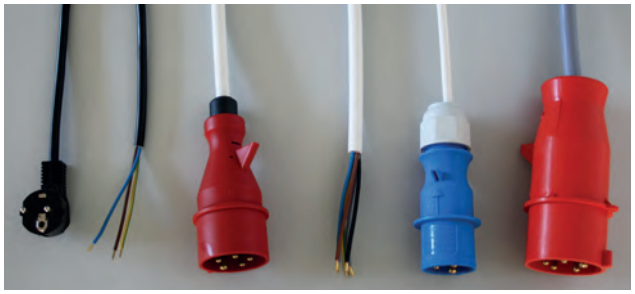
060 14KP W: 600mm	**126** 31KP W: 1260mm	**160** 39KP W: 1600mm
080 19KP W: 800mm	**129** 32KP W: 1295mm	**180** 44KP W: 1800mm
090 22KP W: 900mm	**148** 36KP W: 1485mm	**200** 49KP W: 2000mm
100 24KP W: 1000mm	**150** 37KP W: 1500mm	**230** 57KP W: 2303mm
120 29KP W: 1200mm		

F Version

0	Standard
5	45°
6	45° MULTI

POWER CORD

Flexible power cord completely wired and connected.



Power Cord

291.001.100	5m (3x 1,5mm²) with open end	291.001.500	5m Emergency Stop Cord (2x 1,5mm²), open end
291 001.150	3m (5x 2,5mm²) with open end	291.001.550	3m Emergency Stop Cord (2x 1,5mm²), open end
291.001.200	3m (3x 1,5mm²) with angled Schuko plug	291.001.603	3m Patch Cable grey with 2x RJ45 plug CAT6
291.001.250	5m (3x 1,5mm²) with angled Schuko plug	291.001.605	5m Patch Cable grey with 2x RJ45 plug CAT6
291.001.300	5m (5x 2,5mm²) with CEE plug 16A red	291.001.610	10m Patch Cable grey with 2x RJ45 plug CAT6
291.001.350	5m (5x 6mm²) with CEE plug 32A red	291.001.140	Extra Schuko Plug
291.001.400	5m (3x 1,5mm²) with CEE plug 3poles blue	291.001.144	Extra Swiss Plug
291.001.257	5m (3x 1,5mm²) with Swiss Plug 10A	291.001.147	Extra BS Plug

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PROFI **ENERGY PROFILE**

- Aluminium channel with durable, light grey powder coating with open sides.
- Front for the flexible acceptance of modules in KP raster (40mm).
- For the height variable assembly between PROFI extensions.
- Durable powder coated according to RAL-No.

Standard Version:

- 7 surrounding slots.
- Dimensions: 125 x 102mm (DxH).

45° Version:

- 9 surrounding slots.
- Dimensions: 195/130 x 102mm (DxH).

45° MULTI Version:

- Front - and rear side are made for the acceptance of KP modules.

PROFI ENERGY Profile 320.BB F .900

BB Bench Width (between ENERGY Profile)

05	500mm 10KP (7KP)	**10**	1000mm 23KP (19KP)	**16**	1600mm 38KP (34KP)
06	603mm 13KP (9KP)	**12**	1200mm 28KP (24KP)	**18**	1800mm 43KP (39KP)
08	800mm 18KP (14KP)	**13**	1295mm 30KP (27KP)	**20**	2000mm 48KP (44KP)
09	900mm 20KP (17KP)	**15**	1500mm 35KP (32KP)	**23**	2303mm 55KP (52KP)

F Extensions

3	SINGLE/MULTI
4	ENERGY

A Version

0	Standard
5	45°
6	45° MULTI

EFFORTLESS
FROM SIDE TO SIDE

Like all our profiles, the ENERGY profile is equipped with 7 surrounding slots. If used as horizontal supply channel, trays, TFT supports and various other components can be attached in a movable way, either on top or below the profile. This keeps all your required accessory within perfect reach.

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MOVABLE TRAY FOR ENERGY PROFILE

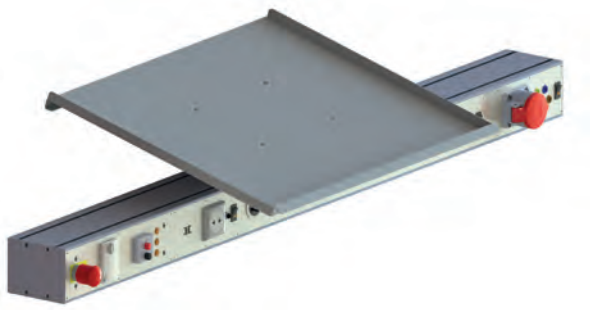
- Sheet steel tray with surrounding stop edge and durable conductive powder coating in light grey.
- Movable from side to side due to four plastic slides.
- Extra stop - and earthing screw with metallic sliding nut.

Movable Tray for ENERGY Profile 320. B T 9.100

B Width		T Depth	
4	400mm	3	300mm
5	500mm	4	400mm
6	600mm		

TILTABLE TRAY FOR ENERGY PROFILE

- Front and sides with 20mm stop edge, tiltable in three positions (0° / 5° / 10° / 15°).
- Made of sheet steel with druable conductive powder coating in light grey.
- Movable from side to side due to four plastic slides.



Tiltable Tray for ENERGY Profile 320. B T 9.200

B Width		T Depth	
4	400mm	3	300mm
5	500mm	4	400mm
6	600mm		

BACKPLANE FOR ENERGY PROFILE

- For the acceptance of tool holders, storage bin supports and shelves. Perforated backplane made of 1,5mm thick sheet steel with surrounding reinforcement. Durable light grey powder coated.
- Movable from side to side due to four plastic slides.
- Extra stop - and earthing screw with metallic sliding nut.

Version: rear side assembly

Backplane for ENERGY Profile 320. B H 9.4 A 0

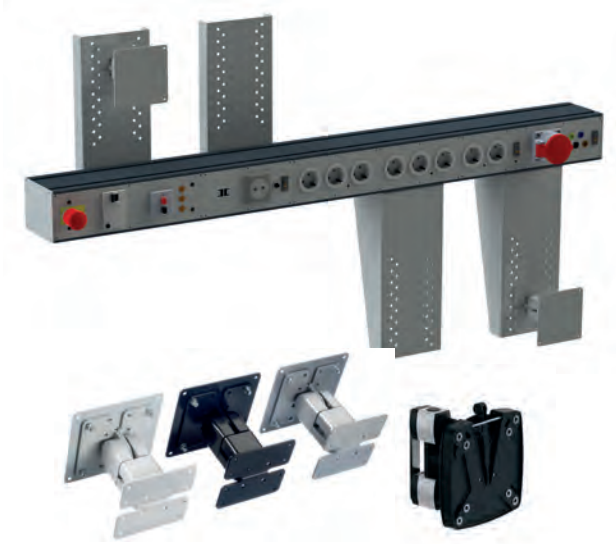
B Width		H Height		A Version	
4	400mm	1	150mm	0	bottom/ top
5	500mm	3	300mm	5	rear side
6	600mm	4	400mm		

TFT SUPPORT FOR ENERGY PROFILE

- Horizontally movable sheet steel support with integrated sliders, with durable light grey powder coating.
- VESA perforation (100x100 and 75x75mm) for the firm assembly of TFT monitors and extra perforation for TFT swivel heads.

TFT Support for ENERGY Profile	
491.053.150	for rearside assembly to ENERGY Profile
491.053.250	for bottom/ top assembly to ENERGY Profile

TFT Swivel Head for PROFI TFT Support	
491.052.100	PLUS tilt - and swivel function (110mm reach; 15kg max. load)
491.057.100	TSS ball-joint head with quick connector (105mm reach; 15kg max. load)



491.052.100 491.057.100

KEYBOARD TRAY FOR ENERGY PROFILE

- Sheet steel tray with stop edge at the front, with durable light grey powder coating.
- Movable from side to side due to four plastic slides.
- Dimensions: 450 x 250mm (WxD).

Keyboard Tray for ENERGY Profile	320.009.600

SLEEVE FOR ENERGY PROFILE

- Sleeve for the modular acceptance of PROFI swivel arms with the respective end pieces. Screw for position lock.
- Movable from side to side due to four plastic slides.
- Extra stop - and earthing screw with metallic sliding nut.

Sleeve for ENERGY Profile	320.009.700

320.009.700
Sleeve

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PROFI **EXTENSIONS ENERGY**

- Two vertical aluminium extrusions ENERGY for the installation on PROFI or EASY benches.
- Variably equipped with modules in KP raster.
- With surrounding slots for the flexible assembly of PROFI shelves and PROFI bench racks.
- Durable powder coated according to RAL-No.

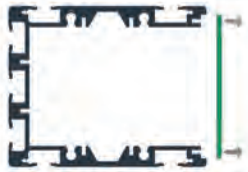
B Version

5 EASY Bench / Mechanical Workbench

6 PROFI Bench

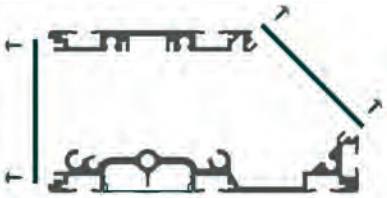
7 PROFI Bench with Power Legs

A Type



0 **Standard**
125 x 102mm (DxH)
straight with 7 slots

5 **45°**
195/130 x 102mm (DxH)
45° tilted with 9 slots



6 **45° MULTI**
front and rear side can be equipped with KP modules
195/130 x 102mm (DxH)
45° tilted with 6 slots

PROFI ENERGY Extension **320. HH B.9 A 0**

HH Height (in 100mm raster)

02 2x 4KP H: 200mm	**07** 2x 16KP H: 700mm	**12** 2x 29KP H: 1200mm
03 2x 6KP H: 300mm	**08** 2x 19KP H: 800mm	**13** 2x 31KP H: 1300mm
04 2x 9KP H: 400mm	**09** 2x 21KP H: 900mm	**14** 2x 34KP H: 1400mm
05 2x 11KP H: 500mm	**10** 2x 24KP H: 1000mm	**15** 2x 36KP H: 1500mm
06 2x 14KP H: 600mm	**11** 2x 26KP H: 1100mm	

B Version

5	EASY Bench / Mechanical
6	PROFI Bench
7	Bench with Power Legs

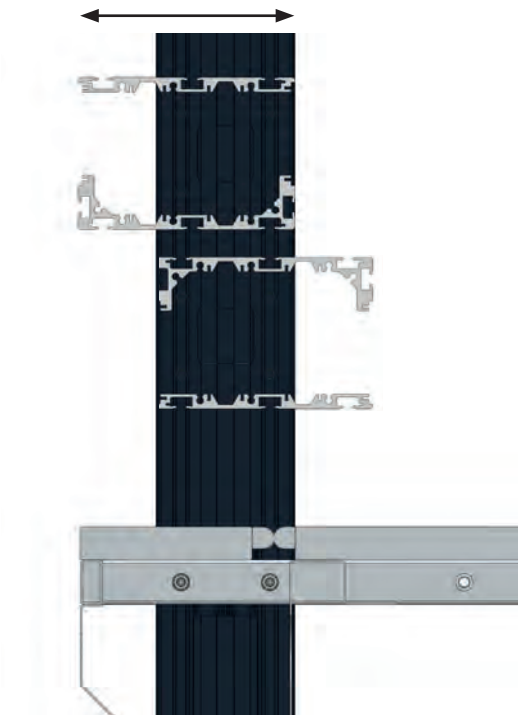
A Type

0	Standard
5	45°
6	45° MULTI

ALUBOARD FOR KP

The Aluboard consists of two aluminium extrusions (F-Type and/ or U-Type) connected with metal end plates for a high stability. This channel can be variably equipped at the rear and front side. The Aluboard can be used directly on the bench top (EASY version) or between two PROFI extesnions (PROFI version).

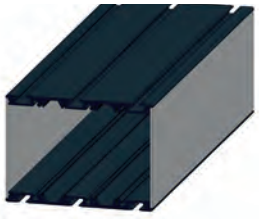
- Upper -/ lower side with the flat F profile with 3 slots for the attachment of components.
- Upper -/ lower side with the U profile with 5 slots for the attachment of components.
- Front - and rear side variably equipped with modules in KP raster.
- 2x side covers made of 3mm sheet steel.
- Depth: 195mm.
- Durable powder coated according to RAL-No.



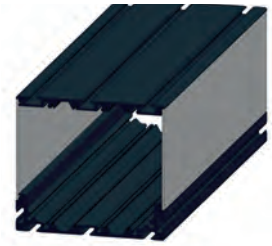
Available in following dimensions:

- suitable for all EASY and PROFI benches
- suitable between SINGLE/ MULTI extesions (-80mm)
- suitable between ENERGY extensions (-204mm)

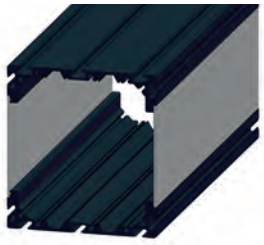
P Profile



F/F-Profile:
height = 96mm



F/U-Profile:
height = 133mm



U/U-Profile:
height = 170mm

EASY/PROFI **ALUBOARD** for KP — **30 A .BBB .2 P 0**

A Type

5	PROFI
7	EASY

BBB Width and Equipment

030	300mm	2x7KP	**142**	1420mm	2x35KP
060	523mm	2x13KP	**148**	1485mm	2x37KP
072	720mm	2x17KP	**150**	1500mm	2x37KP
080	800mm	2x19KP	**152**	1520mm	2x37KP
079	796mm	2x19KP	**159**	1596mm	2x39KP
082	820mm	2x20KP	**160**	1600mm	2x39KP
090	900mm	2x22KP	**172**	1720mm	2x42KP
092	920mm	2x22KP	**179**	1796mm	2x44KP
100	1000mm	2x24KP	**180**	1800mm	2x44KP
109	1091mm	2x26KP	**192**	1920mm	2x47KP
121	1215mm	2x30KP	**200**	2000mm	2x49KP
126	1260mm	2x31KP	**209**	2099mm	2x52KP
129	1295mm	2x32KP	**223**	2223mm	2x55KP
139	1396mm	2x34KP	**230**	2303mm	2x57KP

P Profile

0	F/F- Profile
1	F/F- Profile prepared for shelf
2	F/U-Profile
3	F/U-Profile prepared for shelf
4	U/F-Profile prepared for shelf
5	U/U-Profile
6	U/U-Profile prepared for shelf

Light grey rear panel for Alubaord
309.BBB.200

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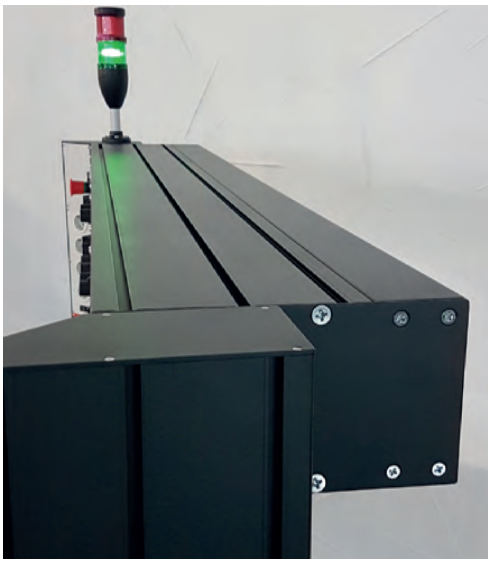
ALUBOARD **REAR PANEL / HOOD**

- Rear panel with ventilation slots and perforated cable access made of sheet steel with durable powder coating.
- For an additional depth the rear panel can be replaced by 70mm hood with ventilation slots and perforated cable access, made of sheet steel with durable powder coating.



Aluboard Rear Panel / Hood	309.BBB.2A0	
BBB Width	**A Version**	
see Aluboard	**0** Rear Panel	**6** Hood F/U
	5 Hood F/F	**7** Hood U/U

KP **BLANK PANEL**

- Made of 3mm Aluminium, light grey powder coated.
- Height: 90mm.

Blank Panel	321.0BB.002				
BB Width					
01	40mm	**04**	160mm	**07**	280mm
02	80mm	**05**	200mm	**08**	320mm
03	120mm	**06**	240mm	**16**	640mm

KP PANEL WITH **CABLE ACCESS**

- Cable access 60mm.
- 2-pcs. plastic ring.

Panel with Cable Access	321.210.F02	2KP
F Colour		
0 light grey	**1** anthracite	

KP PANEL WITH **CABLE GLAND**

Panel with Cable Gland	321.20 **A** .002	1KP

A Type

1	1x Cable Gland (M20)	**2**	2x Cable Glands (M20 + M25)

KP MODULE WITH **EMERGENCY STOP** OR SWITCH

- Equipped with Emergency Stop, with two opener contacts, unwired or switch for vairous applications.

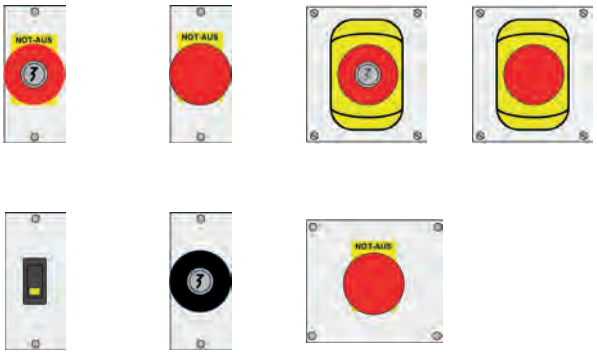
Module with Emergency Stop or Switch	322.100. **N** **E** 2

N Emergency Stop

0	Key Release
1	Rotation Release
2	Key Release and Protective Collar
3	Rotation Release and Protecitve Collar
5	Switch 2poles
7	Black Key Button

E Position

0	1KP horizontal
5	2KP vertical (only Emergency Stop)



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KP **MAINS MODULE**

- For the central protection of the complete ENERGY profile.
- Voltage control lamps.
- Motor circuit breaker 9-12,5A or 12,5-16A with under voltage release.
- Residual current device (RCD) 25A / 30mA type A.
- Optionally: RCD 25A / 30mA type B sensitive to all currents. Recommended for workings, were smooth DC residual current occur.
- The Emergency Stop is effective on the undervoltage release, with 2. opener contact for the optional connection to the inhouse emergency stop. Optionally with black mushroom button with key release.
- Mains Panels in US-Standard on demand!

322.110.102: Mains Module with RCD type A

322.132.202: Mains Module without RCD

322.131.052: Mains Module with RCD type B

Mains Module 16A **322.1 P T . N E 2**

P Phase		**T** RCD (sensitive to ...)		**N** Emergency Stop		**E** Position	
1	1phase 230V	**0**	8KP pulsating current type A	**0**	Emergency Stop with Key Release	**0**	horizontal 12,5 - 16A
3	3phases 400V	**1**	8KP all currents type B	**1**	Emergency Stop with Rotation Release	**2**	horizontal 9 - 12,5A
		2	6KP no RCD	**2**	Black Key Button	**5**	vertical 12,5 - 16A
				3	no Emergency Stop (size minus 1KP)	**7**	vertical 9 - 12,5A

KP MAINS MODULE **WITH CONTACTOR**

- Residual current device 25A / 30mA type A.
- Optionally: RCD 25A / 30mA type B sensitive to all currents. Recommended for training facilities with experimental equipment according to VDE 0100-723.
- Automatic circuit breaker B16.
- Voltage control lamps.
- 1- or 2-level-activation with on/ off button, contactor and status indication.
- With wire harness and coupler.
- Mains Panels in US-Standard on demand!

322.287.202: Mains Panel, 3phase, RCD Type B, 2-level-activation

322.275.152: Mains Panel 1phase, RCD Type A, 1-level-activation

Mains Panel with Contactor **322. 2 P T . F E 2**

P Phase		**T** RCD		**F** Activation		**E** Position	
7	1phase 230V	**0**	no RCD	**0**	1-level, with On and Off Button	**0**	horizontal
8	3phase 400V	**5**	pulsating current type A	**1**	1-level with Key-On and Off Button	**5**	vertical
		7	all currents type B	**2**	2-level with Key-On and Off Button		

KP MAINS MODULE WITH **2-LEVEL-ACTIVATION**

- 2-level-activation (low voltage / mains voltage).
- Voltage control lamps.
- Motor circuit breaker 9-12,5A or 12,5-16A with under voltage release.
- Residual current device (RCD) 25A / 30mA type A.
- Optionally: RCD 25A / 30mA type B sensitive to all currents. Recommended for training facilities with experimental equipment according to VDE 0100-723.
- Emergency Stop button with protective collar, effective on the under voltage release and 2. opener contact for the optional connection to the inhouse emergency stop.
- 2-level-activation with key, two contactors and status indication.
- Mains Panels in US-Standard on demand!

322.231.002: Mains Module with 2-level-activation and RCD type B

Mains Module with 2-Level-Activation 322.2 P T . N E 2

P Phases		T RCD (sensitive to ...)		N Emergency Stop		E Position	
1	1phase 230V	0	10KP pulsating current type A	0	Emergency Stop with Key Release	0	horizontal 12,5 - 16A
3	3phases 400V	1	10KP all currents type B	1	Emergency Stop with Rotation Release	2	horizontal 9 - 12,5A
		2	8KP no RCD	2	Black Key Button	5	vertical 12,5 - 16A
				3	no Emergency Stop (size minus 1KP)	7	vertical 9 - 12,5A

KP **MAINS MODULE** 32A

- 3x Voltage control lamps.
- Motor circuit breaker 32A with under voltage release.
- Residual current device 40A/ 30mA.
- Emergency Stop button effective on the under voltage release and 2. opener contact for the optional connection to the inhouse emergency Stop.
- Second output protected by motor circuit breaker 16A.

322.330.002: Mains Module 32A with RCD type A 10KP

Mains Module 32A 322.33 T . N E 2

T RCD (sensitive to ...)		N Emergency Stop		E Position	
0	10KP pulsating current type A	0	Emergency Stop with Key Release	0	horizontal
1	10KP all currents type B	1	Emergency Stop with Rotation Release	5	vertical
2	8KP no RCD	2	Black Mushroom Button with Key Release		
		3	no Emergency Stop (size minus 1KP)		

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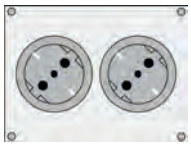
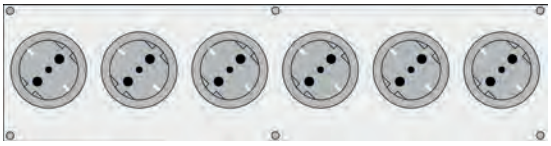
KP **SOCKET MODULE** WITHOUT SWITCH

- Schuko socket, grey, 45° positioned.
- With wire harness and coupler.





Socket Module without Switch	323.0 A 0.0 E 2

A Sockets, pcs.

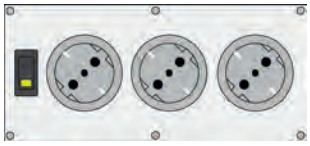
1	2KP	**4**	6KP
2	3KP	**5**	8KP
3	5KP	**6**	9KP

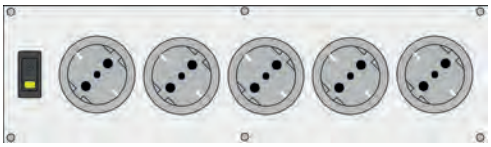
E Position

0	standard
5	vertical, left

KP **SOCKET MODULE** WITH SWITCH

- Schuko socket, grey, 45° positioned.
- Illuminated switch, 2poles for central on/off.
- With wire harness and coupler.





Socket Module with Switch	323.0 A 1.0 E 2

A Sockets, pcs.

1	2KP	**4**	7KP
2	4KP	**5**	8KP
3	5KP	**6**	10KP

E Position

0	standard
5	vertical, left

KP SOCKET **MODULE FOR IT**

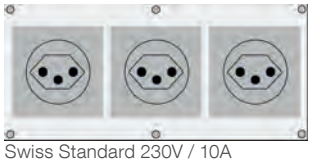
All KP socket modules are available for IT supply.

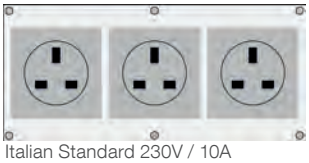
- With red front panel.
- Separate terminal connection, not wired to the mains panel.

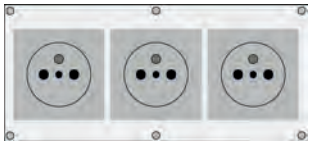
IT Socket Module	323.xxx.xx6

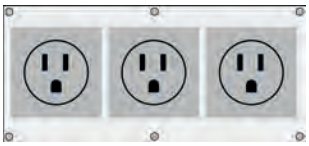
KP **INTERNATIONAL SOCKET** MODULE

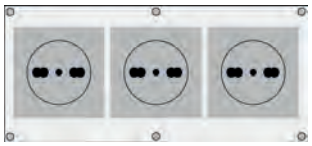
- Sockets of international standards. Dimensions: 60 x 60mm.
- With and without illuminated switch, 2poles 16A for central on/off.
- Front panel light grey with wire harness and coupler.
- Optionally: Front panel red with IT sockets (separate terminal, not wired to mains panel).
- Other sockets on demand!

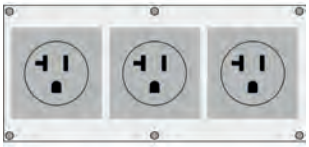

Swiss Standard 230V / 10A


Italian Standard 230V / 10A


Franco/Belgian Standard 230V / 16A


British Standard 240V / 13A


Italian Standard 230V / 10A

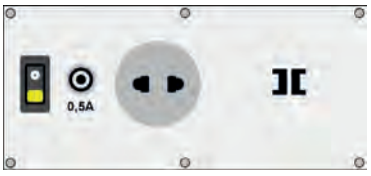

USA NEMA 5-15 125V / 15A

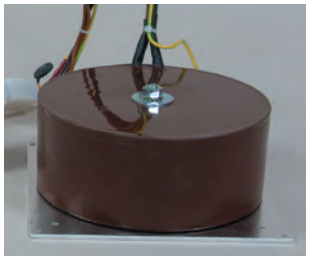
International Socket Module 323.0 A S . L E F

A Sockets, pcs.		**S** Switch		**L** Standard		**E** Position		**F** Front	
1	2KP	**0**	no switch	**4**	Swiss 230V / 10A	**0**	standard	**2**	light grey (standard)
2	3KP	**1**	with switch	**5**	Franco/Belgian Standard 230V/16A	**5**	vertical	**6**	red (IT socket)
3	5KP			**6**	Italien Standard 230V / 10A				
4	6KP			**7**	British Standard 240V / 13A				
5	8KP			**8**	USA NEMA 5-15R 125V / 15A				
6	9KP			**9**	USA NEMA 6-20R 250V / 20A				

KP MODULE WITH **ISOLATED TRANSFORMER** FOR FLOATING VOLTAGE

- Isolated transformer for the supply of floating AC voltage 230V / 0,5A (700VA), either positioned directly in the module or encapsuled in the cable tray.
- Protected by frontside operated thermomagnetic fuse.
- Output at universal socket without protective earth contact.
- Illuminated 2poles switch for central on/off.




encapsuled isolated tansformer 700VA

Module with Isolated Transformer 325.AAA.0 E 2

AAA Type		**E** Position	
115	115VA / 0,5A 5KP	**0**	horizontal
700	700VA / 3A 3KP	**5**	vertical

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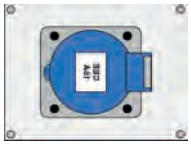
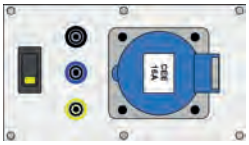
KP **CEE SOCKET** MODULE, 1PHASE

- Blue CEE socket, straight 6h 3poles 230V / 16A.
- Optionally with illuminated switch, 2poles.
- Optionally with 4mm safety jacks (L, N, PE).
- With wire harness and coupler.





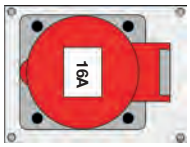
CEE Socket Module, 1phase 323.10 S.B 02

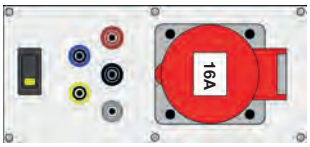
S.B Switch/Jacks

0.0	3KP no switch/ no jacks	**1.0**	4KP with switch/ no jacks
0.1	3KP no switch/ with jacks	**1.1**	5KP with switch/ with jacks

KP **CEE SOCKET** MODULE, 3PHASES 16A

- Red CEE socket, straight 6h, 5poles 400V / 16A.
- Optionally with illuminated switch and contactor, 3poles.
- Optionally with 4mm safety jacks (L1, L2, L3, N, PE).
- With wire harness and coupler.





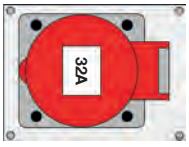
CEE Socket Module, 3phases 16A 323.13 S.B 02

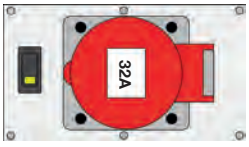
S.B Switch/Jacks

0.0	3KP no switch/ no jacks	**1.0**	4KP with switch/ no jacks	**2.0**	5KP with key switch/ no jacks
0.1	4KP no switch/ with jacks	**1.1**	5KP with switch/ with jacks	**2.1**	6KP with key switch/ with jacks

KP **CEE SOCKET** MODULE, 3PHASES 32A

- Red CEE socket, straight 6h 5poles 400V / 32A.
- Optionally with illuminated switch and contactor, 3poles.
- With wire harness and coupler.





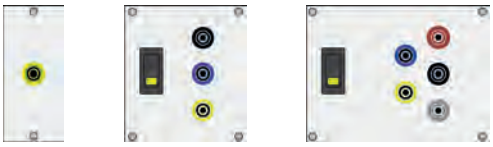
CEE Socket Module, 3phases 32A 323.15 S.B 02

S.B Switch/Jacks

0.0	3KP no switch/ no jacks	**1.0**	4KP with switch/ no jacks	**2.0**	5KP with key switch/ no jacks
0.1	4KP no switch/ with jacks	**1.1**	5KP with switch/ with jacks	**2.1**	6KP with key switch/ with jacks

KP MODULE WITH **SAFETY JACKS**

- 4mm safety jacks.
- Optionally with illuminated switch and contactor, 5poles (only for 3phases).
- With wire harness and coupler.



Module with Safety Jacks	323.5 **PS** .002

PS Phases / Switch

10	1KP 1phase/ no switch	**30**	2KP 3phases / no switch	**00**	1KP PE Socket
11	2KP 1phase/ with switch	**31**	3KP 3phases/ with switch		

KP MODULE WITH **SELECTIVE POLES**

- Selective poles are used for loop wirings in class rooms or training centers, if the teacher provides voltages for the class. Selective poles are not connected, wiring has to be done on-site.
- 4mm safety jacks.
- BNC sockets.

Module with Selective Poles	323.8 **A** 0.0 **E** 2

A Type

0	2KP 5x jacks
1	3KP 6x jacks + 2x BNC

E Position

0	horizontal
5	vertical

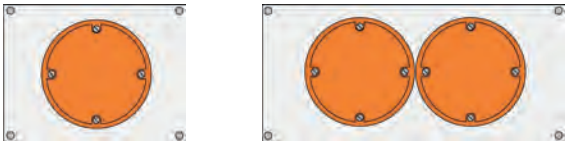
KP **INSTALLATION MODULE**

- Module with installation box for the variable equipment with installation components.

Installation Module	321.1 **A** 0.002

A Installation Box (pcs.)

1	3KP	**2**	5KP	**3**	7KP



Suitable Installation Components			
333.220.500	Cover 1-fold	**333.220.530**	Double-UAE-Socket RJ45
333.220.502	Cover 2-fold	**333.220.540**	TAE-Socket 6F
333.220.510	TV-Antenna-Socket 2-holes	**333.220.550**	Red Schuko Socket with Label
333.220.520	SAT-Antenna-Socket 3-holes		

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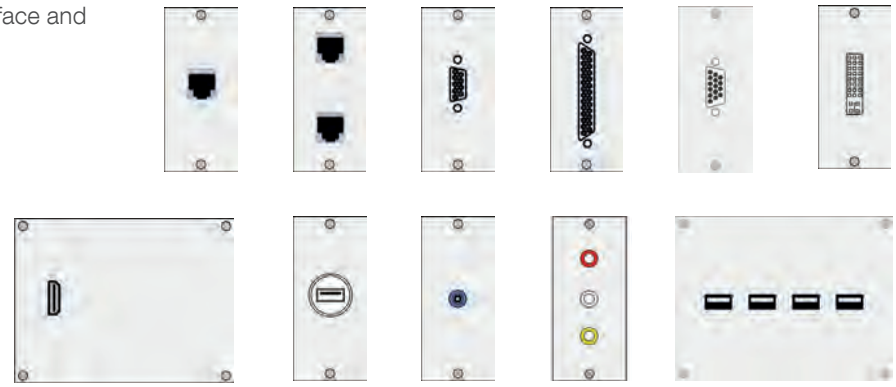
EASY WAY OF
DATA TRANSMISSION

Our ENERGY profile offers sufficient room for the acceptance of different KP modules and its complete wiring. Thus all required media, no matter if interface, socket or laboratory power supply is within convenient reach and your work will be even more efficient.

KP MODULE WTH **INTERFACES**

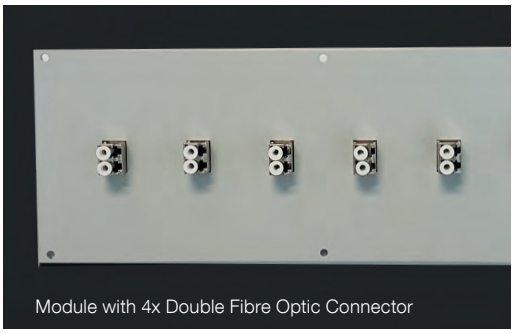
- Module with flush integrated interface and cable.



Modules with Interface	324.TT 0.002

TT Type

10	1KP	1x RJ45 Jack CAT5	**23**	1KP	1x DVI-I-Socket (Digital Visual Interface)
11	1KP	2x RJ45 Jack CAT5	**24**	3KP	1x HDMI (High Definition Multimedia Interface)
15	1KP	1x RJ45 Jack CAT6	**30**	1KP	1x USB-A to USB-B Flange Socket 2.0
16	1KP	2x RJ45 Jack CAT6	**31**	1KP	1x USB-A to USB-B Flange Socket 3.0
17	1KP	1x RJ45 fixed connection (displaced insulation) CAT6	**35**	1KP	3x Chinch Socket (red, white, yellow)
18	1KP	2x RJ45 fixed connection (displaced insulation) CAT6	**36**	1KP	1x Audio Jack 3,5mm
20	1KP	1x Sub-D 9poles Plug for COM/RS232	**40**	3KP	Active 4x USB-Hub 2.0 incl. supply unit
21	1KP	1x Sub-D 25poles Socket for LPT	**41**	3KP	Active 4x USB-Hub 3.0 incl. supply unit
22	1KP	1x Sub-D 15poles Socket for VGA	**60**	1KP	Double Fibre Optic Connector (LC or SC on demand - multi or single mode)


Module with 4x Double Fibre Optic Connector

KP MODULE WITH **CONTINUITY TESTER**

- High-ohmic, electric continuity tester, poled.
- Resistance range: 0 ... 200k Ohm with acoustic signal (sound alternation with changing resistance) and optical signal.
- Residual current protection (> 400V) and LED indication.
- Electric continuity tester for low-ohmic tests with 24V AC.
- LED indication.
- Connection with 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.
- With wire harness and coupler.

Module with Continuity Tester	327.100.0 E 2	6KP

E Position

0	horizontal	**5**	vertical

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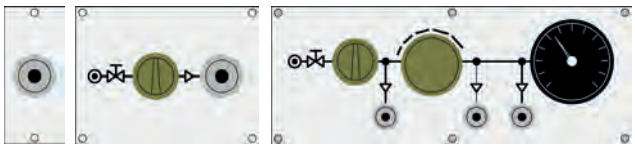
KP MODULE FOR **PRESSURED AIR**

- Self-closing quick connector.
- Optional (T=5) with pressure regulator and analogue pressure gauge.
- Completely hosed with open end.



Power Cord			
323.710.002	for Hose 6/4 (1KP)	323.750.002	Regulated ; 10Bar; for Hose 6/4 (6KP)
323.711.002	for Hose 8/6 (1KP)	323.750.052	Regulated ; 10Bar; for Hose 6/4 (6KP)
323.712.002	NW5 (1KP)	323.750.302	Regulated; 3Bar; for Hose 6/4 (6KP)
323.713.002	NW7,2 (1KP)	323.750.352	Regulated ; 3Bar; for Hose 6/4 (6KP)
323.720.002	Closing Valve for Hose 6/4 (3KP)	323.751.002	Regulated; 10Bar; for Hose 8/6 (6KP)
323.721.002	Closing Valve for Hose 8/6 (3KP)	323.751.052	Regulated; 10Bar; for Hose 8/6 (6KP)
323.722.002	Closing Valve NW5 (3KP)	323.751.302	Regulated; 3Bar; for Hose 8/6 (6KP)
323.723.002	Closing Valve NW7,2 (3KP)	323.751.352	Regulated; 3Bar; for Hose 8/6 (6KP)

KP **SOLDERING STATION**, ANALOGUE

- Professional soldering station 24V / 80W with electronic temperature regulation.
- Stepless adjustable temperature by potentiometer between 150°C and 450°C with LED temperature indication.
- Antistatic soldering tool (24V / 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- With wire harness and coupler.

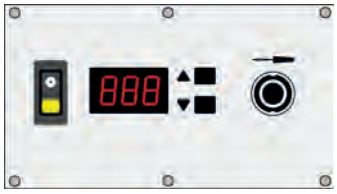
Soldering Station, analogue	327.000.0 **E** 2	4KP

E Position

0	horizontal	**5**	vertical

KP **SOLDERING STATION**, DIGITAL

- Microprocessor controlled soldering station with automatic soldering tool cognition.
- Stepless at two buttons adjustable temperature between 150° and 450°C.
- 3digit LED display for actual and set temperature indication.
- Antistatic soldering tool (24V / 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- With wire harness and coupler.



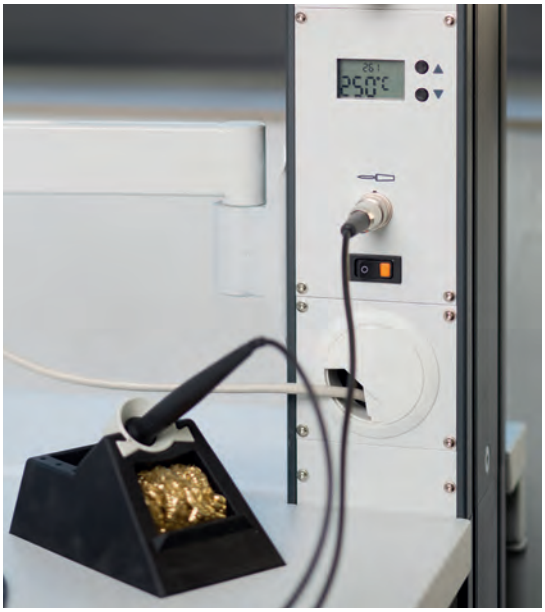
Soldering Station, digital	**327.005.002**	**4KP**

KP **SOLDERING STATION,** VERTICAL

Microprocessor controlled soldering station with all relevant functions for industrial production. Shut-down and stand by function help to reduce energy costs and guarantee a long life duration. You can select between 3 fixed temperatures or choose the stepless temperature adjustment.

- Electronically controlled soldering station (80W).
- Stepless adjustable temperature 150 ... 450°C.
- LCD with actual and nominal temperature indication.
- Antistatic according to MIL-SPEC/ESA.
- Powerful fine soldering tool (heating time 9sec.)
- Holder, antistatic with metall cleaning wool.
- Vertical, for the integration in ENERGY extensions.
- Illuminated 2poles switch for central on/off.
- With wire harness and coupler.

Soldering Station	**Vertical**	**327.020.002**	**4KP**



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KP MODULE WITH **DC POWER SUPPLY**

- Stabilized and short-circuit proofed DC power supply for fixed voltage, earthed.
- Overload - overvoltage - and overheat protection.
- Ripple: < 100mV p-p.
- Accuracy: < 2%.
- Output with 4mm safety jacks.

Module with DC Power Supply 326.1 WW .1 E 2 4KP

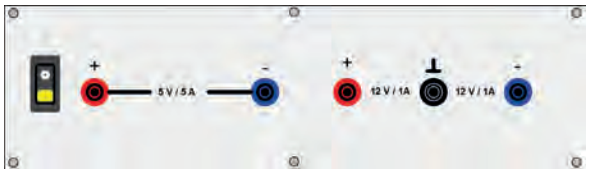
WW Value		E Position	
05	5V / 12A	0	horizontal
12	12V / 5,2A	5	vertical
24	24V / 2,7A		
25	24V / 4,2A		

Module with Double DC Power Supply 326.2 WW .1 E 2 4KP

WW Value		E Position	
12	+/-12V / 1,0A	0	horizontal
15	+/-15V / 0,8A	5	vertical

Module with Triple DC Power Supply 326.3 WW .1 E 2 8KP

WW Value		E Position	
12	5V / 5A and +/-12V / 1,0A	0	horizontal
15	5V / 5A and +/-15V / 0,8A	5	vertical



KP MODULE WITH **LABORATORY POWER SUPPLY** 0-30V / 0-2A

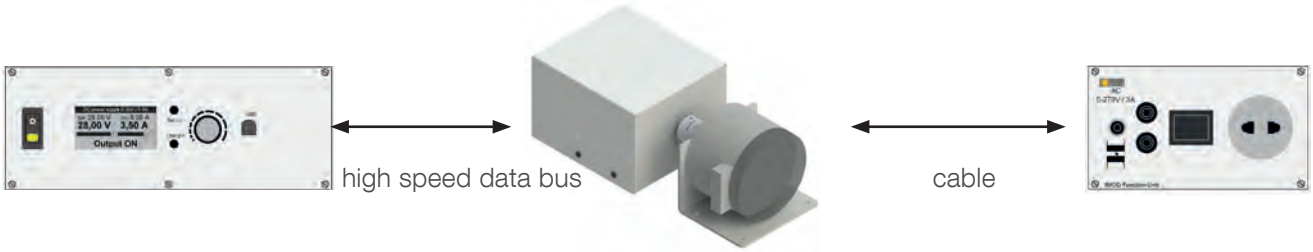
- Linear controlled, isolated and short-circuit proofed laboratory power supply.
- Ripple: < 1mV eff.
- Accuracy: < 0,05%.
- Voltage - and current adjustment with potentiometer and LED mode indication.
- Output at 4mm safety jacks.
- Display with selector for voltage and current.
- Illuminated 2poles switch for central on/off.
- With wire harness and coupler.

Laboratory Power Supply 0-30V/ 0-2A 326.532. A E 2 9KP

A Type		E Position	
1	analogue reading (class 1,5)	0	horizontal
5	digital reading (LED, 4digits)	5	vertical

IMOD
INTELLIGENT & **MOD**ULAR

The IMOD series is an intelligent, modular system consisting of the 3 individually located units:



Control-Unit | Functional Device of Function-Unit | Output Module of Function-Unit

The advantages are:

- Operation and display (Control-Unit) can be positioned in ergonomic reach and view.
- Some Function-Units might be very heavy and voluminous, this is now completely decoupled and can be placed in convenient positions, e.g. variacs under the bench.
- The outputs can be placed in small channels and optimal positions, either vertical or horizontal, this will keep workspaces free of laboratory cables.

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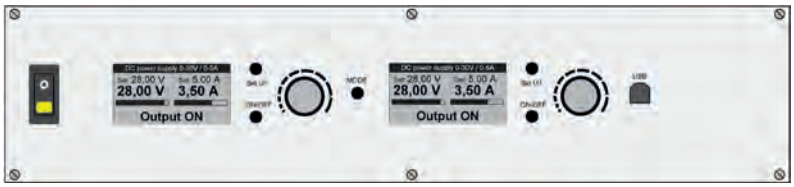
KP MODULE **IMOD CONTROL-UNIT LCD**

- Controller with integrated communication bus for one of the following Function-Units.
- Background illuminated LC-Graphic-Display 60x30mm (128x64).
- Rotary switch with tip-function for direct and precise settings.
- 2x buttons for instant and intuitive operation.
- USB interface at the front and LAN interface at the rear instrument side.
- Illuminated 2poles switch for central on/ off.
- With wire harness and coupler.



IMod Control-Unit LCD	6 **E** 0.000. **A** 00

E Position		**A** Version	
1	vertical	**3**	1x LC-Graphic-Display 6KP
2	horizontal	**5**	2x LC-Graphic-Display 10KP (only for douple units)

KP IMOD FUNCTION-UNIT: **AC SOURCE 1PHASE**

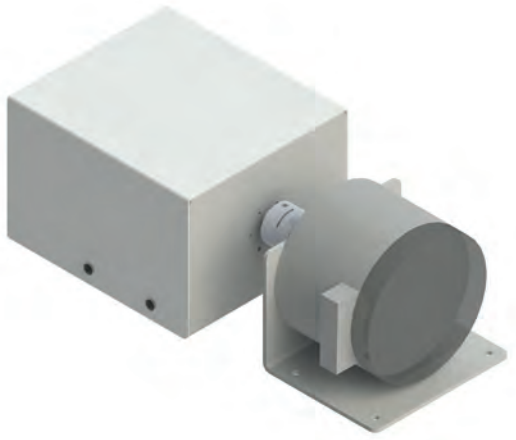
A combination of output module for bench rack integration and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

Output Module with respect to type:

- Status indication with RGB-LED.
- Front side operated thermomagnetic fuse for output.
- 4mm safety jacks.
- PE socket or universal socket for floating voltage.
- Selector switch for floating type.
- Bridge rectifier (BRF) for a pulsating DC voltage with 48% ripple.

Functional Device (separate housing):

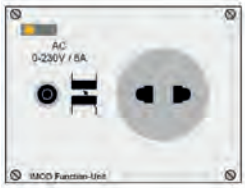
- Motor-driven variac (floating type with downstream connected isolated transformer).
- Silent running motor for voltage adjustment, with intelligent speed control for a minimum of overshoot and response time. Incl. supply unit.
- 2x TrueRMS converter (voltage and current) with 12bit resolution.
- Internal communication bus for data transfer with Control-Unit.
- Precision adjustment for voltage or current (selector switch).



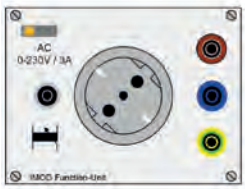
A Output

1 2KP Safety Jacks

2 3KP Universal (floating)

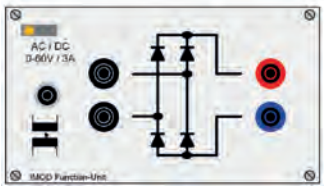


3 3KP Safety Jacks Schuko Socket



3 4KP Safety Jacks Universal (floating)

4 4KP Safety Jacks Bridge Rectifier



IMod Function-Unit: AC Source 1phase 6 **E** 2. **A** **LL.LLL**

E Position		**A** Output			**LL.LLL** Functional Device			
1	vertical	**1**	2KP	Safety Jacks	**23.010**	0-230V / 1A	**03.045**	0-30V / 4A floating
2	horizontal	**2**	3KP	Schuko or Universal (floating)	**23.030**	0-230V / 3A	**06.035**	0-60V / 3A floating
		3	3/4KP	Safety Jacks + Schuko / Universal	**23.060**	0-230V / 6,3A	**27.015**	0-270V / 1A floating
		4	4KP	Safety Jacks and Bridge Rectifier	**23.100**	0-230V / 10A	**27.035**	0-270V / 3A floating
					23.140	0-230V / 14A	**27.055**	0-270V / 5A floating
							27.105	0-270V / 10A floating
							27.125	0-270V / 12A floating
							30.105	0-300V / 10A floating
					Primary L1-L2 3phases supply necessary		**27.165**	0-270V / 16A floating
							30.165	0-300V / 16A floating

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KP IMOD FUNCTION-UNIT: **LAB POWER SUPPLY LINEAR**

A combination of output module in KP raster and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

Output Module equipped with:

- Status indication with RGB-LED.
- 2x 4mm Safety Jacks.

Functional Unit (separate housing):

- Linear controlled laboratory power supply with power factor correction (PFC).
- Up to 150W fanless.
- Resolution of set - and actual values: 14Bit (16384dots).
- Resolution of measurements: 16Bit (6553dots).
- Ripple (at Ia = 50%): <1mVrms.
- Response time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protection: 100V.

IMod Function-Unit: Lab Power Supply Linear — 6 **E** 6.10 **L.LL** 0 — **1KP**

E Position

1	vertical
2	horizontal

L.LL Functional Device

3.02	60W: 0-30V / 0-2A	**6.05**	300W: 0-60V / 0-5A
3.05	150W: 0-30V / 0-5A	**3.20**	600W: 0-30V / 0-20A
3.10	300W: 0-30V / 0-10A	**6.10**	600W: 0-60V / 0-10A

KP IMOD FUNCTION-UNIT: **LAB POWER SUPPLY EXTENDED RANGE**

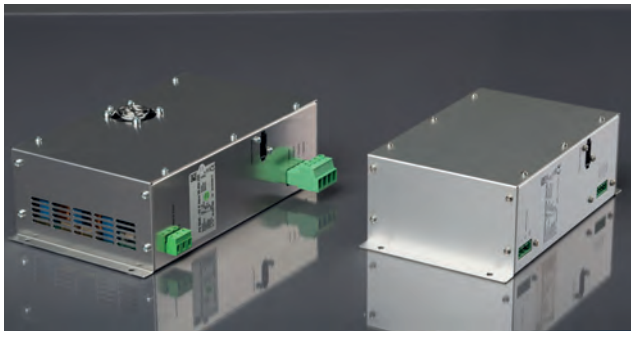
A combination of output module in KP raster and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

Output Module equipped with:

- Status indication with RGB-LED.
- 2x 4mm Safety Jacks.

Functional Unit (separate housing):

- Switch-mode laboratory power supply, fanless up to 160W.
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Response time 10-100% load: <1ms.
- Overvoltage protection: 0…46,2V.
- Accuracy: <0,2%.
- Actual value of current and voltage adjust each other, so the max. power (P = U x I) is not exceeded.



IMod Function-Unit: Lab Power Supply Extended Range — 6 **E** 5.10 **L.LL** 0 — **1KP**

E Position

1	vertical
2	horizontal

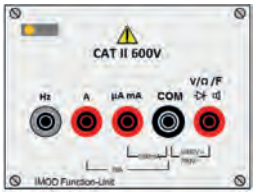
L.LL Functional Device

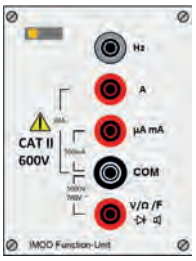
4.06	100W: 0-42V / 0-6A	**8.03**	100W: 0-84V / 0-3A
4.10	160W: 0-42V / 0-10A	**8.05**	160W: 0-84V / 0-5A
4.20	320W: 0-40V / 0-20A		

KP IMOD FUNCTION-UNIT: **MULTIMETER**

Module with housed Multimeter:

- Status indication with RGB-LED.
- 5x 4mm safety jacks
  (Hz, A, µA/mA, COM, V/Ohm/F/Diode/Continuity Test).
- Resolution: 4 3/4digits (50.000 Counts).
- Voltage DC: 10µV – 1000V.
- Voltage AC TrueRMS: 10µV – 700V.
- Current DC: 10nA – 20A.
- Current AC TrueRMS: 10nA – 20A.
- Front side operated thermomagnetic fuse for input µA/mA.
- Resistance: max. 50MOhm.
- Frequency: 100µHz – 50MHz.
- Capacity: max. 50 mF.
- Other functions: diode test, continuity test.
- Range selection: manual and automatic.
- Measuring rate: 2,5 / 5 or 10 measurements /sec. selectable.
- Safety EN 61010-1; CAT II 600V.





IMod Function-Unit: Multimeter	6 E 4.000.000	3KP

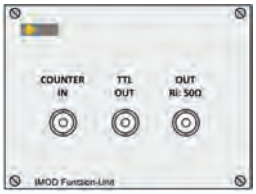
E Position

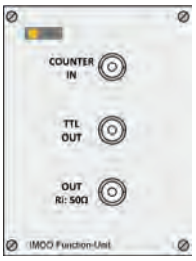
1	vertical	2	horizontal

KP IMOD FUNCTION-UNIT: **FUNCTION GENERATOR**

Module with housed Function Generator:

- Status indication with RGB-LED.
- 3x BNC-Sockets
  (COUNTER IN, TTL OUT and OUT R.: 50Ohm).
- Basic functions: sinus, triangle, square, saw tooth, pulse and DC voltage.
- Frequency range: 1mHz – 10MHz (Sinus),
  10Hz – 1MHz (other signals).
- Arbitrary function: max. 4096dots.
- Other functions: pulse width modulation, TTL output.
- Amplitude: 30Vss (max. 1MHz), max. 3Vpp at 10MHz.
- Resolution: 13 Bit.
- Duty cycle: 0,1% … 99,9%.
- DC Offset: ± 10V.
- Frequency and counter: 100µHZ max. 50MHz.





IMod Function-Unit: Function Generator	6 E 7.000.000	3KP

E Position

1	vertical	2	horizontal

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CHAPTER 10: **EP AND MP RACK WITH EP AND MP MODULES**

294 Aluboard
296 PROFI Under Top Energy Board (EP)
297 PROFI Energy Channel (EP)
298 PROFI Energy Board (EP) and Module Board (MP)
300 EASY Energy Board (EP) and Module Board (MP)
301 PROFI Module Rack (MP) and EASY MEP Rack
303 Foldaway Mechanism and Hideaway Mechanism
304 Hexagonal Team Rack
305 EP Tower 4-sided and EASY Tower Board (EP/MP)
306 Carrying Case and Cable
307 Shelf Unit and Lamp
309 Blank Panel and Installation Box
310 Compensating Panel and Emergency Stop Button
311 Mains Panel
313 Socket Panel
315 CEE Socket and Safety Jacks
316 Isolated Transformer for Floating Voltage
317 Multi Measuring Unit
318 Conitinuity Tester, Selective Poles, Test Speaker
319 Interface
320 Soldering / Desoldering Station
322 Pressured Air Modules
323 R- and C-Decade
324 L-Decade and Load Resistors
325 AC Low Voltage
326 Variable AC Source 1phase and 3phases
329 Lab Power Supply Fixed Voltage and Compact
331 Lab Power Supply
332 Didact-Supply
333 Function Generator and Amplifier
335 Function Generator and Multimeter
336 Digital Multimeter
339 Oscilloscope
340 Norm Signal Generator and Digital Thermometer
341 Pneumatic Calibrator
342 Safety Tester (VDE)
344 IMOD Control-Unit
346 IMOD Function-Unit: AC Source , 1phase and 3phases
348 IMOD Function-Unit: Laboratory Power Supply
349 IMOD Function-Unit: Function Generator and Multimeter

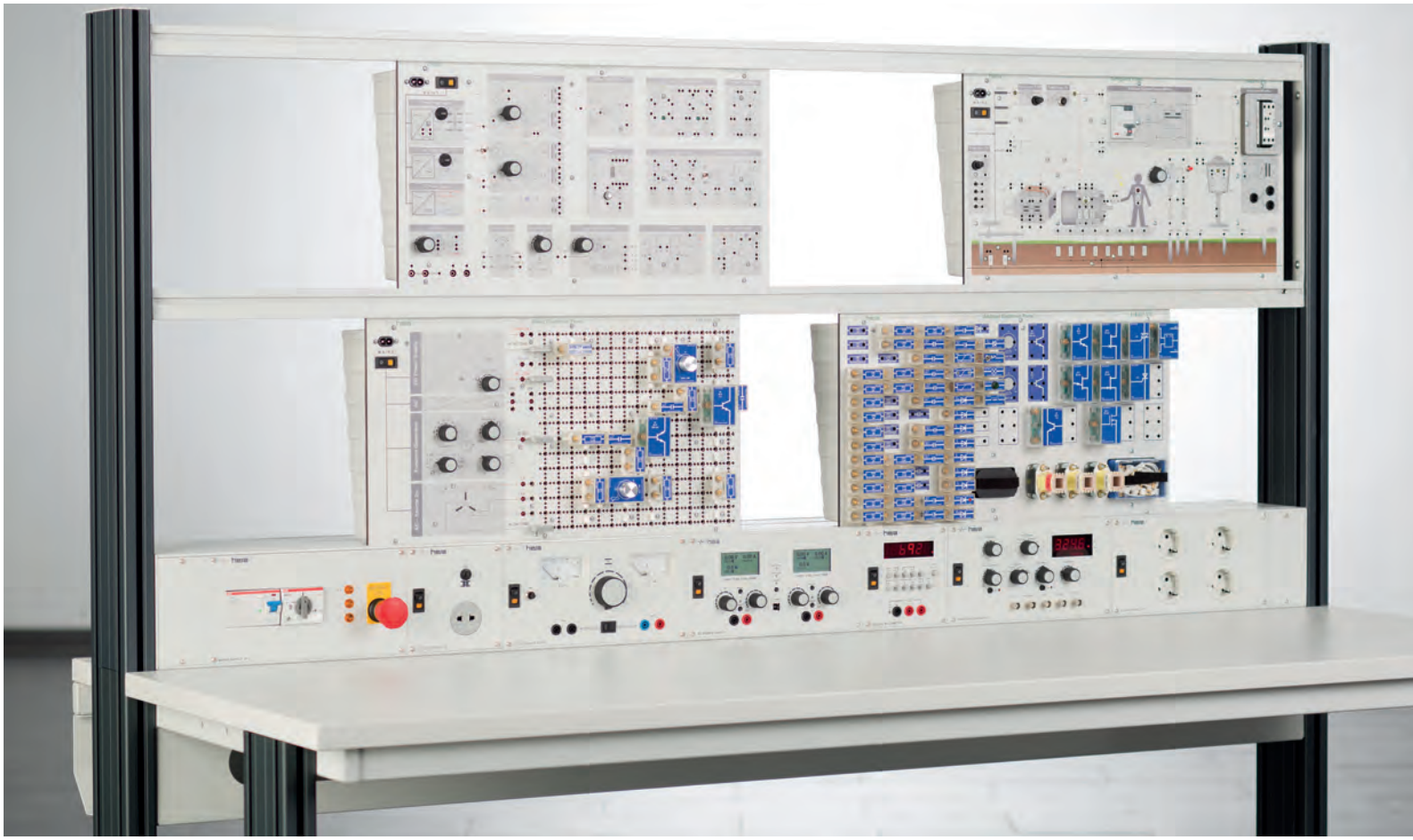
IDEAL FOR ELECTRIC WORKSTATIONS WITH MEDIUM ELECTRICAL EQUIPMENT

This chapter shows how the modules of the EP and MP system can be combined in an individual Energy Channel, Energy Board or Module Board just perfect for your application.

THE **EP SYSTEM** WITH 3HE HEIGHT

Our EP system offers a great variety of modules, that can be integrated into all EP racks, no matter if the channel is with tilted front or electrically retractable. The EP system is very cost-effective and suitable bench racks are available in wood and metal.

Under bench mounted Energy Boards can even replace the cable tray and the instruments are accessible by opening the cable flap.



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THE **MP SYSTEM** WITH 5HE HEIGHT

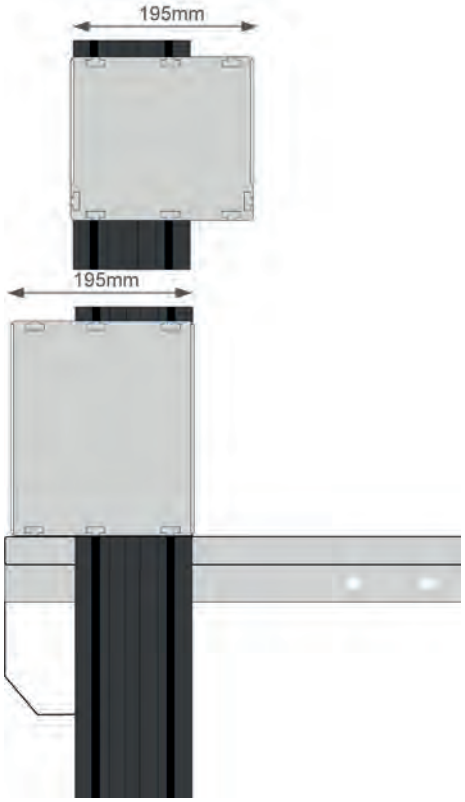
Like the EP system, the bigger MP system can be installed as suspended bench rack and offers sufficient stability even for a top-mount shelf. MP bench racks are available as wooden boards and aluboards. Unlike the smaller EP system, MP even offers room for oscilloscopes and safety testers.

ALUMINIUM BENCH RACK - **FOR EASY ATTACHEMENTS**

ALUBOARD FOR EP AND MP

The Aluboard consists of two aluminium extrusions (F-Type and/ or U-Type) connected with metal end plates for a high stability. This channel can be variably equipped at the rear and front side. The Aluboard can be used directly on the bench top (EASY version) or between two PROFI extesnions (PROFI version).

- Upper -/ lower side with the flat F profile with 3 slots for the attachment of components.
- Upper -/ lower side with the U profile with 5 slots for the attachment of components.
- Front - and rear side variably equipped with modules in EP or MP raster.
- 2x side covers made of 3mm sheet steel.
- Depth: 195mm.
- Durable powder coated according to RAL-No.



Available in following dimensions:

- suitable for all EASY and PROFI benches
- suitable between SINGLE/ MULTI extesions (-80mm)
- suitable between ENERGY extensions (-204mm)

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A Version

PROFI: Side covers with cable access and prepared for the installation between the PROFI extensions.

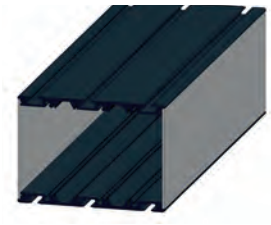
EASY: Closed side covers for the installation directly on the bench top or on top of the extensions. Cable access to be defined.

S System

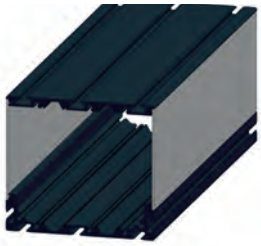
EP System: 3HE with module height 132mm

MP System: 5HE with module height 223mm

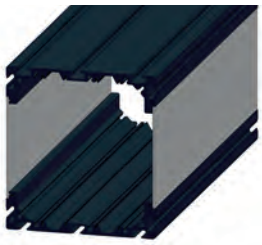
P Profile



F/F-Profile:
height = module + 6mm



F/U-Profile:
height = module + 43mm



U/U-Profile:
height = module + 80mm

EASY/PROFI **ALUBOARD** for EP and MP **30 A . BBB . S P 0**

A Version

5	PROFI
7	EASY

BBB Width and Equipment each Side

030	300mm	1EP	2MP	**142**	1420mm	5EP	10MP
052	523mm	1,5EP	3MP	**148**	1485mm	5EP	10MP
060	603mm	2EP	4MP	**150**	1500mm	5EP	10MP
072	720mm	2EP	4MP	**152**	1520mm	5,5EP	11MP
080	800mm	3EP	6MP	**159**	1596mm	5,5EP	11MP
082	820mm	3EP	6MP	**160**	1600mm	6EP	12EP
090	900mm	3EP	6MP	**172**	1720mm	6EP	12MP
092	920mm	3EP	6MP	**179**	1796mm	6,5EP	13MP
100	1000mm	3,5EP	7MP	**180**	1800mm	6,5EP	13MP
109	1091mm	3,5EP	7MP	**192**	1920mm	7EP	14MP
121	1215mm	4EP	8MP	**200**	2000mm	7EP	14MP
126	1260mm	4,5EP	9MP	**209**	2099mm	7,5EP	15MP
129	1295mm	4,5EP	9MP	**223**	2223mm	8EP	16MP
139	1396mm	5EP	10MP	**230**	2303mm	8EP	16MP

S System

2	KP (chap. 9)
3	EP (3HE)
4	MP (5HE)

P Profile

0	**F/F- Profile**
1	**F/F- Profile** prepared for shelf
2	**F/U-Profile**
3	**F/U-Profile** prepared for shelf
4	**U/F-Profile** prepared for shelf
5	**U/U-Profile**
6	**U/U-Profile** prepared for shelf

ALUBOARD **REAR PANEL / HOOD**

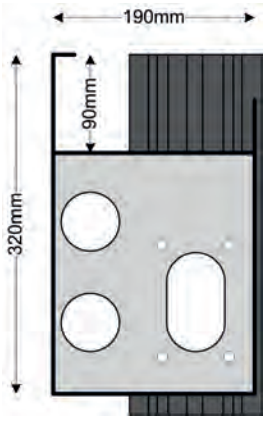
- Rear panel with ventilation slots and perforated cable access made of sheet steel with durable powder coating.
- For additional depth the rear panel can be replaced by 70mm hood with ventilation slots and perforated cable access, made of sheet steel with durable powder coating.

Aluboard Rear Panel / Hood 309. **BBB S A** 0

BBB Width	**S** System	**A** Version
see Aluboard	**2** KP (Chap. 9)	**0** Rear Panel
	3 EP (3HE)	**5** Hood F/F
	4 MP (5HE)	**6** Hood F/U
		7 Hood U/U

PROFI **UNDERTOP ENERGY BOARD** FOR EP

- Sheet steel rack, all sides welded and with durable powder coating.
- Ventilation slots for air ventilation at the bottom and rear side.
- With rear side paneling and sides with cable access.
- Installed under the cable flap and between the rear bench legs.
- Top with mounting strip for the acceptance of modules in 19“ EP raster (W: 52TE or 264mm).
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.



PROFI Undertop Energy Board 422.**BB** 0.**F** 20

BB Width and Equipment
(between ENERGY Profile)

08	800mm	2,5EP	(2EP)	**15**	1500mm	5EP	(4,5EP)
09	900mm	3EP	(2,5EP)	**16**	1600mm	5,5EP	(5EP)
10	1000mm	3EP	(2,5EP)	**18**	1800mm	6EP	(5,5EP)
12	1200mm	4EP	(3,5EP)	**20**	2000mm	7EP	(6,5EP)
13	1295mm	4,5EP	(4EP)	**23**	2303mm	8EP	(7,5EP)

F Rear Bench Legs

0	SINGLE / MULTI
2	ENERGY

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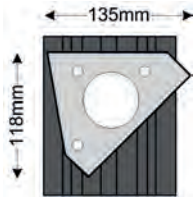
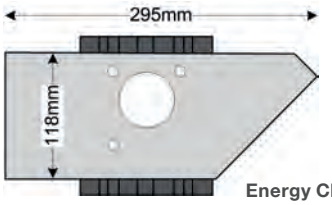
PROFI ENERGY CHANNEL AND ENERGY CHANNEL PLUS FOR EP

- Sheet steel channel with 45° tilted front and sides with mounting holes for the installation between the PROFI extensions, with durable light grey powder coating.
- High travers rigidity and thus an ideal support for shelves.
- Front with mounting strip for the acceptance of modules in 19“ EP raster (W: 52TE or 264mm).
- The Energy Channel is even suitable for sockets and lamps below 19“ bench racks.
- The Energy Channel PLUS offers sufficient room for voluminous modules (e.g. isolated transformers, power supplies, soldering/ desoldering stations) and could be combined with the EP lamp module.

G Rack



Energy Channel



Energy Channel PLUS

PROFI Energy Channel 425. BB 0. F 1 G

BB Width and Equipment (between ENERGY Profile)

03	270mm	1EP		**13**	1295mm	4EP	(4EP)
06	603mm	1,5EP	(1EP)	**15**	1500mm	5EP	(4,5EP)
08	800mm	2,5EP	(2EP)	**16**	1600mm	5,5EP	(5EP)
09	900mm	3EP	(2,5EP)	**18**	1800mm	6EP	(5,5EP)
10	1000mm	3EP	(2,5EP)	**20**	2000mm	7EP	(6,5EP)
12	1200mm	4EP	(3,5EP)	**23**	2303mm	8EP	(7,5EP)

F Extensions

0	SINGLE / MULTI
2	ENERGY

G Rack

1	Energy Channel
2	Energy Channel PLUS

PROFI Energy Channel Corner 425.5 KL .01 G

KL Edge Length Corner Element

00	1213 x 1213mm	5EP		**12**	1035 x 1035mm	3EP	
10	835 x 835mm	2,5EP		**18**	935 x 935mm	3EP	
20	1200 x 1000mm	4EP		**22**	1000 x 1200mm	4EP	

G Rack

1	Energy Channel
2	Energy Channel PLUS

PROFI ENERGY BOARD AND **MODULE BOARD, METAL**

- Sheet steel rack, all sides welded and with durable powder coating.
- Ventilation slots for air ventilation at the bottom and rear side.
- Sides with mounting holes and cable access directly into the cable channel of the PROFI extensions.
- Top with mounting holes for the fixation of shelves.
- High rigidity and thus ideal as support for shelves.
- Front with mounting strip for the acceptance of modules in EP or MP.
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.

G Rack

Energy Board

Module Board

Energy Board PLUS

Module Board PLUS

PROFI Energy Board 422.BB0.F1G

BB Width and Equipment (between ENERGY Profile)

03	270mm	1EP/2MP		**13**	1295mm	4EP/8MP	(4EP/8MP)
06	603mm	1,5EP/3MP	(1EP/2MP)	**15**	1500mm	5EP/10MP	(4,5EP/9MP)
08	800mm	2,5EP/5MP	(2EP/4MP)	**16**	1600mm	5,5EP/11MP	(5EP/10MP)
09	900mm	3EP/6MP	(2,5EP/5MP)	**18**	1800mm	6EP/12MP	(5,5EP/11MP)
10	1000mm	3EP/6MP	(2,5EP/5MP)	**20**	2000mm	7EP/14MP	(6,5EP/13MP)
12	1200mm	4EP/8MP	(3,5EP77MP)	**23**	2303mm	8EP/16MP	(7,5EP/15MP)

F Extensions

0	SINGLE / MULTI
2	ENERGY

G Rack

0	Energy Board
1	Energy Board PLUS
2	Module Board
3	Module Board PLUS

PROFI Energy Board Corner 422.5KL.01G

KL Edge Length Corner Element

00	1213 x 1213mm	5EP	**12**	1035 x 1035mm	3EP	**20**	1200 x 1000mm 4EP
10	835 x 835mm	2,5EP	**18**	935 x 935mm	3EP	**22**	1000 x 1200mm 4EP

G Rack

0	Energy Board
2	Energy Board PLUS

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PROFI ENERGY BOARD AND **MODULE BOARD, WOOD**

- Body made of light grey 19mm thick melamine resin covered chipboard.
- Sides with cutout for the PROFI extensions.
- Detachable, powder coated rear panel made of perforated sheet steel with two cable glands.
- Front with mounting strip for the acceptance of EP or MP modules.
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.
- Height of EP Energy Board: 170mm.
- Height of MP Module Board: 260mm.
- Depth: 300mm.

PROFI Energy Board and Module Board, wood 422. BB F .51 A

BB Width and Equipment

06	603mm	2EP	4MP	**15**	1500mm	5EP	10MP
08	800mm	2,5EP	5MP	**16**	1600mm	5,5EP	11MP
09	900mm	3EP	6MP	**18**	1800mm	6,5EP	13MP
10	1000mm	3,5EP	7MP	**20**	2000mm	7EP	14MP
12	1200mm	4EP	8MP	**23**	2303mm	8EP	16MP
13	1295mm	4,5EP	9MP				

F Extensions

0	Energy Board for SINGLE/ MULTI
1	Module Board for SINGLE/ MULTI
2	Energy Board for ENERGY
3	Module Board for ENERGY

A Version

0	Standard
5	ESD

PROFI Energy Board and Module Board Corner, wood 422. G KL .51 A

G Rack

5	Energy Board
6	Module Board

KL Edge Length Corner Element

00	1213 x 1213mm	5EP	10MP
10	835 x 835mm	2EP	4MP
12	1035 x 1035mm	3EP	6MP
18	935 x 935mm	3EP	6MP
20	1200 x 1000mm	4EP	8MP
22	1000 x 1200mm	4EP	8MP

A Version

0	Standard
5	ESD

EASY ENERGY BOARD AND MODULE BOARD FOR EP AND MP

- Body made of light grey 19mm thick melamine resin covered chipboard.
- Single sided version with detachable rear panel made of powder coated perforated sheet steel with two cable glands.
- Front with mounting strip for the acceptance of EP or MP modules.
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.
- Height of EP Energy Board: 170mm.
- Height of MP Module Board: 260mm.

Available in following dimensions:

- suitable for all EASY and PROFI benches
- suitable between SINGLE/ MULTI extesions (-80mm)
- suitable between ENERGY extensions (-204mm)

EASY Energy Board and Module Board 31 **G** . **BBB** . **F** **T** **A**

G Rack

3	Energy Board
4	Module Board

BBB Width and Equipment

030	302mm	1EP	2MP	**129**	1295mm	4,5EP	9MP
060	567mm	2EP	4MP	**139**	1396mm	4,5EP	10MP
069	696mm	2EP	4MP	**142**	1420mm	5EP	10MP
072	720mm	2EP	4MP	**148**	1485mm	5EP	10MP
079	796mm	2,5EP	5MP	**150**	1500mm	5EP	10MP
080	800mm	2,5EP	5MP	**152**	1520mm	5EP	10MP
082	820mm	2,5EP	5MP	**159**	1596mm	5,5EP	11MP
090	900mm	3EP	6MP	**160**	1600mm	6EP	12EP
092	920mm	3EP	6MP	**172**	1720mm	6EP	12MP
100	1000mm	3,5EP	7MP	**179**	1796mm	6,5EP	13MP
105	1056mm	3,5EP	7MP	**180**	1800mm	6,5EP	13MP
109	1091mm	3,5EP	7MP	**192**	1920mm	7EP	14MP
112	1120mm	3,5EP	7MP	**200**	2000mm	7EP	14MP
118	1180mm	4EP	8MP	**209**	2099mm	7,5EP	15MP
120	1200mm	4EP	8MP	**223**	2223mm	8EP	16MP
121	1215mm	4EP	8MP	**230**	2303mm	8EP	16MP
126	1260mm	4,5EP	9MP				

F Colour

1	orange (not ESD)
5	light grey
7	pebble (not ESD)
8	indus grey

T Depth

2	150mm
3	300mm
6	300mm
	double sided

A Version

0	Standard
5	ESD

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PROFI **MP MODULE RACK**

- Body with tilted front made of light grey 19mm thick melamine resin covered chipboard.
- Sides with cutout for the PROFI extensions.
- Front with mounting strip for the parallax-free acceptance of MP modules.
- Sheet steel front panel (powder coated according to RAL-No.) with ventilation slots. The panel additionally stabilizes the suspended rack, no other support is required.
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.
- Depth: 380 / 325mm.
- Height: 335 / 280mm.

PROFI Module Rack 422.**BB** **F** .00 **A**

BB Width and Equipment

08	800mm 5MP	**15**	1500mm 10MP
09	900mm 6MP	**16**	1600mm 11MP
10	1000mm 7MP	**18**	1800mm 13MP
12	1200mm 8MP	**20**	2000mm 14MP
13	1295mm 9MP	**23**	2303mm 16MP

F Extensions

1	SINGLE/ MULTI
3	ENERGY

A Version

0	Standard
5	ESD

EASY **MEP RACK** FOR EP AND MP

- Body with tilted front made of light grey 19mm thick melamine resin covered chipboard.
- Front with mounting strip for the parallax-free acceptance of modules in MP raster, 5HE.
- Lower side with mounting strip for EP modules 3HE.
- Detachable, powder coated rear panel made of perforated sheet steel with two cable glands.
- Depth: 350 / 300mm.
- Height: 420mm.

EASY MEP Rack 311.**BB** 5.50 **A**

BB Width and Equipment

06	567mm	4MP + 2EP	**15**	1485mm	10MP + 5EP
09	900mm	6MP + 3EP	**16**	1600mm	11MP + 5,5EP
10	1000mm	7MP + 3,5EP	**18**	1800mm	13MP + 6,5EP
13	1260mm	9MP + 4,5EP	**20**	2000mm	14MP + 7EP

A Version

0	Standard
5	ESD

RETRACTABLE BENCH RACK
FOR A MAXIMUM OF PRECAUTION

Bench racks for EP and MP are available with hideaway or foldaway mechanism. The electric devices are in a safely retracted position if not needed. The movement of bench racks can either be controlled from the teachers bench (software-controlled version) or directly with up / down button at the students bench. This offers sufficient room on the bench top for either practical or theoretical lessons and of cause a maximum of precaution with regard to the expensive electrical devices.

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FOLDAWAY MECHANISM FOR ENERGY BOARD OR MODULE BOARD

- Flush into the bench top integrated Energy Board or Module Board that is fold up and down with two lifts.
- Rear side with solid hinges.
- Front side with double rubber lip for bruise protection.
- Powder coated sheet steel cover for the protection of the electrical devices in retracted state.
- Up and down with two silent-running electric lifts with automatic stop.
- Optionally with central control from the teachers bench (software or RC version), standard version with up/ down button at the front of each bench.
- Depth: 400 - 440mm (depending on the rack and equipment).

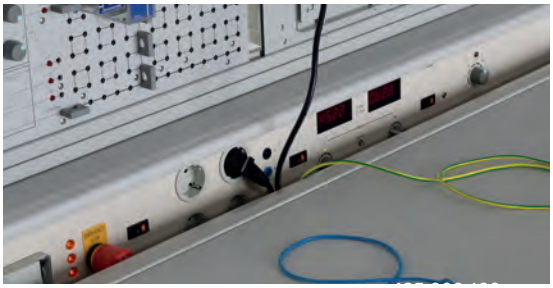
NOTE:
Suitable for all PROFI Workbenches and EASY Energy Boards or Module Boards (Width: -200mm). EP or MP modules according to customers choice.

Foldaway Mechanism	**425.900.010**

HIDEAWAY MECHANISM FOR EP ENERGY BOARD/ MP MODULE BOARD

- Chest made of light grey, 19mm thick melamine resin covered chipboard and levellers for uneven grounds. Front side with detachable service flap.
- Devicefacing side of the chest with mechanical bruise-protection by double rubber lip, to avoid injury while retraction.
- Integrated hideaway mechanism with four silent-running lifts, electrical bruise-protection (switch-off automatic with reverse motion) and programmable lifting speed.
- Optionally with central control from the teachers bench (software or RC version), standard version with up/ down button at the front of each bench.

NOTE:
Suitable for all PROFI Workbenches and EASY Energy - or Module Boards. EP and MP modules according to customers choice.



Option Hideaway Mechanism	**425.900.100**

Double **Bruise-Protection**

- mechanical with double rubber lip
- electrical with switch-off automatic for lifts

HEXAGONAL TEAM RACK FOR EP AND MP

- Completely assembled, light grey body.
- Top and bottom made of 30mm thick melamine resin covered chipboard.
- Inner side with cross stiffening, so the top could even be used as shelving.
- Completely surrounding mounting strips for the acceptance of EP or MP modules.
- Height of EP Energy Baord:
  190mm (1x level) / 360mm (2x levels).
- Height of MP Module Board:
  280mm (1x level) / 530mm (2x levels).

Hexagonal Team Rack 31 **G** .55 **D** . **F** **H** **A**

G Rack	**D** Diameter	**F** Colour	**H** Height	**A** Version
3 Energy Board	**0** 1800mm 6x 3EP / 6x 6MP	**1** orange (not ESD)	**0** one level	**0** Standard
4 Module Board	**1** 1100mm 6x 2EP / 6x 4MP	**5** light grey	**1** two levels	**5** ESD
	2 550mm 6x 1EP / 6x 2MP	**7** pepple (not ESD)		
		8 indus grey		

HIDEAWAY MECHANISM FOR HEXAGONAL TEAM RACK FOR EP AND MP

- Chest made of light grey 19mm thick melamine resin coated chipboard with levellers for uneven floors and detachable service flap.
- The devicefacing sides of the chest with mechanical bruise-protection by double rubber lip, to avoid injury.
- Integrated hideaway mechanism with four silent-running lifts, electrical bruise-protection (switch-off automatic with reverse motion) and programmable lifting speed.

Option Hideaway Mechanism for Hexagonal Team Rack	**425.900.150**

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EP TOWER, 4-SIDED

- More sides of the Tower are equipable and could be flexibly mounted on each bench top.
- Four anodized aluminium profiles 30 x 30mm with slots and mounting brackets.
- Top - and bottom steel plate with light grey powder coating.
- Two sides made of aluminium with durable light grey powder coating.
- Completely assembled and wired.
- Base dimensions: 194 x 194mm

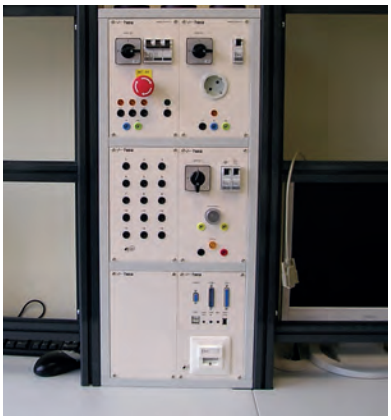
EP Tower, 4-sided **313.700.HH 0**

HH Height and Equipment

03	272mm	2x 1EP	**04**	404mm	2x 1,5EP	**05**	536mm	2x 2EP

EASY **TOWER BOARD** FOR EP AND MP

- Body made of light grey 19mm thick melamine resin covered chipboard.
- Detachable, powder coated rear panel made of perforated sheet steel with two cable glands.
- Front with mounting strip for the acceptance of EP or MP modules.
- Terminal block for the connection to mains and optionally to the inhouse emergency stop.
- Width: 302mm.



EASY Tower Board **314.7 BB . F T E**

BB Equipment and Height

11	1x 1EP + 1x 2MP	395mm	**03**	3x 2MP	710mm
02	2x 2MP	485mm	**22**	2x 1EP + 2x 2MP	748mm
12	1x 1EP + 2x 2MP	620mm			

F Colour

1	orange (not ESD)
5	light grey
7	pepple (not ESD)
8	indus grey

T Depth

2	150mm
3	300mm
6	300mm
	both sided

A Version

0	Standard
5	ESD

CARRYING CASE FOR EP AND MP

- Sheet steel housing with durable light grey powder coating, carrying handle and rubber feet.
- Slotted bottom and rear panel.
- Depth: 300mm.
- Incl. power cord.

Carrying Case	394.BB0.G01

BB Equipment

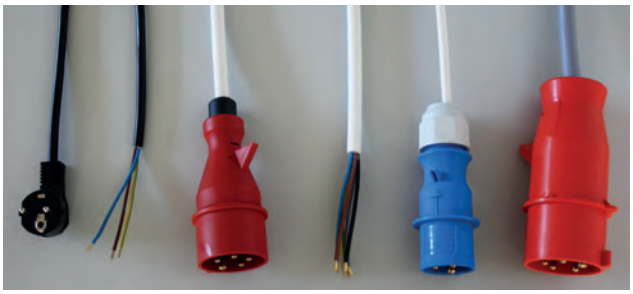
10	1EP / 1MP
15	1,5EP
20	2EP / 2MP

G Case

3	for EP, height: 190mm
4	for MP, height: 280mm

POWER CORD

Flexible power cord completely wired and connected.



Power Cord			
291.001.100	5m (3x 1,5mm²) with open end	291.001.500	5m Emergency Stop Cord (2x 1,5mm²), open end
291 001.150	3m (5x 2,5mm²) with open end	291.001.550	3m Emergency Stop Cord (2x 1,5mm²), open end
291.001.200	3m (3x 1,5mm²) with angled Schuko plug	291.001.603	3m Patch Cable grey with 2x RJ45 plug CAT6
291.001.250	5m (3x 1,5mm²) with angled Schuko plug	291.001.605	5m Patch Cable grey with 2x RJ45 plug CAT6
291.001.300	5m (5x 2,5mm²) with CEE plug 16A red	291.001.610	10m Patch Cable grey with 2x RJ45 plug CAT6
291.001.350	5m (5x 6mm²) with CEE plug 32A red	291.001.140	extra Schuko Plug
291.001.400	5m (3x 1,5mm²) with CEE plug 3poles blue	291.001.144	extra Swiss Plug
291.001.257	5m (3x 1,5mm²) with Swiss Plug 10A	291.001.147	extra British Standard Plug

TOPMOUNT SOCKET WITH FLAP

- Schuko socket with white flap, flush mounted into a wooden body and connected to the central power supply.

Topmount Socket with Flap	
291.006.201	2x Socket with Flap
291.006.401	4x Socket with Flap

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PROFI EP / MP **SHELF UNIT**

- For PROFI Energy Board PLUS, PROFI Energy Board and EASY Energy Board.
- Made of 3mm aluminium, durable light grey powder coated.
- Both sides with cable access.
- Usable height: 100mm (EP) and 190mm (MP).
- Depth: 250mm.

EP Shelf Unit 1,5EP

EP/MP Shelf Unit		
333.080.502	0,5EP	(W: 132mm)
333.081.002	1EP	(W: 264mm)
333.081.502	1,5EP	(W: 396mm)
333.082.002	2EP	(W: 528mm)
336.082.002	2MP	(W: 264mm)
336.083.002	3MP	(W: 396mm)
336.084.002	4MP	(W: 528mm)

MP Shelf Unit 4MP with integrated socket strip (not within the delivery scope)

EP MODULE WITH **LAMP**

- Flush integrated reflector with fluorescent lamp.
- Glarefree parabol louver.
- Ballast and illuminated switch, 2poles for central on/off.
- Optional with dimmable electric ballast.

Module with Lamp 334.481. AA V				
AA Type			**V Ballast**	
15	36W	2EP	**2**	magnetic ballast
20	36W	4EP	**4**	electric ballast
25	2x 36W	4EP	**6**	electric ballast, dimmable

EP MODULE WITH **COMPACT LAMP, TILTABLE**

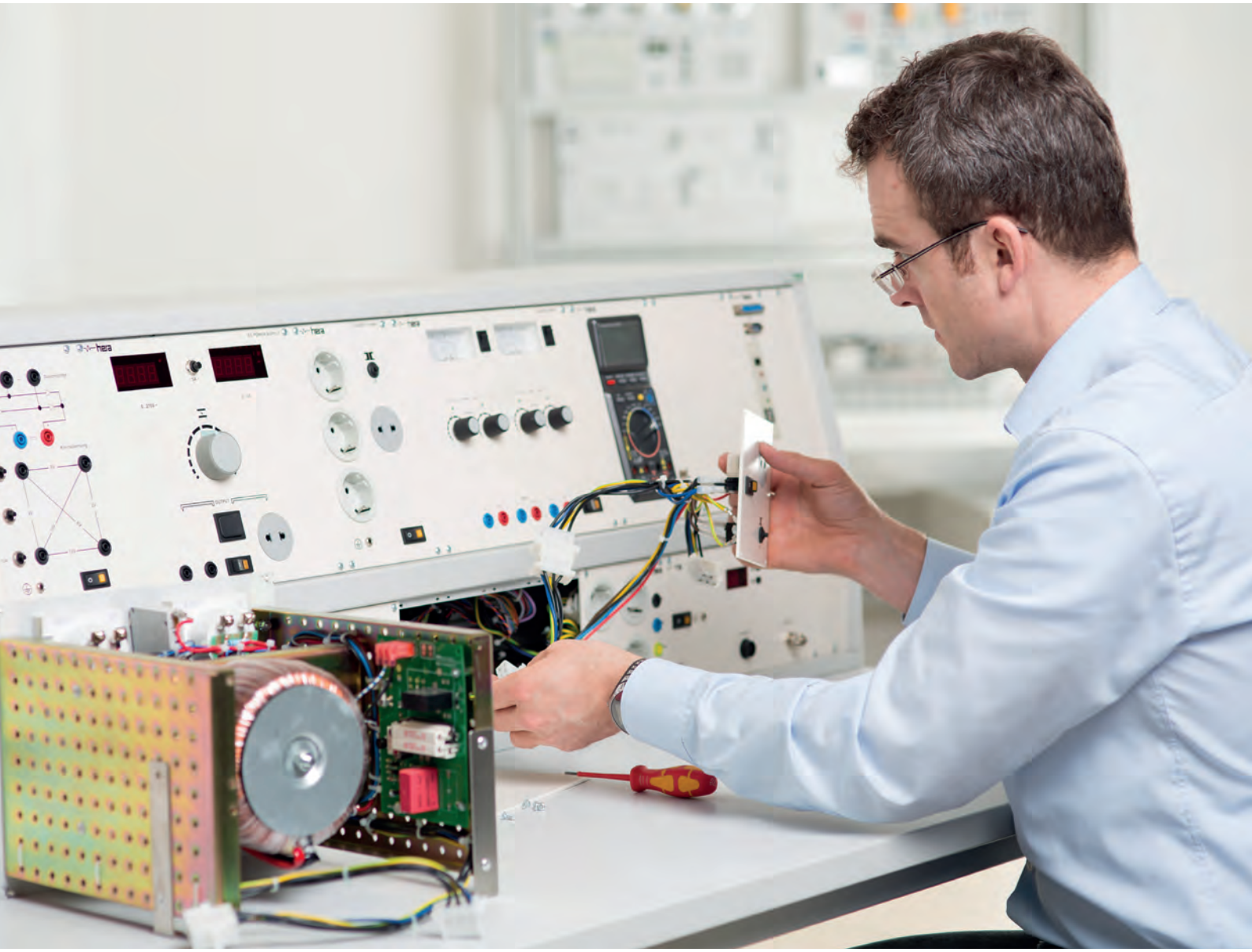
- Due to the tiltability, the light beam could be adapted to the different bench depth and working conditions.
- Tiltable integrated reflector with fluorescent lamp 36W.
- Glarefree semicircular parabol louver.
- Ballast and illuminated switch, 2poles for central on/off.
- Optional with dimmable electric ballast.

Module with Compact Lamp 334.481.10 V 2EP			
V Ballast			
2	magnetic ballast	**4**	electric ballast

CHOOSE YOUR PERFECT DEVICE CONFIGURATION

The 19“ modules of the EP and MP system have following technical and mechanical characteristics:

- Aluminium front panel, 3mm thick with matt light grey powder coating and abrasion-proof silk-screen printing in anthracite.
- For 5poles supply 230V/ 400V, 16A the modules have 6poles input plugs and output couplers.
- Chromatized TORX screws for front panel fixation.
- Height: EP = 3HE (132mm)
  MP = 5HE (223mm)
- Width: EP = 52TE (264mm)
  MP = 26TE (132mm)



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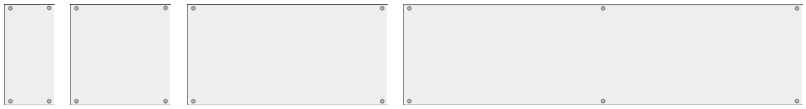
EP/ MP **BLANK PANEL**

- For closing EP or MP bench racks.
- Front panel with fixing screws.



0,25EP 0,5EP 1EP 2EP

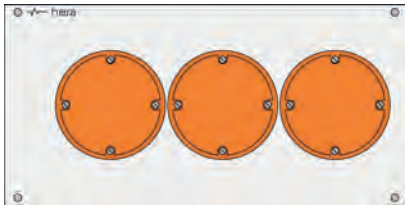
0,5MP 1MP 2MP

Blank Panel 33 S . BB 0.102			
S System		**BB Width**	
3	EP	**05**	0,25EP
6	MP	**10**	0,5EP 0,5MP
		20	1EP 1MP
		30	1,5EP 3MP
		40	2EP 2MP

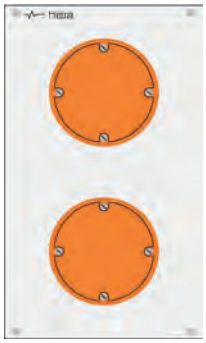
EP/ MP **INSTALLATION MODULE**

- Module with installation box for the variable equipment with installation components.

Installation Module 33 S . BB 0.102			
S System		**BB Width**	
3	EP	**12**	1x Installation Box 0,5EP
6	MP	**22**	2x Installation Box 1EP 1MP
		23	3x Installation Box 1EP



333.230.102



336.220.102

Suitable Installation Components			
333.220.500	1x Cover	**333.220.530**	Double-UAE-Socket RJ45
333.220.502	2x Cover	**333.220.540**	TAE-Socket 6F
333.220.510	TV-Antenna-Socket 2-holes	**333.220.550**	Red Schuko Socket with Label
333.220.520	SAT-Antenna-Socket 3-holes		

EP/ MP **EQUIPMENT** FOR COMPENSATING PANEL

- EP and MP racks have compensating panels at each side, those could be equipped as follows:

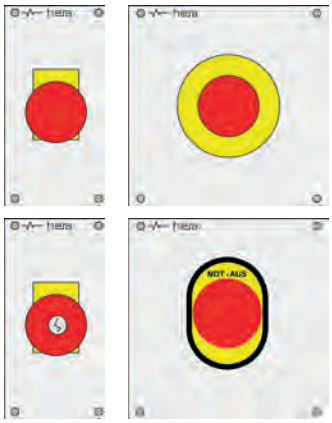
Equipment for Compensating Panel	
333.800.100	Illuminated Switch, 2poles
333.800.150	2x Illuminated Switch, 2poles
333.800.200	Emergency Stop Button (unwired)
333.800.250	Emergency Stop Button with Key (unwired)
333.800.300	2x Modular Coupling RJ45 Socket 8-8 CAT 5
333.800.360	Modular Coupling RJ45 Socket 8-8 CAT 6
333.800.380	2x Modular Coupling RJ45 Socket 8-8 CAT 6
333.800.400	Valve for Pressured Air w. Quick Connector NW 7,2
333.800.500	PE Socket

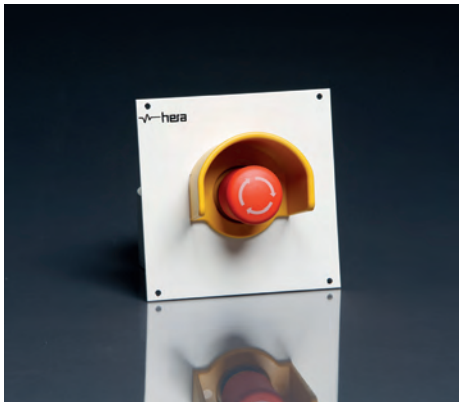
EP MODULE WITH **EMERGENCY STOP BUTTON**

- Emergency Stop button with 2. opener contact, unwired.

EP Module with Emergency Stop Button	
332.056.102	with rotation release 0,25EP
332.066.102	with key release 0,25EP
335.106.102	with rotation release 0,5EP
332.156.102	with protective collar and rotation release 0,5EP

MP Module with Emergency Stop Button	
335.056.102	with rotation release 0,5MP
335.066.102	with key release 0,5MP
335.106.102	with protective collar and rotation release 0,5MP
335.156.102	with protective collar and key release 0,5MP





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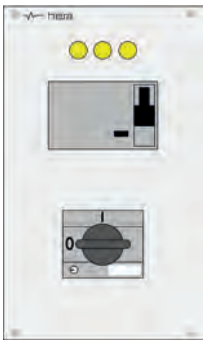
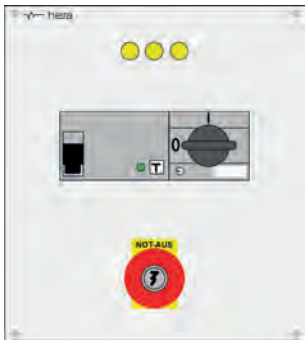
EP/ MP **MAINS MODULE 16A**

- The mains modules are for central on/off and central protection of the complete bench rack.
- Residual current device (RCD) 25A / 30mA type A.
- Optionally: RCD 25A / 30mA type B sensitive to all currents. Recommended for training facilities with experimental equipment according to VDE 0100-723.
- Motor circuit breaker 12,5-16A with under voltage release. For central on/off and overcurrent protection.
- Emergency Stop button with protective collar, effective on the under voltage release and 2. opener contact for the optional connection to the inhouse emergency stop. Alternatively: black mushroom button with key.
- Voltage control lamps.
- With wire harness and coupler.

Configuration example: MP mains module

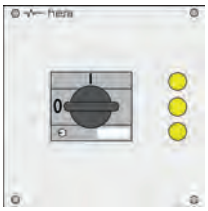


335.235.002 (1MP)



335.237.202 (1,5MP)

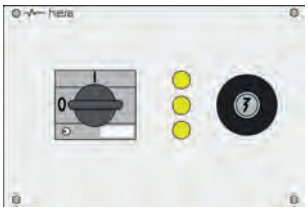
Configuration example: EP mains module



332.230.002 (0,5EP)

332.215.102 (1EP)

332.235.002 (0,75EP)



332.230.302 (0,75EP)

Mains Module 16A	33 S .2 P T . N 02	1EP / 1MP (some types may vary)

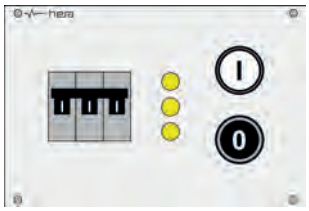
S System		P Phases		T RCD (sensitive to ...)		N Emergency Stop	
2	EP	1	1phase 230V	0	no RCD	0	no Emergency Stop
5	MP	3	3phases 400V	5	pulsating currents type A	1	Emergency Stop with Rotation Release
				7	all currents type B	2	Emergency Stop with Key Release
						3	Black Key Button

Swiss Version: **33**X.XXX.XX**7**
(Tripping Current of Motor Circuit Breaker: 9 - 12,5A)

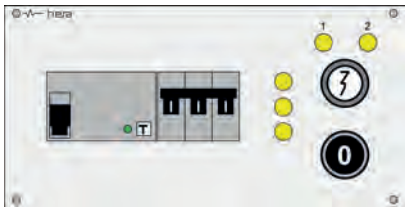
US Version: **33**X.XXX.XX**8**
(Rated Voltage of 120V/240V)

EP/ MP **MAINS MODULE** WITH CONTACTOR

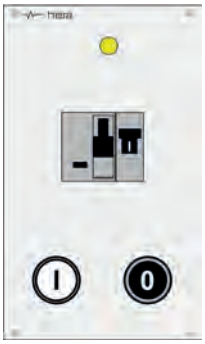
- Residual current device 25A / 30mA type A.
- Optionally: RCD 25A / 30mA type B sensitive to all currents. Recommended for training facilities with experimental equipment according to VDE 0100-723.
- Automatic circuit breaker B16.
- Voltage control lamps.
- 1- or 2-level-activation with on/ off button, contactor and status indication.
- With wire harness and coupler.



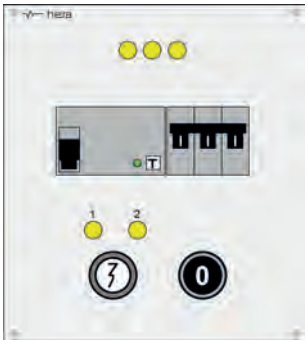
332.280.002 (0,75EP)



332.287.202 (1EP)



335.275.102 (1MP)



332.287.202 (1,5MP)

Mains Module with Contactor 33 **S** .2 **P** **T** . **F** 02 — **1EP / 0,75MP (some types may vary)**

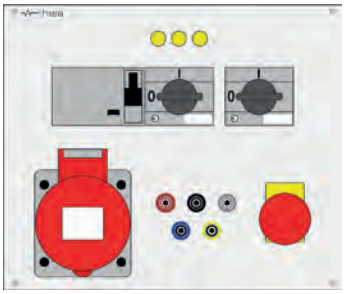
S System	**P** Phases	**T** RCD (sensitive to ...)	**F** Activation
EP	**7** 1phase 230V	**0** no RCD	**0** 1-level with On and Off Button
MP	**8** 3phases 400V	**5** pulsating currents type A	**1** 1-level with Key-On and Off Button
		7 all currents type B	**2** 2-level with Key-On and Off Button

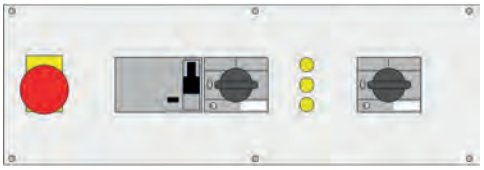
Swiss Version: 33x.xxx.xx**7**
(Triggering Current of Motor Circuit Breaker: 9 - 12,5A)

US Version: 33X.XXX.XX**8**
(Rated Voltage of 120V/240V)

EP/ MP **MAINS MODULE 32A**

- RCD 40A/ 30mA.
- Motor circuit breaker 32A with undervoltage release for central on/ off and 32A protection.
- 3x voltage control lamps.
- 32A output terminal for external use
  or
  CEE socket 32A and safety jacks 32A
  (L1, L2, L3, N and PE).
- Output with motor circuit breaker 16A.
- Emergency Stop button effective on the undervoltage release and 2. opener contact for the connection to the inhouse emergency stop.





Mains Module 32A 33 **S** .43 **T** . **N** 02 — **2EP / 2MP (some types may vary)**

S System	**T** RCD (sensitive to ...)	**N** Emergency Stop	**A** Output
2 EP	**0** no RCD	**0** no Emergency Stop	with CEE 32A and 4mm jacks
5 MP	**5** pulsating currents type A	**1** Emergency Stop with Rotation Release	with 32A output terminal
	7 all currents type B	**2** Emergency Stop with Key Release	
		3 black Key Button	

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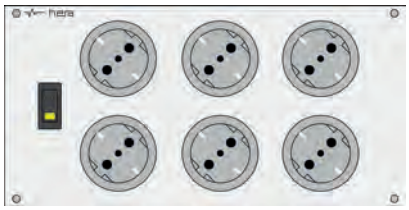
EP/ MP **SOCKET PANEL** WITH SWITCH

- Illuminated switch, 2poles 16A.
- With wire harness and coupler.



333.261.102 (1EP)

336.261.102 (1MP)

D Sockets

4	5	6	7	8	9
Swiss	Franco/ Belgian	Italian	British	NEMA 5-15	NEMA 6-20

Configuration examples:

333.121.102 (0,5EP)

333.241.102 (1EP)

333.421.102 (2EP)

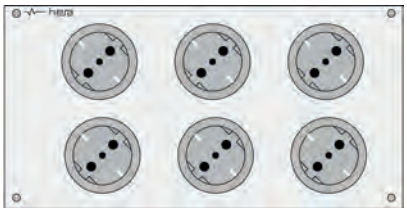
336.221.102 (0,5MP)

Socket Panel with Switch	33 **S** .**AA** 1.1 **D** 2

S System		**AA** Socket		**D** Type	
3	EP	**12**	2x Sockets 0,5EP	**0**	Schuko Socket, 45° positioned
6	MP	**22**	3x Sockets 1EP / 0,5MP	**4**	Swiss Standard 230V / 10A
		24	4x Sockets 1EP	**5**	Franco/Belgian Standard 230V / 16A
		26	6x Sockets 1EP / 1MP	**6**	Italian Standard 230V / 10A
		42	5x Sockets 2EP	**7**	British Standard 240V / 13A
				8	USA NEMA 5-15, 125V / 15A
				9	USA NEMA 6-20, 250V / 20A

EP/ MP **SOCKET PANEL**, NO SWITCH

- With wire harness and coupler.



333.331.102 (1EP)

336.331.102 (1MP)

D Socket

4	5	6	7	8	9
Swiss	Franco/Belgian	Italian	British	NEMA 5-15	NEMA 6-20

Configuration examples: EP/ MP Socket Panel, no Switch

333.031.102
(0,25EP)

333.131.102
(0,5EP)

333.231.102
(1EP)

333.331.102
(2EP)

336.231.102
(0,5MP)

Socket Panel, no Switch 33 **S** . **A** 31.1 **D** 2

S System		**A** Socket		**D** Type	
3	EP	**0**	2x Sockets 0,25EP	**0**	Schuko Socket, 45° positioned
6	MP	**1**	4x Sockets 0,5EP (International: 0,75EP)	**4**	Swiss Standard 230V / 10A
		2	3x Sockets 1EP / 0,5MP	**5**	Franco/Belgian Standard 230V / 16A
		3	6x Sockets 1EP / 1MP	**6**	Italian Standard 230V / 10A
		4	6x Sockets 2EP	**7**	British Standard 240V / 13A
				8	USA NEMA 5-15, 125V / 15A
				9	USA NEMA 6-20, 250V / 20A

IT Sockets: **33**x.xxx.xx**3**
red front panel and terminal clamp for separate power cord

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EP/ MP **CEE SOCKET MODULE**, 1PHASE

- CEE socket 3poles, blue 230V/ 16A 6h.
- Optionally with 4mm safety jacks (L, N, PE).
- Optionally with illuminated switch, 2poles.

Configuration examples:

333.032.102

333.102.202

333.232.202

336.032.202

336.102.102

336.132.102

333.102.102

336.132.202

CEE Socket Module, 1phase	33 S .AA 2. W 02

S System

3	EP
6	MP

AA Type

03	jacks 0,25EP / 0,5MP	13	CEE and jacks 0,5EP / 1MP
10	CEE socket 0,5EP / 1MP	23	CEE and jacks 1EP

W Switch

1	no switch
2	with switch

EP/ MP **CEE SOCKET MODULE**, 3PHASE

- CEE socket 5poles, red 400V /16A 6h.
- Optionally with 4mm safety jacks.
- Optionally with illuminated switch, 2poles and contactor.

Configuration examples:

333.052.102

333.302.202

333.452.202

336.052.202

336.302.102

336.352.102

333.352.202

336.352.202

Socket Module, 3phases	33 S .AA 2. W C 2

S System

3	EP
6	MP

AA Type

05	jacks 0,25EP / 0,5MP	35	CEE and jacks 0,5 EP / 1MP
30	CEE socket 0,5EP / 1MP	45	CEE and jacks 1EP

W Switch

1	no switch
2	with switch
3	with key switch

C Current

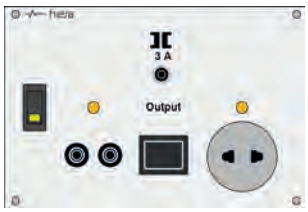
0	16A
5	32A

EP/ MP MODULE WITH **ISOLATED TRANSFORMER**

- Isoltated tranformer for a floating AC voltage 230V.
  100VA Isoltated tranformer (88 x 66 x 61mm)
  115VA Isoltated tranformer (110 x 100x 85mm)
  700VA Toroidal core transformer (165 x 70mm)
- Protected by a front side operated thermomagnetic fuse.
- Output on universal socket (Schuko, Franco-American) without earth contact. Optional with selector switch for the output on 4mm safety jacks and LED indication.
- Illuminated switch, 2poles.

333.010.302 100VA (1EP)

333.012.302 115VA (0,5EP)



333.170.302 700VA (0,75EP)

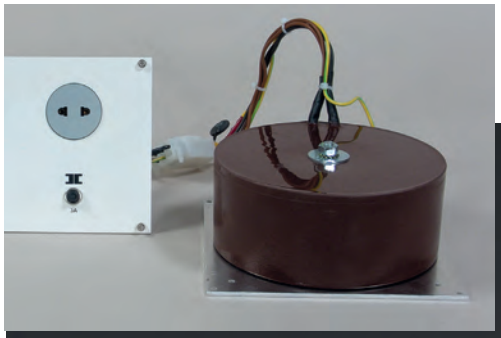
Module with Isolated Transformer 33 S .AAA .302

S System **AAA Type**

3	EP	**010**	100VA / 0,43A 1EP (fits in Energy Channel)
6	MP	**012**	115VA / 0,5A 0,5EP / 0,5MP
		112	115VA / 0,5A 0,75EP / 1MP output switchable to jacks
		070	700VA / 3A 0,5EP / 0,5MP
		170	700VA / 3A 0,75EP / 1MP output switchable to jacks

336.012.302 115VA (0,5MP)

336.170.302 700VA (1MP)



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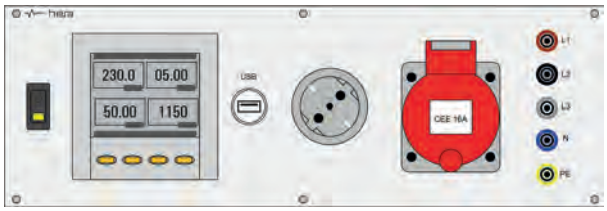
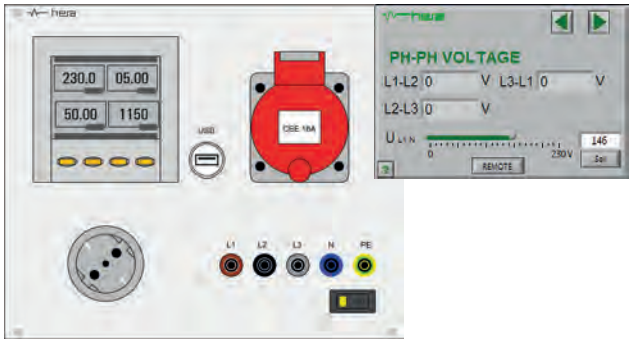
EP/ MP MODULE WITH **MULTI MEASURING UNIT**

- The module is for the display of voltage, current and power of connected AC consumers.
- Multifuctional display with graphic-LCD and 4 variably programmable readings and four switches.
- Optional with front side connectable USB interface or back side connectable LAN interface.
- CEE socket straight 400V/ 16A, 6h, 5poles.
- 4mm safety jacks (L1, L2, L3, N and PE).
- Schuko socket, grey 45° positioned.
- Illuminated switch, 2poles and contactor.





Module with Multi Measuring Unit	33	S	389.	AA	2

S System

4	EP
7	MP

AA Type

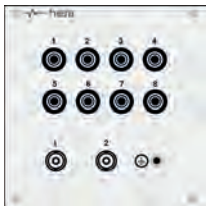
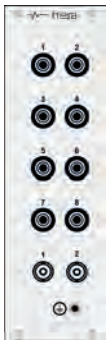
50	5A	no Interface	1,5EP/ 2MP
53	5A	USB Interface	1,5EP/ 2MP
55	5A	LAN Interface	1,5EP/ 2MP
60	16A	no Interface	1,5EP/ 2MP
63	16A	USB Interface	1,5EP/ 2MP
65	16A	LAN Interface	1,5EP/ 2MP

Technical details of Multi Measuring Unit:

- Instrument 96 x 96mm with graphic-LCD 128 x 80 Pixel and 4x switches for operation.
- Voltages TRMS (phases-, system- and line-to-line voltage); accuracy: ±0,2%.
- Phase current TRMS (calculated current of neutral contactor); Accuracy: ±0,2%.
- Power (active, reactive, apparent power of phase and in total); accuracy: ±0,5% v. EW.
- P.F. (power factor each phase and in total); accuracy: ±0,5%.
- Frequency (frequency measuring of the measured voltage); accuracy: ±0,05%.
- HIGH and LOW values of the actual voltage -, current -, power -, PF - and frequency value.
- Total harmonic distortion (THD) of voltages and currents.
- Harmonic analyses of voltage and current up to the 31st harmonic wave.
- Counter for active -, reactive -, and apparent energy (partial and total counter with programmable tariff functions).
- Hour counter (counter for total and service hours, programmable).

EP/ MP MODULE WITH **SELECTIVE POLES**

- Selective poles are used for loop wirings in class rooms or training centers, if the teacher provides voltages for the class. Selective poles are not connected, wiring has to be done on-site.

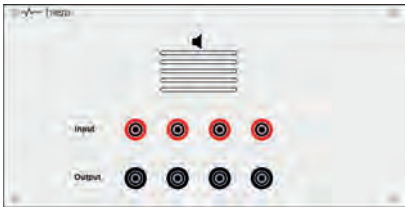



Module with Selective Poles	33 **S** ,850. **A** 02

S System		**A** Type	
3	EP	**1**	5x jacks 0,25EP / 0,5MP
6	MP	**2**	8x jacks + 2x BNC sockets 0,5EP / 0,5MP

EP/ MP MODULE WITH **TEST SPEAKER**

- Test speaker 10Watt/ 8Ω.
  Transmission range: 130-20.000 Hz.
- Upstream connected transmitter for impedance matching.
  Transmission range: 40 - 20.000Hz.
  Primary winding: 2kΩ / 4kΩ / 8kΩ / 16kΩ.
  Secundary winding: 4Ω / 8Ω / 16Ω.
- Connection with 4mm safety jacks.



Module with Test Speaker	
334.090.302	1EP
337.090.302	1MP

EP/ MP MODULE WITH **CONTINUITY TESTER**

High-ohmic, electronic continuity tester, poled:

- Resistance range: 0...200kΩ with accoustic signal (sound alternation with changing resistance) and optical signal.
- Residual current protection (> 400V) and LED indication.

Electric continuity tester for low-ohmic tests with 24VAC.

- LED indication.
- Connection with 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.
- With wire harness and coupler.

Module with Continuity Tester	
334.121.602	0,5EP
337.121.602	0,5MP

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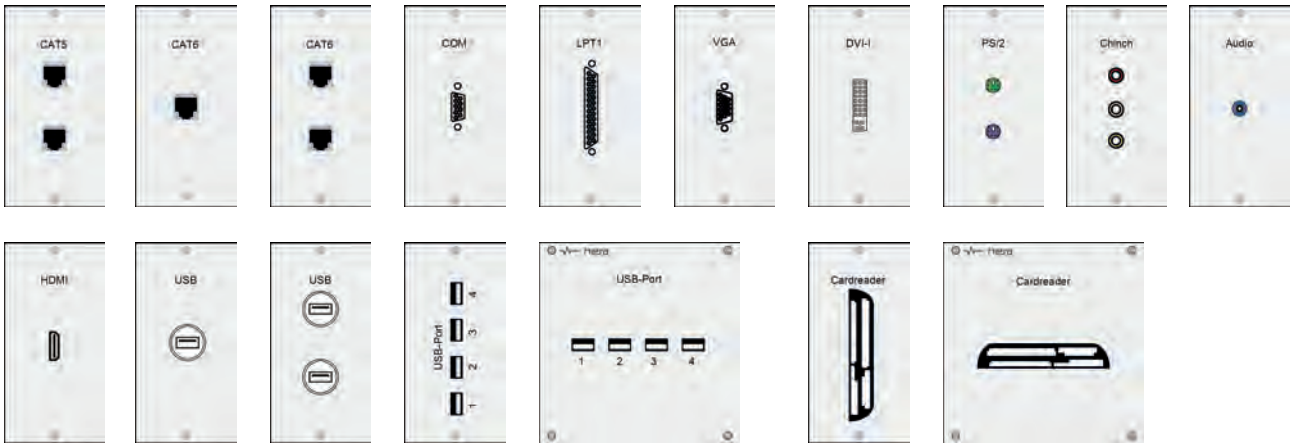
EP/ MP **MODULE WITH INTERFACE**

- Interface module with cable.



Module with Interface **SSS**. **AAA**. **AAA**

SSS System **AAA**.**AAA Type**

333 ~~333~~	EP	**802.005**	Gigabit Ethernet Switch 5 Port (136×76× 25,5mm)	**805.102**	1x USB-A to USB-B Flange Socket 0,25EP / 0,5MP
336 ~~336~~	MP	**802.008**	Gigabit Ethernet Switch 8 Port incl. power supply	**805.202**	2x USB-A to USB-B Flange Socket 0,25EP / 0,5MP
		802.102	2x RJ45 Socket CAT5 0,25EP / 0,5MP	**805.103**	1x USB-A to B 3.0 Flange Socket 0,25EP/ 0,5MP
		802.302	1x RJ45 Socket CAT6 0,25EP / 0,5MP	**805.203**	2x USB-A to B 3.0 Flange Socket 0,25EP/ 0,5MP
		802.402	2x RJ45 Socket CAT6 0,25EP / 0,5MP	**805.302**	4x USB-Hub 2.0 incl. supply unit 0,25EP / 0,5MP
		802.502	1x RJ45 displaced insulation CAT6 0,25EP / 0,5MP	**805.402**	4x USB-Hub 2.0 0,5EP (fits in energy channel)
		802.602	2x RJ45 displaced insulation CAT6 0,25EP / 0,5MP	**805.502**	4x USB-Hub 3.0 incl. supply unit 0,25EP / 0,5MP
		803.102	1x Sub-D 9poles Plug for RS232 0,25EP / 0,5MP	**805.702**	Card Reader USB2.0 56in1 0,25EP / 0,5MP
		803.302	1x Sub-D 25poles Socket for LPT 0,25EP / 0,5MP		
		803.502	1x Sub-D 15poles Socket for VGA 0,25EP / 0,5MP	**806.002**	Double Fibre Optics Connector
		803.702	1x DVI-I- Socket 0,25EP / 0,5MP		
		803.902	2x PS/2-Socket (Keyboard + Mouse) 0,25EP / 0,5MP		
		804.102	3x Cinch Socket (red, white, yellow) 0,25EP / 0,5MP		
		804.302	1x Audio Jack 3,5mm 0,25EP / 0,5MP		
		804.502	1x HDMI 0,25EP / 0,5MP		

EP/ MP MODULE WITH **SOLDERING STATION, ANALOGUE**

- Professional soldering station 24V/ 80W with electric temperature regulation.
- Stepless adjustable temperature by potentiometer between 150°C and 450°C with LED temperature indication.
- Antistatic soldering iron (24V/ 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- Coupler for soldering fume extractor.

Module with Soldering Station, analogue	
334.152.103	0,5EP
334.252.103	1EP (fits in energy channel)
337.152.103	0,5 MP

EP/ MP MODULE WITH **SOLDERING STATION, DIGITAL**

- Microprocessor controlled soldering station with automatic soldering tool cognition.
- Stepless at two buttons adjustable temperature between 50°C and 450°C.
- 3digit LED display for actual and set temperature indication.
- Antistatic soldering iron (24V/ 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- Coupler for soldering fume extractor.

Module with Soldering Station, digital	
334.153.103	0,5EP
337.253.103	1MP

EP/ MP **SOLDERING STATION**

Microprocessor controlled soldering station with all relevant functions for industrial production. Shut-down and stand by function help to reduce energy costs and guarantee a long life duration. You can select between 3 fixed temperatures or choose the stepless temperature adjustment.

- Electronically controlled soldering station (80W).
- Stepless adjustable temperature 150 ... 450°C.
- LCD with actual and nominal temperature indication.
- Antistatic according to MIL-SPEC/ESA.
- Powerful fine soldering tool (heating time 9sec.)
- Antistatic holder with metal cleaning wool.
- Illuminated 2poles switch for central on/off.

Module with Soldering Station	
334.154.103	0,5EP
337.254.103	1MP

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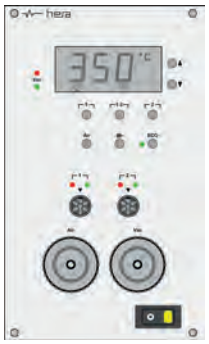
EP/ MP **SOLDERING AND DESOLDERING** REPAIR STATION UNIVERSAL

- Universal applicable 2 channel repair station for professional repairs of industrial PLCs, as well as generally for service and repair departments.
- The station has two independent channels for automatic tool cognition and automatic activation of the respective control parameter. Soldering and desoldering or soldering with hot air could be done simultanously.
- All accessories like soldering iron, desoldering iron and hot air pencil could be connected.
- Integrated rotary pump for vacuum and air flow (max. suction 0,7 bar; max. air flow 18 l/min).
- Variably programmable buttons for repeated functions.
- LC display.
- EGB safe.
- ECO button.
- Temperature regulation: 50°C – 550°C.
- For a variety of soldering tools up to 200 Watt.



Soldering and Desoldering Repair Station, UNIVERSAL	
334.254.102	1EP
337.254.102	1MP

Accessory to Repair Station UNIVERSAL	
380.000.100	Soldering Tool Set 80 Watt (Soldering Iron, Safety Holder)
380.000.200	Soldering Tool Set 120 Watt (Soldering Iron, Safety Holder)
380.000.300	Desoldering Tool Set 80 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.400	Desoldering Tool Set 120 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.500	Hot Air Pencil Set 100 Watt (Hot Air Pencil, Safety Holder, Nutdriver for Nozzle Changing)

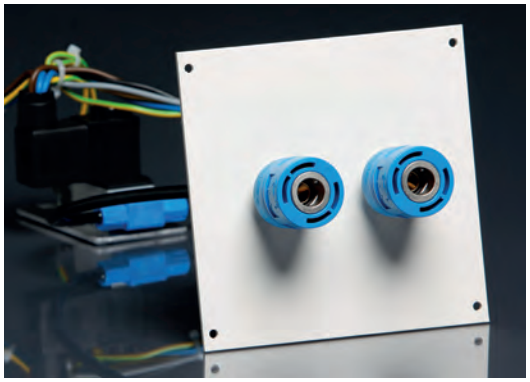
Soldering Tool Set

Desoldering Tool Set

Hot Air Pencil Set

EP MODULE WITH **PRESSURED AIR CONNECTOR**

- Self-closing coupling for pressured air.
- Connector G ¼“ outside.



Safety connector with upstream connected shut-off valve

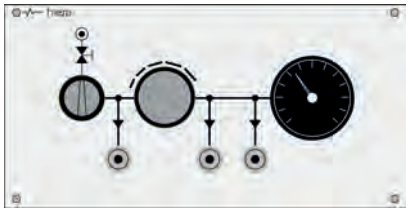
NW 7,2

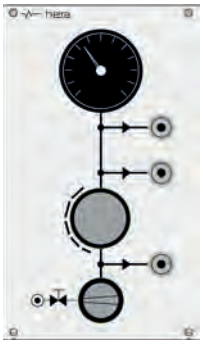
NW 5

Module with Adapter for Pressured Air	0,25EP
334.260.102	Hose coupler 6/4 self closing 0,25 EP
334.260.202	Hose coupler 8/6 0,25EP
334.260.302	Quick release coupler NW 5
334.260.402	Quick release coupler NW7 ,2
334.260.502	FESTO safety coupler NW 7,85 (the coupler could only be disconnected after releasing the pressure)
334.260.000	Option: upstream connected shut-off valve incl. hoses (normally closed and airless for remote controlled enabling of the pressured air output)

EP/ MP MODULE WITH **PRESSURED AIR**

- Shut-off valve.
- Self-closing quick release coupler 4/6 (unregulated).
- Adjustable pressure regulator with analogue manometer.
- Two self-closing quick release coupler 4/6 (regulated).
- Completely hosed with open hose end.





Module with Pressured Air	
334.262.102	0 - 3 bar 1EP
334.262.202	0 - 10 bar 1EP
337.262.102	0 - 3 bar 1MP
337.262.202	0 - 10 bar 1MP

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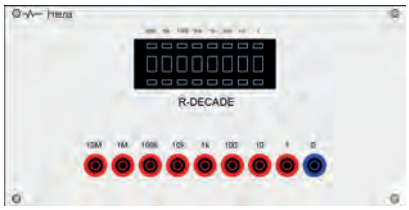
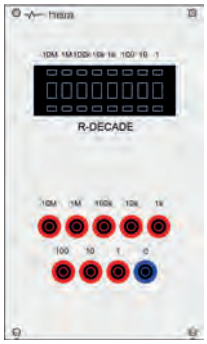
EP/ MP MODULE WITH **R-DECADE**

- 8x decade switches with precision resistors in the range between 1Ω and 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V AC; max. current: 0,5A.
- 9x 4mm safety jacks for resistance taps.



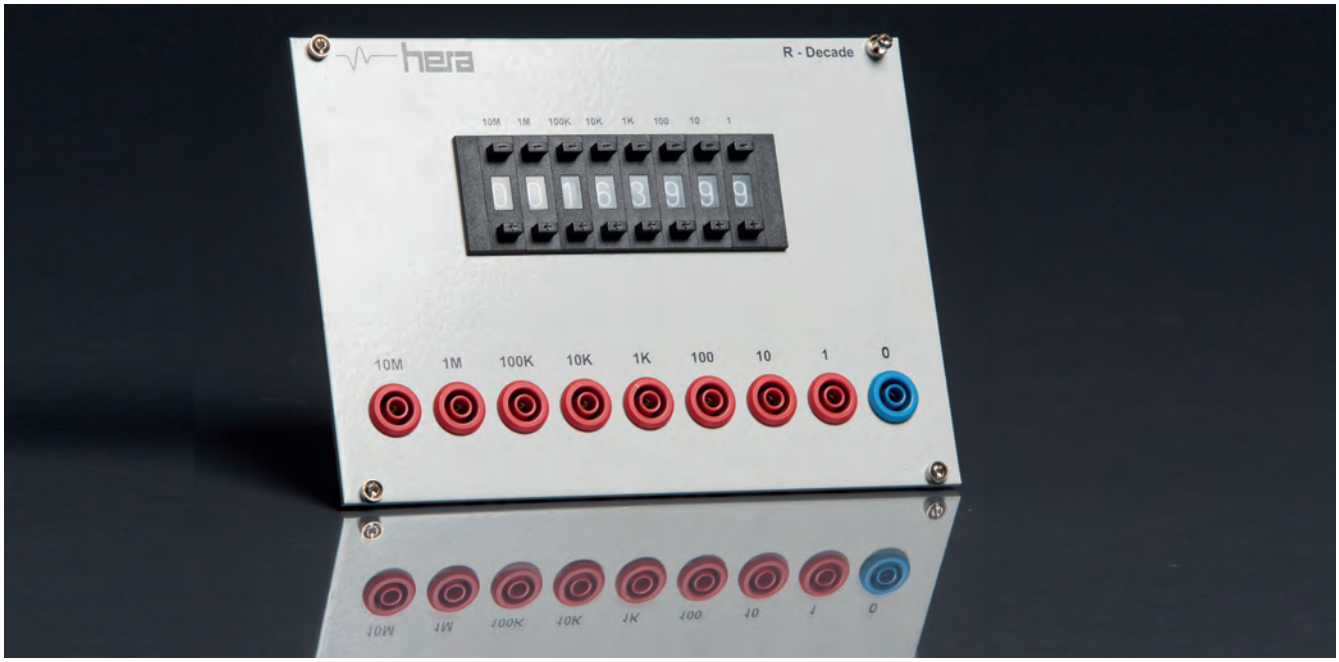


Module with R-Decade	
334.441.102	1EP
337.441.102	1MP

EP/ MP MODULE WITH **C-DECADE**

- 5x decade switches with precision capacitors in the range between 100pF, 1nF, 10nF, 100nF, 1µF.
- Accuracy: 5% + 75pF.
- Max. voltage: 200V AC; max. current: 0,5A.
- 2x 4mm safety jacks for capacity taps.

Module with C-Decade	
334.441.202	0,5EP
337.441.202	1MP



EP/ MP MODULE WITH **L-DECADE**

- 4x decade switches with precision coils in the range between 1µH, 10µH, 100µH, 1mH.
- Max. voltage: 100V.
- 2x 4mm safety jacks for inductance taps.

Module with L-Decade	
334.441.302	0,5EP
337.441.302	1MP

EP/ MP MODULE WITH **LOAD RESISTANCE**

- Stepless adjustable rotational resistors 50W.
- Thermic automatic circuit breaker for overload protection.
- Connection on three safety jacks.

Module with Load Resistance 33 **S** .005. **A** 02			
S System		**A** Type	
4	0,5EP	**1**	0-10Ω / 2,2A
7	1MP	**2**	0-100Ω / 0,7A
		3	0-1kΩ / 0,2A
		4	0-10kΩ / 0,1A

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EP/ MP MODULE WITH FLOATING **AC LOW VOLTAGE 24V / 5A**

- Isoltated transformer for the supply of floating AC voltage 24V.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Illuminiated switch, 2poles for central on/off.

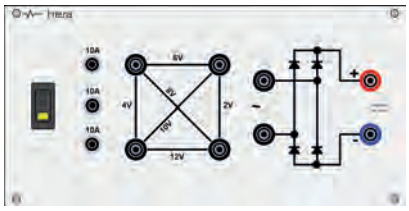
Module with AC Low Voltage 24V/ 5A	33 S .220.002

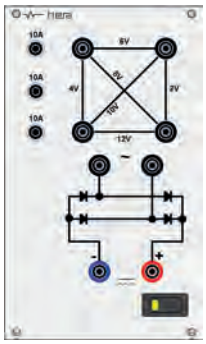
S System

4 0,5EP	**7** 0,5MP

EP/ MP FLOATING **AC LOW VOLTAGE, 1PHASE**

- Isoltated transformer with 4 isolated outputs for tapping off 6 different voltages.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Bridge rectifier at 4mm safety jacks.
- Iluminiated switch, 2poles for central on/off.



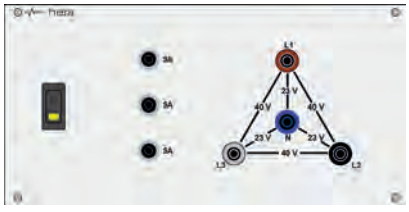


Module with AC Low Voltage, 1phase	33 A .221. S 02

S System	**A Type**
4 1EP	**3** 2, 4, 6, 8, 10, 12V / 10A
7 1MP	**1** 6, 12, 18, 24, 36, 42V / 3A

EP/ MP FLOATING **AC LOW VOLTAGE, 3PHASE**

- Isolated AC transformer for a floating 3phase voltage of 23V/ 40V.
- Max. line-to-line-current: 5A.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles with contactor for central on/off.



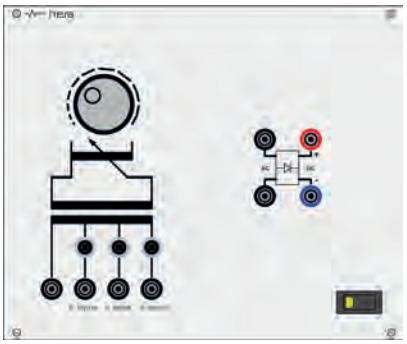
Module with AC Low Voltage, 3phase	33 S .223.002

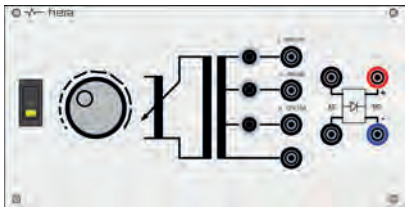
S System

4 1EP	**7** 1MP

EP/ MP VARIABLE **AC SOURCE 0-260V/ 3A** WITH DIVIDER TRANSFORMER AND RECTIFIER

- Variac 0...260V/ 3A.
- Downstream connected divider transformer for 260V/ 3A, 60V/ 6A and 12V/ 15A.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Bridge rectifier at 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.





Module with Variable AC Source 0-260V/ 3A	
334.221.402	1EP
337.221.402	2MP

EP/ MP VARIABLE **AC/DC SOURCE**

- Variac with downstream connected isolated transformer for a floating voltage of 0 - 100%.
- Connectible bridge rectifier for a pulsating DC voltage with 48% ripple.
- AC and DC output on 4mm safety jacks.
- Current and voltage readings.
  Analogue: Moving iron, class 1,5.
  Digital: 3digit LED display TrueRMS (< 0,5% +/- 1 Digit).
- Protected by front side operated thermomagnetic fuse.
- Illuminated switch, 2poles for central on/off.

Variable AC/DC Source 33 **S** . **LLL** . **A** 02			
S System	**LLL** Power		**A** Reading
4 EP	**039** 0 – 30V / 10A 1EP / 2MP	**275** 0 – 270V / 5A 2MP	**3** analogue
7 MP	**054** 0 – 50V / 5A 1EP / 2MP	**274** 0 – 270V / 1A + 0 - 60V / 4A 1,5EP / 2MP	**4** digital
	271 0 – 270V / 1A 1EP / 2MP	**279** 0 – 270V / 3A + 0 - 60V / 10A 2EP / 2MP	
	273 0 – 270V / 3A 1,5EP / 2MP		

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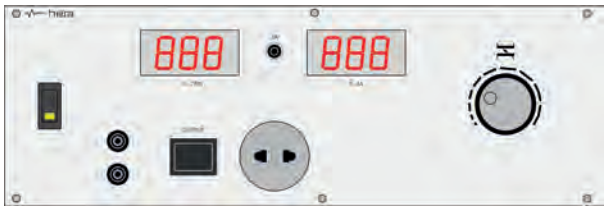
EP/ MP VARIABLE **AC SOURCE, 1PHASE**

- Variac for an output voltage 0…100%.
- Floating type with downstream connected isolated transformer.
- Protected by front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without PE contact or Schuko.
- Analogue: Moving iron voltage + current (class 1,5).
- Digital: LED display for voltage + current TrueRMS (3digits, < 0,5% +/- 1 Digit).
- MFA: Multifunctional display with graphic LCD with 4 variably programmable readings and 4 buttons (technical details see page 314).
- Optionally MFA with front side connection for USB interface or rear side connection for LAN interface.
- Illuminated switch, 2poles for central on/off.

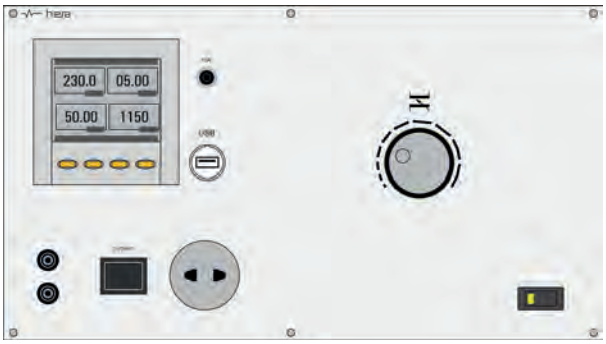
Variable AC source non FLOATING (1,5MP)

Variable AC source FLOATING (1EP)

Variable AC source non FLOATING (1EP)



Variable AC source FLOATING (1,5EP)



Variable AC source FLOATING (3MP) with MFA and USB interface

Variable AC Source	33 **S** . **LLL** . **A** 12		
S System	**LLL** Power		**A** Reading
4 EP	**FLOATING version**	**non FLOATING version**	**1** analogue
7 MP	**063** 0 – 60V / 3A 1EP / 1,5MP	**231** 0 – 230V / 1A 1EP / 1,5MP	**5** digital
	271 0 – 270V / 1A 1EP / 2MP	**233** 0 – 230V / 3A 1EP / 1,5MP	**6** MFA (starting at 5A)
	273 0 – 270V / 3A 1,5EP / 2MP	**236** 0 – 230V / 6A 2MP (3MP MFA)	**7** MFA with USB
	275 0 – 270V / 5A 2MP (3MP MFA)	**239** 0 – 230V / 10A 3MP	**8** MFA with LAN
	279 0 – 270V / 10A 4MP		

EP/ MP VARIABLE **AC/DC SOURCE, 3PHASE**

- 3phase variac non floating with inrush current limitter.
- Protected by front side operated thermomagnetic fuses.
- Output at 4mm safety jacks.
- Output at CEE socket (not for EP with analogue or digital readings).
- AC/DC sources with 6-level-rectifier for a pulsating DC voltage (4,3% ripple) at safety jacks.
- DC voltage - and current reading (only at 4MP version).
- Illuminated switch with contactor.

Analogue Reading:

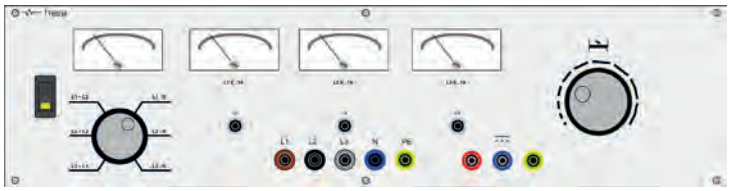
- 1x voltage reading with measuring point selector and 3x current readings (moving iron instruments class 1,5).

Digital Reading:

- 1x voltage reading with measuring point selector and 3x current readings (3digit LED, TrueRMS; 0,5% +/-1 Digit).

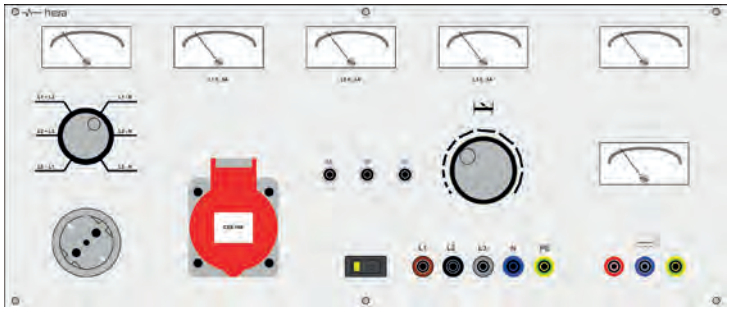
Multi Measuring Unit (MFA):

- Graphic LCD for the simultaneous indication of 4 variably programmable values.
- Phase voltages and phase currents TRMS.
- Power indication (effective, apparent, reactive) of each phase and in total.
- Power factor per phase and in total.
- Frequency.
- HIGH - and LOW - value indication.
- Harmonic distortion of voltages and currents.
- Analyse of harmonic waves of voltage and current.
- Counter for effective -, reactive - and apparent energy.
- Hour counter.



Variable AC/DC source, 3phase (2EP)

Variable AC source, 3phase (2EP) with MFA and USB interface



Variable AC/DC source, 3phase (4MP)

Variable AC source, 3phase (3MP)

Variable AC/DC Source, 3phase 33 S . LLL . A 04

S System	**LLL** Power		**A** Reading
4 EP	**AC Source**	**AC/DC Source**	**1** analogue
7 MP	**401** 0 – 230V / 400V 1A 2EP / 3MP	**411** 0 – 230V / 400V / 1A 2EP / 3MP	**5** digital
	403 0 – 230V / 400V / 3A 2EP / 3MP	**413** 0 – 230V / 400V / 3A 2EP / 3MP	**6** MFA (only AC)
	405 0 – 230V / 400V / 5A 4MP	**415** 0 – 230V / 400V / 5A 4MP	**7** MFA with USB (only AC)
	408 0 – 230V / 400V / 8A 4MP	**418** 0 – 230V / 400V / 8A 4MP	**8** MFA with LAN (only AC)

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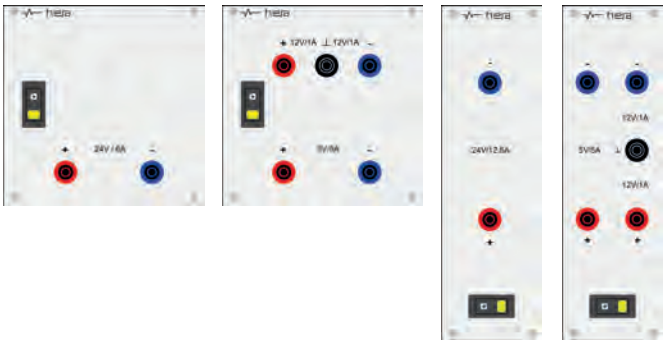
EP/ MP MODULE WITH **FIXED VOLTAGE**

- Stabilized and shortcircuit-proofed power supply for fixed voltage, galvanically isolated.
- Overload -, overvoltage - and overtemperature protected.
- Offset: < 2%
- Ripple: < 100mV p-p.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

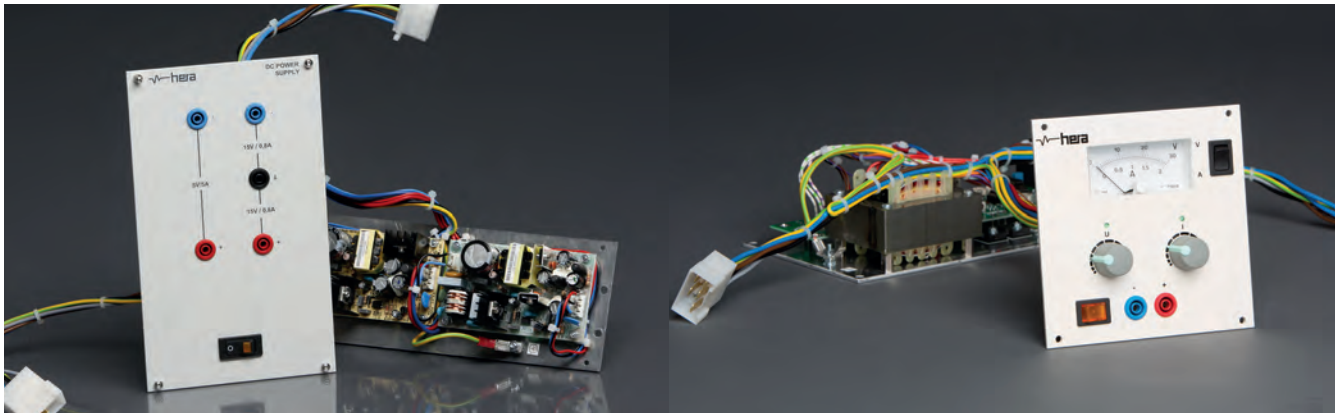


Module with Fixed Voltage	33 S . LLL . LLL					0,5EP / 0,5MP
S System	**LLL.LLL** Power					
3 EP	**105.032**	5V / 3A	**113.112**	13,5V / 11,2A	**148.022**	48V / 2,3A
6 MP	**105.052**	5V / 5A	**113.142**	13,5V / 14,9A	**148.042**	48V / 4,2A
	105.102	5V / 10A	**124.012**	24V / 1,5A	**212.032**	+ 12V / 3A + 5V / 6A
	112.032	12V / 3A	**124.032**	24V / 3,2A	**224.022**	+ 24V / 2A + 5V / 6A
	112.062	12V / 6A	**124.062**	24V / 6,5A	**312.012**	+/- 12V / 1A + 5V / 5A
	112.122	12V / 12,5A	**124.082**	24V / 8,4A	**315.012**	+/- 15V / 0,8A + 5V / 5A

EP/ MP LABORATORY **POWER SUPPLY COMPACT 0...30V / 0...2A**

- Inphase controlled, isolated and shortcircuit-proofed laboratory power supply.
- Voltage - and current setting with potentiometer and LED status indication.
- Output on 4mm safety jacks.
- Ripple: < 1mV eff.
- Offset: < 0,05%.
- Selector switch for current or voltage indication.
  analogue: moving iron class 1,5
  digital: 4digit high-contrast LED, accuracy: 0,5% +/- 1 digit.

Laboratory Power Supply Compact 0...30V / 0...2A					
334.810.202	analogue	0,5EP	337.810.202	analogue	1MP
334.810.402	digital	0,5EP	337.810.402	digital	1MP



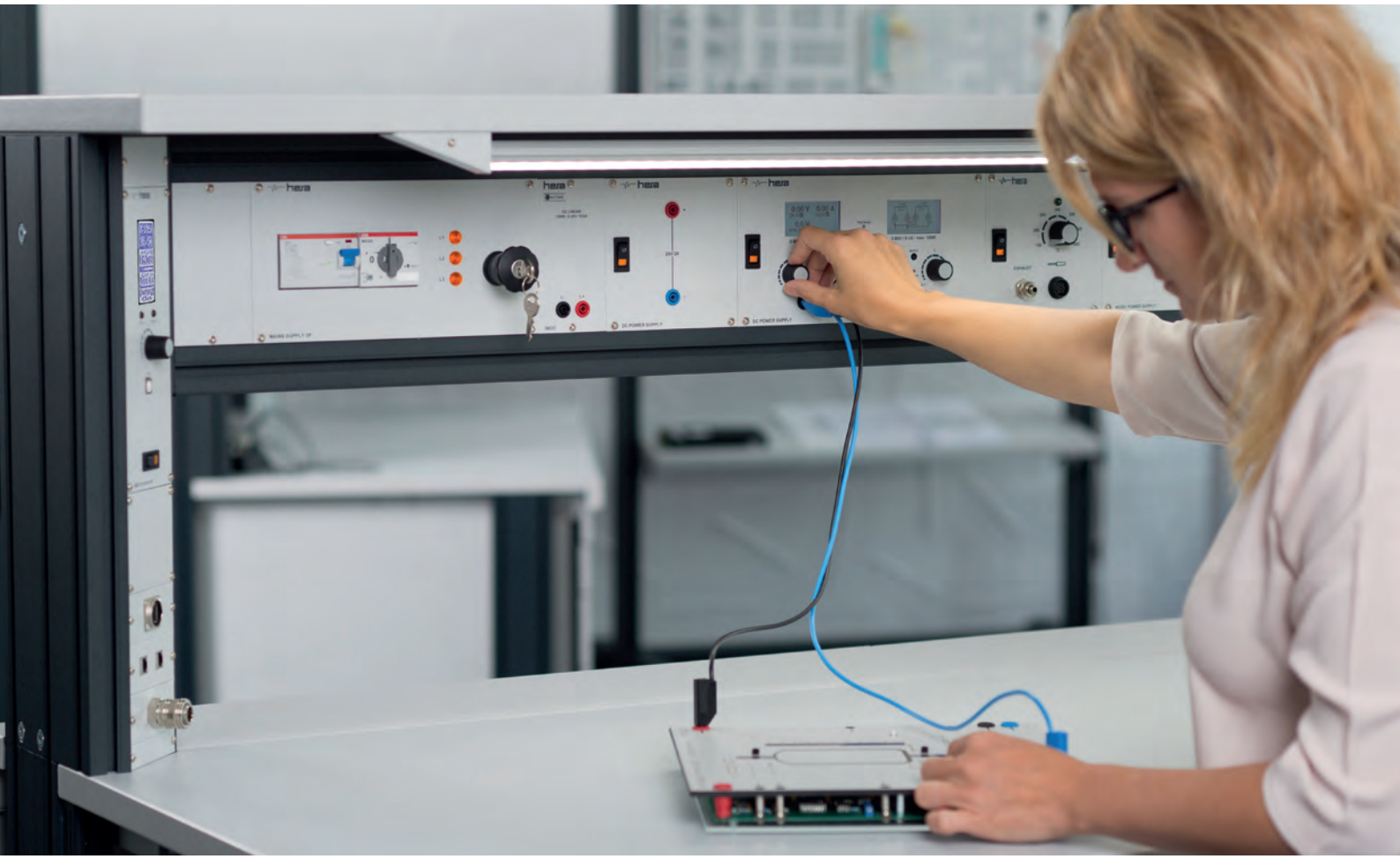
FIRST-CLASS LAB POWER SUPPLIES
FOR MULTIPLE APPLICATIONS

Characteristics for our Lab Power Supplies are:
- Intuitive operation with fine adjustable rotary switch or keys.
- Clearly visible due to backlight graphic display.
- USB - and LAN interface for remote operation.
- Incl. operation software (WinRemote) with arbitrary function, operation lock and programmable overvoltage protection.

Choose your power supply from two different cathegories:

Laboratory Power Supply LINEAR:
- highly precise lab power supply with < 1mV ripple
- power output between 60 - 600W

Laboratory Power Supply EXTEND RANGE:
- switch-mode power supply with < 5mV ripple
- maximum efficiency due to extended ranges for voltage and current



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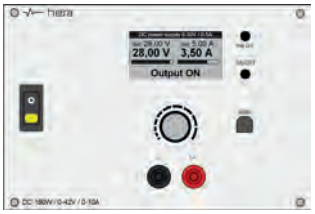
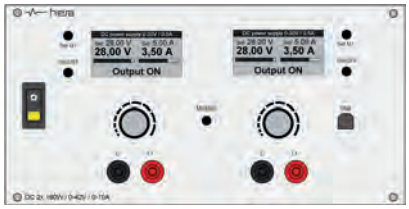
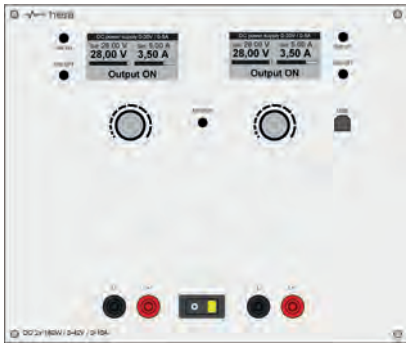
EP/ MP **LABORATORY POWER SUPPLY**

- Backlight graphical LCD 60 x 30mm (128x64) for the simultaneous indication of all important values and modes.
- Rotary switch with push button function for quick and precise settings of voltage and current.
- Extra buttons for quick and intuitive operation.
- Output ON / OFF button with status indication in the display.
- 2 Channel Power Supplies with switching function for: 2 channel -, tracking -, serial - or parallel mode.
- Output at 4mm safety jacks.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/off.







Technical data: Laboratory Power Supply EXTENDED RANGE

- Switch-mode power supply (up to 160W without fan).
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Response time 10-100% load: <1ms.
- Overvoltage protection: 0…46,2V.
- Accuracy: <0,2%.
- Set value for current and voltage adjust one another, so maximum power is not exceeded.

Technical data: Laboratory Power Supply LINEAR

- Linear power supply with power factor control
- up to 150W without fan.
- Resolution of set - and actual value: 14Bit (16384pts).
- Resolution of measurement: 16Bit (65536pts).
- Ripple (at Ia = 50%): <1mVrms.
- Response time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protection: 100V.

Lab Power Supply EXTENDED RANGE 33 **S** . **LLL** . **A** 03

S System		**LLL** Voltage & Current				**A** Channels	
4	EP	**406**	100W 0 - 42V / 0 - 6A	**803**	100W 0 - 84V / 0 - 3A	**7**	1 Channel 0,75EP / 1,5MP
7	MP	**410**	160W 0 - 42V / 0 - 10A	**805**	160W 0 - 84V / 0 - 5A	**8**	2 Channels 1EP / 2MP
		420	320W 0 - 40V / 0 - 20A				

Lab Power Supply LINEAR 33 **S** . **LLL** . **A** 03

S System		**LLL** Voltage & Current				**A** Channels	
4	EP	**302**	0 - 30V / 0 - 2A	**605**	0 - 60V / 0 - 5A	**4**	1 Channel 0,75EP / 1,5MP
7	MP	**305**	0 - 30V / 0 - 5A	**610**	0 - 60V / 0 - 10A	**5**	2 Channels 1EP / 2MP
		310	0 - 30V / 0 - 10A	**320**	0 - 30V / 0 - 20A		

EP/ MP **DIDACTIC SUPPLY**

This universal supply is suitable for basic tests with the hera training systems.

Symmetric DC Fixed Voltage +/-15V/ 1A:

- Stabilized (+/- 5%), floating and shortcircuit proofed power supply with thermic fuse.
- LED mode indication.
- Output on 4mm safety jacks.

Variable Laboratory Power Supply 0…30V/ 1A:

- Inphase controlled, floating and shortcircuit proofed laboratory power supply.
- Voltage setting with potentiometer and LED mode indication.
- Ripple: < 1mV eff.
- Offset: < 0,05%.
- Output on 4mm safety jacks.
- OPTIONALLY with analogue voltage and current reading and current setting with potentiometer.

AC Low Voltage 10V + 24V/ 100mA:

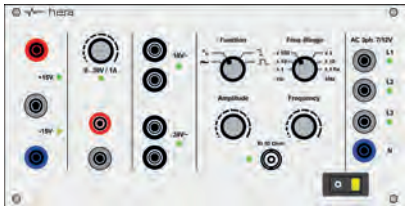
- Floating and shortcircuit proofed AC low voltage with thermic fuse.
- LED mode indication.
- Output on 4mm safety jacks.

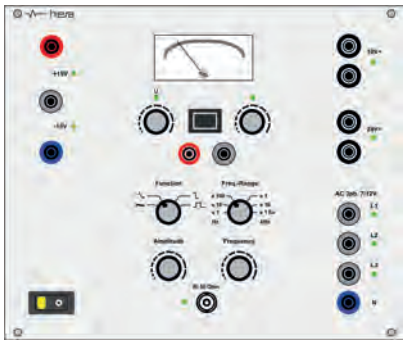
Function Generator 2Hz – 200kHz:

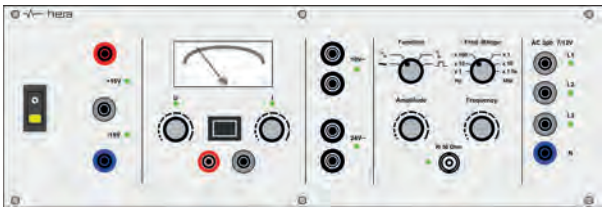
- Selector for signal forms: sinus, triangle, squared and positive pulse.
- Selector for frequency range: x1Hz, x10Hz, x100Hz, x1kHz, x10kHz and 1kHz fi.
- Potentiometer for stepless frequency adjustment.
- Potentiometer for a stepless adjustable amplitude of 0...20V ss.
- Output on BNC socket (Ri = 50Ω).

AC Source 7V/ 12V max. 50mA:

- Electrically generated 3phase sinewave AC voltage 50Hz.
- LED mode indication and outer conductor (L1, L2, L3) with thermic fuse.
- Output on 4mm safety jacks.







Didactic Supply	33 **S** . 800. **A** 02		
S System		**A** Version	
4 EP		**1** no Reading	1EP / 1MP
7 MP		**2** with Reading	1,5EP / 2MP

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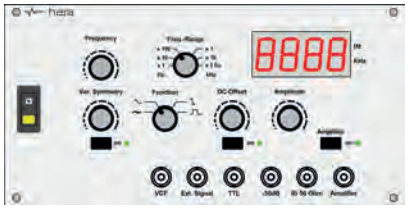
EP/ MP **FUNCTION GENERATOR** COMPACT 200KHZ

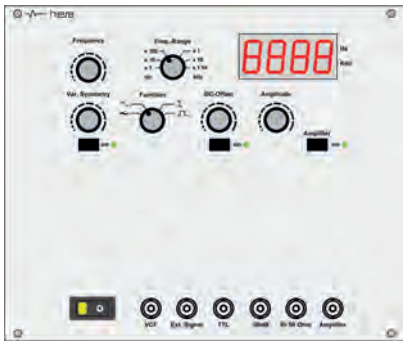
- Selector for signal forms:
  sine wave, triangle, squared, positive pulse.
- Selector for frequency range:
  x1, x10, x100Hz, x1kHz, x10kHz and 1kHz fix.
- Potentiometer for stepless fine adjustment.
- Potentiometer for a stepless adjustable amplitude of 0…20V_{SS}.
- Output on BNC socket (Ri = 50Ω).

Function Generator Compact 200kHz	
334.820.102	0,5EP
337.820.102	1MP

EP/ MP **FUNCTION GENERATOR** 1MHZ / POWER AMPLIFIER

- Function generator 1MHz with power amplifier 100kHz, frequency setting with multiturn potentiometer.
- 6 level selector for frequency range.
- Rotation switch for the selection of sinewave, triangle, squared and external signal.
- Variable symmetry with potentiometer of 20%...80%.
- Potentiometer for a stepless adjustable amplitude of 0...30V ss (no load).
- DC-Offset between -10V...+10V adjustable.
- Frequency adjustment with external voltage input (VCF).
- Frequency reading at 4digit LED display.
- 5x BNC socket with external signal input;
  TTL output, 30dB output, 50Ω output.





Option Power Amplifier (PA):

- Switchable range of 0,1Hz...100kHz.
- 40W eff continuous output with sinus at 5Ω.
- Shortcircuit proofed due to retracted current characteristic.
- Max. output voltage 40Vss.

Function Generator / Power Amplifier	33 **S** .653. **AAA**

S System

3	EP
6	MP

AAA Version

102	Function Generator, no PA 1EP / 2MP
202	Function Generator, with PA 1EP / 2MP
002	Power Amplifier 0,5EP / 1MP

EP/ MP DDS **FUNCTION GENERATOR LC** WITH POWER AMPLIFIER

The DDS Wobble Function Generators offer a big choice of signals and can either be used as regular function generator, pulse generator or pulse generator and wobble emitter.

- 6digit LED display.
- Direct with keys or stepless setting.
- 16x signals e.g. sinus, square, triangle, ramp, neg./ pos. pulse.
- 10µHz frequency resolution.
- Total distortion: < 1%.
- Square signal: < 50ns rise -/ fall time.
- Amplitude: 0 - 20Vpp (resolution: 5mVpp).
- Offset: +/- 10V.
- Modulation: FM, AM, PM, PWM, FSK.
- Modulation frequency: 40mHz - 20kHz.
- USB Interface.
- 10W power amplifier (PA).
- Safety: EN 61010-1; CAT II.

DDS Function Generator LC with Power Amplifier					
334.665.302	3MHz	1EP	334.665.402	20MHz	1EP
337.665.302	3MHz	2MP	337.665.402	20MHz	2MP

EP/ MP 2-CHANNEL **FUNCTION GENERATOR ARBITRARY**

- Two channel function generator (arbitrary waveform generator) with frequency counter and USB interface. Easy menu navigation with graphic display.
- Sinewave, squared, pulse, ramp, 48 defined arbitrary output waves, freely definable arbitrary output waves, signal noise.
- 2 channels.
- Frequency range between 1µHz and 20MHz (sine), Distortion factor <0.2%.
- Frequency range square 1µHz - 5MHz, Rising time <20ns.
- Frequency range triangle 1µHz - 150kHz.
- Frequency range ARB 1µHz - 5MHz, resolution 1µHz.
- Waveform storage 4kpts.
- Impedance 50Ω.
- Sweep function 1ms - 500s.
- Internal modulation AM/ FM/ PM/ FSK.
- Amplitude: 2mV pp to 10V pp (channel 1)/ 2mV pp to 3V pp (channel 2).
- Integrated frequency counter (200MHz).
- USB interface for PC connection and memory on USB stick.
- Incl. LabView driver and operation software.

Only fits into racks with min. 300mm depth.

2-Channel Function Generator Arbitrary	
334.666.102	1EP
337.666.102	2MP

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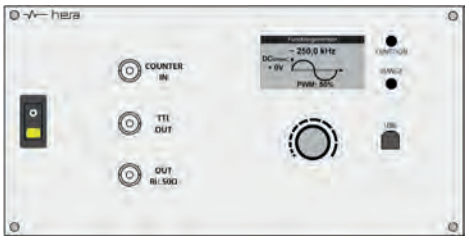
EP/ MP **FUNCTION GENERATOR ICOM**

- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function for quick and precise settings of voltage and current.
- 3x BNC sockets ((COUNTER IN, TTL OUT and OUT R 50 Ohm).
- Basic functions: sinus, triangle, square, saw tooth, pulse. DC voltage.
- Frequency range: 1mHz – 10MHz (sinus), 10Hz – 1MHz (other signals).
- Arbitrary: max. 4096pts.
- Other functions: PWM, TTL-OUT.
- Amplitude: 30Vss (max. 1MHz), and 3Vpp at 10MHz.
- Resolution: 14 Bit.
- Duty cycle: 0,1 % … 99,9%.
- DC Offset: ± 10V.
- Frequency and event counter: max. 100MHz.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.



Function Generator ICOM	
334.830.102	1EP
337.830.102	1,5MP

EP/MP **DIGITAL MULTIMETER ICOM**

- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function and two extra buttons.
- 5x 4mm safety jacks (Hz, A, µA/mA, COM, V/Ohm/F/Diode/Continuity).
- Resolution: 4 3/4digit (50.000 Counts).
- Voltage DC: 10µV – 1000V.
- Voltage AC TrueRMS: 10µV – 700V.
- Current DC: 10nA – 20A .
- Current AC TrueRMS: 10nA – 20A.
- Front side operated fuse for µA/mA output.
- Resistance: max. 50MOhm.
- Frequency: 100µHz – 50MHz.
- Capacity: max. 50mF.
- Other functions: diode -, continuity test.
- Measuring range selection: manual and automatic.
- Measuring rate: 2,5 / 5 or 10 measurements /sec.
- Safety: EN 61010-1; CAT II 600V.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.

Digital Multimeter ICOM	
334.710.602	1EP
337.710.602	1,5MP

EP/ MP **DIGITAL MULTIMETER COMPACT**

- 4 1/2digit LED with digit height of 13mm.
- Functions: Voltage AC and DC, current AC and DC and resistance.
- True root mean square measurement (TRMS).
- Range selector: manual with switch series.
- Sampling rate: ca. 2,5 measurings /sec.
- DC voltage: 200mV to 1000V in 5 ranges (resolution: max. 10µV).
- AC voltage: 200µA to 20A in 6 ranges (resolution: max. 10nA).
- AC voltage: 200mV to 1000V in 5 ranges (resolution: max. 10µV).
- AC current: 200µA to 20A in 6 ranges (resolution: max. 10nA).
- Resistance: 200Ω to 20MΩ in 5 ranges (resolution: max. 10mΩ).
- Connection on 4mm safety jacks.
- Illuminated switch, 2poles.

Digital Multimeter Compact	
334.710.402	0,5EP
337.710.402	1MP

EP/ MP **DIGITAL MULTIMETER LC**

- True-RMS bench top multimeter with RS232 and USB interface and many measuring functions.
- Measuring range AC and DC Volt: 600mV…1000V.
- Measuring range AC and DC Ampere: 600µA…10A.
- Measuring range capacity: 6nF…6mF.
- Measuring range resistance: 600Ω…60MΩ.
- Measuring range temperature: -40°C…1000°C.
- Measuring range frequency: 6kHz…60MHz.
- Continuity tester: transistor and diode test.
- Background illuminated LCD display: 6000 digits.
- Automatic/ manual selector for measuring range.
- Min.-/ max.- and hold function.
- Safety class IEC 1010-1, CAT I, 1000 V/. CAT II 600 V.
- Incl. measuring leads, temperature probes and operation software.

Digital Multimeter LC	
334.711.302	1EP
337.711.302	2MP

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EP/ MP PRECISION **DIGITAL MULTIMETER LAN**

- 5 ¾digit display (480.000 dots).
- 3 simultaneous readings: e.g. DC + AC + statistic.
- Sampling rate up to 200 measurements/sec.
- 0,015% accuracy (DC).
- 12 measuring functions: DCV, DCI, TrueRMS ACV and ACI, frequency, 2- and 4-wire-resistance, capacity, continuity, diode, temperature, power.
- Precise readability due to excellent TFT colour display.
- Resolution 1µV, 100nA, 1mΩ, 1pF, 1Hz, 0,1°C.
- True root mean square AC, AC+DC.
- Mathematical function: limit test, min./ max., average, offset, DC power, dB, dBm.
- Temperature measurement with platinum sensors (PT100/ PT500/ PT1000).
- Data logging in CSV format on internal memory or USB stick.
- Interface: USB and Ethernet.
- Incl. LabView driver and operation software.

Only fits into racks with min. 300mm depth.

Precision Digital Multimeter LAN	
334.702.202	Precision Digital Multimeter LAN HMC8012 (1EP)
337.702.202	Precision Digital Multimeter LAN HMC8012 (2MP)

EP/ MP **UNIVERSAL HOLDER** FOR HANDHELD INSTRUMENTS

- Front panel with two holding brackets and internal adapting mechanism.
- The adapting mechanism enables the stepless adjustability of the holding brackets to variable widths.
- For the flexible acceptance of handheld instruments with following dimensions:
  width: 70 – 90mm; depth: 25 – 45mm.
- The universal holder is for a fixed or detachable installation within a bench rack.

Unviersal Holder for Handheld Instruments	
334.708.902	Universal Holder 0,5EP
337.708.902	Universal Holder 1MP

Digital Multimeter / Calibrator	
590.105.100	METRALINE DMM15 Digital Multimeter
590.105.200	METRALINE DMM16 Digital Multimeter
590.105.300	METRAHIT TECH Digital Multimeter
590.105.400	METRAHIT CAL Calibrator
590.105.500	Multimeter (DMM + LCR)
590.105.600	LCR Meter

MP DIGITAL MULTIMETER, **LCR METER & CALIBRATOR**

TRMS Multimeter DMM15 3 6/7digit with analogue bargraph:

- TRMS V AC and I AC.
- Accuracy 0,5%V DC.
- Automatic blocking sockets ABS.
- Current: I DC 10µ...10A (16A 30sec) and I AC 10µ...10A (16A 30sec).
- Resistance: 100mΩ...40MΩ.
- Temperature: -200,0...+400,0°C. Thermo element type K.
- Frequency measurement: 0,1Hz...1kHz.
- Continuity and diode test.
- MIN/ MAX data logging and data hold.

TRMS Multimeter with extra functions DMM16:

- Background illuminated digital display 3 6/7digit with analogue bargraph, Basic accuracy: 0,5% V DC.
- Band width VAC TRMS 2kHz.
- Automatic blocking sockets ABS.
- Votlage: V DC 100µ...1000V and V AC TRMS 100µ...1000V.
- Current: I DC and I AC TRMS 10µ...10A (16A 30sec).
- Resistance: 100mΩ...40MΩ.
- Temperature: -50,0°C...+800,0°C. Thermo element type K.
- Frequency measurement: 0,1Hz...1MHz.
- Sampling rate: 2%...98% (1kHz).
- Rotation speed measurement: 60RPM...99,99kRPM.
- Capacity measurement: 10pF...400F.
- Continuity and diode test 3V.
- MIN/ MAX data logging and data hold.

Precision Multimeter TECH 4½digit TRMS:

- 3 automatic blocking sockets ABS.
- Automatic and manual selector for measuring range.
- Automatic data logging DATA/ MIN/ MAX.
- Illuminated display with extra large digits (15mm) and analogue bargraph for dynamic measurements.
- Voltage AC TRMS - voltage DC - voltage AC+DC.
- Current AC TRMS - current DC - current AC+DC,TRMS.
- Frequency (Hz with voltage and current).
- Temperature measurement with K-thermo elements.
- Capacity measurement, continuity and diode test.
- DKD calibration certificate within delivery scope.

Calibrator and Multimeter for electrical parameters CAL:

- 0 - 24mA source and 0 - 300mA measuring 0 - 20mA and 4 - 20mA selectable ranges output voltage 0 - 300mV, 3, 10 and 15V.
- Resistance with 2 and 4 wire simulates small resistance 0,01mΩ. Resolution high resistance measurements up to 30mΩ.
- Simulation of RTD temperature sensors °C/ °F, Pt100/ 1000, Ni100/ 1000.
- Simulation of a sufficient series of thermo elements (J, L, T, U, K, E, S, R, B, N) with internal and external compensation of cold joints.
- Frequency generator with square pulse (1Hz ...1000Hz).
- Ramp -, step- and dwell functions.
- DKD calibration certificate within delivery scope.

Multifunctional Meter (DMM + LCR):

- 3 ½digit backlight LCD display.
- MAX data logging and data hold.
- DCV 200mV/2/20/200/600V; 100µV; +/- 0,5% + 1dgt.
- ACV 200mV/2/20/200/600V; 100µV; +/- 0,8% + 3dgt.
- DCA 20µA/2/200mA/10A; 10nA; +/- 0,8% + 1dgt.
- ACA 20µA/2/200mA/10A; 10nA; +/- 1,0% + 3dgt.
- Frequency range / frequency range: 40 - 400Hz
- Ohm 200W/2/20/200 kW/2/20/2000MW; 0,1W; +/- 0,8%1dgt.
- Capacity 20/200 nF/2/100 µF; 10pF; +/- 2,5% + 5dgt.
- Inductivity 2/20/200mH/20 H; 1µH; +/- 2,0% + 10dgt.
- Frequnecy 2/20/200kHz/2/10MHz; 1Hz; +/- 0,1% + 3dgt.
- Temperature -40 ... +1000°C; +/- 1,0% + 3dgt.
- Transistor, diode - and continuity test with buzzer
- Incl. lab cords, multifunctional adapter, temperature probe.

LCR Meter:

- 4 1/2digit 27mm backlight LCD display.
- Resistance: 110Ohm / 1,1 / 11 / 110kOhm / 1,1 / 11 / 110MOhm, ±1,2% + 8dgt., 10mOhm.
- Capacity: 11 / 110nF / 1,1 / 11 / 110µF / 1,1 / 11 / 110mF, ±3,0% + 10 dgt., 1pF.
- Inductivity: 11 / 110mH / 11 / 20 H, ±2,0% + 0,2mH, 1nH.
- Measuring sequence: 3 - 4x per sec.
- Min.-/max.-DATA logging and DATA hold.
- Relative value measurement.
- Continuity and diode test.

DMM15

DMM16

TECH

CAL

DDM + LCR

LCR

GOSSEN METRAWATT Digital Multimeter and Calibrator	
337.708.302	TRMS Multimeter DMM15, incl. power supply 1MP
337.708.352	TRMS Multimeter with extra functions DMM16, incl. power supply 1MP
337.708.402	Precision Multimeter TECH 4½digit TRMS, incl. power supply 1MP
337.708.602	Calibrator and Multimeter for electrical parameter CAL, incl. power supply 1MP
337.708.702	Multimeter (DMM + LCR), incl. power supply 1MP
337.708.802	LCR Meter, incl. power supply 1MP

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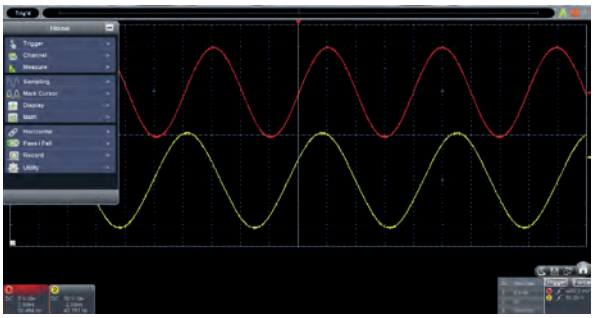
EP/MP 2-CHANNEL **PC OSCILLOSCOPE 25MHZ**

2-Channel PC Oscilloscope with integrated interface for a direct query of the input signals with included PC software via USB interface.

- Insulated USB interface for measurements up to 400V.
- 2 channels 25MHz (100MSa/s).
- 20x automatic measuring modes.
- Mathematic functions (+, -, *, /) and FFT
- USB (2.0) connector 421 for real time data communication.
- Software CD for Windows XP/VISTA/7/8/10.
- Accessory: probe , USB cable, BNC cable, AC-DC adapter.

2-Channel PC Oscilloscope 25MHz	
334.925.002	0,5EP
337.925.002	1MP

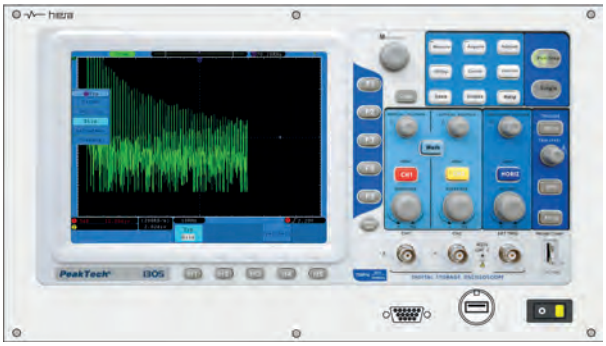


MP 2-CHANNEL **DIGITAL STORAGE OSCILLOSCOPE**

Digital storage oscilloscopes with high resolution back-lightcolor dispaly, high bandwidth and measuring rate, big internal data memory and USB interface. An integrated LAN port enables an easy integration into cooperate net-works and the VGA output enables connection to external monitors or beamers for presentation purpose.

- 2 channels.
- 8“ TFT color display (800 x 600pcs.; 65536 colors).
- USB interface for a real time data transfer and the read out of internal memory.
- VGA output for the connection of external monitors.
- LAN port for operation in networks.
- Auto set - and auto scale function.
- Big internal memory for 15 wave forms.
- 20 automatic measuring modes and FFT function.
- PASS/FAIL function.
- Safety: EN 61010-1; CAT II.
- Accessory: 2pcs. BNC cables, PASS/FAIL adapter, USB cable, software-CD, power cord, 2 probes.

Digital Storage Oscilloscope	
338.101.030	30MHz 3MP
338.101.070	70MHz 3MP
338.101.125	125MHz 3MP



▸ other oscilloscopes on demand

EP / MP CONSTANT **CURRENT SOURCE**

- Selector switch for 4mA, 20mA and 0...50mA.
- Burden voltage: max. 30V.
- 10turn potentiometer for 0...50mA.
- LED digital display 3digits.
- Status-LED (burden allowed / not allowed).
- Output on safety jacks.
- Illuminated switch.

Constant Current Source	
334.050.402	0,5EP
337.050.402	1MP

EP / MP CONSTANT **VOLTAGE SOURCE**

- Selector switch for 1V, 10V und 0...30V.
- Short circuit current: 100 mA.
- 10turn potentiometer for 0...30V.
- LED digital display 3digits.
- Status-LED (burden allowed / not allowed).
- Output on safety jacks.
- Illuminated switch.

Constant Voltage Source	
334.050.202	0,5EP
337.050.202	1MP

EP / MP DIGITAL **THERMOMETER**

- Temperature device for PT100/ PT1000 sensor according to DIN EN 60751.
- Devices in 3 wire technology with automatic line resistance compensation.
- Measuring current max. 1,5mA. Analogue output (not isolated) in mV/°C.
- Accuracy: ± 0,1% ± 1 D v. M.
- Measuring rate 2,5M/sec.
- 3 1/2digit LED display (12,5mm; red).
- Incl. rod-type sensor or surface sensor in 3 wire technology.

Digital Thermometer		
334.060.102	-100,0°C ..+199,9°C	0,5EP
334.060.202	-200,0°C...+600°C	0,5EP
337.060.102	-100,0°C ..+199,9°C	1MP
337.060.202	-200,0°C...+600°C	1MP

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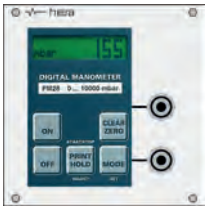
EP / MP PRESSURE METER / **PRESSURE CALIBRATOR DIGITAL**

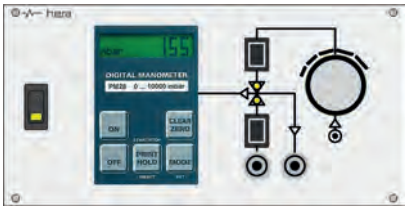
- Digital meter with integrated pressure sensor for the measurement of difference -, relative -, or absolute pressure.
- 3½digit LCD display.
- Piezoresistive pressure sensor.
- Measuring range HI, class 0.2% v.E.
- Measuring range LO, class 0.5% v.E.
- Inlet and outlet with self-closing quick-release couplers 4/6mm.

Calibrator with:

- Precision pressure regulator.
- Selector switch for internal and external supply with two 3/2- magnetic valves and LED indication.
- Illuminated switch.
- Rear side with pressure connector.

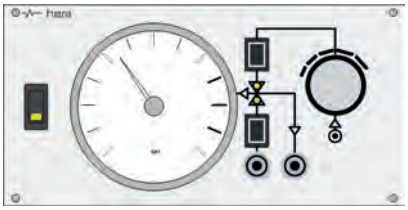
Pressure Meter / Pressure Calibrator digital		
334.072.502	Pressure Meter 0 - 2000mbar	0,5EP
334.071.502	Pressure Meter 0 - 10bar	0,5EP
334.072.602	Pressure Calibrator 0 - 2000mbar	1EP
334.071.602	Pressure Calibrator 0 - 10bar	1EP
337.072.502	Pressure Meter 0 - 2000mbar	1MP
337.071.502	Pressure Meter 0 - 10bar	1MP
337.072.602	Pressure Calibrator 0 - 2000mbar	1MP
337.071.602	Pressure Calibrator 0 - 10bar	1MP

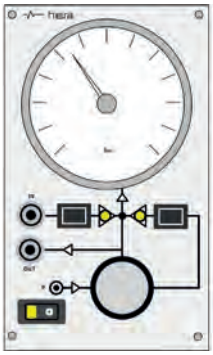




EP / MP **PRESSURE CALIBRATOR** ANALOGUE

- Precision pressure regulator.
- Selector switch between internal and external supply with two 3/2-magnetic valves and LED indication.
- Inlet and outles with self-closing quick-release couplers 4/6mm.
- Analogue pressure gauge class 1,0.
- Illuminated switch.
- Completely hosed with open hose end 4/6.





Pressure Calibrator analogue		
334.070.102	Vacuum	1EP
334.073.102	0 - 2,5bar	1EP
334.076.102	0 - 6bar	1EP
334.071.102	0 - 10bar	1EP
337.070.102	Vacuum	1MP
337.073.102	0 - 2,5bar	1MP
337.076.102	0 - 6bar	1MP
337.071.102	0 - 10bar	1MP

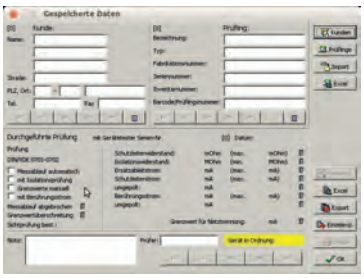
MP **ELECTRICAL APPLIANCE TESTER** ANALOGUE

- Module for tests according to DIN VDE 0701 - 0702. and repeating tests according to BGV A3.
- Comfortable operation with membrane keypad.
- Single step tests or automatic test procedure.
- Optical indication of the actual test.
- No manual polarity reversal of the mains plug according to DIN VDE 0701 – 0702 necessary.
- PE resistance test 0...100mΩ, Testing current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Testing voltage 500V DC.
- Leakage current test 0...18mA, Testing voltage 40V AC.
- Analogue display, keypad and testing socket.
- Automatic mode with procedure of all three tests in a row.

Electrical Appliance Tester analogue	**338.700.102**

MP **ELECTRICAL APPLIANCE TESTER** DIGITAL

- Module for tests according to DIN VDE 0701 - 0702. and repeating tests according to BGV A3 and DIN EN 62353.
- Easy menu navigation with LCD.
- Single step tests or automatic test procedure.
- Manual or automatic setting of limiting value.
- Remote controllable from PC due to USB interface.
- Exporting function for test files in Excel or other data files. Import function for customer and test item data.
- RS232C interface for barcode scanner.
- Selective data logging of test protocol from repeating tests by reading in barcodes, customer details, date or test instrument number.
- Automatic data assignation from data memory to the newly measured values for repeating tests when reading in barcode.
- Automatic set-up of the test procedure by barcode.
- PE resistance test 0...100mΩ, Measuring current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Testing voltage 500V DC.
- Leakage currrent test 0...18mA, Testing voltage 40V AC.
- Digital display, key pad and testing socket.
- Automatic mode with procedure of all three tests in a row.



Electrical Appliance Tester digital	**338.700.202**

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IMOD
INTELLIGENT & MODULAR DEVICES

The IMOD series is an intelligent, modular system consisting of the 3 seprately located units:

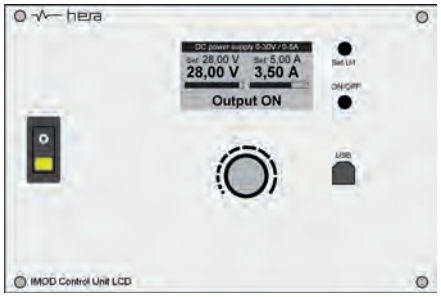
- the Control-Unit for operation
- the completely housed Function-Unit
- the bench rack module with Output-Unit

The advantages are:

- Up to 5 Function-Units can be controlled with only one Control-Unit, thus the space requirement for device combinations is less.
- More working efficiency as operation and reading of the Control-Unit can be done ergonomically in the middle of the bench, so there is no need for the operator to continuously change position.
- Some Function-Units might be very heavy and voluminous, this is now completely decoupled and can be placed in convenient positions, e.g. variacs under the bench.
- The outputs can be placed in small channels and optimal positions, either vertical or horizontal, this will keep workspaces free of laboratory cords.

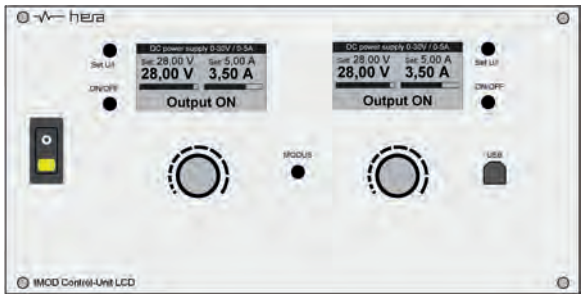
EP/MP **IMOD CONTROL-UNIT LCD**

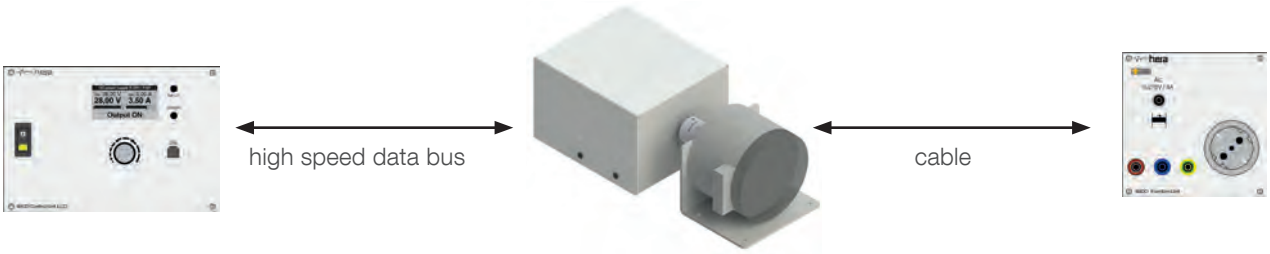
- Controller with integrated communication bus for one of the following function units.
- Background illuminated LC-display 60x30mm (128x64).
- Rotary switch with tip-function for direct and precise settings.
- 2x extra buttons for quick and intuitive operation.
- USB interface at the front and LAN interface at the rear instrument side.
- Illuminiated 2poles switch for central on/off.
- With wire harness and coupler.

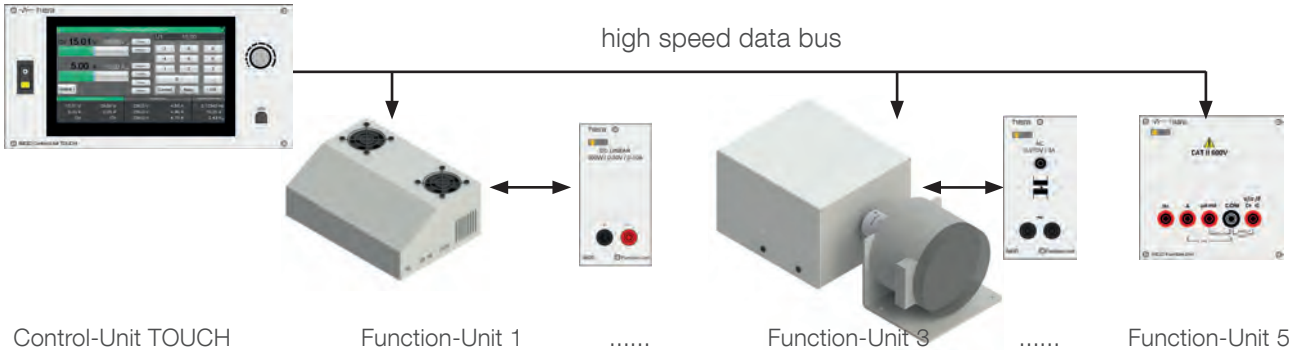


IMod Control-Unit LCD	6 S 0.000. A 00

S System		A Type	
3	EP	3	1x LC Display 0,75EP / 1,5MP
5	MP	5	2x LC Display 1EP / 2MP (only double power supplies)







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EP/MP **IMOD CONTROL-UNIT TOUCH**

- Controller with internal bus for the central control of max. 5 function units.
- Flush integrated 7“ TFT display (800x480) with glass front and wide-angle-view.
- High precision capacitive multitouch operation.
- Rotary switch with tip-function for a direct control of all main functions.
- Value setting either by touch slide bar, touch keypad or rotary switch.
- Value indication with large figures and bargraph, data logging of graph and numeric table.
- USB interface at the front and LAN interface at the rear instrument side.
- Illuminiated 2poles switch for central on/off.
- With wire harness and coupler.

IMOD Control-Unit TOUCH	
630.000.100	1 EP
650.000.100	1,5 MP

EP/MP IMOD FUNCTION-UNIT: **AC SOURCE 1PHASE**

A combination of output module for bench rack integration and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

Configuration of Output Module with respect to type:

- Status indication with RGB-LED.
- Front side operated thermomagnetic fuse for output.
- 4mm safety jacks.
- PE socket or universal socket for floating voltage.
- Selector switch for floating type.
- Bridge rectifier (BRF) for a pulsating DC voltage with 48% ripple.

Functional Unit (separate housing):

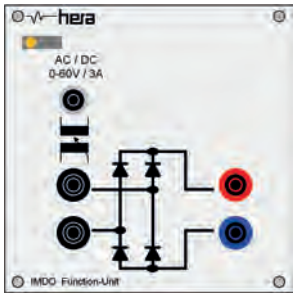
- Motor-driven variac (floating type with downstream connected isolated transformer).
- Silent running motor for voltage adjustment, with intelligent speed control for a minimum of overshoot and response time. Incl. supply unit.
- 2x TrueRMS converter (voltage and current) with 12bit resolution.
- Internal communication bus for data transfer with Control-Unit.
- Precision adjustment for voltage or current (selector switch).

EP Module with jacks (floating)

EP Module with jacks + PE socket (non floating)

MP Module with jacks (non floating)

MP Module with jacks and universal socket for floating voltage (with selector siwtch)



EP Module AC/DC with Bridge Rectifier + jacks (floating)

IMod Function-Unit: AC Source 1phase 6 **S** 2. **A** **LL.LLL**

S System

3	EP
5	MP

A Output

1	Safety Jacks	0,25EP / 0,5MP
2	PE Socket or Universal (floating)	0,25EP / 0,5MP
3	Jacks and PE Socket/ Universal	0,5EP / 0,5MP
4	AC/DC with BRF and Jacks	0,5EP / 0,5MP

LL.LLL Functional Device

23.010	0-230V / 1A	**03.045**	0-30V / 4A floating
23.030	0-230V / 3A	**06.035**	0-60V / 3A floating
23.060	0-230V / 6,3A	**27.015**	0-270V / 1A floating
23.100	0-230V / 10A	**27.035**	0-270V / 3A floating
23.140	0-230V / 14A	**27.055**	0-270V / 5A floating
		27.105	0-270V / 10A floating
		27.125	0-270V / 12A floating
		30.105	0-300V / 10A floating
Primary L1-L2 3phase supply required		**27.165**	0-270V / 16A floating
		30.165	0-300V / 16A floating

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EP/MP IMOD FUNCTION-UNIT: **AC SOURCE 3PHASES**

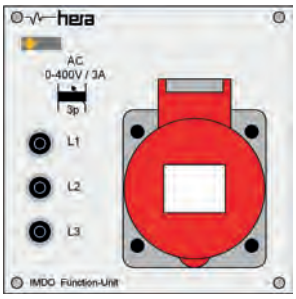
A combination of output module for bench rack integration and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

Configuration of Output Module with respect to type:

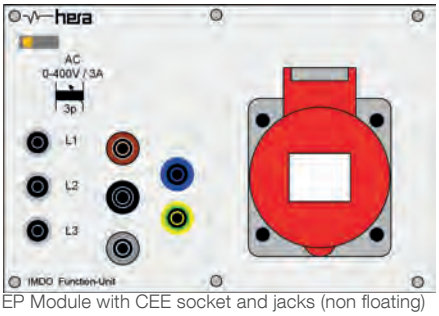
- Status indication with RGB-LED.
- Front side operated thermomagnetic fuse for output.
- 4mm safety jacks.
- CEE socket 5poles red 400V / 6h.
- 6-level-rectifier (6-level-RF) for a pulsating DC voltage with a ripple of 4,3%.

Functional Unit (separate housing):

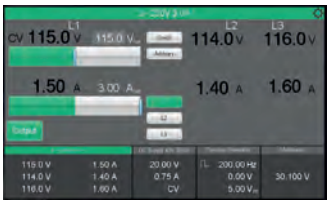
- Motor-driven variac (floating type with downstream connected isolated transformer).
- Silent running motor for voltage adjustment, with intelligent speed control for a minimum of overshoot and response time. Incl. supply unit.
- 6x TrueRMS converter (3x voltages and 3x current) with 12bit resolution.
- Internal communication bus for data transfer with Control-Unit.
- Precision adjustment for voltage or current (selector switch).

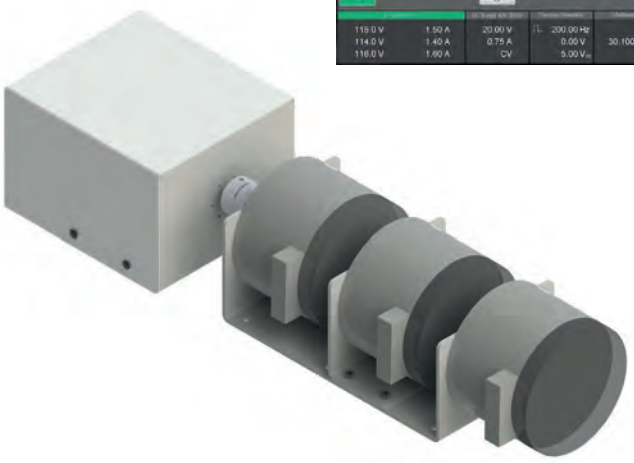


EP Module with CEE socket and jacks

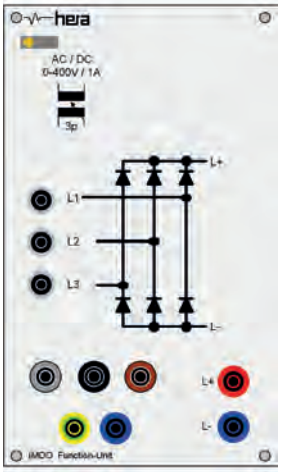


EP Module with CEE socket and jacks (non floating)





MP Module with jacks (non floating)



MP Module AC/DC with 6-level-recitfier and jacks (floating)

IMOD Function-Unit: AC Source 3phases 6 **S** 3. **A** **LL.LLL**

S System

3	EP
5	MP

A Output

1	Safety Jacks	0,5EP / 0,5MP
2	CEE Socket 5poles	0,5EP / 1MP
3	Jacks and CEE Socket	0,75EP / 1MP
4	AC/DC with 6-level-RF and Jacks	0,5EP / 1MP

LL.LLL Functional Device

40.010	0-400V / 1A	**40.015**	0-400V / 1A floating
40.030	0-400V / 3A	**40.035**	0-400V / 3A floating
40.060	0-400V / 6,3A	**45.055**	0-450V / 5A floating
40.100	0-400V / 10A	**40.105**	0-400V / 10A floating
40.140	0-400V / 14A	**40.145**	0-400V / 14A floating
		52.075	0-520V / 7A floating
		52.105	0-520V / 10A floating

EP/MP IMOD FUNCTION-UNIT: **LAB POWER SUPPLY LINEAR**

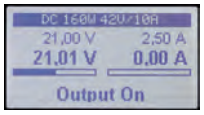
A combination of output module for bench rack integration and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

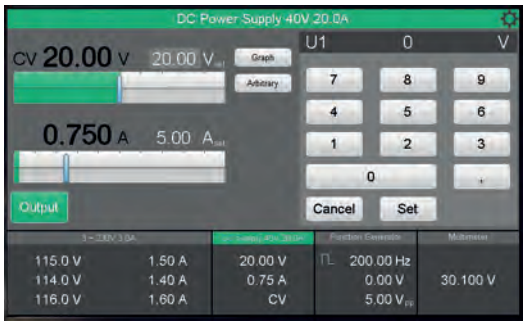
Configuration of Output Module:

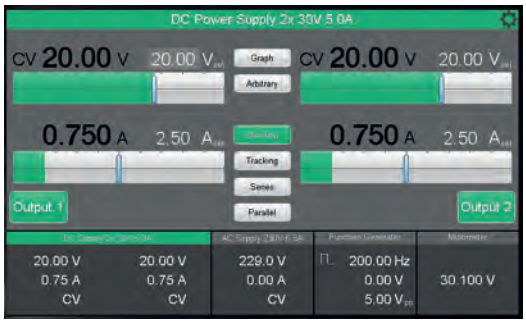
- Status indication with RGB-LED.
- 2x 4mm safety jacks.

Functional Unit (separate housing):

- Linear regulated laboratory power supply with power factor correction (PFC).
- Up to 150W fanless.
- Resolution of set - and actual values: 14Bit (1638dots).
- Resolution of measurements: 16Bit (65536dots).
- Ripple (at Ia = 50%): <1mV rms.
- Response time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protection: 100V.







IMOD Function-Unit: Lab Power Supply Linear	6 S 6.10 L.LL 0	0,25EP / 0,5MP

S	System	L.LL	Funtional Device		
3	EP	3.02	60W: 0-30V / 0-2A	6.05	300W: 0-60V / 0-5A
5	MP	3.05	150W: 0-30V / 0-5A	3.20	600W: 0-30V / 0-20A
		3.10	300W: 0-30V / 0-10A	6.10	600W: 0-60V / 0-10A

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EP/ MP IMOD FUNCTION-UNIT: **LAB POWER SUPPLY EXTENDED RANGE**

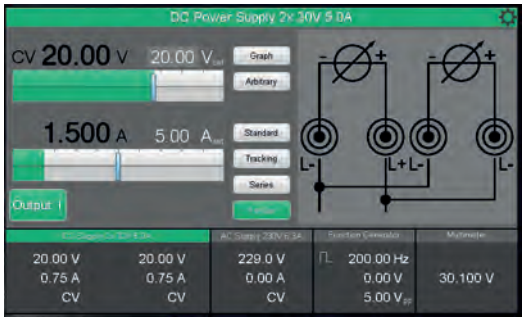
A combination of output module for bench rack integration and a separate, completely housed functional device which can be positioned either in the bench rack, in the cable tray or under the bench top.

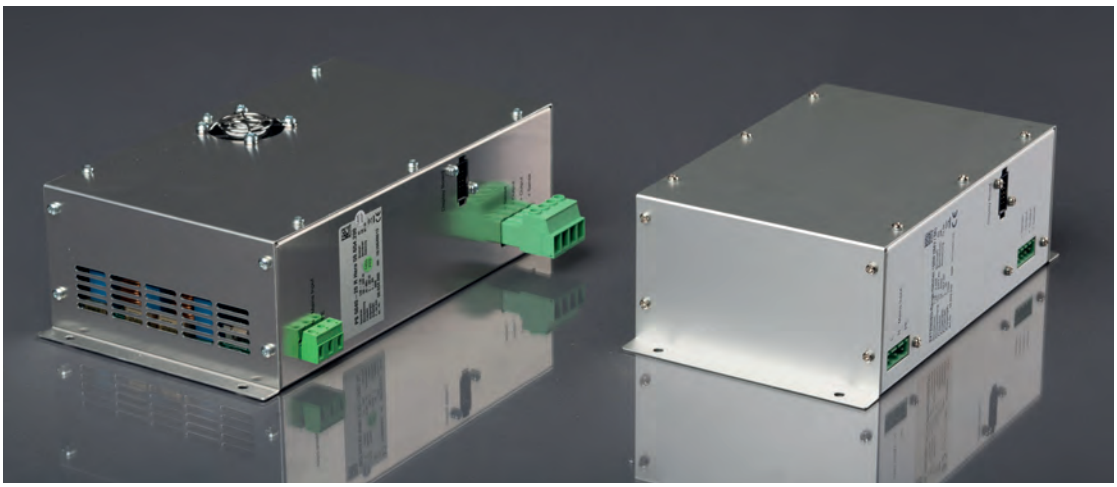
Configuration of Output Module:

- Status indication with RGB-LED.
- 2x 4mm safety jacks.

Functional Unit (separate housing):

- Switch-mode laboratory power supply, fanless up 160W.
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Response time 10-100% load: <1ms.
- Overvoltage protection: 0…46,2V.
- Accuracy: <0,2%.
- Actual value of current and voltage adjust each other, so the max. power (P = U x I) is not exceeded.





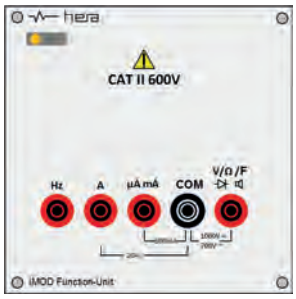
IMOD Function-Unit: Lab Power Supply Extended Range 6 **E** 5.10 **L.LL** 0 0,25EP / 0,5MP

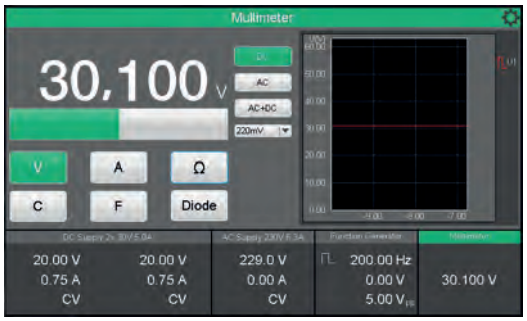
S System		**L.LL** Functional Device			
3	EP	**4.06**	100W: 0-42V / 0-6A	**8.03**	100W: 0-84V / 0-3A
5	MP	**4.10**	160W: 0-42V / 0-10A	**8.05**	160W: 0-84V / 0-5A
		4.20	320W: 0-40V / 0-20A		

EP/MP IMOD FUNCTION-UNIT: **MULTIMETER**

Configuration with Multimeter (in housing):

- Status indication with RGB-LED.
- 5x 4mm safety jacks
  (Hz, A, µA/mA, COM, V / Ohm / F / Diode / Continuity Test).
- Resolution: 4 3/4 stellig (50.000 Counts).
- Voltage DC: 10µV – 1000V.
- Voltage AC TrueRMS: 10µV – 700V.
- Current DC: 10nA – 20A.
- Current AC TrueRMS: 10nA – 20A.
- Front side operated thermomagnetic fuse of input µA/mA.
- Resistance: up to 50MOhm.
- Frequency: 100 µHz – 50MHz.
- Capacity: up to 50mF.
- Other functions: diode test, continuity test.
- Range selection: manual and automatic.
- Measuring rate: 2,5 measurements/ sec.
- Safety class: EN 61010-1; CAT II 600V.



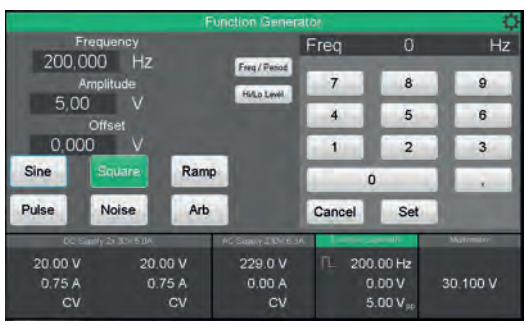


IMOD Function-Unit: Multimeter	
634.000.000	0,5EP
654.000.000	1MP

EP/MP IMOD FUNCTION-UNIT: **FUNKTION GENERATOR**

Configuration with Function Generator (in housing):

- Status indication with RGB-LED.
- 3x BNC sockets.
- Basic functions: sinus, triangle, saw tooth, pulse and DC voltage.
- Frequency range: 1mHz – 10MHz (sinus),
  10Hz – 1MHz (other signals).
- Aribitrary function: up to 4096dots.
- Other functions: PWM, TTL output.
- Amplitude: 30Vss (max. 1MHz), max. 3Vpp at 10MHz.
- Resolution: 14 Bit.
- Duty cycle: 0,1% … 99,9%.
- DC Offset: ± 10V.
- Frequency and counter: max. 100MHz.



IMod Function-Unit: Function Generator	
637.000.000	0,5EP
657.000.000	1MP

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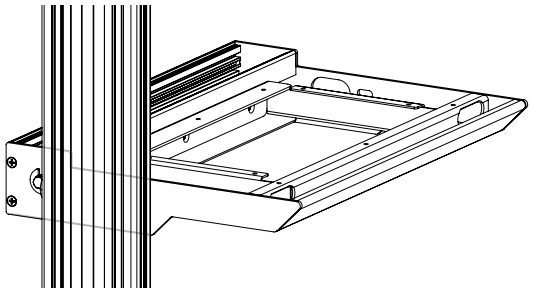
CHAPTER 11: **19“ BENCH RACKS WITH 19“ MODULES AND CASSETTES**

352 PROFI Multimedia Support and System Rack
354 PROFI 19" Cassette Racks
356 19" Cassette Rack and Cassette Carrying Case
358 19“ EASY Bench Rack
359 PROFI 19“ Bench Rack Superstructure
360 19" Container Rack
361 PROFI 19" Racks
363 HE Carrying Case and Folding Table
364 Topmount Socket and Signal Lamp
366 Blank Panel, - Cassette and - Insertion
367 Installation Panel and Emergency Stop Button
368 Mains Panel (16A and 32A)
371 Instructor Bench: Mains Module and Power Distribution
372 Socket Panel and Socket Module
373 Isolating Transformer and CEE Socket
374 Measuring Unit with Multifunctional Display
375 Test Speaker, Continuity Tester, Pneumatics
376 Selective Poles and Interface
377 Soldering - / Desoldering Station
379 R-, C- and L-Decade
380 Load Resistor
382 AC Low Voltage 1-/ 3phase
383 Variable AC Source 1phase
385 Variable AC Source 3phase
387 Meter Tester and Motor Tester
389 Motor Tester with Frequency Converter
390 Sinus Frequency Converter
391 DC Fixed Voltage Power Supply and Laboratory Power Supply Compact
393 Laboratory Power Supply - Linear & Extended Range
394 High Performance Power Supply
395 Didactic Supply
396 Function Generator and Amplifier
398 Digital Multimeter and Calibrator
401 Oscilloscope
402 Standard Signal Generator and Digital Thermometer
403 Pressure - and Process Calibrator, Pressure Pump
405 Appliance Tester analogue/ digital
406 HV Tester and 19“ Universal Tester
407 Sub Rack
408 PROFI 19" Shelf Unit

PROFI **MULTIMEDIA SUPPORT**

Heavy duty support with modular equipped channel at the rear side and complete hidden cable runs.

- Rear side with compact terminal for the modular acceptance of all modules in KK raster.
- Surrounding heavy duty steel frame for the hidden cable run into the PROFI extensions.
- Front brace ergonomically bevelled for the optional acceptance of the LED workstation lamp.
- Durable, conductive powder coating in light grey or anthracite.
- Dimensions: 390 x 75/40mm (DxH).



Your advantage with the multi-media support and system rack

- Rear side with variably equippable compact terminal, thus each configuration is possible with a system rack.
- Completely suspended due to integrated heavy duty steel frame.
- Front brace for LED Workstation Lamp.

PROFI Multimedia Support 424.0BB . 8 F 0

BB Width and Equipment (SINGLE / ENERGY)

05	500mm (39cm / 26cm)	**13**	1295mm (118cm / 105cm)		
06	603mm (49cm / 36cm)	**15**	1500mm (139cm / 126cm)		
08	800mm (69cm / 56cm)	**16**	1600mm (149cm / 136cm)		
09	900mm (79cm / 66cm)	**18**	1800mm (169cm / 156cm)		
10	1000mm (89cm / 76cm)	**20**	2000mm (189cm / 176cm)		
12	1200mm (109cm / 96cm)	**23**	2303mm (219cm / 206cm)		

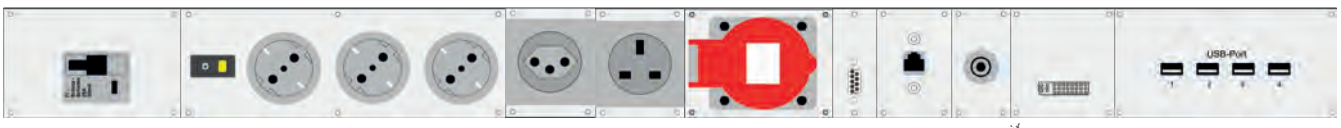
F Extensions

0	SINGLE / MULTI
1	ENERGY

Modularity of the Multimedia Support:

The rear side of the Multimedia Support is with integrated compact terminal straight, thus the multimedia support could be equipped with the broad variety of modules in KK raster.

Examples for KK Modules:



for suitable KK modules see capter 9

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SYSTEM RACK FOR MULTIMEDIA SUPPORT

The system rack is placed on top of the multimedia support and can be individually combined with shelf sections. The electric modules are simply connected to the sockets in the rear side of the multimedia support.

- Body made of 19mm thick melamine resin covered chipboard.
- Lower side recessed for access to the multimedia support.
- Customized intermediate wall for the separation of device - and shelf section.
- Detachable powder coated rear panel made of sheet steel with ventilation slots.
- Mounting strip for EP/ MP modules, 19“ raster profile, cage nuts and guiding rails.
- Depth: 470mm.

SYSTEM RACK FOR THE MULTIMEDIA SUPPORT

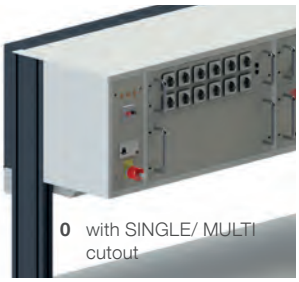
H Height

3 STRAIGHT 3HE for EP modules and 19" panels

5 STRAIGHT 5HE for MP modules and 19" panels.

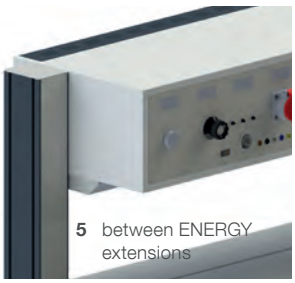
7 STRAIGHT for 7HE 19" panels and 19“ modules.

F Cutout



0 with SINGLE/ MULTI cutout

1 between SINGLE-/ MULTI extensions



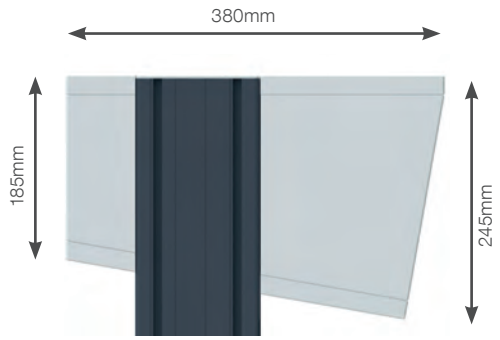
5 between ENERGY extensions

System Rack for Multimedia Support 42 **A** . **H** **BB** .8 **F** **Z**

A Version		**H** Height		**BB** Width				**F** Cutout		**Z** Intermediate Wall	
0	Standard	**3**	175mm for 3HE /EP	**05**	500mm	**13**	1295mm	**0**	for SINGLE / MULTI	**0**	no
1	ESD	**5**	265mm for 5HE /MP	**06**	603mm	**15**	1500mm	**1**	between SINGLE /MULTI	**1**	Intermediate Wall
		7	355mm for 7HE	**08**	800mm	**16**	1600mm	**4**	for ENERGY	**2**	Intermediate Wall
				09	900mm	**18**	1800mm	**5**	between ENERGY	**3**	Intermediate Wall
				10	1000mm	**20**	2000mm	**6**	no cutout	**4**	Intermediate Wall
				12	1200mm	**23**	2303mm			**5**	Intermediate Wall

PROFI 19" **CASSETTE RACK SUPERSTRUCTURE** 3HE

- Suspended, light grey bench rack with tilted front, made of 19mm thick melamine resin covered chip-board.
- Bottom with ventilation slots.
- Detachable, sectioned rear panel.
- 19" sub rack for 3HE cassettes in euro raster and 3HE front panels in multiplier raster (DIN 41494). Right and left side with compensating panel incl. guiding rail and H15 connector.
- Ventilation panel made of sheet steel (powder coated according to RAL-No.).
- Connectors completely wired with cental wire harness and terminal block.



PROFI 19" Cassette Rack Superstructure 3HE **421. BB A . F 01**

BB Width / Equipment

08	800mm / 133TE	**16**	1600mm / 294TE
09	900mm / 154TE	**18**	1800mm / 336TE
10	1000mm / 175TE	**20**	2000mm / 371TE
12	1200mm / 224TE	**23**	2303mm / 434TE
13	1295mm / 231TE	**50**	Corner 1213 x 1213 / 210TE
15	1500mm / 273TE		

A Version

0	Standard
1	ESD

F Extensions

9	SINGLE / MULTI
7	ENERGY

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PROFI 19" **CASSETTE BENCH RACK** 3HE

- Light grey body with tilted front, made of 19mm thick melamine resin covered chipboard. Optionally sides with cutout for PROFI extensions.
- Detachable powder coated perforated rear panel with two cable glands.
- 19“ sub rack for 3HE cassettes in euro raster and 3HE front panels in multiplier raster (DIN 41494). Right and left side with compensating panel incl. guiding rail and H15 connector.
- Ventilation panel made of sheet steel (powder coated according to RAL-No.). With integrated Schuko sockets, grey 45° positioned.
- Connectors and Schuko sockets completely wired with cental wire harness and terminal block.
- Height: 260mm, depth: 340/ 370mm.

19" Cassette Bench Rack 3HE **421.BB A . F 01**

BB Width / Equipment / Pcs. Sockets

06	600mm / 105TE / 2 Schuko	**18**	1800mm / 336TE / 6 Schuko
08	800mm / 133TE / 2 Schuko	**20**	2000mm / 371TE / 6 Schuko
09	900mm / 154TE / 2 Schuko	**23**	2303mm / 434TE / 6 Schuko
10	1000mm / 175TE / 2 Schuko	**50**	Corner 1213 x 1213 / 217TE
12	1200mm / 224TE / 4 Schuko	**51**	Corner 835 x 835 / 105TE
13	1295mm / 231TE / 4 Schuko	**52**	Corner 935 x 935 / 133TE
15	1500mm / 273TE / 4 Schuko	**53**	Corner 1035 x 1035 / 161TE
16	1600mm / 294TE / 4 Schuko		

A Version

5	Standard
6	ESD

F Extensions

9	SINGLE/ MULTI
7	ENERGY
1	no cutout

PROFI 19" **CASSETTE BENCH RACK** 3HE

- Body made of 19mm thick melamine resin covered chipboard, optionally sides with cutouts for PROFI extensions.
- Detachable, powder coated rear panel made of perforated steel with two cable glands.
- 19“ sub rack for 3HE cassettes in euro raster and 3HE front panels in multiplier raster (DIN 41494). Right and left side with compensating panel incl. guiding rail and H15 connector.
- Connectors completely wired with central wire harness and terminal block.
- Heigth: 175mm, depth: 380mm.

19" Cassette Bench Rack 3HE **218.BB.A.F01**

BB Bench Width / Equipment (between SINGLE/ MULTI)

06	600mm / 105TE (91TE)	**18**	1800mm / 336TE (322TE)
08	800mm / 133TE (119TE)	**20**	2000mm / 371TE (357TE)
09	900mm / 154TE (140TE)	**23**	2303mm / 434TE (420TE)
10	1000mm / 182TE (161TE)	**50**	Corner 1213 x 1213 (217TE)
12	1200mm / 224TE (210TE)	**51**	Corner 835 x 835 (105TE)
13	1295mm / 231TE (217TE)	**52**	Corner 935 x 935 (133TE)
15	1500mm / 273TE (259TE)	**53**	Corner 1035 x 1035 (161TE)
16	1600mm / 294TE (280TE)		

A Version

5	Standard
6	ESD

F Extensions

2	no extensions
0	between SINGLE/ MULTI (bench width - 80mm)

CARRYING CASE FOR 19" CASSETTE

- Front and rear frame made of aluminium profile, housing of light grey sheet steel, sides with recessed grip.
- 19“ sub rack for 3HE cassettes in euro raster and 3HE front panels in multiplier raster of 5,08mm (DIN 41494).
- Incl. guiding rail and H15 connector.
- Completely wired with 2m Schuko power cord.
- Height: 132mm, depth: 389mm.

Carrying Case for 19“ Cassette **394.3BB.101** **3HE**

BB Width / Equipment

42	241mm / 42TE
63	342mm / 63TE
84	449mm / 84TE

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THIS IS HOW WE REALIZE SUFFICIENT **AIR VENTILATION AND STIFFENING**

Thanks to a solid sheet steel panel the hera 19“ bench rack can be used for suspended set-ups; either without extra stiffening for benches of max. 1295mm or with a broad selection of supports for wider bench dimensions. Due to ventilation slots in the steel panel and in the lower side of the body the bench even can be placed directly to walls without causing heat accumulation.

EASY 19" **BENCH RACK**

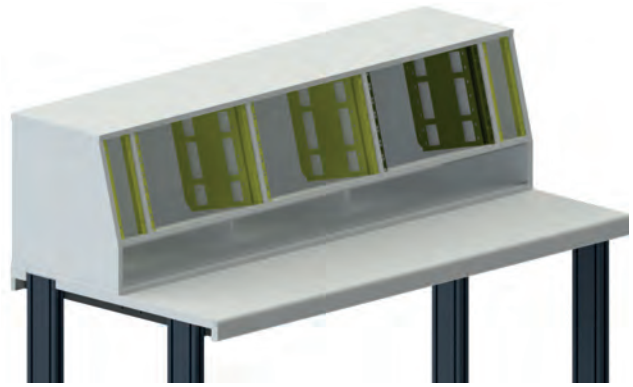
- Light grey body made of 19mm thick melamine resin covered chipboard.
- Sides optionally with cutouts for PROFI extensions.
- Detachable, powder coated rear panel made of perforated steel with two cable glands.
- 19“ HE panels sections with raster profile, cage nuts and guiding rails.
- Right and left side with module sections.
- 3phase central wiring of the sections with rear side aluminium channel and integrated Schuko sockets, hera couplers and connector block.

EASY 19" Bench Rack **420. BB H . F 0 A**

BB Width / Equipment		**H** Height		**F** Extensions		**A** Version	
13	1295mm / 2x Modules + 2x HE Panels	**4**	4HE / 215mm	**0**	no cutout	**0**	Standard
15	1500mm / 2x Modules + 2x HE Panels + Shelf	**7**	7HE / 355mm	**1**	SINGLE / MULTI	**5**	ESD
16	1600mm / 3x HE Panels			**2**	ENGERGY		
18	1800mm / 2x Modules + 3x HE Panels						
20	2000mm / 2x Modules + 3x HE Panels + Shelf						
23	2303mm / 2x Modules + 4x HE Panels						
50	Corner 1213 x 1213 / 2x HE Panels						

EASY 19" **BENCH RACK WITH EP**

- Light grey body with tilted front made of 19mm thick melamine resin covered chipboard.
- Parallax-free 19" sections 7HE with raster profile, cage nuts and guiding rails.
- Right and left side with module sections.
- Below the 19“ section with section for EP modules 3HE.
- Detachable, powder coated rear panel made of perforated steel with two cable glands.
- 3phase central wiring of the sections with rear side aluminium channel and integrated Schuko sockets, hera couplers and connector block.
- Depth: 470/ 410mm, height: 510mm.



for suitable EP modules see chapter 10

EASY 19“ Bench Rack with EP **420. BB 0.50 A**

BB Width / Equipment				**A** Version	
13	1295mm / 2x Modules + 2x 7HE Panels + 4,5EP	**18**	1800mm / 2x Modules + 3x 7HE Panels + 6EP	**0**	Standard
15	1500mm / 2x Modules + 2x 7HE Panels + Rest + 5EP	**20**	2000mm / 2x Modules + 3x 7HE Panels + Rest + 7EP	**5**	ESD
16	1600mm / 3x 7HE Panels + 5,5EP	**23**	2303mm / 2x Modules + 3x 7HE Panels + 8EP		

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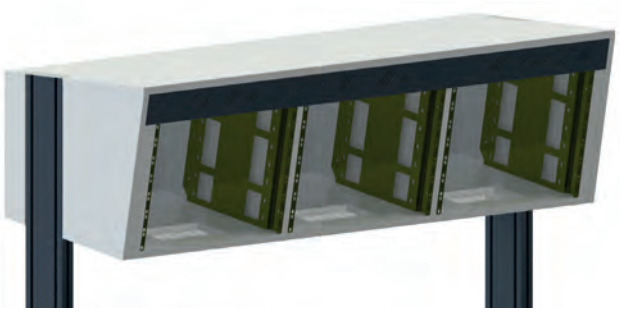
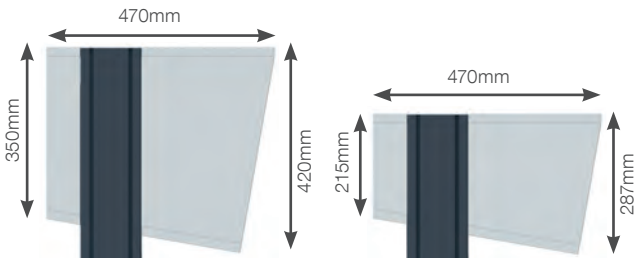
PROFI 19" **BENCH RACK SUPERSTRUCTURE** 4HE AND 7HE

- Suspended, light grey body with tilted front, made of 19mm thick melamine resin covered chipboard.
- Sides with cutouts for PROFI extensions.
- Lower side with ventilation insert.
- Closed, sectioned and detachable rear panel.
- 19" HE panel sections with raster profile, cage nuts and guiding rails.
- Right and left side with module sections.
- 3phase central wiring of the sections with rear side aluminium channel and integrated Schuko sockets, hera couplers and connector block.
- Front panel made of sheet steel (powder coated according to RAL-No.) with ventilation slots.





PROFI 19" Bench Rack Superstructure 420. BB A . F 01

BB Width / Equipment

13	1295mm / 2x Modules + 2x HE Panels
15	1500mm / 2x Modules + 2x HE Panels + Shelf
16	1600mm / 3x HE Panels
18	1800mm / 2x Modules + 3x HE Panels
20	2000mm / 2x Modules + 3x HE Panels + Shelf
23	2303mm / 2x Modules + 4x HE Panels
50	Corner 1213 x 1213 / 2x HE Panels

A Version

0	7HE / Standard
1	7HE / ESD
4	4HE / Standard
5	4HE / ESD

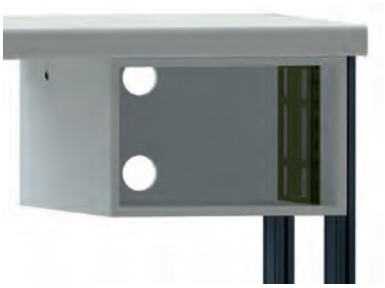
F Extensions

3	ENGERGY
9	SINGLE/ MULTI

19" **CONTAINER RACK**

- Light grey rack made of 19mm thick melamine resin covered chipboard.
- Optionally with service flap at the side.
- Firmly installed rear panel, upper and lower side with cable access, optionally this can be replaced by ventilation insert.
- Front with recessed 19“ section with raster profile, cage nuts and guiding rails.
- Rear side connecting rail with Schuko sockets.
- Width: 543mm.

G Container



SR: 19" Suspended Rack with top-side mounting holes

PR: 19" Pedestal Rack with base and levelers

MR: 19" Mobile Rack with 70mm swivel casters

19“ Container Rack 47 **G** . **T** **HH** .0 **R** **A**

G Container		**T** Depth		**HH** Equipment / Height		**R** Service Flap		**A** Version	
2	Suspended	**5**	580mm	**04**	4HE / SR: 216mm	**0**	left	**0**	Standard
3	Pedestal	**6**	680mm	**07**	7HE / SR: 351mm	**1**	right	**5**	ESD
4	Mobile	**7**	780mm	**12**	12HE / SR: 573 / MR: 655	**3**	none		
				14	14HE / PR: 710 / MR: 744				
				15	15HE / PR: 750mm				
				21	21HE / PR: 1050mm				

DOOR FOR 19" CONTAINER RACK

- Wooden door made of 19mm thick melamine resin covered chipboard, ergonomically bevelled. Upper and lower side with 2mm PP plastic edge.
- Glass door made of 6mm single-pane safety glass.
- Metal hinges, 90° opening.
- Metal handles, lock with two keys (master key system).

T Door

wooden door

glass door

Door for 19" Container Rack 475. **T** **HH** .00 **A**

T Door		**HH** Height				**A** Version	
0	Wooden Door	**04**	4HE / 220mm	**14**	14HE / 670mm	**0**	Standard
5	Glass Door	**07**	7HE / 355mm	**21**	21HE / 985mm	**5**	ESD
		12	12HE / 580mm				

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PROFI **19“ RACK**

- Very sturdy rack, design and technology in accordance with the PROFI benches.
- Corners made of the PROFI profile SINGLE with durable powder coating according to RAL-No.
- Front with recessed 19“ panel sections with raster profile, cage nuts and guiding rails.
- Cover and bottom made of solid steel frame with durable powder coated sheet steel panels in light grey.
- Optionally with 4 heavy duty steering casters (height + 90mm) for mobile applications or 4 height adjusters (height + 20mm).
- Rear side with lockable sheet steel door with durable light grey powder coating. Lower side with cable access.
- Detachable sides made of sheet steel with durable light grey powder coating.
- Width: 610mm.

PROFI 19" Rack 470.**T**HH.901

T Depth

0	645mm
1	800mm
2	900mm
3	1000mm

HH Height

14	14HE / 670mm	**34**	34HE / 1570mm
16	16HE / 760mm	**38**	38HE / 1750mm
20	20HE / 840mm	**43**	43HE / 1970mm
25	25HE / 1160mm	**47**	47HE / 2150mm
29	29HE / 1340mm		

Leveling Feet or Casters

471.000.100	Set of Leveling Feet (heght 20mm)	
471.000.000	Standard Casters 75mm (height 90mm)	
471.000.050	ESD Casters 75mm (height 90mm)	
471.000.200	Standard Casters 100mm (height 120mm)	
471.000.250	(ESD Casters 100mm (height 120mm)	
471.000.300	Lifting Casters with Foot Function, heavy duty polyamid casters 63mm, load capacity 500kg, (height: 104mm)	

GLASS DOOR FOR PROFI 19" RACK

- Anodized aluminium frame with perspex insert.
- Hinges (optionally left or right) and lock.

Glass Door for PROFI 19" Rack 471.0 HH.000

HH Height

14	14HE / 670mm	**25**	25HE / 1160mm	**38**	38HE / 1750mm
16	16HE / 760mm	**29**	29HE / 1340mm	**43**	43HE / 1970mm
20	20HE / 840mm	**34**	34HE / 1570mm	**47**	47HE / 2150mm

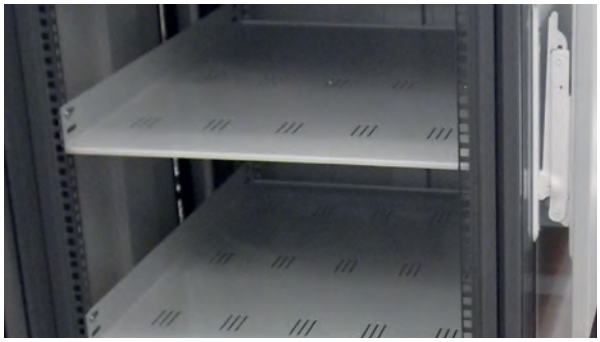
19" **GUIDING RAILS** (PAIR)

- 2x robust 19“ guiding rails made of chromated sheet steel.
- Incl. assembly set.

19“ Guiding Rails (Pair)			
471.000.150	for depth 645mm	471.002.150	for depth 900mm
471.001.150	for depth 800mm	471.003.150	for depth 1000mm

19" SHEET STEEL **SHELF BOARD** 1HE

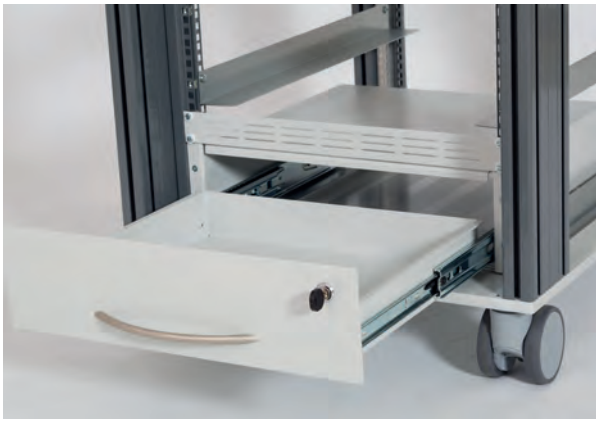
- Durable conductive powder coating in light grey.
- Front and rear side with 7mm bended rim.
- Incl. assembly set.



19“ Sheet Steel Shelf Board 1HE			
471.000.150	for depth 645mm	471.002.150	for depth 900mm
471.001.150	for depth 800mm	471.003.150	for depth 1000mm

19" **DRAWER**

- 19“ sheet steel housing 410 x 372mm (WxD).
- Sheet steel drawer with telescopic full extension, load capacity: 60kg.
- Aluminium front with lock and metal handle.
- Durable conductive powder coating in light grey.



19“ Drawer			
341.009.200	2HE	341.009.500	5HE
341.009.300	3HE	341.009.600	6HE
341.009.400	4HE	341.009.700	7HE

19" KEYBOARD DRAWER 1HE

- 19“ metal drawer 1HE for keyboard, light grey.
- Ballbearing guided extension with metal handle.
- Safety lock with two keys.
- German standard industry keyboard with function buttons for Windows, integrated touch pad or track ball, 2m connecting cable.

19" Keyboard Drawer 1HE	
377.070.200	with Touch Pad
377.070.250	with Track Ball

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CARRYING CASE FOR 19" DEVICE

- Powder coated sheet steel housing with fold-down handles (3HE), incl. reinforced sides. With slotted rear and bottom.
- Incl. power cord and guiding rails.
- Depth: 490mm.

Carrying Case for 19" Device			
394.003.500	3HE	394.007.500	7HE
394.004.500	4HE	394.010.500	10HE
394.006.500	6HE		

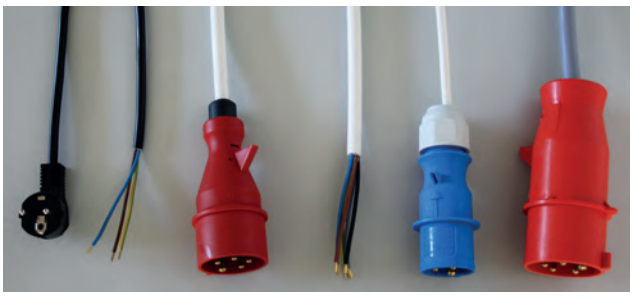
FOLDING TABLE FOR PROFI RACK

- Light grey 19mm thick melamine resin covered chipboard with 3mm PP plastic edge.
- Solid folding mechanism, assembled to the PROFI legs.
- Max. distributed load: 60kg.
- Dimensions: 400 x 630 x 200mm (WxDxH).

Folding Table for PROFI Rack	479.000.000

POWER CORD

Flexible power cord completely wired and connected.



Power Cord			
291.001.100	5m (3x 1,5mm²) with open end	291.001.500	5m Emergency Stop Cord (2x 1,5mm²), open end
291 001.150	3m (5x 2,5mm²) with open end	291.001.550	3m Emergency Stop Cord (2x 1,5mm²), open end
291.001.200	3m (3x 1,5mm²) with angled Schuko plug	291.001.603	3m Patch Cable grey with 2x RJ45 plug CAT6
291.001.250	5m (3x 1,5mm²) with angled Schuko plug	291.001.605	5m Patch Cable grey with 2x RJ45 plug CAT6
291.001.300	5m (5x 2,5mm²) with CEE plug 16A red	291.001.610	10m Patch Cable grey with 2x RJ45 plug CAT6
291.001.350	5m (5x 6mm²) with CEE plug 32A red	291.001.140	extra Schuko Plug
291.001.400	5m (3x 1,5mm²) with CEE plug 3poles blue	291.001.144	extra Swiss Plug
291.001.257	5m (3x 1,5mm²) with Swiss Plug 10A	291.001.147	extra BS Plug

TOPMOUNT SOCKET WITH FLAP

- Schuko socket with white flap, flush mounted into the wooden body and connected to the central power supply.

Topmount Socket with Flap	
291.006.201	2x Socket with Flap
291.006.401	4x Socket with Flap

SIGNAL LAMP

- Signal lamp with post, diameter: 70mm.
- Red, green and/ or yellow light element 230V.
- Installed on the bench rack and wired to the mains panel.
- Incl. power cord.

Signal Lamp 331.03 **A** . **L** 00

A Lamp Elements

1	1x Element (red)
2	2x Element (red / green)
3	3x Element (red / green / yellow)

L Type

1	Filament Lamp 5W
3	LED Continuous Lamp

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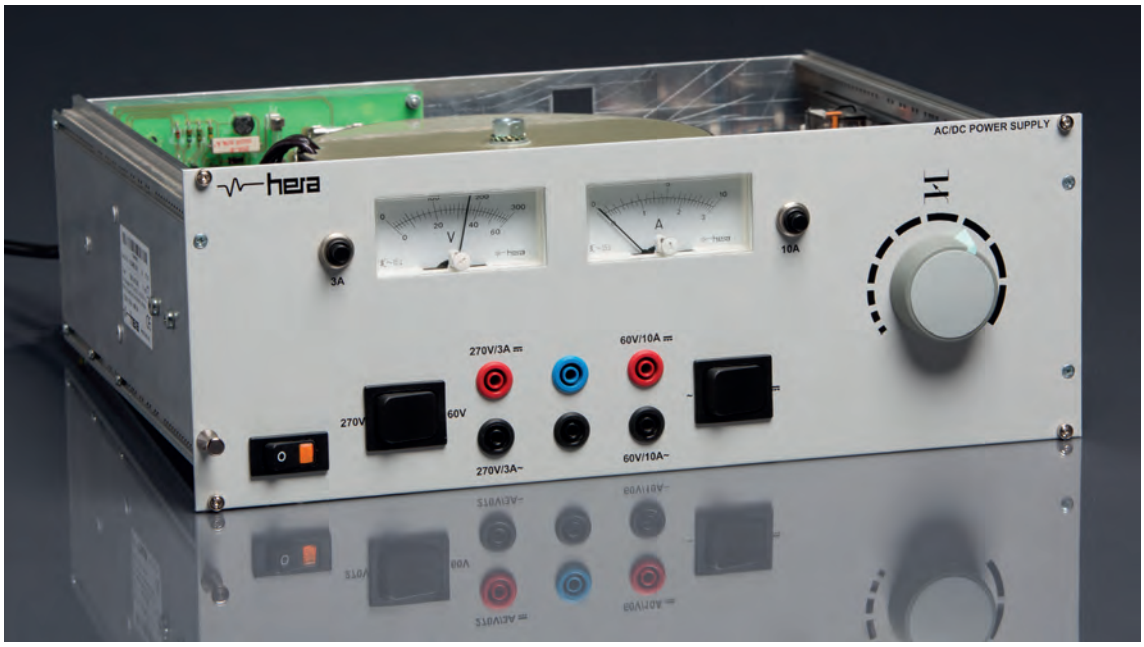
GREAT VARIETY OF **CASSETTES AND PANELS**

On following pages we introduce you to our big range of high technology cassettes and panels in the standard 19“ system. With our program we sufficiently cover all fields within the electronics. The devices are of highest quality and in accordance with applicable standards.



19“ Cassette

width:
1TE = 5,08mm

height:
3HE (128mm)

depth:
290mm

19“ Insertion

width:
19“ = 483mm

height:
1HE (44,45mm)

depth:
360mm

19" TE **BLANK PANEL** AND BLANK CASSETTE

- Aluminium front panel, light grey powder coated, with fixing screws.
- Abrasion proofed and chemical resistant silkscreen printing.
- Width: in 7x TE raster (TE = 5,08mm).
- Height: 3HE (128mm).

Cassette with:

- Handle bar.
- Side panels made of anodized aluminium with slots for the acceptance of PCBs in european standard size.
- Rear panel made of aluminium with H15 connector.
- Depth: 290mm.

Blank Panel / Blank Cassette 340.0 **HH** . **A** 02

HH Height

07	7TE (only blank panel)	**28**	28TE	**49**	49TE
14	14TE (only blank panel)	**35**	35TE	**56**	56TE
21	21TE	**42**	42TE	**63**	63TE
				84	84TE

A Type

1	Blank Panel
2	Blank Cassette

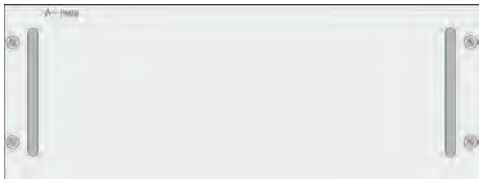
19" HE BLANK PANEL, BLANK MODULE AND **BLANK INSERTION**

- Aluminium front panel, light grey matt powder coated with fixing screws.
- Abrasion proofed and chemical resistant silkscreen printing.
- Width: 19" (483mm); module: 115mm.
- Height: in HE-Raster (HE = 44,45mm).

Insertion with:

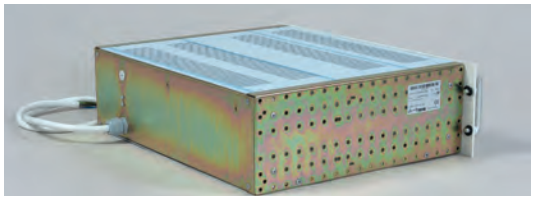
- Two metal handles.
- Sides of the chassis with hole raster, bottom with mounting plate and top with ventilation slots.
- Rear panel with 1m connecting cable and Schuko plug.
- Depth: 360mm.

19" HE	Panel	Module	Insertion
1HE	340.001.302		
2HE	340.002.302		
3HE	340.003.302		340.003.402
4HE	340.004.302	331.000.402	340.004.402
5HE	340.005.302		
6HE	340.006.302		340.006.402
7HE	340.007.302	331.000.302	340.007.402
1HE with ventilation slots	340.021.302		



19“ Blank Insertion 4HE

19“ Blank Module 7HE



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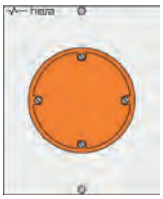
19" **INSTALLATION PANEL**

- Panel with installation box for the flexible equipment of installation components.

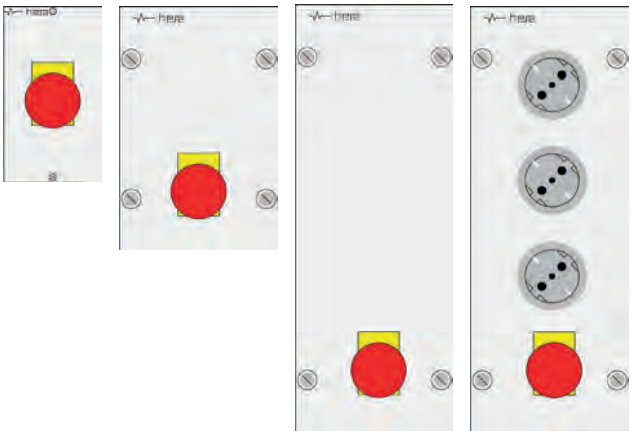


Installation Panel 21TE	340.220.102

Suitable Installation Components and Covers, white	
333.220.500	Cover
333.220.510	TV-Antenna-Socket 2-holes
333.220.520	SAT-Antenna-Socket 3-holes
333.220.530	Double-UAE-Socket RJ45
333.220.540	TAE-Socket 6F
333.220.550	red Schuko socket with Label

19" PANEL WITH **EMERGENCY STOP BUTTON**

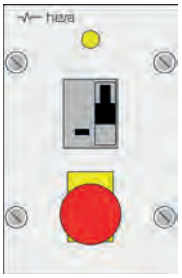
- 19“ aluminium front panel, light grey powder coated with abrasion proofed silk screen printing and fixing screws.
- Equipped with emergency stop button and second unwired opener contact for the optional connection to the inhouse emergency stop circuit.



Emergency Stop Button		
	Rotation Release	**Key Release**
14TE	331.006.102	331.016.102
21TE with protective collar	331.006.202	331.016.202
7HE	331.006.302	331.016.302
4HE	331.006.402	331.016.402
7HE with 3x Schuko	331.007.302	331.017.302

19" **Mains Supply 16A**

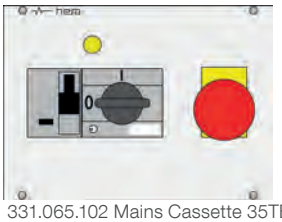
- For the central protection of the complete bench rack.
- Voltage control lamps.
- Motor circuit breaker 12,5-16A with under voltage release.
- Residual current device (RCD) 25A/ 30mA type A or sensitive to all currents type B (recommended for training facilities with experimental equipment according to VDE 0100-723).
- Emergency stop button with rotation or key release, yellow signal ring and opener contact.
- The 2HE type 1phase is with Schuko socket and the 3phases type with CEE socket.
- Other international standards on demand!



331.460.102
Mains Module 4HE

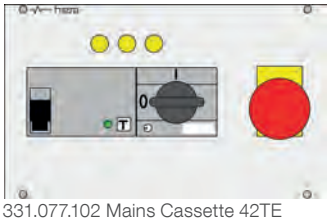
331.165.102
Mains Module 7HE

331.177.102
Mains Module 7HE



331.065.102 Mains Cassette 35TE

331.265.102 Mains Panel (Insertion 2HE)



331.077.102 Mains Cassette 42TE

331.277.102 Mains Panel (Insertion 2HE)

Mains Supply 16A **331. S P T . N 02**

S System		**P** Phases		**T** RCD (sensitive to...)		**N** Emergency Stop	
0	19" Cassette 21-42TE	**6**	1phase 230V	**0**	no RCD	**0**	no Emergency Stop
1	19" Module 7HE	**7**	3phase 400V	**5**	pulsating currents type A	**1**	with Rotation Release
2	19" Insertion 2HE			**7**	all currents type B	**2**	with Key Release
4	19" Module 4HE					**3**	Black Key Button

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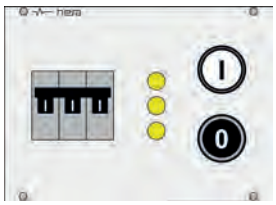
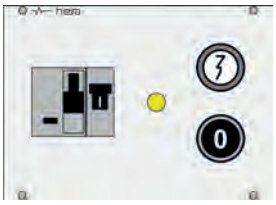
19" MAINS SUPPLY **WITH CONTACTOR**

The mains supply with contactor is with enabling function by switch.

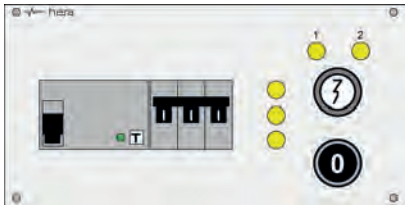
- Residual current device 25A / 30mA type A or sensitive to all currents type B.
- Automatic circuit breaker B16.
- Voltage control lamps.
- 1- or 2-level-activation with on/ off button, contactor and status indication.
- Completely wired and input terminal clamp.
- Other international standards on demand!



331.530.002
Mains Cassette 28TE



331.515.002
Mains Cassette 28TE



331.537.202 Mains Cassette 28TE

331.630.002
Mains Module 7HE

Didact Mains Supply	331. S P T . F 02

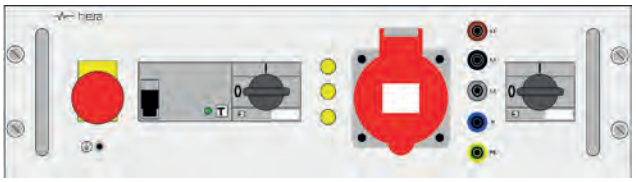
S System		P Phase		T RCD (sensitive to...)		F Activation	
5	19" Cassette 21-56TE	1	1phase 230V	0	no RCD	0	1 level with On and Off button
6	19" Module 7HE	3	3phase 400V	5	pulsating currents type A	1	1 level with Key-On and Off Button
				7	all currents type B	2	2 level with Key-On and Off Button

19" **MAINS SUPPLY 32A**

- Voltage control lamps.
- Motor circuit breaker 32A with under voltage release.
- Residual current device 40A / 30mA, type A or type B for sensitive to all currents.
- Emergency stop button with opener contact.
- CEE socket 32A.
- 5x safety jacks.
- Output protected by motor circuit breaker 16A.
- Completely wired and terminal clamp for 32A input.
- Other international standards on demand!

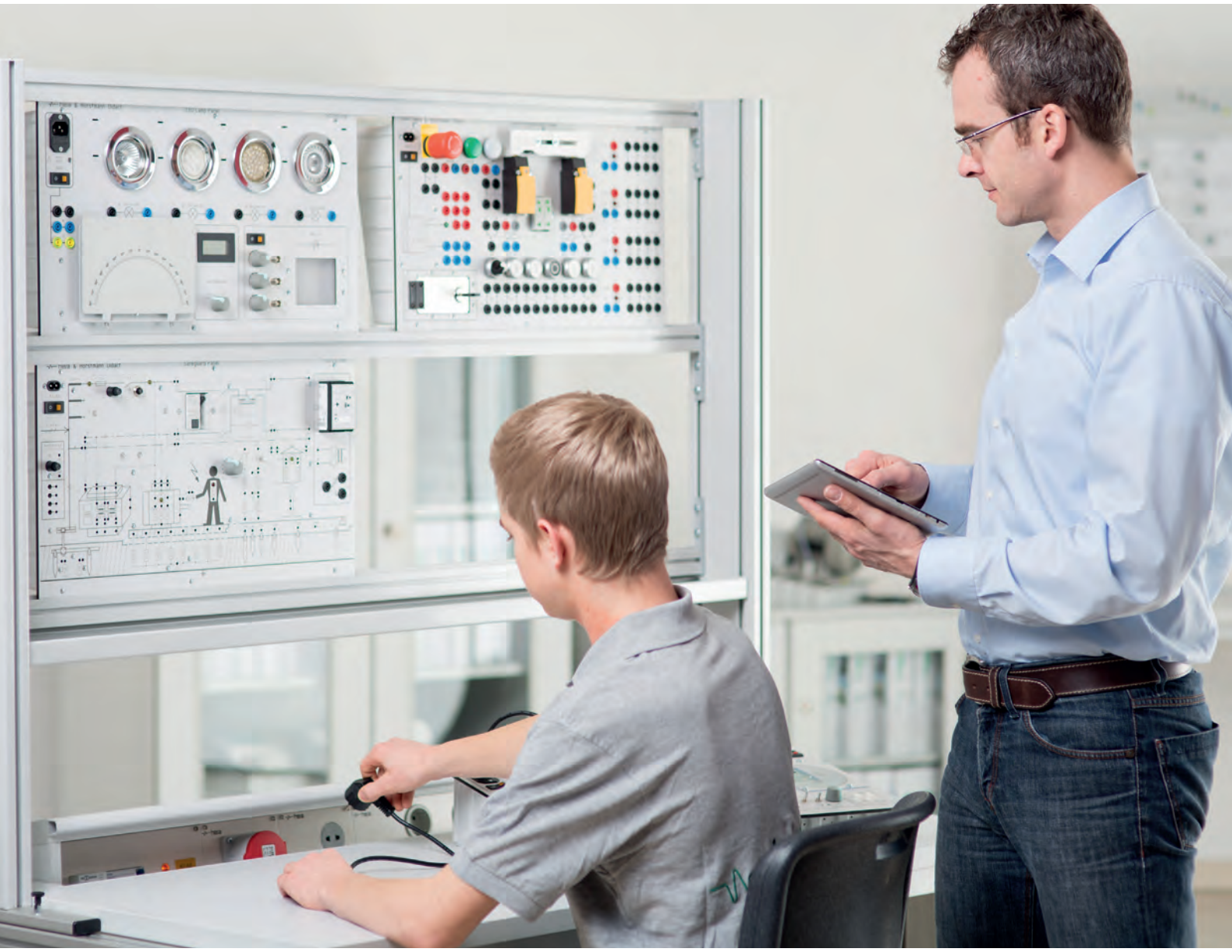
Mains Panel 32A	331.37 T . N 02

T Type RCD		N Emergency Stop	
0	no RCD	0	no Emergency Stop
5	pulsating currents type A	1	with Rotation Release
7	all currents type B	2	with Key Release
		3	Black Key Button



SIMPLE WAY TO
KEEP TRACK OF EVERYTHING

Instructors bear a great deal of responsibility. For this reason it is most important to eliminate any risk within an electronic laboratory. hera offers different possibilities for central protection and control from the instructors bench. Activation and deactivation is either done with key combination at the distribution panel in the instructors bench, remote controlled or with LAN or USB interface.



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19" **CONTROL UNIT** FOR INSTRUCTOR BENCH

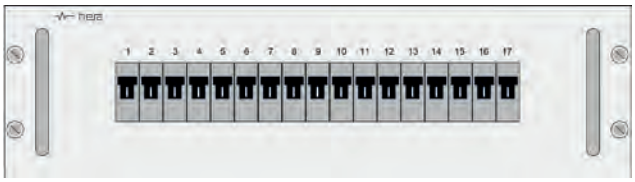
- 19“ panel for the integration in the distribution rack of the instructor bench, for the central protection of a complete laboratory, power distribution, protection of single workstations and control of student workstations.

Available components for modular combinations:

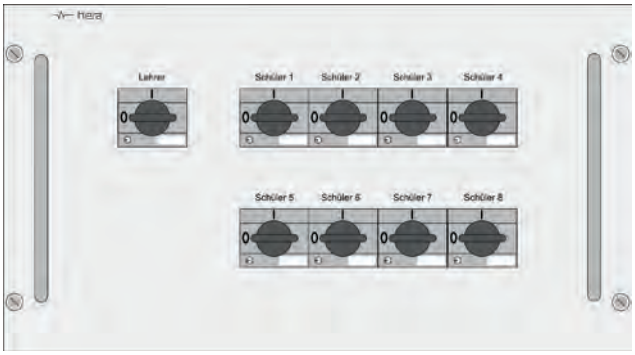
MCB 40A:	Motor circuit breaker 40A with under voltage release for the connection of all emergency stop buttons.
RCD:	Residual current device 300mA/ 40A sensitive to all currents type B.
Activation:	Key switch for the activation of the mains panel.
PhKo:	3x phase control lamps.
Automat B16:	Automatic circuit breaker B16 for 1phase protection of all workstations.
MCB 12,5-16A:	Motor circuit breaker 12,5-16A for the 3phase protection of all workstations.

Control Unit for Instructor Bench	
332.090.104	Mains Panel MCB40A; Activation; PhKo; B6 3HE
332.090.105	Mains Panel MCB40A; RCD, Activation; PhKo; B16 3HE
332.090.108	Mains Panel with Distribution MCB40A; Activation; PhKo 9x Automat B16 (8x Student + 1x Instuctor) 3HE
332.090.109	Mains Panel with Distribution: MCB40A; RCD; Activation; Phko; 9x Automat B16 (8x Student + 1x Instructor) 3HE
332.090.202	Distribution Panel: 17x Automat B16 3HE
332.090.204	Distribution Panel: 9x MCB12,5-16A 6HE

332.090.105 Mains Panel 3HE MCB40A; RCD, Activation; PhKo; Automat



332.090.202 Distribution Panel: 3HE: 17x Automat B16



332.090.204 Distribution Panel: 6HE: 8x MCB 12,5-16A
(1x Teacher + 8x Student)

19“ **STUDENT BENCH CONTROL**

For the central control of the student benches with following media:

- Key combination at the 19“ distribution rack.
- Radio remote controlled.
- Networked operation at the PC via LAN.

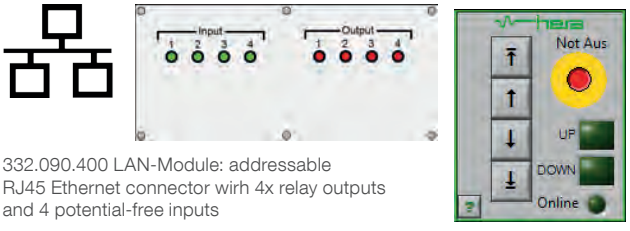
Following functions could be remote controlled:

- On/ off for multiple levels (low voltage, mains voltage/ soldering iron, etc.)
- Up/ down for foldaway/ hideaway bench racks.
- Emergency stop monitoring.

Student Bench Control	
332.090.302	19" Panel with 1+8x On/ Off key combination with control lamp 3HE
332.090.800	Handheld radio transmitter 8 channels
332.090.850	Handheld radio transmitter 32 channels (8x4 levels)
332.090.920	Radio receiver 2 channels (relay output)
332.090.940	Radio receiver 4 channels (relay output))
332.090.400	LAN-Panel: adressable RJ45 Ethernet connector with 4x relay outputs and 4x potential-free inputs

332.090.301 19“ Panel 3HE with 1 + 8x On/ Off button

332.090.920 Receiver with 2 channels (relay output)

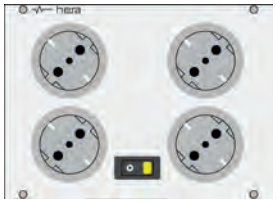


332.090.400 LAN-Module: addressable RJ45 Ethernet connector wirh 4x relay outputs and 4 potential-free inputs

19" SCHUKO **SOCKET PANEL**

19“ aluminium front panel light grey with abrasion proofed silkscreen printing and H15 connector, completely wired.

- Schuko socket grey, 45° positoned.
- Depending on the type with or without illuminated switch, 2poles and 4mm safety jacks (L, N, PE).
- International sockets on demand!



Schuko Socket Panel	
340.330.202	2x Schuko 14TE
340.335.202	4x Schuko 28TE
340.330.102	2x Schuko with Switch 21TE
340.335.102	4x Schuko with Switch 35TE
340.121.102	1x Schuko with Switch and Safety Jacks 14TE
340.221.102	3x Schuko with Switch and Safety Jacks 28TE

19" SCHUKO **SOCKET MODULE**

19“ aluminium front panel light grey with abrasion proofed silkscreen printing and H15 connector, completely wired.

- Schuko socket grey, 45° positoned.
- Illuminated switch, 2poles.
- International sockets on demand!

Schuko Socket Module	
331.007.352	3x Schuko with extra Switch for Overhead Lamp
331.021.302	3x Schuko with Switch 7HE
331.021.402	2x Schuko with Switch 4HE

19" SCHUKO **SOCKET PANEL**

- 5x Schuko sockets grey, 45° positioned.
- 3x 4mm safety jacks (L, N, PE).
- Illuminated switch, 2poles.
- International sockets on demand!

Schuko Socket Panel	
341.402.102	2HE

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19" CASSETTE AND PANEL WITH **ISOLATED TRANSFORMER**

- Ferrit core transformer for the supply of a floating AC voltage 230V.
- Protected by a front side operated thermomagnetic fuse.
- Output on universal socket (Schuko, Franco-American) without earth contact.
- Illuminated switch, 2poles.

Some cassettes/ panels with:

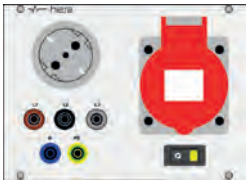
- Schuko socket grey; 45° positioned.
- 2poles selector switch to change between sockets and 4mm safety jacks (SLB).
- International sockets on demand!

Isoltated Transformer	
340.535.102	19“ Cassette 700VA/ 3A + Selector for Safety Jacks + 2x Schuko Sockets 35TE
340.535.122	19“ Cassette 115VA/ 0,5A + Selector for Safety Jacks SLB 14TE
331.024.302	19” Module 700VA/ 3A 4HE
331.025.302	19” Module 700VA/ 3A + 2x Schuko Sockets 7HE
341.503.102	19“ Panel 700VA/ 3A + Selector for Safety Jacks + 4x Schuko Sockets 3HE
341.503.202	19“ Panel 3700VA/ 16A + Selector for Safety Jacks + 4x Schuko Sockets 4HE

19" CASSETTE AND PANEL WITH **CEE SOCKET**

- CEE socket 5poles red 400V/ 16A 6h.
- 4mm safety jacks (SLB).
- Schuko sockets grey; 45° positioned.
- Illuminated switch, 2poles and contactor.
- International sockets on demand!

CEE Socket	
340.242.502	19" Cassette without Switch 21TE
340.242.302	19" Cassette with Switch + Schuko 35TE
331.202.302	19" Module without Switch 4HE
331.202.352	19" Module with Switch 4HE
331.203.302	19" Module without Switch + 2x Schuko 7HE
331.203.352	19" Module with Switch + 2x Schuko 7HE
341.203.302	19" Panel without Switch + 4x Schuko 2HE
341.203.352	19" Panel with Switch + 4x Schuko 2HE



19" PANEL WITH **MULTI MEASURING UNIT**

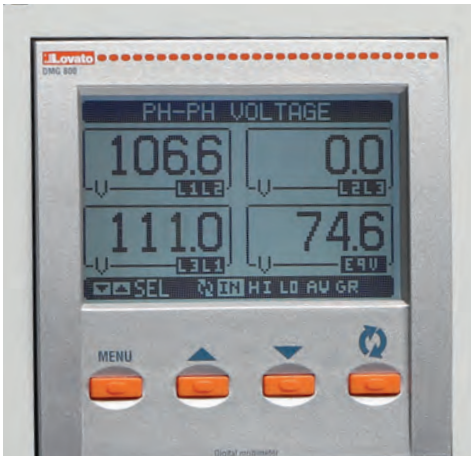
- The panel is for the indication of voltage, current and power of connected AC consumers.
- Multifunctional display with LC-graphic display and 4 variably programmable readings and four switches.
- Optional with front side connectable USB interface or back side connectable LAN interface.
- CEE socket straight 400V/ 16A, 6h, 5poles.
- 4mm safety jacks (L1, L2, L3, N and PE).
- Schuko socket, grey 45° positioned.
- Illuminated switch, 2poles and contactor.

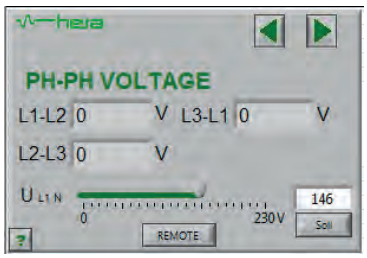
Panel with Multi Measuring Unit	34 S .389.51 R

S System		R Remote	
0	19“ Cassette 35TE	2	no Interface
1	19“ Panel 3HE	7	USB Interface
		8	LAN Interface

Technical details of Multi Measuring Unit:

- Instrument 96 x 96mm with graphic-LCD 128 x 80 Pixel and 4x switches for operation.
- Voltages TRMS (phases-, system- and line-to-line voltage); accuracy: ±0,2%.
- Phase current TRMS (calculated current of neutral contactor); Accuracy: ±0,2%.
- Power (active, reactive, apparent power of phase and in total); accuracy: ±0,5% v. EW.
- P.F. (power factor each phase and in total); accuracy: ±0,5%.
- Frequency (frequency measuring of the measured voltage); accuracy: ±0,05%.
- HIGH and LOW values of the actual voltage -, current -, power -, PF - and frequency value.
- Total harmonic distortion (THD) of voltages and currents.
- Harmonic analyses of voltage and current up to the 31 harmonic wave.
- Counter for active -, reactive -, and apparent energy (partial and total counter with programmable tariff functions).
- Hour counter (counter for total and service hours, programmable).





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19" CASSETTE WITH **CONTINUITY TESTER**

High-ohmic electronic continuity tester, poled:

- Resistance range: 0...200kΩ with accoustic signal (sound alternation with changing resistance) and optical signal.
- Residual current protection (> 400V) and LED indication.

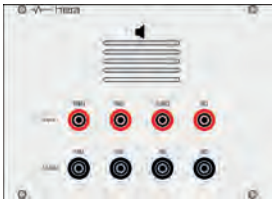
Electric continuity tester for low-ohmic tests with 24VAC:

- LED indication.
- Connection with 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

Continuity Tester	
380.020.202	19“ Cassette 21TE

19" CASSETTE WITH **TEST SPEAKER**

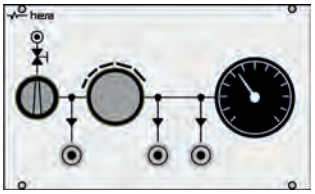
- Test speaker 10Watt/ 8Ω.
  Transmission range: 130-20.000Hz.
- Upstream connected transmitter for impedance matching.
  Transmission range: 40 - 20.000Hz.
  Primary winding: 2kΩ / 4kΩ / 8kΩ / 16kΩ.
  Secundary winding: 4Ω / 8Ω / 16Ω.
- Connection with 4mm safety jacks.



Test Speaker	
380.090.302	19“ Cassette 35TE

19“ MODULE WITH **PRESSURED AIR**

- Shut-off valve.
- Self-closing quick release coupler 4/6 (unregulated).
- Adjustable pressure regulator with analogue manometer.
- Two self-closing quick release coupler 4/6 (regulated).
- Completely hosed with open hose end 4/6.

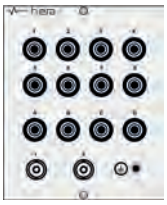


Module with Pressured Air	
388.003.102	0 - 3bar 42TE
388.010.102	0 - 10bar 42TE
388.013.302	0 - 3bar + 0 - 10bar 2HE

19" PANEL **SELECTIVE POLES**

- Selective poles are used for loop wirings in class rooms or training centers, if the teacher provides voltages for the class. Selective poles are not connected, wiring has to be done on-site.

Equiped with:
- 4mm safety jacks (SLB).
- BNC sockets.

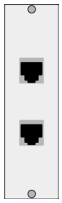


19" Panel Selective Poles	
380.090.052	5x Safety Jacks 7TE
380.090.102	12x Safety Jacks + 2x BNC Sockets 21TE

19" PANEL WITH **INTERFACE**

Front panel with integrated interface and cable.

Panel with Interface	
340.614.302	2x RJ45 Socket CAT5 7TE
340.614.342	1x RJ45 Socket CAT6 7TE
340.614.362	2x RJ45 Socket CAT6 7TE
340.614.352	1x RJ45 fixed connection (displaced insulation CAT6) 7TE
340.615.102	1x Sub-D 9poles Plug for COM / RS232 7TE
340.615.302	1x Sub-D 25poles Socket for LPT 7TE
340.615.502	1x Sub-D 15poles Socket for VGA 7TE
340.615.702	1x DVI-I-Socket (Digital Visual Interface) 7TE
340.615.902	2x PS/2-Socket (Keyboard + Mouse-Interface) 7TE
340.616.102	3x Chinch-Socket (red, white, yellow) 7TE
340.616.302	1x Audio Jack 3,5mm 7TE
340.616.502	1x HDMI (High Definition Multimedia Interface) 7TE
340.617.102	1x USB-A to USB-B Flange Socket 7TE
340.617.202	2x USB-A to USB-B Flange Socket 7TE
340.617.302	Active 4x USB-Hub 2.0 incl. Supply Unit 14TE
340.617.402	Active 4x USB-Hub 3.0 incl. Supply Unit 14TE
340.617.702	Card Reader USB 2.0 14TE



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19“ **SOLDERING STATION**, ANALOGUE

- Professional soldering station 24V/ 80W with electronic temperature regulation.
- Stepless adjustable temperature by potentiometer between 150°C and 450°C with LED temperature indication.
- Antistatic soldering iron (24V/ 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- Coupler for soldering fume extractor.

Soldering Station, analogue	
380.001.102	19“ Cassette 21TE
380.253.102	19“ Module 7HE

19“ **SOLDERING STATION**, DIGITAL

- Microprocessor controlled soldering station with automatic soldering tool cognition.
- Stepless at two buttons adjustable temperature between 50°C and 450°C.
- 3digit LED display for actual and set temperature indication.
- Antistatic soldering iron (24V/ 80W).
- Holder with sponge.
- Illuminated switch, 2poles for central on/off.
- Coupler for soldering fume extractor.

Soldering Station, digital	
380.001.602	19“ Cassette 28TE
380.253.602	19“ Module 7HE

19“ **SOLDERING STATION**

Microprocessor controlled soldering station with 3 fixed temperatures or stepless temperature adjustment.

- Electronically controlled soldering station (80W).
- Stepless adjustable temperature 150 ... 450 °C.
- LCD with actual and nominal temperature indication.
- Antistatic according to MIL-SPEC/ESA.
- Powerful fine soldering tool (heating time in 9sec.)
- Antistatic holder with metal cleaning wool.
- Illuminated 2poles switch for central on/off.
- With wire harness and coupler.

Soldering Station	
380.001.702	19“ Cassette 21TE
380.253.702	19“ Module 7HE

19“ **SOLDERING AND DESOLDERING** REPAIR STATION UNIVERSAL

- Universal applicable 2 channel repair station for professional repairs of industrial PLCs, as well as generally for service and repair departments.
- The station has two independent channels for automatic tool cognition and automatic activation of the respective control parameter. Soldering and desoldering or soldering with hot air could be done simultaneously.
- All accessories like soldering iron, desoldering iron and hot air pencil could be connected.
- Integrated rotary pump for vacuum and air flow (max. suction 0,7 bar; max. air flow 18 l/min).
- Variably programmable buttons for repeated functions.
- LC display.
- EGB safe.
- ECO button.
- Temperature regulation: 50°C – 550°C.
- For a variety of soldering tools up to 200 Watt.

Soldering and Desoldering Repair Station UNIVERSAL	
380.001.502	19“ Cassette 42TE
341.254.102	19“ Panel 2HE

Accessory to Repair Station UNIVERSAL	
380.000.100	Soldering Tool Set 80 Watt (Soldering Iron, Safety Holder)
380.000.200	Soldering Tool Set 120 Watt (Soldering Iron, Safety Holder)
380.000.300	Desoldering Tool Set 80 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.400	Desoldering Tool Set 120 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.500	Hot Air Pencil Set 100 Watt (Hot Air Pencil, Safety Holder, Nutdriver for Nozzle Changing)

Soldering Tool Set

Desoldering Tool Set

Hot Air Pencil Set

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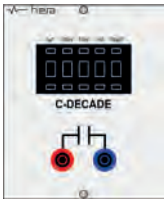
19" CASSETTE **R-DECADE**

- 8x decade switches with precision resistors in the ranges of 1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V AC; max. current: 0,5A.
- 9 x 4mm safety jacks for resistance taps.

R-Decade	
380.002.102	19“ Cassette 35TE

19“ CASSETTE **C-DECADE**

- 8x decade switches with precision capacitors in the ranges of 100pF, 1nF, 10nF, 100nF, 1µF.
- Accuracy: 0,1% + 75pF.
- Max. voltage: 200V AC; max. current: 0,5A.
- 2 x 4mm safety jacks for capacity taps.

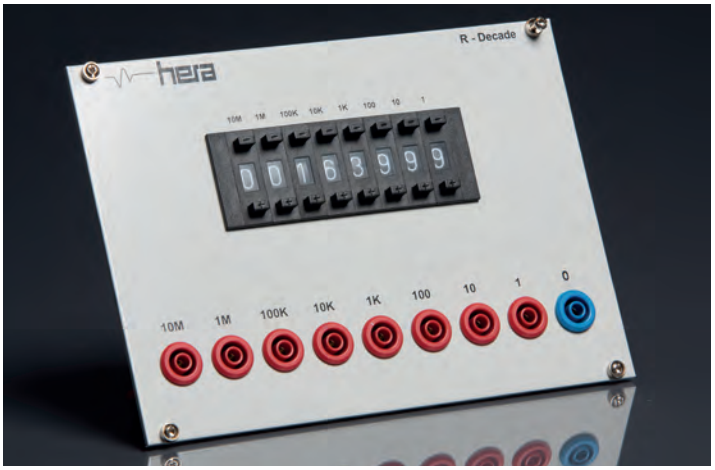


C-Decade	
380.002.202	19“ Cassette 21TE

19“ CASSETTE **L-DECADE**

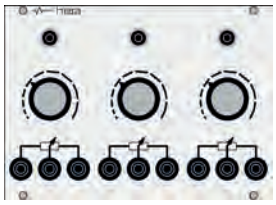
- 4x decade switches with precision coils in the ranges of 1µH, 10µH, 100µH, 1mH.
- Max. voltage: 100V.
- 2 x 4mm safety jacks for inductance taps.

L-Decade	
380.002.302	19“ Cassette 21TE



19" PANEL WITH **LOAD RESISTANCE**

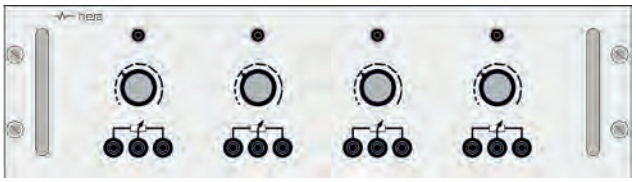
- Stepless adjustable rotational resistors 50W (test voltage: 2,5kV).
- Thermic automatic circuit breaker for overload protection.
- Connection at three safety jacks.



Load Resistance	
380.005.102	0 - 10Ω / 2,2A 14TE
380.005.202	0 - 100Ω / 0,7A 14TE
380.005.302	0 - 1kΩ / 0,2A 14TE
380.005.402	0 - 10kΩ / 0,1A 14TE
380.005.002	3x Load Resistors 0 - 0,1 / 1 / 10kΩ 35TE

19" INSERTION WITH **LOAD RESISTANCE**

- 4x 50W
  Four stepless adjustable load resistors
  (test voltage: 2,5kV):
  0 - 10Ω / 50W; 2,2A
  0 - 100Ω / 50W; 0,7A
  0 - 1kΩ / 50W; 0,2A
  0 - 10kΩ / 50W; 0,1A
- or 4x 300W
  Four stepless adjustable load resistors
  (test voltage: 2,5kV):
  0 - 10Ω / 5,4A
  0 - 100Ω / 1,7A
  0 - 1kΩ / 0,5A
  0 - 10kΩ / 0,2A
- Thermic automatic circuit breaker for overload protection.
- Each resistance with two end taps and center tap at 4mm safety jacks.



Load Resistance	
380.010.102	4x 50W 3HE
380.010.302	4x 300W 4HE

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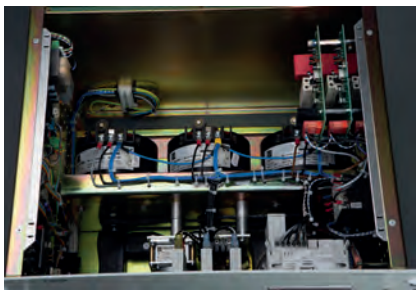
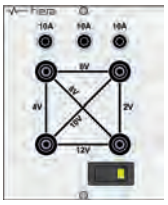
VARIABLE **AC SOURCES**

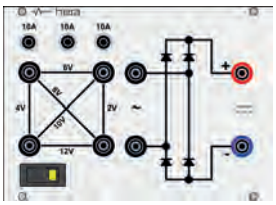
Our adjustable AC sources are ideal for the simulation of mains alternations. Due to latest technology and a great performance, the devices are not only applicable for education but also for service and development. Our galvanic insulated types ensure even more accuracy and offer a maximum of safety.



19" CASSETTE FLOATING **AC LOW VOLTAGE, 1PHASE, PLUGABLE**

- Transformer with earthfree 10A outputs. Plugable to tap off 2V, 4V, 6V, 8V, 10V or 12V.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Bridge rectifier at 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

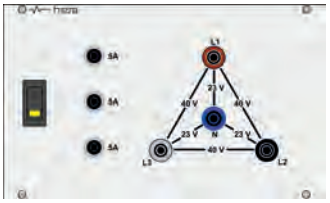




AC Low Voltage, 1phase, plugable	
342.012.102	no Bridge Rectifier 21TE
342.012.202	with Bridge Rectifier 35TE

19" CASSETTE WITH FLOATING **AC LOW VOLTAGE, 3PHASE**

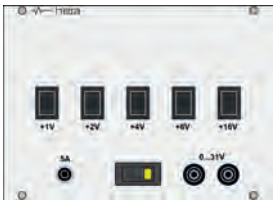
- AC isolated transformer 345VA for a floating 3phase voltage 23V/ 40V.
- Protected by front side operated thermomagnetic fuse.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles with contactor.



AC Low Voltage, 3phase	
342.323.002	19“ Cassette 42TE

19" CASSETTE WITH FLOATING **AC LOW VOLTAGE**

- Isolated transformer for 1V, 2V, 4V, 8V, 16V/ 5 A. Protected by front side operated thermomagnetic fuse.
- 5x switches for voltage setting. The output voltage could be adjusted in 1V steps between 0...31V.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.



AC Low Voltage, 1phase	
342.031.102	19“ Cassette 35TE

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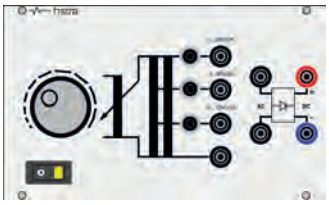
19" CASSETTE VARIABLE **AC SOURCE 0 - 260V/ 3A**

- 1x variac with downstream connected isolated transformer for 0…260V/ 3A, 0…60V/ 6A and 0…12V/ 15A.
- Protected by front side operated thermomagnetic fuses.
- Outputs on 4mm safety jacks.
- Bridge rectifier at 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

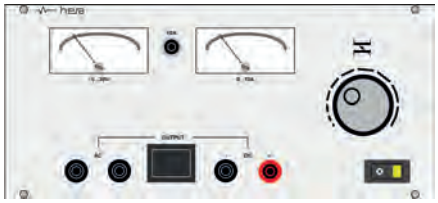


Variable AC Source 0 - 260V/ 3A	
342.026.102	19“ Cassette 42TE

19" CASSETTE **VARIABLE AC/DC SOURCE 1PHASE**

- Variac with downstream connected isolated transformer for a floating output voltage between 0 - 100%. Protected by front side operated thermomagnetic fuses.
- Connectible bridge rectifier for a pulsating DC voltage with 48% ripple.
- AC - and DC output on 4mm safety jacks.
- Current - and voltage reading
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS, Accuracy: 0,5% +/-1 digit.
- Illuminated switch, 2poles for central on/off.

Variable AC/DC Source 1phase	
346.033.202	0-30V / 10A analogue 56TE
346.053.202	0-50V / 3A analogue 56TE
346.271.202	0-270V / 1A + 0-60V / 4A analogue 63TE
346.271.602	0-270V / 1A + 0-60V / 4A digital 63TE
346.273.202	0-270V / 3A + 0-60V / 10A analogue 70TE
346.273.602	0-270V / 3A + 0-60V / 10A digital 70TE



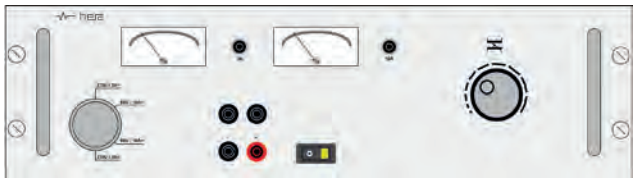
19" CASSETTE VARIABLE **AC SOURCE 1PHASE**

- 1x variac with downstream connected isolated transformer for a floating output voltage between 0 - 100%. Protected by front side operated thermomagnetic fuses.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without PE contact.
- Current - and voltage reading
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS, Accuracy: 0,5% +/-1 digit.
- Illuminated switch, 2poles for central on/off.

Variable AC Source 1phase	
342.271.202	0-270V / 1A analogue 63TE
342.271.602	0-270V / 1A digital 63TE
342.273.202	0-270V / 3A analogue 63TE
342.273.602	0-270V / 3A digital 63TE

19" INSERTION **AC/DC SOURCE 1PHASE**

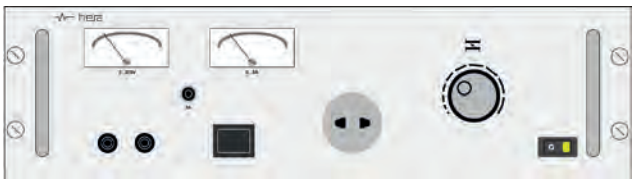
- Variac with downstream connected isolated transformer for a floating output voltage between 0 - 100%.
- Protected by front side operated thermomagnetic fuse.
- Connectible bridge rectifier for a pulsating DC voltage with 48% ripple.
- AC - and DC output on 4mm safety jacks.
- Current - and voltage reading
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS, accuracy: 0,5% +/-1 digit.
- Illuminated switch, 2poles for central on/off.



AC/DC Source 1phase	
346.273.102	0-270V / 3A + 0-60V / 10A, analogue 3HE
346.273.502	0-270V / 3A + 0-60V / 10A, digital 3HE
346.275.102	0-270V / 3A analogue 4HE
346.280.102	0-270V / 10A analogue 4HE

19" INSERTION **AC SOURCE 1PHASE**

- Variac with downstream connected isolated transformer for a floating output voltage between 0 - 100%.
- Protected by front side operated thermomagnetic fuses.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without PE contact.
- Current - and voltage reading
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS, accuracy: 0,5% +/-1 digit.
  - MFA: Multifunctional display optionally with USB or LAN interface.
- Illuminated switch, 2poles for central on/off.

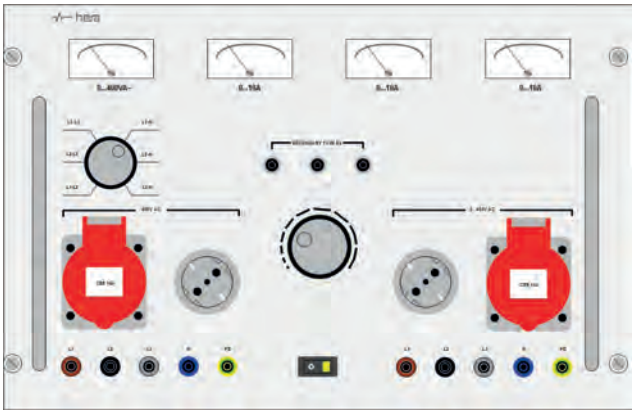


AC Source 1phase	342. SSS . A 04

SSS	Voltage / Current	A	Reading
273	0-270V / 3A 3HE	1	analogue
275	0-270V / 5A 4HE	5	digital
280	0-270V / 10A 4HE	6	MFA
282	0-270V / 12A 4HE	7	MFA with USB Interface
301	0-300V / 10A 4HE	8	MFA with LAN Interface
286	0-270V / 16A 7HE (3phase supply required)		
306	0-300V / 16A 7HE (3phase supply required)		

19" INSERTION **AC SOURCE 3PHASE**

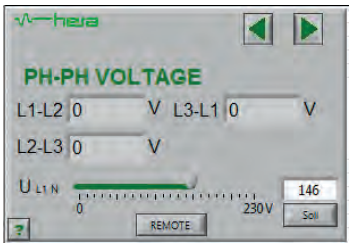
- AC variac in star connection for an adjustable output voltage between 0 - 100%.
- **Option FLOATING:** with downstream connected isolated transformer for galvanically separated output voltage.
- Inrush current limiter with primary fuse.
- AC - and DC output on 4mm safety jacks.
- AC voltage reading with measuring points selector and 3x current reading L1, L2 and L3.
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS.
  - MFA: Multi Measuring Unit optional with USB or LAN interface.
- Output with 1x CEE socket straight 400V/ 16A, 6h, Schuko socket and 5x 4mm safety jacks (L1, L2, L3, N, PE).



AC Source 3phase	343. SSS . A 02

SSS Voltage / Current		A Reading	
335	0-400V / 3A 7HE	**1**	analogue
336	0-400V / 3A, floating 7HE	**5**	digital
455	0-450V / 5A 7HE	**6**	MFA
456	0-450V / 5A, floating 7HE	**7**	MFA with USB Interface
460	0-400V / 10A 7HE	**8**	MFA with LAN Interface
461	0-400V / 10A, floating 7HE		
557	0-520V / 7A, floating 7HE		
561	0-520V / 10A, floating 7HE		

Technical details of Multi Measuring Unit:

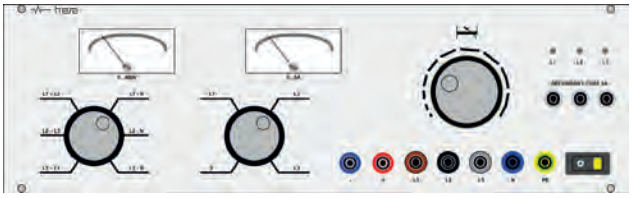


- Instrument 96 x 96mm with graphic-LCD 128 x 80 Pixel and 4x switches for operation.
- Voltages TRMS (phases-, system- and line-to-line voltage).
- Phase current TRMS (calculated current of neutral contactor).
- Power (active, reactive, apparent power of phase and in total).
- P.F. (power factor each phase and in total).
- Frequency (frequency measuring of the measured voltage).
- HIGH and LOW values of the actual voltage -, current -, power -, PF - and frequency value.
- Total harmonic distortion (THD) of voltages and currents.
- Harmonic analyses of voltage and current up to the 31 harmonic wave.
- Counter for active -, reactive -, and apparent energy (partial and total counter with programmable tariff functions).
- Hour counter (counter for total and service hours, programmable).

19" CASSETTE VARIABLE **AC/DC SOURCE 3PHASE**

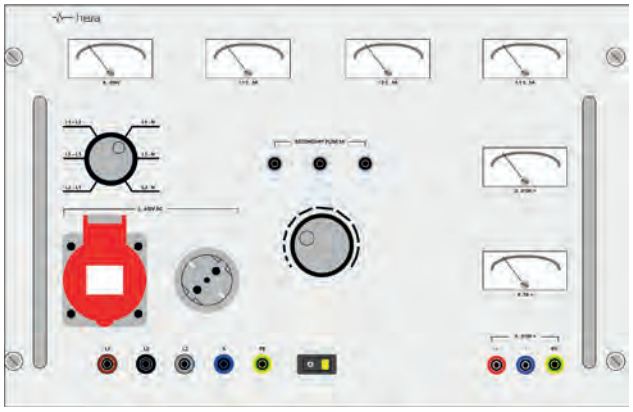
- 3phase variac for a non floating output voltage of 0 - 400V. Protected by front side operated thermomagnetic fuses.
- AC/DC source with 6 pulse rectifier for a pulsating DC voltage with 4,3% ripple.
- Output on 4mm safety jacks.
- Current - and voltage reading with phase selector
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS, accuracy: 0,5% +/-1 digit.
- Illuminated switch 2poles with contactor.

AC/DC Sources 3phase	
348.401.102	AC Source 0-400V / 1A analogue 70TE
348.401.602	AC Source 0-400V / 1A digital 70TE
348.403.102	AC/DC Source 0-400V / 3A analogue 84TE
348.403.602	AC/DC Source 0-400V / 3A digital 84TE



19" INSERTION **AC/DC SOURCE 3PHASE**

- 3phase variac in delta connection for an output voltage of 0 - 100%. Protected by front side operated thermo-magnetic fuses.
  Option FLOATING: with downstream connected isolated transformer for galvanically separated output voltage.
- 1x CEE socket straight 400V/ 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x Schuko socket.
- AC voltage reading with measuring point selector and 3x AC current readings L1, L2 and L3.
  - analogue: moving iron class 1,5.
  - digital: 3digit LED display TrueRMS.
- 6 pulse rectifier (ripple 4,3%) with DC voltage reading and DC current reading.
- 4mm safety jacks for variable DC voltage output (factor: 1,35 of the AC voltage).
- Illuminates switch, 2poles with contactor.



AC/DC Source 3phase	347. LLL . A 02	7HE

LLL Power

335	0-400V / 3A, NON floating	**460**	0-400V / 10A, NON floating	**1**	analogue
336	0-400V / 3A, FLOATING	**461**	0-400V / 10A, FLOATING	**5**	digital
455	0-450V / 5A, NON floating	**557**	0-520V / 7A, FLOATING		
456	0-450V / 5A, FLOATING	**561**	0-520V / 10A, FLOATING		

A Reading

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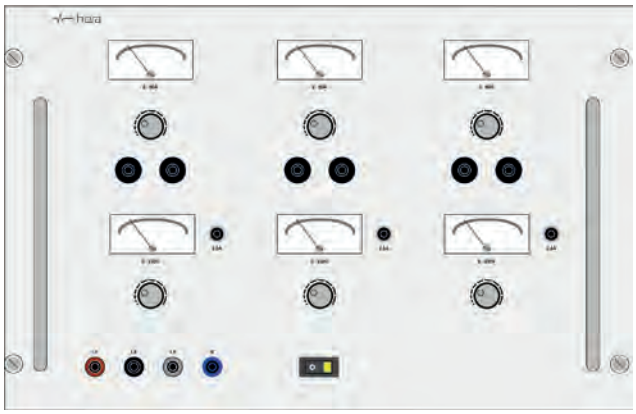
19" **METER TESTER**

Voltage Supply:

- 3x individually adjustable variacs for a floating output voltage of 0 - 230V/ 2,5A.
- Protected by front side operated thermomagnetic fuse.
- Output on 4x 4mm safety jacks (L1, L2, L3, N).
- 3x analogue voltage readings (moving iron class 1,5).

Current Supply:

- 3x individually adjustable variacs for a floating output current of 0 - 60A/ 6,6V.
- Output on 6 x 4mm safety jacks (L1-L1’, L2-L2’, L3-L3’).
- 3x analogue current readings (moving iron class 1,5).
- Illuminated switch, 2poles with contactor.



Meter Tester	
353.260.102	7HE

19" MOTOR TESTER **WITH VARIAC**

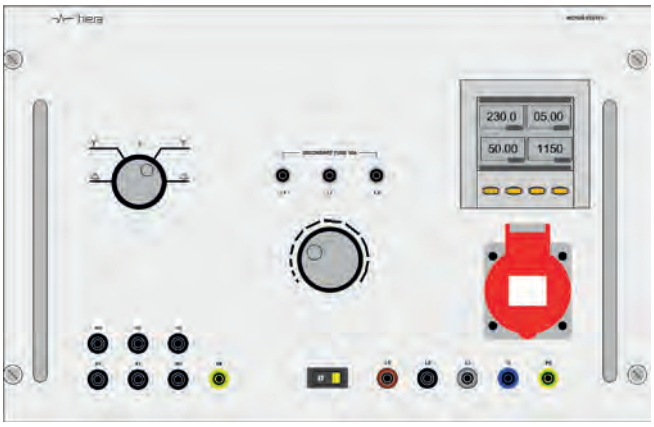
- AC variac for a non floating output voltage of 0 – 400V/ 10A.
- Protected by front side operated thermomagnetic fuse.
- 7x 4mm safety jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and rotation field selector.
- More outputs on 4mm safety jacks (L1, L2, L3, N, PE) and CEE socket straight 400V/ 16A, 6h, 5poles.
- Illuminated switch, 2poles with contactor.

Analogue Reading:

- 1x Voltage reading with measuring point selector and 3x current readings (moving iron clas 1,5).

Multi Measuring Unit:

- Graphic LCD for the simultaneous indication of 4 variable programmable values.
- Phase voltages and phase currents TRMS.
- Power indication (effective, apparent, reactive) of each phase and in total.
- Power factor per phase and in total.
- Frequency.
- HIGH - and LOW value indication.
- Harmonic distortion of voltages and currents.
- Analyse of harmonic waves for voltage and current.
- Counter for effective -, reactive - and apparent energy.
- Hour counter.



Motor Tester with Variac 0-400V/ 10A	7HE
385.381.102	with analogue readings
385.381.602	with MFA
385.381.702	with MFA and USB Interface
385.381.802	with MFA and LAN Interface

19" AC MOTORTESTER **WITHOUT VARIAC**

- Selector switch for the stepless adjustment of the external variac.
- 7x 4mm safety jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and rotation field selector.
- More outputs on high-current jacks (L1, L2, L3, N, PE) and CEE socket straight 400V/ 16A, 6h, 5poles.

Analogue Reading:

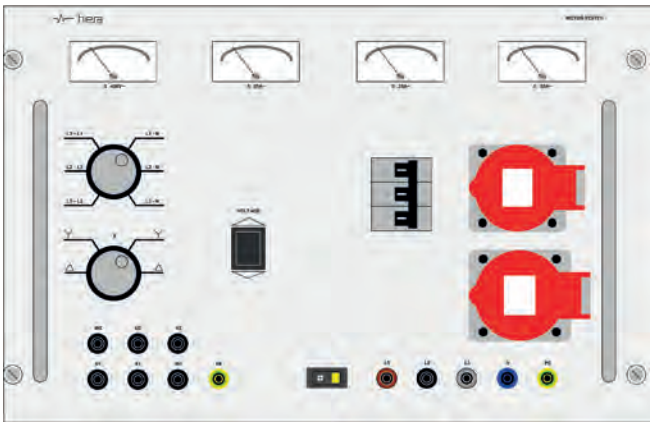
- 1x Voltage reading with measuring point selector and 3x current readings (moving iron clas 1,5).

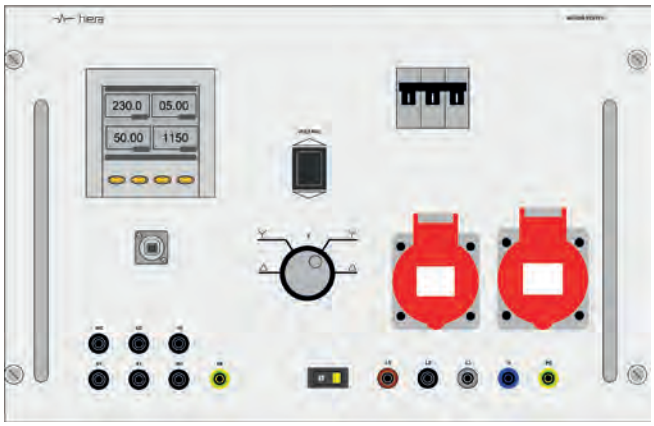
Digital Reading:

- 1x Voltage reading with measuring point selector and 3x current readings (3digit LED display, TrueRMS; 0,5% +/-1digit).

Multi Measuring Unit:

- Graphic LCD for the simultaneous indication of 4 variable programmable values.
- Phase voltages and phase currents TRMS.
- Power indication (effective, apparent, reactive) of each phase and in total.
- Power factor per phase and in total.
- Frequency.
- HIGH - and LOW value indication.
- Harmonic distortion of voltages and currents.
- Analyse of harmonic waves for voltage and current.
- Counter for effective -, reactive - and apparent energy.
- Hour counter.





AC Motortester	385.3 SS . A 02	7HE

SS Output Current

82	25A
84	40A
86	60A
99	100A

A Reading

1	analogue
5	digital
6	MFA
7	MFA with USB Interface
8	MFA with LAN Interface

EXTERNAL VARIAC FOR MOTOR TESTER

- Sheet steel housing with casters, two with brakes.
- Integrated 3phase motor driven variac with inrush current limiter.
- Input terminal block with primary fuse.
- Power transfer to the motor tester with residual current device (RCD).

External Variac for Motor Tester	
285.516.100	0 - 400V / 16A
285.525.100	0 - 400V / 25A
285.540.100	0 - 400V / 40A
285.550.100	0 - 400V / 50A
285.560.100	0 - 400V / 60A
285.599.100	0 - 400V / 100A

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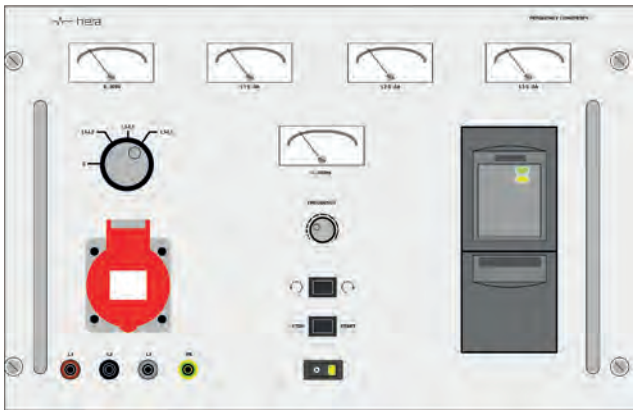
19" MOTOR TESTER **WITH FREQUENCY CONVERTER**

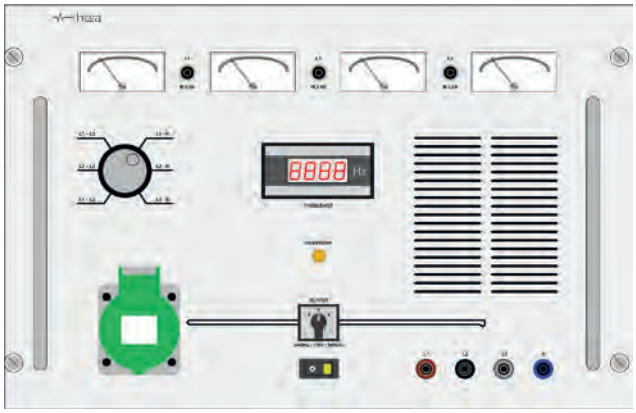
- Menu driven vector frequency converter 0 - 400Hz (max. 650Hz).
- Variable output voltage with variac 0 - 400V/ 6A.
- Stepless frequency adjustment with 10turn potentiometer.
- Switch for rotation field direction.
- 4x 4mm safety jacks (L1, L2, L3, PE).
- CEE sockets, straight 400V/ 16A, 6h, 5poles.
- Analogue voltage reading class 1,5 with measuring point selector.
- 3 analogue current readings (L1, L2, L3) class 1,5.
- Illuminated switch, 2poles with contactor.



Motor Tester with Frequency Converter	
356.400.102	7HE

19" **SINUS FREQUENCY CONVERTER**, 3PHASE

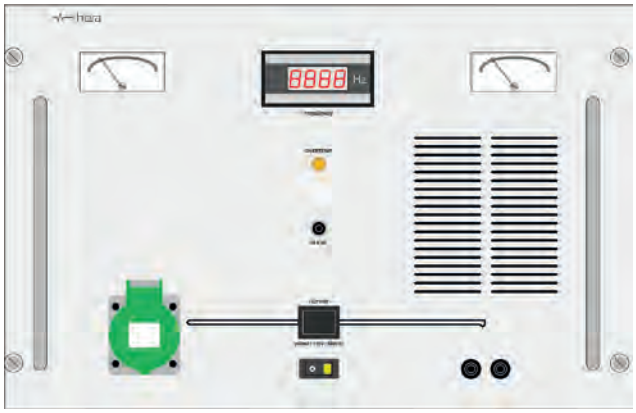
- Linear controlled precision frequency converter (distortion factor < 3%) for a floating and stabilized output voltage (+/- 2%).
- Selector switch for 4mm safety jacks or CEE socket 5poles.
- 3x analogue current readings L1, L2 and L3.
- Analogue current and voltage reading.
- Digital frequency and status reading.
- Illuminated switch, 2poles with contactor.



Sinus Frequency Converter, 3phase	
356.402.102	7HE

19" **SINUS FREQUENCY CONVERTER**, 1PHASE

- Linear controlled precision frequency converter (distortion factor < 3%) for a floating and stabilized output voltage (+/- 2%).
- Selector switch for 4mm safety jacks or CEE socket 3poles.
- Analogue current and voltage reading.
- Digital frequency and status reading.
- Illuminated switch, 2poles.

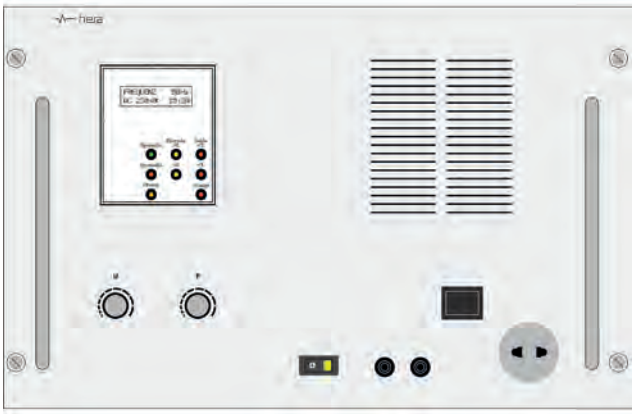


Sine Frequency Converter, 1phase		7HE
355.064.102	60Hz / 115V / 4A	
355.406.102	400 Hz / 115V / 6A	

19" SINUS FREQUENCY **CONVERTER LC 1PHASE 60HZ**

Variable earth-free sinus frequency converter with micro-controller, status LED and alphanumeric LC-display.

- Sinus source with galvanic isolated input THD-U: 2-3% at 100% ohmic load.
- Power: 100% duration cos phi 0,8, 20% for 3-5min.
- Adjustable output voltage 100V - 250V. Stability: +/-1,5%.
- Adjustable frequency 47Hz bis 63Hz (sinus). Stability: +/-0,1%.
- Text display for voltage, current and frequency.
- Output selector switch for 4mm safety sockets or universal socket.
- Short-circuit proofed with automatic off function.
- 8x AC status LEDs (indication for undervoltage, overvoltage and overload).
- Illuminated switch, 2poles for central on/off.



Sinus Frequency Converter LC 1phase 60Hz		7HE
355.063.202	Power Output 800VA / 3A	
355.066.202	Power Output 1500VA / 6A	

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19“ **FIXED DC** VOLTAGE

- Stabilized and short-circuit proofed DC power supply for a fixed output voltage, galvanically isolated.
- Overload-, overvoltage - and overtemperature protected.
- Offset: < 2%; ripple: < 100mV p-p.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

Fixed DC Voltage	368. AAA . AA S

AAA AA Type

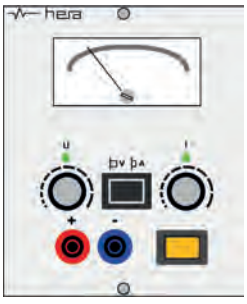
105.05	5V / 5A 14 TE
105.10	5V / 10A 21TE
112.03	12V / 3A 14TE
112.06	12V / 6A 21TE
112.12	12V / 12,5A 28TE
113.11	13,5V / 11,2A 28TE
124.03	24V / 3,2A 21TE
124.08	24V / 8,4A 28TE
148.02	48V / 2,3A 21TE
148.04	48V / 4,2A 28TE
212.03	+ 12V / 3A + 5V / 6A 28TE
224.02	+ 24V / 2A + 5V / 6A 28TE
312.01	+/- 12V / 1A + 5V / 5A 14TE
315.01	+/- 15V / 0,8A + 5V / 5A 14TE

S System

2	19" Cassette
5	19“ Module 7HE
6	19'' Panel 2HE

19" LABORATORY POWER SUPPLY COMPACT 0...30V / 0...2A

- Inphase controlled, earthfree and short-circuit proofed laboratory power supply.
- Voltage and current adjustment with potentiometer and LED status indication.
- Output on 4mm safety jacks.
- Ripple: < 1mV eff.
- Offset: < 0,05%.
- Selector switch at analogue reading class 1,5 for voltage and current.



Laboratory Power Supply Compact 0...30V / 0...2A	
380.810.202	19“ Cassette 21TE

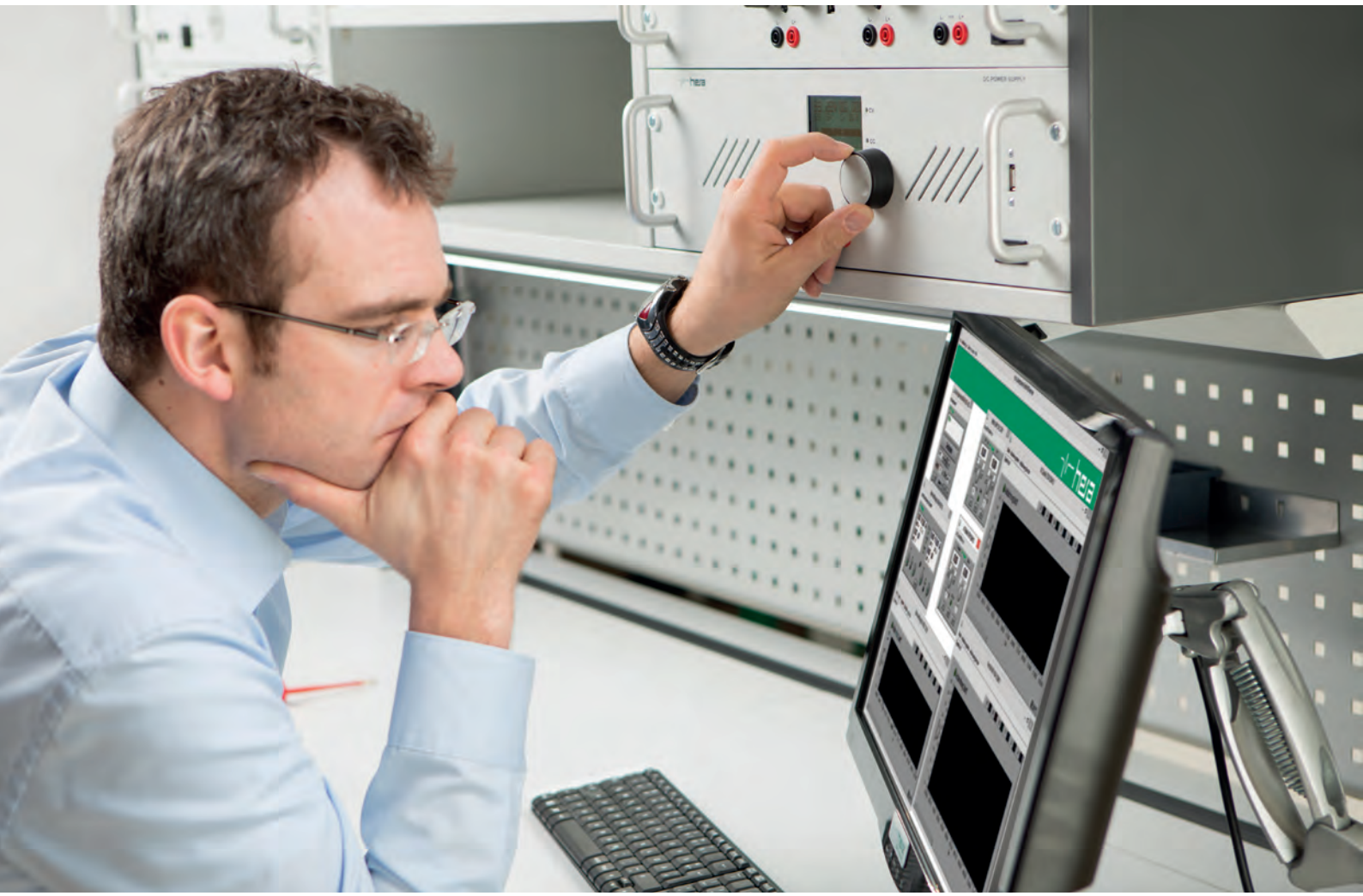
FIRST-CLASS LAB POWER SUPPLIES
FOR MULTIPLE APPLICATIONS

Characteristic for our lab power supplies is:
- Intuitive operation with fine adjustable rotary switch or keys.
- Clearly visible due to backlight graphic display.
- USB - and LAN interface for remote operation.
- Incl. operation software (WinRemote) with arbitrary function, operation lock and programmable overvoltage protection.

Choose your power supply from two different cathegories:

Laboratory Power Supply LINEAR:
- highly precise lab power supply with < 1mV ripple
- power output between 60 - 600W

Laboratory Power Supply EXTEND RANGE:
- switch-mode power supply with < 5mV ripple
- maximum efficiency due to extended ranges for voltage and current



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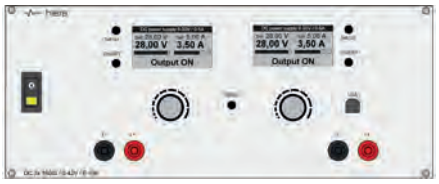
19“ **LABORATORY POWER SUPPLY**

- Backlight graphical LCD 60 x 30mm (128x64) for the simultaneous indication of all important values and modes.
- Rotary switch with push button function for quick and precise settings of voltage and current.
- Extra buttons for quick and intuitive operation.
- Output ON / OFF button with status indication in the display.
- 2 Channel Power Supplies with switching function for: 2 channel -, tracking -, serial - or parallel mode.
- Output at 4mm safety jacks.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/off.



Technical data: Laboratory Power Supply EXTENDED RANGE

- Switch-mode power supply (up to 160W without fan).
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Response time 10-100% load: <1ms.
- Overvoltage protection: 0…46,2V.
- Accuracy: <0,2%.
- Set value for current and voltage adjust one another, so maximum power is not exceeded.

Technical data: Laboratory Power Supply LINEAR

- Linear power supply with power factor control
- up to 150W without fan.
- Resolution of set - and actual value: 14Bit (16384pts).
- Resolution of measurement: 16Bit (65536pts).
- Ripple (at Ia = 50%): <1mVrms.
- Response time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protection: 100V.

Lab Power Supply EXTENDED RANGE 36 **A** . **LLL** **S** 03

A Channels		**LLL** Voltage & Current		**S** System	
1	1 Channel 42TE / 3HE	**406** 100W / 0 - 42V / 0 - 6A	**803** 100W / 0 - 84V / 0 - 3A	**7**	19“ Cassette
2	2 Channel 63TE / 3HE	**410** 160W / 0-42V / 0 - 10A	**805** 160W / 0 - 84V / 0 - 5A	**5**	19“ Module 7HE (only 1 Channel)
		420 320W / 0 - 40V / 0 - 20A		**8**	19“ Insertion

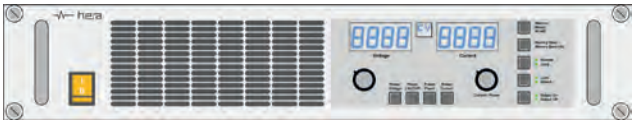
Lab Power Supply LINEAR 36 **A** . **LLL** **S** 03

A Channels		**LLL** Voltage & Current		**S** System	
1	1 Channel 42TE / 3HE	**302** 0 - 30V / 0 - 2A	**605** 0 - 60V / 0 - 5A	**1**	19“ Cassette
2	2 Channel 63TE / 3HE	**305** 0 - 30V / 0 - 5A	**610** 0 - 60V / 0 - 10A	**3**	19“ Module 7HE (only 1 Channel)
		310 0 - 30V / 0 - 10A	**320** 0 - 30V / 0 - 20A	**4**	19“ Insertion

19" HIGH PERFORMANCE LABORATORY POWER SUPPLY

- 19“ Insertion with microcontroller operated laboratory power supply.
- Power controlled output (the nominal values of current and voltage adjust each other, so the max. power of P= U x I does not exceed).
- Control and display selection with rotary switch, buttons for programming and matrix display for:
  - nominal value setting for U, I and P
  - nominal value setting for U, I and P
  - under- and overvoltage protection
  - control mode (CV, CC, CP)
  - error messages and menu settings.
- Memory function for five different nominal values.
- Rear side with analogue interface (control of current, voltage and power).
- Output on high-current jacks.
- Optionally upgrateable with interface cards (RS232, USB, LAN/ Ethernet, CANBus and PROFIBus).
- Depth: 460mm / 380mm (640W und 650W).

NOTE:
These power supplies need customized bench rack depth!



19“ High Performance Power Supply

19“ Output Panel for High Performance Power Supply 1HE

Technical details:

- Efficiency factor: 93%.
- Ripple: 10mV pp / 4mV rms.
- Power factor: > 0,99.
- Accuracy: < 0,2%.
- Voltage stability at 0 - 100% load: < 0,05%.
- Response time: 10 - 100% load: < 2ms.
- Dielectric strength: 2500V DC.

High Performance Laboratory Power Supply	
365.065.032	640W / 0-32V / 0-20A 2HE
365.065.065	650W / 0-65V / 0-10A 2HE
365.065.160	640W / 0-160V / 0-4A 2HE
365.100.080	1000W / 0-80V / 0-40A 2HE
365.150.040	1500W / 0-40V / 0-60A 2HE
365.150.080	1500W / 0-80V / 0-60A 2HE
365.150.360	1500W / 0-360V / 0-15A 2HE
365.300.040	3000W / 0-40V / 0-120A 2HE
365.300.080	3000W / 0-80V / 0-120A 2HE
365.300.160	3000W / 0-160V / 0-60A 2HE
365.300.360	3000W / 0-360V / 0-30A 2HE
365.300.720	3000W / 0-720V / 0-15A 2HE

Option Interface — 365.000. **II** 0

II Interface

10	CANBus-Interface	**13**	PROFIBus-Interface
11	LAN (Ethernet)-Interface	**14**	RS232-Interface
12	IEEE/ GPIB-Interface	**15**	USB-Interface

19" Output Panel for High Performance Power Supply — 365.000. **A** **I** 2 — 1HE

A Output Jacks

5	4x 4mm Safety Jacks (max. 32A) completely wired
6	2x 4mm Clamp Pole Sockets (max. 64A) + Sense
7	2x Toggle Clamp with 4mm Jack (max. 200A) + Sense

I Interface

0	no Interface
2	USB Socket with connecting cable
4	RS232 / Sub-D Socket (9poles) with connecting cable
6	LAN / RJ45 Socket CAT6 with Patch Cable

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19“ CASSETTE WITH **DIDACTIC SUPPLY**

The universal supply is suitable for basic tests with the hera training systems.

Symmetric DC Fixed Voltage +/- 15V/ 1A:

- Stabilized (+/- 5%), floating and shortcircuit proofed power supply with thermic fuse.
- LED mode indication.
- Output on 4mm safety jacks.

Variable Laboratory Power Supply 0…30V/ 1A:

- Inphase controlled, floating and shortcircuit proofed laboratory power supply.
- Voltage setting with potentiometer and LED mode indication.
- Ripple: < 1mV eff.
- Offset: < 0,05%.
- Output on 4mm safety jacks.
- OPTIONALLY with analogue voltage and current reading and current setting with potentiometer.

AC Low Votage 10V + 24V/ 100mA:

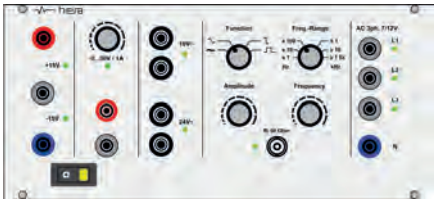
- Floating and shortcircuit proofed AC low voltage with thermic fuse.
- LED mode indication.
- Output on 4mm safety jacks.

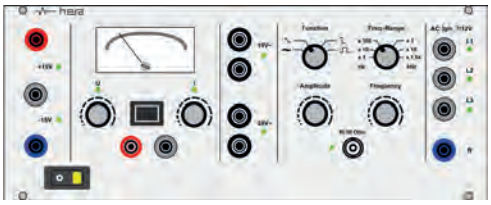
Function Generator 2Hz – 200kHz:

- Selector for signal forms: sinus, triangle, squared and positive pulse.
- Selector for frequency range: x1Hz, x10Hz, x100Hz, x1kHz, x10kHz and 1kHz fi.
- Potentiometer for stepless frequency adjustment.
- Potentiometer for a stepless adjustable amplitude of 0...20V ss.
- Output on BNC socket (Ri = 50Ω).

AC Source 7/12V max. 50mA:

- Electrically generated 3phase sinewave AC voltage 50Hz.
- LED mode indication with outer conductor (L1, L2, L3) with thermic fuse.
- Output on 4mm safety jacks.

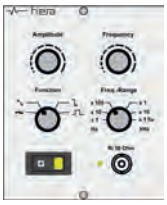




Didact Supply	
380.800.102	Didactic Supply 56TE
380.800.202	Didactic Supply with Reading 63TE

19“ CASSETTE **FUNCTION GENERATOR 200KHZ** COMPACT

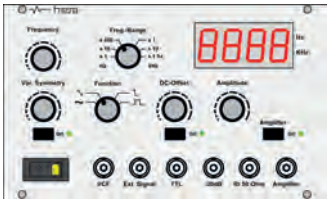
- Selector for signal forms: sine wave, triangle, squared and positive pulse.
- Selector for frequency range: x1Hz, x10Hz, x100 Hz, x1kHz, x10kHz and 1kHz fix.
- Potentiometer for stepless fine adjustment.
- Potentiometer for a stepless adjustable amplitude of 0…20V_{ss}.
- Output on BNC socket (Ri = 50Ω).

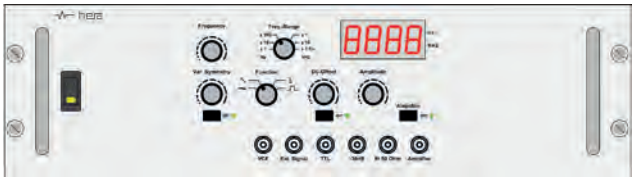


Function Generator 200kHz Compact	
380.820.102	19“ Cassette 21TE

19“ CASSETTE **FUNCTION GENERATOR** 1MHZ / POWER AMPLIFIER

- Frequency adjustment with multiturn potentiometer.
- 6 level selector for frequency range.
- Rotation switch for the selection of sinewave, triangle, squared and external signal.
- Variable symmetry with potentiometer of 20%...80%.
- Potentiometer for a stepless adjustable amplitude of 0...30V_{ss} (no load).
- DC-Offset between -10V...+10V adjustable.
- Frequency adjustment with external voltage input (VCF).
- Frequency reading with 4digit LED display.
- 5x BNC sockets with external signal input; TTL output, 30dB output, 50W output.





Option Power Amplifier:

- Switchable range of 0,1Hz...100kHz.
- 40W_{eff} continuous output with sinus at 5Ω.
- Shortcircuit proofed due to retracted current characteristic.
- Max. output voltage 40V_{ss}.

Function Generator 1MHz / Power Amplifier 100kHz	
371.653.102	Function Generator, no Power Amplifier 42TE
371.653.202	Function Generator, with Power Amplifier 42TE
371.653.002	Power Amplifier 28TE
372.653.202	Functon Generator with Power Amplifier 3HE

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19“ DDS **FUNCTION GENERATOR LC** WITH POWER AMPLIFIER

The DDS Wobble Function Generators offer a big choice of signals and can either be used as regular function generator, pulse generator or pulse generator and wobble emitter.

- 6digit LED display.
- Direct with keys or stepless setting.
- 16x signals e.g. sinus, square, triangle, ramp, neg./ pos. pulse.
- 10µHz frequency resolution.
- Total distortion: < 1%.
- Square signal: < 50ns rise -/ fall time.
- Amplitude: 0 - 20V_{pp} (resolution: 5mV_{pp}).
- Offset: +/- 10V.
- Modulation: FM, AM, PM, PWM, FSK.
- Modulation frequency: 40mHz - 20kHz.
- USB Interface.
- 10W power amplifier (PA).
- Safety: EN 61010-1; CAT II.

DDS Function Generator LC with Power Amplifier	
371.656.302: 3 MHz / 56TE	371.656.202: 20 MHz / 56TE
372.656.302: 3 MHz / 3HE	372.656.202: 20 MHz / 3HE

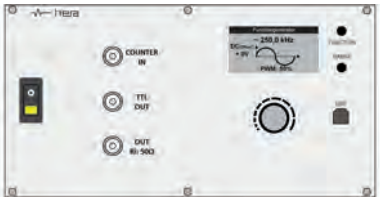
19“ 2-CHANNEL **FUNCTION GENERATOR ARBITRARY**

- Two channel function generator (arbitrary waveform generator) with frequency counter and USB interface. Easy menu navigation with graphic display.
- Sinewave, squared, pulse, ramp, 48 defined arbitrary output waves, freely definable arbitrary output waves, signal noise.
- 2 channels.
- Frequency range between 1µHz and 20MHz (sine), Distortion factor <0.2%.
- Frequency range square 1µHz - 5MHz, Rising time <20ns.
- Frequency range triangle 1µHz - 150kHz.
- Frequency range ARB 1µHz - 5MHz, resolution 1µHz.
- Waveform storage 4kpts.
- Impedance 50Ω.
- Sweep function 1ms - 500s.
- Internal modulation AM/ FM/ PM/ FSK.
- Amplitude: 2mV_{pp} to 10V_{pp} (channel 1)/ 2mV_{pp} to 3V_{pp} (channel 2).
- Integrated frequency counter (200MHz).
- USB interface for PC connection and memory on USB stick.
- Incl. LabView driver and operation software.

2-Channel Function Generator Arbitrary	
371.660.702	19“ Cassette 49TE
372.660.702	19“ Insertion 3HE

19“ **FUNCTION GENERATOR** ICOM

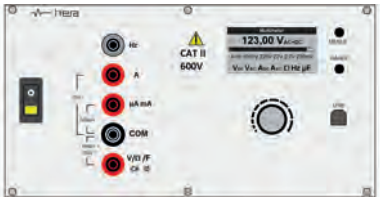
- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function for quick and precise settings of voltage and current.
- 3x BNC sockets ((COUNTER IN, TTL OUT and OUT R50Ω.
- Basic functions: sinus, triangle, square, saw tooth, pulse. DC voltage.
- Frequency range: 1mHz – 10MHz (sinus), 10Hz – 1MHz (other signals).
- Arbitrary: max. 4096pts.
- Other functions: PWM, TTL-OUT.
- Amplitude: $30V_{ss}$ (max. 1MHz) and $3V_{pp}$ at 10MHz.
- Resolution: 14 Bit.
- Duty cycle: 0,1 % … 99,9%.
- DC Offset: ± 10V.
- Frequency and event counter: max. 100MHz.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.



Function Generator ICOM	
371.830.102	19“ Cassette 49TE
372.830.102	19“ Insertion 2HE

19“ **DIGITAL MULTIMETER** ICOM

- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function and two extra buttons.
- 5x 4mm safety jacks (Hz, A, µA/mA, COM, V/Ohm/F/Diode/Continuity).
- Resolution: 4 3/4digit (50.000 Counts).
- Voltage DC: 10µV – 1000V.
- Voltage AC TrueRMS: 10µV – 700V.
- Current DC: 10nA – 20A .
- Current AC TrueRMS: 10nA – 20A.
- Front side operated fuse for µA/mA output.
- Resistance: max. 50MOhm.
- Frequency: 100µHz – 50MHz.
- Capacity: max. 50mF.
- Other functions: diode -, continuity test.
- Measuring range selection: manual and automatic.
- Measuring rate: 2,5 / 5 or 10 measurements /sec.
- Safety: EN 61010-1; CAT II 600V.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.



Digital Multimeter ICOM	
371.710.602	19“ Cassette 49TE
372.710.602	19“ Insertion 2HE

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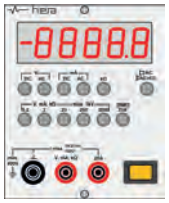
19“ DIGITAL **MULTIMETER LC**

- TrueRMS bench top multimeter with RS232 and USB interface and many measuring functions.
- Measuring range AC and DC Volt: 600mV…1000V.
  Measuring range AC and DC Ampere: 600µA…10A.
  Measuring range capacity: 6nF…6mF.
  Measuring range resistance: 600Ω…60MΩ.
  Measuring range temperature: -40°C…1000°C.
  Measuring range frequency: 6kHz…60MHz.
- Continuity tester: transistor and diode test.
- Background illuminated LCD display: 6000 digits.
- Automatic/ manual selector for measuring range.
- Min.-/ max.- and hold function.
- Safety class IEC 1010-1, CAT I, 1000 V/. CAT II 600 V.
- Incl. measuring leads, temperature probes and operation software.

Digital Multimeter LC	
371.711.602	19“ Insertion 3HE
372.711.602	19“ Cassette 49TE

19“ DIGITAL **MULTIMETER COMPACT**

- 4 1/2digit LED display with digit height of 13mm.
- Functions: Voltage AC and DC, current AC and DC and resistance.
- True root mean square measurement (TRMS).
- Range selector: manually with switch series.
- Sampling rate: ca. 2,5 measurings /sec.
- DC voltage: 200mV to 1000V in 5 ranges (resolution: max. 10µV).
- DC current: 200µA to 20A in 6 ranges (resolution: max. 10nA).
- AC voltage: 200mV to 1000V in 5 ranges (resolution: max. 10µV).
- AC current: 200µA to 20A in 6 ranges (resolution: max. 10nA).
- Resistance: 200Ω to 20MΩ in 5 ranges (resolution: max. 10mΩ).
- Connection on 4mm safety jacks.
- Illuminated switch, 2poles.



Digital Multimeter Compact	
372.710.402	19“ Cassette 21TE

19“ PRECISION **DIGITAL MULTIMETER USB**

- Dual display enables to simultaneously indicate two seperate measuring values.
- Resoution: 6 1/2 digits.
- 2-wire-/ 4-wire-resistance measurements.
- 5000 samplings/ sec. at 4 1/2 digits.
- Integrated functions: DC I, DC V, AC I, AC V, 2WO, 4WO, frequency, period, diode, continuity tester, limits, ratio, MX+B, %, dB, dBm, min./ max and zero.
- Different triggers.
- TrueRMS AC voltage and current measurement.
- USB interface.
- Input impedance frequency counter 10kΩ.

Precision Digital Multimeter USB	
371.711.402	19“ Cassette 56TE
372.711.402	19“ Insertion 3HE

19“ PRECISION **DIGITAL MULTIMETER LAN**

- 5 ¾digit display (480.000 dots).
- 3 simultaneous readings: e.g. DC + AC + statistic.
- Sampling rate up to 200 measurements/ sec.
- 0,015% accuracy (DC).
- 12 measuring functions: DCV, DCI, TrueRMS ACV and ACI, frequency, 2- and 4-wire-resistance, capacity, continuity, diode, temperature, power.
- Precise readability due to excellent TFT colour display.
- Resolution 1µV, 100nA, 1mΩ, 1pF, 1Hz, 0,1°C.
- True root mean square AC, AC+DC.
- Mathematical function: limit test, min./ max., average, offset, DC power, dB, dBm.
- Temperature measurement with platinum sensors (PT100/ PT500/ PT1000).
- Data logging in CSV format on internal memory or USB stick.
- Interface: USB and Ethernet.
- Incl. LabView driver and operation software.

Precision Digital Multimeter LAN	
371.702.202	19“ Cassette 56TE
372.702.202	19“ Insertion 3HE

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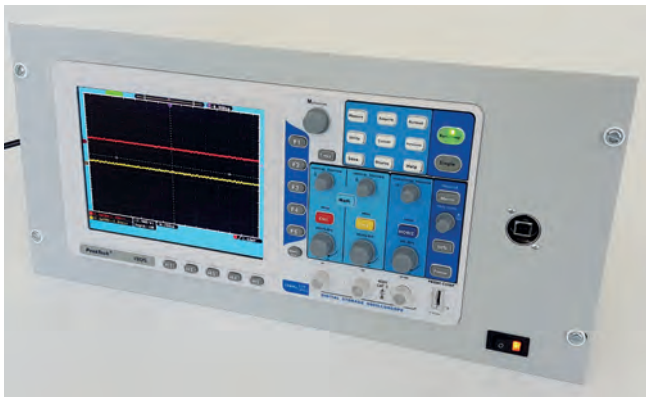
19“ 2-CHANNEL **DIGITAL STORAGE OSCILLOSCOPE**

Digital storage oscilloscopes with high resolution backlight color dispaly, high bandwidth and measuring rate, big internal data memory and USB interface. An integrated LAN port enables an easy integration into cooperate networks and the VGA output enables connection to external monitors or beamers for presentation purpose.

- 2 channels.
- 8“ TFT color display (800 x 600pcs.; 65536 colours).
- USB interface for a real time data transfer and the read out of internal memory.
- VGA output for the connection of external monitors.
- LAN port for operation in networks.
- Auto set - and auto scale function.
- Big internal memory for 15 wave forms.
- 20 automatic measuring modes and FFT function.
- PASS/FAIL function.
- Safety: EN 61010-1; CAT II.
- Accessory: 2pcs. BNC cables, PASS/FAIL adapter, USB cable, software-CD, power cord, 2 probes.

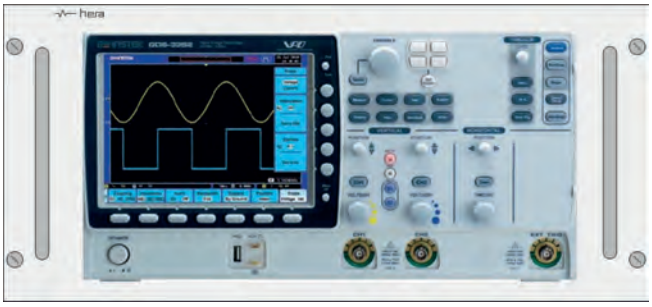
▸ **other oscilloscopes on demand**



Digital Storage Oscilloscope		5HE
338.101.030	30MHz	
338101.070	70MHz	
338.101.125	125MHz	

19" DIGITAL **STORAGE OSCILLOSCOPE GW INSTEK**

- Digital storage oscilloscope with many functions and excellent price-performance ratio. Flush in 19“ insertion integrated for the installation in bench racks. The oscilloscope comes with freely available software for data transmision and data logging on PC.
- 2- or 4-channels.
- 8“ TFT colour display.
- 2GSa/s real-time sampling rate.
- 2MPts memory depth.
- 36 automatic measurements.
- FFT analysis.
- 6 digit frequency counter.
- USB interface and frontside USB connector for memory stick.



Digital Storage Oscilloscope	
373.119.207	2-Channel / 70MHz
373.119.407	4-Channel / 70MHz
373.119.222	2-Channel / 200MHz
373.119.422	4-Channel / 200MHz

19" **CONSTANT CURRENT** SOURCE

- Selector switch for 4mA, 20mA and 0...50mA.
- Burden voltage: max. 30V.
- 10turn potentiometer for 0...50mA.
- LED digital display 3digits.
- Status-LED (burden allowed / not allowed).
- Output on safety jacks.
- Illuminated switch.

Constant Current Source	
369.050.402	19" Cassette 21TE

19" **CONSTANT VOLTAGE** SOURCE

- Selector switch for 1V, 10V und 0...30V.
- Short circuit current: 100 mA.
- 10turn potentiometer for 0...30V.
- LED digital display 3digits.
- Status-LED (burden allowed / not allowed).
- Output on safety jacks.
- Illuminated switch.

Constant Voltage Source	
369.050.202	19" Cassette 21TE

19" DIGITAL **THERMOMETER**

- Temperature device for PT100/PT1000 sensor according to DIN EN 60751.
- Devices in 3 wire technology with automatic line resistance compensation.
- Measuring current max. 1,5mA. Analogue output (not isolated) in mV/°C.
- Accuracy: ± 0,1% ± 1 D v. M.
- Measuring rate 2,5M/sec.
- 3 1/2digit LED display (12,5mm; red).
- Incl. rod-type sensor or surface sensor in 3 wire technology.

Digital Thermometer	
369.060.102	-100,0°C...+199,9°C 21TE
369.060.202	-200°C...+600°C 21TE

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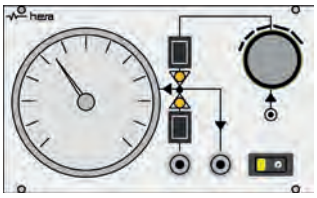
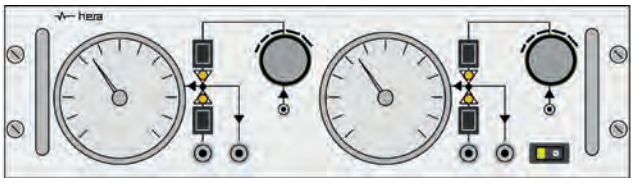
19“ **PRESSURE CALIBRATOR** ANALOGUE

- Precision pressure regulator.
- Selector switch from internal to external supply with two 3/2-magnetic valves and LED indication.
- Inlet and outlet with self-closing quick-release couplers 4/6mm.
- Analogue pressure gauge class 1,0.
- Illuminated switch.
- Completely hosed with open hose end 4/6.





Pressure Calibrator analogue	
389.001.102	Vacuum 42TE
389.102.102	0 - 2,5bar 42TE
389.106.102	0 - 6bar 42TE
389.110.102	0 - 10bar 42TE
389.110.302	0 - 2,5bar + 0 - 10bar 3HE

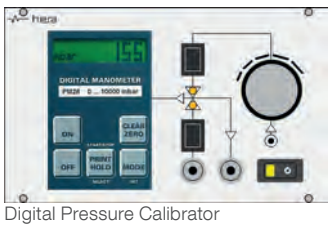
19" PRESSURE METER / **PRESSURE CALIBRATOR DIGITAL**

- Digital meter with integrated pressure sensor for the measurement of difference -, relative -, or absolute pressure.
- 3½digit LCD display.
- Piezoresistive pressure sensor.
- Measuring range HI, class 0.2% v.E.
- Measuring range LO, class 0.5% v.E.
- Inlet and outlet with self-closing quick-release couplers 4/6mm.

Digital Pressure Meter

Calibrator with:

- Precision pressure regulator.
- Selector switch for internal and external supply with two 3/2- magnetic valves and LED indication.
- Illuminated switch.
- Completely hosed with open hose end 4/6.



Digital Pressure Calibrator

Pressure Meter / Pressure Calibrator digital	
383.002.002	Pressure Meter 0 - 2000mbar 28TE
383.010.002	Pressure Meter 0 - 10bar 28TE
383.002.102	Pressure Calibrator 0 - 2000mbar 49TE
383.010.102	Pressure Calibrator 0 - 10bar 49TE

19“ INSERTION WITH **PROCESS CALIBRATOR**

The process calibrator is for high precision and justage of universal pressure meters: analogue manometers, pressure transducers, digital manometers, pressure switches, etc.

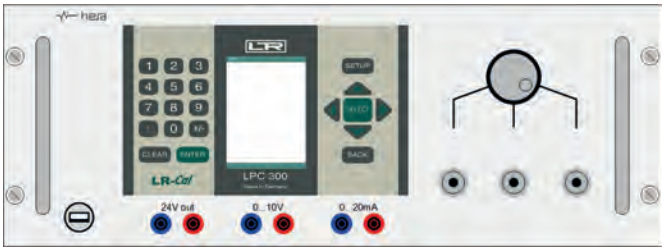
The integrated precision reference is exchangable, so that more measuring - and testing ranges could be realized with just one instrument.

The pressure calibrator measures pressure, current and voltage and supplies an auxiliary voltage of 24V DC.
The device is with USB interface.

- Selector switch for max. three reference sensors in the range of 0...250mbar and 0...8.000bar.
- Optional exchangable reference sensors (accuracy ±0,025% v.E.).
- All common pressure units (one customer defined).
- Relative pressure, absolute pressure, negative pressure, compound rages.
- Voltage measurement: 0-1V, 0-2V, 0-5V, 0-10V. Resolution 0,1 mV, accuracy ±0,5 mV, incl. calibration certificate.
- Current measurement: 0-20 mA, 4-20 mA Resolution 1 µA, accuracy ±1,6 µA, incl. calibration certificate.
- Conversion of pressure to current or voltage.
- Conversion of current or voltage to pressure.
- Logging of calibration data (integrated real time clock).
- Function for pressure switch test (swiching point adjustment).
- Operator panel with text menu with language selection (English, German, French, Italian and Spanish).
- Big colour display, background illuminated.
- Output for auxiliary voltage supply 24VDC for pressure transducer.
- USB Interface.
- Calibration certificates for pressure -, current - and voltage measurement, with reference to national standards.

The **PC-Calibration Software** enables an easy and comfortable generation of calibration certificates.

Layout and data content or data processing could be modified and configurated with all MS-Excel provided possibilities.



Process Calibrator	
384.100.002	19“ Insertion Process Calibrator, no Sensor 4HE
384.100.100	Option PC-Calibration Software

Reference Sensor (Measuring Range / Pressure Unit / Overload)	
384.000.010	0...1bar / relative or absolute / 5bar
384.000.060	0...6bar / relative or absolute / 35bar
384.000.100	0...10bar / relative or absolute / 35bar
384.000.160	0...16bar / relative or absolute / 80bar
384.000.400	0...40bar / relative / 80bar
384.001.000	0...100bar / relative / 200bar
384.002.500	0...250bar / relative / 500bar
384.010.015	-1...+1,5bar / relative / 10bar

MANUAL **PRESSURE PUMP**

- Handheld device for the precise generation of pressure.
- Manual pressure pump 40 and 60bar with selector switch for vacuum.
- Great temperature stability due to highly insulated pump housing.

Manual Pressure Pump	
390.000.700	Vacuum -800mbar
390.005.000	0 ... 7bar
390.040.000	-0,95 ... 40bar
390.060.000	-0,95 ... 60bar

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19“ **ELECTRICAL APPLIANCE TESTER** ANALOGUE

- Module for tests according to DIN VDE 0701 - 0702. and repeated tests according to BGV A3.
- Comfortable operation with membrane keys.
- Single step tests or automatic test procedure.
- Optical identification of the actual tests.
- No manual polarity reversal of the mains plug according to DIN VDE 0701 – 0702 necessary.
- PE resistance test 0...100mΩ, Testing current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Testing voltage 500V DC.
- Leakage current test 0...18mA, Testing voltage 40V AC.
- Analogue display, key pad and testing socket.
- Automatic mode with a procedure of all three tests in a row.

Electrical Appliance Tester analogue	
377.002.802	19“ Insertion 4HE

19“ **ELECTRICAL APPLIANCE TESTER** DIGITAL

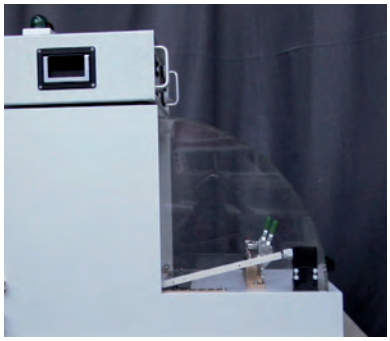
- Module for tests according to DIN VDE 0701 - 0702. and repeated tests according to BGV A3 and DIN EN 62353.
- Easy menu navigation with LCD display.
- Single step tests or automatic test procedure.
- Manual or automatic setting of limiting value.
- Remote controllable from PC due to USB interface.
- Exporting function for test files in Excel or other data files. Import function for customer and test item data.
- RS232C interface for barcode scanner.
- Selective data logging of test protocol from repeating tests by reading in barcodes, customer details, date or test instrument number.
- Automatic data assignation from data memory to the newly measured values for repeating tests when reading in the barcode.
- Automatic set-up of the test procedure by barcode.
- PE resistance test 0...100mΩ, Measuring current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Testing voltage 500V DC.
- Leakage currrent test 0...18mA, Testing voltage 40V AC.
- Digital display, key pad and testing socket.
- Automatic mode with a procedure of all three tests in a row.

Electric Appliance Tester digital	
377.002.902	19“ Insertion 4HE

TEST HOOD

- Dimensions: 530 x 900 x 660mm (WxDxH).
- Lower side with plastic base and sufficient room for test item adaptor.
- Pivoting semi-circular test hood made of perspex with handle and safety switch.
- Rear and sides made of plastics.

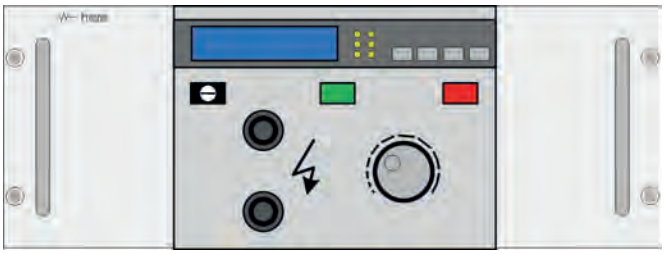
Test Hood	
377.050.100	pcs.



19" **HIGH VOLTAGE TESTER**

- Test voltage: 0…6000V manual stepless adjustable HV-resolution: 10V_{eff} HV.
- Voltage indication: digital root mean square indication (TRMS).
- HV testing current: I_{max} = 100mA | Ik>200mA (according VDE- / IEC regulation).
- Total current: digital root mean square indication (TRMS) resolution: 0,1mA.
- HV limiting current evaluation: HV-I min/max-comparator : 0,1…100mA - variable programmable, report if the limiting current is exceeded.
- HV response time: < 30ms.
- HV nominal power: >500VA (nach VDE-/ IEC regulation) from approx. 500V.
- HV mode selection: manual / automatic / burn.
- HV activation: in mains voltage zero-crossing.
- Protection: key switch, external protective contact and emergency stop.
- Microprocessor controlled with HIGH-TEC processor of latest technology.
- Display: illuminated, high-contrast, 2-line 16digit alphanumeric display.
- Signal: optic and accoustic failure messages.
- CE conform: according to EN50191.

High Voltage Tester	
377.010.102	High Voltage Tester 4HE



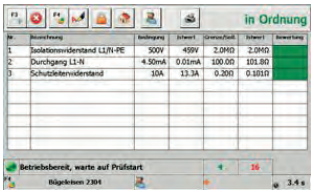
19" **UNIVERSAL TESTER**

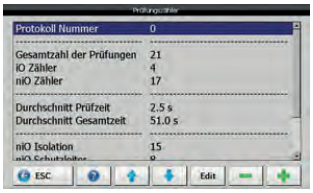
Universal Tester for all Safety Tests:

- Protective conductor resistance 1…30A AC/ 6V or 12V.
- Insolation resistance 30...1000V.
- High Voltage 0...6000VAC/ 100mA/ 500VA.

Technical details:

- Illuminated TFT display with touch screen.
- Data base for approx. 10000 test proceedings and test results.
- 8 Gbyte memory.
- LAN -, 4x USB - and CAN-Bus Interface.
- 3x serial RS232-9poles SUB-D.
- Warning and result lamp.
- Input for external protective input and emergency stop.
- Digital in- and output (24V DC) for external operation e.g. PLC controlled.
- 4x Inputs for variable use (e.g. external digital program selection).
- Software language selectable of DE, UK, IT and SP.
- Accoustic signal for failure message.
- Depth with rear side connector: 350mm + approx. max. 60mm for industrial plug.





Universal Tester	
377.030.100	Universal Tester 4HE

Accessory for Universal Tester	
377.039.100	Protective Conductor Probe (1...30Amp-2,5m) + Starter
377.039.150	PE Connecting Cable with PE Crocodile Clamp
377.039.200	Safety Test Gun separately 10kVDC / 8kVAC (2m)
377.039.300	Warning Signal Lamp, standing
377.039.350	Result Signal Lamp, standing
377.039.400	Foot Switch for Test Voltage On/Off (2m cable)

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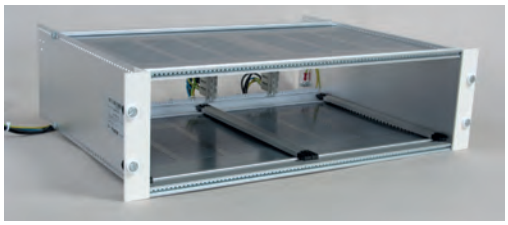
19" SUB RACK FOR 19“ CASSETTES

- 19“ sub rack for 3HE cassettes in euro raster and 3HE front panels in multiplier raster of 5,08mm (DIN 41494).
- Right and left with fixing brackets for the integration into 19“ racks (light grey powder coated).
- Incl. guiding rails and H15 connector.
- Completely wired with 3phase wire harness and terminal block.
- Depth: 290mm.



19" Sub Rack for 19" Cassettes	
341.003.302	84TE / 3HE

19" SUB RACK FOR EP/MP MODULES

- 19“ sub rack for the integration of 3HE panels in EP raster or 5HE panels in MP raster.
- Right and left with compensating panels and fixing bracket for the 19“ bench rack (light grey powder coated).

19“ Sub Rack for EP/MP Modules	
341.003.102	1,5EP (3HE)
341.005.102	3MP (5HE)

19" SUB RACK FOR LS2000 INSERTIONS

- 19“ sub rack for the integration of LS2000 2x single - or 1x double insertion.
- Right and left with fixing brackets for the 19“ bench rack (light grey powder coated).
- Incl. guiding rails and connectors.
- Completely wired with 3phase wire harness and terminal block.

19" Sub Rack for LS2000 Insertions	
341.007.302	7HE

PROFI 19" **SHELF UNIT**

- For bench racks with tilted front.
- The shelf units are made as insertions for the 19“ bench racks of the PROFI system.
- Equipped with one height adjustable shelf board.
- Colour: light grey.

PROFI 19“ Shelf Rack		7HE
341.008.002	Standard	
341.008.502	ESD	

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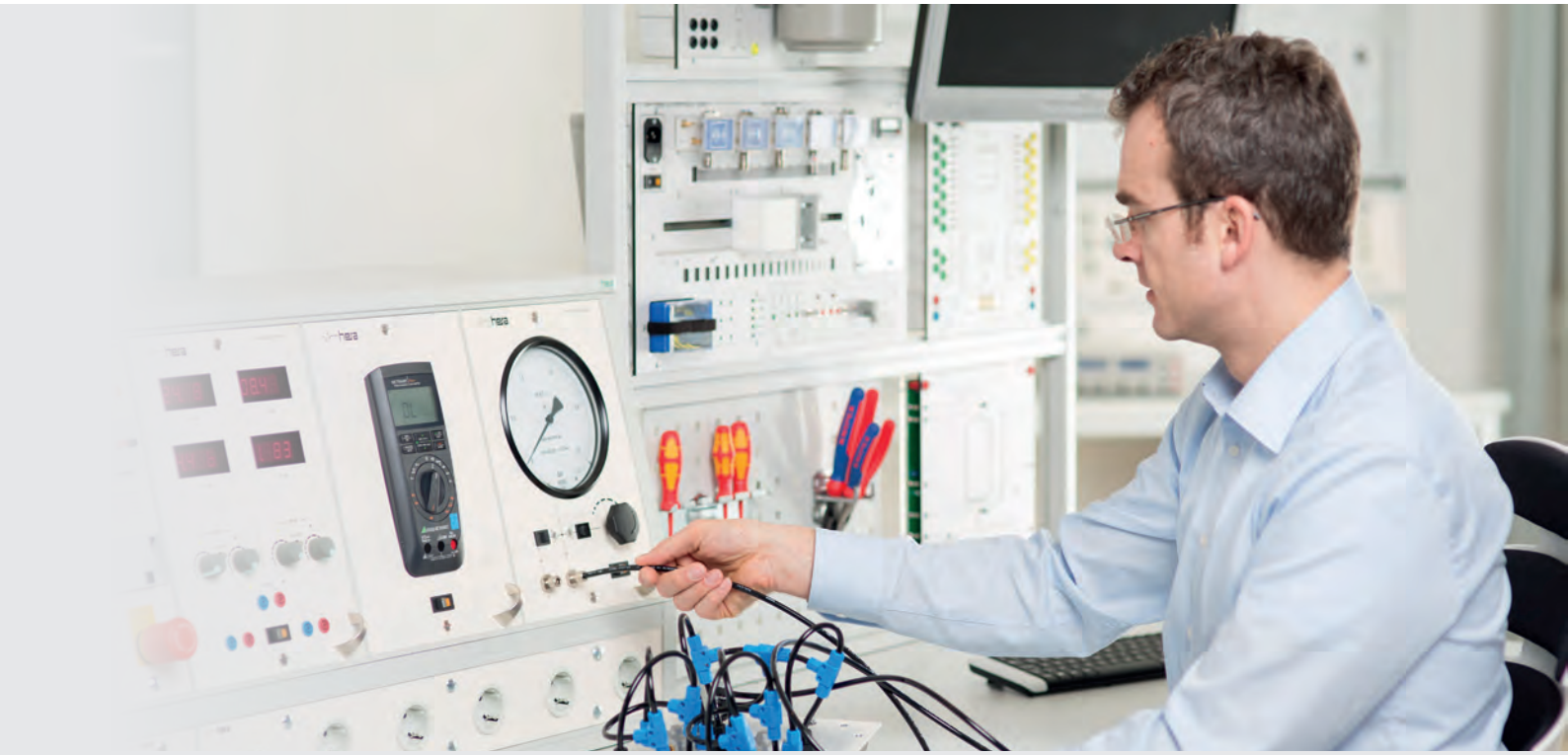
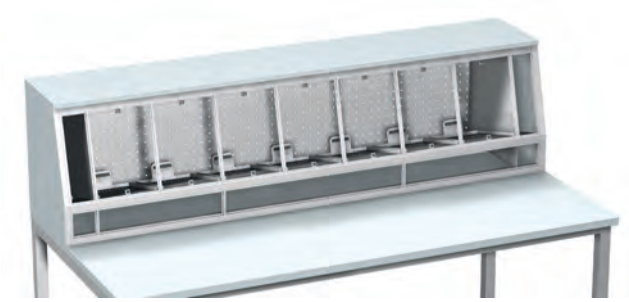


CHAPTER 12: **LS2000 BENCH RACK WITH LS2000 PANELS**

410 Standard Bench Rack
413 Bridge Bench Rack
415 Carrying Case, Power Cord, Top Mount Socket
416 Blank Panel / Blank Plug-in Unit
418 Mains Panel; Panel with Emergency Stop
419 Socket Panel
420 Socket Panel with Isoltated Transformer
421 Socket Panel with Emergency Stop or Safety Jacks
422 Socket Panel with CEE and Safety Jacks
423 Measuring Unit with analogue Readings or MFA
424 Continuity Tester
425 Soldering Station and Soldering Fume Extraction
426 Soldering / Desoldering Station
427 R-Decade or R- and C-Decade
428 Variable AC Source, 1phase
430 Variable AC Source, 3phase
432 Motor Tester with Variac
434 Sinus Frequency Converter
435 Fixed DC Voltage and DC High-Current Power Supply
436 Laboratory Power Supply (Extended Range and Linear)
437 Function Generator
439 Multimeter, Calibrators and LCR Meter
440 Digital Multimeter Compact and Oscilloscope
441 Electrical Appliance Tester analogue/ digital
442 Pneumatic Supply/ Pressure Calibrator
443 Pressure Calibrator with Electrical Standard Signals
444 Load Resistance and Test Speakers

LS2000 **STANDARD BENCH RACK**

- Body with tilted front made of 19mm thick melamine resin covered chipboard.
- The integrated tilted aluminium frame is for LS2000 plug-in units (LE) and vertical modules (NE). The plug-in units are automatically contacted when slided in and have a convenient quick fastening system.
- Lower side with aluminium frame for the acceptance of horizontal panels (WE) in size 1, 2, 3 and 4.
- 3phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (powder coated) with two cable glands.
- Depth: 300mm / 385mm, height: 468mm.



LS2000 Standard Bench Rack **211.BBB.F00**

BBB Width

036	360mm / 1xNE + 1xLE + WE (size 2)	**126**	1260mm / 1xNE + 5xLE + 2xWE (size 3+4)
058	580mm / 1xNE + 2xLE + WE (size 3)	**148**	1485mm / 1xNE + 6xLE + 3xWE (size 1+2x size 4)
081	810mm / 1xNE + 3xLE + 2xWE (size 1+4)	**180**	1800mm / 2xNE + 7xLE + 3xWE (2x size 3+ size 4)
103	1030mm / 1xNE + 4xLE + 2xWE (size 2+4)	**200**	2000mm / 1xNE + 8xLE + 3xWE (3xsize 1+2x size 4)

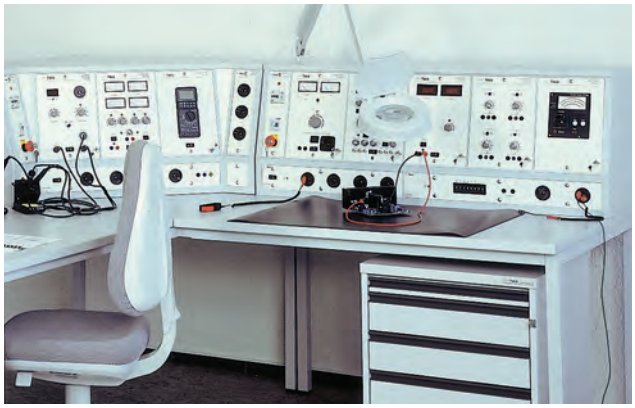
Corner Version:

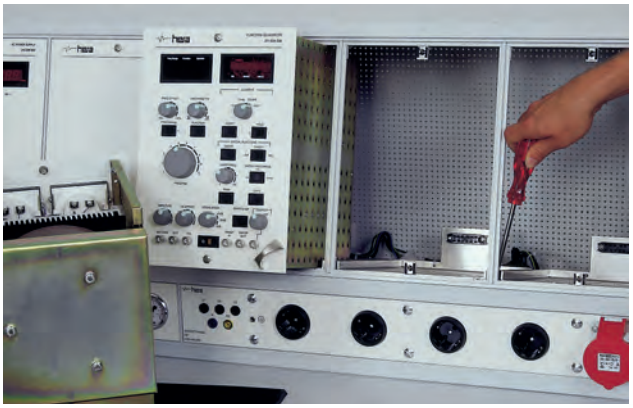
212.100.F00 Corner 1000 x 1000 / 2xNE + 3xLE + 2xWE (size 2+4)

F Colour

1	orange
5	light grey
9	RAL XY

W: 360mm W: 580mm W: 810mm W: 1030mm W: 1260mm W: 1485mm W: 1800mm W: 2000mm Corner: 1000x1000mm





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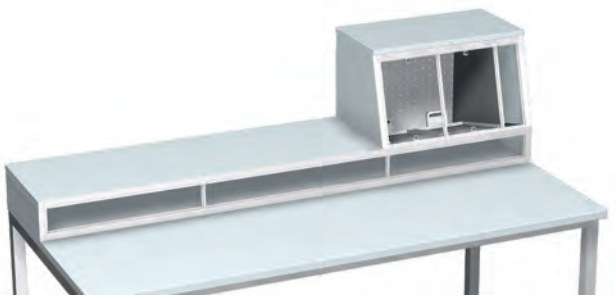
LS2000 BENCH RACK WITH **ENERGY BOARD**

- Equipment energy board 2xWE size 3 + 1xWE size 4.
- Width: 1800mm; depth: 300/385mm; height: 134/468mm.

LS2000 Bench Rack with Energy Board 221.0 BB . F 00

BB Width		F Colour	
58	1xNE + 2xLE left	1	orange
59	1xNE + 2xLE right	5	light grey
81	1xNE + 3xLE left	9	RAL XY
82	1xNE + 3xLE right		



see page 410 for technical details

1xNE + 2xLE left

1xNE + 2xLE right

1xNE + 3xLE left

1xNE + 3xLE right

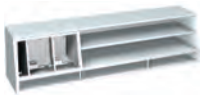
LS2000 **BENCH RACK WITH SHELF**

- Equipment energy board 2xWE size 3 + 1xWE size 4.
- Width: 1800mm; depth: 300mm/385mm; height: 468mm

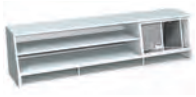
LS2000 Bench Rack with Shelf 222.BBB . F 00

BBB Width		F Colour	
058	1xNE + 2xLE left	1	orange
059	1xNE + 2xLE right	5	light grey
081	1xNE + 3xLE left	9	RAL XY
082	1xNE + 3xLE right		
126	1xNE + 5xLE left		
127	1xNE + 5xLE right		

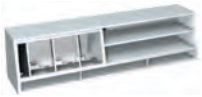
see page 410 for technical details



1xNE + 2xLE left



1xNE + 2xLE left



1xNE + 3xLE left

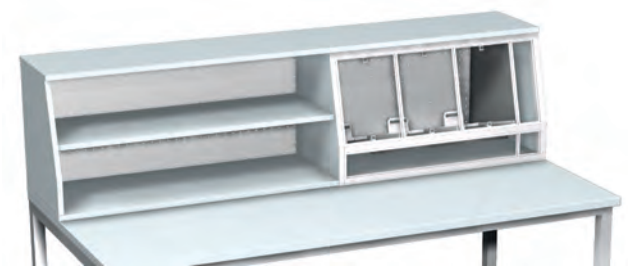
1xNE + 3xLE right

1xNE + 5xLE left

1xNE + 5xLE left

LS2000 BENCH RACK **WITH END SHELF**

- Width: 1800mm; depth: 300/385mm; height: 468mm.



see page 410 for technical details

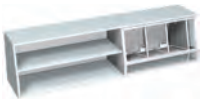
LS2000 Bench Rack with End Shelf	223. BBB. F 00

BBB Width		F Colour	
058	1x NE + 2x LE + 1x WE (size 3 left)	1	orange
059	1x NE + 2x LE + 1x WE (size 3 right)	5	light grey
081	1x NE + 2x LE + 1x WE (size 4 left)	9	RAL XY
082	1x NE + 2x LE + 1x WE (size 4 right)		
126	1x NE + 2x LE + 2x WE (size 3 + 4 left)		
127	1x NE + 2x LE + 2x WE (size 3 + 4 right)		

1x NE + 2x LE left

1x NE + 2x LE right

1x NE + 3x LE left



1x NE + 3x LE right

1x NE + 5x LE left

1x NE + 5x LE right

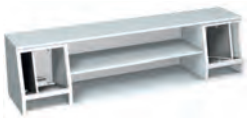
LS2000 BENCH RACK **WITH MIDDLE SHELF**

- Width: 1800mm; depth: 300/385mm; height: 468mm.

see page 410 for technical details

LS2000 Bench Rack with Middle Shelf	224.0 BB. F 00

BB Width		F Colour	
36	2x NE + 2x LE + 2x WE (2x size 2)	1	orange
58	2x NE + 4x LE + 2x WE (2x size 3)	5	light grey
		9	RAL XY



2x NE + 2x LE

2x NE + 4x LE

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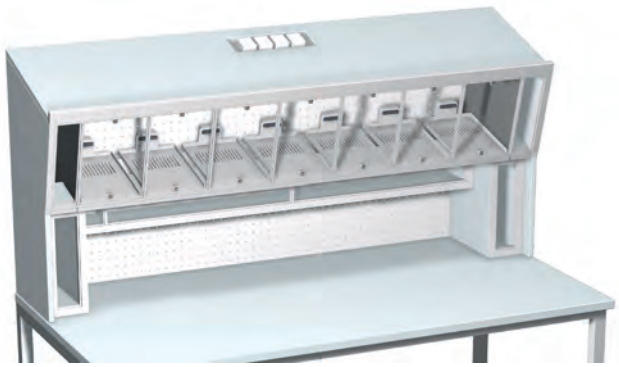
LS2000 **BRIDGE BENCH RACK**

- Body with tilted front made of 19mm melamine resin covered chipboard.
- 15° to the front tilted top, usable as shelf and 4 top mount Schuko sockets with flap.
- Tilted integrated aluminium frame for the acceptance of LS2000 plug-in units (LE), vertical modules (NE) and horizontal panels (WE). The plug-in units are automatically contacted with insertion and have a convenient quick fastening system.
- 3phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (powder coated) with two cable glands.



LS2000 Bridge Bench Rack 229.1 **BB**. **F** 0 **E**

BB Width		**F** Colour		**E** Type	
126	1260mm / 3x NE + 5x LE	**1**	orange	**0**	with Energy Board
148	1485mm / 3x NE + 6x LE	**5**	lichtgrau		(only for width 1485mm and 1800mm)
180	1800mm / 4x NE + 7x LE	**9**	RAL XY	**1**	no Energy Board
Corner Version:					
500	Corner 1000 x 1000 / 3x LE				

3x NE + 5x LE

3x NE + 6x LE
+ WE 2x size 3

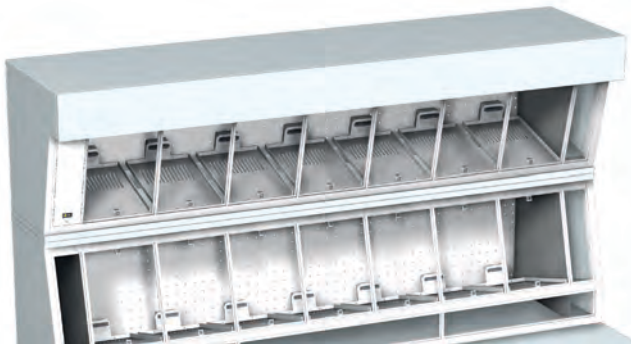
4x NE + 7x LE

4x NE + 7x LE
+ WE 1x size 1 + 2x size 4

3x LE

LS2000 UPPER ATTACHMENT **UNIT WITH LAMP**

- Body with tilted front made of 19mm thick melamine resin covered chipboard.
- Top with integrated lamp behind paneled front (fluorescent lamp 36W). Switch integrated in mains module.
- The integrated tilted aluminium frame is for LS2000 plug-in units (LE) and vertical modules (NE). All plug-in units are automatically contacted with insertion and have a convenient quick fastening system.
- Lower side with aluminium frame for the acceptance of horizontal panels (WE) in size 1, 2, 3 and 4.
- 3phase central wire harness for the plug-in units and terminal block.
- Detachable perforated sheet steel rear panel (powder coated) with two cable glands.
- Depth: 500/ 385/ 300mm; height: 470mm.



LS2000 Upper Attachment Unit with Lamp **228.BBB.F00**

BBB Width

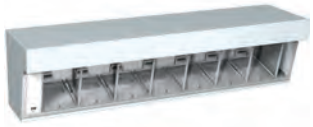
126	1260mm / 5x LE
148	1485mm / 6x LE
180	1800mm / 1x NE + 7x LE
200	2000mm / 8x LE

F Colour

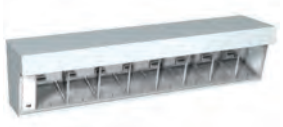
1	orange
5	light grey
9	RAL XY

5x LE

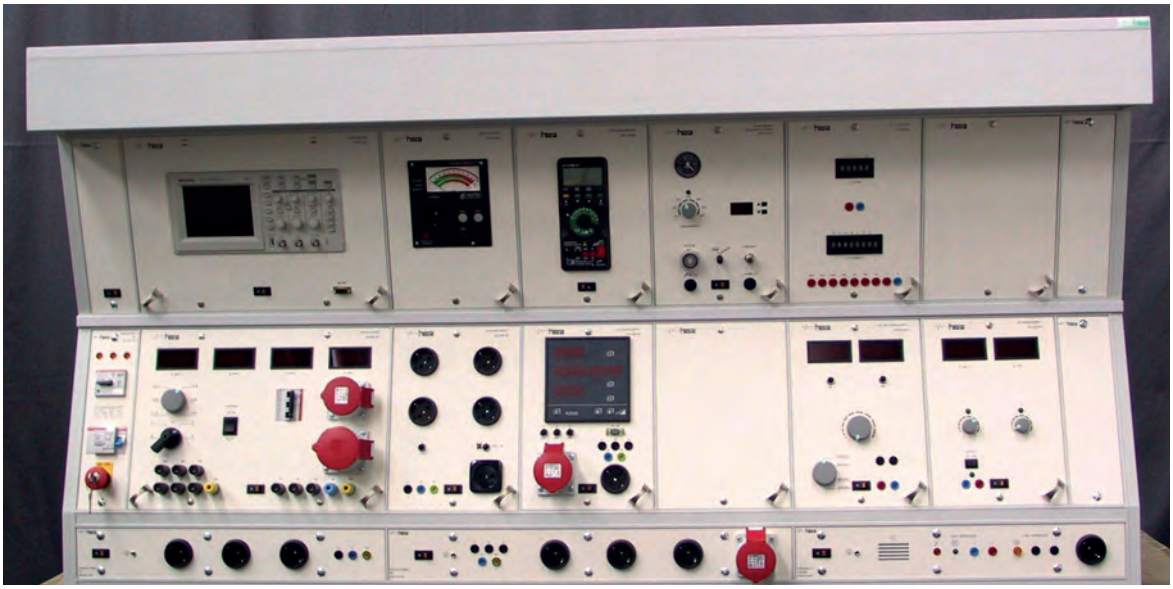
6x LE



1x NE + 7x LE



8x LE



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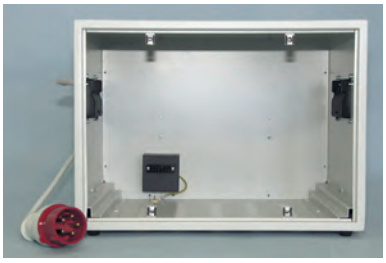
CARRYING CASE FOR LS2000

- Sheet steel housing with durable light grey powder coating, carrying handle.
- With LS2000 quick fastening system, guiding rails and rear side terminal block.
- Power cord with 1phase or 3phase plug.
- Dimensions: 340 x 340mm (HxD).

Carrying Case for LS2000	
294.001.100	LE (W: 248mm)
294.001.200	Double-LE (W: 473)



POWER CORDS

Power Cords	
291.001.100	5m (3x1,5mm²) with open ends
291.001.150	5m (5x2,5mm²) with open ends
291.001.200	3m (3x1,5mm²) with angled Schuko plug
291.001.250	5m (3x1,5mm²) with angled Schuko plug
291.001.300	5m (5x2,5mm²) with CEE plug 16A red
291.001.350	5m (5x6mm²) with CEE plug 32A red
291.001.400	5m (3x1,5mm²) with CEE plug 3pole blue
291.001.500	5m Emergency Off Cable (2x1,5mm²), open ends
291.001.550	5m Emergency Off Cable (2x1,5mm²), open ends
291.001.603	3m Patch Cable grey with 2x RJ45 plug CAT 6
291.001.605	5m Patch Cable grey with 2x RJ45 plug CAT 6
291.001.610	10m Patch Cable grey with 2x RJ45 plug CAT 6

flexible plastic cable with plug, ready for operation

TOPMOUNT SOCKET WITH FLAP

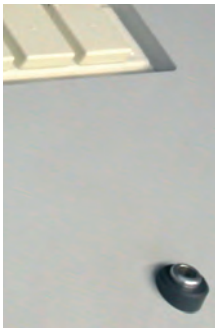
- Schuko sockets with flap, white. Flush integrated into the top of the bench rack and connected to the central wire harness of the bench rack.

Topmount Socket with Flap	
291.006.201	2x Schuko with Flap
291.006.401	4x Schuko with Flap

LAMP ADAPTER

- Plastic sleeve, flush integrated into the top of the bench rack for acceptance of a lamp with arm.
- Inner diameter: 13mm.

Lamp Adapter	
291.003.100	for LS2000 Standard Bench Rack
291.003.150	for LS2000 Bridge Bench Rack



LS2000 **BLANK PANEL**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- NE = vertical module H: 85 x 310mm (WxH).
- WE = horizontal module H: 85mm
  size 1 = W: 85mm
  size 2 = W: 310mm
  size 3 = W: 535mm
  size 4 = W: 670mm
- LE = LS2000 plug-in unit 219 x 310mm (WxH) or double plug-in unit 444 x 310mm (WxH).

Blank Panel	
233.100.100	WE size 1
233.200.100	WE size 2
233.300.100	WE size 3
233.400.100	WE size 4
231.000.100	NE
241.000.100	LE
241.000.300	Double-LE

1LE

1NE

2WE

1WE

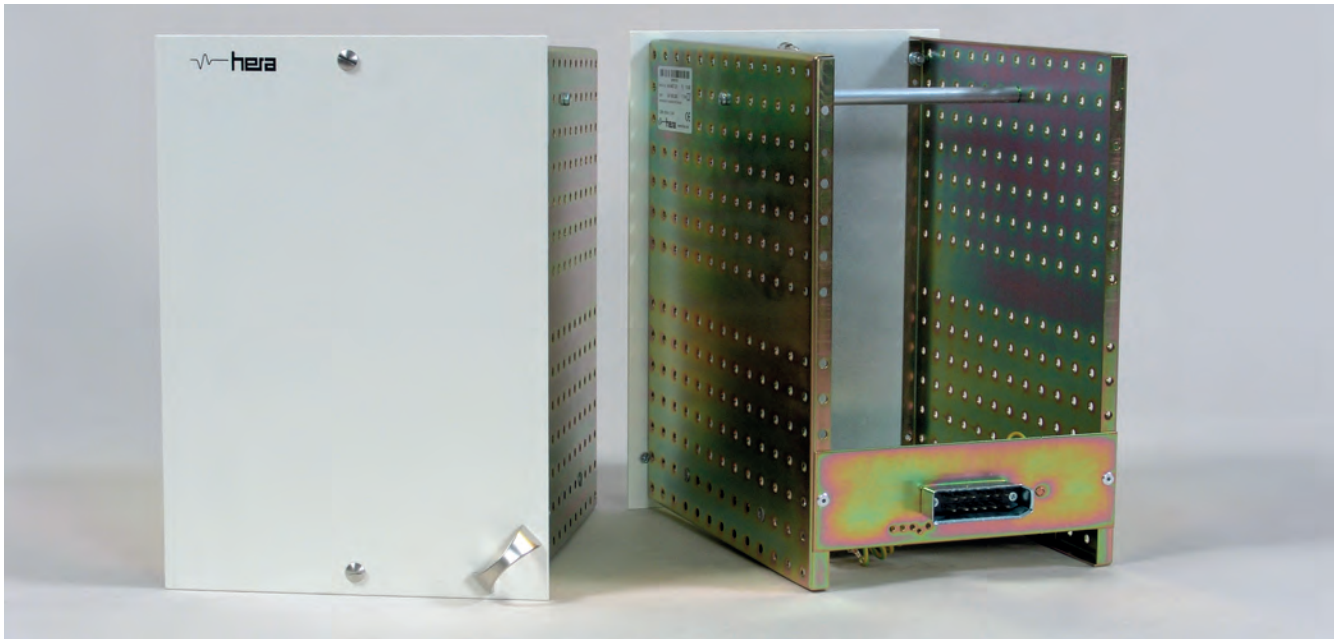
3WE

4WE

LS2000 **BLANK PLUG-IN UNIT**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing, metal handle and fixing bolts.
- Chassis made of perforated side panels and lower mounting plate.
- Rear panel with 12poles connector.
- Depth: 260mm.

Blank Plug-In Unit	
241.000.200	LE
241.000.400	Double-LE



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YOU WON'T MISS A THING!

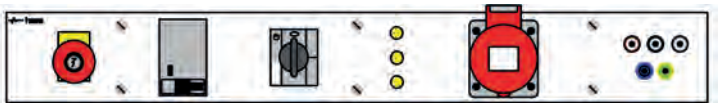
For the classic LS2000 we offer the complete range of electrics, either as regular plug-in unit in DIN-A4 size or as double plug-in unit in DIN-A3 size. LS2000 offers sufficient room especially for voluminous devices like pressure calibrators, etc.

LS2000 **MAINS PANEL**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Voltage control lamps.
- Motor circuit breaker 16A with undervoltage release.
- Residual current device (RCD) 25A / 30mA.
- Type A or sensitive to all currents type B (recommended for training facilities with experimental equipment according to VDE 0100-723).
- Emergency stop button with opener contact, either with rotation release or with key release.

LS2000 Mains Panel NE	
231.062.100	1phase, RCD Type A, with Key Release
231.062.102	1phase, RCD Type A, with Rotation Release
231.062.103	1phase, RCD Type B, with Rotation Release
231.062.104	1phase, RCD Type B, with Key Release
231.072.100	3phase, RCD Type A, with Key Release
231.072.102	3phase, RCD Type A, with Rotation Release
231.072.103	3phase, RCD Type B, with Rotation Release
231.072.104	3phase, RCD Type B, with Key Release

LS2000 Mains Panel WE	size 3, 1phase	size 3, 3phase	size 4, 1phase	size 4, 3phase
RCD Type A, with Key Release	232.362.101	232.312.400	232.462.101	232.412.400
RCD Type A, with Rotation Release	232.362.102	232.312.402	232.462.102	232.412.402
RCD Type B, with Key Release	232.362.103	232.312.403	232.462.103	232.412.403
RCD Type B, with Rotation Release	232.362.104	232.312.404	232.462.104	232.412.404



LS2000 PANEL WITH **EMERGENCY STOP BUTTON**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Unwired emergency stop button with opener contact for the connection to the inhouse emergency stop loop.

Panel with Emergency Stop Button	
231.006.300	NE
233.106.300	WE size 1

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LS2000 **SOCKET PANEL**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Schuko sockets, grey in 45° position.
- International sockets on demand!

Socket Panel WE	
233.220.101	size 2 / 3x Schuko
233.320.101	size 3 / 5x Schuko
233.420.101	size 4 / 6x Schuko

LS2000 SOCKET PANEL **WITH SWITCH**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Schuko sockets, grey in 45° position.
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!

Socket Panel with Switch	
231.221.101	NE / 3x Schuko
233.221.101	WE size 2 / 2x Schuko
233.321.101	WE size 3 / 4x Schuko
233.421.101	WE size 4 / 5x Schuko

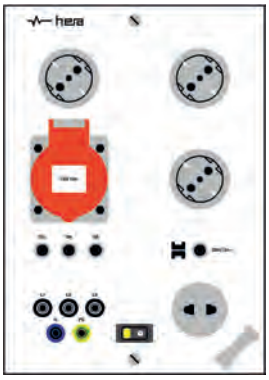
LS2000 SOCKET PANEL WITH **ISOLATED TRANSFORMER**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silkscreen printing and fixing bolts.
- Toroidal core transformer 700VA for the supply of floating AC voltage 230V / 3A. Protected by a front side operated thermomagnetic fuse.
- Output on universal socket (Schuko, Franco-American) without earth contact.
- Schuko sockets, grey in 45° position.
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!

Socket Panel with Isolated Transformer	
231.221.301	NE / 2x Schuko
233.321.301	WE size 3 / 3x Schuko
233.421.301	WE size 4 / 4x Schuko

LS2000 PLUG-IN UNIT WITH SOCKETS AND **ISOLATED TRANSFORMER**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Toroidal core transformer 700VA for the supply of floating AC voltage 230V / 3A. Protected by a front side operated thermomagnetic fuse.
- Output on universal socket (Schuko, Franco-American) without earth contact.
- Schuko sockets, grey in 45° position.
- 4mm safety jacks.
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!



Plug-In Unit with Socket and Isolated Transformer	
241.229.101	LE / 1phase
241.389.301	LE / 3phase with CEE socket

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LS2000 SOCKET PANEL **WITH EMERGENCY STOP BUTTON**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- Unwired emergency stop button with opener contact , for the connection to the inhouse emergency stop loop.
- Schuko sockets, grey in 45° position.
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!

Socket Panel with Emergency Stop Button	
231.221.401	NE / 2x Schuko
233.321.401	WE size 3 / 3x Schuko
233.421.401	WE size 4 / 4x Schuko

LS2000 SOCKET PANEL **WITH SAFETY JACKS**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- 3x 4mm safety jacks (L, N and PE).
- Schuko sockets, grey in 45° position.
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!

Socket Panel with Safety Jacks	
233.321.501	WE size 3 / 3x Schuko
233.421.501	WE size 4 / 4x Schuko

LS2000 SOCKET PANEL **WITH CEE SOCKET, SAFETY JACKS AND SWITCH**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- CEE socket, straight 400V /16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- Illuminated switch, 2poles for central on/ off.
- International sockets on demand!

Socket Panel with CEE Socket, Safety Jacks and Switch	
233.341.401	WE size 3 / 2x Schuko
233.441.401	WE size 4 / 3x Schuko

LS2000 SOCKET PANEL **WITH CEE SOCKET AND SAFETY JACKS**

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N and PE).
- Schuko sockets, grey in 45° position.
- International sockets on demand!

Socket Panel with CEE Socket and Safety Jacks	
231.240.401	NE / 1x Schuko
233.340.401	WE size 3 / 3x Schuko
233.440.401	WE size 4 / 4x Schuko

LS2000 SOCKET PANEL **3PHASE WITH CEE SOCKET** AND SWITCH

- Aluminium front panel, creme white powder coated with abrasion proofed and chemically resistant silk-screen printing and fixing bolts.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- Schuko sockets, grey in 45° position.
- Illuminated switch, 2poles and contactor.
- International sockets on demand!

Socket Panel 3phase with CEE Socket and Switch	
233.341.201	WE size 3 / 3x Schuko
233.441.201	WE size 4 / 4x Schuko

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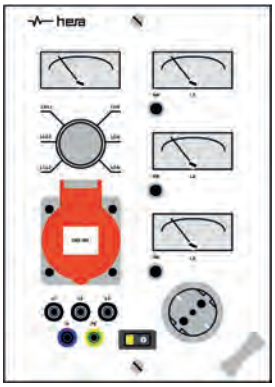
LS2000 PLUG-IN UNIT **WITH MEASURING UNIT, ANALOGUE**

- Analogue voltage reading (moving iron class 1,5) with selector for measuring point.
- 3x analogue current readings (moving iron class 1,5) for L1, L2, L3.
- 3x front side operated thermomagnetic fuses 10A.
- Schuko sockets, grey in 45° position.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- Illuminated switch, 2poles with contactor.



Plug-In Unit with Measuring Unit, analogue	
241.389.401	LE

LS2000 PLUG-IN UNIT **WITH MULTI MEASURING UNIT, DIGITAL**

- Multi measuring unit with 4digit digital reading for the measurement of current, voltage, active -, reactive -, and apparent power, mains frequency and energy.
- Accuracy: U, I: +/- 0,5%; P, Q, S, PF, counter: +/- 1,0%; F: +/- 0,02Hz (abs.).
- 3x front side operated thermomagnetic fuses 10A.
- Schuko sockets, grey in 45° position.
- CEE socket, straight 400V / 16A, 6h, 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- Illuminated switch, 2poles with contactor.

Plug-In Unit with Multi Measuring Unit, digital	
241.389.501	LE / with RS232 and 4x readings
241.389.601	LE / no RS232 and 3x readings

LS2000 ELECTRIC **CONTINUITY TESTER**

- High-ohmic, electric continuity tester, poled.
- Resistance range: 0...200kΩ with accoustic signal (sound alternation with changing resistance) and optical signal.
- Residual current protection and LED indication.
- Connection with 4mm safety jacks.
- Illuminated switch, 2poles for central on/ off.

Electric Continuity Tester	
234.321.501	WE size 3 / 2x Schuko
234.421.501	WE size 4 / 3x Schuko
277.205.000	LE

LS2000 ELECTRIC / ELECTRONIC **CONTINUITY TESTER**

- High-ohmic, electronic continuity tester, poled.
- Resistance range: 0...200kΩ with accoustic signal (sound alternation with changing resistance) and optical signal.
- Residual current protection and LED indication.
- Electric continuity tester for low-ohmic tests with 24V AC.
- Indication with LED lamp.
- Connection with 4mm safety jacks.
- Illuminated switch, 2poles for central on/ off.

Electric/ Electronic Continuity Tester	
234.321.601	WE size 3 / 1x Schuko
234.421.601	WE size 4 / 2x Schuko
277.205.100	LE

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LS2000 **SOLDERING STATION** ANALOGUE

- Professional soldering station 24V/ 80W with electronic temperature regulation.
- Stepless adjustable temperature by potentiometer between 150°C and 450°C with LED temperature indication.
- Antistatic soldering iron.
- Holder with sponge.
- Illuminated switch, 2poles for central on/ off.
- Coupler for soldering fume extraction.

Soldering Station analogue	
234.352.501	WE size 3 / 3x Schuko
234.452.101	WE size 4 / 3x Schuko
280.004.101	LE

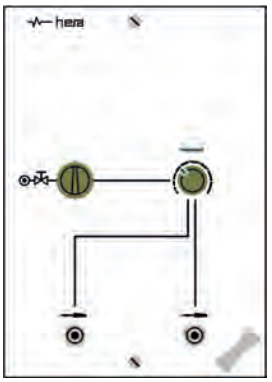
LS2000 **SOLDERING STATION** DIGITAL

- Microprocessor controlled soldering station (24V/ 80W) with automatic soldering tool cognition.
- Stepless at two buttons adjustable temperature between 50°C and 450°C.
- 3digit LED display for actual and set temperature indication.
- Antistatic soldering iron.
- Holder with sponge.
- Illuminated switch, 2poles for central on/ off.
- Coupler for soldering fume extraction.

Soldering Station digital	
280.005.101	LE

LS2000 PNEUMATIC **SOLDERING FUME EXTRACTION**

- Integrated pump for soldering fume extraction with filter.
- Rear side with connector for pressured air.
- Pressured shut-off valve.
- Regulating valve for pressured air to control the extraction power.
- 2x connectors for soldering irons.



Pneumatic Soldering Fume Extraction	
280.005.900	LE

LS2000 **SOLDERING/ DESOLERING** REPAIR STATION UNIVERSAL

- Universal applicable 2 channel repair station for professional repairs of industrial PLCs, as well as generally for service and repair departments.
- The station has two independent channels for automatic tool cognition and the automatic activation of the respective control parameter. Soldering and desoldering or soldering with hot air could be done simultaneously.
- All accessories like soldering iron, desoldering iron and hot air pencil could be connected.
- Integrated rotary pump for vacuum and air flow (max. suction 0,7bar; max. air flow 18 l/min.).
- Variably programmable buttons for repeated functions.
- LC display.
- EGB safe.
- ECO button.
- Temperature regulation: 50°C – 550°C.
- For a variety of soldering tools up to 200 Watt.

Soldering and Desoldering Repair Station UNIVERSAL	
280.001.501	LE

Accessory to Repair Station UNIVERSAL	
380.000.100	Soldering Tool Set 80 Watt (Soldering Iron, Safety Holder)
380.000.200	Soldering Tool Set 120 Watt (Soldering Iron, Safety Holder)
380.000.300	Desoldering Tool Set 80 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.400	Desoldering Tool Set 120 Watt (Desoldering Iron, Safety Holder, Cleaning Set)
380.000.500	Hot Air Pencil Set 100 Watt (Hot Air Pencil, Safety Holder, Nutdriver for Nozzle Changing)

Soldering Tool Set

Desoldering Tool Set

Hot Air Pencil Set

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LS2000 **R-DECADE**

- 8x decade switches with precision resistors in the range between 1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V AC; max. current: 0,5A.
- 9x 4mm safety jacks for resistance taps.

R-Decade	
234.341.100	WE size 3 / 2x Schuko
234.441.100	WE size 4 / 3x Schuko
277.003.300	LE

LS2000 **R- AND C-DECADE**

R-Decade:

- 8x decade switches with precision resistors in the range between 1Ω, 10Ω, 100Ω, 1kΩ, 10kΩ, 100kΩ, 1MΩ, 10MΩ.
- Accuracy: 0,1% + 100mΩ.
- Max. voltage: 200V AC; max. current: 0,5A.
- 9x 4mm safety jacks for resistance taps.

C-Decade:

- 5x decade switches with precision capacitors in the range between 100pF, 1nF, 10nF, 100nF, 1µF.
- Accuracy: 5% +75 pF.
- Max. voltage: 200V AC; max. current: 0,5A.
- 2x 4mm safety jacks for capacity taps.

R- and C-Decade	
234.341.200	WE size 3
234.441.200	WE size 4
277.003.400	LE

LS2000 PLUG-IN UNIT **AC SOURCE 1PHASE**

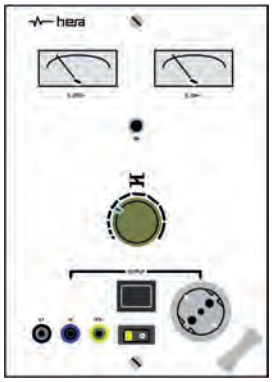
- Variac and downstream connected isolated transformer for a floating output voltage of 0-100%. Protected by a front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without earth contact.
- Current and voltage reading
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles for central on/ off.

AC Source 1phase	242.2 SS . A 01

SS Voltage/ Current		A Reading	
53	0-270V / 3A LE	1	analogue
56	0-270V / 5A LE	5	digital
76	0-270V / 16A Double-LE (3phase supply)		

LS2000 PLUG-IN UNIT **AC SOURCE NON FLOATING, 1PHASE**

- Variac for an output of 0-100%. Protected by a front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without earth contact.
- Current and voltage reading
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles for central on/ off.



AC Source non-floating, 1phase	
242.259.101	LE / 0-270V / 10A analogue
242.259.501	LE / 0-270V / 10A digital

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LS2000 PLUG-IN UNIT **AC SOURCE 1PHASE WITH MULTI MEASURING UNIT**

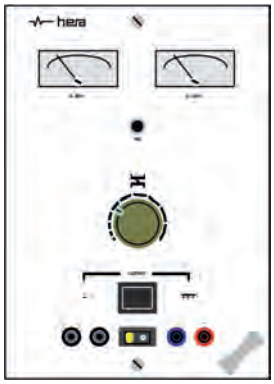
- Variac and downstream connected isolated transformer for a floating output voltage of 0-100%. Protected by a front side operated thermomagnetic fuse.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without earth contact.
- Multi measuring unit with 4digit digital readings for the measurement of current, voltage, active -, reactive -, and apparent power, mains frequency and energy.
- Accuracy: U, I: +/- 0,5%; P, Q, S, PF,
  Counter: +/- 1,0%; F: +/- 0,02Hz (abs.).
- Illuminated switch, 2poles for central on/ off.

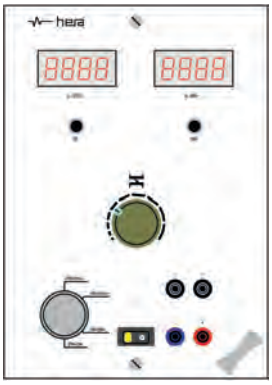
▸ 3phase supply is required for 242.276.601 and 242.276.701!

AC Source 1phase with Multi Measuring Unit	
242.253.601	LE / 0-270V / 3A
242.256.601	LE / 0-270V / 5A
242.276.601	Double-LE / 0-270V / 16A
242.276.701	Double-LE / 0-270V / 16A with RS232 Interface

LS2000 PLUG-IN UNIT **AC/DC SOURCE**

- Variac for an output of 0-100%. Protected by a front side operated thermomagnetic fuse.
- Switchable bridge rectifier for a pulsating DC voltage with 48% ripple.
- AC and DC output on 4mm safety jacks.
- Current and voltage readings
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS,
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles for central on/ off.

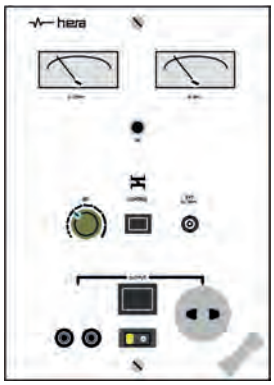




AC/DC Source	
246.039.101	LE / floating 0-30V/10A analogue
246.253.101	LE / floating 0-270V/3A analogue
246.253.201	LE / floating 0-270V/3A anal. + 0-60V/10A analogue
246.253.401	LE / floating 0-270V/3A anal. + 0-60V / 10A digital
246.256.101	LE / floating 0-270V/5A analogue
246.256.501	LE / floating 0-270V/5A digital
246.259.101	LE / non floating 0-270V/10A analogue

LS2000 STABILIZED **AC SOURCE 1PHASE**

- Motor driven variac (actuating time: approx. 10s over complete adjusting range) with downstream connected isolated transformer for a floating output voltage of 0 - 100%. Protected by a front side operated thermomagnetic fuse.
- Electronic voltage stabilization, accuracy: 1,5% of end value.
- Control input 0...10V DC for external output voltage adjustment.
- Output selector for 4mm safety jacks and universal socket (Schuko, Franco-American) without earth contact.
- Current and voltage reading
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles for central on/ off.



Stabilized AC Source 1phase	
252.256.101	LE / 0-270V / 5A analogue
252.256.401	LE / 0-270V / 5A digital

LS2000 VARIABLE **AC SOURCE 3PHASE**

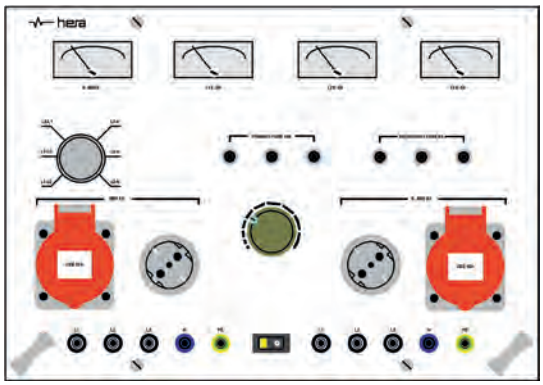
- AC variac in star connection for an output voltage of 0 - 100%. Protected by a front side operated thermo-magnetic fuse.

Fixed Outputs:

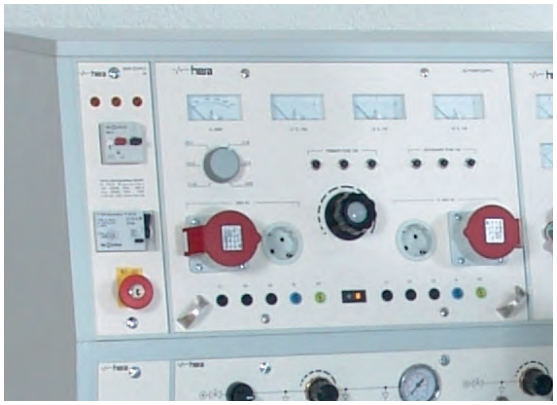
- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x Schuko socket.

Variable Outputs:

- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x Schuko socket.
- Voltage reading with measuring point selector.
- 3x current reading L1, L2 and L3.
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles for central on/ off.



Variable AC Source 3phase	Double-LE
243.385.301	0-450V / 5A
243.389.301	0-400V / 10A
243.385.501	0-450V / 5A
243.389.501	0-400V / 10A



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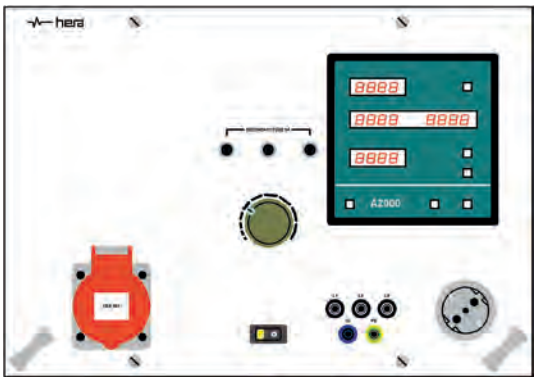
LS2000 AC SOURCE 3PHASE **WITH MULTI MEASURING UNIT**

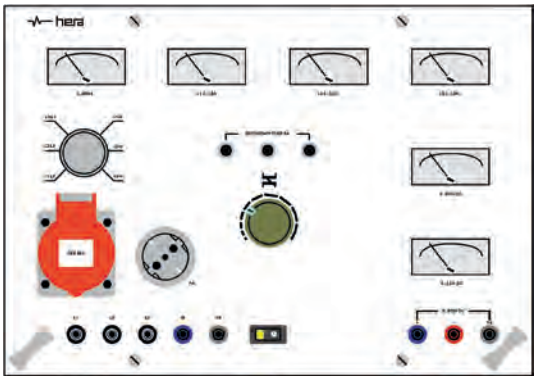
- AC variac in star connection for an output voltage of 0 - 100%. Protected by a front side operated thermo-magnetic fuse.
- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x Schuko socket.
- Multi measuring unit with 4digit digital readings for the measurement of current, voltage, active -, reactive -, and apparent power, mains frequency and energy.
- Accuracy: U, I: +/- 0,5%; P, Q, S, PF,
  Counter: +/- 1,0%; F: +/- 0,02Hz (abs.).
- Illuminated switch, 2poles with contactor.



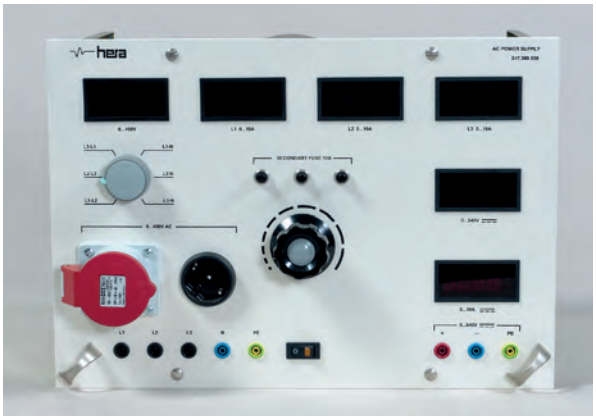
Variable AC Source 3phase/ Multi Measuring Unit	Double-LE
243.385.601	0-450V / 5A no RS232 and 3x reading
243.385.701	0-450V / 5A with RS232 and 4x reading
243.389.601	0-400V / 10A no RS232 and 3x reading
243.389.701	0-400V / 10A with RS232 and 4x reading

LS2000 **AC/DC SOURCE 3PHASE**

- AC variac in star connection for an output voltage of 0 - 100%. Protected by a front side operated thermo-magnetic fuse.
- 1x CEE socket, straight 400V / 16A, 6h 5poles.
- 5x 4mm safety jacks (L1, L2, L3, N, PE).
- 1x Schuko socket.
- AC voltage reading with measuring point selector.
- 3x current readings L1, L2 and L3
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- 6-level-rectifier (ripple 4,3 %).
- DC voltage reading and DC current reading.
- 4mm safety jacks for a variable DC output voltage (factor: 1,35 of the AC voltage).
- Illuminated switch, 2poles with contactor.

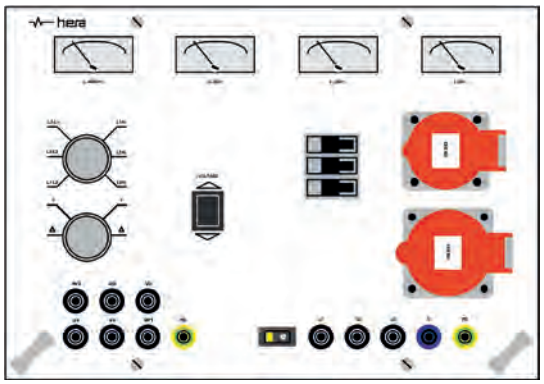


AC/DC Source 3phase	Double-LE
247.381.301	0-450V / 1,5A; floating, analogue
247.385.301	0-450V / 5A analogue
247.389.301	0-400V / 10A analogue
247.385.501	0-450V / 5A digital
247.389.501	0-400V / 10A digital



LS2000 **MOTOR TESTER** ANALOGUE

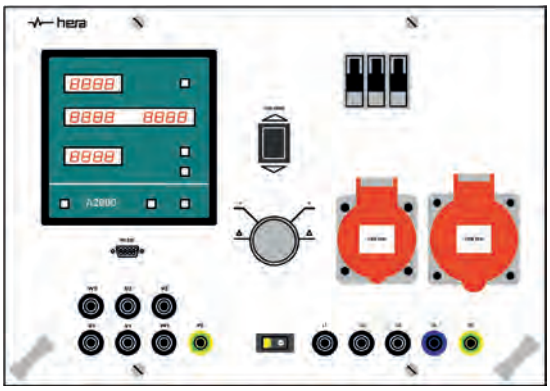
- Rocker switch for the stepless adjustment of the external variac.
- 7x high-current jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and direction reversal switch.
- Extra outputs on high-current jacks (L1, L2, L3, N, PE) and CEE socket.
- Analogue voltage reading with selector for measuring point (moving iron class 1,5).
- 3x analogue current reading L1, L2 and L3 (moving iron class 1,5).
- Illuminated switch, 2poles with contactor.



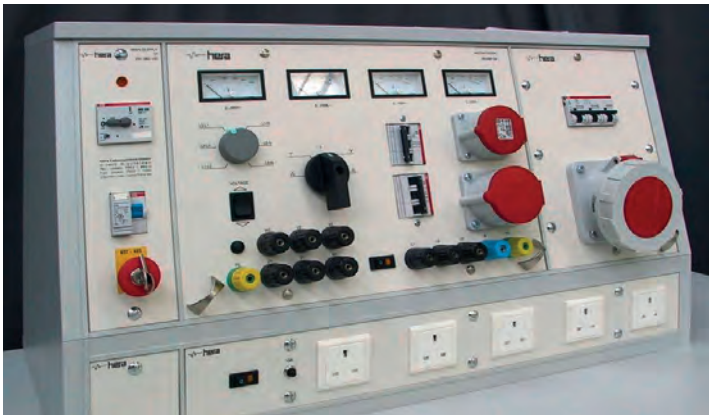
Motor Tester analogue			Double-LE
285.381.101	16A	285.386.101	60A
285.382.101	25A	285.399.101	100A
285.384.101	40A		

LS2000 MOTOR TESTER **WITH MULTI MEASURING UNIT**

- Rocker switch for the stepless adjustment of the external variac.
- 7x high-current jacks arranged as motor terminal board (U1, U2, V1, V2, W1, W2 and PE).
- Star -/ delta- and direction reversal switch.
- Extra outputs on high-current jacks (L1, L2, L3, N, PE) and CEE socket.
- Multi measuring unit with 4digit digital readings for the measurement of current, voltage, active -, reactive -, and apparent power, mains frequency and energy.
- Front side with RS232 interface.
- Illuminated switch, 2poles with contactor.



Motor Tester with Multi Measuring Unit			Double-LE
285.381.701	16A	285.386.701	60A
285.382.701	25A	285.399.701	100A
285.384.701	40A		



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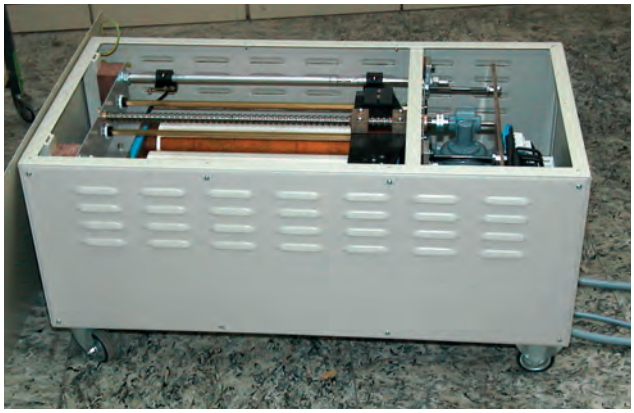
EXTERNAL VARIAC FOR MOTOR TESTER

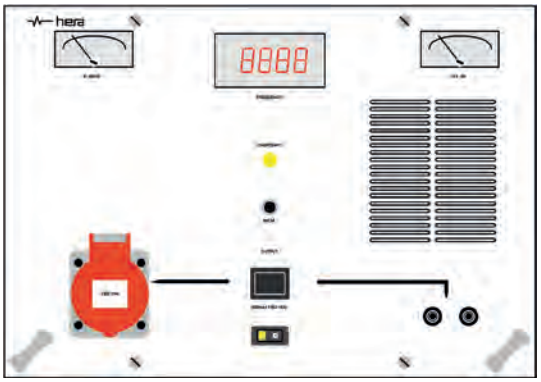
- Sheet steel housing with casters, two with brake.
- Integrated 3phase motor driven variac with inrush current limiter.
- Input terminal block with primary fuse.
- Power transfer to the motor tester with residual current device (RCD).

External Variac for Motor Tester	
285.516.100	0-400V / 16A
285.525.100	0-400V / 25A
285.540.100	0-400V / 40A
285.550.100	0-400V / 50A
285.560.100	0-400V / 60A
285.599.100	0-400V / 100A



LS2000 SINUS **FREQUENCY CONVERTER 1PHASE**

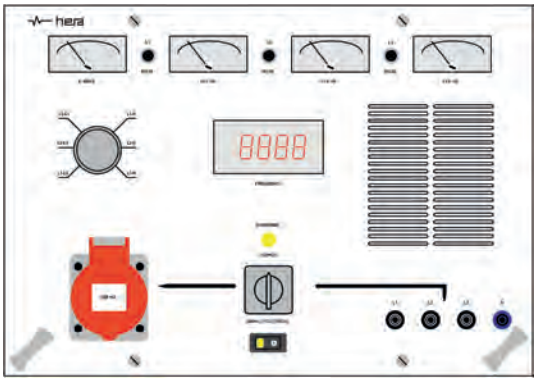
- Inphase controlled precision sinus frequency converter (distortion factor < 3%) with floating and stabilized output voltage (+/- 2%).
- Output selector for 4mm safety jacks or CEE socket 3poles.
- Analogue current and voltage readings.
- Digital frequency and status indication.
- Illuminated switch, 2poles for central on/ off.



Sinus Frequency Converter 1phase	Double-LE
255.064.100	60 Hz / 115V / 4A
255.406.100	400 Hz / 115V / 6A

LS2000 SINUS **FREQUNECY CONVERTER 3PHASE**

- Inphase controlled precision sinus frequency converter (distortion factor < 3%) with floating and stabilized output voltage (+/- 2%).
- Output selector for 4mm safety jacks or CEE socket 5poles.
- 3x analogue current readings L1, L2 and L3.
- Analogue current and voltage readings.
- Digital frequency and status indication.
- Illuminated switch, 2poles with contactor.



Sinus Frequency Converter 3phase	Double-LE
256.402.100	400Hz / 115V / 500VA

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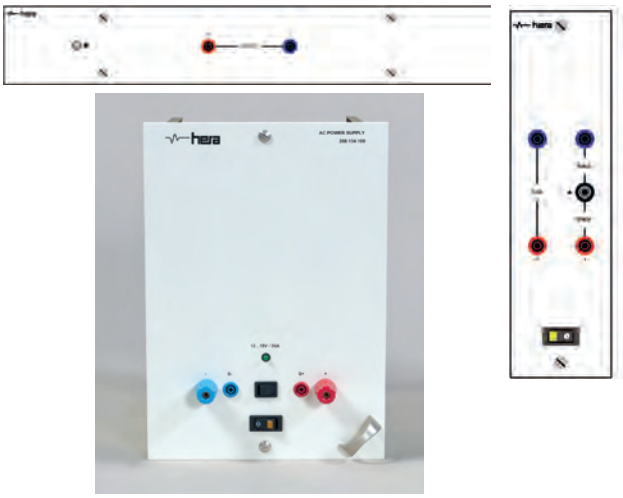
LS2000 PANEL WITH **FIXED VOLTAGE**

- Stabilized and shortcircuit-proofed power supply for fixed voltage, galvanically isolated.
- Overload -, overvoltage - and overtemperature protected.
- Offset: < 2%.
- Ripple: < 100mV p-p.
- Output on 4mm safety jacks.
- Illuminated switch, 2poles for central on/off.

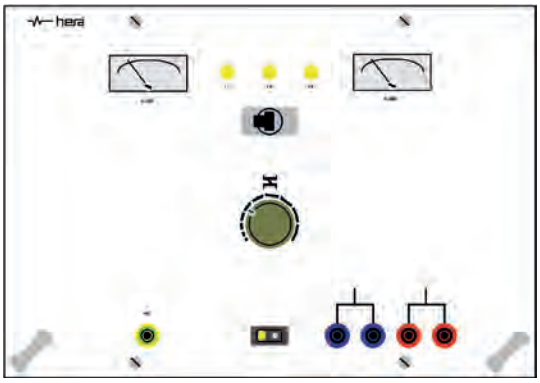


Panel with Fixed Voltage 23 **S** . **LLL** . **LLL**

S System		**LLL.LLL** Power					
0	LE	**105.032**	5V / 3A	**113.112**	13,5V / 11,2A	**148.022**	48V / 2,3A
1	NE	**105.052**	5V / 5A	**113.142**	13,5V / 14,9A	**148.042**	48V / 4,2A
3	WE size 3	**105.102**	5V / 10A	**124.012**	24V / 1,5A	**212.032**	+ 12V / 3A + 5V / 6A
		112.032	12V / 3A	**124.032**	24V / 3,2A	**224.022**	+ 24V / 2A + 5V / 6A
		112.062	12V / 6A	**124.062**	24V / 6,5A	**312.012**	+/- 12V / 1A + 5V / 5A
		112.122	12V / 12,5A	**124.082**	24V / 8,4A	**315.012**	+/- 15V / 0,8A + 5V / 5A

LS2000 **HIGH-CURRENT** DC POWER SUPPLY

- AC variac with two downstream connected isolated transformers and 6-level rectifier for a floating voltage and load independent ripple of < 1,5%.
- Phase control lamps (L1, L2 and L3).
- Output on 2x 2 high-current jacks.
- Current and voltage reading
  Analogue: moving iron class 1,5.
  Digital: 3digit LED display TrueRMS
  accuracy: 0,5% +/- 1 Digit.
- Illuminated switch, 2poles with contactor.



High-Current DC Power Supply 244. **SSS** . **A** 01 **Double-LE**

SSS Voltage / Current		**A** Reading	
160	0-15V / 0-60A	**1**	analogue
325	0-30V / 0-25A	**4**	digital
360	0-30V / 0-60A		

LS2000 LABORATORY POWER SUPPLY

- Backlight graphical LCD 60 x 30mm (128x64) for the simultaneous indication of all important values and modes.
- Rotary switch with push button function for quick and precise settings of voltage and current.
- Extra buttons for quick and intuitive operation.
- Output ON / OFF button with status indication in the display.
- 2 Channel Power Supplies with switching function for: 2 channel -, tracking -, serial - or parallel mode.
- Output at 4mm safety jacks.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/off.

Technical data: Lab Power Supply EXTENDED RANGE

- Switch-mode power supply (up to 160W without fan).
- Stability at 0-100% load: <0,8%.
- Stability at 10% mains alternation: <0,02%.
- Ripple: <5mVrms.
- Response time 10-100% load: <1ms.
- Overvoltage protection: 0…46,2V.
- Accuracy: <0,2%.
- Set value for current and voltage adjust each another, so maximum power is not exceeded.

Technical data: Lab Power Supply LINEAR

- Linear power supply with power factor control
- up to 150W without fan.
- Resolution of set - and actual value: 14Bit (16384pts).
- Resolution of measurement: 16Bit (65536pts).
- Ripple (at Ia = 50%): <1mVrms.
- Response time (load step 10-90% Ia, at 50% Ua): <50µs.
- External voltage protection: 100V.

Lab Power Supply EXTENDED RANGE **26 A . LLL .803**

A Channels		LLL Voltage & Current			
1	1 Channel	**406**	100W / 0 - 42V / 0 - 6A	**803**	100W / 0 - 84V / 0 - 3A
2	2 Channel	**410**	160W / 0-42V / 0 - 10A	**805**	160W / 0 - 84V / 0 - 5A
		420	320W / 0 - 40V / 0 - 20A		

Lab Power Supply LINEAR **26 A . LLL .403**

A Channels		LLL Voltage & Current			
1	1 Channel	**302**	0 - 30V / 0 - 2A	**605**	0 - 60V / 0 - 5A
2	2 Channel	**305**	0 - 30V / 0 - 5A	**610**	0 - 60V / 0 - 10A
		310	0 - 30V / 0 - 10A	**320**	0 - 30V / 0 - 20A

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LS2000 **FUNCTION GENERATOR 1MHZ**

- Precise and convenient frequency adjustment with multi-turn potentiometer.
- Frequency offset: < 2% of end value; frequency stability: < 0,3%/K.
- Selector for signal forms: sine, triangle, square and external signal.
- Distortion: < 0,5% (to 50Hz); < 1% (50kHz - 100kHz); < 3% (100kHz - 1MHz).
- Linearity error: < 1% (to 100kHz); < 5% (100kHz - 1MHz).
- Symmetry error: < 1% (to 100kHz); < 5% (100kHz - 1MHz).

Option Power Amplifier:

- Switchable range of 0,1Hz...100kHz.
- 40W_{eff} continuous output with sinus at 5W.
- Shortcircuit proofed due to retracted current characteristic.
- Max. output voltage 40V_{ss}.

- Rise - and release time: < 80ns at 50Ω load.
- Variable symmetry adjustable between 20%...80%. 1:1 symmetry adjustable with illuminated switch.
- DC Offset (zero line shift) adjustable between -10V...+10V.
- Frequency adjustment with external voltage input (VCF).
- Frequency indication with 4digit LED display.
- 5x BNC sockets with VCF, ext. signal input; TTL-output, -30dB-output, 50Ω-output.

Function Generator 1MHz	
271.653.101	no Power Amplifier
271.653.201	with Power Amplifier

LS2000 **FUNCTION GENERATOR** ICOM

- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function for quick and precise settings of voltage and current.
- 3x BNC sockets ((COUNTER IN, TTL OUT and OUT R 50Ω).
- Basic functions: sinus, triangle, square, saw tooth, pulse. DC voltage.
- Frequency range: 1mHz – 10MHz (sinus), 10Hz – 1MHz (other signals).
- Arbitrary: max. 4096pts.
- Other functions: PWM, TTL-OUT.
- Amplitude: 30V_{ss} (max. 1MHz), and 3V_{pp} at 10MHz.
- Resolution: 14 Bit.
- Duty cycle: 0,1 % … 99,9%.
- DC Offset: ± 10V.
- Frequency and event counter: max. 100MHz.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.

Function Generator ICOM (LE)	272.830.102

OPEN FOR
ALL SYSTEMS

hera is a manufacturer that even allows to integrate other brands within its systems. Due to the high compatibility of devices, we offer to integrate electrical instuments that are already existant and should be used in your new laboratoy.

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LS2000 DIGITAL MULTIMETER, LCR METER & CALIBRATOR

TRMS Multimeter DMM15 3 6/7digit with analogue bargraph:
- TRMS V AC and I AC.
- Accuracy 0,5%V DC.
- Automatic blocking sockets ABS.
- Current: I DC 10µ...10A (16A 30sec) and I AC 10µ...10A (16A 30sec).
- Resistance: 100mΩ...40MΩ.
- Temperature: -200,0...+400,0°C. Thermo element type K.
- Frequency measurement: 0,1Hz...1kHz.
- Continuity and diode test.
- MIN/ MAX data logging and data hold.

TRMS Multimeter with extra functions DMM16:
- Background illuminated digital display 3 6/7digit with analogue bargraph, Basic accuracy: 0,5% V DC.
- Band width VAC TRMS 2kHz.
- Automatic blocking sockets ABS.
- Votlage: V DC 100µ...1000V and V AC TRMS 100µ...1000V.
- Current: I DC and I AC TRMS 10µ...10A (16A 30sec).
- Resistance: 100mΩ...40MΩ.
- Temperature: -50,0°C...+800,0°C. Thermo element type K.
- Frequency measurement: 0,1Hz...1MHz.
- Sampling rate: 2%...98% (1kHz).
- Rotation speed measurement: 60RPM...99,99kRPM.
- Capacity measurement: 10pF...400F.
- Continuity and diode test 3V.
- MIN/ MAX data logging and data hold.

Precision Multimeter TECH 4½digit TRMS:
- 3 automatic blocking sockets ABS.
- Automatic and manual selector for measuring range.
- Automatic data logging DATA/ MIN/ MAX.
- Illuminated display with extra large digits (15mm) and analogue bargraph for dynamic measurements.
- Voltage AC TRMS - voltage DC - voltage AC+DC.
- Current AC TRMS - current DC - current AC+DC,TRMS.
- Frequency (Hz with voltage and current).
- Temperature measurement with K-thermo elements.
- Capacity measurement, continuity and diode test.
- DKD calibration certificate within delivery scope.

Calibrator and Multimeter for electrical parameters CAL:
- 0 - 24mA source and 0 - 300mA measuring 0 - 20mA and 4 - 20mA selectable ranges output voltage 0 - 300mV, 3, 10 and 15V.
- Resistance with 2 and 4 wire simulates small resistance 0,01mΩ. Resolution high resistance measurements up to 30mΩ.
- Simulation of RTD temperature sensors °C/ °F, Pt100/ 1000, Ni100/ 1000.
- Simulation of a sufficient series of thermo elements (J, L, T, U, K, E, S, R, B, N) with internal and external compensation of cold joints.
- Frequency generator with square pulse (1Hz ...1000Hz).
- Ramp -, step- and dwell functions.
- DKD calibration certificate within delivery scope.

Multifunctional Meter (DMM + LCR):
- 3 ½digit backlight LCD display.
- MAX data logging and data hold.
- DCV 200mV/2/20/200/600V; 100µV; +/- 0,5% + 1dgt.
- ACV 200mV/2/20/200/600V; 100µV; +/- 0,8% + 3dgt.
- DCA 20µA/2/200mA/10A; 10nA; +/- 0,8% + 1dgt.
- ACA 20µA/2/200mA/10A; 10nA; +/- 1,0% + 3dgt.
- Frequency range / frequency range: 40 - 400Hz
- Ohm 200W/2/20/200 kW/2/20/2000MW; 0,1W; +/- 0,8%1dgt.
- Capacity 20/200 nF/2/100 µF; 10pF; +/- 2,5% + 5dgt.
- Inductivity 2/20/200mH/20 H; 1µH; +/- 2,0% + 10dgt.
- Frequnecy 2/20/200kHz/2/10MHz; 1Hz; +/- 0,1% + 3dgt.
- Temperature -40 ... +1000°C; +/- 1,0% + 3dgt.
- Transistor, diode - and continuity test with buzzer
- Incl. lab cords, multifunctional adapter, temperature probe.

LCR Meter:
- 4 1/2digit 27mm backlight LCD display.
- Resistance: 110Ohm / 1,1 / 11 / 110kOhm / 1,1 / 11 / 110MOhm, ±1,2% + 8dgt., 10mOhm.
- Capacity: 11 / 110nF / 1,1 / 11 / 110µF / 1,1 / 11 / 110mF, ±3,0% + 10 dgt., 1pF.
- Inductivity: 11 / 110mH / 11 / 20 H, ±2,0% + 0,2mH, 1nH.
- Measuring sequence: 3 - 4x per sec.
- Min.-/max.-DATA logging and DATA hold.
- Relative value measurement.
- Continuity and diode test.

DMM15

DMM16

TECH

CAL

DMM+LCR

LCR Meter

Digital Multimeter, LCR Meter and Calibrator	1LE
272.708.302	TRMS Multimeter DMM15 incl. Supply Unit
272.708.352	TRMS Multimeter DMM16 incl. Supply Unit
272.708.400	Precision Multimeter TECH 4½digit TRMS incl. Supply Unit
272.709.200	Calibrator and Multimeter for electrical Parameters CAL incl. Supply Unit
272.708.702	Multifunctional Meter (DMM + LCR) incl. Supply Unit
272.708.802	LCR Meter incl. Supply Unit

LS2000 **DIGITAL MULTIMETER** ICOM

- Backlight graphical-LCD 60x30mm (128x64).
- Rotary switch with push button function and two extra buttons.
- 5x 4mm safety jacks (Hz, A, µA/mA, COM, V/Ohm/F/Diode/Continuity).
- Resolution: 4 3/4digit (50.000 Counts).
- Voltage DC: 10µV – 1000V.
- Voltage AC TrueRMS: 10µV – 700V.
- Current DC: 10nA – 20A .
- Current AC TrueRMS: 10nA – 20A.
- Front side operated fuse for µA/mA output.
- Resistance: max. 50MOhm.
- Frequency: 100µHz – 50MHz.
- Capacity: max. 50mF.
- Other functions: diode -, continuity test.
- Measuring range selection: manual and automatic.
- Measuring rate: 2,5 / 5 or 10 measurements /sec.
- Safety: EN 61010-1; CAT II 600V.
- Front side USB interface, rear side LAN interface.
- LabView driver and WinRemote program module.
- Illuminated switch, 2poles for central on/ off.

Digital Multimeter ICOM (LE)	272.710.602

LS2000 **OSCILLOSCOPE**

- Digital storage oscilloscope with many functions to an excellent price. Flush integrated in a plug-in unit for the installation in bench racks. The oscilloscope comes with freely available software for data transmission and data logging on PC.
- 2- or 4-channels.
- 8“ TFT colour display.
- 2GSa/s real-time sampling rate.
- 2MPts memory depth.
- 36 automatic measurements.
- FFT analysis.
- 6 digit frequency counter.
- USB interface and frontside USB connector for memory stick.

Oscilloscope	Double-LE
273.119.207	2-Channel / 70MHz
273.119.407	4-Channel / 70MHz
273.119.220	2-Channel / 200MHz
273.119.420	4-Channel / 200MHz

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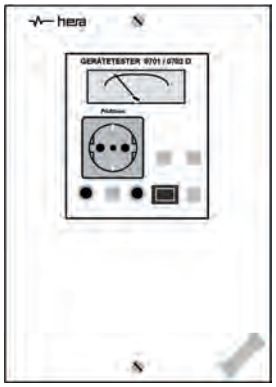
LS2000 ELECTRICAL **APPLIANCE TESTER ANALOGUE**

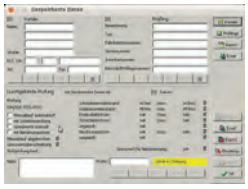
- Module for tests according to DIN VDE 0701 - 0702 and repeated tests according to BGV A3.
- Comfortable operation with membrane keys.
- Single step tests or automatic test procedure.
- Optical identification of the actual tests.
- No manual polarity reversal of the mains plug according to DIN VDE 0701 – 0702 necessary.
- PE resistance test 0...100mΩ, Testing current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Measuring voltage 500V DC.
- Leakage current test 0...18mA, Testing voltage 40V AC.
- Analogue display, key pad and testing socket.
- Automatic mode with a procedure of all three tests in a row.

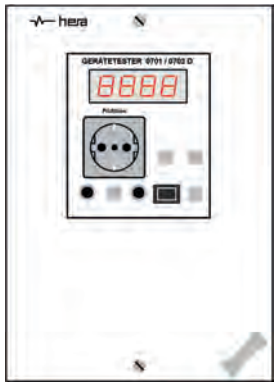


Electrical Appliance Tester analogue (LE) 277.002.800

LS2000 ELECTRICAL **APPLIANCE TESTER DIGITAL**

- Module for tests according to DIN VDE 0701 - 0702 and repeated tests according to BGV A3 and DIN EN 62353.
- Easy menu navigation with LCD display.
- Single step tests or automatic test procedure.
- Manual or automatic setting of limiting value.
- Remote controllable from PC due to USB interface.
- Exporting function for test files in Excel or other data files. Import function for customer and test item data.
- RS232C interface for barcode scanner.
- Selective data logging of test protocol from repeating tests by reading of barcodes, customer details, date or test instrument number.
- Automatic data assignation from data memory to the newly measured values for repeating tests when reading the barcode.
- Automatic set-up of the test procedure by barcode.
- PE resistance test 0...100mΩ, Measuring current 200mA DC.
- Isolation resistance test 0,2...10MΩ, Testing voltage 500V DC.
- Leakage currrent test 0...18mA, Testing voltage 40V AC.
- Digital display, key pad and testing socket.
- Automatic mode with a procedure of all three tests in a row.

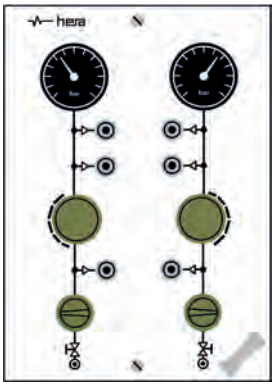




Electrical Appliance Tester digital (LE) 277.002.900

LS2000 **PRESSURED AIR SUPPLY**

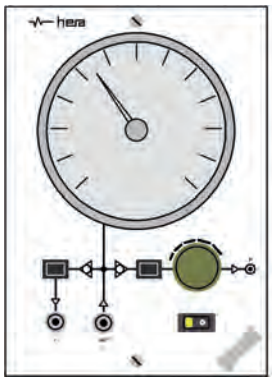
- 2x self-closing, unregulated outlets (hose 6/4).
- Adjustable pressure regulator 0-3bar with analogue pressure gauge 4bar.
- 2x self-closing, regulated outlets, 3bar (hose 6/4).
- Adjustable pressure regulator 0-10bar with analogue pressure gauge 10bar.
- 2x self-closing, regulated outlets, 10bar (hose 6/4).
- Completely hosed with open hose end 4/6.



Pressured Air Supply	
288.121.100	3 / 10bar / LE
288.321.100	3 / 10bar / WE size 3
288.421.100	3 / 10bar / WE size 4

LS2000 **PRESSURE CALIBRATOR** ANALOGUE

- Precision pressure regulator.
- Selector switch between internal and external supply with two 3/2-magnetic valves and LED indication.
- Inlet and outles with self-closing quick-release couplers 4/6mm.
- Analogue pressure gauge class 0,6 (160mm diameter or class 1,0 (diameter 100mm).
- Completely hosed with open hose end 4/6.
- Illuminated switch, 2poles for central on/ off.



Pressure Calibrator, analogue	LE
289.001.100	Vacuum class 0,6
289.001.101	Vacuum class 1,0
289.102.100	2,5bar class 0,6
289.102.101	2,5bar class 1,0
289.106.100	6bar class 0,6
289.106.101	6bar class 1,0
289.110.100	10bar class 0,6
289.110.101	10bar class 1,0

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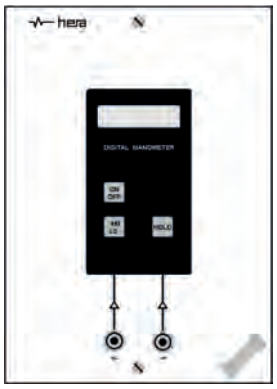
LS2000 PRESSURE METER / **PRESSURE CALIBRATOR DIGITAL**

- Digital meter with integrated pressure sensor for the measurement of difference -, relative - or absolute pressure.
- 3½digit LCD display.
- Piezoresistive pressure sensor.
- Measuring range HI, class 0.2% v.E.
- Measuring range LO, class 0.5% v.E.
- Inlet and outlet with self-closing quick-release couplers 4/6mm.

Calibrator with:

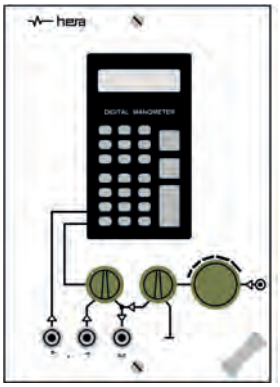
- Precision pressure regulator.
- Selector switch for internal and external supply with two 3/2-magnetic valves and LED indication.
- Completely hosed with open hose end 4/6.
- Illuminated switch, 2poles for central on/ off.



Pressure Meter / Pressure Calibrator digital		LE
282.001.000	Pressure Meter 0 - 1000mbar	
282.010.000	Pressure Meter 0 - 10bar	
282.001.100	Pressure Calibrator 0 - 1000mbar	
282.010.100	Pressure Calibrator 0 - 10bar	

LS2000 PRESSURE CALIBRATOR **WITH ELECTRIC PARAMETERS**

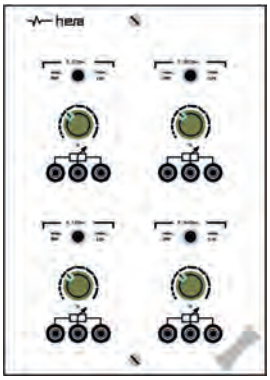
- Precision pressure meter.
- Selector for internal or external supply with two 3/2-magnetic valves.
- Measurement of over and negative pressure, differencial pressure and absolute pressure.
- Resolution: 1/1000 of measuring range.
- Max. load depending on the range (4bar / 27bar).
- Tolerance: 0,1% v.E. +/- 1 Digit.
- DC current measurement: 0...24mA (resolution 1µA).
- DC current supply: 0...24mA (resolution 1µA).
- DC voltage measurement: 0...30V (resolution 1mV).
- DC voltage supply: 0...1V (resolution 0,1mV).
- Two lines illuminated display with key operation for data logging -, leakage rate -, record -, ramp -, deviation -, simulation - and trigger function.
- Incl. RS232 interface with software.
- Completely hosed with open hose end 4/6.
- Illuminated switch, 2poles for central on/ off.



Pressure Calibrator with Electric Parameters		LE
284.001.000	0 - 2000mbar	
284.010.000	0 - 10bar	

LS2000 LOAD **RESISTANCE 50W**

- Four stepless adjustable load resistors 50W (test voltage: 2,5kV).
  - •0-10Ω / 50W; 2,2A
  - •0-100Ω / 50W; 0,7A
  - •0-1kΩ / 50W; 0,2A
  - •0-10kΩ / 50W; 0,1A
- Thermal circuit breaker for overload protection.
- Each resistor has two end taps and one middle tap on 4mm safety jacks. Optionally with software for output on printer or PC.



Load Resistance 50W	
277.201.200	LE

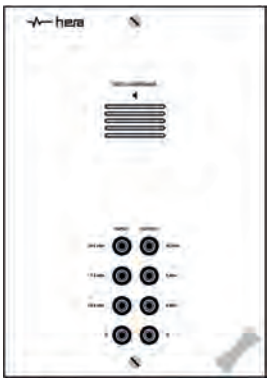
LS2000 LOAD **RESISTANCE 300W**

- Four stepless adjustable load resistors 300W (test voltage: 2,5kV).
- Thermal circuit breaker for overload protection.
- Each resistor has two end taps and one middle tap on 4mm safety jacks.

Load Resistance 300W	LE
277.202.100	0 - 10Ohm / 5,4A
277.202.200	0 - 100Ohm / 1,7A
277.202.300	0 - 1kOhm / 0,5A
277.202.400	0- 10kOhm / 0,2A

LS2000 **TEST SPEAKER**

- Test speaker 10Watt/ 8Ω.
  Transmission range: 130-20.000Hz.
- Upstream connected transmitter for impedance matching.
  Transmission range: 40 - 20.000Hz.
  Primary winding: 2kΩ / 4kΩ / 8kΩ / 16kΩ.
  Secundary winding: 4Ω / 8Ω / 16Ω.
- Connection with 4mm safety jacks.



Test Speaker	
277.205.200	pcs.

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CHAPTER 13: **ACCESSORIES**

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INDUSTRY SWIVEL **CHAIR TEC**

Characteristic for the TEC-Series is the tapering backrest, for a maximum of shoulder and arm mobility. Optionally the backrest could be equiped with handles, so there is no need to touch the upholstery with dirty hands.
This series is DIN 68 877 conform and holds the German GS symbol.

Seat:	49 x 36 x 45–64cm (WxDxH)
Base:	Ø 70cm
Backrest:	44 x 55-62cm (WxH)
Casters:	soft, for hard floors

Standard or ESD:

ESD version is with conductive seat and backrest, conductive casters and polished aluminium base.
The chairs are according to DIN EN 61340-5-1:2001 for disipation of static charge.

Counter Version (only for BS, BS+, ST and AS):

Higher gas lift for a sitting height of 60 – 85cm.
Height adjustable chromated foot ring, anti-slip finish and base with feet. For safety reason counter version is not available with casters.

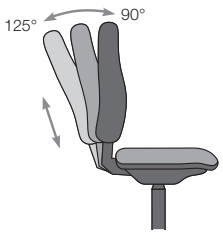
Counter version with chromatized foot ring and base and back rest handles

Standard Swivel Chair TEC (choose from Standard Fabrics)	
181.710.**B**00	TEC with Synchron Mechanics BS
181.710.**B**05	TEC with Synchron Mechanics BS+
181.711.**B**00	TEC with Synchron Technology ST
181.711.**B**05	TEC with Synchron Technology AB
181.712.**B**00	TEC with Automatic Weight Adjustment AS
181.712.**B**05	TEC with Automatic Weight Adjustment AS+
181.013.000	Multifunctional Armrests (PU covered) height - (10cm) and width adjustment (6cm)
181.719.010	Option: Backrest Handle
181.028.000	Option: Counter Version
181.029.000	Option: Chromated Aluminium Base (Ø 71cm)
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

ESD Swivel Chair TEC (choose from ESD Fabrics)	
181.714.**B**05	TEC ESD with Synchron Mechanics BS+
181.715.**B**00	TEC ESD with Synchron Technology ST
181.715.**B**05	TEC ESD with Synchron Technology AB
181.716.**B**00	TEC ESD with Automatic Weight Adjustment AS
181.716.**B**05	TEC ESD with Automatic Weight Adjustment AS+
181.014.000	ESD Multifunctional Aluminium Armrests (PU covered), height - (10cm), witdth- (5cm) and depth adjustment (4cm) Armlehnenträger Aluminium
181.028.000	Option: Counter Version
181.029.000	Option: Chromated Aluminium Base (Ø 71cm)
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

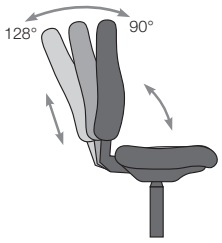
Synchron Mechanics BS:
Seat - and backrest follow the movement of the sitting person synchron in the right angle. Stepless adjustable counter-pressure of the backrest (for 50 - 125kg body weight). Synchron movement arrestable in 5 positions.

Synchron Mechanics BS+:
Like Synchron Mechanics BS but with extra seat tilt (-5°) and seat depth adjustment (5cm).



Automatic Weight Adjustment AS:
Automatic weight-dependant adjustment of the backrest counter-pressure; individual adjustable in 2 steps. Synchron movement of seat and backrest, adjustable in 3 steps. First position arrestable.

Automatic Weight Adjustment AS+:
Like Automatic Weight Adjustment AS but with extra seat tilt (-1°/-6°) and seat depth adjustment in 2 steps.



B: ESD Fabrics (TEC and SHAPE):

1: black

2: bright blue

6: blue

8: PU Foam

9: Synthetic Leather

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INDUSTY SWIVEL **CHAIR SHAPE**

The classic series SHAPE is available with two different backrests, standard and extra high. Its characteristic is an enormous seating comfort. This series is DIN 68 877 conform and holds the German GS symbol.

Seat:	47 x 37 x 43–59cm (WxDxH)
Base:	Ø 70cm
Backrest (standard):	43 x 51-57cm (WxH)
Backrest (high):	43 x 62-68cm (WxH)
Casters:	soft, for hard floors

Standard or ESD:
ESD version is with conductive seat and backrest, conductive casters and polished aluminium base. The chairs are according to DIN EN 61340-5-1:2001 for disipation of static charge.

Counter Version (only for SM, PF and ST):
Higher gas lift for a seating height of 60 – 85cm. Height adjustable chromated foot ring, anti-slip finish and base with feet. For safety reason counter version is not available with casters.

ESD Swivel Chair Shape with high backrest

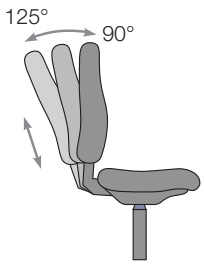
Multifunctional Armrest

Standard Swivel Chair SHAPE (choose from Standard Fabrics)	
181.410.**B**00	SHAPE with Standard Mechanics SM
181.411.**B**00	SHAPE with Permanent Backrest Contact PF
181.412.**B**00	SHAPE with PF and high Backrest
181.413.**B**00	SHAPE with Synchron Technology ST
181.414.**B**00	SHAPE with ST and high Backrest
181.413.**B**05	SHAPE with Synchron Technology AB
181.414.**B**05	SHAPE with AB and high Backrest
181.013.000	Multifunctional Armrests (PU covered) height - (10cm) and width adjustable (6cm).
181.028.000	Option: Counter Version
181.029.000	Option: Chromated Aluminium Base (Ø 71cm)
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

ESD Swivel Chair SHAPE (choose from ESD Fabrics)	
181.410.**B**05	SHAPE ESD with Standard Mechanics SM
181.415.**B**00	SHAPE ESD with Backrest Permanent Contact PF
181.416.**B**00	SHAPE ESD with PF and high Backrest
181.417.**B**00	SHAPE ESD with Synchron Technology ST
181.418.**B**00	SHAPE ESD with ST and high Backrest
181.417.**B**05	SHAPE ESD with Synchron Technology AB
181.418.**B**05	SHAPE ESD with AB and high Backrest
181.016.000	Multifunctional Armrests (PU covered/ not for SM) height - (10cm) and width adjustable (6cm).
181.028.000	Option: Counter Version
181.029.000	Option: Chromated Aluminium Base (Ø 71cm)
181.000.000	Option: hard casters for soft floors (no surcharge)

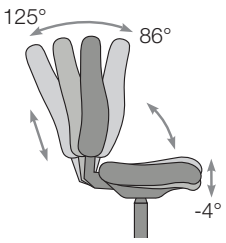
Standard Mechanics SM:
Mechanic adjustment of the backrest tilt, stepless arrestable.

Permanent Contact Backrest PF:
Backrest follows the movement of the sitting person permanently. Stepless adjustable counter-pressure of the backrest (for 50 - 125kg body weight). Tilt of backrest stepless arrestable.



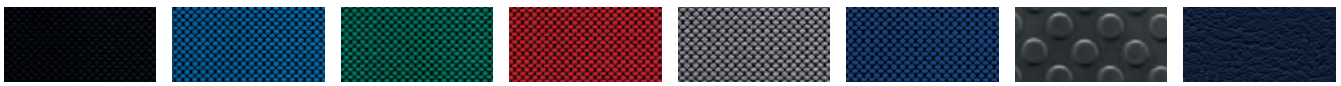
Synchron Technology (4° Seat Tilt) ST:
Seat and Backrest follow the movement of the sitting person synchron in the right angle. Stepless direct noticeable adjustment of the backrest counter-pressure for 50 - 125kg body weight. Synchorn movement stepless arrestable.

Synchron Technology AB:
Like Synchron Technology ST but with extra either individual or automatic adjustments of the whole upper chair, either to the front (max. seat tilt -12°) and to the back (max.backrest tilt 128°).



B: Standard Fabrics (TEC and SHAPE):

1: black | **2:** bright blue | **3:** green | **4:** red | **5:** grey | **6:** blue | **8:** PU-Foam | **9:** Synt. Leather



ESD CHAIR **ECONOMY**

Hardwearing and solid ESD swivel chair according to EN 61340-5-1:2001. Gas lift height adjustment (480 – 68cm) and adjustable backrest.
Hardwearing cushioned seat and backrest.
Conductive metall base and casters.

ESD Chair ECONOMY	
181.110.100	Textile, black
181.110.200	Textile, blue
181.110.300	Vinyl, black

ESD SWIVEL CHAIR PREMIUM

ESD Swivel Chair according to EN 61340-5-1:2001 with ergonomic adjustment functions:

- Height adjustment with gas lift (43 - 57cm).
- Seat tilt.
- Height and angle of the backrest.
- Upholsered seat and backrest with hardwearing ESD fabrics.
- Polished aluminium base with casters.

ESD Swivel Chair Premium	
181.111.100	Textile, black
181.111.300	Textile, blue
181.111.500	Vinyl, black

ESD CHAIR **POLYURETHANE**

ESD swivel chair for the use in rugged laboratories according to EN 61340-5-1:2001 with ergonomic adjustment functions:

- seat height with gas lift
- seat tilt
- height and angle of the backrest

Upholstered polyurethane seat and backrest in to versions:

- polished aluminium base with casters for a sitting height of 41 – 53,5cm
- polished aluminium base with feet and height adjustable foot ring for a sitting height of 50 – 69cm

ESD Chair PHOLYURETHANE	
181.112.100	with Casters
181.112.200	with Feet and Foot Ring

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CLEAN ROOM CHAIR SHAPE

This chair complies with the standard for clean rooms class 4 according to DIN EN ISO 14644-1, the upholstry is done in conductive sythetics leather.

Seat:	47 x 37 x 43–59cm (WxDxH)
Base:	Ø 71cm
Backrest:	47 x 51-57cm (WxH)
	47 x 62-68cm (high backrest)
Casters:	soft, for hard floors

Counter Version:
Higher gas lift for a seating height of 59 – 84cm.
Height adjustable chromated foot ring, anti-slip finish and base with feet.

Clear Room Chair SHAPE	
181.216.000	SHAPE with ST Technology, 4° Seat Tilt Adjustment
181.217.000	SHAPE with ST Technology and high Backrest
181.028.000	Option: Counter Version
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

ESD SEAT WITH CASTERS

Stepless adjustable sitting height and sitting tilt. The version with sitting height 54 - 79cm has load dependant blocking casters.

Base:	aluminium, Ø 53cm, sitting height: 45 - 62cm
	aluminium, Ø 65cm, sitting height: 54 - 79cm
	(foot ring with load dependant blocking casters)
Seat:	33 x 40cm (WxD), conductive polyurethane foam
Casters:	soft, for hard floors
	(with fooring, load dependant blocking)

ESD Seat with Casters	
181.436.000	ESD Seat, height: 54 - 79cm with Foot Ring
181.436.100	ESD Seat, height: 45 - 62cm
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

STAND-UP SEAT WITH **CASTERS AND FOOT RING**

Stepless adjustable sitting height (55 - 80cm) and seat tilt adjustment.

Seat:	37 x 36cm (WxD)
Base:	polished Aluminium, Ø 65cm
Upholstery:	conductive PU-Foam, washable
Casters:	load-dependant blocking casters, soft, for hard floors

NOTE: For safety reason this model is only available with soft casters.

Stand-Up Seat with Casters and Foot Ring	181.435.000

STAND-UP SEAT ECONOMY

Stepless adjustable sitting height with gas lift.
Seat made of PU-foam with integrated seat tilt adjustment.
Solid base made of black polyamid, optionally made of polished aluminium incl. feet.

Seat height: 55-81cm
Seat width: 35cm
Seat depth: 25cm
Backrest: 15cm

Stand-Up Seat ECONOMY	
181.431.001	with Polyamid Base
181.431.002	with Polished Aluminium Base

WORKSHOP STOOL

Stool for manufacturing area and workshop.
Stepless adjustable sitting height with gas lift.
Polyamid base with load-dependant blocking safety casters for hard floors or feet.

Seat height: 39-52cm
Seat diameter: Ø 35cm

Workshop Stool	
181.211.101	with Synthetics Leather and Casters
181.211.102	with Synthetics Leather and Feet
181.211.103	with Wood and Casters
181.211.104	with Wood and Feet
181.000.001	Option: Hard Casters for Soft Floors (no surcharge)

WORKSHOP CHAIR TEC

Swivel chair for manufacturing area and workshop with wooden seat and tapering backrest for a maximum of shoulder and arm mobility. The chair is conform to DIN 68 877 and holds the German GS symbol.

Seat: 42 x 36 x 44–58cm (WxDxH)
Base: Ø 70cm
Backrest: 43 x 55-63cm (BxH)
Casters: Soft, for hard floors

Counter-Version:
Sitting height between 55 - 80cm and heigth adjustable chromated footring with anti-slip surface. Base with feet.

Workshop Chair TEC	
181.211.002	TEC with Standard Mechanics SM
181.028.000	Option: Counter-Version
181.029.000	Option: Polished Aluminium Base
181.000.000	Option: Hard Casters for Soft Floors (no surcharge)

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STUDENT CHAIR **FLEX**

- Ergonomic shaped blow-moulding seat in polypropylene.
- Grooved seat and backrest for comfortable air ventilation.
- Stepless adjustable sitting height with gas lift.
- Aluminium base with casters or feet.
- Sitting height: 43 - 51cm.

Available colours on demand!

Student Chair FLEX	
182.260.901	with Casters (sitting height + 2cm)
182.265.901	with Feet

STUDENT SWIVEL CHAIR, WOOD

- Seat and backrest made of beech multiplex.
- Aluminium base with 5-beams and casters or feet.
- Stepless adjustable sitting height between 43 - 51cm.

Colours on demand!

Student Swivel Chair, Wood	
182.305.901	with Casters (sitting height + 3cm)
182.300.901	with Feet

STUDENT CANTILEVER CHAIR

- Oval tube 35/15/2mm (stackable), exoxy coated (colours on demand).
- Sitting height: 46cm.
- Floor protecting plastic feet.
- Beech Type:
  Seat and backrest made of beech multiplex.
- Air cushion Type:
  Seat and backrest made of recyCable blow-moulding plastics.

Student Cantilever Chair	
181.100.901	Beech
181.150.901	Air Cushion

4-LEG **VISITOR CHAIR**

- 4-leg base made of Ø 22mm chromated tubular steel with plastic cover.
- Ergonomically formed backrest and seat with hard-wearing cushion.
- Packing unit = 2pcs.

Seat height: 46cm
Seat width: 48cm
Seat depth: 45cm
Backrest: 32cm

4-Leg Visitor Chair (please choose your colour)	
181.311.**B**02	4-Leg Visitor Chair
181.311.002	Armrests (W: 61cm)

SWIVEL CHAIR **ECONOMY**

- Stepless adjustable seat height with gas lift.
- High, ergonomic shaped backrest with spinal support, height adjustable in steps.
- Supports for spinal disks and pelvic area.
- Synchron mechanics with body weight adjustment, stepless arrestable.
- Black polyamid base or optional with chromated base and weight-dependant blocking casters.
- Hardwearing fabrics made of 100% polypropylen.

Ring Armrest
181.018.002

Seat height: 42-55cm
Seat width: 45cm
Seat depth: 43cm
Backrest: 57cm

Swivel Chair ECONOMY (please choose your colour)	
181.113.**B**02	Swivel Chair ECONOMY
181.018.002	Option: Chromated Steel Base
181.020.002	Ring Armrests
181.023.002	Height Adjustable Armrests
181.114.002	Option: Soft Casters for Hard Floors

SWIVEL CHAIR **TOP PRO**

- Stepless adjustable height with gas lift.
- Medicinically ergonomic backrest with integrated lumbar support,stepless height adjustable.
- Permanent contact mechanics for tilt adjustment of the backrest.
- Ergonomically contoured seat.
- Black polyamid base or optional with polished aluminium base and weight-dependant blocking casters.
- Hardwearing fabrics.

181.023.001

Seat height: 42-55cm
Seat width: 45cm
Seat depth: 46cm
Backrest: 45cm

Swivel Chair TOP PRO (please choose your colour)	
181.113.**B**01	Swivel Chair TOP PRO
181.018.001	Option: Polished Aluminium Base
181.023.001	Height Adjustable Armrests
181.114.001	Option: Soft Casters for Hard Floors

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SWIVEL CHAIR **SYNCRO PRO**

- Stepless adjustable seat height with gas lift.
- High, ergonomic shaped backrest with spinal support.
- Supports for spinal disks and pelvic area.
- Point synchron mechanic for the synchron adjustment of seat - and backrest tilt. Spring tension individually adjustable to body weight.
- Black polyamid base or optional with chromated base and weight-dependant blocking casters.

Seat height: 45-55cm
Seat width: 48cm
Seat depth: 48cm
Backrest: 55cm

Swivel Chair SYNCRO PRO (please choose your colour)	
181.313.**B**01	Swivel Chair SYNCRO PRO
181.019.001	Option: Polished Aluminium Base
181.024.001	Height Adjustable Armrests
181.114.001	Option: Soft Casters for Hard Floors

SWIVEL CHAIR **ALU BASIC**

- Stepless adjustable seat height with gas lift.
- Backrest with integrated, height adjustable lumbal support.
- Backrest with jacket hanger.
- Comportable orthopedic shaped seat.
- Point synchron mechanic, spring tension individually adjustable to body weight
- Black polyamid base or optional with chromated base and weight-dependant blocking casters.

Seat height: 42-55cm
Seat width: 47cm
Seat depth: 46cm
Backrest: 58cm

Swivel Chair ALU BASIC (please choos your colour)	
181.416.**B**01	Swivel Chair ALU BASIC
181.015.001	Option: Polished Aluminium Base
181.026.001	Height Adjustable Armrests
181.114.001	Option: Soft Casters for Hard Floors

▸ B: Fabrics (Visitor - and Model ECONOMY, TOP PRO, SYNCRO PRO, ALU BASIC)

1: black | **2:** anthracite | **4:** red | **5:** grey | **6:** dark blue | **7:** bordeaux | **8:** blue

PIN BOARD / **ROOM PARTITION**

Room Partition:

- Dimensions on demand, maximum size: 1000 x 1900mm oder 1200 x 1700mm.
- Both sides covered with fabrics in black, anthracite or blue.
- Hard foam core for sound protection.
- Surrounding anodized aluminium frame, width 28mm with plastics corner joints.
- Outer side with surrounding slot.
- ESD version with conductive fabrics and earting Cable.

Partition Stand with Disk-Foot; light grey

- Plastics disk foot, diameter 400mm.
- Round tube in standard height 2000mm.
- Incl. 4 pcs. pre-assembled mounting rings in black.

Partition Stand with T-Foot; light grey

- T-foot, depth 530mm.
- Round tube in standard height 2000mm.
- IIncl. 4 pcs. pre-assembled mounting rings in black.

Accessory to Pin Board / Room Partition	
490.100.500	Partition Stand with Disk-Foot, light grey
490.100.510	Partition Stand with T-Foot, light grey
490.110.900	Partition Element 1000 x 1800mm
490.110.905	ESD Partition Element 1000 x 1800mm

Partition Element with both foot types

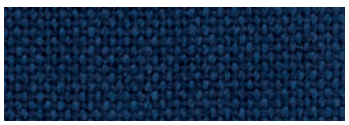
Partition with sound protection integrated in a perfrated blackplane.

Colours:

black

anthracite

blue



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THE RIGHT LIGHT FOR EACH PROCESS

Not matter if in laboratories, workshops or technical classrooms, workings have to be done very carefully. For this reason it is important, that the complete workspace is perfectly illuminated without dazzling anyone. Choose the right light for your individual application from our considerable range of lighting systems.

PROFI LED WORKSTATION LAMP ST (STANDARD)

Slim design made of anodized aluminium profile with integrated optics, thus optimal for installation at shelves and racks.

- Anodized aluminium profile with cooling ribs.
- Body 320° tiltable, ø 25 mm.
- Both sides with triangled brackets (W: 95mm) for complete hidden cable runs, with switch.
- Incl. supply unit 24V.
- Completely assembled.
- No cooling required.
- Continuous LED strip in different length with narrow LED pattern for an absolutely homogenous workspace illumination.

0...100 % DIMMABLE

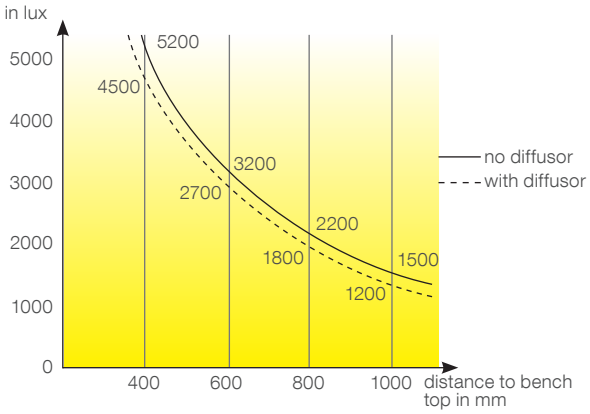
320° ROTATABLE

Installation:

- Firmly connected Install Unit with open frame supply unit for bench rack integration.
- Attachment Unit firmly connected with capsuled supply unit, used for bench combinations WITHOUT bench racks.
- Add-on Unit with plug-connection to the capsuled supply unit. Retrofitting unit.

DIMMABLE:

- Optionally with dimming function due to microcontroller-controlled PWM button, selective brightness 0…100%.



Technical data:

- Module length: 300mm, consisting of 28 LEDs, gapless positioned, module power: 14,4W.
- Brightness: 2.000lm (>3.300 lux at 500mm distance).
- Emitting angle: 120°.
- Colour reproduction RA: typ. 85.
- Colour temperature: 5.000 K (daylight white).
- Colour quality: Single binning according to ANSI (purely selected LEDs for a constant light colour).

Capsuled LED supply unit under shelf 365 x 68 x 38mm (WxDxH)

LED with diffusor/ LED without diffusor

LED Workstation Lamp ST	456. B 61. M 0 A

B Width

1	500mm (2.000lm)
2	800mm (4.000lm)
3	1100mm (6.000lm)
4	1400mm (8.000lm)
5	1700mm (10.000lm)
6	2000mm (12.000lm)

M Installation

0	INSTALLATION UNIT, not dimmable
2	ATTACHMENT UNIT, not dimmable
1	ADD-ON UNIT, not dimmable
5	INSTALLATION UNIT, dimmable
6	ATTACHMENT UNIT, dimmable
7	ADD-ON UNIT, dimmable

A Version

1	without diffusor
2	with diffusor
3	waterproof IP67, LED potted in two component PU

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PROFI LED WORKSTATION LAMP PR (PREMIUM)

Slim design made of anodized aluminium profile with integrated optics, thus optimal for installation at shelves and racks.

- Anodized aluminium profile with cooling ribs.
- Body 320° tiltable, ø 25 mm.
- Both sides with triangled brackets (W: 95mm) for complete hidden cable runs, with switch.
- Incl. supply unit 24V.
- Completely assembled.
- No cooling required.
- Continuous LED strip in different length with narrow LED pattern for an absolutely homogenous workspace illumination.

0...100 % DIMMABLE

320° ROTATABLE

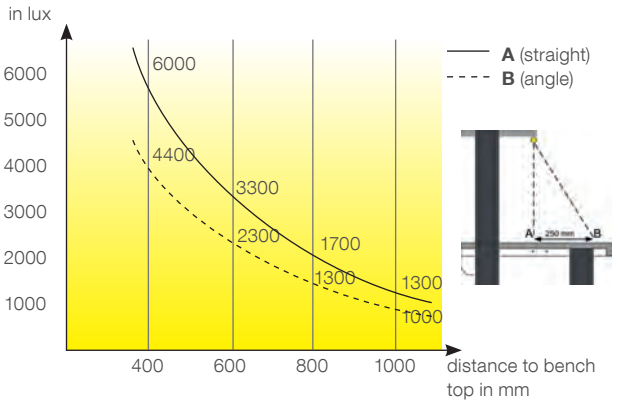
ADJUSTABLE COLOUR TEMPERATURE

Installation:

- Firmly connected Install Unit with open frame supply unit for bench rack integration.
- Attachment Unit firmly connected with capsuled supply unit, used for bench combinations WITHOUT bench racks.
- Add-on Unit with plug-connection to the capsuled supply unit. Retrofitting unit.

2-Channel DIMMER with adjustable white:

- Adjustable brightness between 0…100%
- Stepless adjustable colour temperature between 2.700K (daylight white) to 5.500K (cool white).
- With 2-channel microcontroller-controlled PWM dimmer with double rocker switch.



Technical data:

- Module length: 400mm, consisting of 42 LEDs, gapless positioned, module power: 23W.
- Brightness: 3.000lm (> 4.500 lux at 500mm distance).
- Emitting angle: 120°.
- Colour reproduction RA: typ. 85.
- White colour temperature adjustable due to alternately arranged 2.700K (daylight white) and 5.500K (cold white) LEDs.

adjustable colour between: cold white (5.500k)

daylight white

and warm white (2.700K)

LED Workstation Lamp	PR 456. B 81. M 0 A

B Width

1	600mm (3.000lm)
2	1000mm (6.000lm)
3	1400mm (9.000lm)
4	1800mm (12.000lm)

M Installation

0	INSTALLATION UNIT
2	ATTACHMENT UNIT
1	ADD-ON UNIT

A Version

1	without diffusor
2	with diffusor
3	waterproof IP67, LED potted in two component PU

PROFI LED WORKSTATION LAMP **WITH GOOSENECK**

- The highly flexible gooseneck allows a completely variable and exact positioning of the luminaire.
- Housing with button for operating the LED (brightness and colour temperature at type PR).
- Pivoting LED lamp with body made of aluminium profile with cooling rips.
- Lamp body with continous LED strip and diffusor.
- Separate 24V supply with integrated dimmer, capsuled in 365 x 68 x 38 (WxDxH) sheet steel housing.

0...100 % DIMMABLE

ADJUSTABLE COLOUR TEMPERATURE

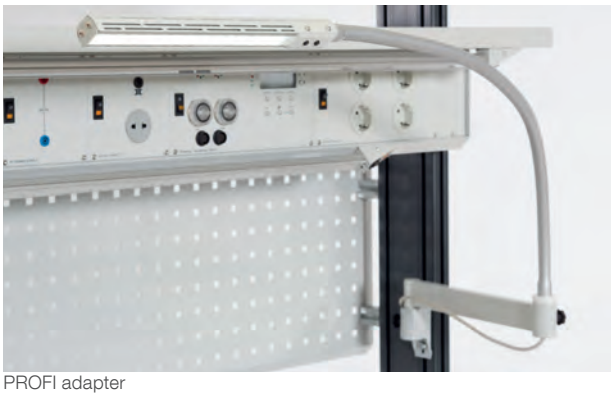
Installation:

- Adapter to fit into the PROFI sleeve (491.002.000) for the PROFI cantilever arm.
- Bench clamp with max. opening 90mm.
- Sliding-Adapter for the installation to the ENERGY Profile or the Multimedia Support.
  Thus the LED lamp can be moved across the complete bench width.

Technical data of the Luminaire:

- see page 456 for type ST
- see page 457 for type PR

2-channel dimmer with ajdustable colour temperature



PROFI adapter

see details to swivel heads on page 122

bench clamp

sliding adapter for ENERGY profile

sliding adapter for Multimedia Support

PROFI LED Workstation Lamp with Gooseneck 456. L A 1. M S 2

L LED Length		**A** Type		**M** Installation		**S** Gooseneck	
0	ST:75 / PR:133	6	Standard (ST)	1	with Adapter for PROFI Sleeve	4	500mm
1	ST:150 / PR:266	8	Premium (PR)	2	with Bench Clamp	5	800mm
2	ST: 300 / PR:400			3	with Sliding Adapter for ENERGY Profile		
				4	with Sliding Adapter for Multimedia Support		

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DAZZLE PROTECTOR FOR PROFI LED WORKSTATION LAMP

Especially for height adjustable workstations, looking directly into bright light when adjusting the bench height or the emitting angle of the lamp can not alway be prevented. For this reason we offer dazzle protectors.
They are easily attached to the cooling rips of the lamp.

Dazzle Protector 456.0 BB .001

BB Width

05	ST 500mm	**14**	ST/PR 1400mm
06	PR 600mm	**17**	ST 1700mm
08	ST 800mm	**18**	PR 1800mm
10	PR 1000mm	**20**	ST 2000mm
11	ST 1100mm		

OPTION **HIDDEN CABLE RUN**

- Milled slot with light grey plastic cover for hidden Cable runs on shelves and shelf racks.

Option Hidden Cable Run	**458.000.000**

OPTION **MAGNETIC HOLDER**

Magnetic set for ADD-ON Unit, which allows to use the LED Workstation lamp even on sheet steel shelves.

The set is consisting of:

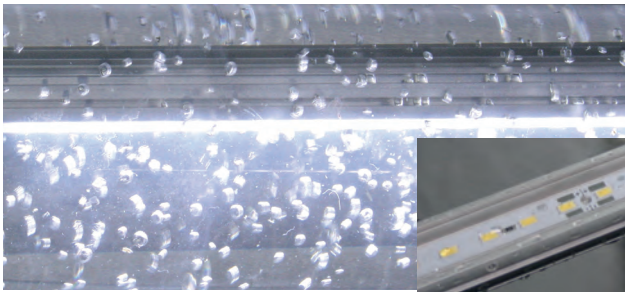
- Magnets for the triangular LED holder
- Magnets for the capsules 24V supply.
- Magnetic Cable channel 10 x 10mm.

Option Magnetic Holder	**456.000.000**

FULLY POTTED **LED IP67**

- LED module strips completely potted in lamp by engased two component compound.
- Aluminium brackets with encapsuled power cord.

This version of the LED Workstation Lamp is especially for the use in wet areas, e.g. within mechanical machines.



▸ **PROFI LED Workstation Lamp ST and PR**

WORKSPACE LAMP

- 180° tiltable sheet steel housing, sides with mounting brackets.
- With glare-free parabolic reflector.
- 36 Watt compact fluorescent lamp.
- Front with illuminated switch.
- Rear with 3m cable outlet, no plug.
- Durable, light grey powder coating.
- Dimensions: 70 x 95/45mm (DxH).

Workspace Lamp	458.0 BB . V 00

BB Width

36	490mm (1x 36W)
72	980mm (2x 36W)

V Version

0	VVG (low-loss ballast)
3	EVG (electronic ballast)
5	EVG with dimmer

UNIVERSAL **LED FLAT LIGHT**

- Very flat and nicely shaped lamp for the installation under shelves or bench racks. Made of anodized alu minium with integrated supply unit and switch.
- Dimensions: 40 x 15mm (DxH).
- Homogeneous, glarefree illumination due to low-gap LED arrays and diffusor.
- Extremely long lasting 80mW LEDs (approx. 30.000h).
- Energy efficiency of lamp: 1430lm/m (80lm/W).
- Colour represention: Ra/CRI > 80.
- Light colour neutral white: approx. 4.000K.

Universal LED Flat Light	
299.106.045	Length 450mm / 8W
299.106.060	Length 600mm / 10W
299.106.090	Length 900mm / 15W
299.106.120	Length 1200mm / 18W

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MAGNIFIER LAMP **ECO**

Economic type of magnifier lamp with energy-safing - or LED luminaire:

- Parallel motion metal arm (2 x 40cm).
- Lamp head Ø 2,5cm with integrated switch.
- 3 diopter lense, Ø 12,7cm, incl. protective flap.
- Incl. luminaire and bench clamp (65mm opening).
- 22W energy-safing ring lamp, 6.500K, day light white, 800 Lux at 35cm distance.
- 6W LED lamp with 90x LEDs, 6.500K, day light white, 1340 Lux at 35cm distance.

Magnifier Lamp ECO	
299.101.102	Energy-Safing Lamp
299.101.103	LED Lamp

LED MAGNIFIER LAMP

Magnifier lamp with artifical metal arm and slim LED luminaire.

- 7W LED module with a total power consumption of 9,5W.
- Colour temperature: 4000K.
- Colour reproduction: Ra 80.
- Dimmable (0%-50%-100%).
- 3 diopter lense (127mm diameter).
- Parallel motion arm with a total reach of 1000mm.
- Incl. fabric cover and bench clamp.

LED Magnifier Lamp	299.101.201

LED MAGNIFIER LAMP **VARIO**

Solid nicely shaped metal housing, with flexible arm and excellent illumination efficiency.

- Two semi-cyclic LED modules (total power: 11W).
- Colour temperature: 4000K.
- Colour reproduction: Ra 80.
- Dimmable between 1 - 100%.
- 3 or 5 diopter crown glass lense (127mm diameter).
- Swivel parallel motion arm, total reach 1050mm.
- Off-function after 4 or 9 hours.
- Incl. fabric cover and bench clamp.
- Standard type in light grey.
- ESD type in black.

LED Magnifier Lamp VARIO	
299.101.730	Standard with 3 Diopter
299.101.750	Standard with 5 Diopter
299.101.735	ESD with 3 Diopter
299.101.755	ESD with 5 Diopter

Standard Type

ESD Type

LED MAGNIFIER LAMP **DESIGN**

Magnifier Lamp with extra large optics, for a practical vision with both eyes. For an even higher magnification a second optics can be plugged on.

- 3,5 diopter crown glass lense (165mm diameter).
- Articlulated arm with joint and integrated spring, total reach: 1000mm.
- Incl. bench clamp and fabric cover.
- LED Module 750lm (4000K).
- Dimmable 10% - 100%.

LED Magnifier Lamp Design	
299.101.701	LED Magnifier Lamp Design
299.101.790	Extra Lense 4 Diopter
299.101.791	Extra Lense 6 Diopter

MAGNIFIER LAMP **3D**

The magnifier lamp 3D offers either the shadow-free illumination from both sides or a 3-dimensional magnification from either left or right side. This technology is very helpful for PLC technology and other difficult workings.

- Two integrated 6W LED modules (dimmable in steps 0-50-100%).
- Colour temperature: 4000K.
- Colour reproduction: Ra 80.
- 3,5 or 5 diopter crown glass lense (175 x 108mm).
- Articulated arm (parallel motion) with total reach of 1050mm.
- Off-function after 4 or 9 hours.
- Incl. fabric cover and bench clamp.
- Standard type in light grey.
- ESD type in black.

Standard Type

ESD Type

Magnifier Lamp 3D	
299.101.501	Standard with 3,5 Diopter
299.101.503	Standard with 5 Diopter
299.101.402	ESD with 3,5 Diopter
299.101.403	ESD with 5 Diopter

LED **TABLE LAMP**

The LED Table Lamp with spring-balanced arm is easy to adjust and offers homogenous illumination.

- LED Module 6W (300lm).
- Colour temperature: 3200K.
- Balanced spring articulated arm, 800mm reach.
- Colour of lamp: aluminium grey.
- Incl. bench clamp.

LED Table Lamp	299.101.801

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TASK LAMP

Symmetric lamp for the homogeneous illumination of large workspaces.

- Parallel motion arm with steel sheet housing in white.
- Total reach: 1050mm.
- Lamp head: 100/ 470mm.
- Illuminant: 1 x TC-L 24W.
- Incl. 2,1m cable and bench clamp.

Task Lamp	299.101.310

LINEAR LED LAMP

Workspace lamp with great efficiency, high light quality and ergonomic handling.

- 12 LEDs, total 14W.
- Colour temperature: neutral white 4.000K.
- Glare suppression with cone prism lense.
- Lamp head (218 x 136 x 33mm) made of anodized aluminium and black plastic parts.
- Spring balanced arm (384 + 400mm) with 3D head joint.
- Switch for dimmer in the lamp head.
- Supply unit (15W) with 3m cable.
- ESD type in black.

Standard Type

ESD Type

Linear LED Lamp	
299.101.320	Linear LED Lamp
299.101.321	ESD Linear LED Lamp
299.103.200	Bench Clamp

LED SPOT LAMP

Spot lamp for the precise punctual illumination.

- LED technology with 9,5W in neutral white 5.700K.
- Radiation angle: 10°.
- Colour reproduction Ra > 80.
- Luminaire (79 x 102mm) with 3mm safety glass.
- Black housing and anodized aluminium parts.
- Spring balanced arm (422 + 280mm).
- Switch for dimmer in the lamp head.
- Incl. 3m cable.

LED Spot Lamp	
299.103.101	LED Spot Lamp
299.103.200	Bench Clamp

BENCH TOP **SLEEVE**

- For table -, magnifier - and examination lamp.
- For all lamps with fixation bolt of Ø 12,7mm.

Bench Top Sleeve	**299.101.210**

LAMP ADAPTER FOR PROFI CANTILEVER ARM

- Plastic part for the adaption of the lamp bolt to the sleeve of the PROFI cantilever arm.
- Reduction: 25mm to 12mm.

Lamp Adapter for PROFI Cantilever Arm	**491.005.200**

Sleeve + PROFI Cantilever Arm + Lamp Adapter
491.002.000 + 491.003.000 + 491.005.200

PROFI CANTILEVER ARM WITH SLEEVE FOR LAMPS

- Solid steel beams with absolut stable sleeve/ bolt combination.
- Max. load: 50kg.
- Modular configurable with:
  - sleeve fot the assembly to the PROFI profiles
  - cantilever arm with bolt, sleeve and locking screw (available in different length with cord holder)
  - different end pieces with bolts

PROFI Cantilever Arm with Sleeve for Lamps	
491.002.000	Sleeve for PROFI Cantilever Arm Ø 25mm
491.003.000	PROFI Cantilever Arm / Reach: 250mm
491.004.000	PROFI Cantilever Arm / Reach: 300mm
491.005.001	PROFI Cantilever Arm / Reach: 500mm
491.002.100	Set 1: Sleeve + Cantilever Arm 300mm
491.010.100	Set 2: Sleeve + Cantilever Arm 300 + 250mm

PROFI Sleeve 491.002.000

PROFI Cantilever Arm 491.004.000 + 491.003.000

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TFT - AND KEYBOARD SUPPORT FOR PROFI CANTILEVER ARM

- Solid swivel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Adapter plate in VESA standard (100 x 100mm and 75 x 75mm).
- Keyboard tray 470 x 220 x 320mm (WxDxH).
- Swiveling Mousepad 200 x 200mm.
- Durable, light grey powder coating.

TFT - and Keyboard Support for PROFI Cantilever Arm	
491.028.101	TFT Support
491.028.111	TFT Support with Keyboard Tray
491.028.121	TFT Support with Keyboard Tray and Mousepad

491.028.101:
TFT Support

491.028.111:
TFT Support with Keyboard Tray

491.028.121:
TFT Support with Keyboard Tray and Mousepad
with Swiveling Mousepad

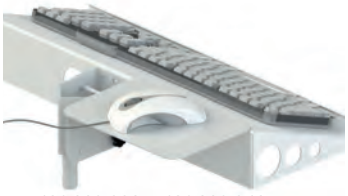
NOTEBOOK - AND KEYBOARD SUPPORT FOR PROFI CANTILEVER ARM

- Solid siwvel head (+/- 20°) with two locking screws and bolt (Ø 25mm).
- Sheet steel swivel tray with front side stop edge.
- Notebook Support: 400 x 300mm (WxD).
- Keyboard Support: 470 x 200mm (WxD).
- Durable, light grey powder coating.

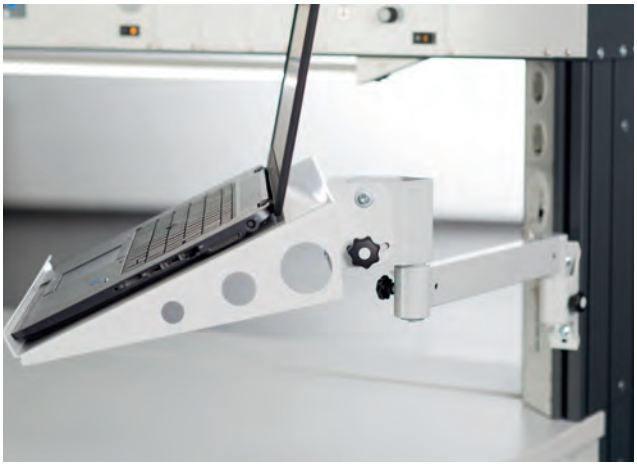
491.028.320 Notebook Support

491.028.330 Keyboard Support

Notebook - und Keyboard Tray for PROFI Cantilever Arm	
491.028.320	Notebook Support
491.028.330	Keyboard Support
491.028.340	Option Mousepad for Keyboard Support



491.028.330 + 491.028.340
Keyboard Support with Mousepad



PROFI TFT **SWIVEL ARM TSS LITE**

- 2pcs. swivel arm with a total reach of 415mm.
- Load capacity: max. 5kg.
- Rotatable and tiltable TFT support in VESA standard 75/100.
- Colour: light grey (or white on demand).

PROFI TFT Swivel Arm TSS Lite	491.056.310

PROFI **TFT SWIVEL ARM TSS**

- Swivel arm made of anodized aluminium.
- Adjustable smoothiness of joints.
- Ball joint for a precise and flexible positioning of the monitor.
- VESA adapter 75/100 with quick clamp for an easy and toolless change of monitors.
- Integrated cable holder for clearly arranged cable runs.

Ball joint with quick clamp

Integrated cable holder

PROFI TFT Swivel Arm TSS	
491.057.100	only head; reach: 105mm; load: max. 15kg
491.057.200	1pcs; reach: 250mm; load: max. 15kg
491.057.210	1pcs; reach: 325mm; load: max. 15kg
491.057.300	2pcs; reach: 450mm; load: max. 10kg
491.057.400	2pcs; reach: 505mm; load: max. 15kg
491.057.410	2pcs; reach: 700mm; load: max. 10kg
491.057.420	2pcs; reach: 800mm; load: max. 10kg
491.057.430	2pcs; reach: 900mm; load: max. 10kg

491.057.100

491.057.200

491.057.300

491.057.400

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TABLET COMPUTER HOLDER TSS

- The tablet computer holder can be plugged to the TSS - or TSS Lite swivel arm.
- Suitable for 7“ to 10“ tablet computers, with cage clamp (clamping length: 160 - 300mm).

Tablet Computer Holder TSS	491.056.900

PROFI SWIVEL ARM TSS WITH NOTEBOOK - & KEYBOARD SUPPORT

- 2pcs. TSS swivel arm made of anodized aluminium.
- Cord holder for swivel arm for a clear Cable run.
- Load capacity: max. 10kg.
- Supports rotatable and tiltable in 25° angle.
- Notebook space (404 x 288mm) for normal and large notebooks.
- Keyboard space (640 x 172mm) for computer keyboard and mouse.

491.057.500

491.057.600

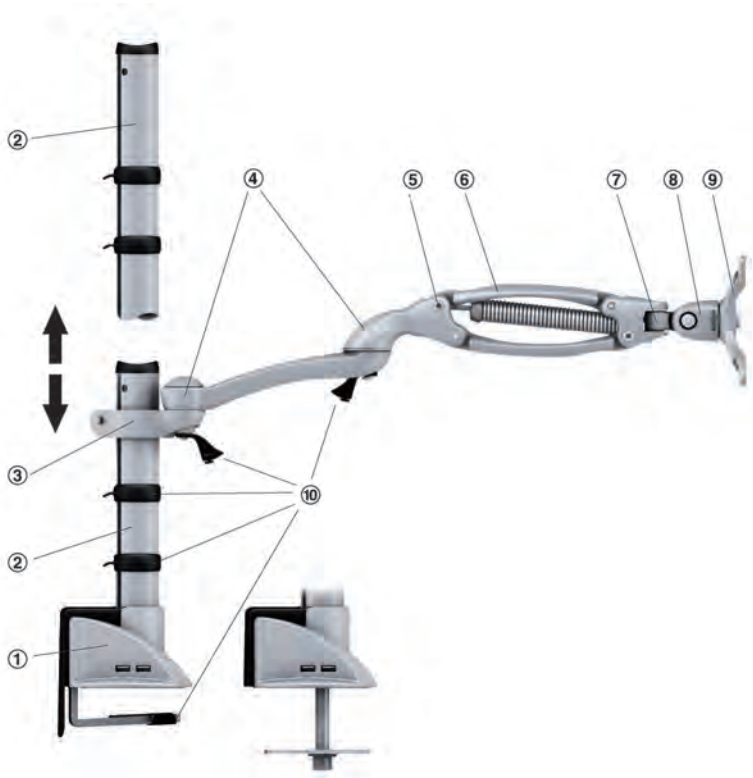
PROFI Swivel Arm TSS with Notebook - & Keyboard Support	
491.057.500	TSS with Notebook Support, reach: 589mm
491.057.600	TSS with Keyboard Support, reach: 528mm
491.057.610	TSS with Keyboard Support reach: 728mm

PROFI FOOT TSS

- Anodized aluminium foot with four slots.
- Length: 445mm.
- Diameter: 51mm.
- Height variable fixation of TFT swivel arm TSS and TSS Lite.
- Incl. 2 cable clamps.
- Bench clamp, opening: 5 - 70mm.
- Non-movable: screwed to the slots of the ENERGY profile or PROFI cross profile.
- Movable: horizontally attached to the ENERGY profile or PROFI profile with plastic sliders.

PROFI Foot TSS	
491.057.000	with Bench Clamp
491.057.050	Non-Movable Slot Fixation
491.057.900	Movable Slot Fixation

MODULAR SWIVEL ARM SYSTEM DESIGN



1. Bench top fixation with 4 USB sockets, either with clamp or through the bench top, span width: 8-75mm.
2. Bench top fixation, height 260mm or 570mm.
3. Clamp fixation for tool-less and stepless adjustable height.
4. 180° swivelling to both sides for flexible positioning.
5. Stepless adjustable with spring.
6. Vertical stroke 228mm for an optimal height adjustment.
7. 90° swivelling to the right or left side.
8. Up or down tilt of 85°.
9. 180° rotatable standard VESA adapter 75/100, (monitor either horizontal or vertical).
10. Cord holder at the swivel arm and foot for a protected and clear cable arrangement.

FOOT FOR TFT SWIVEL ARM DESIGN

- For clamp fixation and through bench top.
- With 4 cord holders and end cap.
- Clamp fixation: 8 - 75mm.
- Height: 260mm/ 570mm.

Foot for TFT Swivel Arm DESIGN	
491.055.881	height: 260mm
491.055.883	height: 570mm

SLIDING CLAMP FOR FOOT

- For the fixation of one or two TFT swivel arms to the foot.
- With cord holder.

double sliding clamp for the fixation of two TFT swivel arms on same height

Sliding Clamp for Foot	
491.055.969	Single Sliding Clamp with 1 Cord Holder
491.055.365	Double Sliding Clamp with 2 Cord Holders

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PROFILE CONNECTOR FOR TFT SWIVEL ARM DESIGN

- With cord holder.
- Height: 90mm / width: 51mm.
- Incl. assembly set.

Profile Connector	491.055.980

TFT SWIVEL ARM DESIGN

- Swivel arm short for TFT monitors 5kg or 7,5kg.
- Reach: 90mm.
- Adjustable tilt 85°.
- 180° swivel head piece.

TFT Swivel Arm DESIGN	
491.055.976	Load: 5kg
491.055.977	Load: 7,5kg

TFT SWIVEL ARM DESIGN, NO HEIGHT ADJUSTMENT

- Swivel arm in two different length for the acceptance of TFT monitors 5kg or 7,5kg.
- Reach: 250mm or 430mm.
- 180° swivel head piece.
- With cord holder.

TFT Swivel Arm DESIGN, no height adjustment	
491.055.958	Reach 250mm/ Load: 5kg
491.055.959	Reach 250mm/ Load: 7,5kg
491.055.938	Reach 430mm/ Load: 5kg
491.055.939	Reach 430mm/ Load: 7,5kg

TFT SWIVEL ARM DESIGN, HEIGHT ADJUSTABLE

- Swivel arm in two different length for the acceptance of TFT monitors 5kg or 7,5kg.
- Reach: 330mm or 510mm at full length.
- 180° swivel head piece.
- Adjustable height more than 150mm.

TFT Swivel Arm DESIGN, height adjustable	
491.055.942	Reach 330mm/ Load: 5kg
491.055.952	Reach 330mm/ Load: 7,5kg
491.055.903	Reach 510mm/ Load: 5kg
491.055.932	Reach 510mm/ Load: 7,5kg

FLEX POWER **OUTLET STRIP**

- Solid power outlet strip in screw-fixed plastic housing.
- Connecting cable H05VV-F3G 1,5mm².
- Optionally with illuminated 2poles switch, 16A.
- Dimensions: 56 x 41mm (WxH).
- International outlet strips on demand.

FLEX Power Outlet Strip			
293.630.000	Schuko 3fold (L:185) white, no Cable	293.660.500	Schuko 6fold (L:340) white, with 5m Cable
293.630.001	Schuko 3fold (L:185) black, no Cable	293.660.501	Schuko 6fold (L:340) black, with 5m Cable
293.630.100	Schuko 3fold (L:185) white, with 1,5m Cable	293.661.000	Schuko 6fold (L:340) white, no Cable, with Switch
293.630.101	Schuko 3fold (L:185) black, with 1,5m Cable	293.661.100	Schuko 6fold (L:340) white, with1,5m Cable and Switch
293.630.300	Schuko 3fold (L:185) white, with 3m Cable	293.661.101	Schuko 6fold (L:340) black, with 1,5m Cable, with Switch
293.630.301	Schuko 3fold (L:185) black, with 3m Cable	293.661.300	Schuko 6fold (L:340) white, with 3m Cable, with Switch
293.630.302	Schuko 3fold (L:185) red, with 3m Cable	293.661.301	Schuko 6fold (L:340) black, with 3m Cable, with Switch
293.630.500	Schuko 3fold (L:185) white, with 5m Cable	293.661.500	Schuko 6fold (L:340) white, with 5m Cable, with Switch
293.630.501	Schuko 3fold (L:185) black, with 5m Cable	293.661.501	Schuko 6fold (L:340) black, with 5m Cable, with Switch
293.640.000	Schuko 4fold (L:288) white, no Cable		
293.640.100	Schuko 4fold (L:288) white, with 1,5m Cable	**Options:**	
293.640.101	Schuko 4fold (L:288) black, with 1,5m Cable	293.600.000	Mounting Kit for FLEX Outlet Strip
293.641.000	Schuko 4fold (L:288) white, no Cable, with Switch	293.600.010	with EP/MP-Plug for the Connection to the Mains Module
293.641.100	Schuko 4fold (L:288) white, with 1,5m Cable, with Switch	291.001.147	Option: extra BS plug
293.641.101	Schuko 4fold (L:288) black, with 1,5m Cable, with Switch		
293.660.000	Schuko 6fold (L:340) white, no Cable	**Swiss Outlet Strip:**	
293.660.100	Schuko 6fold (L:340) white, with 1,5m Cable	293.640.204	4fold with Overload Protection 10A
293.660.101	Schuko 6fold (L:340) black, with 1,5m Cable	293.660.204	6fold with Overload Protection 10A
293.660.300	Schuko 6fold (L:340) white, with 3m Cable	293.661.204	6fold with Switch and Overload Protection 10A
293.660.301	Schuko 6fold (L:340) black, with 3m Cable		

POWER OUTLET **STRIP INDUSTRY**

- Hight quality power outlet strip made of silver plastic profile and child-protected black Schuko sockets (45° position), black end cap and mounting tongues.
- Black connecting cord H05VV-F 3G1,50mm² (length: 2m) with angled Schuko plug.
- Dimensions: 70 x 45mm (WxH).
- Available with 4fold and 6fold in franco-belgian standard (same price).

Power Outlet Strip INDUSTRY			
293.204.100	4fold with Switch (L: 355mm)	293.209.100	9fold with Switch (L: 570mm)
293.206.100	6fold with Switch (L: 440mm)	293.212.100	12fold with Switch (L: 700mm)

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19“ POWER OUTLET STRIP 1HE

- Anodized aluminium profile with light grey Schuko sockets (45° position) and stainless steel brackets with 19“ fixing holes (90° turnable).
- Black connecting cord H05VV-F 3G1,50mm² (length: 2m) with angled Schuko plug.

19“ Power Outlet Strip 1HE			
293.405.400	5fold, with Switch and Overvoltage Protection, Mains - and Frequency Filter	293.407.300	7fold, with Switch and Overvoltage Protection (optical function and failure indication)
293.406.500	6fold, with RCD 30mA, 2poles	293.408.200	8fold, with Switch
293.406.600	6fold, with Circuit Breaker B 16A, 2poles	293.409.100	9fold, no Switch

SOCKET UNIT FOR FURNITURE INTEGRATION

- Silver steel frame (248 x 151mm).
- Solid flap-mechanism, snapping into end positions (depth: 56mm).
- Flap could be closed even if plugged in, due to integrated brush strip.
- Solid clamp fastening for bench tops between 18mm to 30mm. The socket unit is inserted into the completely mounted flap-mechanism.

Socket Unit for Furniture Integration	
293.801.300	1fold with 2x RJ45 and 1x VGA Socket
293.802.200	2fold with 2x RJ45
293.803.100	3fold

MODULAR SOCKET SYSTEM STEP

- Modular connectible protection - and socket system in aluminium-plastic housing.
- Single modules can be set-up in flexible configurations and connected from bench to bench.

293.336.004

293.336.039

293.336.067

293.336.065

293.906.003

Modular Socket System STEP	
293.336.004	Overvoltage Protection 2kV w. Mains Filter 30MHz
293.336.039	3fold Schuko Socket, black
293.336.067	3fold Schuko Socket, red
293.336.065	RCD/ Line Circuit Breaker 16A, 400V, 2poles
293.375.038	Connecting Cable H05VV-F3G 1,5mm², 2m
293.375.003	Power Cord H05VV-F3G 1,5mm², 3m
293.906.003	3fold Schuko Socket, black with Switch
293.940.097	Fixing Brackets made of Stainless Steel, 2pcs.

TEST LEADS WITH 2MM LAMELLA PLUG

- Highly flexible connecting cable.
- Both sides with stackable 2mm lamella plug.
- Rated current: 10A.
- Approved contact voltage for 4mm measuring leads (not insulated): $30V_{AC}$ / $60V_{DC}$.

Test Lead 299.52 **L** .0 **F** **F**

L Length

0	7,5cm	**6**	45cm
2	30cm	**8**	60cm

FF Colour

02	black	**06**	red	**10**	green	**14**	grey
04	brown	**08**	yellow	**12**	blue	**18**	white

TEST LEAD WITH 4MM LAMELLA PLUG

- Highly flexible connecting cable.
- Both sides with stackable 4mm lamella plug.
- Rated current: 32A
- Approved contact voltage for 4mm measuring leads (not insulated): 30V AC/60V DC.
- Approved contact voltage for 4mm measuring leads (contact protected with safety plugs): 1000V.

4mm lab plug (not insulated)

4mm safety plug (contact protected)

Test Leads 299.5 **A** **L** .0 **F** **F**

A Type

1	Test Lead
3	Safety Test Lead

L Length

0	25cm	**4**	100cm
2	50cm	**6**	150cm

FF Colour

02	black	**06**	red	**10**	yellow	**14**	blue	**18**	white
04	brown	**08**	yellow/ green	**12**	green	**16**	grey		

Set 299.49 **A** . **S** 00

A Type

1	Test Lead
3	Safety Test Lead

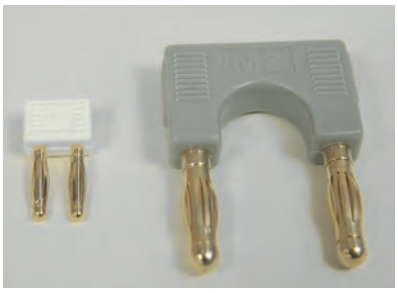
S Pcs.

1	50x Cable, Lengths 25, 50 and 100cm in Different Colours
2	100x Cable, Lengths 25, 50, 100 and 150cm in Different Colours
3	160x Cable, Lengths 25, 50, 100 and 150cm in Different Colours

PLUG CONNECTOR AND ADAPTER

Plug Connector

505.000.010	Plug Connector 2mm (pin distance 5mm)
505.000.020	Plug Connector 4mm (pin distance 19mm)
505.000.021	Plug Connector 4mm (pin distance 38mm)
505.000.022	Adapter 4mm Plug to 2mm Jack, black
505.000.023	Adapter 4mm Plug to 2mm Jack, red
505.000.030	Safety Plug Connector 4mm (pin distance 19mm)



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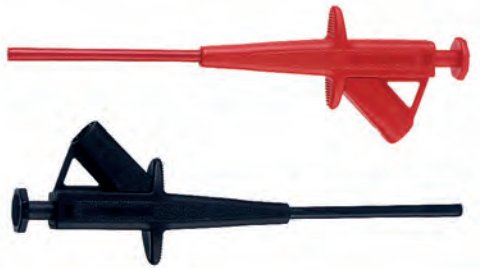
CLAMP-TYPE **TEST PROBE**

- Clamp-type test probe with elastic grip jaw in flexible tube and 4mm jack.

Clamp-Type Test Probe	
299.500.001	red
299.500.002	black



TEST **PROBE**

- Test probe with plug connection to 4mm jack and steel measuring pin.

Test Probe	
299.500.011	red
299.500.012	black

CROCODILE CLIP

- Test clip for bolts up to 20mm front part with fine-wire surface and 4mm jack.

Crocodile Clip	
299.500.021	red
299.500.022	black

BNC CABLE

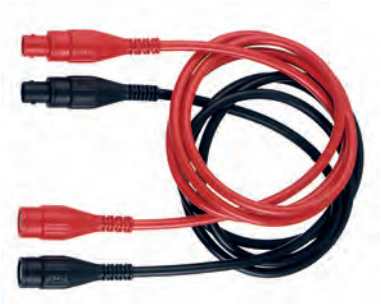
- BNC test lead 50Ω, with 2 BNC plugs and bend protection.
- Colour: black.

BNC Cable	
299.050.100	50cm
299.100.100	100cm
299.200.100	200cm

BNC EXTENSION CABLE

- BNC test lead with BNC plug and BNC connector, 50Ω.
- Colour: black.

BNC Extension Cable	
299.500.031	100cm
299.500.032	200cm



BNC **ADAPTER**

- Adapter from two rigid 4mm socket to BNC.

BNC Adapter	
299.001.300	with BNC Plug
299.002.100	with BNC Socket

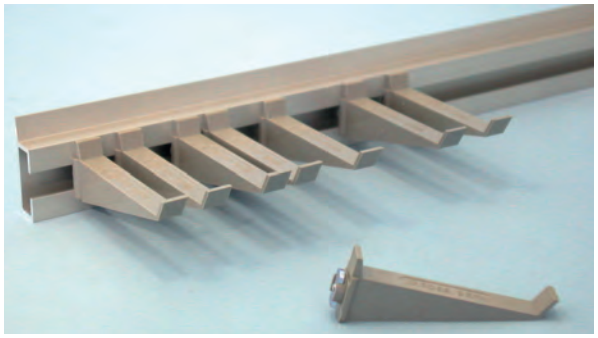
CORD HOLDER FOR PROFI

- Cable comb made of aluminium, with different gaps for the acceptance of cables up to 12mm thick.
- Durable, light grey powder coating.
- Incl. assembly set for the fixation to the PROFI profiles.
- Height: 30mm.

Depth	Width / no. of gaps 300/17	500/31	603/37	800/48	1000/56
80mm	448.160.000	448.180.000	448.200.000	448.220.000	448.240.000
160mm	448.170.000	448.190.000	448.210.000	448.230.000	448.250.000

CABLE SUPPORT **WITH SLIDING PINS**

- Aluminium U-Profile with individual sliding pins, plastic.
- The sliding pins can be individually adjusted to the different cable diameters.



Cable Support with Sliding Pins	
299.211.100	1 Sliding Pin
299.221.100	L: 255mm with 16x Sliding Pins
299.221.200	L: 500mm with 34x Sliding Pins
299.221.400	L: 1000mm with 69x Sliding Pins

PROFI **CABLE SUPPORT**

- Cable support with bow and integrated cable comb, made of 3mm thick aluminium.
- Cable comb suitable for laboratory cords, power cords, etc.
- Durable, electrical conductive powder coating in light grey.
- Dimensions: 160 x 100 x 65mm (WxDxH).

PROFI Cable Support	299.221.501

PROFI HOSE AND **CABLE SUPPORT**

- Hose support made of aluminium die-cast.
- For the storage of hoses and cables.
- Dimensions: 190 x 70mm (WxD).

PROFI Cable Support	299.221.501

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DIGITAL MULTIMETER AND LCR METER

Digital Multimeter with Bargraph; 3 3/4digits:

- 23mm, 3 3/4digit LCD with background illumination and 41 segment bar graph.
- Automatic and manual range selection.
- Min. - /max. - and data-hold-function.
- Hz/ duty function and relative value.
- DCV 40/ 400mV/ 4/ 40/ 400/ 600V; 10µV.
- ACV 40/ 400mV/ 4/ 40/ 400/ 600V; 10µV.
- DCA 400µA/ 4/ 40/ 400mA/ 10A; 0,1µA.
- ACA 400µA/ 4/ 40/ 400mA/ 10A; 1µA.
- Ohm 400Ω/ 4/ 40/ 400kΩ/ 4/ 40MΩ; 0,1Ω.
- Capacity 40/ 400nF/ 4/ 40/ 400µF; 10pF.
- Frequenz 100/ 1000Hz/ 1/ 10/ 100kHz/ 1/ 10MHz; 0,1Hz.
- Temperature: -20 ... +1000°C; 1°C (K-probe).
- Fast continuity test and diode test.
- Safety: EN 61010-1; CAT III 600V.
- Dimensions: 95 x 190 x 45mm.
- Incl. holster, test leads, type K-thermocouple, battery and manual.

Multifunctional Tester (DMM and LCR Meter)

- 3 ½digit LCD with background illumination.
- Max. - and data-hold-function.
- DCV 200mV/ 2/ 20/ 200/ 600V; 100µV.
- ACV 200mV/ 2/ 20/ 200/ 600V; 100µV.
- DCA 20µA/ 2/ 200mA/ 10A; 10nA.
- ACA 20µA/ 2/ 200mA/ 10A; 10nA.
- Frequency range: 40 - 400Hz.
- Ohm 200Ω/ 2/ 20/ 200kΩ/ 2/ 20/ 2000MΩ; 0,1W.
- Capacity 20/ 200nF/ 2/ 100µF; 10pF.
- Inductivity 2/ 20/ 200mH/ 20H; 1µH.
- Frequency 2/ 20/ 200kHz/ 2/ 10MHz; 1Hz.
- Temperature -40 ... +1000°C.
- Transistor test, diode test, continiuity test with buzzer.
- Dimension: 90 x 195 x 40mm.
- Incl. test leads, multifunctional adapter, temperature probe.

DigitalMultimeter und LCR-Meter	
590.100.003	Digital Multimeter
590.105.500	Multifunctional Meter (DMM + LCR)

DIGITAL STORAGE OSCILLOSCOPE, 2-CHANNEL

Device series with high resolution colour display, back light, high band width and high sampling rate, big internal data memory and USB port. The LAN interface enables an easy integration into corporate networks and the VGA output port allows presentations via external monitor or beamer.

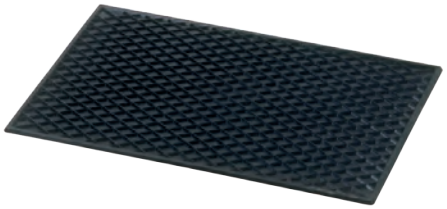
- 2 Channels.
- 8“ TFT display (800 x 600 pics; 65536 colours).
- USB interface for real time data transmission or reading of internal memory.
- VGA output port for the connection of an external monitor.
- LAN connection for the remote access via network.
- Auto-set and auto-scale function.
- Large internal memory for 15 wave forms.
- 20 automatic measuring modes and FFT function.
- PASS/FAIL function.
- Safety: EN 61010-1; CAT II.
- Dimensions: 355 x 178 x 118mm.
- Accessory: 2 pcs. BNC cables, PASS/ FAIL adapter, USB cable, software-CD, mains cable, 2 probes.

Digital Storage Oscilloscope, 2-Channels	
590.126.500	30MHz
590.130.500	70MHz
590.131.000	125MHz

RUBBER MAT

- The rubber mat protects the work top of heavy or sharp-edged devices.
- Dimensions: 525 x 365 x 7mm (WxDxH).
- Colour: black.

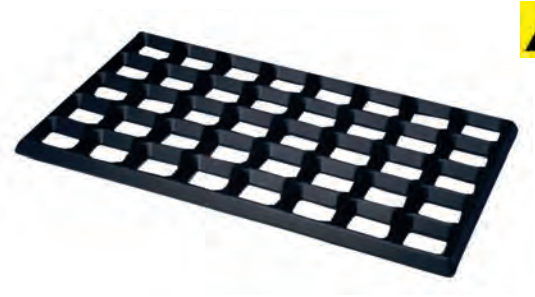
Rubber Mat	**299.111.100**



ANTISTATIC **RUBBER GRID-MAT**

- This solid rubber mat protects the bench top of sharp-edged and sensible devices.
- The grid catches splinters and separates small parts.
- Dimensions: 625 x 375 x 20mm (WxDxH).
- Colour: black.

Antistatic Rubber Grid-Mat	**299.111.300**



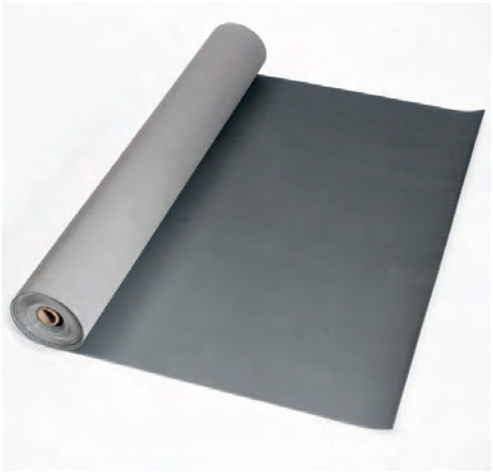
RUBBER MAT (PER METER)

- Tailored rubber mat for the protection of the complete bench top or as floor mat.
- Surface either flat or rilled.
- Resilent to disruptive discharge from 4mm thickness up to 50kV (VDE 0680).
- Width: 1000mm, length (max.): 10m, colour: grey.

Rubber Mat (per meter) **299.121. B S 0**

B Thickness		**S** Thickness	
1	3mm, rilled	**0**	1000mm
2	4,5mm, rilled	**2**	1200mm
3	4mm, flat		

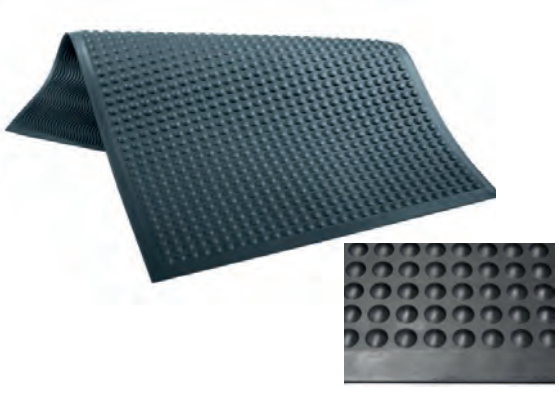
Tailoring	
299.890.910	Straight Cutout per Running Meter
299.890.920	Squared Cutout



EROGONOMIC FLOOR MAT STANDARD PU

- Ergonomic floor mat, foamed PU.
- Semicircular foams (Ø 19mm), for mostly standing occupations.
- Colour: grey.
- Thickness: 14mm

Ergonomic Floor Mat Standard PU	
299.892.609	600 x 900mm / pcs.
299.892.618	600 x 1800mm / pcs.
299.892.912	900 x 1200mm / pcs.
299.892.918	900 x 1800mm / pcs.



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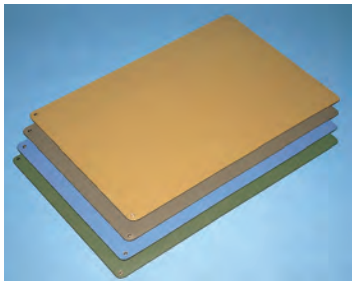
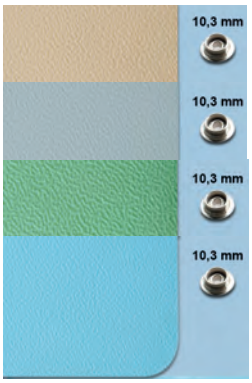
ESD BENCH MAT

- Double-layered bench mat with rounded corners.
- Material: Synthetic rubber, double-layered.
- Contact: 2 press studs 10,3mm.
- The top layer is mostly resistant to soldering spatters, the low-ohmic structure material provides a continuous resistance of between 10 - 100MΩ.

ESD Bench Mat	
299.890.300	600 x 1000mm (beige)
299.890.302	600 x 1000mm (platinum grey)
299.890.304	600 x 1000mm (olive green)
299.890.306	600 x 1000mm (light blue)
299.890.310	600 x 1200mm (beige)
299.890.312	600 x 1200mm (platinum grey)
299.890.314	600 x 1200mm (olive green)
299.890.316	600 x 1200mm (light blue)

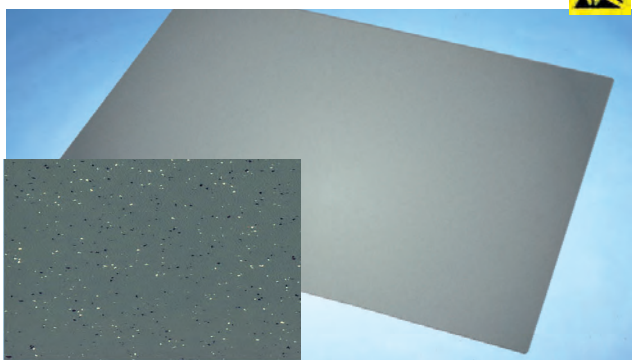




ESD FLOOR MAT

- The structure of the mat guarantees finest laying characteristics without curls and risk of stumbling.
- The surface is resistant to swivel chairs and shortly withstands intense heat, e.g. soldering splatter.
- Material: synthetic rubber, double-layered.
- Standard size: 1500 x 1200 x 3,5mm or per meter, max. 1500 x 10000mm (no press studs).
- Contact: 2x press studs 10,3mm.
- Colour: platinum grey.

ESD Floor Mat	
299.890.200	1500 x 1200mm (with press studs)
299.890.202	per meter: roll width: 1500mm (no press studs)

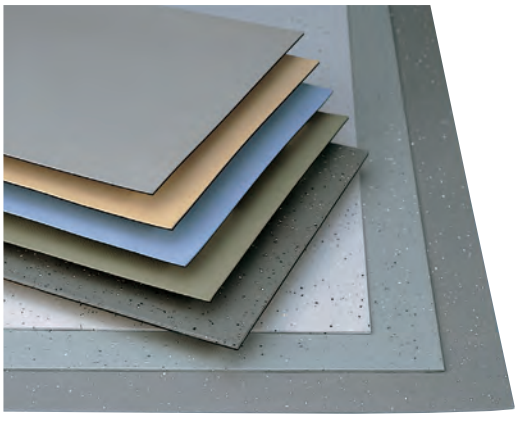


the synthetic rubber with its electrical conductive lower layer, with point-wise contact to the surface, guarantees an optimal electric conductance

ESD MAT PER METER

- Made of synthetic rubber, shortly heat resistant (e.g. soldering splatter), double-layered with low-ohmic structure material.
- Certified according to VDE DIN EN 100 015.
- Discharge resistance: 10 - 100MΩ, length (max.): 10m.

ESD Mat	299.89 B . 4 ST	
B Width		**ST Thickness**
1	1000mm	**00** 2mm (beige)
0	1220mm	**02** 2mm (platinum grey)
		04 2mm (olive grey)
		06 2mm (light blue)
		10 3,5mm (platinum grey)



the mat ensures a safe and rapid discarge of electric loads in ESD protected areas

ESD CONNECTOR

- For the easy realization of ESD earth connection with integrated 1MΩ protective resistor.

ESD Connector	
299.890.500	Schuko - Press Stud 10,3 with 1,5m Cable
299.890.510	Schuko - 3x Press Stud 10,3
299.890.520	Eylet Screw - 2x Press Stud 10,3 with 1,5m Cable
299.890.530	Schuko - 6x Press Stud 10,3 with 1,5m Cable

WRISTBAND / COILED CORD

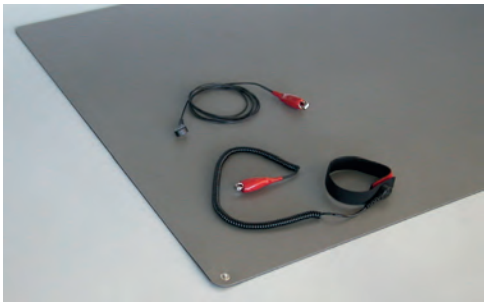
- Textile wristband with elastic-strap and non-allergic synthetic material. Integrated 1MΩ resistor. Connected with 10mm press stud.
- Length of coiled cord: 2400mm, both sides with press stud 10mm.

ESD Wrist Band / Coiled Cord	
299.890.110	Wirst Band with Coiled Cord
299.890.120	Wirst Band
299.890.130	Coiled Cord

ESD BASIC SET

- Conductive bench mat platinum grey with round corners made of antistatic systhetic rubber, 900 x 600 x 2mm.
- Two press studs for the connection of the wrist band cord.
- Earthing cord with press stud and crocodile clip.
- Textile wrist band with elastic-strap, coiled cord and press stud.

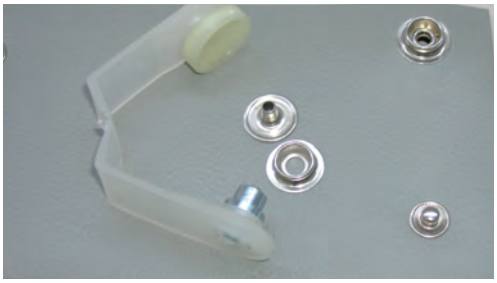
ESD Basic Set	299.890.100



CUSTOMIZING RUBBER MATS

- On demand we cut above rubber mats into specific dimensions, make cutouts for profile extensions and insert press studs.
- Adhesive foil with micro-perforation and ventilation grooves enables an easy and bubble-free tape down on bench tops or floors.
- The respective surface is instantly usable, the foil can be removed without residue.
- For an easy handling the foil is protected with peel-off paper.
- Resilent to stool casters.
- Suitable for under-floor heating.
- The punching tool is for later modifications of your mat with press studs 10,3mm.

Customizing Rubber Mats	
299.890.910	Straight Cut per Meter
299.890.920	Squared Cut
299.890.590	Punching Tool incl. Press Studs 10,3mm
299.895.075	1m Double Sided Adhesive Foil (width: 1m)



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ESD DOCUMENT HOLDER DIN A4

- 10x DIN A4 document protectors made of electrostatic polyethylene, fitted in black metall frames.
- Holder made of stainless steel incl. assembly set for the fixation to the PROFI extensions.

ESD Document Holder DIN A4	**468.100.100**

TURNTABLE

- Stainless steel disk with ribbed rubber surface.
- Load capacity: 180kg.
- Height: 20mm.
- Position lock with stop-pin in 45° steps, free-wheeling possible.

ESD Type:
- Conductive ribbed rubber surface with earthing Cable.

Turntable 299.62 A . D 0 T

A Type		D Diameter		T Version	
0	Standard	3	380mm	0	no position lock
5	ESD	5	500mm	5	with position lock

ESD FOOT REST

- Solid, conductive and tilting foot rest with earthing Cable.
- Black surface (450 x 350mm).
- Height front: 30 - 100mm.
- Height rear: 70 - 75mm.

ESD Foot Rest	**299.610.100**

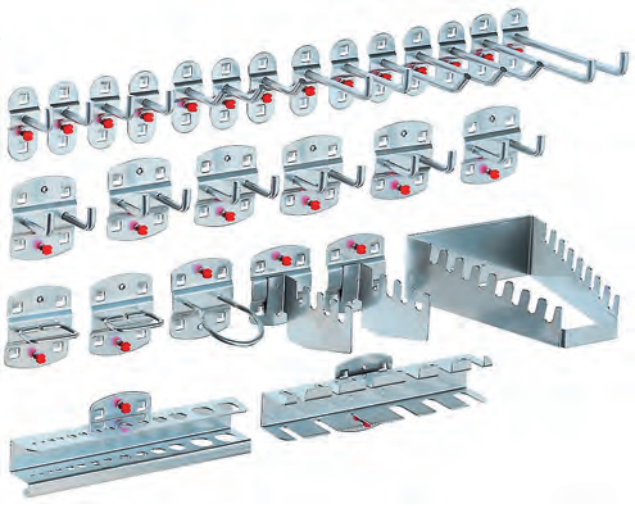
TOOL HOLDER

- All tools always at hand.
- Flexible plastic tool hangers for easy attach- and detachment.
- Colour: black.
- Dimensions: 440 x 35 x 30mm (WxHxD).

Tool Holder	**461.912.000**

HOLDER FOR PERFORATED BACKPLANE

- For hooking into perforated backplanes, with screw lock.
- Steel made, durable plastic coating in aluminium colour.



Set

469.900.010	12pcs.
469.900.020	18pcs.
469.900.030	28pcs.
469.900.040	40pcs.

Holder with Tilted Hook

469.050.010	L: 50mm / Ø 6mm
469.050.020	L: 100mm / Ø 6mm
469.050.030	L: 150mm / Ø 6mm
469.050.040	L: 200mm / Ø 6mm

Holder with Double-Hook

469.100.010	35 x 35mm (LxW)
469.100.020	50 x 35mm (LxW)
469.100.030	75 x 35mm (LxW)
469.100.040	150 x 35mm (LxW)

Holder with Clip

469.150.010	with Clip (Ø 13mm)
469.150.020	with Clip (Ø 19mm)
469.150.030	with Clip (Ø 25mm)
469.150.040	with Clip (Ø 32mm)

Holder for Pliers

469.200.010	35 x 20mm (WxD)
469.200.020	55 x 20mm (WxD)
469.200.030	75 x 20mm (WxD)

Holder for Electric Tools

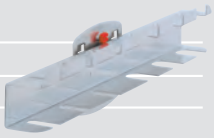
469.250.010	Ø 40mm
469.250.020	Ø 60mm
469.250.030	Ø 80mm

Holder for Cable

469.300.010	150 x 37 x 50mm
469.300.020	200 x 37 x 50mm

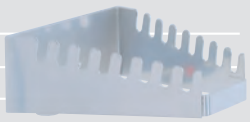
Holder for Screw Driver

469.400.010	6 Screw Driver
469.400.020	12 Screw Driver



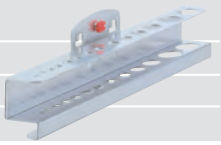
Holder for Screw Driver

469.500.010	8 Screw Driver



Holder for Drill and Allen Wrench

469.450.010	14 Tools
469.450.020	28 Tools



Holder for Storage Boxes

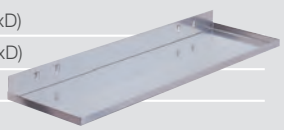
469.350.010	single
469.350.020	550 x 60mm (WxH)
469.350.030	550 x 38mm (WxH)

Document Holder

469.600.030	220 x 310mm (WxH)

Shelf

469.550.010	350 x 125mm (WxD)
469.550.020	445 x 150mm (WxD)



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SMALL PART MAGAZINE STANDARD

The drawers are made of transparent and unbreakable polypropylen, separatable by partitions and labelable.

- Prepared for wall mounting.
- Sheet steel, anthracite powder coated.
- 307 x 150 x 555mm (WxDxH).

Small Part Magazine Standard	
295.008.100	with 8 Drawers
295.016.100	with 16 Drawers
295.024.100	with 24 Drawers
295.040.100	with 40 Drawers
295.048.100	with 48 Drawers
295.060.100	with 60 Drawers

295.048.100

295.024.100

295.016.100

SMALL PART MAGAZINE ESD

The drawers are made of conductive black plastics with carbon-fibres.

- Prepared for wall mounting.
- Sheet steel, anthracite powder coated.
- 307 x 150 x 555mm (WxDxH).

Small Parts Magazine ESD	
295.024.200	with 24 Drawers
295.048.200	with 48 Drawers
295.060.200	with 60 Drawers

295.060.200

ROTARY TOWER

The rotary tower is modularly and flexibly equipable with above mentioned small part magazines.

- Sheet steel, anthracite powder coated.
- Can be equipped with 12 small part magazines.
- Easy running, due to wearfree ball bearings.
- 680 x 680 x 1760mm (WxDxH).

Please note:
This article No. **does not include** small part magazines.

Rotary Tower for Small Part Magazines	
295.000.100	Standard
295.000.200	ESD

295.000.100

295.000.200

STORAGE **BINS**

- Storage bins made of polypropylene with lable holder and hooking strip for cross bin bars.
- Stackable with lable holder.
- The standard is available in grey, green, blue, red and yellow.

ESD Version:
- Made of conductive black plastics with carbon-fibres.

Storage Bin 296. GGG . A 01				(PU = 10pcs.)
GGG	**Size (LxWxH)**		**A**	**Version**
050	290x140x130		**1**	Standard
075	230x140x130		**2**	ESD
100	160x105x75			
125	85x105x45			

Standard

ESD

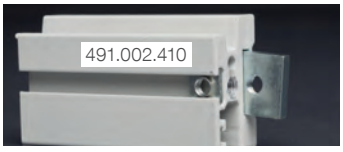
EURO **TRANSPORT BOXES**

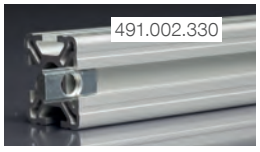
- Stackable transport boxes in standard size.
- Specially suitable for the convenient transport of products on transfer systems like roller - or ball transfer bands.
- Discharge resistance: approx. 10kOhm.

Euro Transport Boxes 296. GGG .201								
GGG	**Dimensions (WxDxH)**							
322	300x200x117	**431**	400x300x75	**434**	400x300x220	**642**	600x400x120	**645** 600x400x285
		432	400x300x120	**435**	400x300x270	**643**	600x400x150	**646** 600x400x320
		433	400x300x170	**436**	400x300x320	**644**	600x400x220	

SLIDING NUTS FOR ALUMINIUM PROFILES

Sliding nuts	(PU = 10)
491.002.110	Sliding Nut for PROFI Profile M5
491.002.120	Sliding Nut for PROFI Profile M6
491.002.130	Sliding Nut for PROFI Profile M8
410.130.138	Heavy Duty Sliding Nut M8 (67x20x8mm)
69.750.006	Cage Nut M6 for Back Planes
491.002.220	Thread Nut M6 19x19 for Didact Profile rear
491.002.410	Thread Nut M4 for Didact Profile front
491.002.310	Sliding Nut for 30x30 Cross Profile M5
491.002.320	Sliding Nut for 30x30 Cross Profile M6
491.002.330	Sliding Nut for 30x30 Cross Profile M8





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ELECTRICIAN VISE WITH BALL JOINT BASE

- Rotatable in all directions with position lock.
- Replacable plastic jaws.
- Clamping pressure: 1.470N; opening width: 70mm.
- Clamping depth; 38mm; jaw width: 50mm.

Electrician Vise with Ball Joint Base			
299.131.100	Standard	299.131.105	ESD

BASE WITH **BALL JOINT**

- For the fixation to laboratory benches with max. bench top 80mm thick.

Base with Ball Joint			
299.130.400	Standard	299.130.405	ESD

ELECTRICIAN **VISE**

- Replacable plastic jaws.
- Clamping pressure: 1.470N; opening width: 70mm.
- Clamping depth; 38mm; jaw width: 50mm.

Electrician Vise			
299.130.500	Standard	299.130.505	ESD

TURNING HEAD FOR PLC HOLDER

- Quick turning mechanism with angled adapter.
- For an easy and quick 180°-turn of the PLC holder with automatic stop.

Turning Head for PLC Holder			
299.130.700	Standard	299.130.705	ESD

PLC HOLDER

- Fixed clamp holder for the acceptance of PLC, so it does not have to be touched.
- Clamp length: 70mm; adjustable width: 25 - 270mm.
- Central position: adjustable.

PLC Holder			
299.130.600	Standard	299.130.605	ESD

PLC **COVER PANEL**

- For fixating the components while turning the PLC for soldering.
- Dimensions: 315 x 330mm.

PLC Cover Panel	299.130.800

MECHANIC **VISE**

HEUER vise with forged jaws for circular pipes, clamping jaws for great depth, easy adjustable centric clamping mechanism, precision spindle-bearing with two-turn trapezium thread; grooved jaws.

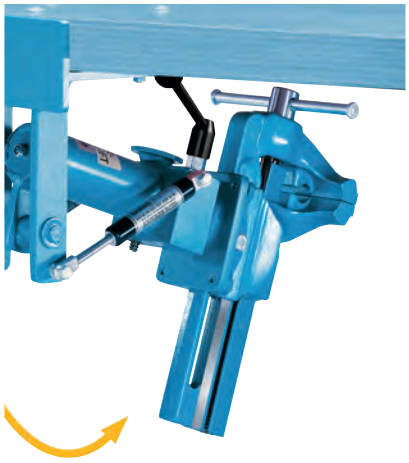
Jaw width:	120 mm
Span detph:	65 mm
Pipe Ø min./max.:	16-55 mm

Mechanic Vise	
299.132.101	Vise Standard
299.132.102	Vise with exchangable Jaws
299.132.191	Jaws PP (polypropylene)
299.132.192	Jaws (PR) for Pipes

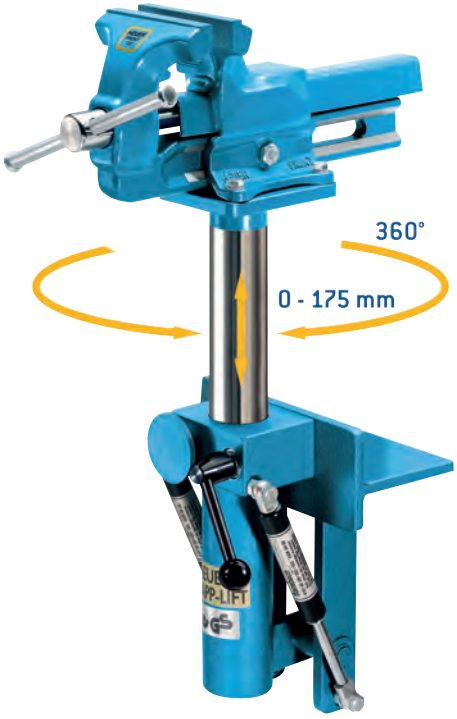
FOLDING / LIFTING MECHANISM FOR MECHANIC VISE

For a maximum of working space, the vise could be folded below the bench top if not in use. In working position the vise is approx. 175mm height adjustable and can be turned by 360°.

Lowest position:	590mm
Folding depth:	460mm
Pivoting radius:	430mm



Folding -/ Lifting Mechanism	
299.132.201	Lifting Mechanism (turning and lifting mechanism)
299.132.211	Automatic Folding Mechanism
299.132.221	Manual Folding -/ Lifting Mechanism



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SOLDERING FUME EXTRACTION FOR 1-2 WORKSTATIONS

The Weller Zero Smog Extraction eliminates air pollution caused by soldering fume, adhesive vapours or laser smoke. It is an cost-effective solution for 1-2 workstations.

- Dimensions: 335 x 330 x 445mm (WxDxH).
- Power consumption: 120VA.
- Particle filter H13 and carbon filter.

ZeroSmog EL:

- The fan can be adjusted in 4 rotation speeds.
- Sound level: 55db(A).
- Max. vacuum: 2.500Pa.
- Max. air ventilation: 150m³/h.
- Fine particle prefilter: M5.

ZeroSmog TL:

- Variable air volume adjustment.
- Sond level: <50db(A).
- Max. vacuum: 3.000Pa.
- Max. air ventilation: 190m³/h.
- Fine particle prefilter: F7.

Soldering Fume Extraction for 1-2 Workstations	
185.410.100	Zero Smog Extraction EL
185.410.150	Zero Smog EL Set
185.410.190	Filter for Extraction EL
185.420.100	Zero Smog Extraction TL
185.420.150	Zero Smog TL Set
185.420.190	Filter for Extraction TL
185.400.200	Extra Extraction Arm

Zero Smog EL Set

- EL Extraction Unit
- flexible hose 1,5m
- hood nozzle 225x100
- bench clamp

Zero Smog TL Set:

- TL Extraction Unit
- Closing valve in bench clamp
- flexbile extraction arm 1m
- hood nozzle 225x100
- flexible hose 3m
- remote button

ACCESSORY TO SOLDERING FUME EXTRACTION EL/ TL

Flexible click-piping system with 60mm diameter, ESD conform.

Extraction Arm with Punctual Nozzle consisting of:

- Aluminium extraction arm with two joints, throttle valve and bench clamp.
- Flexible extraction hose with punctual metal nozzle, length: 700mm.
- Extraction hose: Ø 60mm, length: 3m.

Extraction Arm with Hood Nozzle consisting of:

- Aluminium extraction arm with one joint, throttle valve and bench clamp.
- Flexible extraction hose with hood nozzle 230x100mm, length 700mm.
- Extraction hose: Ø 60mm, length: 3m.

Accessory for Soldering Fume Extraction EL/ TL	
185.400.010	Extraction Arm with Punctual Nozzle
185.400.020	Extraction Arm with Hood Nozzle
185.400.210	Flexible Extraction Hose 0,7m
185.400.220	Extraction Hose 3m
185.400.300	Punctual Nozzle
185.400.310	Transparent Hood Nozzle
185.400.350	Closing Valve
185.400.400	Reduction 60mm to 50mm
185.400.500	Remote Button with 2m Cable

185.400.010

185.400.020

185.400.210

185.400.220

185.400.400

185.400.300

185.400.350

185.400.310

185.400.500

DIRECT SOLDERING FUME EXTRACTION

Soldering fume is a toxic gas and needs to be extracted from the workstation. The direct soldering fume extraction from Weller is good for the connection of 2 soldering tools and extracts the fume directly at its origin.
The device has an integrated sound-insolated vacuum pump and can be operated in two power modes with respect to the number of connected soldering tools. The condenser motor is maintenance free and with thermal fuse for overload protection.

The extraction system can be easily added to the solde-ring tools of the Soldering / Desoldering Repair Station Universal as the extraction tube Ø 4,5mm is simply clipped directly to the soldering tool.

- Power consumption: 70W.
- Sound level (1m distance): <45dB(A).
- Air ventilation: 50l/min.
- Dimension: 140 x 295mm (diameter x height).
- Max. vacuum: 30.000Pa.
- Fine particle prefilter, class F7.
- Particle filter H13, wide band gas iflter (50% active carbon/ 50% chemical).

WELLER Direct Soldering Fume Extraction	
185.500.000	Direct Soldering Fume Extraction
185.510.000	Clip-On Set for Soldering Tool

SOLDERING FUME EXTRACTION FOR 2-4 WORKSTATIONS

Mobile unit for 2-4 workstations:

- Steel sheet housing in grey RAL7035 and blue RAL5013.
- Dimensions: 340 x 430 x 600mm (WxDxH).
- Triple-filter: prefilter, HEPA filter H13, filtration efficiency according to EN1822 99,95%, replacable active carbon filter in cassette.
- 4x hose connector NW50 at the rear side.
- Air volume: 320m³/h.
- Air pressure: 4.000 Pa.
- Motor power: 240 W.
- Sound level: 56dB(A).

Soldering Fume Extraction ECO:

- Simple operator panel with optic and accoustic control function.

Soldering Fume Extraction PREMIUM:

- Operator panel with full text display and foil keypad.
- Air volume control.

Soldering Fume Extraction	
185.100.111	ECO
185.100.110	PREMIUM
185.100.910	Prefilter (10 pcs.)
185.100.920	HEPA Filter
185.100.930	Return System for Active Carbon Filter

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EXTRACTION ARM - RIGID

- Soldering fume extraction arm, mounted with table clamp or flanged to the bench top.
- Tube diameter 50mm.
- Recommended air flow: 45 - 85 m^3/h.
- Tubes: conductive, galvanized aluminium.
- Joints: conductive PP, black
- Integrated throttle.
- Earting Cable with 1MOhm resistor.
- Flange for bench top access 60mm.

Extraction Arm System - Rigid	
185.202.100	Table Clamp, black
185.202.445	Extraction Arm with 2 Joints (reach: 445mm)
185.202.545	Extraction Arm with 2 Joints (reach: 545mm)
185.202.645	Extraction Arm with 2 Joints (reach: 645mm)
185.202.745	Extraction Arm with 3 Joints (reach: 765mm)
185.202.945	Extraction Arm with 3 Joints (reach: 945mm)
185.202.125	Extraction Arm with 3 Joints (reach: 1125mm)
185.352.100	Gap-Nozzle (width: 200mm)
185.352.200	Nozzle (length: 210mm)
185.352.300	Hood-Nozzle (diameter: 200mm)

185.202.445

185.352.100 185.352.200 185.352.300

EXTRACTION ARM- FLEXIBLE

- Soldering fume extraction arm, mounted with table clamp or flanged to the bench top.
- Tube diameter 50mm.
- Recommended air flow: 45 - 85m^3/h.
- Tubes: conductive, galvanized aluminium in combination with a flexible, self-holding hose made of black polypropylene (PP).
- Flange made of conductive PP, black for bench top access at 60mm cutout.
- Joints: conductive PP, black
- Integrated throttle.
- Nozzle made of anodized aluminium.
- Earting Cable with 1MOhm resistor.

Extraction Arm System - Flexible	
185.202.100	Table Clamp, black
185.204.600	Extraction Arm, no joint (reach: 600mm)
185.204.700	Extraction Arm with 1 joint (reach: 700mm)
185.204.900	Extraction Arm with 2 joints (reach: 900mm)

185.204.600

185.204.700

Connecting Set Extraction System - Extraction Arm	
185.390.050	Hose Set 1,25m for Extraction System 702/802
185.390.100	Hose Set 2,5 for ExtractionSystem 702/802
185.390.200	Hose Set 5m for Extraction System 702/802
185.392.050	Hose Set 1,25m for Weller Extraction System
185.392.100	Hose Set 2,5m for Weller Extraction System

TEST **HOOD**

- Dimensions: 530 x 900 x 660mm (WxDxH).
- Plastic base with room for the installation of adapters for test items.
- Swiveling semicircular perspex hood with handle and safety switch.
- Rear and side walls made of plastics.

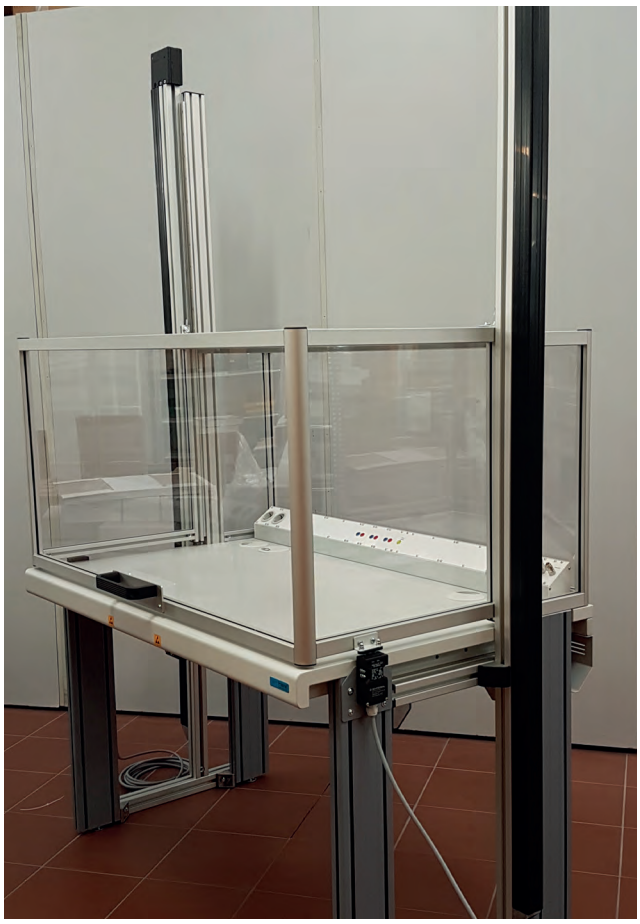
Safety switch and counter part in the test hood.

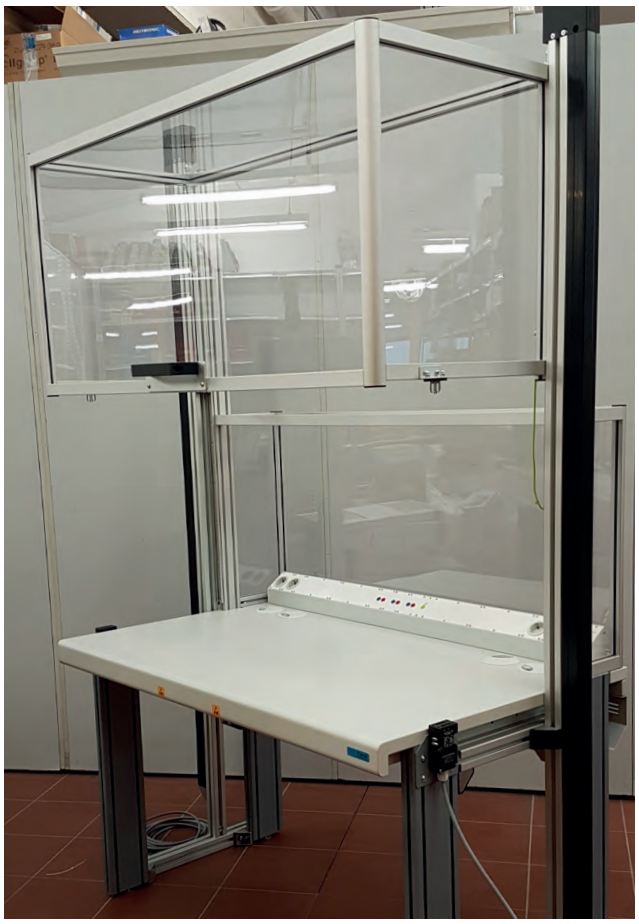
Test Hood	377.050.100

TEST **CABIN**

- Perspex cabin, which can be pushed up and down within the slots of the PROFI profile.
- While testing, the cabin is safely closed with electromagnetic lock.
- When the cabin is pushed up for opening, it is automatically discharged.
- Signal lamp for status indication.

Test Cabin	
940.027.200	800 x 790 x 600mm (WxDxH)
940.075.800	1295 x 790 x 600mm (WxDxH)





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A4 TRAINING SYSTEMS FOR **ELECTRICS AND ELECTRONICS**

CHAPTER 14: **TRAINING SYSTEMS FOR ELECTRICAL BASICS**

493 Basic Electric LC
494 Basic Electric
495 Accessory to Electric Panel
496 Plug Board for Basic Electric
497 Electric Supply Panel for Basic Electric/ Electronic
498 Basic Electronic
499 Accessory to Basic Electronic
500 Plug Board for Basic Electronic
501 Components
505 IC Socket, Connector and Empty Housings
507 Software, Basics and AC Technology
508 Basics of Analogue and Control Engineering
509 Power Electronics
510 Control Technology
511 Controlled System Panel: DC Motor
512 Controlled System Panel: Fill Level
513 Basics to Sensors
514 Software Control Engineering
515 Basics to Digital Technology
516 Digital Technology with Common ICs
517 Controlled System Panel: Stepping Motor
518 PC Process Simulation
519 Software to PC Process Simulation Panel
520 Microcontroller
522 IT Technology
523 Panel Case

LEARNING BY DOING, STUDENTS WILL FIND THE WAY!

In this chapter you will get acquainted to our wide range of training systems. All basic knowledge of electric and electronic engineering could be comprehensibly trained with these panels. Each training system is accompanied by a clearly structured manual or software. The training systems are in A4 standard size. Fronts are durable engraved and the covers are ergonomically tilted for a convenient use either in training system frames or directly on bench tops.

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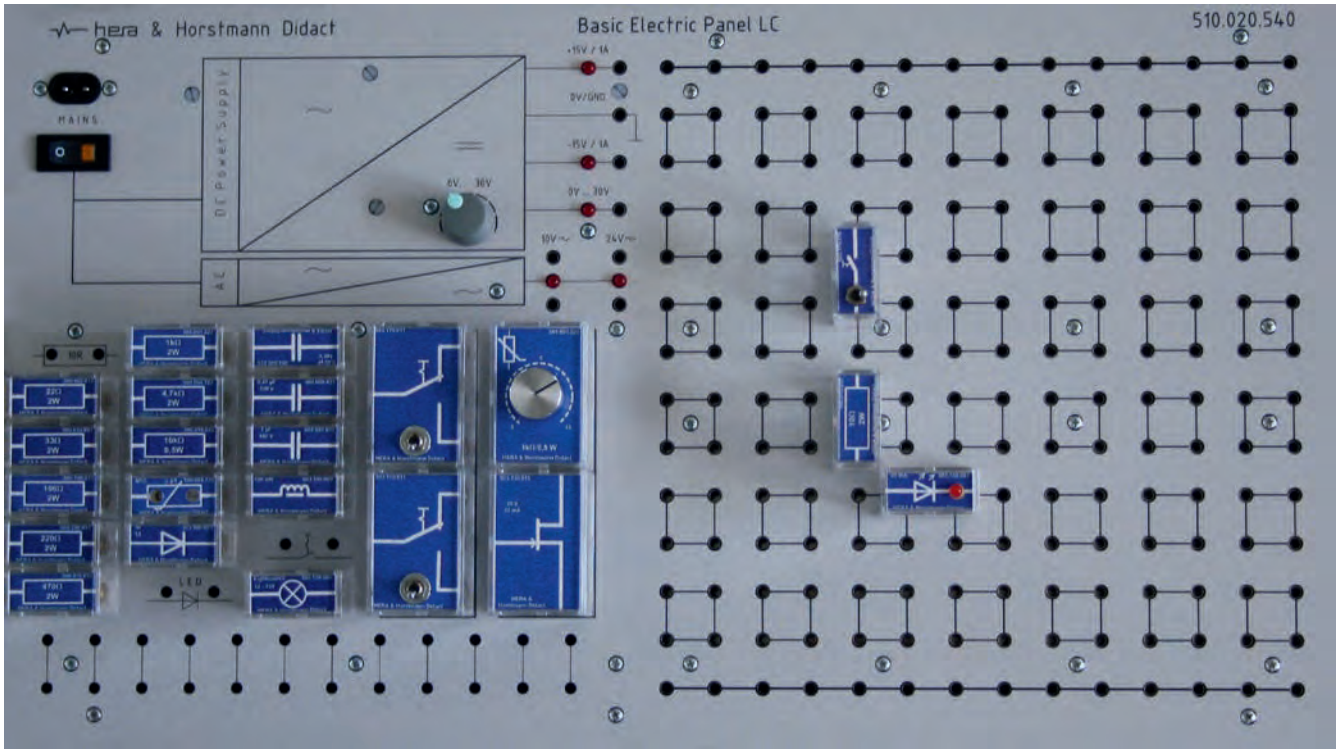
COMPACT PANEL **BASIC ELECTRIC LC**

The Basic Electric Panel LC is designed for the first introduction to the field of electric engineering.
On this board are 4mm jacks, arranged in 19mm raster. Each group of 4 jacks is electrically connected.
This system offers the possibility of almost realistic set-ups according to circuit diagrams. Connections are made with 4mm connectors and test leads.

All DC - and AC voltages, needed for the tests, are available on the generator unit. Outputs are short-circuit proofed.
All required components are stored on the lower left-side of the panel.



Basic Electric Panel LC 510.020.540

Learing Content:

- electric resistors
- voltage sources
- efficiency
- parameters of AC technology
- capacitor in AC circuits
- diode
- transistor

Technical Details:

- laboratory power supply: 0...30V, 1A
- DC voltage: +/- 15V, 1A (+/- 5%); 0...30V, 1A
- AC voltage: 10V, 100mA; 24V, 100mA

Included Components:

9x resistors
1x NTC
3x capacitors
1x coil
1x diode
1x light emitting diode
1x potentiometer
1x transistor
1x toggle switch
1x selector
1x lamp

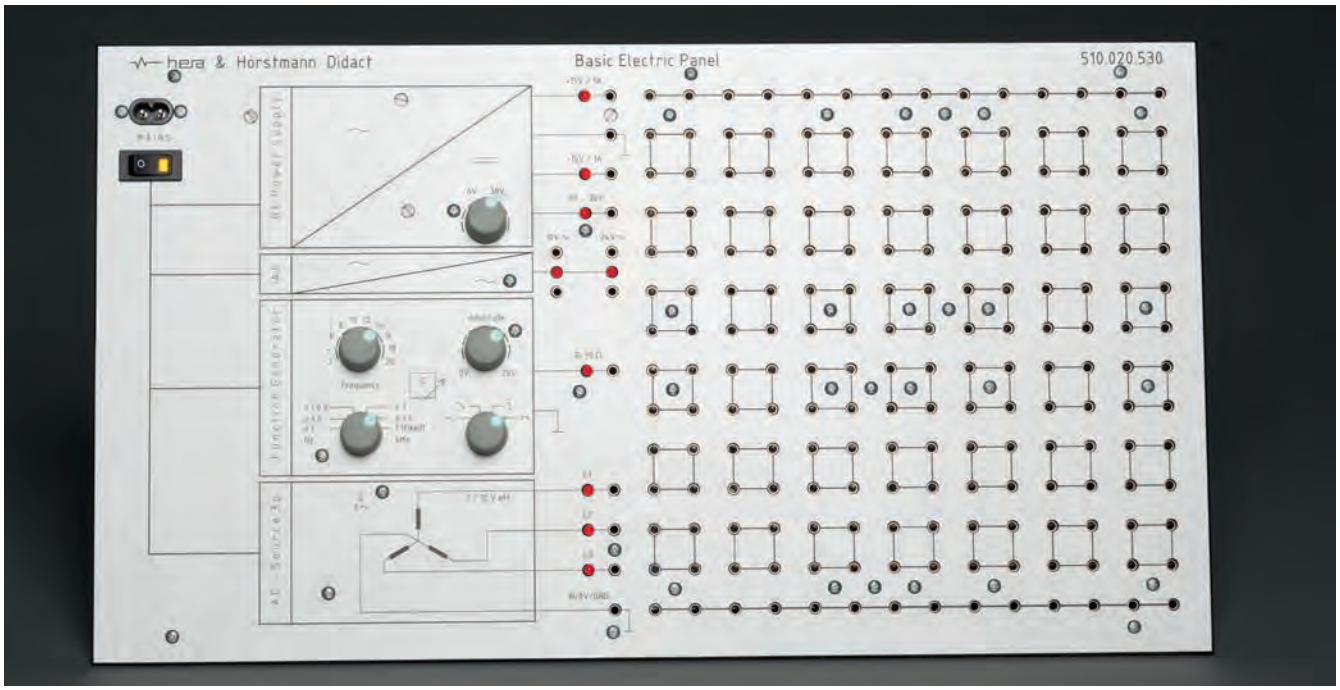
Compact Panel Basic Electric LC			
510.020.540	Basic Electric Panel LC incl. Components	510.029.001	Manual with CD, Basic Tests in Electric/ Electronic Engineering, compact, English
510.022.040	Set of Cables to Basic Electric Panel LC		

BASIC ELECTRIC

The Basic Electric Panel was developed for comprehensive basic trainings of many electrical professions.
On this board are 4mm jacks, arranged in 19mm raster. Each group of 4 jacks is electrically connected.
This system offers the possibility of almost realistic set-ups according to circuit diagrams. Connections are made with 4mm connectors and test leads. All voltages required for the tests are available on the generator unit. Outputs are short-circuit proofed.
This system is perfect for tests in DC-, AC- and three phase technology.

Learing Content:

- electric resistors
- voltage sources
- efficiency
- parameters of AC technology
- capacitor and coil in AC circuits
- transformers
- transmitters
- diodes
- transistors
- thyristors
- op amplifiers



Basic Electric Panel 510.020.530

Technical Details:

- DC voltage: + 15V, 1A (+/- 5%)
  - 15V, 1A (+/- 5%)
  0...30V, 1A
- AC voltage: 10V, 100mA
  24V, 100mA
- three phase generator: 7 / 12V (eff.) max. 50mA

function generator:

- signal forms: sinus -, triangle -, square signal, positive pulse
- frequency: 2Hz...200kHz
- voltage: 0...20V

Basic Electric			
510.020.530	Basic Electric Panel	510.028.001	Manual with CD, Basic Tests in Electric/ Electronic Engineering, English
510.021.020	Addition Electric Panel		
510.022.000	Set of Cables to Basic Electric Panel		

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ACCESSORIES TO **BASIC ELECTRIC**

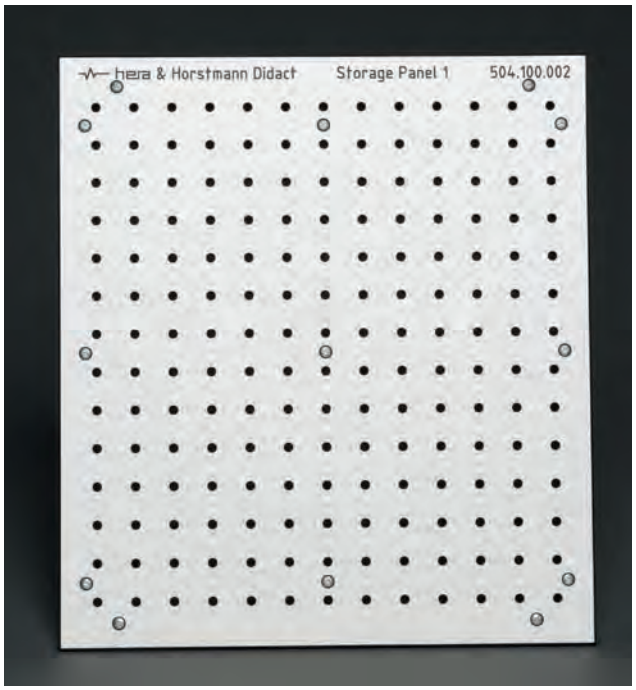
The Addition Electric Panel is a selection of components for tests with the Basic Electric Panel clearly arranged on a storage panel.
This selection is totaly in accordance with our manual „Basic Tests in Electric/ Electronic Engineering“.

Components of the Addition Electric Panel:

- 18 resistors
- 3 capacitors
- 4 coils
- 1 laminated iron core
- 3 diodes
- 1 transistor
- 1 thyristor
- 1 toggle switch
- 2 lamps
- 1 op amplifier

For the set-up of tests a contacted Plug Board is needed. Ideal is the Basic Electric Panel or if an internal power supply is not needed, the Electric Panel.

Addition Electric Panel 510.021.020
incl. 4mm connectors from the set of cables 510.022.000



Storage Panel 266mm for components 504.100.002

Analogue Multimeter
590.100.002

Accessories to Basic Electric Panel

510.021.020	Addition Electric Panel	590.100.001	Digital Multimeter
510.022.000	Set of Cables to Basic Electric Panel	590.100.002	Analogue Multimeter
510.028.001	Manual with CD, English	590.110.002	Oscilloscope
504.100.001	Storage Panel 133mm		
504.100.002	Storage Panel 266mm		
504.100.003	Storage Panel 532mm		

PLUG BOARD FOR BASIC ELECTRIC

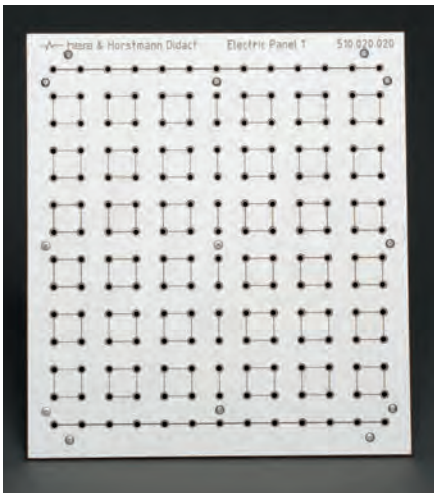
The Electric Panel is perfectly suitable for tests to implement the basic knowledge for many electric professions. On this board are 4mm jacks, arranged in 19mm raster. Each group of 4 jacks is electrically connected.

This system offers the possibility of almost realistic set-ups according to circuit diagrams.

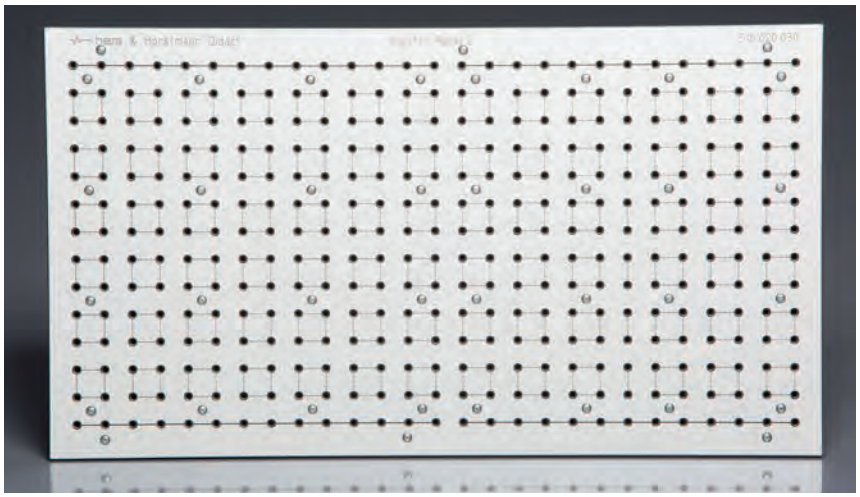
Connections are made with 4mm connectors and test leads.

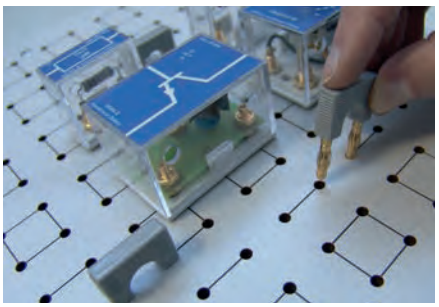
This system is available in two dimensions.
The Electric Panel 1 in 297mm x 266mm and the Electric Panel 2 in 297mm x 532mm (HxW).

For the operation an external voltage supply is needed!



Electric Panel 1 510.020.020


Electric Panel 2 510.020.030



Electric Panel SLB2 with Safety Jacks 510.020.030

Plug Board for Basic Electric			
510.020.020	Electric Panel 1 (297 x 266mm)	510.025.020	Electric Panel SLB1 (297 x 266mm)
510.020.030	Electric Panel 2 (297 x 532mm)	510.025.030	Electric Panel SLB2 (297 x 532mm)

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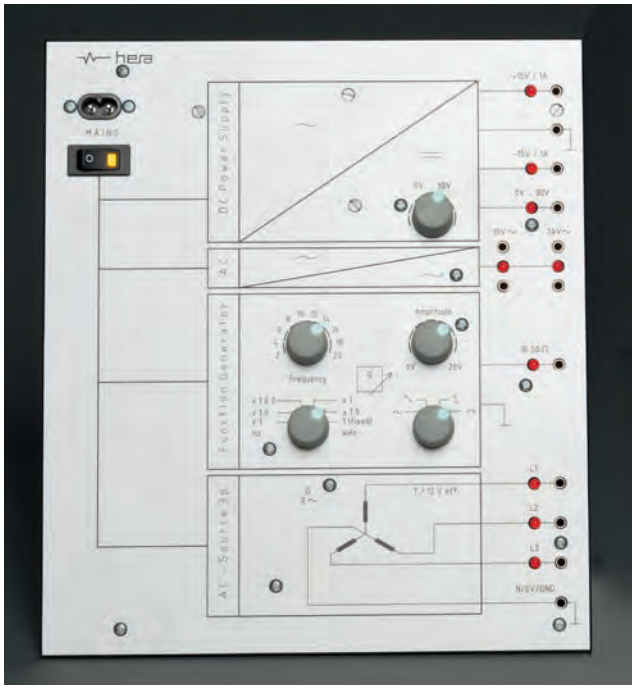
UNIVERSAL POWER SUPPLY ELECTRIC / ELECTRONIC ENGINEERING

The Electric Supply Panel is a power supply for basic tests in electric/ electronic engineering.

This panel offers DC voltage 0 to 30 Volt,
AC voltage 10V and 24V, a function generator with signal form sinus, triangle, square and positive pulse and a three phase source.

Outputs are short-circuit proofed 4mm sockets.

In combination with a plug boards and a choice of plug components you can configure a training system of your choice.



Electric Supply Panel 510.030.520

Mains Supply: 230V AC, 50Hz

Voltages:

- DC voltage: + 15V, 1A (+/- 5%)
  - 15V, 1A (+/- 5%)
  0...30V, 1A
- AC voltage: 10V, 100mA
  24V, 100mA

Three Phase Generator:

- phase voltage: 7V (eff.)
- line-to-line voltage: 12V (eff.)
- current: max. 50mA
- frequency: approx. 50Hz (60Hz)

Function Gnerator:

- wave forms: sinus, triangle, square
  positive pulse
- internal resistance: Ri= 50Ω
- pulse duty factor: V = 2
- frequency: 2Hz...200kHz
- voltage: 0...20V
  0... 8V at positive pulse

Universal Power Supply Electric/ Electronic Engineering			
510.030.520	Electric Supply Panel (lab power supply, AC source, 1p., fuction generator, AC source 3p.)	510.060.520	DC Supply Panel (lab power supply 0-30V / 0-2A, analogue with selector for current or voltage reading)

BASIC **ELECTRONIC**

The Basic Electronic Panel was developed for comprehensive trainings of electronic professions.

The 4mm jacks of this board are arranged in 19mm raster. Each 4mm jack is electrical connected to four 2mm jacks.

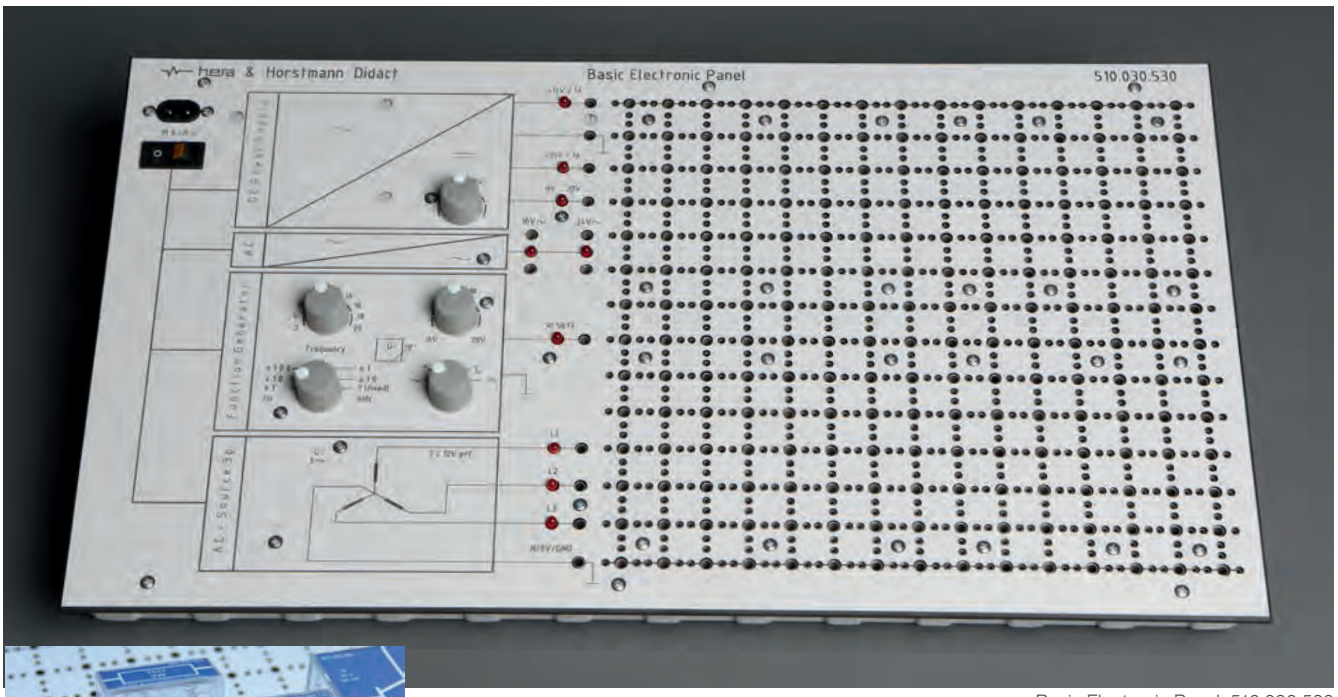
This system offers the possibility of almost realistic set-ups according to circuit diagrams. Connections are made with 4mm and 2mm connectors and test leads. All voltages required for the tests are available on the generator unit. Outputs are short-circuit proofed.

This system is perfect for tests in DC-, AC- and three phase technology.

The accessory set of the Addition Electronic Panel and the two manuals make a harmonized training system.

Learning Content:

- characteristics of diodes, transistors, thyristors and triacs
- amplifier circuits
- oscillator circuits
- modulation and demodulation
- toggle circuits
- power supply circuits
- switching voltage regulator
- direct voltage converter
- power electronic circuits



Basic Electronic Panel 510.030.530

Basic Electronic			
510.030.530	Basic Electronic Panel	590.100.001	Digital Multimeter
510.031.030	Addition Electronic Panel	590.100.002	Analogue Multimeter
510.032.000	Set of Cables to Basic Electronic Panel	590.110.002	Oscilloscope
510.038.011	Manual with CD, English Fundamentals to AC and DC Technology		
510.038.021	Manual with CD, English Semiconductors and Basic Electronic Circuits		

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ACCESSORY TO **BASIC ELECTRONIC**

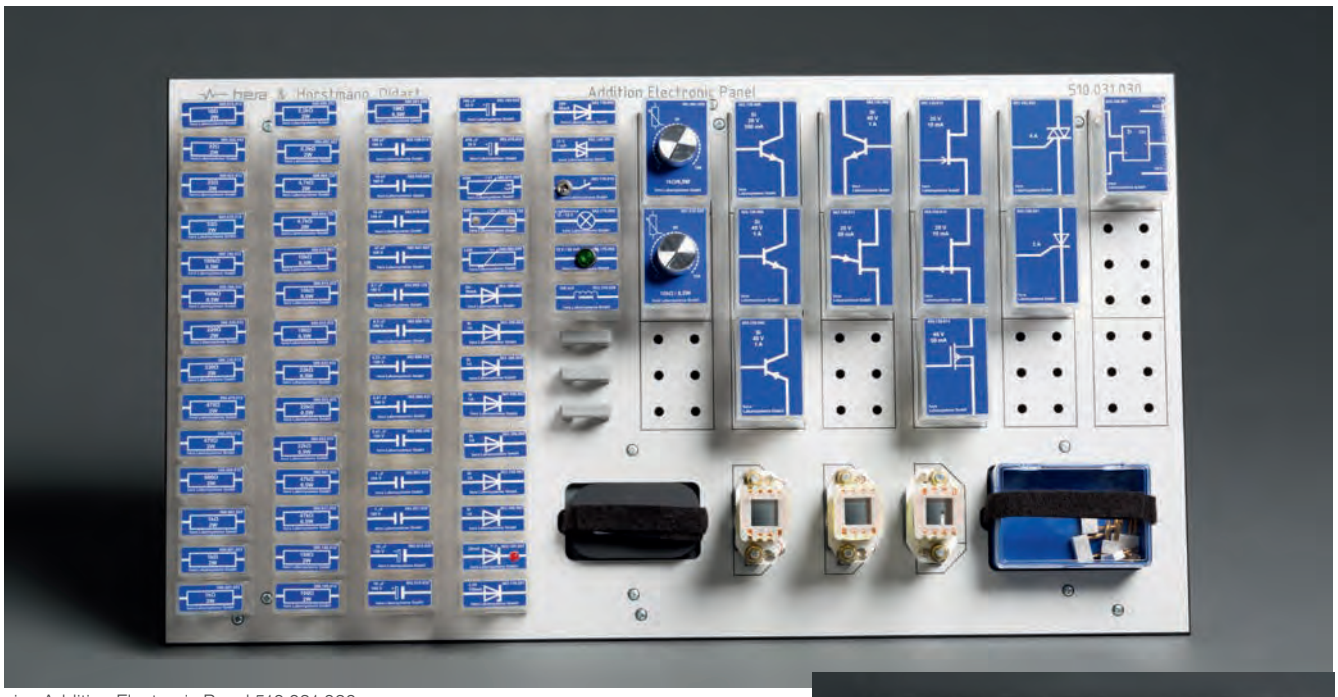
The Addition Electronic Panel is a considerable selection of components clearly arranged on a storage panel.

This selection is totally in accordance with our manuals „Fundamentals of AC and DC technology“ and „Semiconductors and Basic Electronic Circuits“.

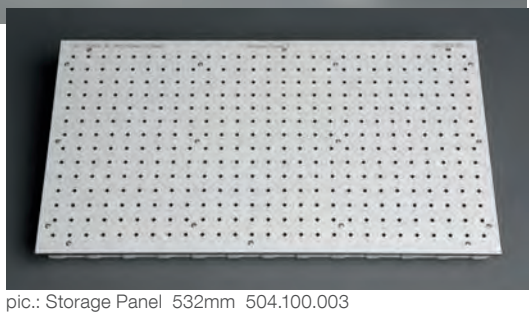
Components of the Addition Electronic Panel:

- 32 resistors
- 15 capacitors
- 2 potentiometers
- 4 coils
- 1 laminated iron core
- 10 diodes
- 8 transisotors
- 1 diac
- 1 thyristor
- 1 triac
- 1 toggle switch
- 2 lamps
- 1 op amplifier

For the set-up of tests a contacted Plug Board is needed. Ideally is the Basic Electric Panel or if an internal power supply is not needed, the Electronic Panel.



pic.: Addition Electronic Panel 510.031.030
with 2mm and 4mm connectors from cable set
510.032.000



pic.: Storage Panel 532mm 504.100.003

Accessory to Basic Electronic

510.031.030	Addition Electronic Panel	590.100.001	Digital Multimeter
510.032.000	Set of Cables to Basic Electronic Panel	590.100.002	Analogue Multimeter
510.038.011	Manual with CD, Fundamentals of AC and DC Technoloy, English	590.110.002	Oscilloscope
510.038.021	Manual with CD, English Semiconductors and Basic Electronic Circuits		

PLUG BOARD BASIC ELECTRONIC

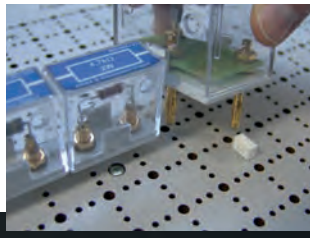
The Electronic Panel is perfectly suitable for tests to implement the basic knowledge for many electronic professions.

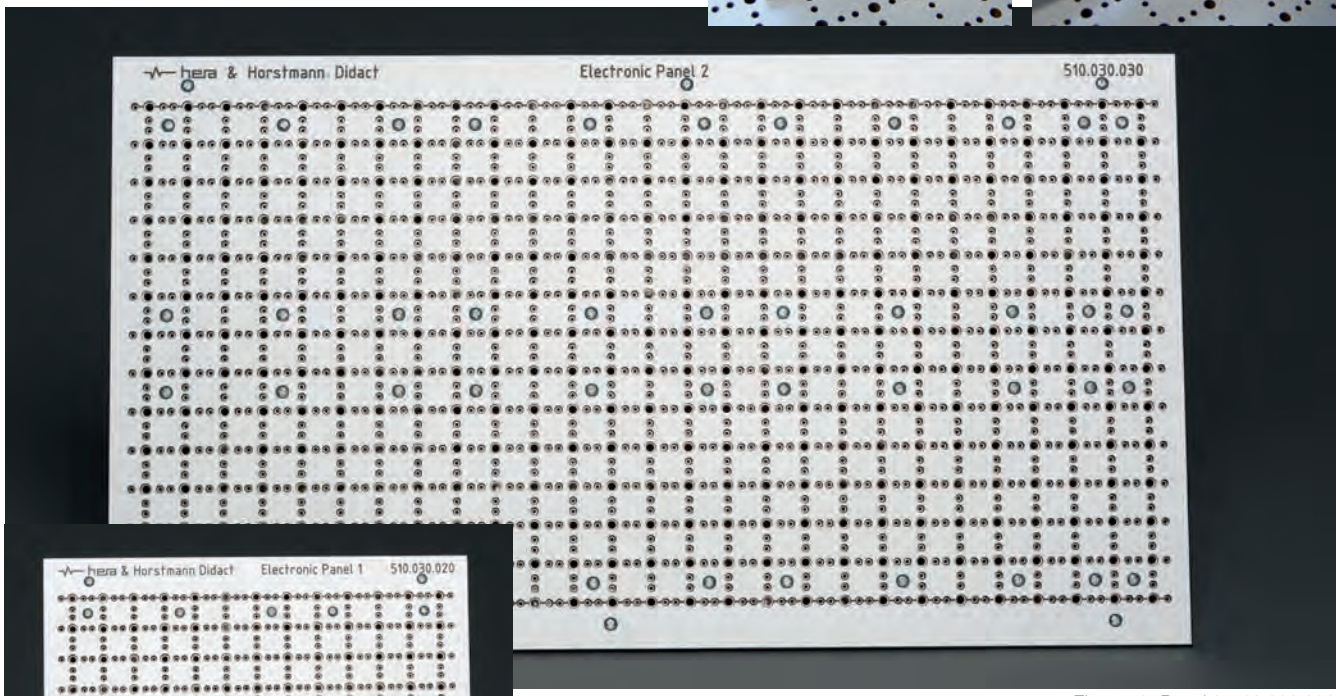
The 4mm jacks of this board are arranged in 19mm raster. Each 4mm jack is electrical connected to four 2mm jacks.

This system offers the possibility of almost realistic set-ups according to circuit diagrams. Connections are made with 4mm and 2mm connectors and test leads.

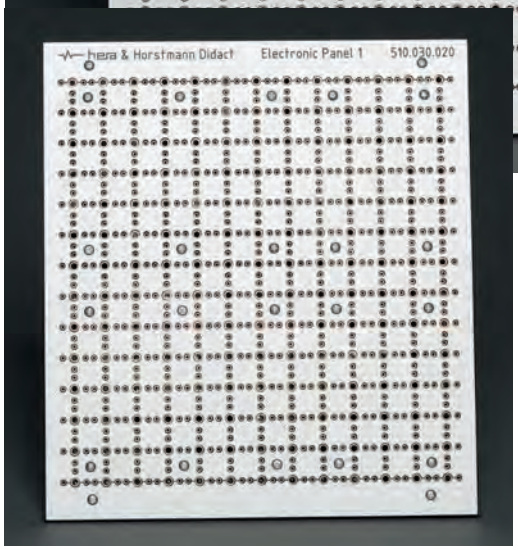
This system is available in two dimensions.
The Electronic Panel 1 in 297mm x 266mm and the Electronic Panel 2 in 297mm x 532mm (HxW).

For the operation an external voltage supply is needed!





Electronic Panel 2 510.030.030



Electronic Panel 1 510.030.020

Plug Board Basic Electronic			
510.030.020	Electronic Panel 1 (297 x 266mm)	510.030.030	Electronic Panel 2 (297 x 532mm)

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RESISTOR

Plug component in transparent plastic housing
with imprinted circuit symbol, 4mm lamella plug, gold plated, 19mm spacing.
All resistors of less than 10KΩ can withstand 2 Watt load, all higher resistances can withstand 0.5 Watt load.
The power resistors (10W) come in metal housings.
Tolerance: +/- 5%.

Housing dimension: 38 x 19 x 35mm (WxDxH).

Component: Resistor 2W

Value	x 1Ω	x 10Ω	x 100Ω	x 1kΩ
1,0	500.001.012	500.010.012	500.100.012	500.001.022
1,2	500.001.212	500.012.012	500.120.012	500.001.222
1,5	500.001.512	500.015.012	500.150.012	500.001.522
1,8	500.001.812	500.018.012	500.180.012	500.001.822
2,2	500.002.212	500.022.012	500.220.012	500.002.222
2,7	500.002.712	500.027.012	500.270.012	500.002.722
3,3	500.003.312	500.033.012	500.330.012	500.003.322
3,9	500.003.912	500.039.012	500.390.012	500.003.922
4,7	500.004.712	500.047.012	500.470.012	500.004.722
5,6	500.005.612	500.056.012	500.560.012	500.005.622
6,8	500.006.812	500.068.012	500.680.012	500.006.822
8,2	500.008.212	500.082.012	500.820.012	500.008.222

Component: Resistor 0,5W

Value	x 10kΩ	x 100kΩ	x 1MΩ
1,0	500.010.022	500.100.022	500.001.030
1,2	500.012.022	500.120.022	500.001.230
1,5	500.015.022	500.150.022	500.001.530
1,8	500.018.022	500.180.022	500.001.830
2,2	500.022.022	500.220.022	500.002.230
2,7	500.027.022	500.270.022	500.002.730
3,3	500.033.022	500.330.022	500.003.330
3,9	500.039.022	500.390.022	500.003.930
4,7	500.047.022	500.470.022	500.004.730
5,6	500.056.022	500.560.022	500.005.630
6,8	500.068.022	500.680.022	500.006.830
8,2	500.082.022	500.820.022	500.008.230

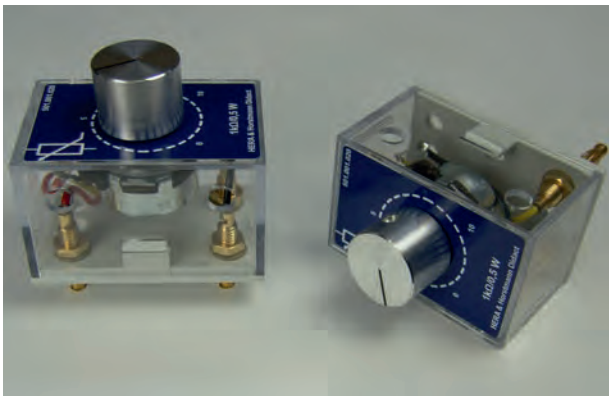
Component: Resistor 10W

Value	x 1Ω	Value	x 1Ω
1,0	500.001.014	15,0	500.015.014
2,2	500.002.214	22,0	500.022.014
5,1	500.005.114	33,0	500.033.014
10,0	500.010.014	43,0	500.043.014

POTENTIOMETER

Plug component in transparent plastic housing
with imprinted circuit symbol, 4mm lamella plug, gold plated, 19mm spacing.
Load 0,5 Watt or 4 Watt.

Housing dimension: 38 x 57 x 35mm (WxDxH).



Component: Potentiometer

501.022.020	22kΩ / 0,5W	501.100.014	100Ω / 4W
501.047.020	47kΩ / 0,5W	501.250.014	250Ω / 4W
501.100.020	100kΩ / 0,5W	501.470.014	470Ω / 4W
501.500.020	500kΩ / 0,5W	501.001.024	1,0kΩ / 4W
501.001.030	1,0MΩ / 0,5W	501.004.724	4,7kΩ / 4W

SPECIAL RESISTOR

Plug component in transparent plastic housing with imprinted circuit symbol, 4mm lamella plug, gold plated, 19mm spacing.

Housing dimension: 38 x 19 x 35mm (WxDxH).

Component: Special Resistor			
500.011.099	VDR Resistor	500.080.019	PTC Resistor P 330
500.470.029	NTC Resistor 470Ω with Series Resistor	500.085.029	LDR Resistor FW 200
500.004.729	NTC Resistor 4,7kΩ		

Z-DIODE

Plug component in transparent plastic housing with imprinted circuit symbol.

Component: Z Diode	
503.110.001	Zener Diode 3,3V, 130mA
503.110.002	Zener Diode 4,7V, 90mA
503.110.003	Zener Diode 6,2V, 64mA
503.110.004	Zener Diode 6,2V, 160mA
503.110.005	Zener Diode 10V, 40mA
503.110.006	Zener Diode 10V, 105mA
503.110.007	Zener Diode 12V, 86mA

DIODE AND LIGHT EMITTING DIODE

Plug component in transparent plastic housing with imprinted circuit symbol.

Housing dimension: 38 x 19 x 35mm (WxDxH).

Component: Diode and Light Emitting Diode			
503.100.004	Si Diode 6A / 600V	503.120.030	GA-AS Light Emitting, red, 5V, with series resitor
503.100.003	Si Diode 1A	503.120.020	GA-AS Light Emitting, yellow, 5V, with series resitor
503.100.002	Ge Diode 30mA	503.120.010	GA-AS Light Emitting, green, 5V, with series resitor
503.100.001	Si Diode 200mA	503.120.006	GA-AS Light Emitting, red, 15V, with series resitor
503.120.003	GA-AS Light Emitting, red, 5V	503.120.005	GA-AS Light Emitting, yellow, 15V, with series resitor
503.120.002	GA-AS Light Emitting, yellow, 5V	503.120.004	GA-AS Light Emitting, green, 15V, with series resitor
503.120.001	GA-AS Light Emitting, green, 5V		

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CAPACITOR

Plug component in transparent plastic housing with imprinted circuit symbol.
The max. operating voltage is 100V.

Housing dimension: 38 x 19 x 35mm (WxDxH).

Component: Tantalum Capacitor

Value	x 1pF	x 10pF	x 0,1nF	x 1nF	x 0,01µF	x 0,1µF
10	502.010.015	502.100.015	502.001.025	502.010.025	502.000.135	502.001.035
15	502.015.015	502.150.015	502.001.525	502.015.025	---	502.001.535
22	502.022.015	502.220.015	502.002.225	502.022.025	502.000.235	502.002.235
33	502.033.015	502.330.015	502.003.325	502.033.025	502.000.325	502.003.335
47	502.047.015	502.470.015	502.004.725	502.047.025	502.000.425	502.004.735
56	502.056.015	502.560.015	502.005.625	502.056.025	502.000.525	502.005.635
68	502.068.015	502.680.015	502.006.825	502.068.025	502.000.625	502.006.835

Component: Electrolytic Capacitor (poled)

502.002.234	2,2µF / 63V	502.100.033	100µF / 35V
502.004.734	4,7µF / 63V	502.470.033	470µF / 35V
502.010.034	10µF / 63V	502.001.044	1000µF / 63V
502.022.034	22µF / 63V	502.002.244	2200µF / 63V
502.047.034	47µF / 63V	502.004.744	4700µF / 63V

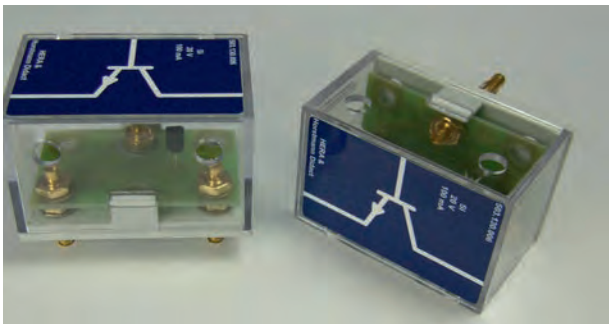
Component: Variable Capacitor

502.220.001	Variable Capacitor 20 - 200pF

TRANSISTOR

Plug component in transparent plastic housing with imprinted circuit symbol.

Housing dimension: 38 x 57 x 35mm (WxDxH).



Component: Transistor

503.130.001	Transistor PNP 24V, 200mA, base left	503.130.009	Transistor NPN 40V, 1A, base right
503.130.002	Transistor PNP 20V, 100mA, base left	503.130.010	Transistor NPN 60V, 15A, base right
503.130.003	Transistor PNP 20V, 100mA, base right	503.130.011	Transistor PNP 60V, 15A, base right
503.130.004	Transistor PNP 40V, 1A, base left	503.130.012	Transistor PNP 40V, 1A, base left
503.130.005	Transistor PNP 40V, 1A, base right	503.130.013	Unijunction Transistor 35V, 50mA
503.130.006	Transistor NPN 20V, 100mA, base right	503.130.014	MOS Field Effect Transistor, 40V, 50mA, gate left
503.130.007	Transistor NPN 20V, 100mA, base right	503.130.015	Barrier Layer Field Effect Transistor 25V, 10mA
503.130.008	Transistor NPN 40V, 1A, base left	503.130.016	Barrier Layer Field Effect Transistor 20V, 10mA

DIAC, TRIAC AND **THYRISTOR**

Plug component in transparent plastic housing with imprinted circuit symbol.

Component: Diac, Triac and Thyristor	
503.140.001	Diac 33V, 1mA
503.160.002	Triac 4A
503.150.001	Thyristor 3A
503.130.000	Transistor Socket

OPERATIONAL AMPLIFIER

Plug component in transparent plastic housing with imprinted circuit symbol.

Component: Operational Amplifier	
503.180.001	Operational Amplifier
503.180.002	Operational Amplifier, front sided voltage supply

COIL

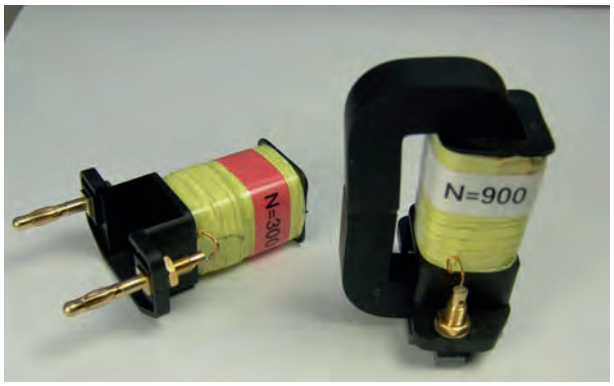
Plug component in transparent plastic housing with imprinted circuit symbol.

Component: Coil	
503.190.005	10mH
503.190.006	20mH
503.190.010	30mH
503.190.007	40mH
503.190.008	80mH
503.190.009	100mH
503.190.011	200mH, large housing

TRANSFORMER

Plugable set-up without housing.

Component: Transformer	
503.190.001	N = 100
503.190.002	N = 300
503.190.003	N = 900
503.190.004	Laminated Iron Core 1 Pair



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SWITCHES, RELAY AND LIGHT SOURCES

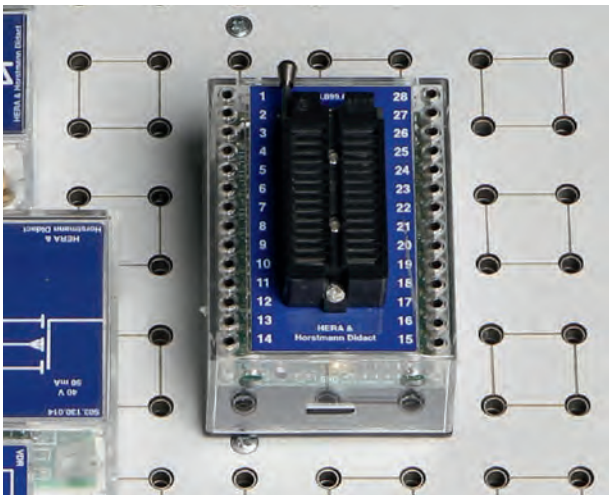
Plug component in transparent plastic housing with imprinted circuit symbol.

Component: Switches, Relay and Light Sources	
503.170.021	Relay 12V, 1 change over contact
503.170.020	Relay 24V, DC, 1 NO contact
503.170.012	Button, NO contact
503.170.014	Button, change over
503.170.013	Button, NC contact
503.170.011	Change Over, 1pole
503.170.010	Toggle Switch, 1pole
503.170.005	Light Source
503.170.004	Lamp yellow, 15V, 82mA
503.170.003	Lamp red, 15V, 82mA
503.170.002	Lamp green, 15V, 82mA
503.170.001	Lamp Socket E10

IC SOCKET

- Durable plastic housing with two lamella plugs 4mm.
- Connector spacing 57mm.
- IC socket.
- 2mm jacks for IC connection.
- Quick clamp mechanism for an easy removal of the IC‘s.

Component: IC Socket 28poles	520.099.001

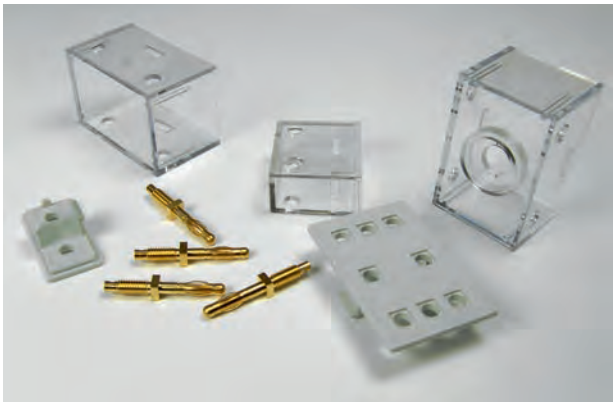


CONNECTOR AND **EMPTY HOUSING**

The transparent plastic housings for the plug components are available in two sizes:

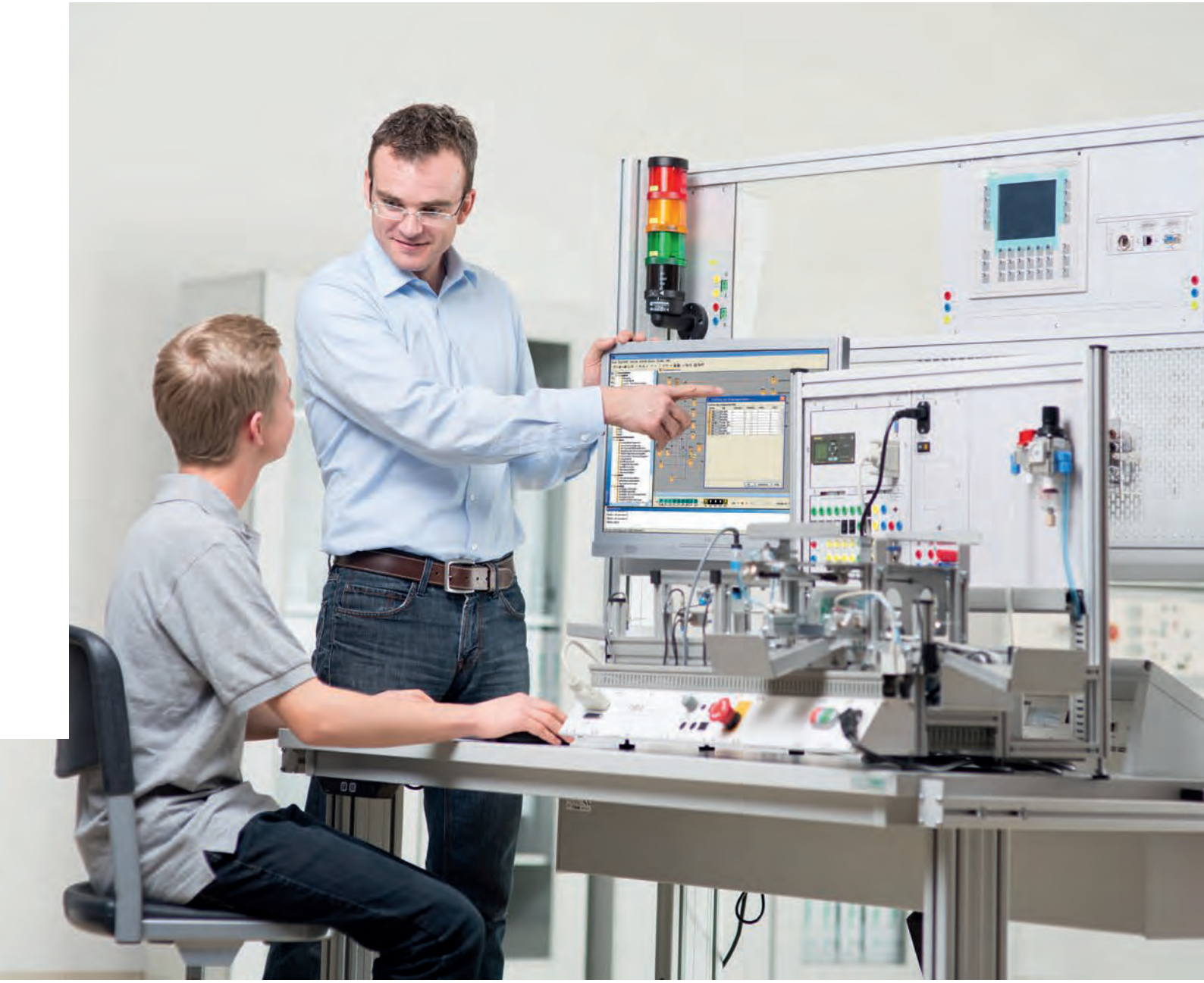
- 38 x 19 x 35mm (WxHxD)
- 38 x 57 x 35mm (WxHxD)

Connectors and Empty Housings	
505.000.010	Connector 2mm (plug spacing 5mm)
505.000.020	Connector 4mm (plug spacing 19mm)
505.000.021	Connector 4mm (plug spacing 38mm)
505.000.022	Adapter for 4mm plug to 2mm socket; black
505.000.023	Adapter for 4mm plug to 2mm socket; red
505.000.030	Safety connector plugs 4mm (spacing 19mm)
504.001.001	Empty housing, small with 2 lamella plugs
504.001.002	Empty housing, small
504.001.003	Empty housing, large with 3 lamella plugs
504.001.004	Empty housing, large



MULTIMEDIAL TEACHING AIDS
FOR A COMPREHENSIVE UNDERSTANDING

Our product range offers interdisciplinary teaching aids like software, manuals and CDs which are designed to deepen the matters of subject in a practice-oriented way. Successful learning in an interesting and modern way is guaranteed.



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SOFTWARE, BASICS OF ELECTRICAL ENGINEERING

Multimedial training courses in German language for the introduction of electrical engineering.

Basics of Electrical Engineering, part 1:

From the structure of the subject to the conductance of current and voltage generation.

Basics of Electrical Engineering, part 2:

From electrical resistance to Wheatstones bridge.

Basics of Electrical Engineering, part 3:

From energy and power to electromagnetic induction.

Basics of Electrical Engineering, part 4:

From constant magnetism to power electronics.

Software, Basics of Electrical Engineering (only available in German language)			
510.098.001	Basics of Electrical Engineering 1, CD-Rom	510.098.003	Basics of Electrical Engineering 3, CD-Rom
510.098.002	Basics of Electrical Engineering 2, CD-Rom	510.098.004	Basics of Electrical Engineering 4, CD-Rom

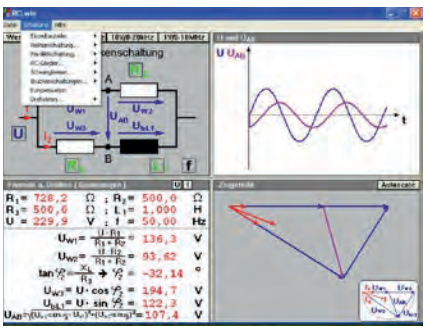
SOFTWARE **ALTERNATING CURRENT**

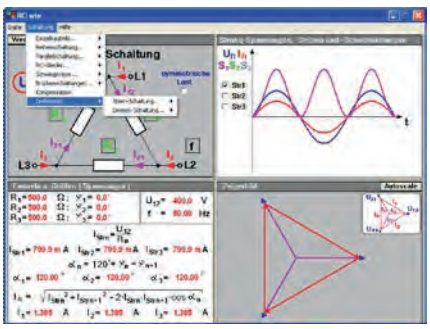
RCLwin is a learning aid for alternating current.

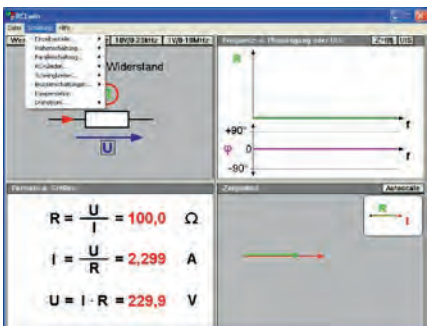
The user can select an example from a library with standard circuits and observe the behaviour of this circuit with changing parameters. The displays are continuously updated while the value of the parameter is being increased or reduced by mouse click.

RCL - AC technology depicts the calculated variables as a frequency and phase response or as an UIS diagram and vector diagram. The parameters can also be changed by direct entry.

RCL - AC technology can be used by electronic professionals and in technical lessons at schools and colleges for the purpose of deepening knowledge of the interrelations of RCL circuits.







Software Alternating Current			
510.900.001	RCLwin, Single License, DE	510.900.003	RCLwin, Multi License, EN
510.900.002	RCLwin, Multi License, DE		

BASICS **ANALOGUE AND CONTROL ENGINEERING**

Das Analogue Electronic Panel is a compact training system for the comprehensive understanding of analogue and control engineering.

All functional modules, operational amplifier, integrator, squaring networks, multiplier, transistors, diodes, potentiometer, generator, dual counter and level converter are clearly featured on the panel front.

Connections are done with 2mm test leads and connectors.

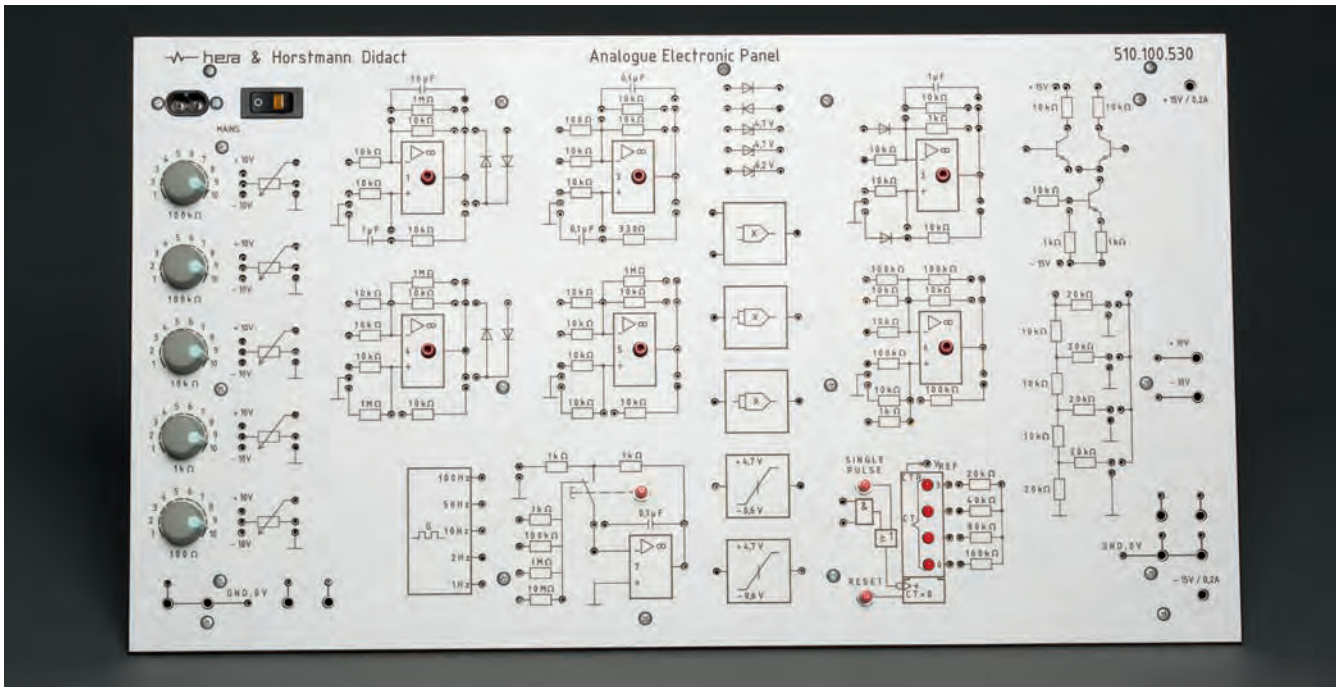
There are two voltage outputs (+/- 15V, 0,2A) for the connection of external devices.

This system is perfectly suitable for aquiring comprehensive knowledge in following topics:

- operational amplifier
- analogue technology
- A/D-D/A converter
- control engineering
- arithmetic circuits
- hybride technology

In combination with the multimeter and the manual this is a perfectly attuned training system.

Digital Multimeter
590.100.001



Analogue Electronic Panel 510.100.530

Basics of Analogue and Control Engineering			
510.100.530	Analogue Electronic Panel	510.108.001	Manual with CD, English
510.102.000	Set of Cables to Analogue Electronic Panel	590.100.001	Digital Multimeter

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POWER ELECTRONICS

The Power Electronic Panel is a training system for the understanding of the complete field of power electronics.

This system offers the possibility of doing experiments in AC, DC and three-phase networks. Resistive, inductive and capacitive loads are integrated. All relevant measuring contacts are available at the panel front.

Following experiments could be done with extra low voltage:

AC experiments:

- uncontrolled half-wave rectifier
- uncontrolled bridge rectifier
- halfcontrolled rectifier bridge
- fully controlled rectifier bridge
- line-commutated inverter
- pulse group control

DC experiments:

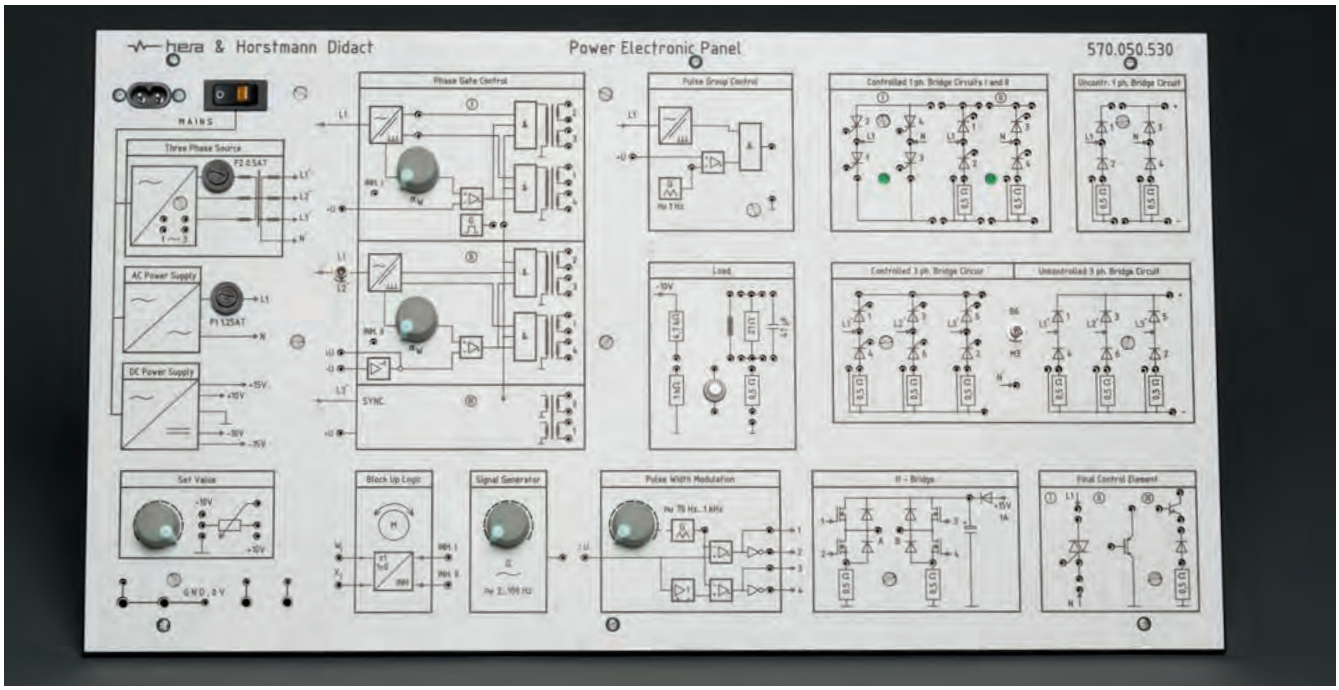
- basic circuits for pulse width modulation (PWM)
- PWM in H circuit

Three-phase experiments:

- uncontrolled rectifier M3
- uncontrolled rectifier B6
- controlled rectifier M3
- controlled rectifier B6

Experiments with GTO (Gate-Turn-Off):

- trigger pulse processing
- GTO as DC chopper controller



Power Electronic Panel 570.050.530

Power Electronics			
570.050.530	Power Electronic Panel	570.058.001	Manual with CD, English
570.052.000	Set of Cables to Power Electronic Panel		

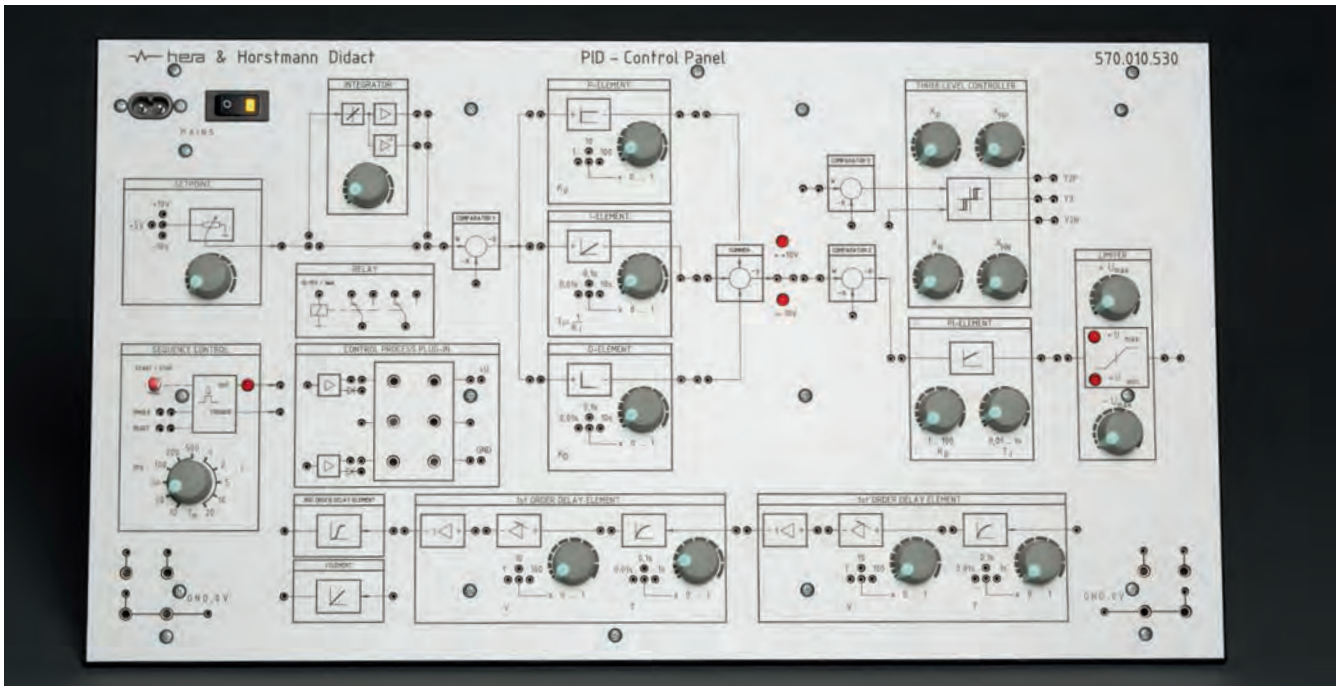
PID - **CONTROL ENGINEERING**

The PID - Control Panel is for basic and more advanced experiments in closed-loop technology.

A short circuit proofed power supply is integrated in the panel. All basic experiments could be done without storage oscilloscope. Each controller characteristic could be set in a wide range. LEDs indicate if the limit of an output is exceeded.

Several delay and P elements, as well as an I element are available for the electric simulation of controlled systems.

Almost each element of the control circuit is designed with respect to its‘ time-dependant behaviour, so the step-response could either be measured with common or storage oscilloscope.



PID - Control Panel 570.010.530

PID - Control Engineering			
570.010.530	PID - Control Panel	570.030.520	Controlled System: PID - C Motor Panel
570.012.000	Set of Cables to PID - Control Panel	570.031.200	Controlled System: Temperature and Light
570.018.001	Manual with CD, Control Engineering, English	570.038.001	Manual with CD, Controlled Systems, English
590.110.002	Oscilloscope		

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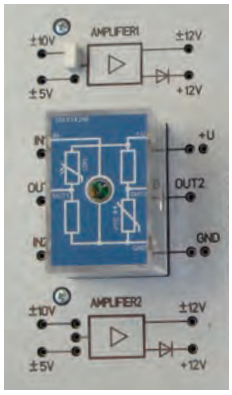
CONTROLLED SYSTEM - **PID-C MOTOR**

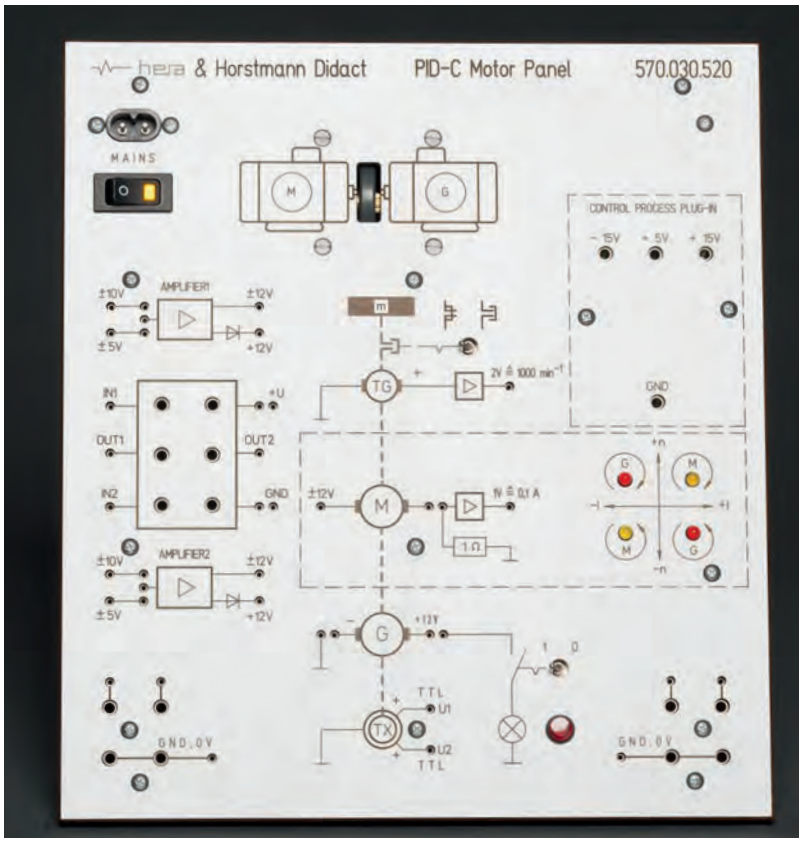
The PID-C Motor Panel is a controlled system for power electronics and control engineering.

The machine unit, integrated in the panel, consists of a DC motor with actual current aquisation, a DC generator with optional load, speed generator, optional gyrating mass, angular encoder for rotation speed and direction, as well as a transparent field for the optical indication of the rotation speed and direction.

The DC power amplifier enables direct control of the motor with regulator or with PLL circuit. The plug-in field at the panel is for the enhancement of the system with a closed-loop for temperature and light.



Controlled System:
Temperature and Light
570.031.200



PID-C Motor Panel 570.030.520

Controlled System: PID-C Motor			
570.030.520	PID-C Motor Panel	570.038.001	Manual with CD, Controlled Systems,
570.031.200	Controlled System: Temperature and Light		English

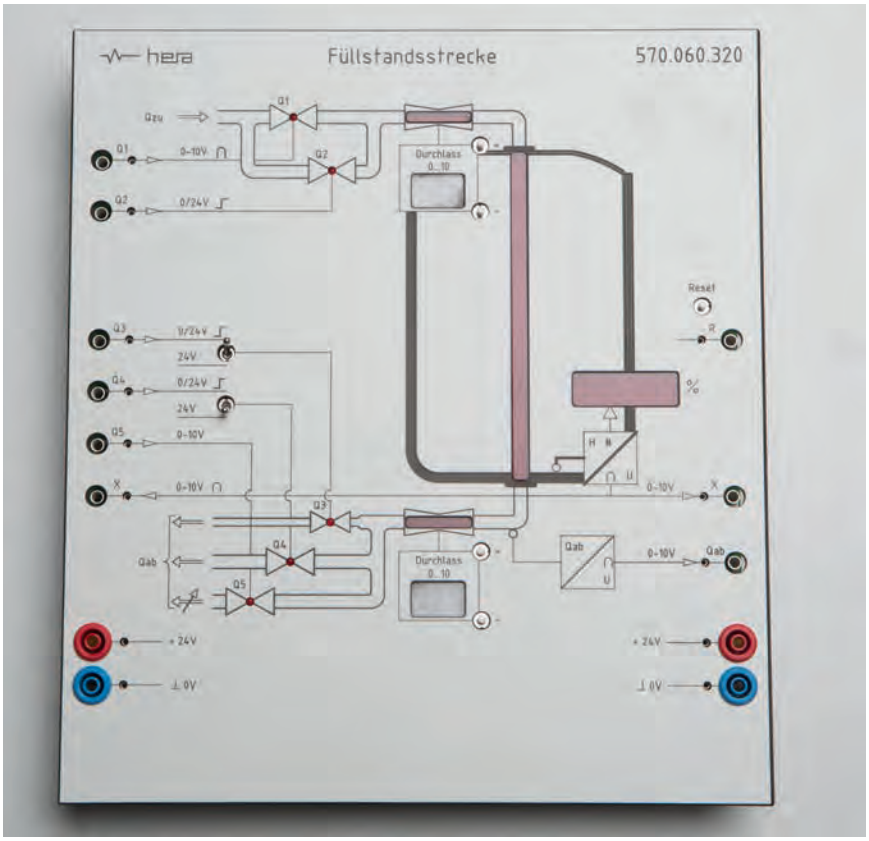
FILL LEVEL PLANT

The Fill Level Plant Panel is for an easy comprehension of processes within the control technology.

The Fill Level Plant could be connected to industrial controllers, PLCs and microprocessors and thus enables a practical training.

Characteristics of the Fill Level Plant Panel:

- Visualization ot the fill level and the quantity of inflow and outflow.
- Outflow per time unit in dependence of fill level.
- Cascadable for controlled systems in higher order.
- Useable in combination with industrial controllers, PLCs and microprocessors.
- Binary inputs switchable between 5V (microprocessor) and 24V (PLC).
- Analogue inputs 0 - 10V.
- Analogue outputs 0 - 10V proportional to filling level and to outflow per time unit.
- Simulation of filling level with high resolution 7-segment-display.
- Simulation of in- and outflow with 7-segment-display.
- Simulation of in- and outflow with chasing lights.
- Simulated valve with LEDs.



Fill Level Plant Panel 570.060.320

Fill Level Plant Panel	**570.060.320**

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BASICS TO **SENSOR TECHNOLOGY**

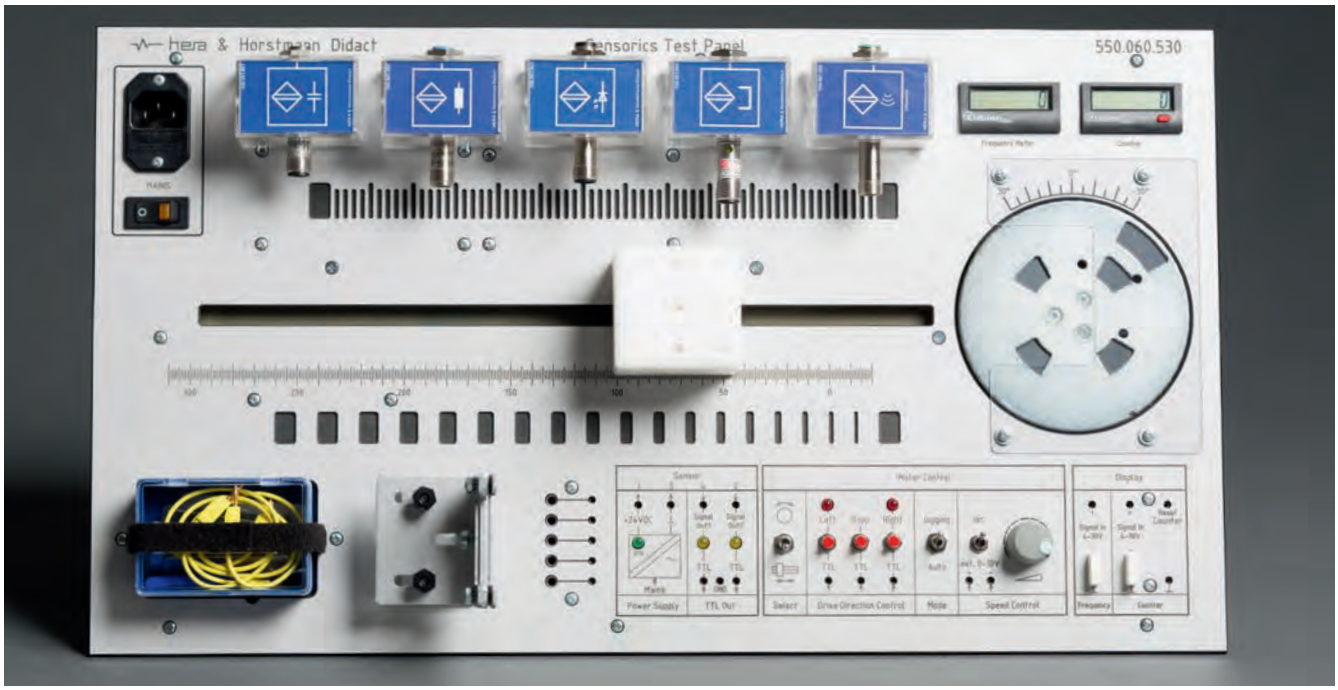
Practice-oriented training system for sensor technology.

This panel is for practical tests with industrial sensors. All basic tests are done with inductive, capacitive, optical and magnetical sensors. All components for the tests are integrated in the panel.

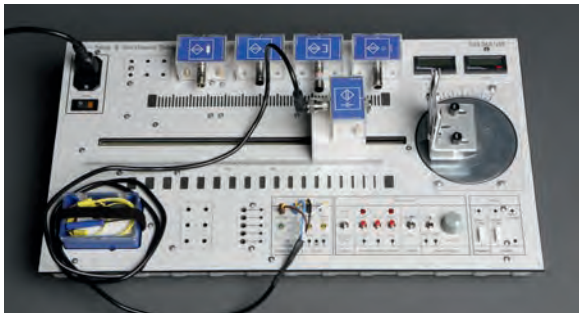
The different levels of sensor sensivity can be tested for a variety of materials, which could be attached to a material holder.

The respective sensor is mounted to a slide and slowly drawn near the material sample. The distance to the sensor is indicated at a display. A motor driven rotary disk could be scanned by the sensors. Both motors, slide and rotary disk could be directly operated at the panel or externally.

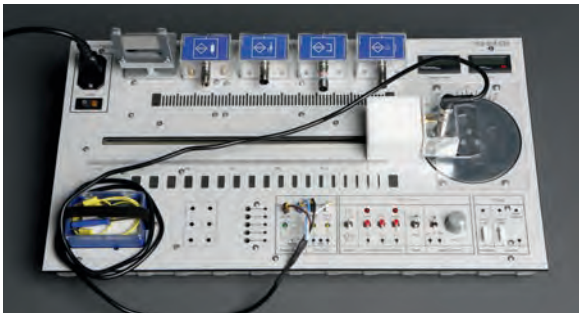
The basic package includes an inductive, capacitive, optical and magnetic sensor.



Sensorics Test Panel 550.060.530



Sensivity measurement with slide and sample holder



Optic and magnetic measurement of rotation speed

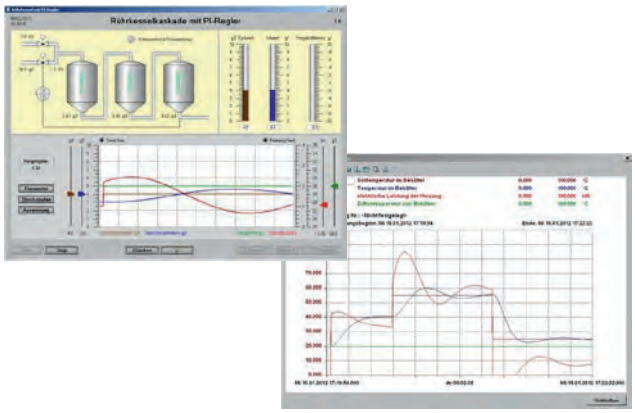
Basics of Sensor Technology

550.060.530	Sensorics Test Panel with 4 Sensors		**Additional Sensors (not in the basic package):**
550.068.001	Manual with CD, English	550.061.005	Ultrasonic Sensor
		550.061.006	LWL Sensor Holder
		550.061.007	Analogue Sensor
		550.061.008	Set of NAMUR Sensors

SOFTWARE **CLOSED-LOOP CONTROL TECHNOLOGY**

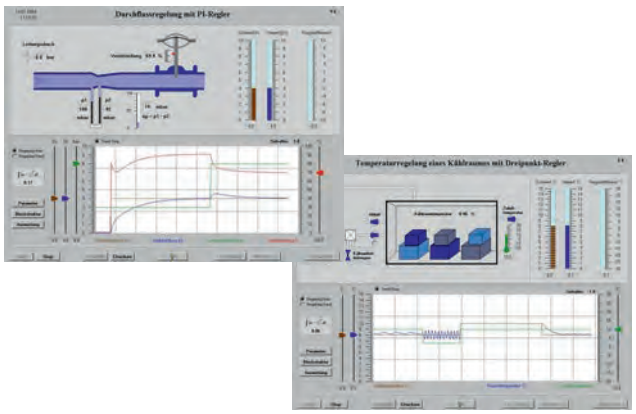
Closed-Loop Control Practical Exercises I:

Using process simulations, step by step the behavior of controllers, controlled systems and control circuits is investigated.
Applications: examination of controller characteristics, fill level plant; temperature control, delayed temperature control, mixing vessel cascade, examination of Ptn loops with P-, I-, PI- and PID-controllers.



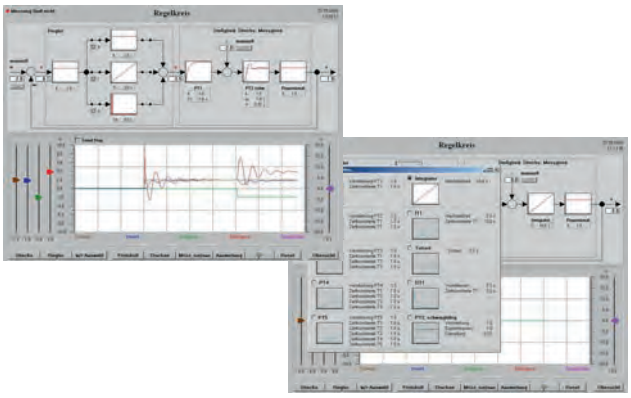
Closed-Loop Control Practical Exercises II:

Interactively learn the basics of closed-loop control engineering with simulated processes. Different closed-loop systems show the time respond.
Applications: room temperature, motor speed, flow control, fill level control with standard controller and 3-level-controllers, room temperature with 3-level-controller, variably selectable controllers and controller parameters.



Closed-Loop Practical Exercises III:

Create your own applications by combination of different controllers, closed-loop control systems and control circuits and investigate its time responding to different input signals, e.g. ramps, steps, square, pulse and oscillating.



Multimedia Tutorial Software Closed-Loop Control Technology:

The multimedia software comprehensively explains the basics of closed-loop control technolgy: different controllers, different closed-loop control systems and different control settings.

Software Closed-Loop Technology (language: German / English)			
570.900.201	Practical Exercises I, single license	570.900.501	Multimedia Tutorial Software, closed-loop control
570.900.210	Practical Exercises I, 10x license		technology only available in German language
570.900.301	Practical Exercises II, single license		
570.900.310	Practical Exercises II, 10x license		
570.900.401	Practical Exercises III, single license		
570.900.410	Practical Exercises III, 10x license		

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BASICS TO **DIGITAL AND MICRO-COMPUTER TECHNOLOGY**

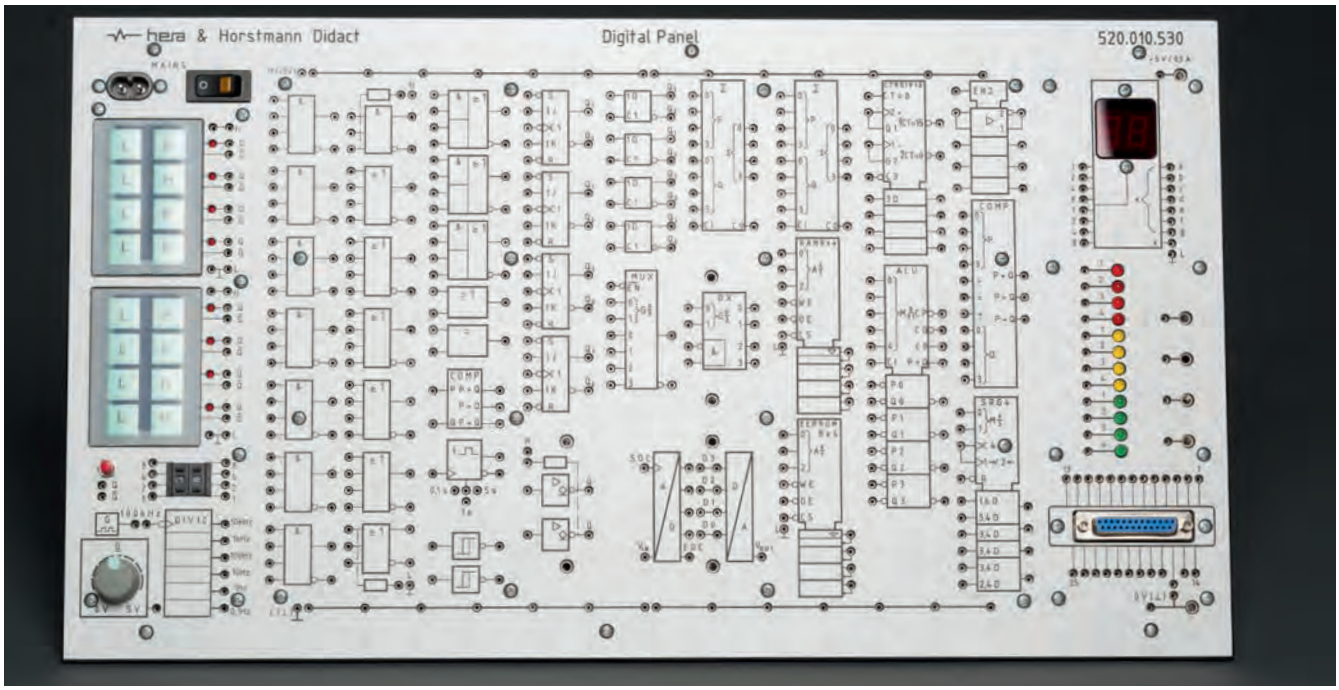
The Digital Panel is a training system for the comprehensive understanding of digital and micro-computer technology.

It is perfectly suitable for obtaining skills in digital technology, non-contact control technology and micro-computer technology.

In front integrated functional modules:

- generator with scaler
- input keypad
- signal sources
- coding switch
- LED‘s
- 7-segment-display
- Sub-D-interface
- gate
- comparator
- flip-flop
- adder
- mono-flop
- multiplexer and demultiplexer
- shift register
- ALU
- RAM
- A/D - and D/A converter

Connection is done with 2mm safety test leads and plugs.



Digital Panel 520.010.530

Basics to Digital and Micro-Computer Technology			
520.010.530	Digital Panel	520.018.001	Manual with CD, English
520.012.000	Set of Cables to Digital Panel	590.100.001	Digital Multimeter

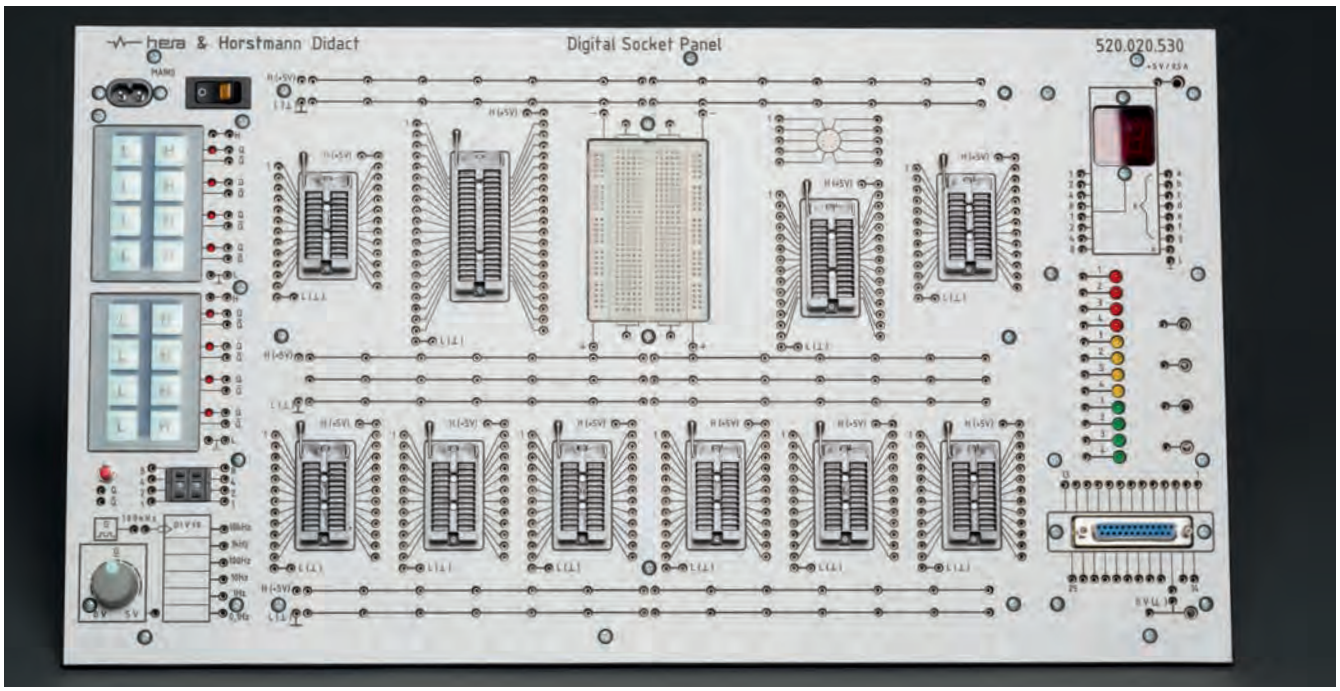
DIGITAL TECHNOLOGY WITH COMMON ICS

The Digital Socket Panel is a compact training system, for the comprehension of digital technology and micro-computer technology with real ICs.

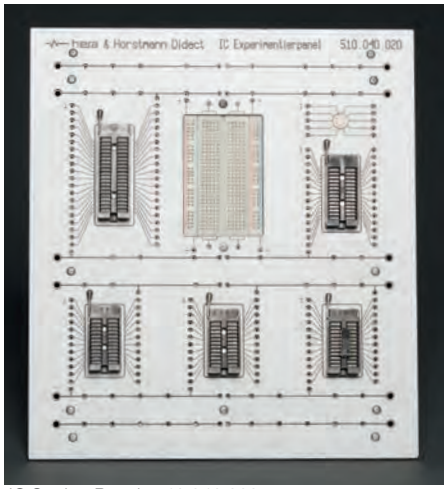
All in- and output modules, input keypads, generators, frequency dividers, coding switches, LEDs, Sub-D interface, 7-segment-display and voltage sources are clearly arranged at the panel front.

There are 10 pcs. sockets with quick-release fasteners, 1 round socket and 1 plug-in-board to do the experiments with common ICs.

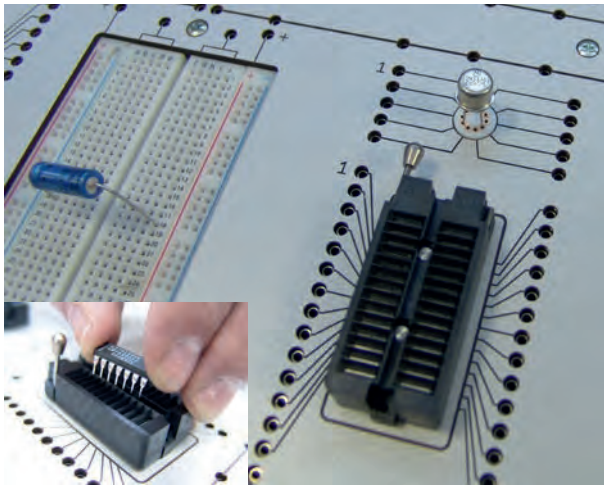
This training system in combination with the set of ICs and our manual make a comprehensive and harmonized training system.
The IC Socket Panel is an ideal enhancement for this training system.



Digital Socket Panel 520.020.530



IC Socket Panel 510.040.020



Digital Technology with Common ICs			
520.020.530	Digital Socket Panel	510.040.020	IC Socket Panel
520.022.000	Set of Cables to the Digital Socket Panel	510.042.000	Set of Cables to the IC Socket Panel
520.011.000	Set of common ICs	520.028.001	Manual with CD, English

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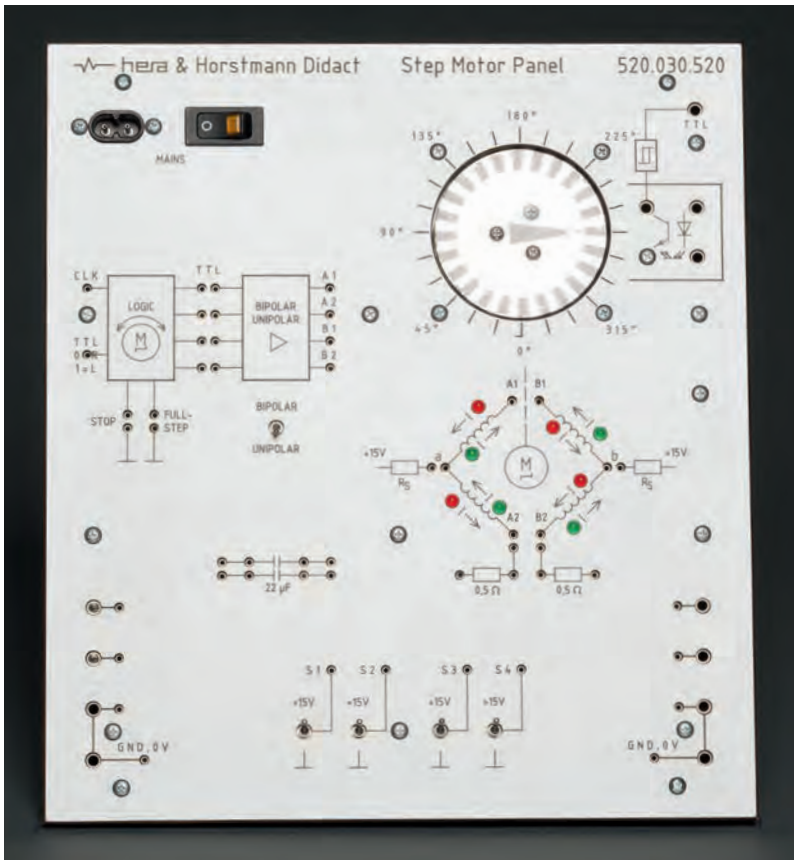
CONTROLLED SYSTEM FOR POWER ELECTRONICS AND DIGITAL PANEL

The Step Motor Panel is an universal controlled system for the power electronic and digital closed-loop technology.

An application is the connection of the Step Motor Panel to the Power Electronic Panel, so the relation between frequency converter and motor could be examined.
Due to its integrated control logic and the amplifier, the panel could be controlled with the Digital Panel.

The training system could be used as follows:

- controlled system for power electronics and digital closed-loop technology
- digital angle - and rotation speed measurement
- digital control of both rotation directions
- bipolar and unipolar operation of the stepping motor



Step Motor Panel 520.030.520

Controlled System for Power Electronics and Digital Panel			
520.030.520	Step Motor Panel	520.038.001	Manual with CD, Step Motor Panel, English
520.031.000	Component: Reflectic Sensor		

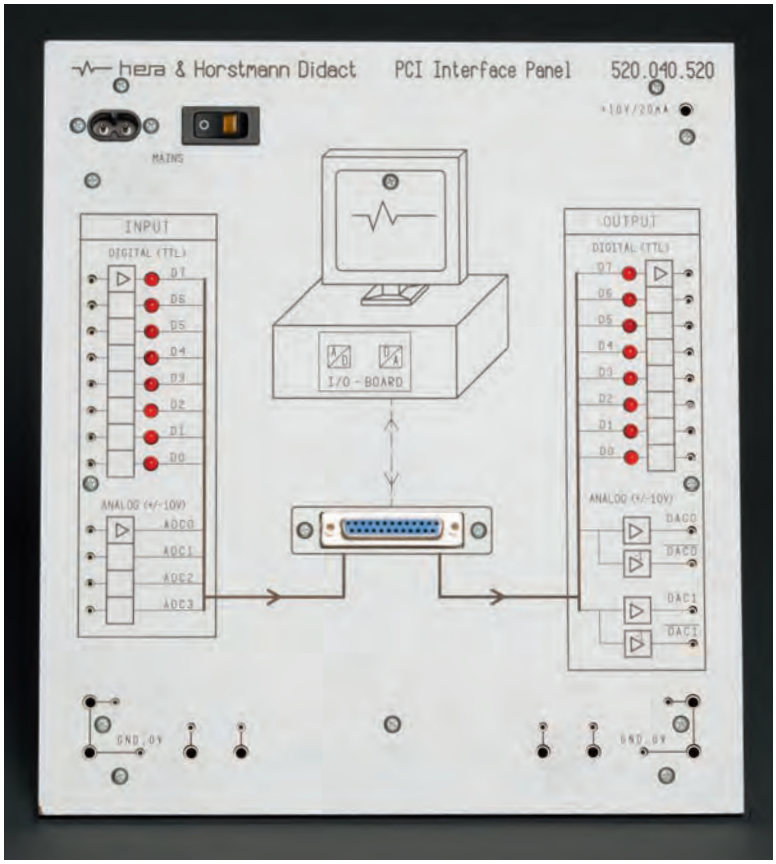
PC **PROCESS SIMULATION**

The PC Process Simulation Panel is the ideal addition to control the Panels of digital technology and control engineering at the PC.

Open loop and closed loop controllers realized by software, could be operated at the training panels via interface. Test set-ups at the panels could also control PC simulated systems.

The system offers 8 digital inputs and 8 digital outputs (TTL, 5V) as well as 4 analogue inputs and 2 analogue outputs. The PC Process Simulation is available with USB or PCI interface.

For PCI connecton is a PCI card required! See suitable softwares on the next page.



PCI Interface Panel 520.040.520

PC Process Simulation			
520.060.520	USB Interface Panel	520.044.000	PCI-I/O Card
520.040.520	PC Interface Panel		

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SOFTWARE FOR THE **PC PROCESS SIMULATION PANEL**

DIGIWIN:

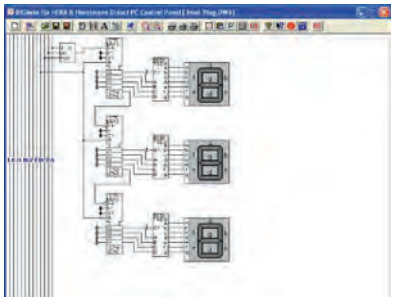
DIGIWIN is a simulation program for digital circuits, which could, in combination with an interface, even control external devices.

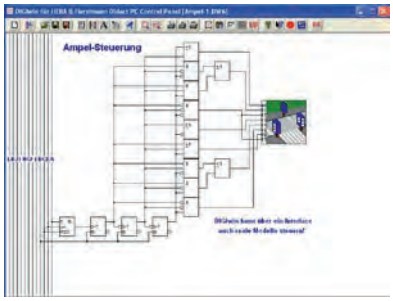
The circuits are generated in Windows with standard symbols, then the function could be tested. In the tests, the signal levels of all lines are indicated or presentation is done as time chart or value table with up to 8 channels.

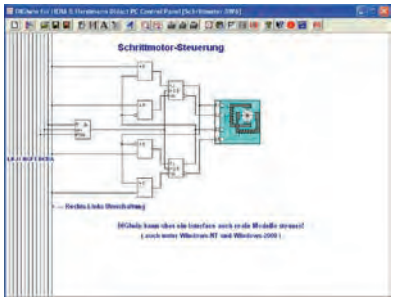
The PLC circuits could be generated in the instruction list. Circuits and time chart could be marked and printed.

The program was developed with particular importance to easy handling, high opertion speed and minimum hardware requirements.

The help function provides detailed information to all functions and componens.







MESSWIN:

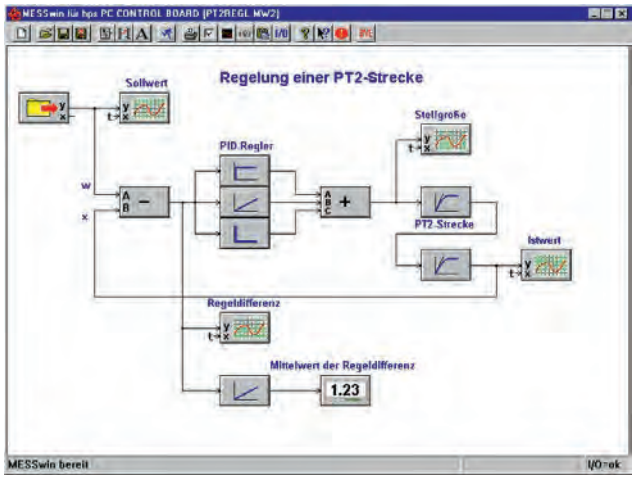
MESSWIN is a graphic program generator for all desired measure -, closed-loop - and control tasks.

The programming is limited to drawing block circuit diagrams with completed, parametrisable function blocks, like generator digital voltmeter, oscilloscope, A/D- or D/A-converter. MESSWIN generates the necessary program code and displays, prints or saves the measured results.

Due to its easy use, MESSWIN is particularly suitable for educational purpose in schools and training centers.

MESSWIN even contains all basic elements of the closed-loop technology like 2-level - and PID controllers.

This enables either closed-loop simulation or if connected via interface: the addressing of real feedback control systems.



Software for the PC Process Simulation Panel			
520.900.302	DIGIWIN Multiple License, DE	570.900.199.	MESSWIN, Multiple License, DE
520.900.305	DIGIWIN Multiple License, EN	570.900.105	MESSWIN, Multiple License, EN

MICROCONTROLLER

The robust Microcontroller Panel is ideal for every day use and it is flexibly upgratable. This innovative training system is a clearly arranged combination of input -, processing - and output components (e.g. potentiometer, summer, switch, RGB-LED/ LEDs). Together with the manual, the training system enables an easy entry into the complex world of microcontroller-programming.

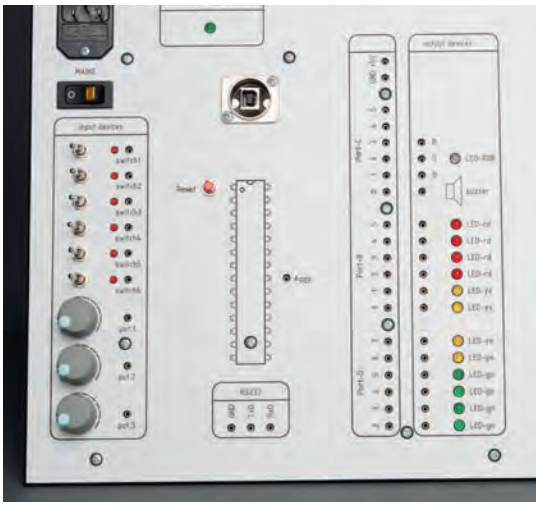
Extra modules with LCD Display, EEPROM, Real Time Clock, Temperature Sensor make this a comprehensive training system for education and development.

The experiments could be from easy LED flashers to complex data loggers.
Due to its integrated separate plug board in 19mm raster, flxible set-ups could be done with common ICs (e.g. transistors).

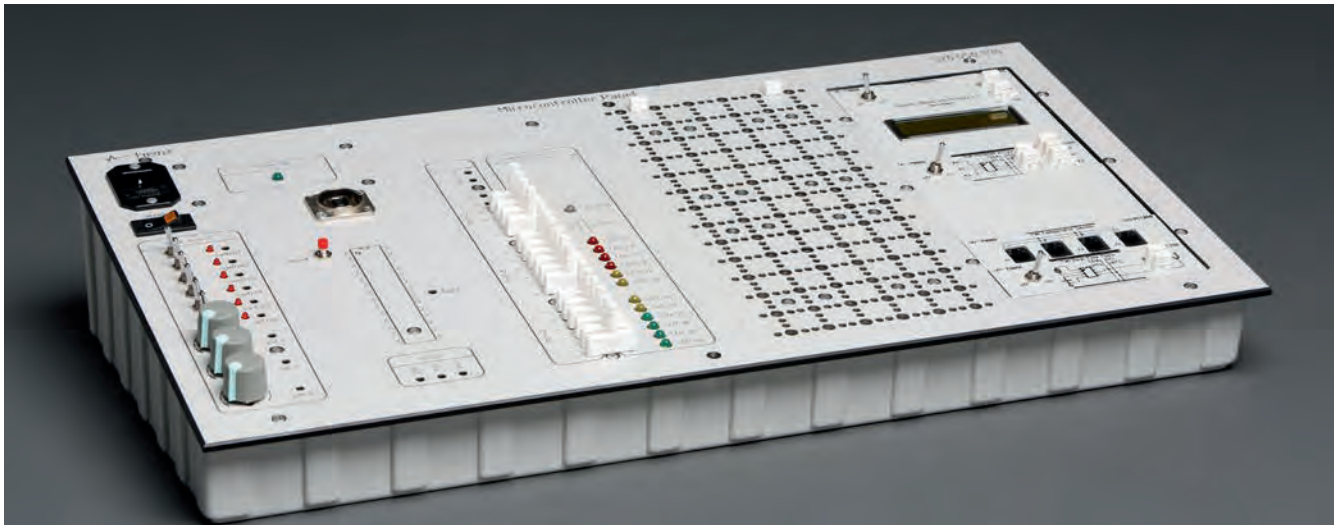
Programming could be done in following computer languages: Assembler, C / C++ and Bascom. Different commercial or open-source programs could be used for software enviornment.

Technical Details:

- ATMEL Microcontroller (ATmega8/48/88/168/328)
- alternately PIC Microcontroller
- USB Interface
- Assembler, C / C++ and Bascom
- 6 A/D-Converter Channels
- Real Time Counter
- 18 Digital I/O
- 6 Switches with Control LEDs
- 3 Potentiometer
- 1 Speaker
- 16 LEDs (red, yellow, green)
- 1 RGB-LED
- Plug Board for Individual Set-Ups
- Damage proof



IPO- (input, process, output) components



Microcontroller Panel with ergonomically tilted hood

Microcontroller			
520.050.530	Microcontroller Panel	520.058.001	Manual with CD, English
520.051.000	Set of Cables to Microcontroller Panel		

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MICROCONTROLLER ENHANCEMENTS

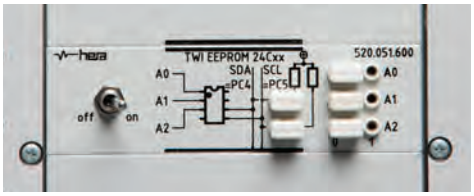
Extra Module **LCD Display**

With the extra module LCD Display, students can learn how to program a display. It also is a basic component for other experiments were a comfortable status indication by display is essential.

extra module LCD Display 520.051.100

Extra Module **Real Time Clock**

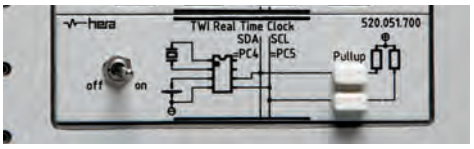
With the extra module it is possible to couple a real time clock IC by I²C Bus to the microcontroller. The serial real time clock has binary coded decimal calendar with seconds, minutes, hours, days, months and years. Even leap years are considered. Both, 24-h-mode and 12-h-mode is possible. Addresses and data are transmitted by bidirectional serial bus.



extra module real time clock 520.051.700

Extra Module **EEPROM**

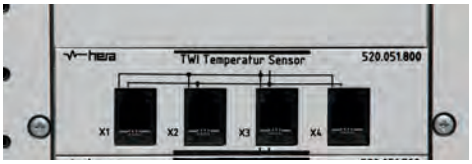
With the extra module EEPROM the microcontroller panel gets additional external memory. The integrated ATmega Microcontroller already posseses an internal EEPROM, but the extra module provides the possibility to store data on external memory and get to know this proceeding. The EEPROM is also controlled by I²C Bus and thus could be easily integrated into the system.



extra module EEPROM 520.051.600

Extra Module **Temperature Sensor**

The extra module sensor measures a temperature and the measured value can be indicated on the LED display. The temperature sensor is not a common PTC or NTC resistor, but a LM75 temperature sensor. The LM75 measures temperatures with a resolution of 0,5 degree and transfers the measuring results via I²C-Bus. Integrated is a thermostat with via I²C adjustable threshold value and hysteresis.



extra module temperature sensor 520.051.800

Extra Modules to Microcontroller			
520.051.100	Extra Module LCD Display	520.051.600	Extra Module EEPROM
520.051.700	Extra Module Real Time Clock	520.051.800	Extra Module Temperature Sensor

NETWORKS TECHNOLOGY

The Local Area Network (LAN) Panel offers a great variety of possibilities to get to know the basic configurations of a LAN and apply those.

Configuration:

- 8 Port Switch 1Gbit/s
- Wireless LAN Access Point 54Mbit/s
  Multifunctional Device, also applicable for Bridge and Repeater
- Multifunctional Router 100Mbit/s
- Powerline Adapter 85Mbit/s

Experiments:

- Characteristics of different length of Ethernet cable
- Individual configured stations
- Simulation of switch failures
- Application of Wireless LAN
- Handlings of big Networks
- Supernetting / unclassified routing
- Networks with more Panels
- Experiments with cable length and transfer rate of Ethernet cables, even on large distances

Comprehensive manual for theoretical and practical lessons!

LAN Panel with ergonomically tilted hood

Networks Technology			
580.140.030	LAN Panel	580.148.001	Manual with CD, English
580.141.000	Set of Cables to LAN Panel		

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PANEL CASE FOR TRANSPORTATION OR STORAGE

We offer an aluminium case, which is suitable for most of our A4 panels, it can be used for storage and convenient transport of training systems.

Case and lid could be flexibly equipped with all standard panels, width: 532mm. For optimal handling, the lid could be detached. The case comes with two keys.

Dimensions:
555 x 390 x 250mm (WxDxH).

Panel Case System			
509.002.000	Panel Case	509.010.001	Flap for Case Lid

NOTES

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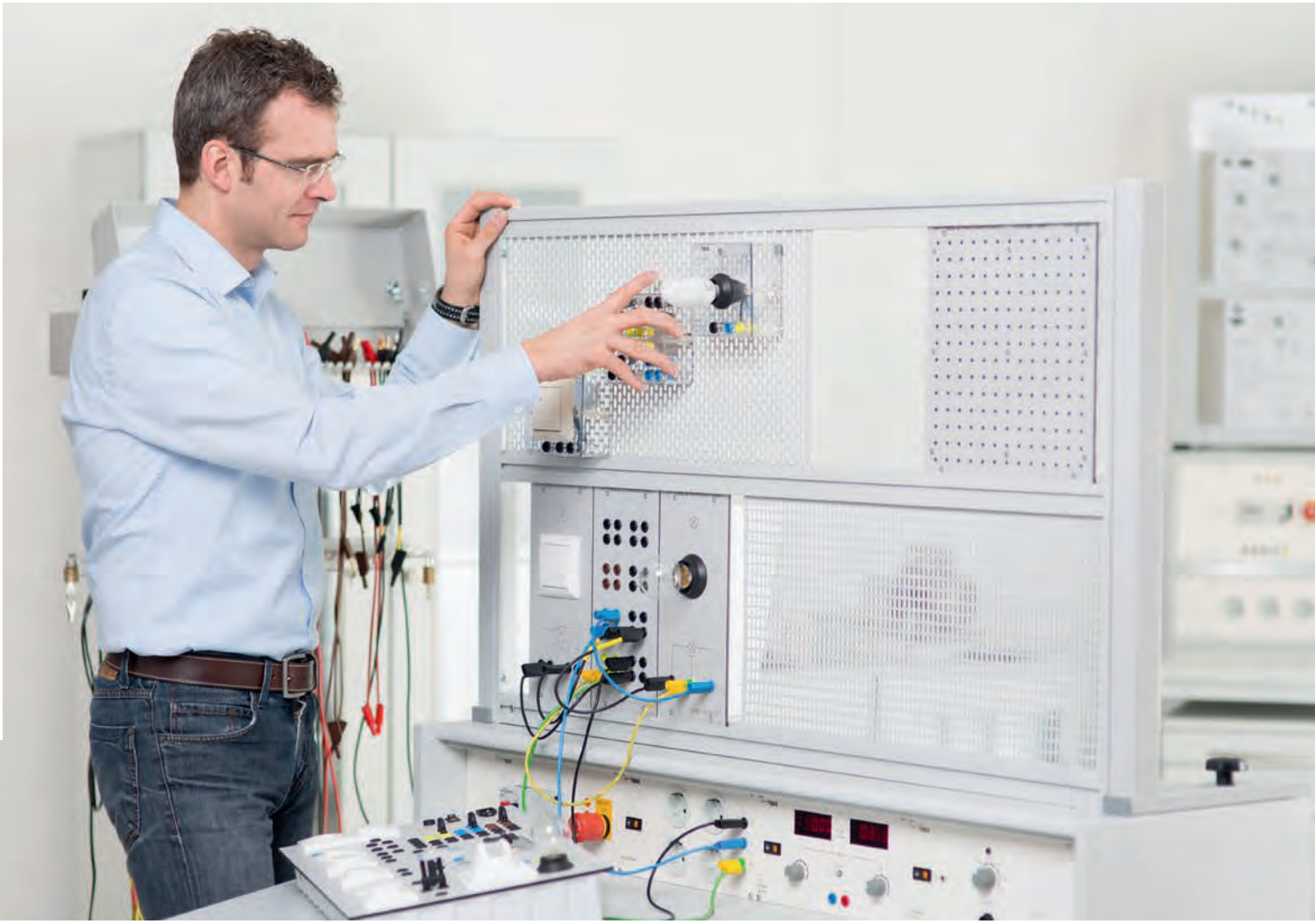
INNOVATIVE TRAINING SYSTEMS
FOR FUTURE ENGINEERS

CHAPTER 15: **TRAINING SYSTEMS FOR ELECTRICAL INSTALLATIONS**

527 Training Panel to Electrical Protective Measures
528 Training Panel to Installation Tests
529 Training Panel to Residual Current Devices
530 Training Panel to Installation Technoloy (compact)
531 Component Panels to Installation Technology
533 Training Boxes to Installation Technology
534 Installation Cabin, stationary / mobile
535 Training Panels and Boxes to Intercom Systems
536 Training Panel to Lighting Technology
537 Component Panels and Boxes to Lighting Technology
538 Training Panel to Halogen Lamps
539 Training Panel to LED Lighting Technology
540 Training Panel to KNX EIB Installation Bus
542 Training Panel to Building Security Technology
543 Software to Installation Technology

TRAINING PANEL, COMPONENT PANEL OR TRAINING BOX?

In this chapter we would like you to get familiar with our training systems for installation technology. You can choose between compact training panels, component panels or training boxes. All panel fronts are durable engraved and clearly arranged. Ergonomically tilted hoods enable a convenient operation either in training system frames or directly on the bench top.
The training boxes could be used for wirings on installation walls and fit in the typical hera-grid, as well as in the universal E-grid. The transparent boxes allow the direct view to each component.
For each training system we offer manuals with a considerable number of tests or tutorial software.



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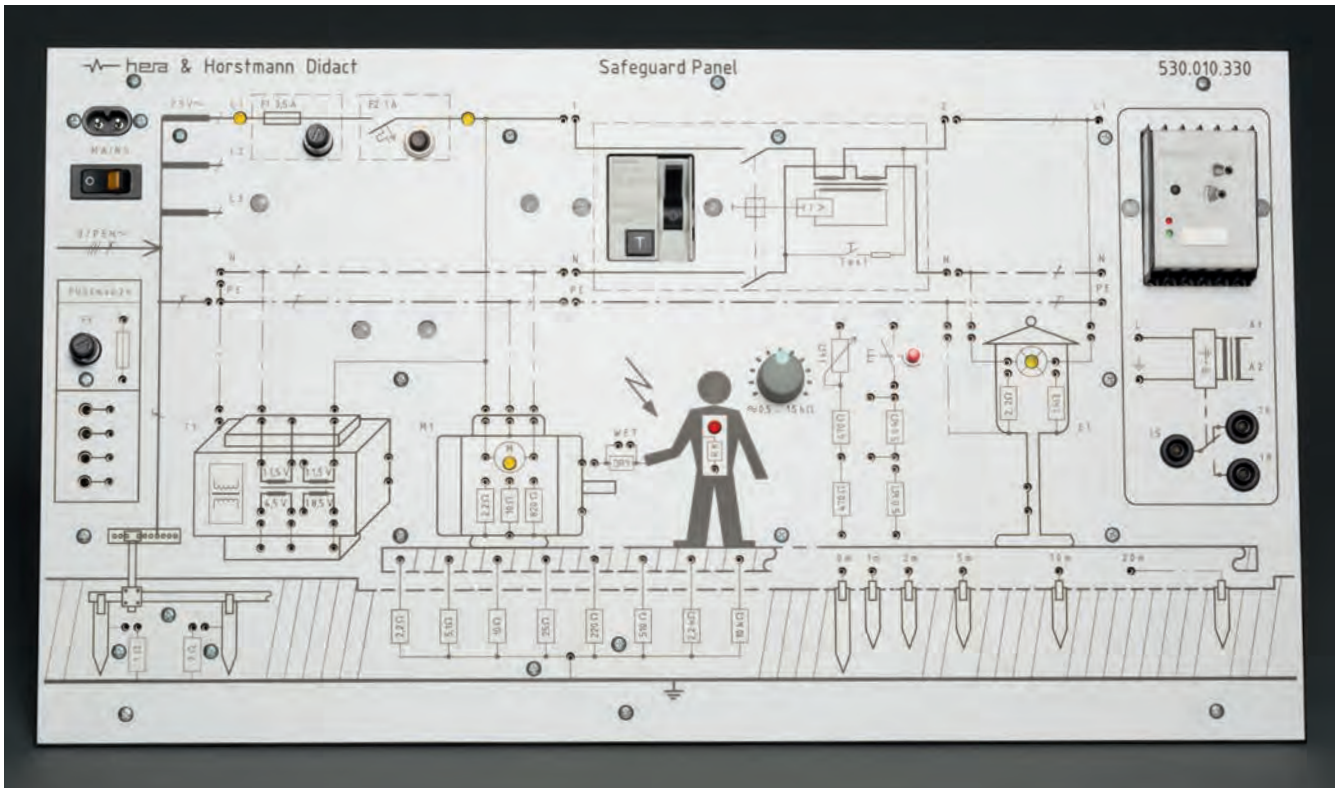
ELECTRICAL **PROTECTIVE MEASURES**

Training system for practical tests in the field of electrical protective measures.
All important protective measures according to VDE 0100 are combined in this system. Power grid connections TT, TN-C-S and IT could be realized. All tests are done with protective low voltage.

Dimensions: 532 x 297mm (W x H).

Learing Content:

- Protective Insulation
- Protective Separation
- Protection against Direct and Indirect Contact
- Protection by Protective Low Voltage
- Residual Current Device (RCD)
- Over Current Protection Device
- Summation Current Transformer
- Autotransformer
- Protective Measures in TN- , TT- and IT grid
- Measurement of Earth Resistance
- Earth Electrode



Safeguard Panel 530.010.330

Electrical Protective Measures			
530.010.330	Safeguard Panel	530.018.001	Manual with CD, English
530.012.000	Set of Cables to Safeguard Panel	590.100.001	Digital Multimeter

INSTALLATION TESTS ACCORDING TO VDE

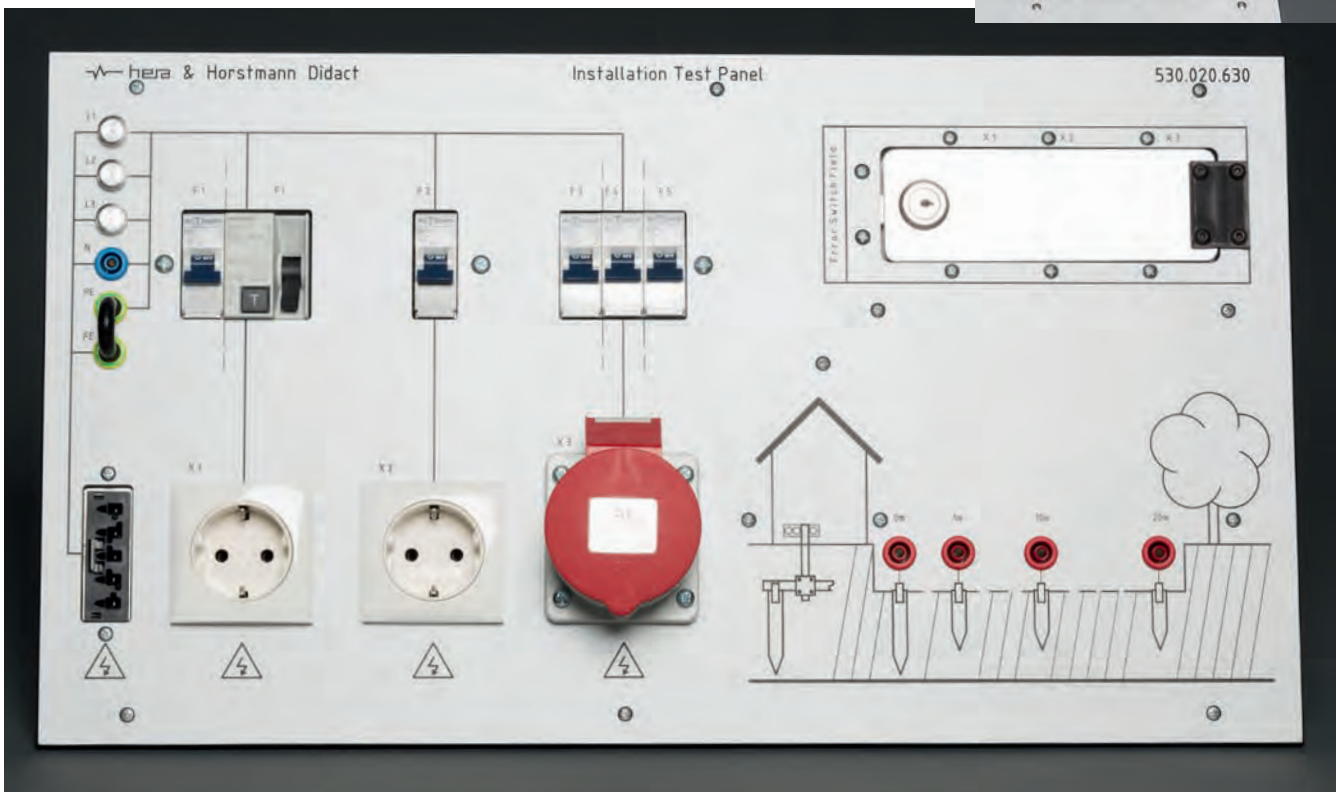
Training system for practical measurements with common instruments of installation technology.
The integrated fault simulator enables to simulate realistic failures within the installation technology. Students get aquainted to measures for fault detection.

Dimensions: 532 x 297mm (W x H).

Learning Content for 1phase and 3phase grid:

- Malfunction of Conductor
- Loop Impedance
- Insulation Resistance
- Tripping Characteristic for a Residual Current Device
- Measurement of Earth Resistance

>> AC SUPPLY NECESSARY >>



Installation Test Panel 530.020.630

Rotation Field Adapter 540.099.007

Measurement - and Test Device 590.100.100

Installation Test			
530.020.630	Installation Test Panel	530.028.631	Manual with CD, English
590.100.100	Measurement and Test Device for Installation Tests (VDE)		
540.099.007	Rotating Field Adapter (CEE-safety jacks)		

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RESIDUAL CURRENT DEVICE

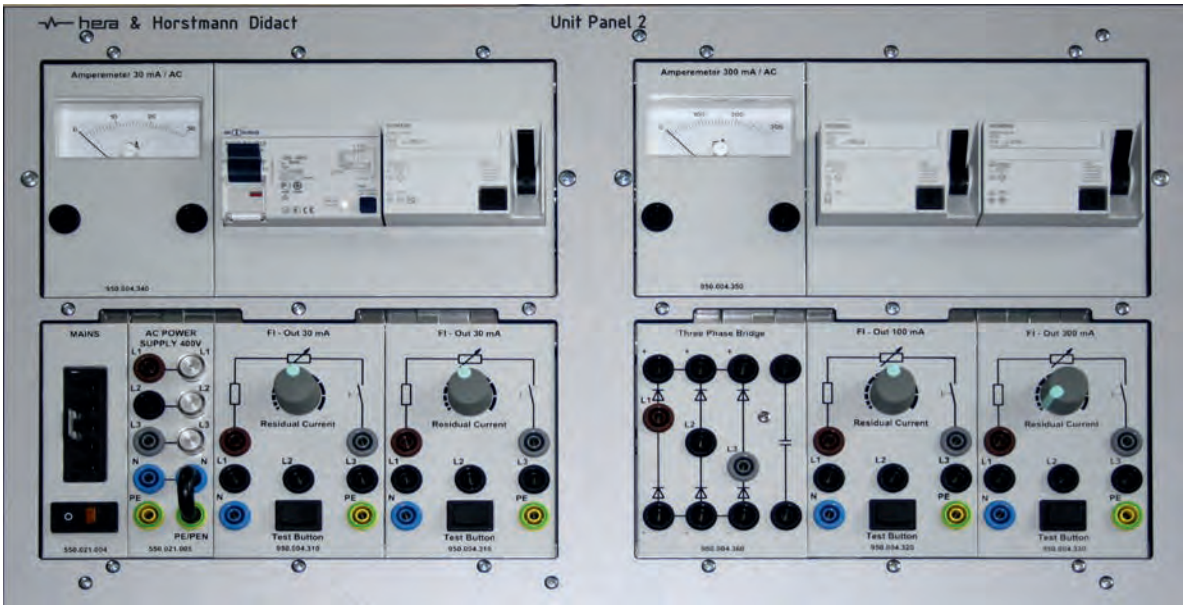
With this system, following measurements could be done in 3phase grids, without tripping the residual current device of the inhouse installation:
Different tripping characteristics of the RCD

- Type A 300mA,
- Type A 100mA S (selective)
- Type A 30mA
- Type B sensitive to all currents 30mA

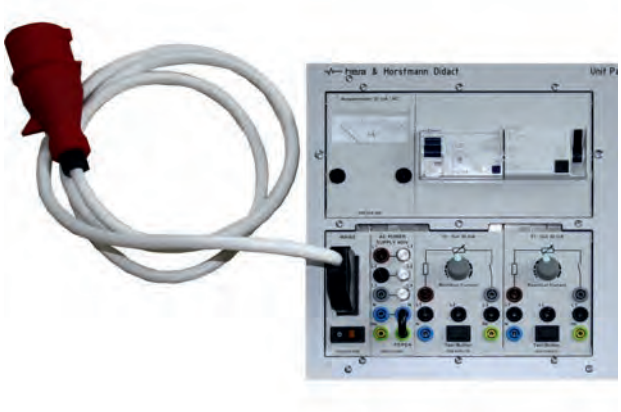
All RCD outputs are connected to safety jacks and provided with integrated variable tripping resistance. An integrated ammeter indicates the tripping current.

To demonstrate the difference and the necessity of a RCD type B, a 6-level-rectifier with suppression capacitor is integrated.
The modular set-up of the panel (basic panel and component modules) enables to replace the residual current device and the tripping components.

Training System for testing the RCD without tripping the residual current device of inhouse installations.



RCD Test Panel 530.030.630



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Residual Current Devices			
530.030.630	RCD Test Panel	530.128.001	Manual with CD, English
530.022.000	Set of Cables to RCD Test Panel		

TRAINING PANEL **INSTALLATION TECHNOLOGY**

Training System for all important basic circuits of installation technology. All components are installed on top of the panel with ergonomically tilted hood. All connections are done with 4mm safety leads.
The integrated fault simulator enables to simulate realistic failures of installation technology. Students get aquainted with measures for fault detection.

Dimensions: 532 x 297mm (W x H).

Following components are integrated:

- 1 Schuko Socket
- 2 Change-Over Switch
- 2 Pushbutton
- 1 Toggle Switch
- 1 Dimmer
- 1 Distribution Board
- 1 Motion Detector
- 1 Impulse Switch
- 1 Time Switch for 3- and 4-line Connection
- 1 Incandescent Lamp
- 1 Fault Simulator

Basic Installation Panel 530.030.530

Lockable Fault Simulator

530.030.530	Basic Installation Panel	530.038.001	Manual and CD, English
530.032.000	Set of Cables to Basic Installation Panel	590.100.001	Digital Multimeter

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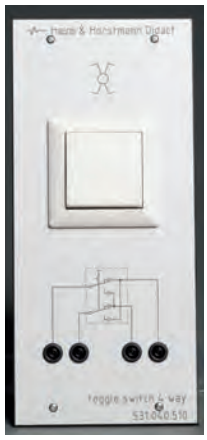
COMPONENT PANEL FOR **INSTALLATION TECHNOLOGY**

Modular training system for all major circuits of installation technology.
All components are on individual panels with ergonomically tilted hood. Connections are done with 4mm safety leads.

Dimensions: 133 x 297mm (W x H).

531.000.100 Set Installation Technology consisting of: (in accordance with manual 530.038.001)

2x Distribution Panel
2x Change-Over Switch
2x Pushbutton
2x Socket E27
1x Schuko Socket
1x Toggle Switch 4-way
1x Dimmer
1x Motion Detector
1x Impulse Switch
1x Staircase Time Switch



Component Panels for Installation Technology

531.000.100	Panel Set Installation Technology	531.510.510	Impulse Switch 230V
531.000.510	Feeding Panel (CEE plug with 2,5m cable)	531.520.510	Staircase Time Switch
531.020.510	Distribution Panel with 8 Distribution Points	531.530.510	Multifunct. Time Relay 8 - 230V; 1x Change-Over
531.130.510	Automatic Circuit Breaker, 1pole, 6A	531.110.510	Pushbotton - Door Bell
531.140.510	Automatic Circuit Breaker, 3poles, 6A	531.120.510	Pushbutton - Door Opener
531.180.510	Neozed Fuse 3 x 6A	531.150.510	Buzzer 5 - 8V
531.190.510	Residual Current Device 30mA, 4poles	531.160.510	Bell Transformer
531.210.510	Residual Current Device 30mA, 2poles	530.038.001	Manual with CD, English
531.010.510	Schuko Socket	590.100.001	Digital Multimeter
531.030.510	Change-Over Switch	500.000.001	Unequipped Panel S (W:133)
531.040.510	Toggle Switch 4-way	500.000.002	Unequipped Panel M (W:266)
531.050.510	Two Single-Pole Switch	500.000.003	Unequipped Panel L (W:532)
531.060.510	Pushbutton with Light Symbol	500.000.011	Unequipped Panel S with tilted Hood
531.070.510	Dimmer for Filament Lamp	500.000.012	Unequipped Panel M with tilted Hood
531.080.510	Motion Detector	500.000.013	Unequipped Panel L with tilted Hood
531.200.510	Lamp 60W, with Cellar Housing	500.000.021	Tilted Hood size S
531.310.510	Lamp Socket E27 (incl. bulb 60W)	500.000.022	Tilted Hood size M
531.170.510	Lamp Sockets 3 x E14	500.000.023	Tilted Hood size L

REPLACEABLE HOOKS AND LOCKINGS

Try to imagine the situation, that a locking from one of your boxes is broken. What happens? Replace the complete training box? - Not if you have hera. Our boxes are with replaceable lockings and hooks, so conveniently replace the broken part and use it again. It will safe you lots of money. And by the way: hera boxes do not only fit into installation walls with hera grid but also in the universal E-grid. This flexibility is incomparable!

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TRAINING BOXES FOR **INSTALLATION TECHNOLOGY**

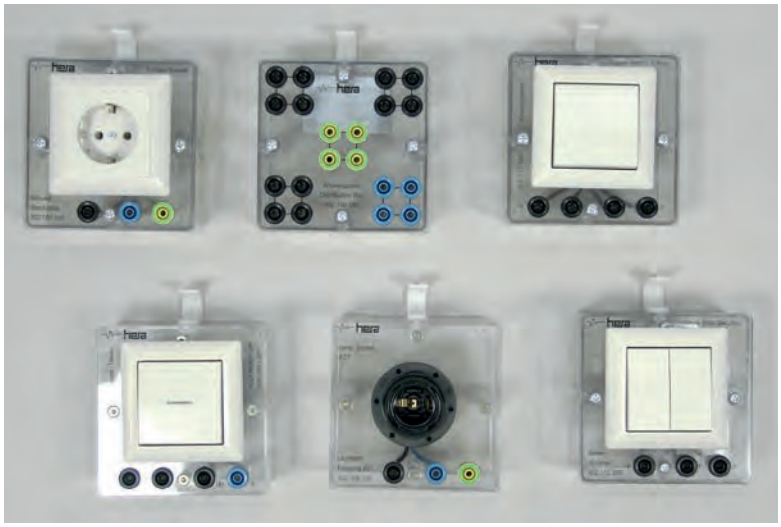
Modular training system for all major circuits of the installation technology. All components are on individual transparent training boxes and could be hooked in installtation walls (either hera grid 12 x 5mm or E-grid 10 x 5mm). All connections are done with 4mm safety leads.

Dimensions: 115 x 115 x 50mm with replaceable locking and hooks.

Completely closed, transparent training box with replaceable locking and hooks, suitable for installation walls with different grids.

302.000.101 Set Installation Technology consisting of: (in accordance with the manual 530.038.001)

3x Distribution Box
1x Automatic Circuit Breaker 1pole C1A
1x Residual Current Device 2poles 16/ 0,01A
1x Schuko Socket
3x Lamp Socket E27 with Bulb 28W
2x Pushbutton without Symbol
1x Pushbutton with Lamp Symbol
1x 2x Change-Over Switch
1x Control Change-Over Switch
1x Intermediate Switch
1x Two Single-Pole Switch
1x Dimmer for Filament Lamp
1x Impulse Switch 230V
1x Staircase Time Switch 230V
1x Relay 230V / AC, 1 Closing Contact
1x Motion Detector



Training Boxes for Installation Technology

302.000.101	Boxes Set Installation Technology	302.106.100	Lamp Socket E27 and Bulb 40W
302.100.500	Feeding Box with Power Cord	302.107.100	Lamp Socket E14 and Bulb 40W + 25W
302.100.100	Distribution Box	302.107.300	3fold Lamp Socket E14 and Bulb 25W
302.101.100	Automatic Circuit Breaker 1poles C1A	302.114.100	Impulse Switch 230V
302.101.300	Automatic Circuit Breaker 1poles C10A	302.114.300	Time Relay
302.101.500	Automatic Circuit Breaker 2poles B10A	302.114.200	Multifunct. Time Relay 8 - 230V; 1 x Change-Over;
302.101.600	Automatic Circuit Breaker 3poled C10A		time selectable between 0,1s - 40h
302.102.100	Residual Current Device 2poles 16/ 0,01A	302.115.100	Motion Detector
302.102.500	Residual Current Device 4poles 25/ 0,03A	302.115.200	Light-Sensitive Switch
302.105.100	Schuko Socket	302.140.100	Impulse Relay 230V AC
302.111.100	Change-Over Switch	302.142.100	Relay 230V AC with 3 x Change-Over Switch
302.111.200	Control Change-Over Switch	302.177.100	Staircase Time Switch
302.112.100	Toggle Switch	302.104.100	Electricity Meter with S0-Interface
302.112.200	Two Single-Pole Switch	302.104.200	3phase Electricity Meter with S0-Interface
302.112.400	Off-Button 3poles	302.108.100	Leakage Current Simulator
302.110.100	Pushbutton without Symbol	530.038.001	Manual with CD, English
302.110.200	Pushbutton with Lamp Symbol	590.100.001	Digital Multimeter
302.110.300	Pushbutton with Change-Over	302.000.000	Training Box, unequipped (in pieces)
302.113.100	Dimmer for Filament Lamps	302.000.010	Set of Hooks for Training Boxes
302.113.200	Dimmer for Electric Transformers	302.000.020	Lockings for Training Boxes

INSTALLATION CABIN STATIONARY

- The installation cabin is for practical tests in electrical installations technology
- It consists of an anodized frame made of aluminium profile and inserted grid walls.
- Durable, light grey powder coating.
- Dimensions: 1200 x 1000 x 2000mm (WxDxH).

Installation Cabin stationary	
461.600.000	Sheet Steel Walls with hera Grid
461.600.010	Sheet Steel Walls with E-Grid
461.600.050	Wooden Walls (replaceable)

INSTALLATION CABIN MOBILE

- Solid base made of tubular steel.
- Four heavy duty casters with brakes.
- All sides with pivoting and lockable walls.
- Durable, light grey powder coating.
- Dimensions: 1000 x 1000 x 2000mm (WxDxH).

Installation Cabin mobile	
461.601.000	Sheet Steel Walls with hera Grid
461.601.010	Sheet Steel Walls with E-Grid
461.601.050	Wooden Walls (replaceable)

SPECIAL DOWELS FOR INSTALLATION WALL

- 100 pcs. dowels for installation walls.
- Incl. pan head screw.
- Length: 9,5mm.

Special Dowel, Set	301.150.100

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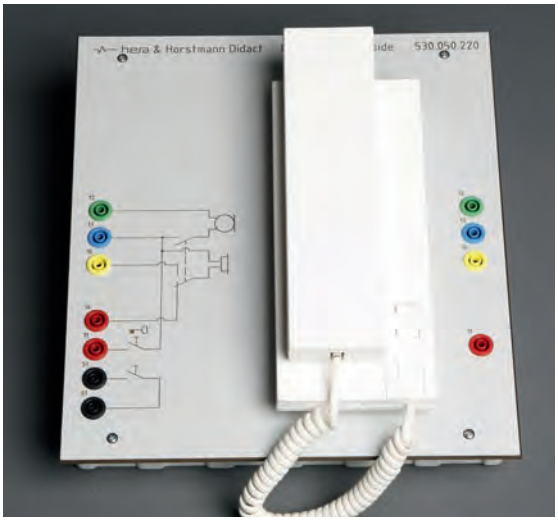
DOOR BELL - AND **INTERCOM SYSTEMS**

For door bell - and intercom systems we offer either training panels or training boxes. Both systems will be connected with 4mm safety leads.

The ideal training system consists of one door intercom point for outside and two indoor intercom points.

Door Intercom Point outside 530.040.220



Indoor Intercom Point 530.050.220

Panels for Door Bell - and Intercom System			
530.040.220	Door Intercom Point with Power Supply and Opener	530.042.000	Set of Cables to Intercom Systems
530.050.220	Indoor Intercom Point	530.048.001	Manual with CD, English

Boxes for Door Bell - and Intercom Systems			
302.130.100	Bell Transformer 230V / 8V	302.133.100	Buzzer 8V AC
302.132.300	Bell Button 2fold	302.135.300	Power Supply for Intercom System
302.132.100	Pushbutton (door opener)	302.136.200	Door Intercom Point
302.131.100	Door Bell 8V	302.136.100	Indoor Intercom Point
302.131.500	Door Opener	530.048.001	Manual with CD, English

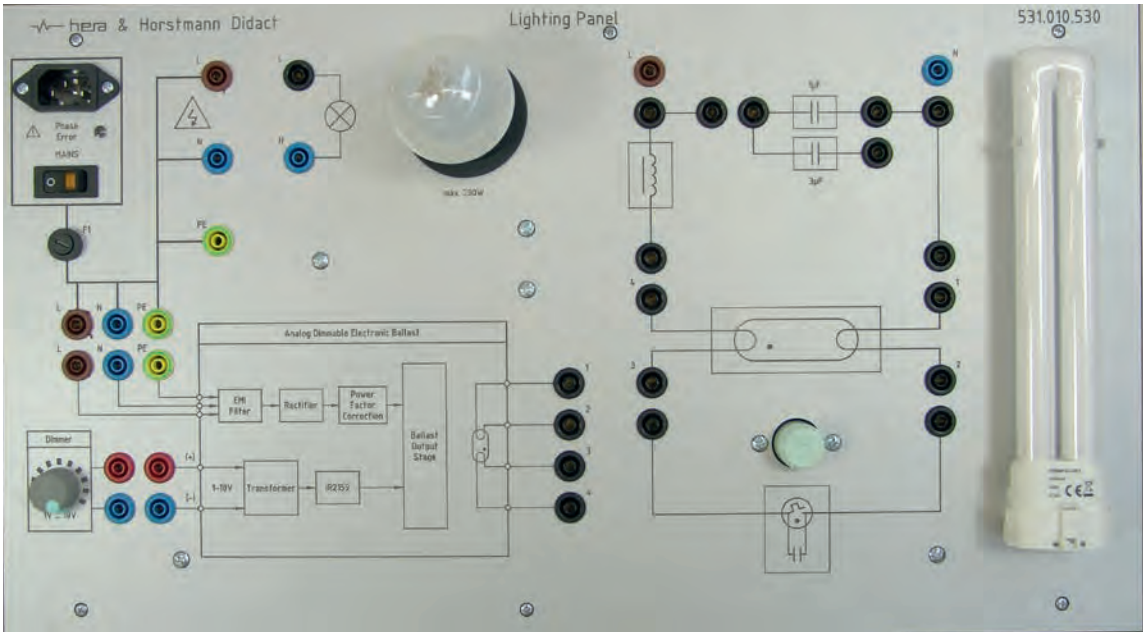
TRAINING PANEL **LIGHTING TECHNOLOGY**

Modular training system for all important lamp circuits of the installation technology.
This training system is available either as panel system or boxes system. All connections are done with 4mm safety leads.

Dimensions: 532 x 297mm (W x H).

Learning Content:

- Incandescent Lamp
- Halogen Lamp
- Fluorescent Lamp Circuit with Choke
- Fluorescent Lamp with Electronic Ballast
- Fluorescent Lamp with Dimmer
- Mixed Light Lamp



Lighting Panel 531.010.530

Lighting Technology			
531.010.530	Lighting Panel	531.018.001	Manual with CD, English
531.011.000	Accessory to Lighting Panel, Starter and Lamp Set	590.010.001	Digital Lux Meter
531.012.000	Set of Cables to Lighting Panel		

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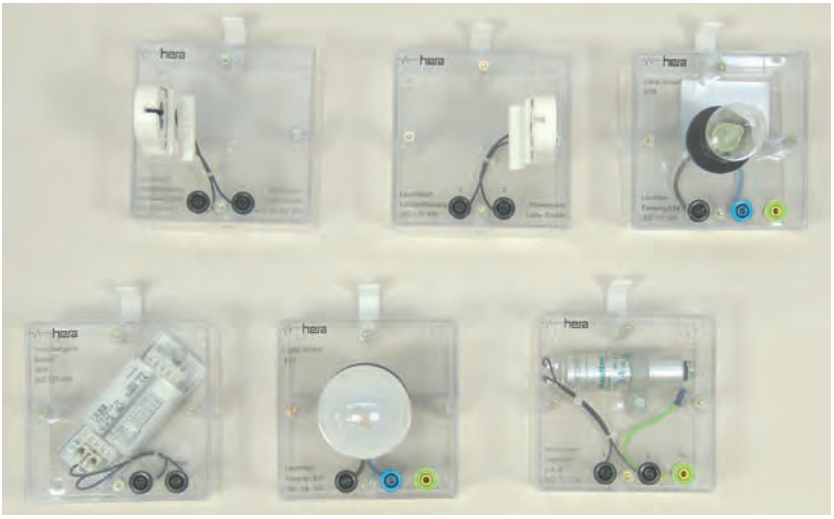
COMPONENT PANELS AND BOXES FOR **LIGHTING TECHNOLOGY**

Socket E27 531.310.510

High-Pressure Lamp 531.030.520

Component Panels for Lighting Technology			
531.310.510	Lamp Socket E27	531.540.520	Sodium Low-Pressure Lamp with Ballast and Starter
531.320.510	Fluorescent Lamp 18W with Socket	531.030.520	High-Pressure Lamp (Halogen, Sodium, Mercury) with Ballast and Starter
531.330.510	Starter, Low-Loss Ballast 18W	531.032.520	Set of Cables to 531.030.520
531.345.510	Capacitor 4,5µF		



Training Boxes for Lighting Technology			
302.106.100	Lamp Socket E27	302.113.300	Electric Potentiometer for Electronic Ballast
302.107.100	Lamp Socket E14	302.121.700	Dimmable Electronic Ballast
302.121.400	Low-Loss Ballast 18W	302.120.600	Dimmable Compact Fluorescent Lamp
302.121.500	Low-Loss Ballast 36W VVG	302.122.100	Capacitor 3,4µF for Double Circuit
302.121.300	Electronic Ballast 18W	302.122.200	Capacitor 4,5µF for Suppressor Capacitor
302.121.600	Electronic Ballast 36W	302.126.100	Socket for Sodium High-Pressure Lamp E40 and Bulb
302.113.200	Dimmer for Electric Transformers		
302.120.100	Socket for Fluorescent Lamp, no Starter	302.126.200	Ballast for Sodium High-Pressure Lamp
302.120.200	Socket for Fluorescent Lamp, with Starter and Light Tube 18W	302.124.100	Conventional Transformer 230V/ 11,5V 60W
		302.124.200	Electronic Transformer 20 – 70W
302.120.300	Socket for Fluorescent Lamp, with Starter and Light Tube 36W	302.125.100	Socket for Halogen Lamp with Bulb
		302.126.100	Socket for Sodium High-Pressure Lamp with Bulb 150W and Starter
302.120.500	Socket for Compact Fluorescent Lamp and Bulb 18W	302.126.200	Ballast for Sodium High-Pressure Lamp 150W

HALOGEN LAMP TECHNOLOGY

Training System for all important tests with low-voltage halogen lamps.

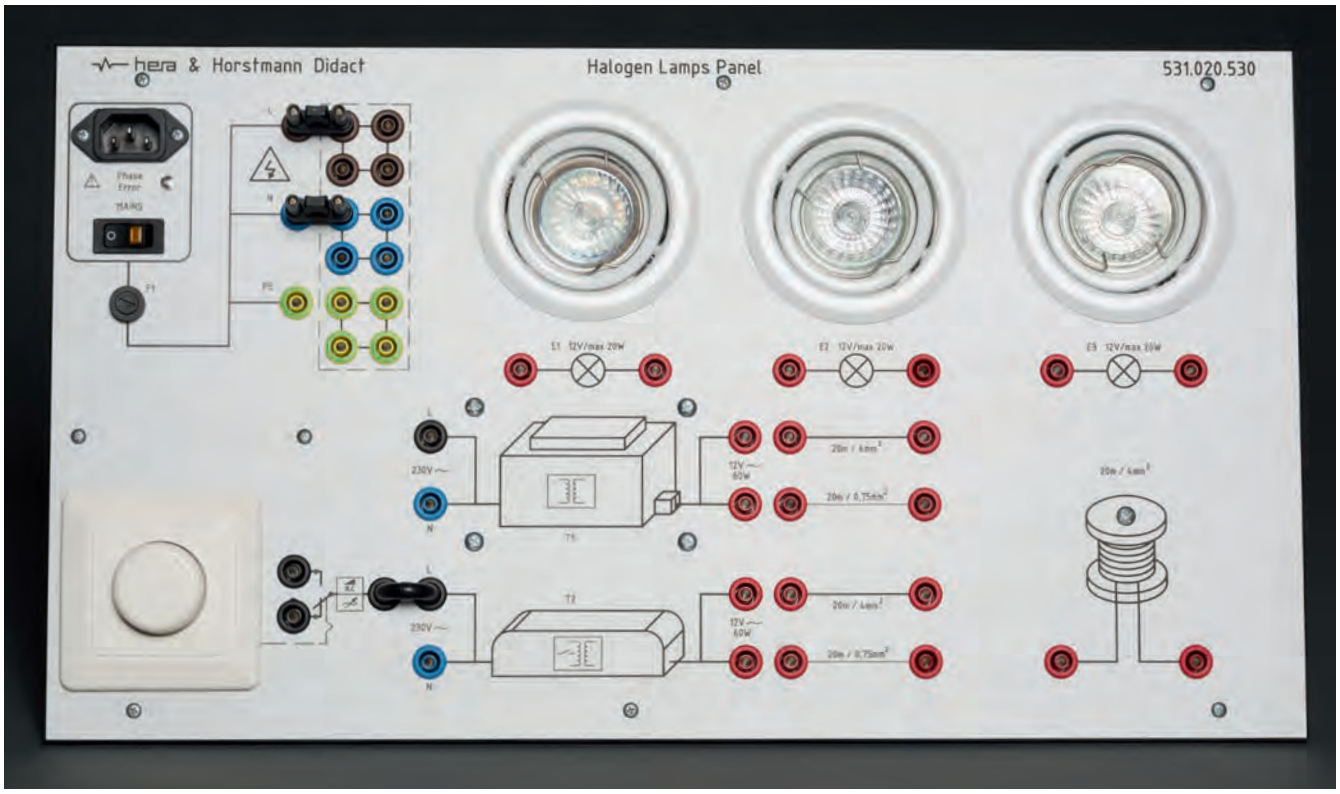
This panel enables to examine the efficiency of various lamps with different transformers. It shows the influence of variable cable length and diameters.

All this circuits could also be done with our training boxes.

Dimensions: 532 x 297mm (W x H).

Learing Content:

- Power Loss of Transformers
- Dimming Low-Voltage Halogen Lamps
- Dependency of Cable Length and Diameter (only panel)
- Characteristics of Low-Voltage Halogen Lamps



Halogen Lamps Panel 531.020.530

Halogen Lamp Technology			
531.020.530	Halogen Lamps Panel	531.018.001	Manual with CD, English
531.022.000	Set of Cables to Halogen Lamps Panel	590.010.001	Digital Lux Meter

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LED TECHNOLOGY

The LED Lamp Panel is the ideal base for sufficient tests with LEDs and helps to understand its characteristics. For the different tests, all luminaries could be separately switched. The operating temperature of each light is indicated.
To demonstrate the dimmability of RGB LEDs, a PWM controller is integrated. For optical demonstration of the changing colours, the LEDs illuminate plastic inserts. The PWM signals could be visualized by connecting an oscilloscope to the three BNC outputs.

Learing Content:

- Power Consumption
- Temperature Measurement
- Light Intensity
- Emitting Angle
- PWM Measurement by Dimming the LEDs

Dimensions: 532 x 297mm (W x H).

LED Lamp Panel 531.030.530

LED Technology

531.030.530	LED Lamp Panel	531.028.001	Manual and CD, English
531.032.000	Set of Cables to LED Lamp Panel	590.010.001	Digital Lux Meter

KNX EIB INSTALLATION BUS

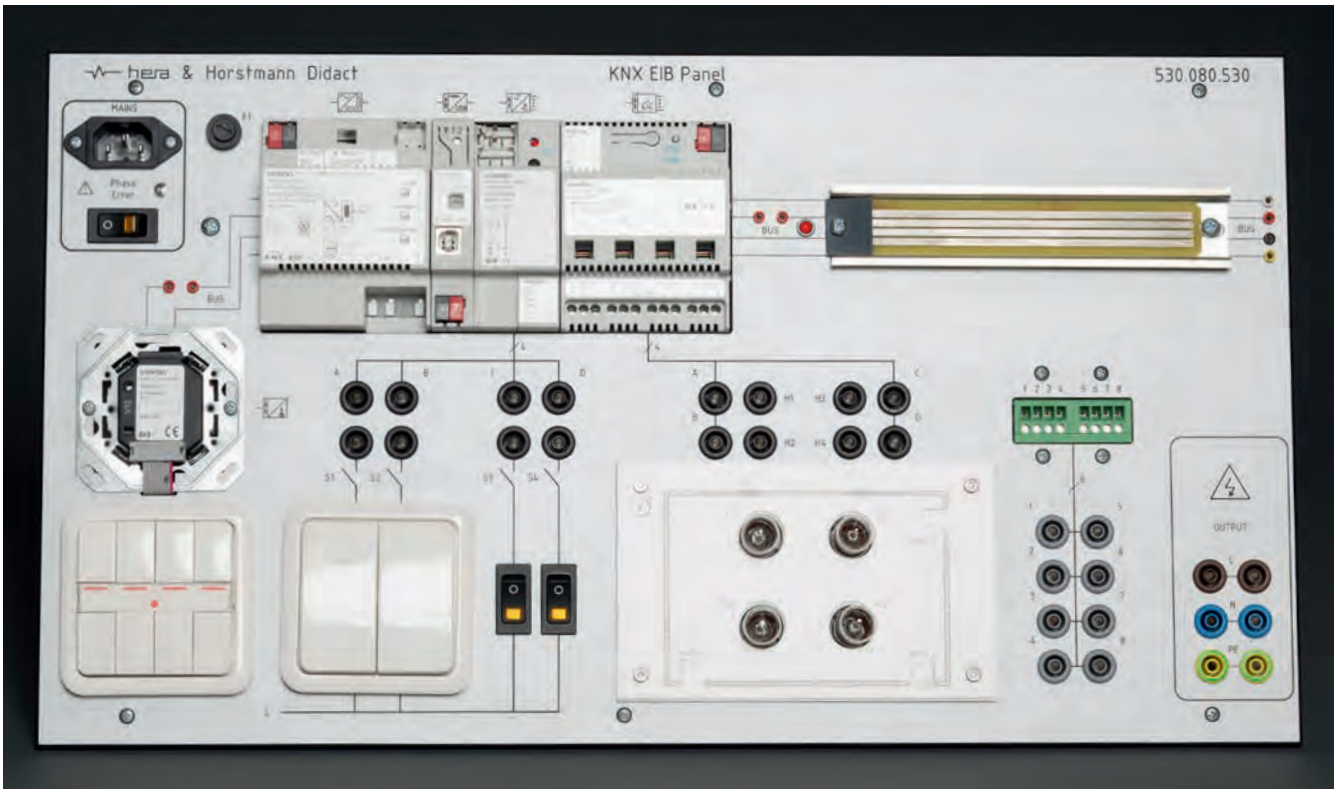
Universal training system to the „European Installation Bus (EIB)“ with integrated basic components.

The system could be enhanced by adding components to the head rail or by connecting extra component panels. The bus lines are connected with 2mm measuring leads and the load circuits with 4mm safety leads.

Dimensions: 532 x 297mm (W x H).

Following Components are Integrated:

- Power Supply with Choke
- EIB Interface USB
- 4x Binary Input
- 4x Switching Actuator
- Bus-Coupler UP
- Tactile Sensor, 4fold with LED Indication
- Bus Detector, LED
- 2x Pushbutton
- 2x Control Button
- 4x Lamps, Load Simulation with Templates
- Head Rail for Additional Components



KNX EIB Panel 530.080.530

KNX EIB Installation Bus			
530.080.530	KNX EIB Panel	530.980.010	ETS 4 Software Trainee Version
530.082.000	Set of Cables to KNX EIB Panel	530.980.011	ETS 4 Software Professional Version
530.088.101	Manual with CD, English: Tests with the KNX EIB Panel	530.088.000	Manual with CD KNX EIB planning, installation and visualization

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COMPONENT PANELS TO **KNX EIB INSTALLATION BUS**

Modular training system to „European Installation Bus“.

Each component is integrated on an individual component panel and could either be used as individual training system or as enhancement to the KNX EIB Panel.

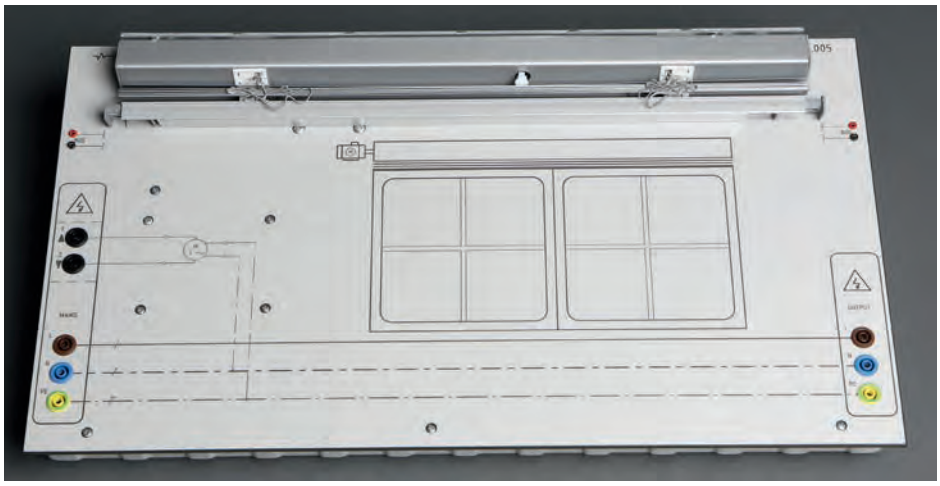
The bus lines are connected with 2mm measuring leads and the load circuits with 4mm safety leads.

Information Display
530.081.001

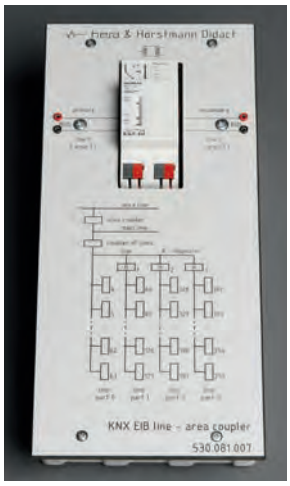
Room Temperature Controller
530.081.002

Actuator for Heater
530.081.003

EIB Motion Detector
530.081.008



Shutter 530.081.005



Line/ Area Coupler 530.081.007

Component Panels for KNX EIB Installation Bus			
530.081.009	EIB Power Supply	530.081.007	Line/ Area Coupler
530.081.010	EIB Data Interface	530.081.008	Motion Detector
530.081.011	Tactile Sensor 4fold	530.081.014	Temperature - and Light Sensitive Sensor
530.081.001	Information Display	530.081.002	Room Temperature Controller
530.081.012	Binary Input 6fold	530.081.003	Actuator for Heater
530.081.013	Switching Actuator 4fold	530.081.004	Shutter Actuator
530.081.006	Dimming Actuator	530.081.005	Shutter

BUILDING SECURITY TECHNOLOGY

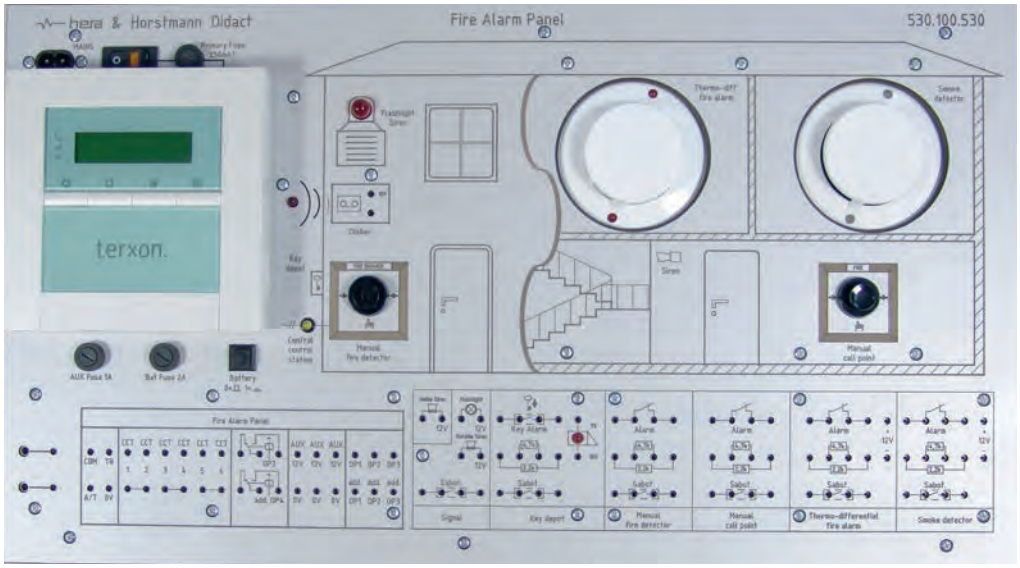
Complete intruder alarm system or fire alarm system in one panel.
This allows a step-by-step introduction to all components and to the installation of a complete security systems.

Fire Alarm System with following Original Components:

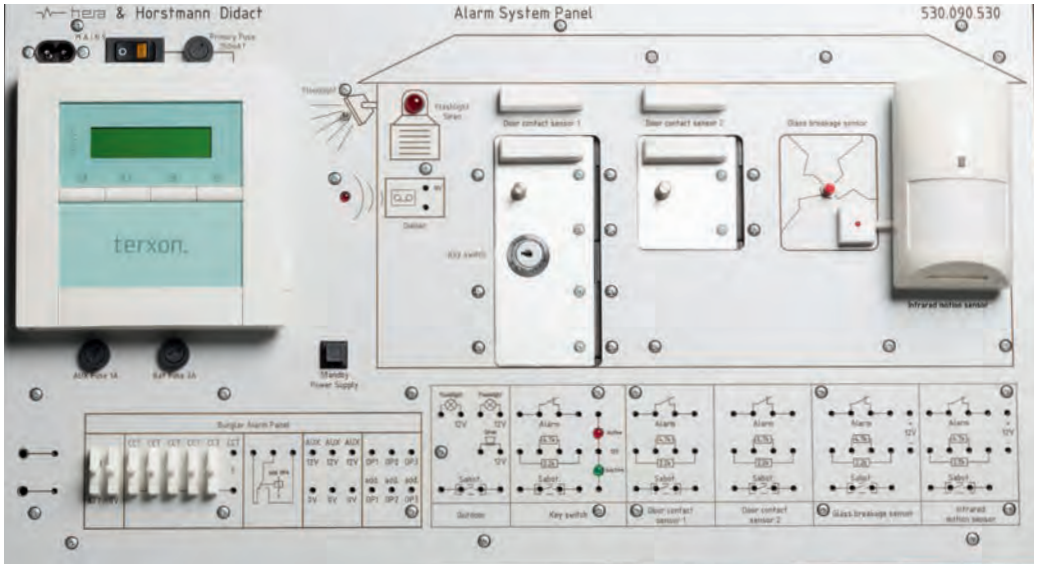
- Alarm Center Terxon SX
- Infra-Red Detector
- Smoke Detector
- Manual Call Points
- Alarm Control Unit

Fire Alarm System with following 12V Original Components and Actuators:

- Alarm Center Terxon SX
- PIR-Motion Detector
- Reed Contact Switches for Window and Door
- Glas Breakage Sensor
- Entrance Key Switch
- External Indication with LEDs: sharp, non-sharp
- Alarm Siren with Flash Light
- Outside Light
- Automatic Dialing Simulator
- Alarm Control Unit



Fire Alarm Panel 530.100.530



Alarm System Panel 530.090.530

Building Security System			
530.090.530	Alarm System Panel (Intruder Alarm)	530.100.530	Fire Alarm Panel
530.092.000	Set of Cables to Alarm System Panel	530.102.000	Set of Cables to Fire Alarm Panel
530.098.001	Manual with CD, English (Intruder Alarm System)	530.108.001	Manual with CD, English (Fire Alarm System)

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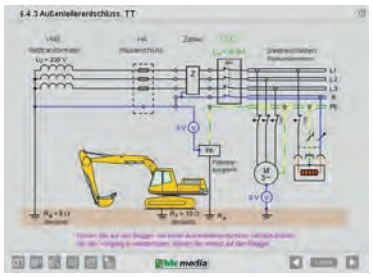
SOFTWARE FOR INSTALLATION TECHNOLOGY

Multimedia Training Systems for the introduction of installation technology.

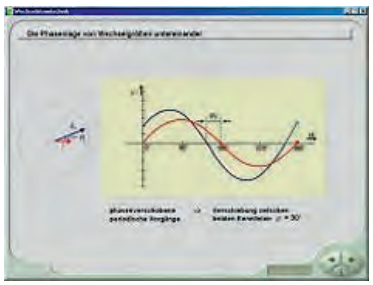
Software to Electrical Installations, Protective Measures:

>> ONLY AVAILABLE IN GERMAN LANGUAGE >>



Software to AC Technology:

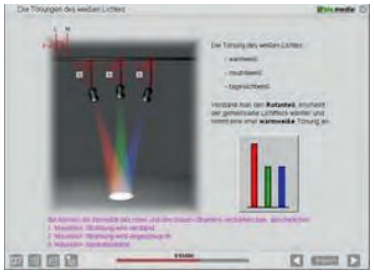
>> ONLY AVAILABLE IN GERMAN LANGUAGE >>



Software, CD-ROM		
530.098.001	Electrical Installations, Protective Measures	
530.098.004	AC Technology	

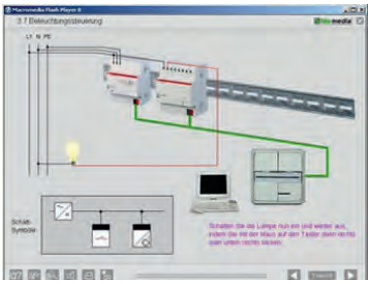
Software Lighting Technology:

>> ONLY AVAILABLE IN GERMAN LANGUAGE >>



Software to KNX EIB European Installation Bus:

>> ONLY AVAILABLE IN GERMAN LANGUAGE >>



Software, CD-ROM	
530.098.002	EIB KNX Installation Bus
530.098.003	Lighting Technology

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INDIVIDUAL TEST SET-UPS **FOR FUTURE ENGINEERS**

CHAPTER 16: **TRAINING SYSTEMS AUTOMATION AND MECHATRONICS**

Control - and Automation Technology

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548 Component Panel Control Engineering
549 Training Boxes Control Engineering
550 Main Contactor Panel
551 Basic Motor Panel
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566 Training System AS Interface Bus
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568 Training Center - Electrical Machines

Mechatronics

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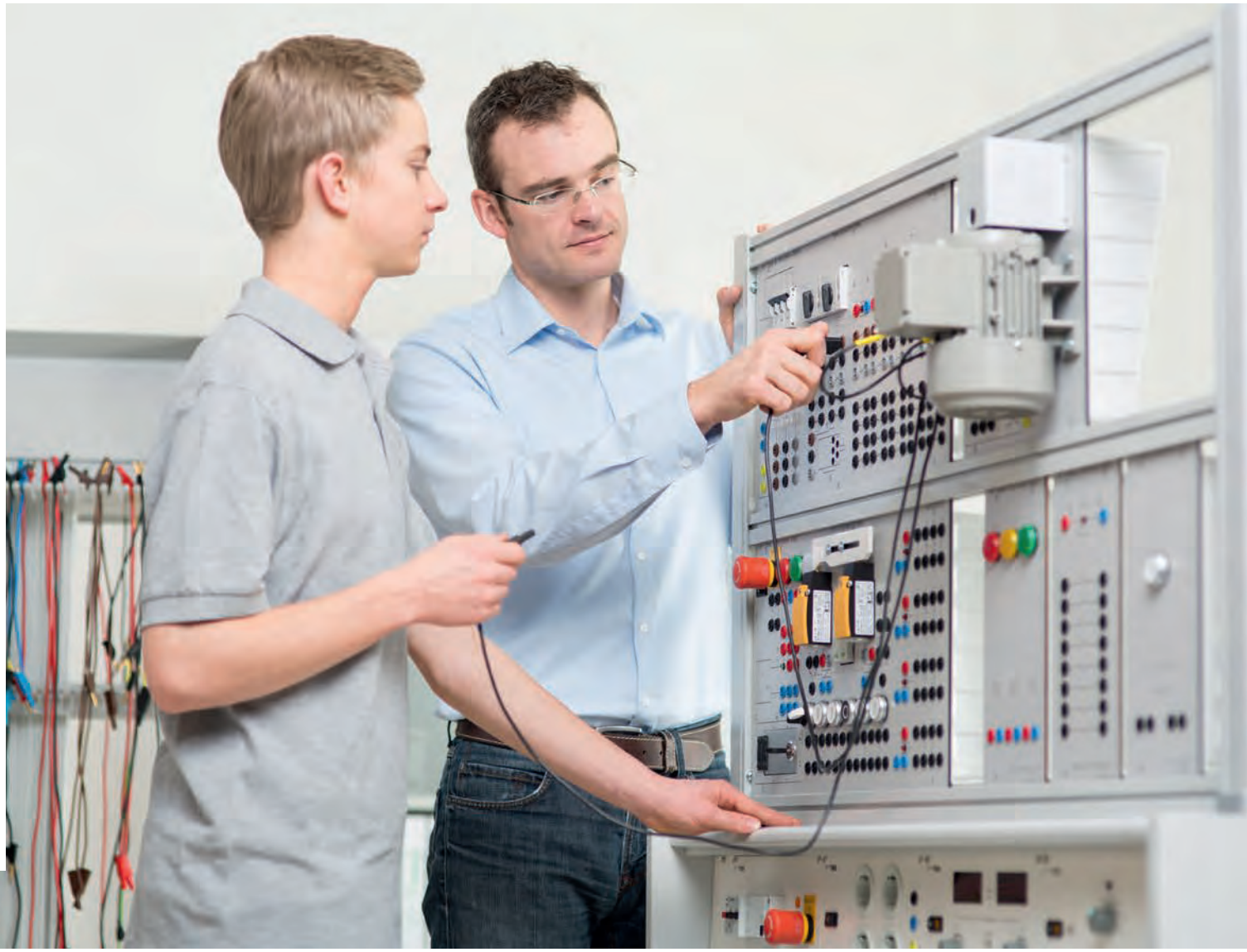
MECHATRONICS BETWEEN BASICS AND **COMPLETE PRODUCTION LINES**

If you need training systems for control or automation technology, you are free to choose between compact panels, component panels or training boxes. All training systems are supported by manuals or educational software.

If you need an individual set-up of a production line, we will be pleased to support you in the planning. See page 568 for some customized projects.



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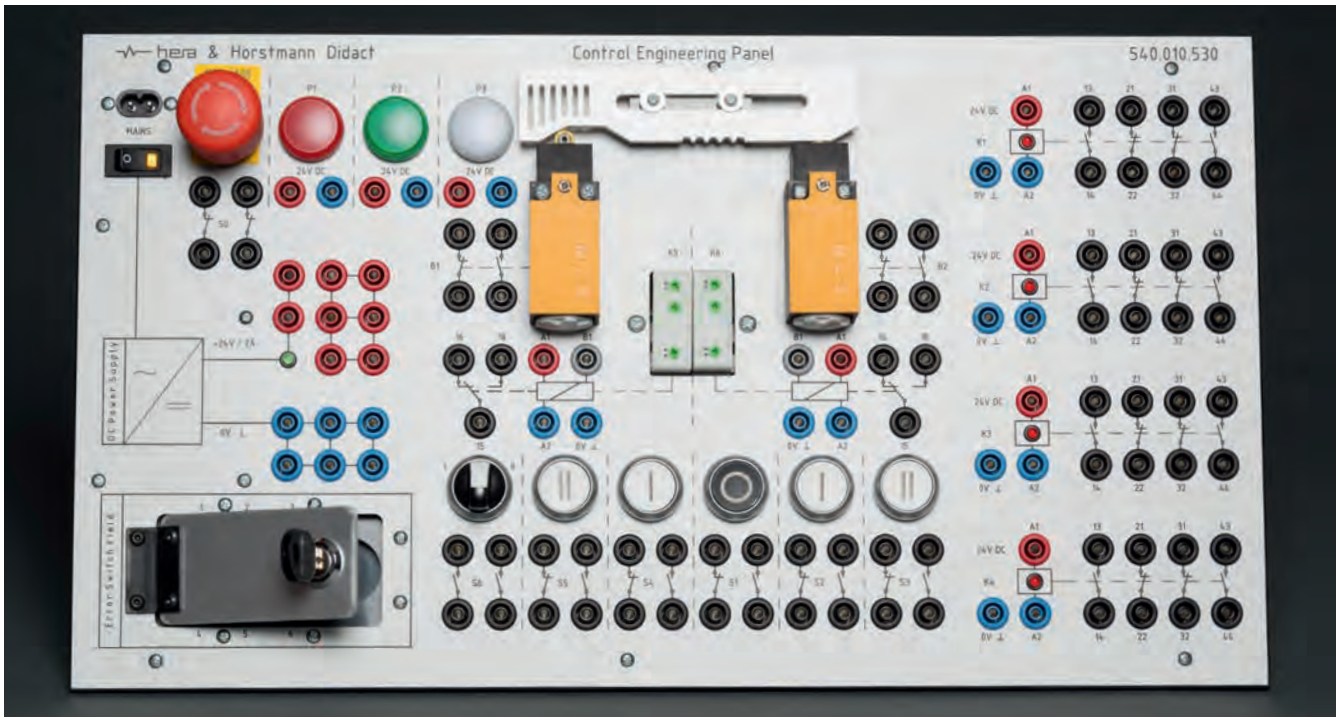
TRAINING SYSTEM **CONTROL ENGINEERING**

This training system enables to study all basic circuits within the control engineering.
Contactor relays, pushbuttons, end switches, signal lamps and time relays enable to perform comprehensive tests. A failure simulator allows to switch-in a variety of failures and thus imparts sustainable knowledge.

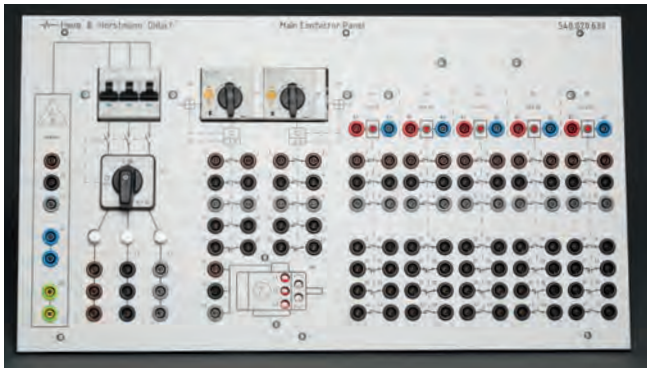
Dimensions: 532 x 297mm (W x H).

Learing Content:

- Circuitry Documents
- Identification of Electrical Equipment
- Functions of Pushbuttons and Emergency Off Button
- Contactor Relay
- Pushbutton - and Contactor Interlocking
- Time Relay
- Directly Switching-On a Motor
- Reversing Contactor Circuits
- Start - Delta Circuits
- Pole-Changing of Motors



Control Engineering Panel 540.010.530



Main Contactor Panel 540.020.630

Training System Control Engineering			
540.010.530	Control Engineering Panel	540.022.000	Set of Cables to Main Contactor Panel
540.012.000	Set of Cables to Control Engineering Panel	540.030.620	Basic Motor Panel
540.018.001	Manual with CD	540.032.000	Set of Cables to Basic Motor Panel
540.020.630	Main Contactor Panel		

COMPONENT PANELS **CONTROL ENGINEERING**

Modular training system for circuits of control engineering.
Each component is integrated in an individual panel.
Dimension: 133 x 297mm (W x H).

The component panels are available for solutions with AC 230V and DC 24V. All connections are done with 4mm safety leads.

Pushbutton On, 540.101.001

Motor Circuit Breaker,
540.100.810

Multi Functional Relay,
540.100.910

Control lamp 3fold,
540.101.023

Pushbutton 3fold,
540.101.003

Emergency Stop,
540.101.100

Auxiliary Contactor,
540.100.207

DC Power Supply 24V
590.500.010

Component Panels Control Engineering

540.000.100	Set Control Engineering (in accordance with manual)	540.100.207	Auxiliary Contactor 24V, 4 Closer, 4 Opener
540.100.103	Reversing Switch	540.100.208	Auxiliary Contactor 230V, 4 Closer, 4 Opener
540.100.104	Star-Delta Switch	540.100.334	Load Contactor 24V, 3 Load Contacts + 2C + 2O
540.100.105	Star-Delta-Reversing Switch	540.100.234	Load Contactor 230V, 3 Load Contacts + 2C + 2O
540.100.106	Pole-Changing Switch, Dahlander Motors	540.100.706	Overcurrent Relay 0,4…0,6A
540.100.107	Pole-Changing Switch, Motor w. Separate Windings	540.100.710	Overcurrent Relay 0,6…1,0A
540.101.100	Emergency Stop	540.100.716	Overcurrent Relay 1,0…1,6A
540.101.005	Pushbutton Off	540.100.911	Time Relay 24V drop-out delay
540.101.001	Pushbutton On	540.100.912	Time Relay 24V switch-on delay
540.101.002	Pushbutton 2fold	540.100.913	Time Relay 230V drop-out delay
540.101.003	Pushbutton 3fold, 0-I-II	540.100.914	Time Relay 230V switch-on delay
540.101.004	Pushbutton 3fold, I-0-II	540.100.910	Multi Functional Relay 8-230V, Change-Over, 0,1s-40h
540.101.023	Control Lamp 24V, 3fold		drop-out - switch-on delay/Clock Generator/Wiper
540.101.024	Control Lamp 230V, 3fold	540.100.806	Motor Circuit Breaker 0,4…0,6A
540.101.031	Limit Switch, 1 Closer, 1 Opener	540.100.810	Motor Circuit Breaker 0,6…1,0A
590.500.010	DC Power Supply Panel 24V/ 4A	540.100.816	Motor Circuit Breaker 1,0…1,6A

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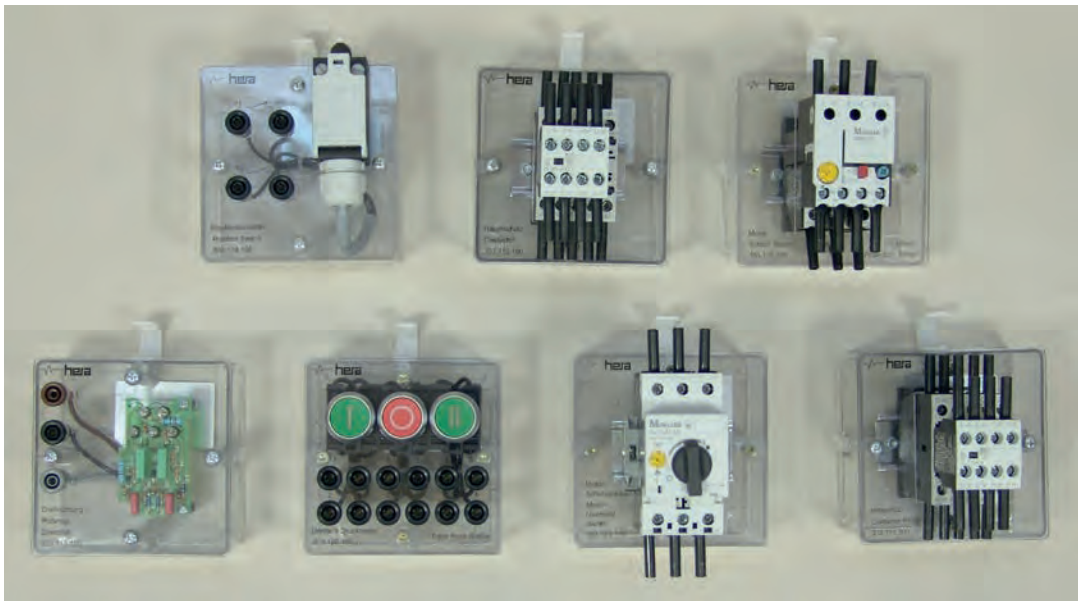
TRAINING BOXES **CONTROL ENGINEERING**

Modular training system for circuits of control engineering.
Each component is integrated in an individual transparent training box and could be hooked into installation walls (either in hera grid 12 x 5mm or E-grid 10 x 5mm).
The component panels are available for solutions with AC 230V and DC 24V. All connections are done with 4mm safety leads.

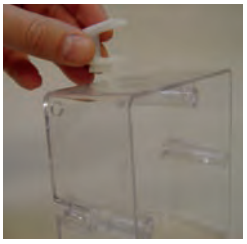
Set for Control Engineering consisting of:
(in accordance to manual 540.018.001)

1x DC Power Supply 24V DC / 4A
2x Auxiliary Contactor 4C + 4O, Coil 24VDC
1x Pushbutton 3fold (0, I, II)
1x Emergency Stop Button
2x End Switch 1C + 1O
1x Control Lamp 3fold 24V, (red, yellow, green)
1x Time Relay, switch-on delay, 24V DC
1x Time Relay, drop-out delay, 230VAC



Replaceable 4mm Jacks for Safety Leads

Completely capsuled, transparent Box with Locking


Hooks and Lockings replaceable

Lockings for different Installation Walls

Training Boxes Control Engineering

303.000.100	Set Control Engineering (in accordance to manual)	303.117.100	Multi Functional Relay 8 ... 230V UC
303.100.100	3 x Resistors 50, 100, 220Ω each 0,5A	303.120.100	Pushbutton, 3fold
303.101.100	Neozed Fuse 3 x 6A	303.120.500	Emergency Stop Button
303.103.100	Motor Circuit Breaker 1...1,6A	303.122.100	Control Lamp 3fold 230V
303.105.100	Motor Protection Relay 1...1,6A	303.124.100	End Switch 1C + 1O
303.105.200	Motor Protection Relay 0,6 ... 1A	303.125.100	Proximity Switch inductive
303.105.300	Motor Protection Relay 0,4 ... 0,6A	303.125.200	Proximity Switch capacitive
303.110.100	Main Switch 3poles	303.156.100	Pushbutton OFF (red)
303.111.100	Reverse Direction Switch	303.157.100	Pushbutton ON (green)
303.112.100	Star-Delta-Switch	303.166.100	Control Lamp 3fold 24V
303.113.100	AC Motor Simulator	303.177.800	Time Relay switch-on delay 230V
303.115.100	Load Contactor 230V 3Aux. + 2C + 2O	303.177.810	Time Relay drop-out delay 230V
303.115.110	Load Contacotr 24V 3Aux. + 2C + 2O	303.177.820	Time Relay switch-on delay 24V
303.115.200	Auxiliary Contactor 230V 4C + 4O	303.177.830	Time Relay drop-out delay 24V
303.115.210	Auxiliary Contactor 24V 4C + 4O		

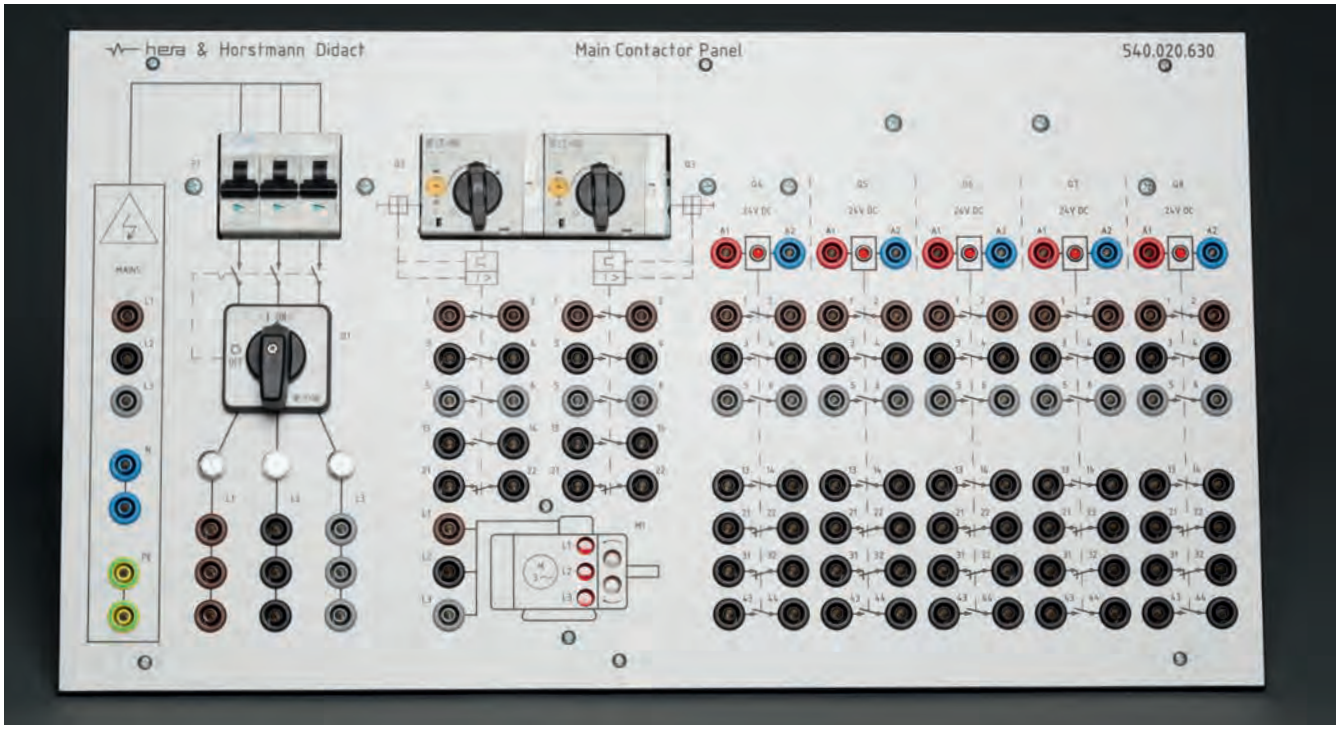
MAIN CURRENT CIRCUIT CONTROL - AND AUTOMATION ENGINEERING

In combination with the Control Engineering Panel or the PLC Panel, the Main Contactor Panel could be used as load circuit in control - or automation systems.

5 load contactors with 3 load contacts each, 2 opener and 2 closer are integrated in the panel.

Furthermore the panel holds 2 motor circuit breaker, 1 line circuit breaker and 1 load circuit breaker. All connections are done with 4mm safety leads.

Dimensions: 532 x 297mm (WxH).



Main Contactor Panel, 540.020.630

CEE Adapter, 540.099.007

Basic Motor Panel, 540.030.620

Load Circuit for Control - and Automation Engineering			
540.020.630	Main Contactor Panel	540.030.620	Basic Motor Panel
540.022.000	Set of Cables to Main Contactor Panel	540.032.000	Set of Cables to Basic Motor Panel
540.099.007	CEE 16A Adapter to Safety Jacks	540.018.001	Manual with CD, English

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UNIVERSAL **AC MOTOR**

In combination with the Control Engineering Panel or the PLC Panel, the Basic Motor Panel could be used as load circuit in control - or automation systems.

The Basic Motor Panel is for the practical training and start-up with asynchron motors in star -, delta connection, motors with separate windings and Dahlander motors.

The reading indicates the rotation direction and the rotation speed. All connections are done with 4mm safety leads.

Dimensions: 266 x 297mm (WxH).

suitable for frequency converters

Basic Motor Panel, 540.030.620

Universal AC Motor			
540.030.620	Basic Motor Panel	540.018.000	Manual with CD
540.032.000	Set of Cables to Basic Motor Panel		

BASICS TO **TRANSFORMERS**

This training system is for the basic knowledge of transformers in 1phase and 3phase operation.

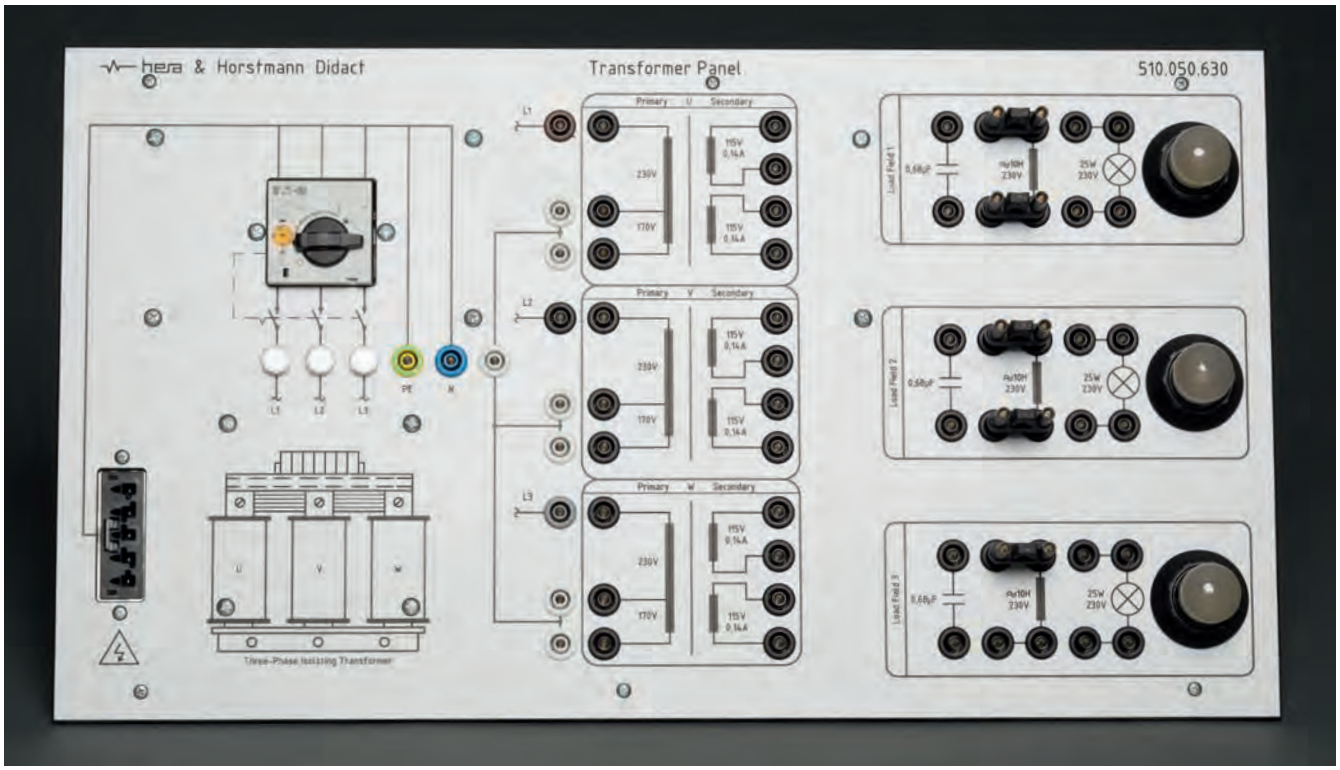
Protective switch and all kind of loads (ohmic, inductive and capacitive) are integrated in the training system.

Dimensions: 532 x 297mm (WxH).

>>AC SUPPLY NECESSARY >>

Learning Contents:

- No-Load Voltage
- Transmission Ratio
- Current - and Voltage Ratio
- Autotransformer
- Transformer Losses
- 3phase Transformer in Yd-, Yy-, Yz- Dy and Dz-Connection
- Phase Multiplier Circuit
- Asymmetric Load



Transformer Panel, 510.050.630

Light bulb for ohmic load with protective cage

Basics to Transformers			
510.050.630	Transformer Panel	510.058.001	Manual with CD, English
510.052.000	Set of Cables to Transformer Panel		

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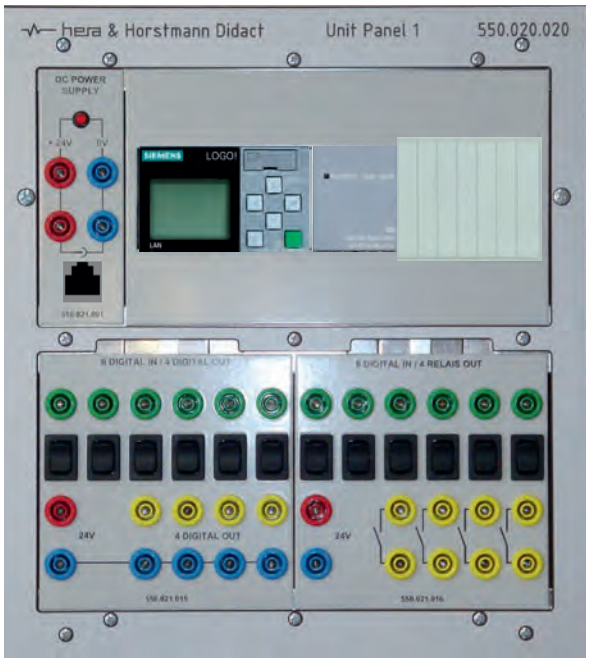
LOGIC **CONTROLLER**

Logic controllers are the ideal control for small machines or comfort house-installations.
The hera training system allows the set-up and training with logic controllers of different brands.

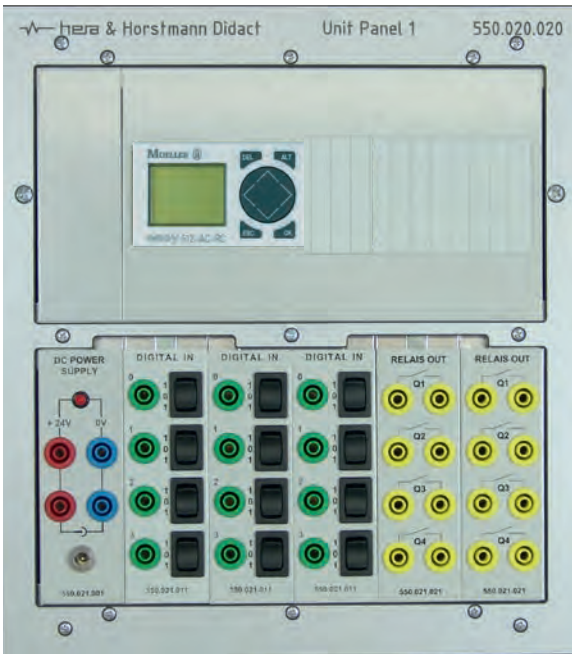
This modular training system allows configurations with controll dependent in- and outputs. All systems come with software and PC connecting cable.

Inputs are connected to safety jacks and with latching pushbuttons.
Outputs are relay outputs (DRO) or trasistor outputs (DTO) connected to safety jacks.

Dimensions: 266 x 297mm.



Training System LOGO!, 550.980.022



Training System Millenium 3, 550.980.044

Compact Controller	
550.980.025	Training System SIEMENS LOGO! 8 12/24V with 12x DI and 8x DRO (4x DI applicable as AI (0-10V)) incl. LOGO! Soft Comfort V8
550.980.026	Training System SIEMENS LOGO! 8 230V with 12x DI and 8x DRO incl. LOGO! Soft Comfort V8
550.980.027	Additional Siemens Module for Temperature Measurement (2x AI for Pt100/Pt1000) and suitable panel addition
550.988.024	Manual English „Controlling with the LOGO!“
550.980.030	Training System Easy 24V (8x DI + 4x DRO)
550.980.031	Training System Easy 230V (8x DI + 4x DRO)
550.980.032	Training System Easy 24V (12x DI + 8x DRO)
550.980.033	Training System Easy 230V (12x DI + 6x DRO)

BASICS **PLC**

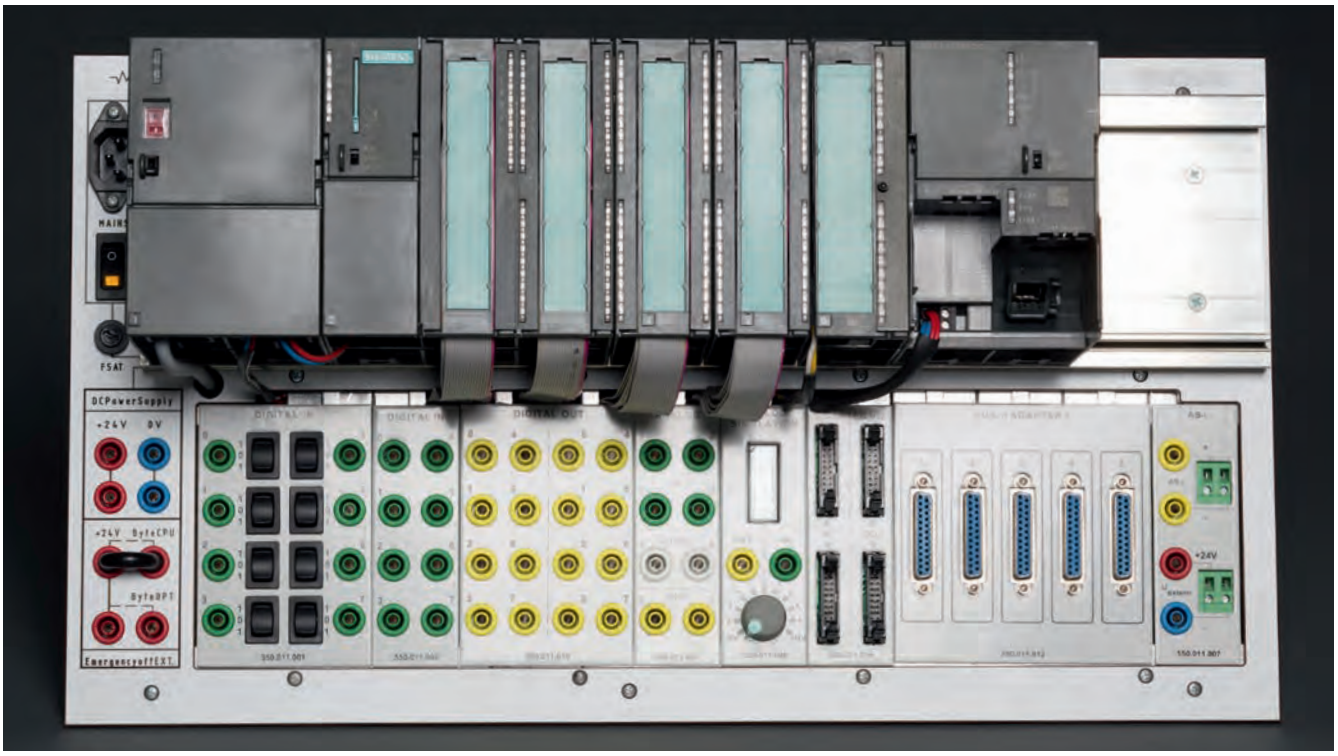
The PLC Panel is the ideal base for trainings with different CPUs of the Siemens S7/300-series.

Due to the modular set-up of the panel, all requirements for the lessons could be realized with the PLC.

Dimensions: 532 x 297mm (WxH).

The PLC panel can be adapted to the desired CPU and can be modified if the system should be enhanced.

The picture below shows an exemplary set-up. On the next page you will find more modules for the equipment of an individual PLC panel.



Exemplary Set-Up of PLC Panel 2 (PLC and Mudules have to be ordered seperately)

Exemplary Set-Up of PLC Panel 1 (PLC and Mudules have to be ordered seperately)

PLC Panel			
550.010.530	PLC Panel 1 (Head Rail 32 cm/ for 15 modules)	550.018.001	Manual with CD, English
550.010.531	PLC Panel 2 (Head Rail 48 cm/ for 12 modules)		Basics of Automation Engineering

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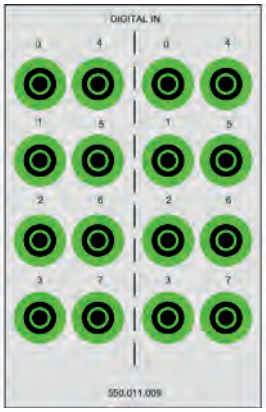
MODULES FOR PLC PANEL

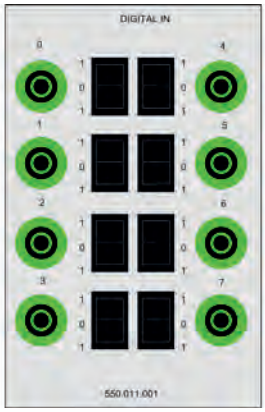
The modules are equipped with 4mm safety jacks and are completely wired to the PLC with ribbon cable.

550.021.000
Blank Module

550.011.002
8x Digital Inputs

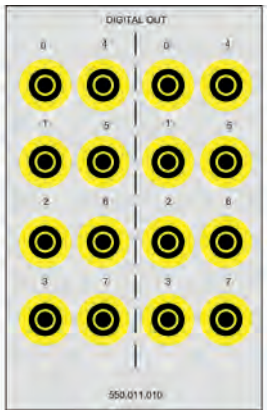


550.011.009
16x Digital Inputs

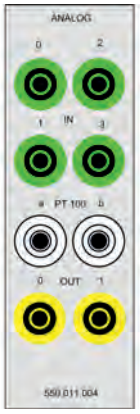


550.011.001
8x Digital Inputs with Latching Push-buttons for Simulations

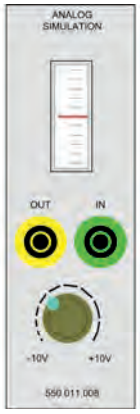
550.011.003
8x Digital Outputs



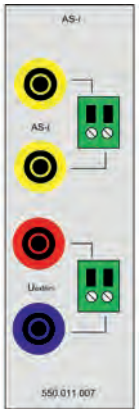
550.011.010
16x Digital Outputs



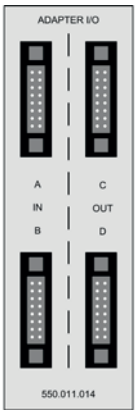
550.011.004
4x Analogue Inputs
2x Analogue Outputs
2x PT100 Inputs



550.011.008
Analogue +/- 10 V
In- and Output with Counter and Simulation Potentiometer

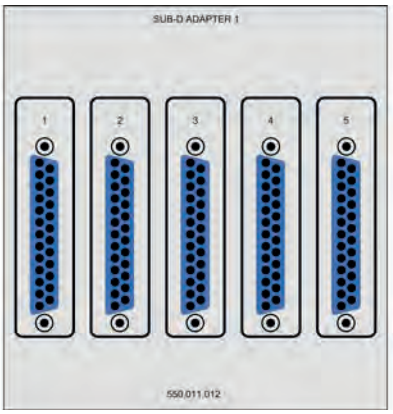


550.011.007
AS-i Interface



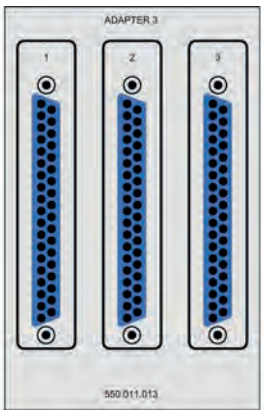
550.011.014
In- and Output
with 16pin Connector

550.011.005
MPI ProfiBus
ProfiNet

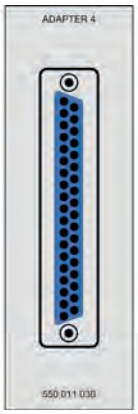


550.011.012
Mechatronic Interface
5x Sub-D 25poles

550.011.006
Mechatronic
Sub-D 9poles
Sub-D 25poles



550.011.013
Mechatronic Interface
3x Sub-D 37poles



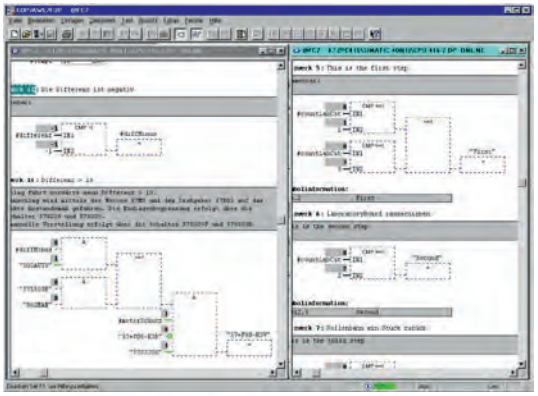
550.011.030
Mechatronic
Sub-D 37poles

SIMATIC STEP7 SOFTWARE

For educational purpose in schools and training centers we offer SIMATIC STEP7 software.

This software supports its user in all construction phases of automation projects, e.g.:

- Set-up and administration for projects.
- Configuration and parametrizing hardware and communication.
- Administration of symbols.
- Creation of programs for SIMATIC S7 target systems.
- Loading programs to target systems.
- Test of automation systems.
- Diagnosis of system malfunction.



Software	
550.990.090	SIMATIC STEP7 + TIA Portal Single License Applicable for schools and training centers in commercial sector!
550.990.091	SIMATIC STEP7 + 12x TIA Portal Classroom License incl. 60x Student Licenses Only for schools and non-commercial training centers!

SIMATIC **S7-314C-2PN/DP**

Upgrade for TIA portal consisting of:

1x SIMATIC S7-300, CPU314C-2PN/DP with 192kByte main memory, 24DI/16DO, 4AO, 2AO, PT100, 4 high-speed counter, 1. interface. MPI/DP 12MBit/s, 2. interface. Ethernet ProfiNet.
1x SIMATIC S7, Micro Memory Card for S7-300, 512kByte.
1x SIMATIC S7-300, Digital Module SM 323, electrically isolated, 16DI and 16DO.
3x SIMATIC S7-300, front connector.
1x Ethernet cable, length: 6m.

SIMATIC S7-300, CPU314C-2PN/DP

Power Supply

SIMATIC S7-314C-2PN/DP	
550.99.041	SIMATIC S7-314C Upgrade Package
550.990.021	Power Supply PS 307 5A
550.990.072	AS-i Power Supply with Data Coupling AC 115V/230V, DC 30V / 2,4A

Micro Memory Card

Ethernet Cable

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SIMATIC **S7-1200**

consisting of:

1x SIMATIC S7, STEP 7 BASIC V13 SP1 Single License.
1x Ethernet Cable, length: 6m.
1x SIMATIC S7-1200, Simulator Module, 8 input switches.
1x SIMATIC S7-1200, Analogausgabe, 1AO.
1x SIMATIC S7-1200, CPU 1214C, AC/DC/Relay
14DI 24VDC; 10DO Relais; 2xAI 0-10V DC.
Or
1x SIMATIC S7-1200, CPU 1214C, DC/DC/DC:
14DI 24VDC; 10DO 24V DC; 2AI 0-10V DC
Power Supply: 24V DC.

SIMATIC S7-1200, CPU 1214C

STEP 7 Single License

SIMATIC S7-1200	
550.991.100	SIMATIC S7-1200 Package: AC/DC/Relay
550.991.200	SIMATIC S7-1200 Package: DC/DC/DC:
550.990.021	Power Supply PS 307 5A

Simulator Module, 8DI

Analogue Module, 1AO

MORE SIEMENS SIMATIC COMPONENTS ON DEMAND

SIMATIC S7-1516 PN/DP

ET 200SP CPU 1515SP

INTUITIVE OPERATION FOR **CONTROL - AND AUTOMATION**

You would like to add a highly efficient operation unit to your automized test set-up? Of cause this could be realized ideally with a touch panel. For more information to the brilliant and yet sturdy display, see the next page!

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OPERATION AND SURVEILLANCE

KTP700:
7“ wide screen Touch Panel with colour display and 8 buttons for functions.
The KTP700 Basic is an operator panel for simple HMI with medium requirements to the visulization functionality of applications with S7-122 controllers or other logics.
The KTP700 Basic is available in 2 versions: KTP700 Basic DP for MPI/ProfiBus DP connection and KTP700 Basic with Ethernet Interface for ProfiNet environment.
NOTE:
System requirement for the KTP700 is WIN CC Basic V 13 SP1. The software is included in STEP 7 Basic V13 SP1 and STEP 7 Professional V13 SP1.

TP700:
7“ wide screen Touch Panel with colour display for touch operation with following interfaces:
2 x RJ 45 Ethernet for ProfiNet (mit integriertem Switch)
1 x RS 485/422 für ProfiBus/MPI
2 x USB-host, 1 x USB- device
2 x SD card slot
INFO:
WIN CC Advanced 13 SP1 within scope of delivery!

Touch Panel, Art-No.: 550.055.320

Comfort Panel, Art-No.: 550.060.320

Ethernet Switch

Incl. WinCC and Ethernet Cable

Operation and Surveillance			
550.055.320	Touch Panel KTP700 Basic with Ethernet Switch and Cable	550.060.320	Comfort Panel TP700 with ProfiNet and MPI/ ProfiBus DP Interface incl. Cable and Software
550.056.320	Touch Panel KTP700 Basic DP		

SYSTEM SIMULATION AT THE PC

The Multi Interface Panel is the ideal training system for system simulations at the PC.

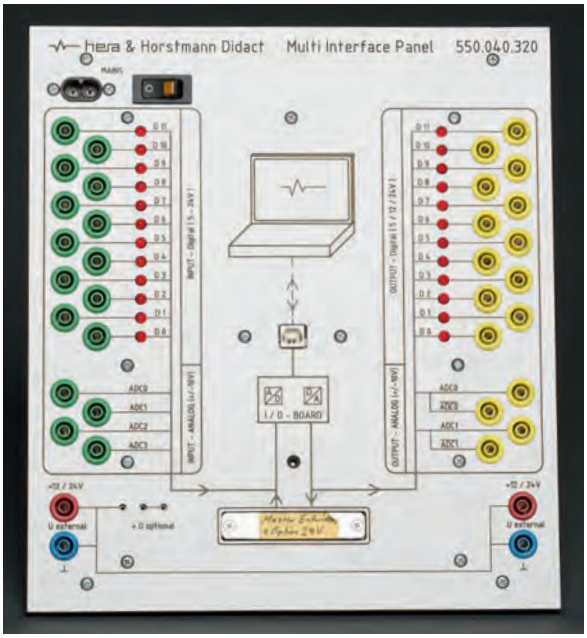
The program for the logic controller is installed on the PLC and connected to the computer by Multi Interface Panel with USB connector. The system is simulated at the computer. The Multi Interface Panel has 12 digital in- and outputs and 2 analogue in- and outputs.

The Software holds following Tasks:

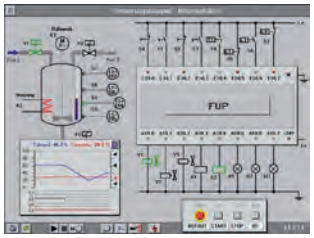
- Reverse Switch for Motors
- Star-Delta Start Circuit for Motors
- Star-Delta Start Circuit in both Directions
- Dahlander Circuit
- Control for Motors with 2 Separate Windings
- Start Circuit for Slip Ring Motor
- Traffic Light Control
- Power Monitoring
- Storage Container
- Waste Water Tank
- Gate Control
- Filter Rinsing
- Mixing Vessel

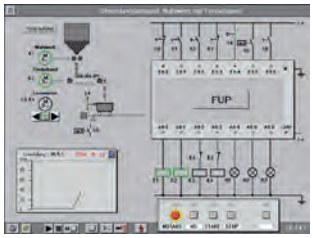
Dimensions: 266 x 297mm (WxH).

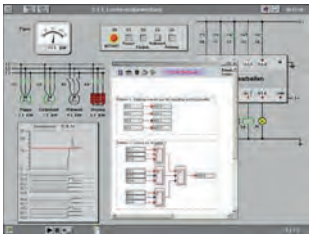
The Multi Interface Panel is ideal for the combination with the simulation softwares DIGIWIN and MESSWIN.

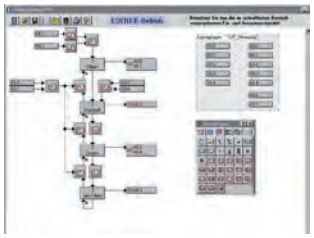


Multi Interface Panel, 550.040.320









System Simulation at the PC			
550.040.320	Multi Interface Panel	550.040.322	Option Integrated Power Supply 12V or 24V
550.042.000	Set of Cables to Multi Interface Panel	550.040.324	Option I/O to 37poles Interface
550.041.001	Software with Tasks of Control Engineering (only German)		

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PROCESS **SIMULATION**

The Process Simulation Panel is a compact simulation environment for different tasks of industrial automation technology.

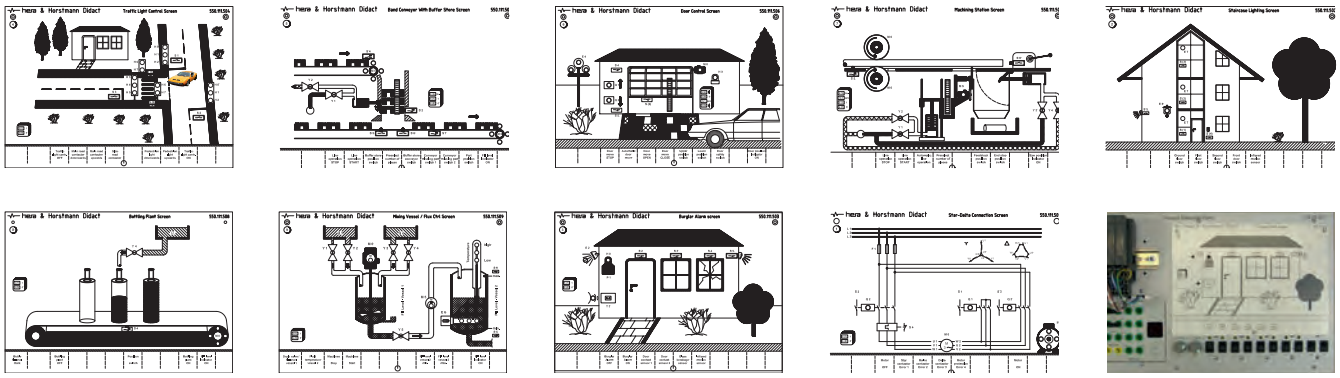
Included Simulation Masks:

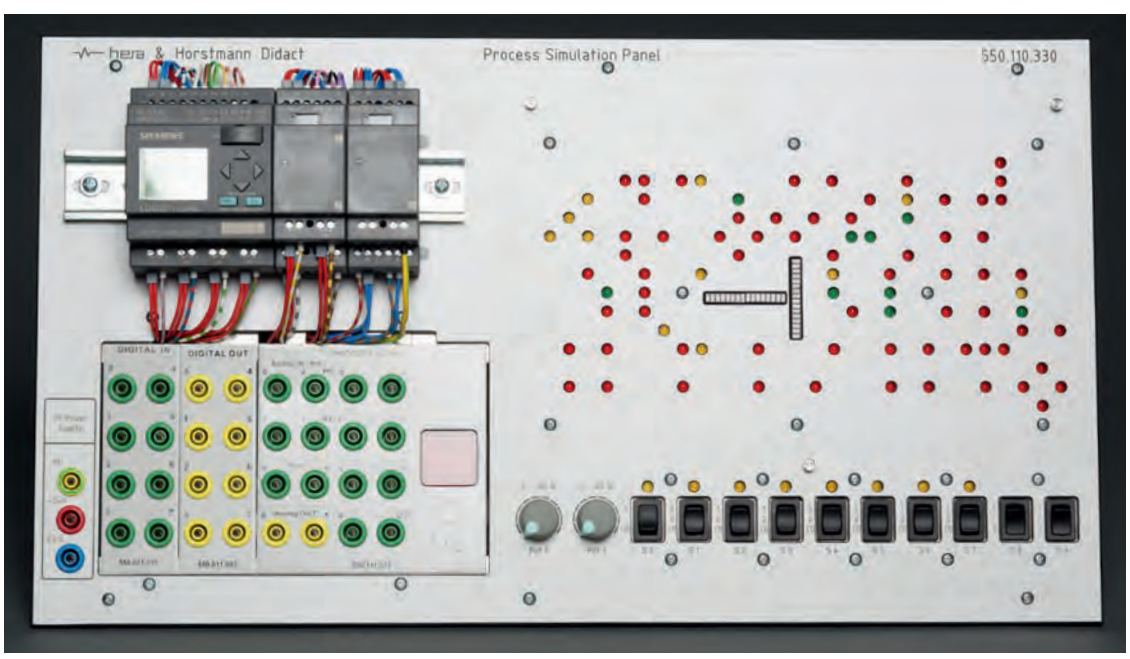
- Star-Delta-Circuit
- Stair Case Lighting
- Intruder Alarm System
- Traffic Lights (traffic dependant / - independant)
- Transfer System with Magazine
- Segment Gate Control
- Machining Station
- Bottling Plant
- Mixing Vessel

The flexible set-up with variable connecting possibilities on 4mm safety jacks or direct wirings enables practice-related trainings with different logics like SIMATIC S7, Logo, as well as peripheral devices like ET 200S.

Technical Details:

- 16x digital inputs on 4mm safety jacks (8x) and latching pushbuttons (8x)
- 16 x digital outputs on 4mm safety jacks (8x) and LED-field (8x)
- 2x analogue inputs on 4mm safety jacks with bridge rectifier on potentiometer
- 2x analogue output on 4mm safety jacks and LED bargraph
- 1x 2digit 7-segment display
- 2x acoustic signal





Process Simulation Panel, 550.110.330

Process Simulation			
550.110.330	Process Simulation Panel	550.118.001	Manual with CD, English

FREQUENCY CONVERTER

Training Systems for the connection and start-up of the SIEMENS industry frequency converter SINAMICS G120-230V and 400V, as well as the former type Micromater 420.

Scope of Delivery:

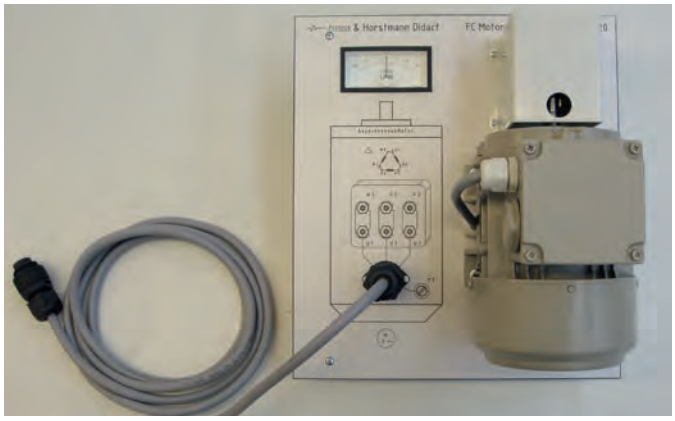
- Frequency converter with EMC filter mounted on A4 panel with protective hood.
- All in- and outputs are connected to 4mm safety jacks.

Learning Contents:

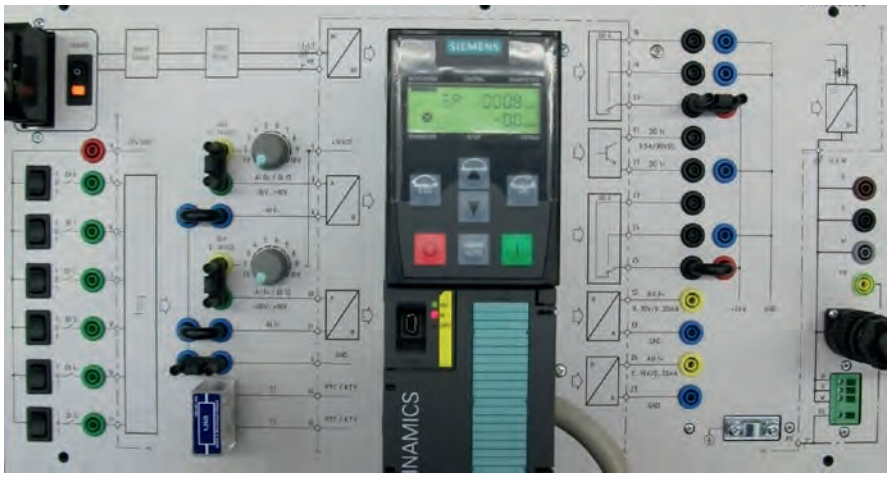
- EMC-Conform Connections
- Put a Frequency Converter into Operation
- Programming and Testing of Drive Functions
- Programming and Testing of Safety Functions
- Operating and Surveillance at the Panel
- Operating and Surveillance at the PC
- Put into Operation at the ProfiBus

The FC Motor Panel is a 3phase motor, which is suitable for the frequency converter.

- Nominal Power: 0,25kW
- Nominal Rotation Speed: 1325u/min
- Reading for Rotation Speed and Direction



FC Motor Panel, 570.021.520



Training System with Frequency Converter G120 3AC 400V

Training System with Micromaster 420

Intelligent Operator Panel for G120: IOP

Basic Operator Panel (BOP)

Frequency Converter			
570.022.520	Frequency Converter SIMATIC G120 1AC 230V incl. IOP, Memory Card, Cable and EMC Filter	570.020.520	Frequency Converter Micromaster 420
		570.021.001	Basic Operator Panel for Micromaster
570.023.520	Frequency Converter SIMATIC G120 3AC 400V incl. IOP, Memory Card, Cable and EMC Filter	570.021.002	Connecting cable between PC and Micromaster 420
		570.021.003	ProfiBus Module
570.028.005	Manual with CD for Frequency Converter G120, EN	550.990.093	Library Modules
550.990.092	Project Software for Electrical Machines	550.990.030	ProfiBus Plug Cable
570.021.520	FC Motor Panel	570.028.000	Manual and CD for Micromaster 420, EN

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MODULAR **BUS SYSTEM**

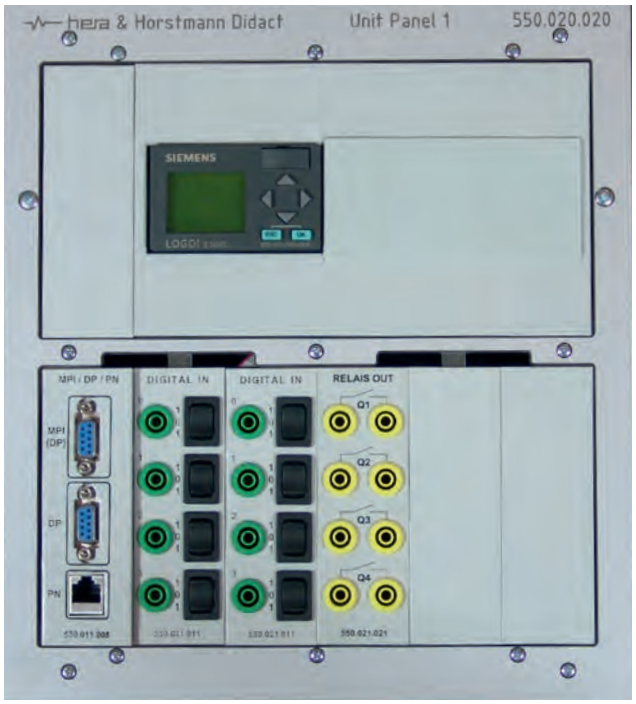
The modular Unit Panel is the ideal adaption between different industrial components and different bus systems.

We offer solutions for:

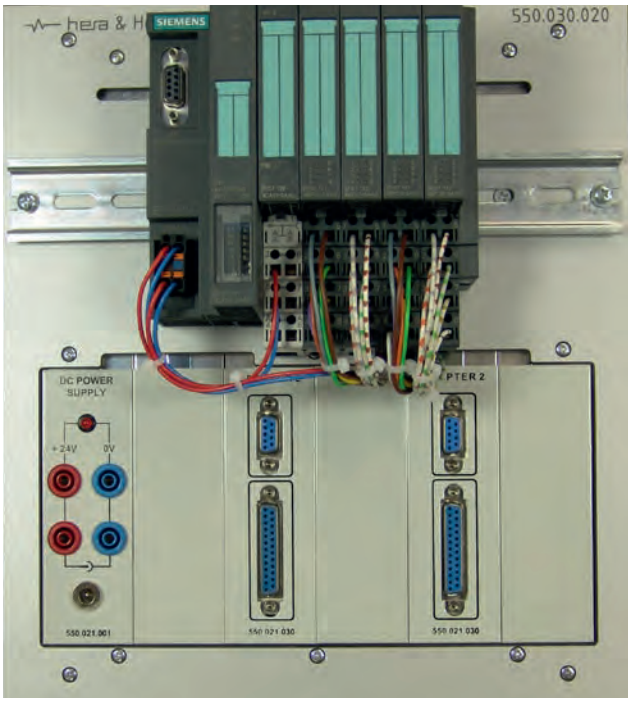
- ProfiBus
- InterBus
- CANopen
- DeviceNet
- EtherNet
- ProfiNet

The picture below is an example for a set-up with ProfiBus.

The modules on the next page allow the ideal panel configuration.



Unit Panel, 550.020.020
(Siemens components and panel modules are not included)



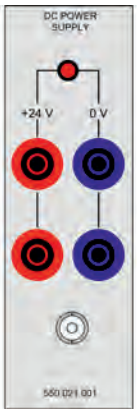
Unit Panel, 550.030.020
(Siemens components and panel modules are not included)

Modular Bus System			
550.020.020	Unit Panel I (with inner head rail; for 6x modules; width: 266mm)	550.030.020	Unit Panel III (with outer head rail; for 6x modules; width: 266mm)
550.020.030	Unit Panel II (with inner head rail; for 12x modules; width: 532mm)	550.030.030	Unit Panel IV (with outer head rail; for 12x modules; width: 532mm)

BUS SYSTEM MODULES FOR UNIT PANELS

The modules are equipped with 4mm safety jacks and are wired on the panel to the industrial components and bus systems.

550.021.000
Blank Module

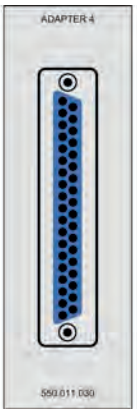


550.021.001
24 V DC with Safety Jacks + DC Connector

550.021.002
230V Mains Connector

550.021.003
230V AC Power Supply Safety Jacks

550.021.030
Interface Sub-D 9poles Sub-D 25poles

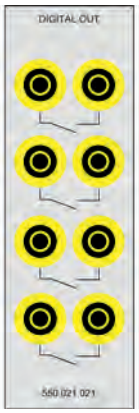


550.021.031
Interface Sub-D 37poles

550.021.010
8x Digital Inputs

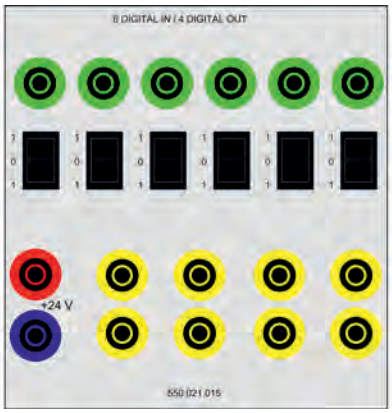
550.021.011
4x Digital Inputs with Latching Push-buttons

550.021.020
8x Digital Outputs

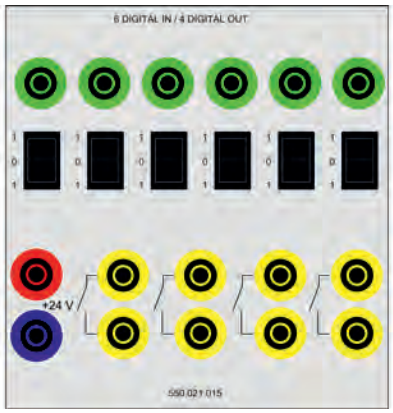


550.021.021
4x Relay Outputs

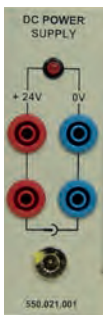
550.021.029
4x Analogue Inputs
2x Analogue Outputs
2x PT100 Inputs



550.021.015
6x Digital Inputs
with Latching Pushbuttons
4x Digital Outputs



550.021.016
6x Digital Inputs with Latching Pushbuttons
4x Relay Outputs



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COMPONENT PANELS TO **TRAINING SYSTEM PLC**

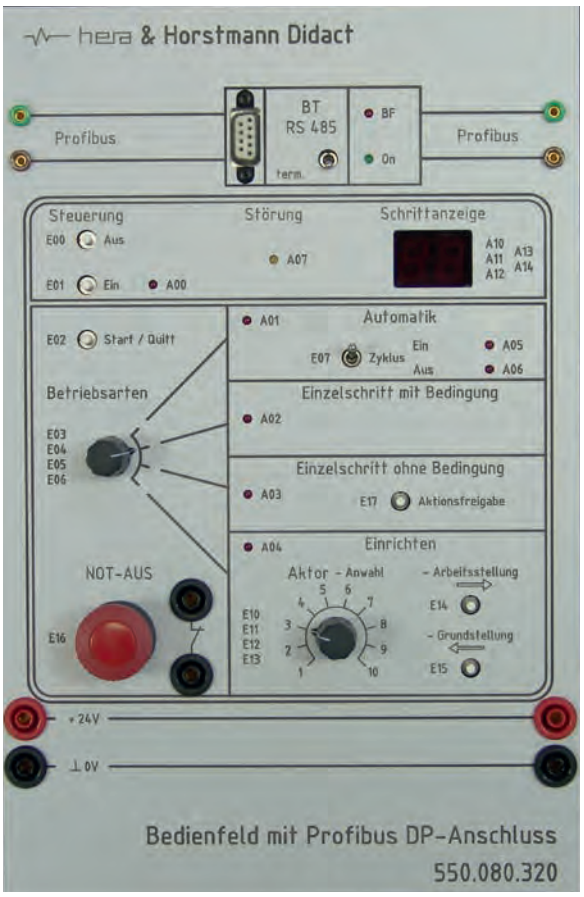
The Data Word I/O Panel is for the transmission and analysis of data words (16 Bit) in combination with the PLC Panel.
The panels are connected with 4 flatribbon cables. The 4digit code switch is assigned to an input word and the 4digit 7-segment display to an output word (depending on the hardware wiring and the addresses).
In- and output is with hexadecimal encoding.

- 4x code switches for input
- 4digit 7-segment display for output
- Operation voltage 24V DC, external

The PLC panel needs a suitable interface to connect the Data Word I/O Panel.

The Operation Panel with ProfiBus DP adapter is for the operation of the PLCs with ProfiBus DP.
The panel holds selector switches and pushbuttons, that are required for manual interference of the logic.
Respective messages for the display are programmed in the panel.
The two digit display indicates the ongoing function within a sequence. In total 4 different operating modes could be selected: automatic, single function with operation, single function without operation and set-up function.
In- and outputs of the Operation Panel are connected to the PLC panel with ProfiBus DP.
For this function the panel is equipped with a ProfiBus-Slave with 16x digital inputs and 16x digital outputs.

Data Word I/O Panel, 550.100.310



Operation Panel with ProfiBus DP Adapter, 550.080.320

Component Panels to Training System PLC			
550.100.310	Data Word I/O Panel	550.011.014	Adapter I/O for the PLC Panel (to connect the Data Word I/O Panel to the PLC Panel)
550.102.000	Set of Flatribbon Cables to connect the WORD I/O Panel to the PLC Panel	550.080.320	Operation Panel with ProfiBus DP Adapter

AS INTERFACE BUS

For trainings of automation engineering with the AS Interface Bus we offer a selection of industrial components.

This selection is an enhancement to the PLC panel and ideal to teach how to install and use AS-I components.

A power supply and communication processor are integrated in the PLC panel.

Pushbutton, indicator light and interface could be used directly on the table or hooked in installation walls.

AS-i Lamp Panel, 550.090.310

AS-i triple pushbutton, 550.090.330

Panel & Accessory			
550.900.001	AS-Interface Component Panel (8x M12 Sockets with 4 DI + 4 DO)	550.090.310	AS-i Lamp Panel
		550.090.330	AS-Interface 3fold Pushbutton
550.990.070	SIMATIC S7/300, Communication Processor CP343-2	550.990.074	AS-Interface 3fold Indicator Light
550.990.071	Front Plug for CP343-2	550.990.075	AS-Interface Contact Module with Sensor
550.990.072	AS-Interface Power Supply for integration into the PLC Panel	590.600.001	AS-i, Adressing and Diagnosis Unit
		590.600.002	Connecting Cable to Adressing Unit
550.011.007	AS-Interface Adapter for PLC Panel	590.600.003	Junction AS-i Cable to M12 Socket
505.900.501	AS-Interface Cable, yellow	550.908.001	Manual with CD, English
505.900.502	AS-Interface Cable, black		

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ACCESSORY AND SPARE PARTS

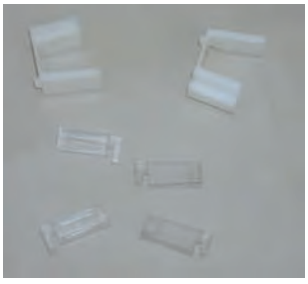
Holder for Multimeter,
590.000.010

Bracket for Panel Fixation
950.004.000

Feed-In Unit with Connecting Cable,
531.000.510

TFT Adapter (VESA),
940.018.700

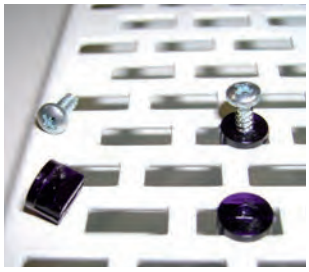
Training Box, unequipped,
302.000.000



Spare Parts Training Box,
302.000.010 + 302.000.020

Empty Housing, 504.000.001 +
504.001.003

Connectors 2mm / 4mm,
505.000.010 + 505.000.020



100 pcs. Installation Dowels for
Installation Walls, 301.150.100

Adapter CEE to Safety Jacks,
540.099.007

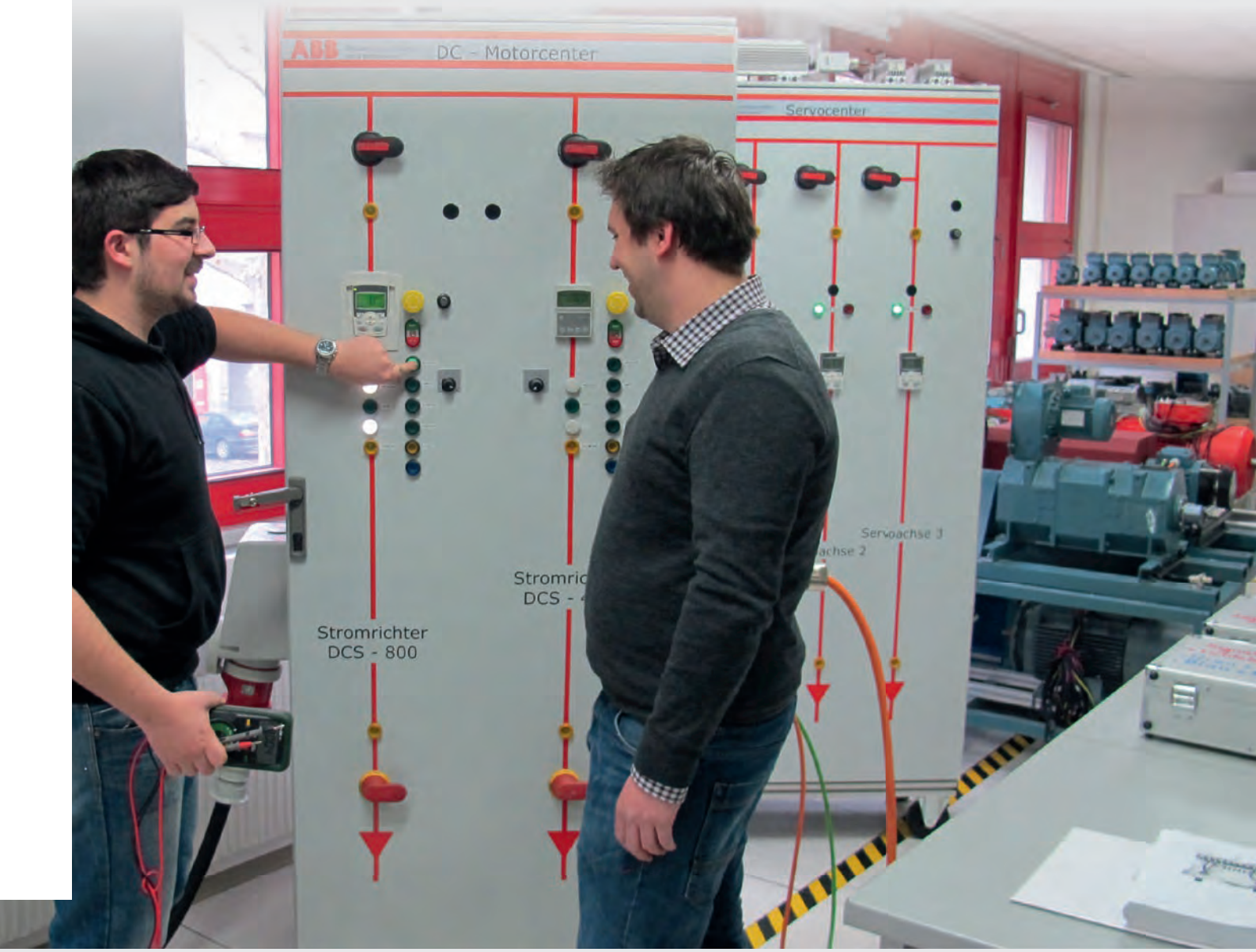
Case for Training Panels,
509.002.000

Accessory and Spare Parts

590.000.010	Digital Multimeter Panel	504.001.001	Empty Housing, small with two lamella plugs
950.004.000	Bracket for Panel Fixation	504.001.002	Empty Housing, small
531.020.510	Feed-In Unit (CEE Plug with 2,5m Cable)	504.001.003	Empty Housing, large with three lamella plugs
940.018.700	TFT Panel	504.001.004	Empty Housing, large
500.000.001	Blank Panel S (W:133)	505.000.010	Connector 2mm (plug spacing 5mm)
500.000.002	Blank Panel M (W:266)	505.000.020	Connector 4mm (plug spacing 19mm)
500.000.003	Blank Panel L (W:532)	505.000.021	Connector 4mm (plug spacing 38mm)
500.000.011	Blank Panel S with Tilted Hood	505.000.022	Adapter for 4mm plug to 2mm sockets
500.000.012	Blank Panel M with Tilted Hood	505.000.023	Adapter for 4mm plug 2mm sockets, red
500.000.013	Blank Panel L with Tilted Hood	505.000.030	Safety Connector 4mm (plug spacing 19mm)
302.000.000	Training Box unequipped (not assembled)	301.150.100	Set of Installation Dowels
302.000.010	Set of Hooks for Training Box	540.099.007	CEE 16A Adapter to Safety Jacks
302.000.020	Locking for Training Box	509.002.000	Case for Training Panels
		509.010.001	Flap for Case

ELECTRICAL MACHINES
FROM AMATEUR TO PROFESSIONAL - ADVENTAGES ARE OBVIOUS!

The training center Electrical Machines is a development with educational institutions and the world leading company ABB.
This program is suitable for different requirements with respect to learning target, local and economical possibilities. We offer anything from economical start-up kit to regenerative 15kW systems.



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APPLICATIONS:

Start-Up Kit with PLC and Electrical Drive:

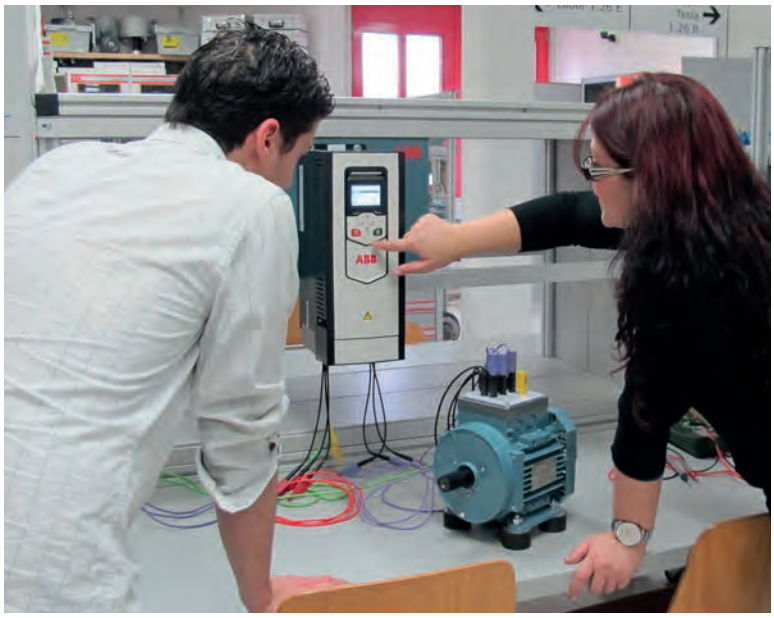
consisting of:

- Vector inverter.
- Microcontroller incl. software licence.
- AC motor with brake.
- Necessay contactors, command and signal devices.
- Connection set.

Modular A4 Training System:

consisting of:

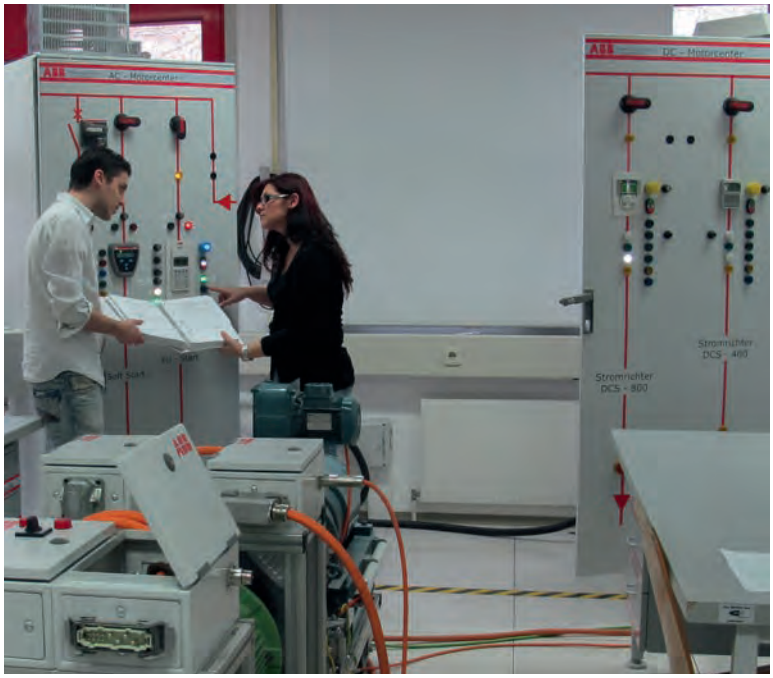
- Training panel with frequency converter. All in- and outputs connected to 4mm safety jacks.
- Training system frame with AC motor incl. rotation speed control and torque measurement.
- Component panels with power contactor, control contactor and motor protection relay.
- Component panels with command and signal devices.
- Component panels with programable logic controller and process control system.



Control Cabinet System:

consisting of:

- Control cabinet for Electrical AC Machines is complete with regenerative frequency converter and all common switch gear.
- Control cabinet Electrical DC Machines is complete with regenerative thyristor converter and all common switch gear.
- AC / DC motor combination 15KW, movable set-up incl. measurement for rotation speed and torque.



PERFECT SIMULATION
FROM 3D PLANNING TO START-UP

What are the requirements on a modern manufacturing line? What components are needed and how do I get things working? These and many others are the questions that students of automation engineering have to deal with every day. See our possibilities for your individual high-efficiency training system on the following pages.

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CONFIGURATION **EXAMPLES**

Single Transfer Line:

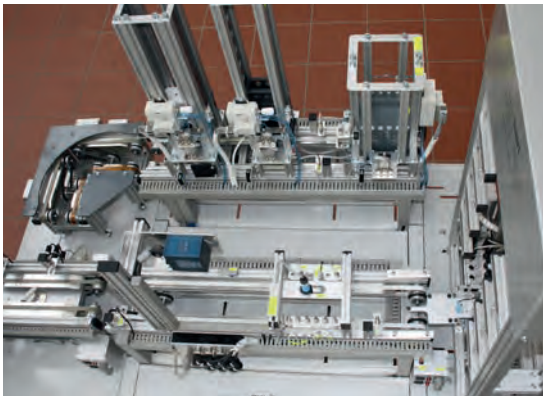
- with DC - or AC motor
- inductive end position sensor
- encoding disk with counter for path and speed measurement

Special Stacker Rack:

- storage for 24 workpiece carrieres on 4 racks
- distribution by horizontal linear drive, rotary drive and vertical linear drive
- positioning is done by reed sensor
- PLC controlled

Complete System:

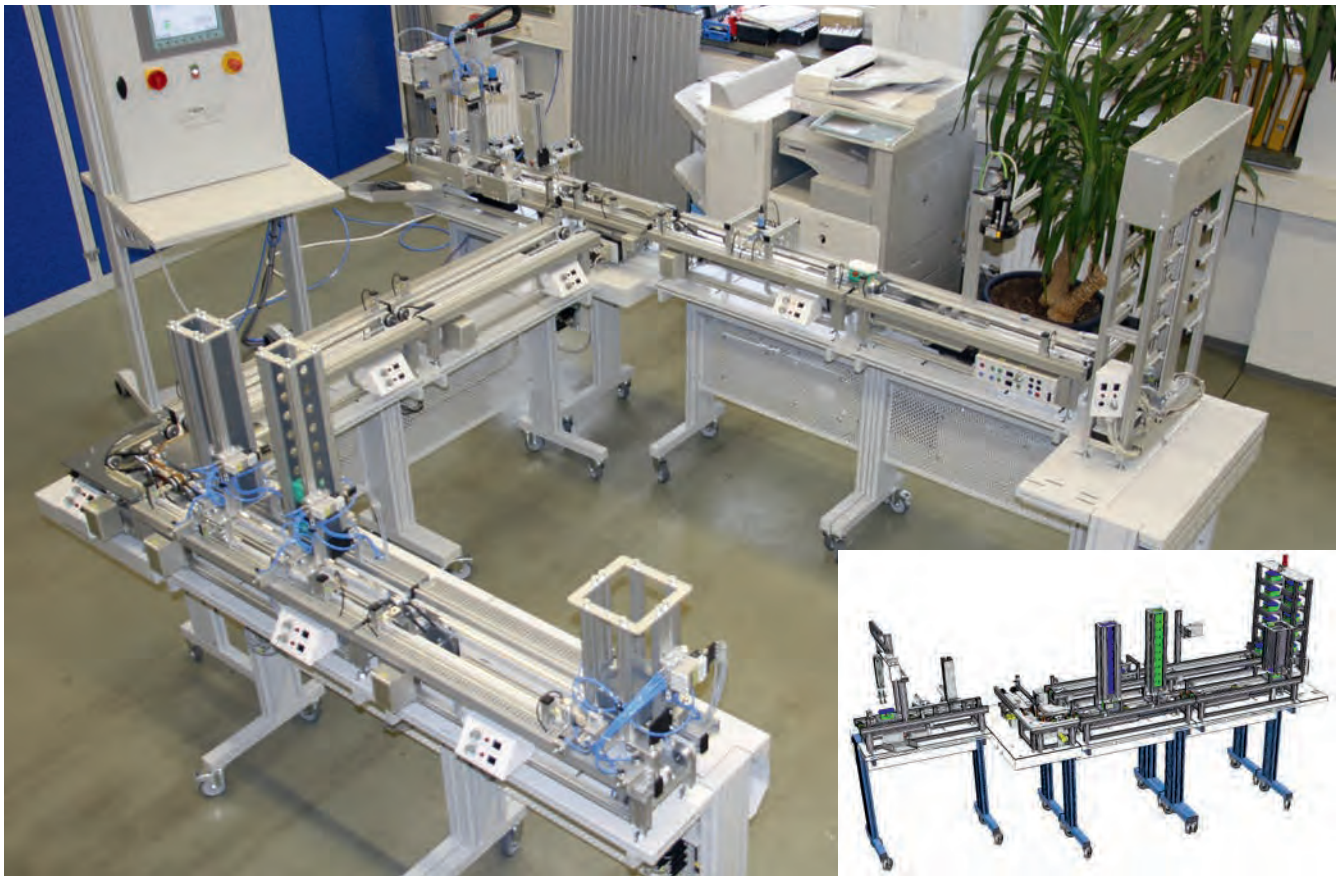
- component magazine, test stations and stacker rack
- transfer line with curve and transfer cunction
- modular set-up on mechatronic mobles with training system Frame for control unit



CONFIGURATION **EXAMPLES**

Complete Manufacturing Line:

- Support from the 3D Planning until Start-Up.
- Modular configurated Mechatronic Mobiles with Training System Frames for the Control Units.
- Component Magazines, Assembly and Disassembly, Sorting Station, Sensor - and Camera Test Station and Stacker Rack.



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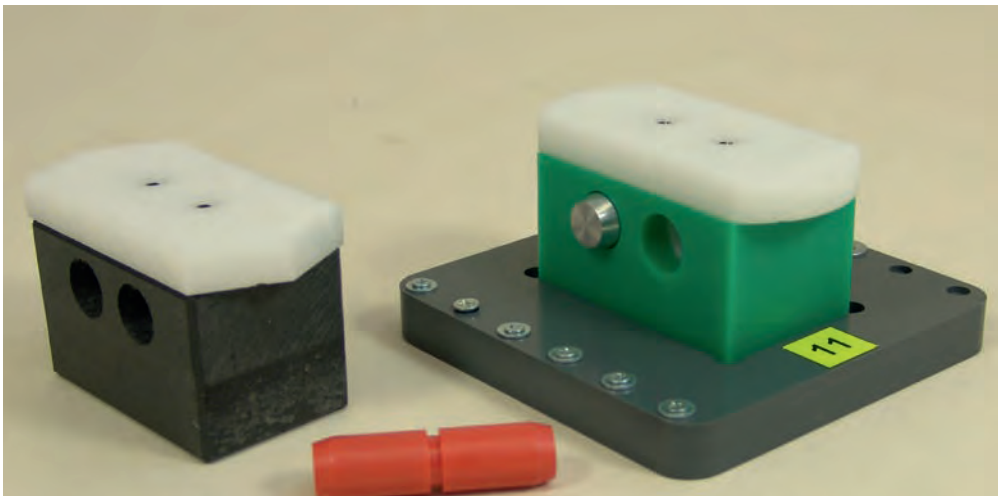
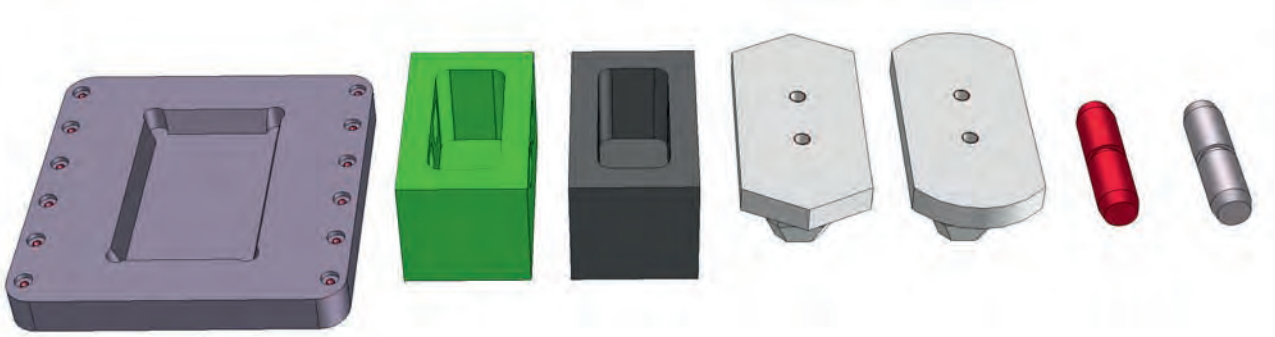
WORKPIECE CARRIER AND 4-PART WORKPIECE

The task of the workpiece carrier is to carry the 4-part workpiece on the transfer line.
Each workpiece carrier is identified by 6-Bit-Code, that could be read-out by inductive sensors.

The 4-part workpiece is for demonstation of typical industrial operations like assembly, disassembly, testing, sorting and storing.
Parts of the workpiece are in different colours, shapes or materials and could be identified with the sensor - and camera test station. All parts are made of durable materials.





Carrier / Workpiece Base / Workpiece Top / Pins

Workpiece Carrier and 4-part Workpiece			
551.011.000	Workpiece Carrier 119 x 119mm with 6-Bit Identification Code	551.011.002	Workpiece Base, black
		551.011.003	Workpiece Base, green
551.011.001	Workpiece Set I (Workpiece Top, round + Workpiece Base, black + 2x Pin PVC red)	551.011.004	Workpiece Top, white, round
		551.011.005	Workpiece Base, white, edged
551.011.008	Workpiece Set II (Workpiece Top, edged + Workpiece Base, green + 2x Pin Aluminium	551.011.006	Pin PVC
		551.011.007	Pin Aluminium

TRANSFER SYSTEM

The Transfer System is for the transportation of the 4-part workpiece. As the height is variable, the transfer system could even be combined with existing systems.

Technical Details:

- Dimensions: 750 x 225 x 165mm (LxWxH)
- Slip- and wear-free toothbelt system
- Flange-mounted pulleys for the connection of conveyor belt and curve without motor.

Choice of Motors for the Transfer System:

- Small gear motor with operation panel (speed and direction selector).
- Gear motor DC 24V with operation panel (speed and direction selector and sensor connectors).
- 3phase motor 230/400V AC (suitable for frequency converter).
- Servo motor incl. power supply, ProfiBus DP adapter and comprehensive parametrize - and control software.

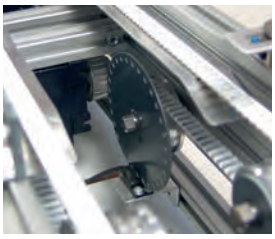
Features of Transfer Systems with Motor:

- 2x inductive sensors (opener) with adjustable holder for end position.
- Integrated encoding disk with optic sensor for path measurement.
- 3x inputs with M12 plug connector for I/O interface.
- 3x outputs with M12 plug connector for I/O interface.
- I/O interface with Sub-D 25pole plug connector for direct control with the PLC panel and 8x M12 plug connector variably useable for in- or output.

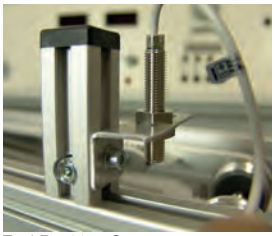
Choice of Interfaces for the Transfer System:

- AS-i (Slave) with 4x digital In- and Outputs (AS-I Master and AS-I power supply is required for operation).
- ProfiBus DP (Slave) with 8x digital In- and outputs (ProfiBus Master is required for operation).
- ProfiNet (Slave) with 8x digital in- and 4x digital outputs (ProfiBus Master is required for operation).

Transfer System with Small Gear Motor and Operation Panel



Encoding Disk with optic Sensor



End Position Sensor

Transfer System			
551.010.000	Transfer System without Motor	551.011.040	Option Interface AS-Interface (4x DI + 4x DO)
551.019.200	Transfer System with DC 24V Small Gear Motor (2x DI + 2x DO)	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
551.019.300	Transfer System with DC Motor 24V (3x DI + 3x DO)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.019.500	Transfer System with AC Motor 230/400V (2x DI + 2x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
551.019.600	Transfer System with Servo Motor	551.018.001	Manual with CD, English: Transfer Systems (Conveyor Belt, Curves, Transfer Junctions)
551.011.020	Option I/O Interface (8x DI + 8x DO)		

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CURVE AND TRANSFER JUNCTION

The transfer junction has the function of a crossing, that could distribute the workpiece to all 4 directions. This is realized with a revolvable conveyor unit with separate motor.

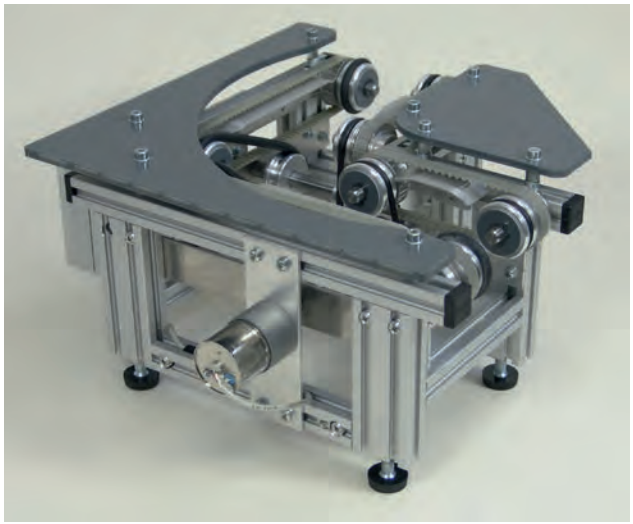
Technical Details:

- Revolving unit with small gear motor DC 24V.
- Conveyor unit with small gear motor DC 24V.
- Inductive sensor (opener) for carrier indication.
- 2x end position sensor for revolving unit.
- Operation panel (speed and direction selector).
- I/O Interface with Sub-D 25poles plug connector and 8x M12 plug connector.
- Overwinding protection.
- Dimensions: 455 x 225 x 410mm (WxHxD).

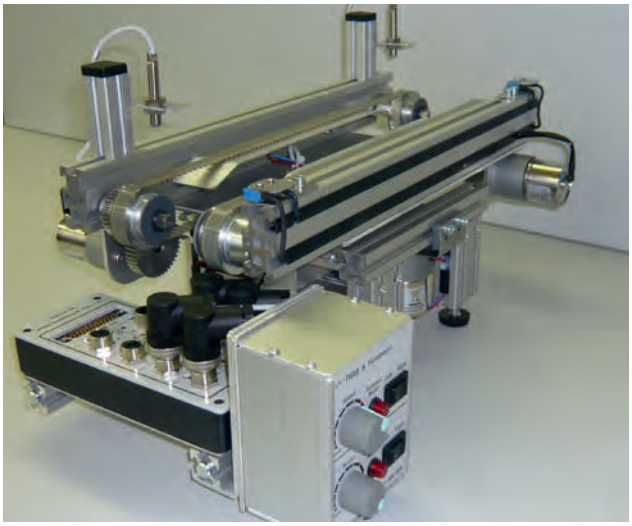
The curve transports the 4-part workpiece by 90°.
Dimensions: 305 x 305 x 172mm (LxWxH).

Choice of Motors:

- Without motor, flange-mount pulleys for the connection to the conveyor belts.
- With motor, so the curve could directly be connected to the transfer junction or to the stacker rack. Realized with small gear motor and operation panel (speed and direction selector).



Curve



Transfer Junction

Curve and Transfer Junction			
551.059.100	Curve 90°, no motor	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
551.159.000	Curve 90° with motor (2/4x DO)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.069.300	Transfer Junction (4x DI / 4x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
551.011.020	Option I/O Interface (8x DI + 8x DO)	551.018.001	Manual with CD, English: Transfer Systems
551.011.040	Option Interface AS-Interface (4x DI + 4x DO)		(Conveyor Belt, Curves, Transfer Junctions)

COMPONENT **MAGAZINES**

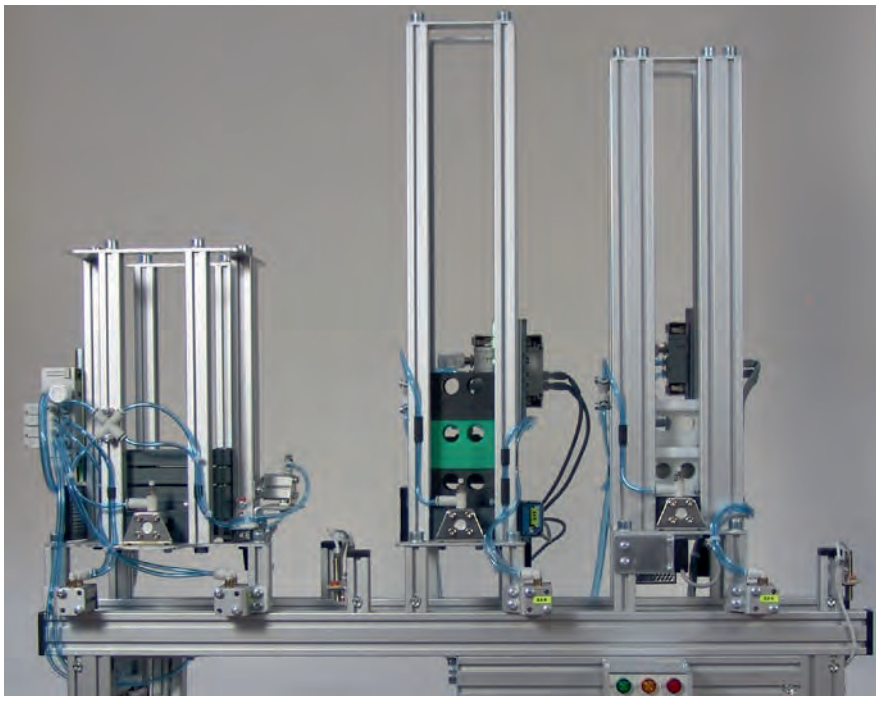
There are component magazines for the workpiece carrier and all the components of the 4-part workpiece. The magazines are installed on the transfer system. Up to 3 stations could be placed on one conveyor belt.

Carrier Magazine:

- Drop-down magazine for 16 carrieres.
- 3x pneumatic one-way cylinder to separate the carriers
- Valve terminal with 4x 5/2-way valves with 8mm pressured air connector.
- Reflective sensor for carrier cognition.
- Adjustable light barrier for indentification of the magazine fill-level.
- Pneumatic 2-way cylinder with vacuum filter.
- 4x inputs with M12 plug connector for an I/O interface.
- 4x outputs with M12 plug connector for an I/O interface.
- Dimensions: 255 x 270 x 342mm (LxWxH).
- Voltage DC 24V.

Magazine for Workpiece Top and - Base:

- Drop-down magazines for 10x top and 10x base for workpiece.
- Each with 3x pneumatic one-way cylinder to seprarate the workpieces.
- Stop cylinder with magnetic valve.
- Valve terminal with 4x 5/2-way valves with 8mm pressured air connector.
- Reflective sensor for carrier cognition.
- Adjustable light barrier for indentification of the magazine fill-level.
- 2x inputs with M12 plug connector for an I/O interface.
- 2x outputs with M12 plug connector for an I/O interface.
- Dimensions: 255 x 130 x 558mm (LxWxH).
- Voltage DC 24V.



Workpiece Carrier Magazine Workpiece Base Magazine Workpiece Top Magazine

Component Magazines			
551.089.300	Workpiece Carrier Magazine (4x DI + 4x DO)	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
		551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.029.300	Workpiece Base Magazine (2x DI + 2x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
		551.088.001	Manual with CD, English: Workpiece Carrier Magazine
551.039.300	Workpiece Top Magazine (2x DI + 2x DO)	551.028.001	Manual with CD, English: Workpiece Top and - Base Magazine
551.011.020	Option I/O Interface (8x DI + 8x DO)		
551.011.040	Option AS-Interface (4x DI + 4x DO)		

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PIN ASSEMBLY AND REMOVAL

There are two pneumatic stations for pin assembly and pin removal. The stations are installed on a transfer system. Up to three stations could be placed on one conveyor belt.

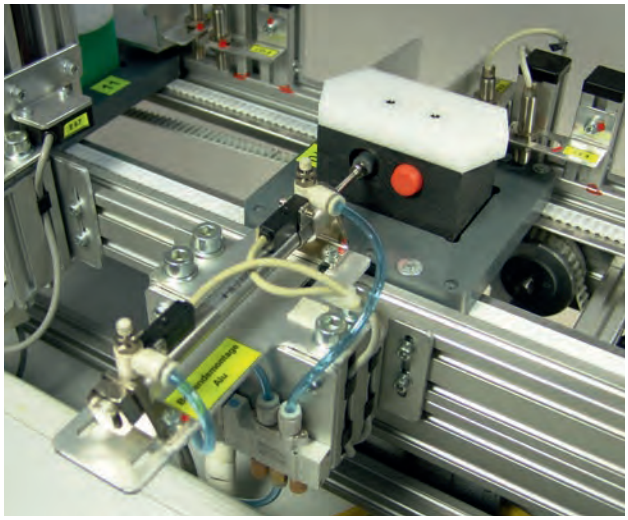
Pin Assembly Station:

- Drop-down magazine for 17 pins.
- Counter holder and collection container for pins.
- Double acting cylinder with end position sensors.
- 5/2-way valve with 4mm pressured air connector.
- Reflex light barrier to identify if pins are in the magazine
- 2x inductive sensors for position cognition of the workpiece carrier.
- 5x inputs with M12 plug connector for an I/O interface.
- 1x output with M12 plug connector for an I/O interface.
- Dimensions: 268 x 120 x 345mm (LxWxH).
- Voltage DC 24V.

Pin Removal Station:

- Double acting cylinder with end position sensors.
- 5/2-way valve with 4mm pressured air connector.
- Slide with collection container for pins.
- 2x inductive sensors for position cognition of the workpiece carrier.
- 4x inputs with M12 plug connector for an I/O interface.
- 1x output with M12 plug connector for an I/O interface.
- Dimensions: 175 x 140 x 132mm (LxWxH).
- Voltage DC 24V.

Pin Assembly Station



Pin Removal Station

Pin Assembly and Removal			
551.079.300	Pin Assembly Station (5x DI + 1x DO)	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
551.129.300	Pin Removal Station (4x DI + 1x DO)	551.011.060	Option Interface ProfiNet (8x DI / 4x DO)
551.079.400	Option Stop Cylinder with Magnetic Valve and M12 Plug Connectors (2x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
		551.078.001	Manual with CD: Pin Assembly Station
551.011.020	Option IO-Interface (8x DI + 8x DO)	551.128.001	Manual with CD: Pin Removal Station
551.011.040	Option Interface AS-Interface (4x DI + 4x DO)		

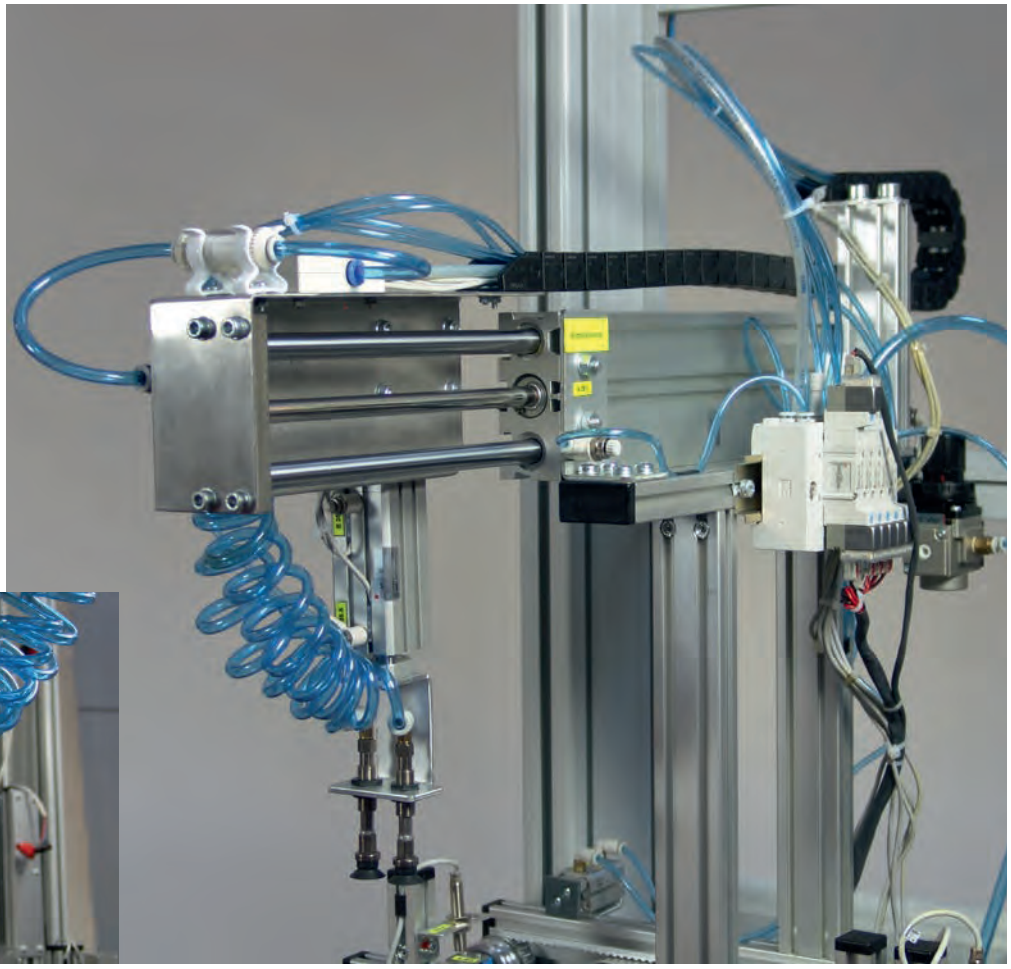
SORTING STATION

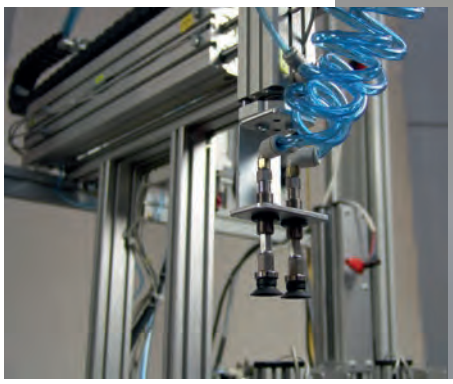
The sorting station is for disassembly of the 4-part workpiece. Top and base are separated.

Top and base could be separately taken and manually placed left or right of the transfer system. The station is installed on top of a transfer system. Up to three stations could be placed on one conveyor belt.

Technical Details:

- Guiding cylinder with 355mm stroke for movement on the X-Axis.
- 2x compact guiding cylinder for movement on the Z-Axis.
- 2x vacuum cups for suction of the workpieces.
- Valve terminal with 4x 5/2-way valves and 1x 5/3-way valve with 8mm pressured air connector.
- Venturi nozzle for the suction (air consumtion: 46 l/min).
- Inductive sensor for the carrier position cognition.
- Stop cylinder with magnetic valve.
- Regulator with reverse current mechanism.
- 8x inputs with M12 plug connector for an I/O interface.
- 6x outputs with M12 plug connector an an I/O interface.
- Dimensions: 470 x 250 x 382mm (LxWxH).
- Voltage DC 24V.





Sorting Station			
551.049.300	Sorting Station (8x DI / 6x DO)	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
551.011.020	Option I/O Interface (8x DI + 8x DO)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.011.040	Option AS-Interface (4x DI + 4x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
		551.048.001	Manual with CD, English: Sorting Station

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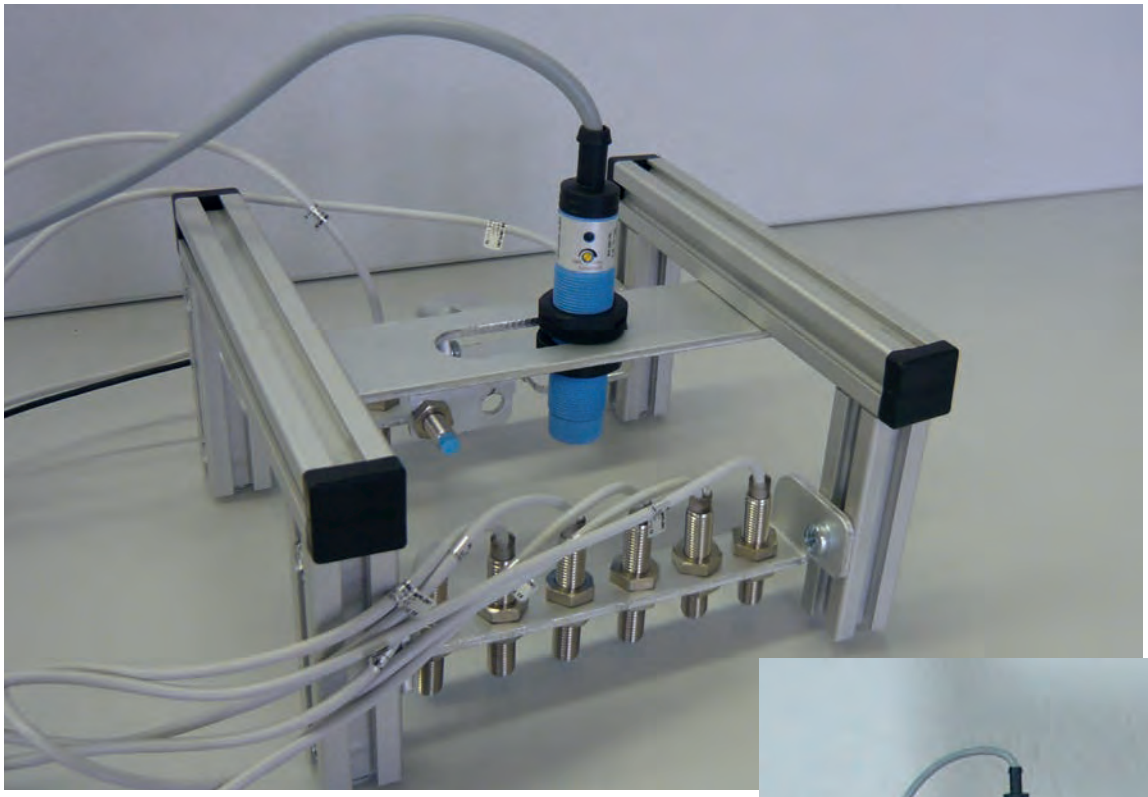
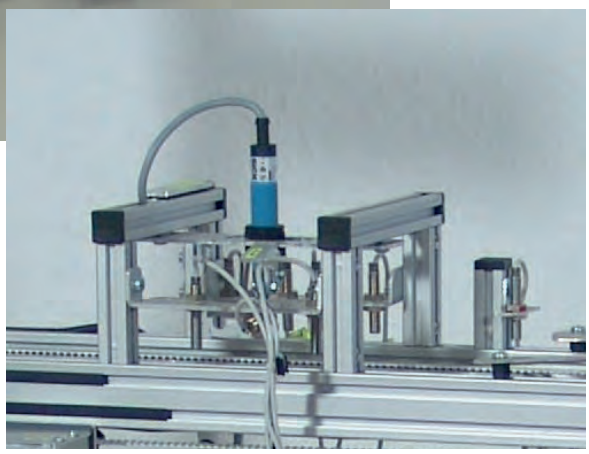
SENSOR TEST STATION

The Sensor Test Station indicates with inductive, capacitive an optical sensors the confirguration of the 4-part workpiece.
Optionally an evaluation unit (6x inductive sensors with M12 plug connector) reads in the 6-bit code of the work-piece carrier. The test station is mounted on a transfer system.
Up to three stations could be placed on one conveyor belt.

Technical Details:

- 2x inductive sensors for the positioning.
- Optical sensor for pin cognition.
- Inductive sensor for the material cognition of the pin.
- Capacitive sensor for the cognition of the workpiece top.
- 5x inputs with M12 plug connector for an I/O interface.
- Dimensions: 182 x 180 x 170mm (LxWxH)
- Voltage DC 24V.





Sensor Test Station			
551.059.300	Sensor Test Station (5x DI)	551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)
551.059.400	Option Evaluation Unit for Carrier Code (6x DI)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.011.020	Option I/O Interface (8x DI + 8x DO)	551.018.010	Sub-D Cable 25oles, 1,8m
551.011.040	Option AS-Interface (4x DI + 4x DO)	551.058.001	Manual with CD, English: Sensor Test Station

CAMERA TEST STATION

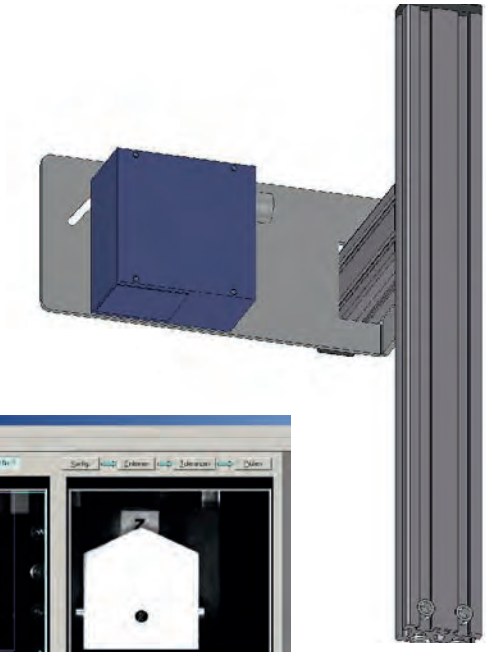
This camera system enables to identify the outlines and colours of the workpiece. Thus the outline of the top (round or edged) and the colour of the pin (red or silver) could be evaluated. The software for camera installation is within the scope of delivery. Control and evaluation is done by the digital in- and outputs of the PLC.
The camera test station is installed on top of a transfer system. Up to three stations could be placed on one conveyor belt.

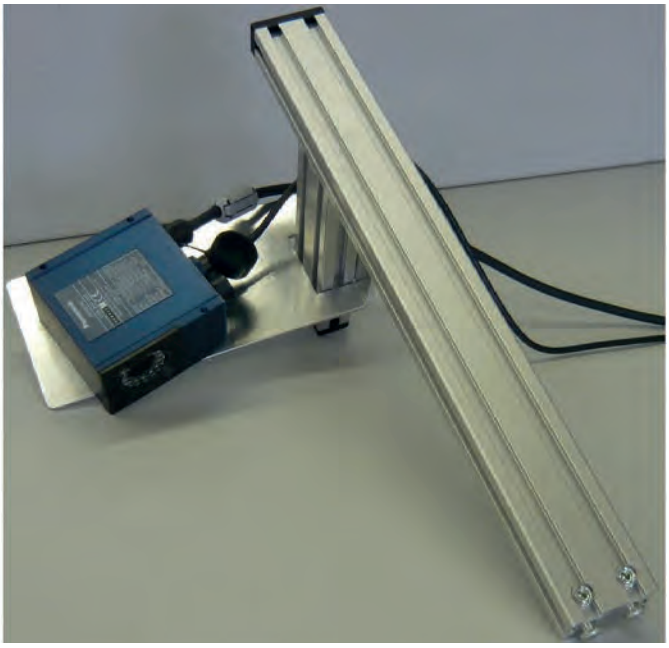
Camera Test Features:

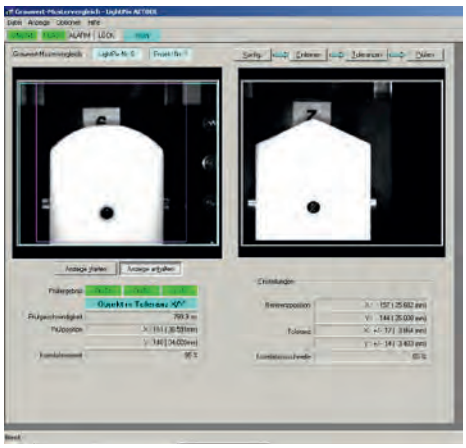
- Outline Detection
- Colour Detectoin
- Colour-Matching
- Greytone-Matching
- Edge Detection
- Corner Detection
- Dimension Check
- Characteristic Detection

Technical Details:

- End postion sensor for test item cognition.
- Camera system with adjustable holder (height, depth and tilt).
- Installation software.
- USB cable.
- 3x inputs with M12 plug connectors for an I/O interface.
- 1x output with M12 plug connectors for an I/O interface.
- Dimensions: 150 x 205 x 345mm (LxWxH).
- Voltage DC 24V.







Camera Test Station			
551.139.310	Teststation Camera (3x DI + 1x DO)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.011.020	Option I/O Interface (8x DI + 8x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
551.011.040	Option AS-Interface (4x DI + 4x DO)	551.138.001	Manual with CD, English: Camera Test Station
551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)		

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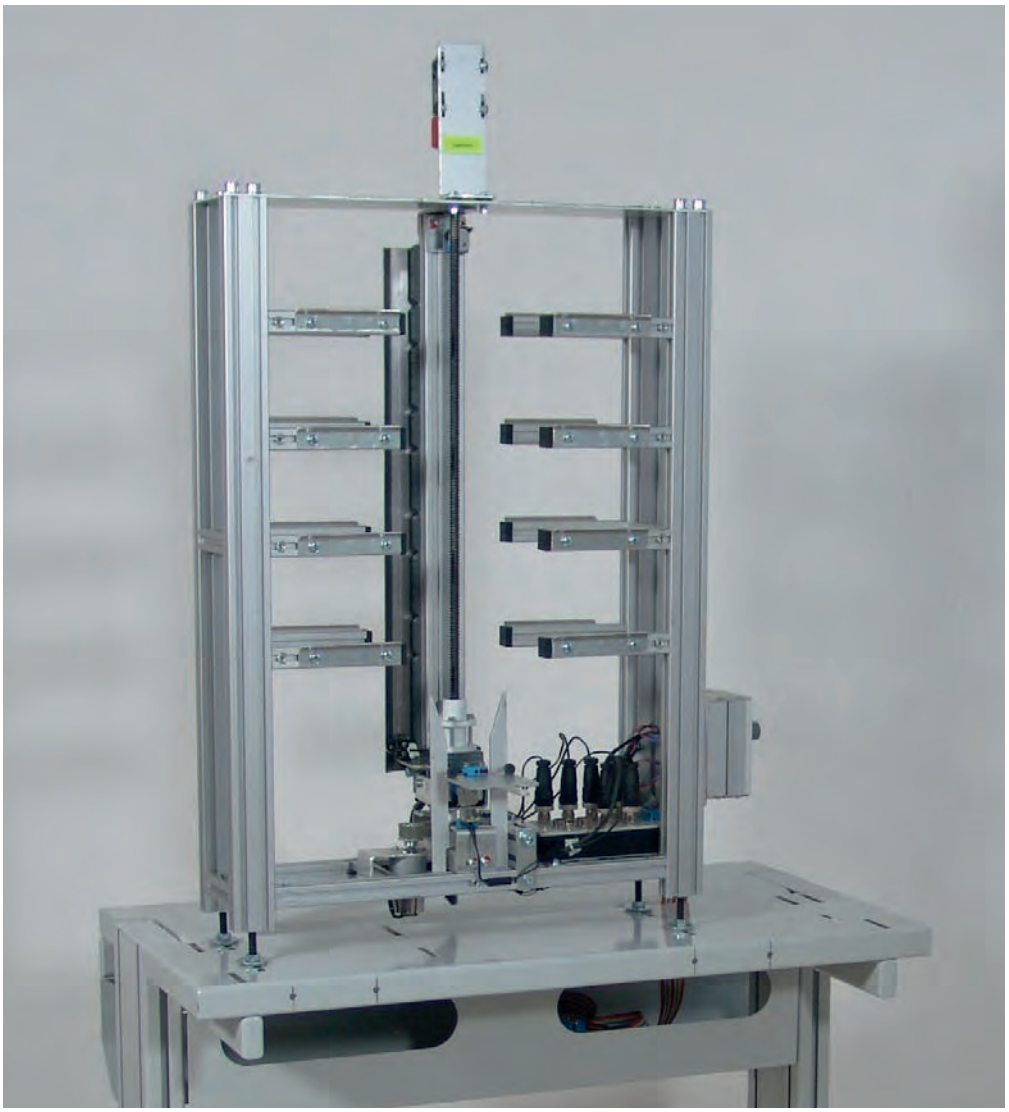
STACKER RACK

Training System for the storage of the carriers, with or without the 4-part workpiece.
The stacker rack is mounted on a transfer system.
Up to three stations could be placed on one conveyor belt.

Technical Details:

- Storage for 8 workpiece carriers.
- Fork for lifting the carrier.
- Threaded lifting spindle with individual motor for the fork movement.
- Motor for fork rotation.
- Optical sensor for carrier cognition.
- 5x mechanic end position switches for the level cognition.
- 6x inputs with M12 plug connector for an I/O interface.
- 4x inputs with M12 plug connector for an I/O interface.
- I/O interface with Sub-D 25poles plug connector for direct control with the PLC panel.
- Control for the regulation of both motors.
- Rotation unit with overwinding protection.
- Dimensions: 210 x 485 x 850mm (LxWxH).
- Voltage DC 24V.



Stacker Rack			
551.099.300	Stacker Rack (6x DI + 4x DO)	551.011.060	Option Interface ProfiNet (8x DI + 4x DO)
551.011.040	Option AS-Interface (4x DI + 4x DO)	551.018.010	Sub-D Cable 25poles, 1,8m
551.011.050	Option Interface ProfiBus DP (8x DI + 8x DO)	551.098.001	Manual with CD, English: Stacker Rack

OPERATION - AND **INTERFACE OPTIONS**

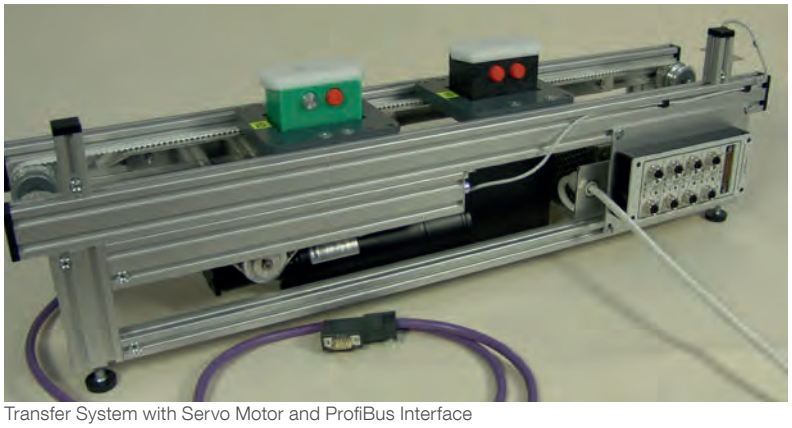
All basic systems (transfer system, curve, etc.) and top-mount stations could be equipped with an operation unit with emergency off and below mentioned interfaces:

- Operation unit with emergency off (3x inputs, 4x outputs), equipped with:
  - Emergency off button, connected with safety jacks.
  - 2x switches (2x inputs)
  - Illuminated switch (input + output)
  - 3x indicator lamp red/orange/green (3x outputs)
- I/O interface with Sub-D 25poles plug connector for the direct control with the PLC panel and 8x M12 plug connectors, variable assignment with input or output.
- AS-i (Slave) with 4x digital inputs and 4x digital outputs (AS-I master and AS-I power supply is required for operation).
- ProfiBus DP (Slave) with 8x digital inputs and 8x digital outputs (ProfiBus master is required for operation).
- ProfiNet (Slave) with 8x digital inputs and 4x digital outputs (ProfiNet master is required for operation).

Operation Unit with Emergency Off

I/O Interface

AS Interface


Transfer System with Servo Motor and ProfiBus Interface

Operation - and Interface Options			
551.119.000	Operation Unit with Emergency Off (3x IN / 4x DO)	551.011.050	Option Interface ProfiBus DP (8x IN / 8x DO)
551.011.020	Option I/O Interface (8x IN / 8x DO)	551.011.060	Option Interface ProfiNet (8x IN / 4x DO)
551.011.040	Option AS-Interface (4x IN / 4x DO)	551.018.010	Sub-D Cable 25poles, 1,8m

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MECHATRONIC SYSTEM **COMPACT**

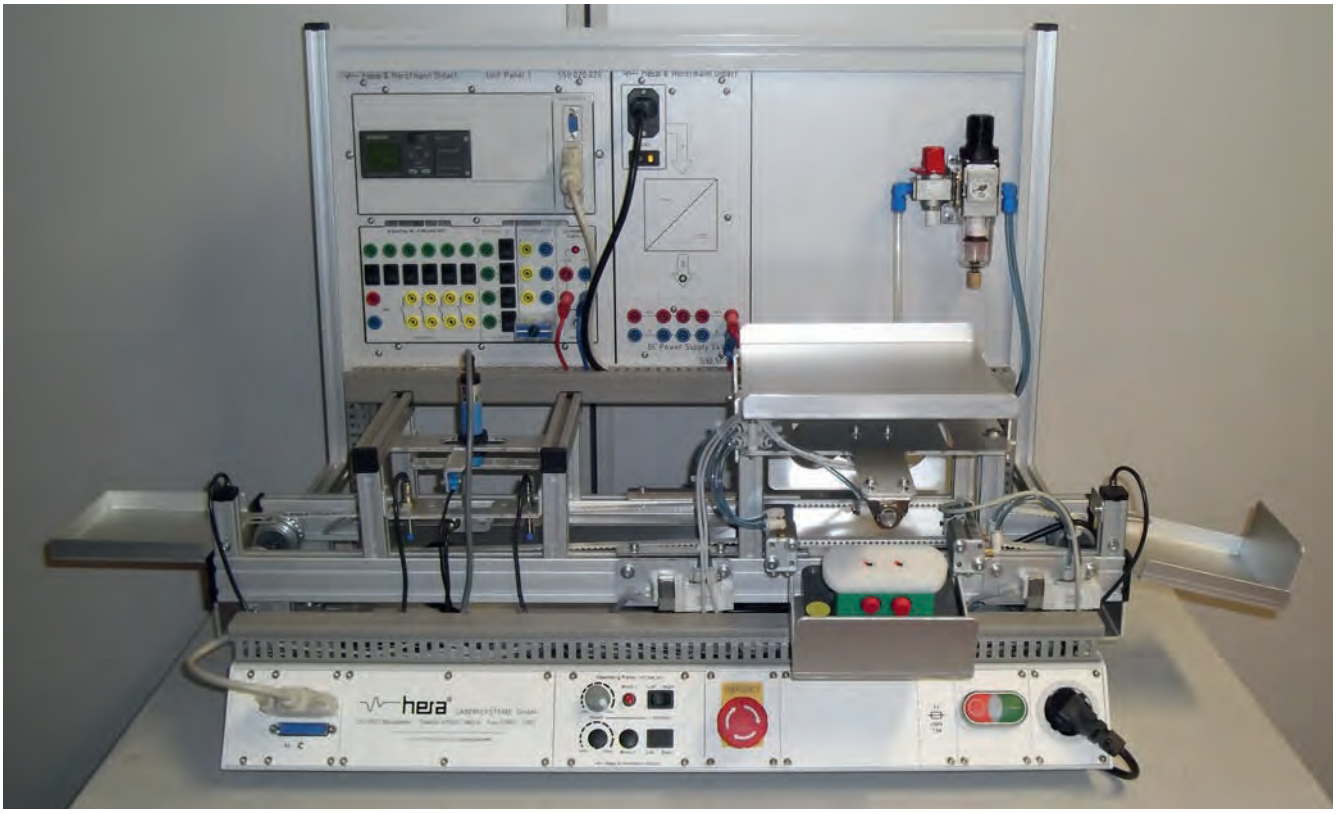
Compact mechatronical system as bench top model including the logic as well as all components electric and pneumatic components.

Operation:

- Manually feed the workpiece with carrier to the transfer band till the carrier is cognized by the inductive sensor.
- The carrier with workpiece is transfered to the sensor test station.
- The workpiece is checked (see page 579).
- If the workpiece is OK , the carrier is transported to the end of the line.
- If the workpiece is NOT ok, the carrier is ejected by a stop cylinder.

Mechatronic System COMPACT consisting of:

- Transfer band with DC small gear motor 24V.
- Sensor Test Station.
- Ejection Unit with stop cylinder.
- Compact Terminal with operator panel.
- Feeding Slide.
- End Slide.
- Training System 1 level.
- Maintenance Unit for pressured air with fine filter.
- DC Power Supply 24V / 4A.
- Training System LOGO! 24V with 16x DI und 8x DRO.
- Ready for start up.



Mechatronic System COMPACT			
950.034.200	Mechatronic System COMPACT	551.011.000	Workpiece Carrier with 6-Bit Identification Code
950.034.289	Manual to Mechatronic System COMPACT, engl.	551.011.001	Workpiece Set I
		551.011.008	Workpiece Set II

ACCESSORY **MECHATRONICS**

For mobile applications, all basic systems (transfer system, curves, transfer junctions and stacker rack) could be installed on special mechatonic mobiles with adapting connections.

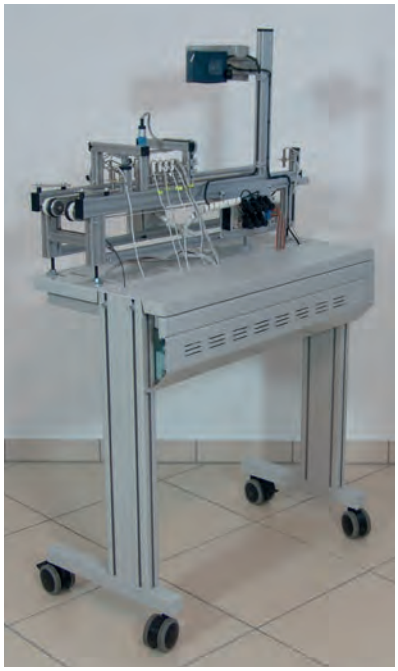
Adventages:

- Clear, flexible and safe cable runs due to spacious cable tray with double rubber-lip flap.
- Modular configurable and connectible to individual systems.
- Could be equipped with training system frames to hook in DIN-A4 training systems (like PLC panel, etc.).
- Compatible to the laboratory system PROFI.

Technical Details:

- Dimensions: 750 x 400 x 780mm (WxDxH).
- Mounting base made of sheet steel with perforation for the fixation of the basic systems.
- Rear side with cable tray made of sheet steel with cable access to the lower - and front side.
- Cable flap with cutout for extensions and double rubber lip for bruise protection.
- PROFI aluminium legs with 6 slots and cross sections.
- Four swivel casters (diameter: 75mm), two with brakes.
- Durable, light grey powder coating.

On demand we offer suitable silent running compressors with calculated air volume and maintenance unit for compressed air for each individual set-up.



Mechatronic Mobile, 551.000.100

Training System Frame, 461.062.901

Maintenance Unit for Compressed Air

Accessory Mechatronic			
551.000.000	Mechatronic Mobile	461.062.901	Training System Frame for Mechatronic Mobile 2 levels (H: 680)
551.000.100	Adapter Base for Curve and Transfer Junction (incl. assembly set for the fixation to the Mechatronic Mobile)	551.990.020	Silent Compressor for Mechatronic Systems WITHOUT Sorting Station
401.008.902	Set of PROFI Extensions SINGLE, height: 800mm (for Training System Frame 1 level)	551.990.010	Silent Compressor for Mechatronic Systems WITH Sorting Station
401.011.902	Set of PROFI Extensions SINGLE, height: 1100mm (for Training System Frame 2 levels)	551.990.050	Component Panel Mechatronic: Maintenance Unit for Compressed Air
461.061.901	Training System Frame for Mechatronic Mobile 1 level (H: 360)	551.990.060	Component Panel Mechatronic: Maintenance Unit for Compressed Air and Fine Filter

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PRACTICAL SIMULATIONS
WITH ORIGINAL COMPONENTS

CHAPTER 17: **TRAINING SYSTEMS FOR RENEWABLE ENERGIES**

587 Classroom Workstation for Photovoltaics
588 Component Panels Photovoltaics
589 Photovoltaics: Isolated System (grid independent)
591 Photovoltaics: Grid Connected System
Manuals and Software
592 Photovoltaics Mobile
593 Wind Energy
594 Solar Technology - PU (Pump Cycle)
595 Solar Technology - TS (Thermosyphon Principle)
596 Thermic Solar System
597 Heat Pump
598 Heat Pump VARIO

COMPREHENSIVE TESTS
WITH HIGH LEARNING EFFICIENCY

Renewable energies could be generated in many different ways. In the field of photovoltaics, solar thermic and heat pump we offer various possibilities for flexible and modular test set-ups, all of them for indoor use.

All siumulations are done with original components from manufacturers of real systems. Components in transparent training boxes offer a good view to the original components from all sides and even increase the learning effect.

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CLASSROOM WORKSTATION FOR PHOTOVOLTAICS

Modular Set-Up with:

- PROFI Laboratory Bench (see chapter 2)
- PROFI Training System Frame (see chapter 2)
- Energy Board with Equipment (see chapter 10)
- Tilt Adjustment for Training System Frame
- PROFI Overhead Frame (see chapter 2)
- Light Unit for PROFI Overhead Frame

Classroom Workstation for Photovoltaics

Tilt Adjustment for Training System Frame with Tilt Angle Indication
461.020.000

Light Unit for Overhead Frame with Tilt - and Rotation Angle Indication
530.070.500

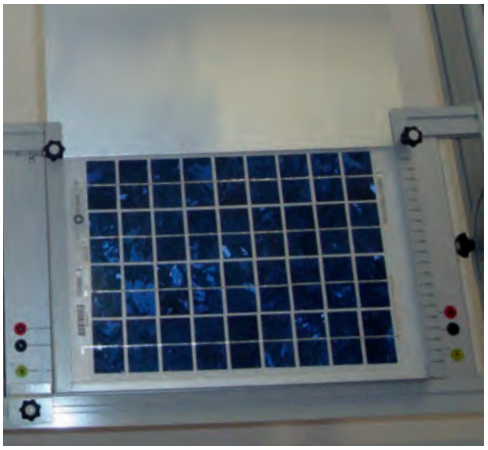
Components for Photovoltaics Workstation	
530.070.500	Light Unit 400W for Overhead Frame
461.020.000	Tilt Adjustment for Training System Frame

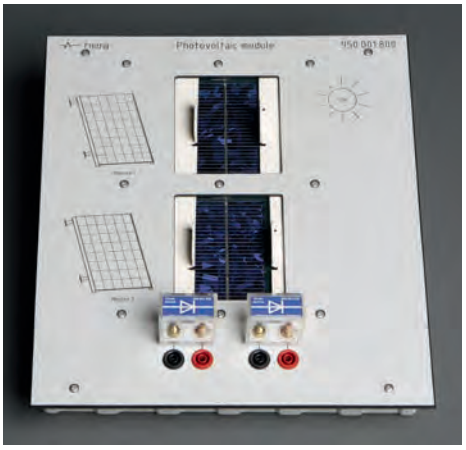
COMPONENT PANELS **PHOTOVOLTAICS**

With the hera component panels you have a considerable choice of components to create your individual set-up of a photovoltaics system.

You can even enhance your existing training system with more component panels.
All training panels (DP) consist of original photovoltaic components from high-quality manufacturers.

530.070.230


950.003.900



530.070.100

530.070.220

530.070.210

530.070.240

530.070.250

530.070.260

530.070.400

Component Panels Photovoltaics			
530.070.230	DP Solar Module 12V / 10Wp	530.070.240	DP Load (Lamp 5W)
950.003.900	DP Solar Module 12V / 10Wp with Shading 0-100%	530.070.250	DP Load Potentiometer (47Ω / 4W + 2,2kΩ / 4W)
530.070.100	DP Series - and Parallel Circuit and Shading Simulation	530.070.260	DP Solar Motor
530.070.220	DP Charge Controller with LCD Display	530.070.400	DP Digital Multimeter MetraHit 2+
530.070.210	DP Lead-Gel-Accumulator (7,2Ah)	770.318.011	Manual Photovoltaik II, English

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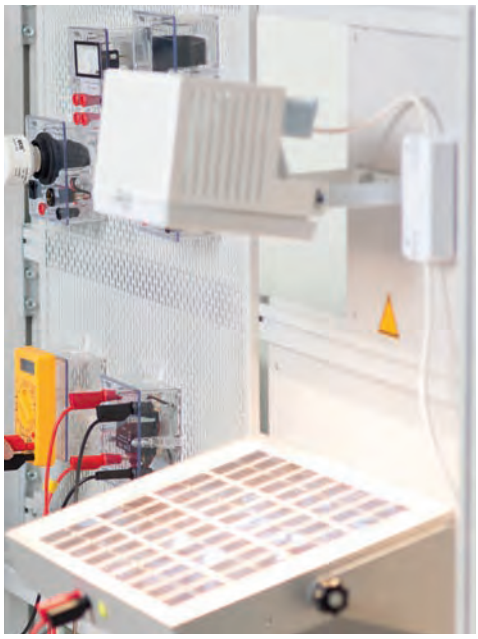
PHOTOVOLTAICS: **ISOLATED SYSTEM**

The component set for isolated systems includes all required parts for comprehensive test proceedings.

The Component Panels (DP) and the transparent Training Boxes (DB) enable quick, clearly arranged and yet flexible test set-ups. If needed the set of components can be enhanced with extra components.



DP (training panel) for
DIN-A4 Training System Frame

DB (training box) for
Installation Walls

Component Set Photovoltaics Isolated System			
770.310.000	Component Set with all Components	770.310.005	Set of Cables for 770.310.000

Components Photovoltaics Isolated System			
770.310.010	DP Photovoltaics Module 12V, 10W tiltable	770.310.170	DB Load 12V with Standard Socket KFZ (10A)
770.310.020	DP Halogen Lamp dimmable, 230V, 400W		and Lamp Socket E27
770.310.030	DB Generator Connector with Voltmeter 15 / 150V	770.310.180	DB Circuit Breaker B6A, 3poles
770.310.040	DB Overvoltage Protection 12V	770.310.190	DB Relay 230V, 3NO, 1NC, 10A
770.310.050	DB Discharge Protection (Schottky Diode)	770.310.200	DB Mains Monitoring Relay 230 / 400V
770.310.060	DB Charge Regulator 12V, 4A	770.310.210	DB Residual Current Device 4pol., 30mA
770.310.070	DB Deep Discharge Protection 12V, 15A	770.310.220	DB Distribution Fuse Board
770.310.080	DB Safety Lamp 12V, 5W contin. Voltage (Sofitte)	770.310.230	Multimeter
770.310.090	DB Lead-Gel-Accumulator	770.310.240	Digital Lux Meter, 4½ digit
770.310.100	DP Charging Unit for Lead-Gel-Accumulator	770.310.250	DP Inverter 300W constant output
770.310.110	DB Safety Lamp for Non-Maintained-Mode	770.310.270	Light Bulbs
770.310.120	DB Lamp 230V		1x incandescent lamp 12V, 5W E14 a. 230V,
770.310.130	DB Relay 12V, 30A		15W E14; 1x energy safing lamp 12V, 11W E27
770.310.140	DB Resistor 10Ω, adjustable	770.310.290	Set of Electric Spare Parts
770.310.150	DB Resistor 2kΩ, adjustable		PV Storage Box with Fuses, Tool for Fuse Change
770.310.160	DB Mains Adapter		(blade-type) and Festoon Lamp

▸ **see page 520 for more pictures**

COMPONENTS PHOTOVOLTAICS **ISOLATED SYSTEM**

770.310.010

770.310.020

770.310.250

770.310.030 770.310.040 770.310.050 770.310.060 770.310.070 770.310.080 770.310.090

770.310.110 770.310.120 770.310.100 770.310.130 770.310.140 770.310.160 770.310.150

770.310.170 770.310.180 770.310.190 770.310.200 770.310.210 770.310.220 770.310.230 770.310.240

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PHOTOVOLTAICS: **GRID-CONNECTED SYSTEM**

The component set for grid-connected system includes all required parts for comprehensive test proceedings.

The Component Panels (DP) and the transparent Training Boxes (DB) enable quick, clearly arranged and yet flexible test set-ups. If needed the set of components can be enhanced with extra components.

770.311.050

770.311.040

770.311.021

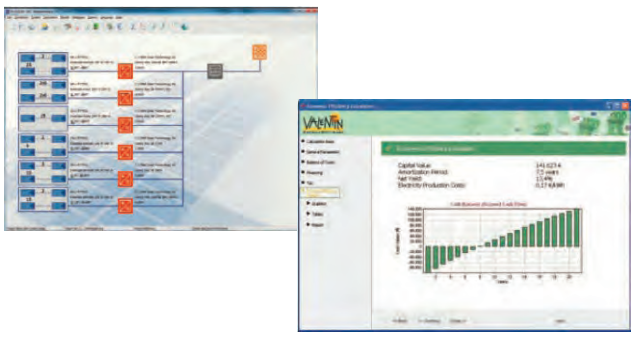
770.311.010

Set and Components Photovoltaics: Grid-Connected System			
770.311.010	DP Photovoltaics Module 48V, foldable and with stepless adjustable tilting angle, with 4x 400W Lamps for Sun Simulation	770.311.040	DB Energy - and Power Meter 230V
		770.311.050	DB DC-Isolator
		770.320.000	Set Photovoltaics: Grid-Connected System
770.311.021	DP Feeding-Inverter with Monitoring Unit		

PHOTOVOLTAICS: **MANUALS AND SOFTWARE**

The manuals for the test proceedings to the hera® Photovoltaics Training Systems hold many different test and theoretical information to the environment-friendly energy generation. With parts for students and instructors to isolated and grid-connected system.

PV*SOL® Pro is a suitable simulation software for the dimensioning and efficiency calculation of grid-connected and grid-independent photovoltaic systems.
The software includes a sufficient module - and inverter data base with automatic update function.



Photovoltaics: Manuals and Software			
770.318.010	Manual Photovoltaics I, English	530.970.010	PV*SOL® Pro 4.5 set Software / Single License
770.318.011	Manual Photovoltaics II, English	530.970.020	PV*SOL® Pro 4.5 set Software / 10fold Licenses

PROFI **PHOTOVOLTAICS MOBILE**

Consisting of:

- Mobile Base 970x700x130mm (WxDxH).
- 3x PROFI Extensions, height: 1200mm.
- Container 2x Drawers + 1 Door.
- Installation Wall for Training Boxes.
- Photovoltaics Module 4fold 48V, foldable.
- Tilting Angle 0...60° stepless adjustable.

Optional for Indoor Use:

- Lamp Unit 4x 400W for Sun Simulation.
- Incl. Holder and Power Distribution.

PROFI Photovoltaics Mobile, with tilt adjustment, foldable for compact storage, measuring units hooked in installation wall

PROFI Photovoltaics Mobile			
530.800.000	PROFI Photovoltaics Mobile	770.311.030	DP Remote-Unit for Inverter / ENS
530.890.000	Lamp Unit 4x 400W with Holder	770.311.040	DB Power - and Energy Meter 230V
770.311.021	DP Feeding-Inverter	770.311.050	DB DC-Isolator

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WIND POWER

The wind power panel is for the simulation of a real wind power plant. The development was done in cooperation with one of the leading manufactuers for wind power plants.

Automatic Mode:
Settings of nominal values are done either on integrated potentiometers or external sensors.

Setting for Wind Direction:
- Integrated Graycode Switch
- External Graycode (4bit or 8bit)
- 4-20mA
- 0-10V

Setting for Wind Speed:
- 0-10V
- 4-20mA
- PWM-Signal

Setting for Degree of Daylight:
- Internal LDR

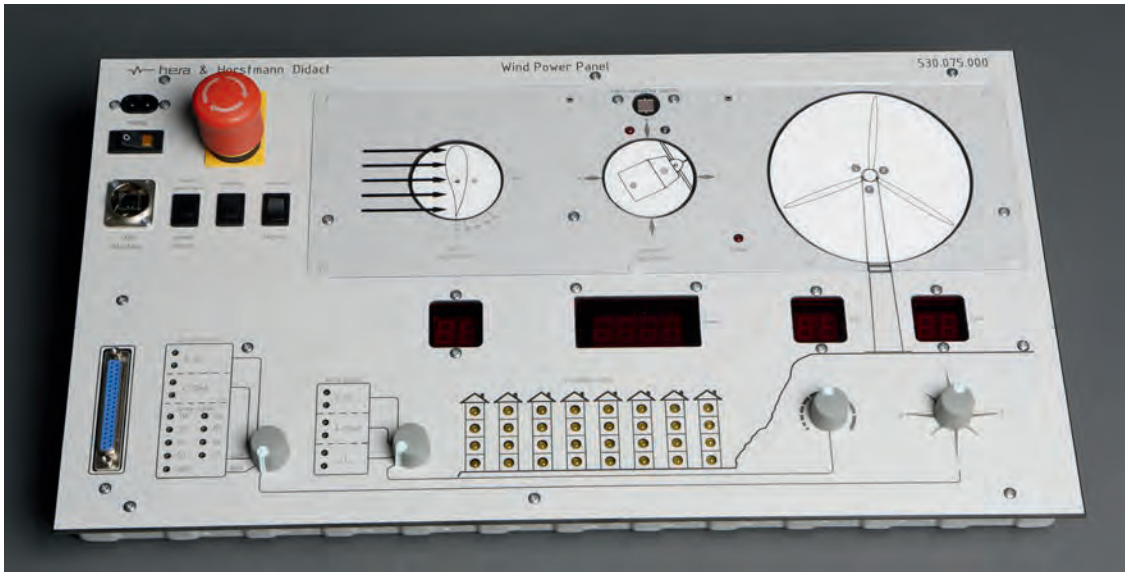
After entering all nominal values, the panel operates completely autarc and simulates all options of a real wind power plant.
- Pitch-adjustment (rotor blade), depending on the wind force between 0° (full surface) to 90° (break).
- Azimuth tracking (wind direction), depending on the wind direction the azimuth is automatically positioned.
- The rotation speed of the rotor changes with the wind speed.
- Change between day - and night light (warning light for aviation) with respect to the degree of ambient daylight.
- Drivetrain break for emergency stop mode.

All functions in case of emergency stop, service mode and power failure could be simulated with switches.
A 7-segment-display indicates the actual wind speed, rpm of the rotor and the generated and consumed power.

Manual Operation (Optional):
In manual operation the overall automatic controls are disabled. Now all actuators could be controlled by SPS and all integrated sensors could be read out, connection is done to SUB-D socket.

Actuators:
- Rotation speed of the rotor via PWM-signal
- Pitch adjustment via PWM-signal
- Azimuth tracking via +24V left or right signal
- LED break
- LED day light
- LED night light

Sensors:
- Wind direction (Graycode)
- Azimuth position (Graycode)
- Service switch (24V)
- Enable switch (24V)
- Emergency stop switch (24V)
- Power failure (24V)
- Actual value rotation speed (pulses per minute)
- Brightness sensor (0-10V)
- Wind speed (0-10V)



Wind Power			
530.075.000	Wind Power Panel	530.118.001	Manual with CD, English: Wind Power Panel

SOLAR TECHNOLOGY WITH **PUMP CYCLE (PU)**

This model imparts detailed knowledge about the function of a solar system with pump cycle.
The miniature collector could be operated outside with natural sun or indoor with the artifical light unit.
The clearly arranged and yet compact set-up of the training system is ideal either for theoretical or practical lessons.
Integrated meters directly indicate the actual temperature, flow volume and pressure and allow the determination of specific parameters with high repeating accuracy.
Optionally we offer a mobile base for this bench-top model, this assures the convenient transportation between various class rooms.

Learning Contents:

- Basic information about thermic solar systems.
- Get to know and explain the typical components of a solar system.
- Comprehension and explanation of the set-up, functionality and effect of all components.
- Determination and analysation of system specific parameter.
- Determination of cost-effective system variables.
- Characteristics of the safety - and control devices.
- Start-up and handover of a solar systems.

Technical Details:

- Dimensions: approx. 800 x 470 x 1000mm (WxDxH)
- Weight: approx. 40kg
- Electrical connection: Schuko 230V AC
- Cold water connection SK - ¾“
- Waste water connection SK - ¾“

Solar Technology with Pump Cycle (PU)			
770.104.000	Solar Technology with Pump Cycle (PU)	770.104.003	Mobile Base
770.104.001	Connectors		

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SOLAR TECHNOLOGY WITH **THERMOSYPHON PRINCIPLE - TS**

This model imparts detailed knowledge about the function of a solar system in thermosyphon principle.
The miniature collector can be operated outside with natural sun or indoor with the artifical light unit.
A transparent tank and partly transparent pipes allow the view inside and visualize the natural circulation in different operation modes. Integrated connectors for meters allow temperature measurements at different points of the system. This helps the students to understand the processes of the system.
As we mostly integrated original components of real systems, the imparted knowledge could be easily transfered into practice. The clearly arranged and yet compact set-up of the training system is ideal either for theoretical or practical lessons.
Optionally we offer a mobile base for this bench-top model, this assures the convenient transportation between various class rooms.

Learing Contents:

- Basic information about the thermosyphon principle.
- Get to know and explain the typical components of a solar system.
- Comprehension and explanation of the set-up, functionality and effect of all components.
- Determination and analysation of system specific parameter.

Technical Details:

- Dimensions: approx. 800 x 470 x 1000mm (WxDxH)
- Weight: approx. 40kg
- No electrical connection required
- Cold water connection SK - ¾“
- Waste water connection SK - ¾“

Solar Technology with Thermosyphon Principle (TS)			
770.104.100	Solar Technology with Thermosyphon Principle (TS)	770.104.103	Mobile Base
770.104.101	Connectors		

THERMAL SOLAR SYSTEM

This system enables to study the set-up and function of a thermal solar system for the provision of hot water. It explanes the settings, the adjusting possibilities and operation. As we consequently integrated original components of real systems, the imparted knowledge could be easily transfered into practice.
Integrated connectors for meters and openings at all relevant points enable the collection of parameters like collector feed and collector supply, tank temperature and system pressure. For the collection of the data and comparisson with the manufacturers parameters we offer a complete set of digital meters, but you can even use existend ones.
The operation of the system bases on temperature differences. To keep the model independent from weather and time of day, it could optionally be equipped with a light unit.
The standard product is equipped with a plastic tank. On demand an approx. 50l water tank or a stainless steel tank with approx. 30l and layering measurement could be integrated.

Learing Contents:

- Planning and dimensioning thermal solar systems.
- Preparation of a customer hand-over check list with demonstrations at the model.
- Preparing an argumentation aid for meetings with customers.
- Performing check-ups and maintenances at the model.
- Get to know and explain the typical components of a solar system.
- Comprehension and explanation of the set-up, functionality and effect of all components.
- Determine and analyse system specific parameters like collector capacity / efficiency / layering, etc.
- Regulation / control of a thermal solar system.

Technical Details:

- Dimensions: approx. 2250 x 2080 x 800mm (WxHxD)
- Weight: approx. 105kg
- Electrical connection: Schuko 230V AC

Thermal Solar System			
770.106.000	Thermal Solar System	770.106.010	Set of Digital Meters
770.106.005	Lamp Unit	770.106.011	Maintenance Case Solar
770.106.006	Tank 50ltr.	770.106.012	Filling - and Rinsing Device
770.106.007	Stainless Steel Tank with Layering Measurement	785.050.000	Planning Software T-Sol

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HEAT **PUMP**

The bench top model Heat Pump is the ideal base for the explanation of all important processes within a heat pump system.
The model holds various possibilities for tests and calculations of the heat pump process.

Integrated meters for the collection of following parameters:

- Power consumption
- Pressure, sucion side
- Pressure, discharge side
- Temperature sucion - and discharge side
- Flow quantity primary - and secudary side
- Temperature primary - and secundary side

Characteristics:

- 1x Heat pump unit
- 1x Coaxial capacitor
- 1x Digital thermometer
- 1x Energy meter
- 1x Flow meter
- 1x Pressure - and temperature meter, low pressure
- 1x Pressure - and temperature meter, high pressure
- 1x Condensate pan
- 1x Complete piping and wiring of the system

Technical Details:

- Dimensions: approx. 500 x 600 x 450mm (WxHxD)
- Cold water connector: quick connector 3/4”
- Waste water hose: DN 50
- Electrical connection: Schuko 230V AC

Heat Pump			
740.105.000	Heat Pump Model	740.105.001	Mobile Base

HEAT PUMP **VARIO**

This model is to study the functionality of 4 different principles of heat pumps.
By simply switching over, the system mode could be changed between air/air, air/water, water/air and water/water. As we mostly integrated original components of real systems, the imparted knowledge could be easily transfered into practice.
The clearly arranged and yet compact set-up of the training system is ideal either for theoretical or practical lessons.
Integrated meters for direct indication of temperatures and pressures in the cooling cycle as well as the water quantity in the heating cycle allow the determination of specific parameters with high repeating accuracy.
Pressure resistant glasses are integrated at the allowed points for the visualization of the cooling mediums‘ aggregate state.
Optionally the model could be equipped with a PC connected data logging system. All relevant data could be logged, visualized and evaluated by software.
The solid aluminium base could optionally be equipped with a hardwearing cabinet for the storage of the measuring instruments and the manuals.

Learing Contents:

- Identification of all heat pump components.
- Comprehension and explanation of the set-up, functionality and effect of all components.
- Identification of the cooling mediums‘ aggregat states.
- Determination and analyze of system relevant parameters.
- Comparing the data for air/air -, air/water -, water/air - and water/water systems.
- Determine the limitation of each system and thus the resulting applications.
- Characteristics of the safety - and control devices.
- Checking the safety - and control devices.
- Determination of possible malfunctions of heat pumps and explanation of its effects to functionality.
- Preparing an argumentation aid for meetings with customers.
- Preparing a check list for the regular service on heat pumps.

Technical Details:

- Dimensions: approx. 1200 x 600 x 1600mm (WxDxH)
- Weight: approx. 90kg
- Electrical connection: Schuko 230V AC
- Cold water connection SK - ¾“
- Waste water connection SK - ¾“

Heat Pump VARIO			
740.106.000	Model Heat Pump VARIO	740.106.003	Integrated Data Logging
740.106.001	Connectors		incl. Analyzing Software

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