



**Modular equipment
systems for electrical
engineering and
electronics**

**Data and technical information
on products and components**

Our solutions

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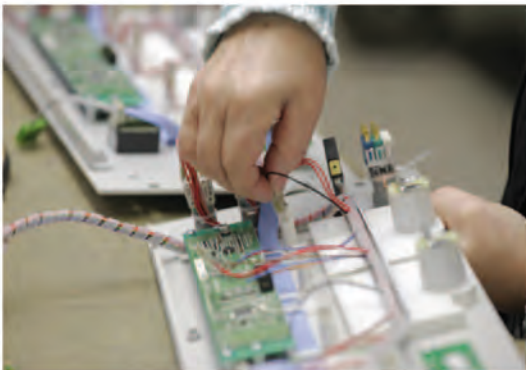
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Elabo GmbH.
Highly flexible solutions.
Efficient and economic.

Elabo is the partner for enterprises and institutions which produce or integrate electrical and electronic products and components or use those components for quality assurance. For these customers Elabo develops modular and custom-made highly flexible and very economic systems.

The range of products extends from the conception and equipment of special rooms – for example electrical labs – to a customer's individual engineering and the construction of complex quality assurance facilities.

Elabo's efficiency is based on comprehensive know-how in electrical engineering and electronics, mechanics and ergonomics, process management and logistics as well as sound knowledge of work place health, safety regulations and technical standards. Elabo is both a hardware producer and a knowledge service provider, who focuses its performances on the specific requirements of its customers. Most of our products are made in-house. The basis for Elabo's strong position is that we have the capabilities and technical facilities for high-quality realization of concepts.

Elabo, founded in 1972, has 150 employees and is today a European market leader in its field.

Elabo LabSystems provides complete turn-key solutions for quality assurance, research, development and trial, prototyping and service workshops in electric laboratories.



Elabo Electronic develops and produces test and measurement instruments and power supply devices as well as software solutions with modular programming for various test procedures. Moreover, Elabo Electronic provides the calibration of inspection equipment and their compliance with European standards.



Elabo TrainingSystems is the leading partner in basic and advanced vocational education in electrical engineering, electronics and neighboring fields. Our performance spectrum ranges from the planning and complete equipping of classrooms to the provision of all teaching materials and seminars for instructors.



Elabo AssemblySystems develops and realizes assembly workstations and assembly lines – also with integrated quality, function and safety test systems – for manual and semiautomatic production.



Elabo TestSystems provides the engineering and realization of compact test stations, complex test systems and process-integrated testing networks for comprehensive quality assurance in the electrical industry and industry sectors which utilize electronics.



Elabo ProcessControlSystems realizes process control stations for monitoring and controlling processes in industry and energy utilities, electronic data processing and computer centers, and also in traffic and building management, security engineering and many other areas.

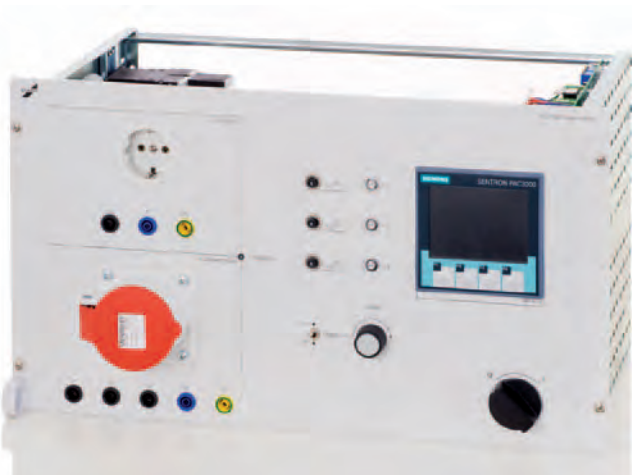


Measurement and test devices as well as power supply systems from Elabo can be mounted in superstructures or housings in the following dimensions: 3HU, 6HU and 19". The use of mounting racks increases the variety of possible combinations when equipping 6HU and 19" superstructures. Our staff provide intensive advice and planning on the equipment requirements ahead of time in order to ensure that the measurement tasks are accurately modeled.



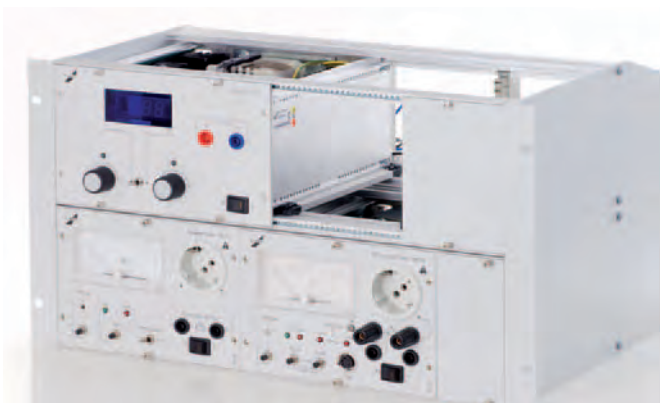
Compact reliability: 3HU

The 3HU system models tests in a space-saving way in an Elabo superstructure. Thus, all important functions can be called up and tested in a very compact space. Thanks to the modular design approach used by Elabo, 3HU devices can be mounted without difficulty also in 6HU racks as well as, if desired, in 19" racks.



Maximum performance capability: 6HU

The 6HU system is used mainly where high performance is expected from power supply systems. The plug-in units are therefore very robust and are also suitable for receiving heavy transformers and similar. In addition, by using 3HU testing and measuring devices, system racks make it possible to carry out a wide range of functions with a high packing density.



Industry standard: 19"

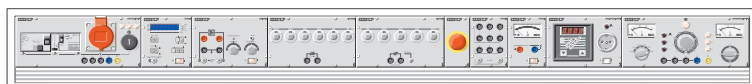
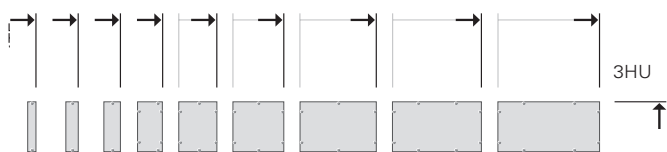
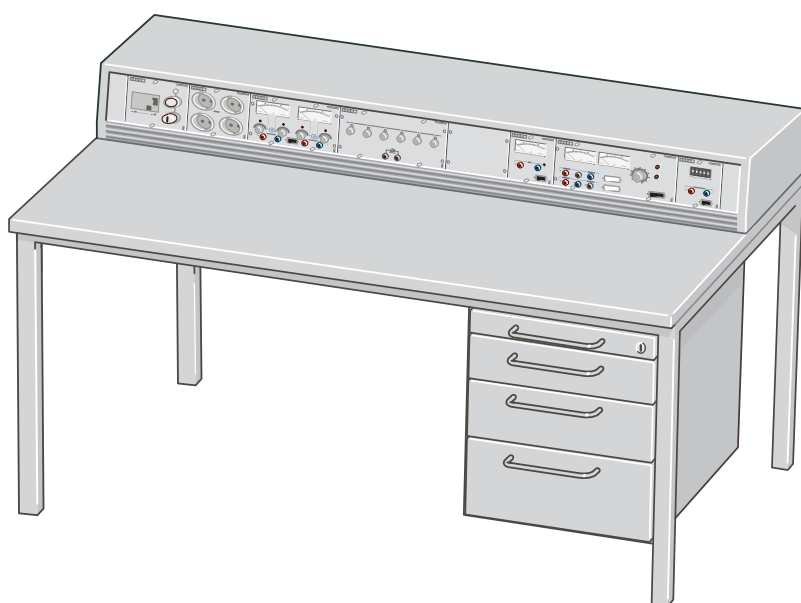
Elabo also offers table superstructures, cabinets and housings in the dimensions of the 19" industry standard. By using rack systems, 3HU and 6HU power supply modules, measuring and testing devices can also be integrated into the furniture.

System 3HU

Compatibility through standardisation. The 3HU eurocassetts and slide-in panels can be integrated into all of the corresponding modular housings and rack mounts thanks to the DIN 41494 19" dividing grid. The ability to combine them with both other Elabo and third party systems means that all possible requirements could be fulfilled.

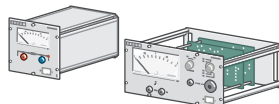
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Housing	E42

Can be combined with:
System 6HU
System 19"



All modules belonging to the Elabo eurocassette system have a uniform front panel height of 3HU = 128.5 mm. The equipment components comprise slide-in panels or cassettes for which the width is given in horizontal pitch = HP.

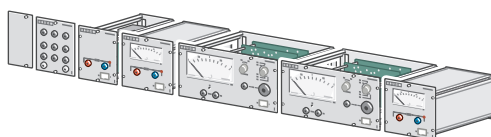
Installation variants



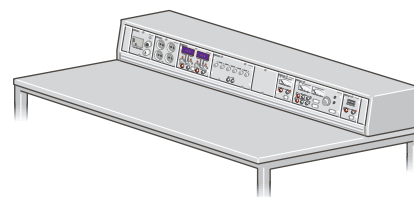
3HU eurocassetts



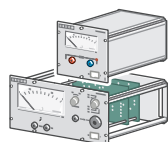
System 3HU housing



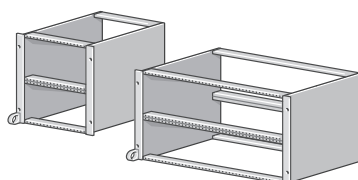
3HU eurocassetts and slide-in panels



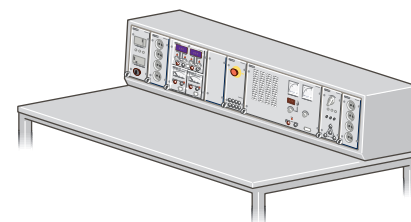
System 3HU bench rack



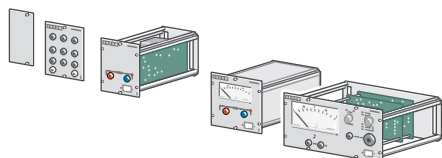
3HU eurocassetts



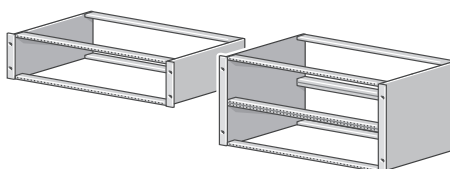
6HU system rack mount



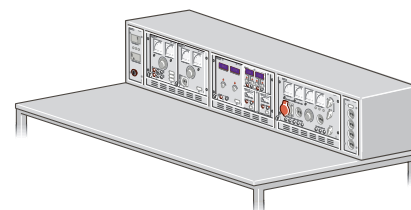
System 6HU bench rack



3HU eurocassetts and slide-in panels



19" system rack mount



System 19" bench rack

Technical information

System 3HU modules

Dimensions according to DIN 41494
1 high unit = 1 HU = 44.45 mm.
The width is determined in pitches:

4 HP	=	20.3 mm
6 HP	=	30.4 mm
8 HP	=	40.3 mm
12 HP	=	60.9 mm
18 HP	=	91.4 mm
24 HP	=	121.9 mm
36 HP	=	182.9 mm
42 HP	=	213.3 mm
48 HP	=	243.8 mm
52 HP	=	264.1 mm
60 HP	=	304.4 mm
66 HP	=	334.8 mm

Front panels:

The front panels are manufactured from 3 mm thick hardened aluminium, powder finish, colour "light grey" (similar to RAL 7035). The labeling is screen printed. Fixed panels carry simple components for which a subdrawer construction is not required.

Euro-Subdrawers are equipped with 4 sectional panels rails as well as rear panel and an 11pole multiple connector to DIN 41612.

There are also completely closed subdrawers available.

Subracks:

Subracks are required in order to mount fixed panels, subdrawers or other system compatible plug-in assemblies in the back uprights of the system 6HU and 19".

It is also possible to integrate modules of other manufacturers, providing they are made according to the DIN 41494 standard.



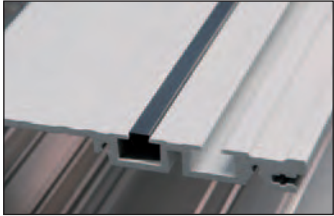



The light grey coated aluminium extruded profile makes the power supply duct suitable for installing simple power supply lines.

The duct is fastened between vertical profiles on raised bench racks, attachment elements, shelving unit racks, multi-functional lamps or between vertical profiles (to be ordered separately).

Every equipment which could be fitted into the power supply duct is marked by the following icon:






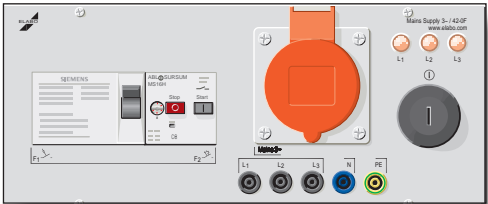


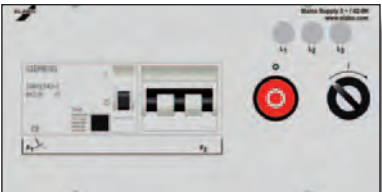










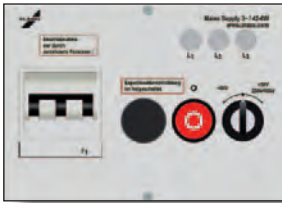

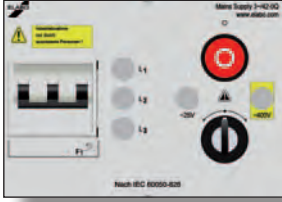


		Technical details	Order no.
Power supply duct fastened on the table		A profiled aluminum channel for accepting Elabo system 3HU plug-in panels. The aluminum channel has in each case two attachment grooves on its upper and lower sides and one such groove on its rear side. Further accessories can be attached at any point by using slot nuts. For attaching the insert panels, the aluminum channel is equipped at the front with two continuous grid strips with M 2.5 threads at a spacing of 5.08 mm. A power cable harness for supplying the installed devices comes as standard equipment.	
		accepts panels up to 388 HP incl. blank panel 14 mm B = 2000 mm, D = 160, H = 142	40-4Y
		accepts panels up to 348 HP incl. blank panel 17 mm B = 1800 mm, D = 160, H = 142	40-4A
		accepts panels up to 308 HP incl. blank panel 20 mm B = 1600 mm, D = 160, H = 142	40-4D
		accepts panels up to 288 HP incl. blank panel 22 mm B = 1500 mm, D = 160, H = 142	40-4B
		accepts panels up to 228 HP incl. blank panel 27 mm B = 1200 mm, D = 160, H = 142	40-4C
Power supply duct		accepts panels up to 372 HP incl. blank panel 25 mm B = 1928 mm, D = 160, H = 142	75-4E.3
		accepts panels up to 332 HP incl. blank panel 28 mm B = 1728 mm, D = 160, H = 142	75-4A.3
		accepts panels up to 294 HP incl. blank panel 21 mm B = 1528 mm, D = 160, H = 142	75-4D.3
		accepts panels up to 276 HP incl. blank panel 13 mm B = 1428 mm, D = 160, H = 142	75-4B.3
		accepts panels up to 216 HP incl. blank panel 18 mm B = 1128 mm, D = 160, H = 142	75-4C.3
Chase cover		suitable for channel width 8,4 mm in 3HU power supply duct, colour black W = 9 mm width, H = 7, L = 2000	81-6N
Compensation strip		strip for height compensation if a 3HU power supply duct is used instead of the interchangeable frame, colour black W = 17,5 mm, D = 6, L = 1915	81-6P



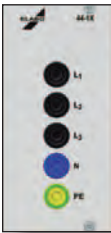






	Technical details	Order no.
Height extenders for power supply unit	Height extenders (2) for power supply duct W = 34 mm, D = 123, H = 729	78-2E ZH729



Elabo mains panels are used to turn the central power supply on and off and provide protection for bench racks. They may be mounted in any convenient location in the bench rack but are normally fitted on the left side. All cassettes and slide-in panels are fitted at the factory and are cabled ready for operation.







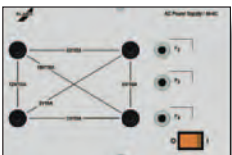


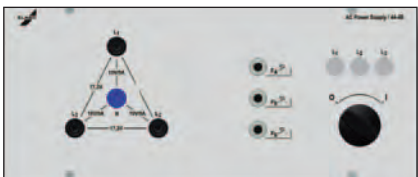

		Technical details	Order no.
Mains supply panel Breite 24 TE		Slide-in panel with 1 earth-leakage circuit breaker type A 2pole 25 A / 30 mA 1 automatic circuit breaker 16 A 1 exterior control indicator lamps 1 Off button 1 key-operated On button 1 protector	42-0B 
Mains supply panel Width 36 HP		Slide-in panel with 1 earth-leakage circuit breaker type B 25 A / 30 mA 1 automatic circuit breaker 16 A 1 key-operated On button 1 Off button 1 contactor 1 phase indicator lamp	42-0C 
Mains supply panel Width 36 HP		Slide-in panel with 1 earth-leakage circuit breaker type A 2pole 16 A / 10 mA 1 automatic circuit breaker 16 A 1 exterior control indicator lamps 1 Off button 1 key-operated On button 1 protector	42-0D 
Mains supply panel Width 60 HP		Slide-in panel with 1 earth-leakage circuit breaker 4pole type A 25 / 30 mA 1 motor protection circuit breaker 10...16 A with undervoltage trip 230 V / 50 Hz 1 key switch I/O 5 safety lab terminals L1, L2, L3, N, PE 1 CEE socket red 16 A 3 phase indicator lamps	42-0F 
		like type 42-0F, but with earth-leakage circuit breaker type B	42-0G 
Mains supply panel Width 48 HP		Slide-in panel with 1 earth-leakage circuit breaker type A 25 A / 30 mA 1 automatic circuit breaker 3pole C 16 A 1 key-operated On button 1 Off button 1 protector 3 exterior control indicator lamps	42-0H 
		like type 42-0H, but with earth-leakage circuit breaker type B	42-0J 







		Technical details	Order no.
Circuit breaker Width 18 HP		Slide-in panel with 1 earth-leakage circuit breaker type A 2pole 25 A / 30 mA	42-0K 
		like type 42-0K, but earth-leakage circuit breaker type B, 24 HP	42-0L 
Circuit breaker Width 24 HP		Slide-in panel with 1 earth-leakage circuit breaker type type A 4pole 25 A / 30 mA	42-0M 
		like type 42-0M, but earth-leakage circuit breaker type B	42-0N 
Fuse protection and switch panel Width 36 HP		Slide-in panel with 1 automatic circuit breaker 1pole C 16 A 1 key switch I/O/II 1 Off button 2 protectors 1 exterior control indicator lamps 1 signal lamp ~ 25 V 1 signal lamp ~ 230 V	42-0V 
Fuse protection and switch panel Width 36 HP		Slide-in panel with 1 automatic circuit breaker 3pole 16 C A 1 key switch I/O/II 1 Off button 2 protectors 3 exterior control indicator lamps 1 signal lamp ~ 25 V 1 signal lamp 3 ~ 400 V	42-0W 
Fuse protection and switch panel Width 36 HP		Slide-in panel with 1 automatic circuit breaker 3pole 16 C A 2 protectors 3 relays 3 exterior control indicator lamps 1 signal lamp ~ 25 V 1 signal lamp 3 ~ 400 V incl. second cable harness Release of voltage by ethernet or by key switch.	42-0Q 
		like type 42-0Q with 1 automatic circuit breaker 1pole 16 C A, 1 exterior control indicator lamps, 1 signal lamp 3 ~ 230 V, without second cable harness	42-0P 

		Technical details	Order no.
Safety lab terminals Width 12 HP		Slide-in panel with mains supply L / N / PE ~ 50 Hz with 3 safety lab terminals L1, N, PE	44-1W 
Safety lab terminals Width 12 HP		Slide-in panel with mains supply 3 / N / PE ~ 50 Hz with 5 safety lab terminals L1, L2, L3, N, PE	44-1X 
CEE socket Width 24 HP		Slide-in panel with mains supply 3 / N / PE ~ 50 Hz with 1 CEE socket	44-2C 
		Slide-in panel with mains supply 3 / N / PE ~ 50 Hz with 1 CEE socket 5 safety lab terminals L1, L2, L3, N, PE	44-2C Z001 
Emergency shutoff switch Width 12 TE		Slide-in panel with 1 Emergency shutoff switch red with a yellow signaling, not wired up	44-1J 

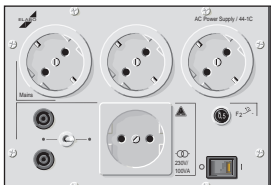
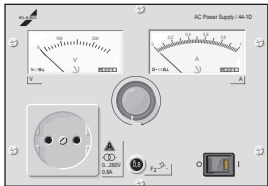
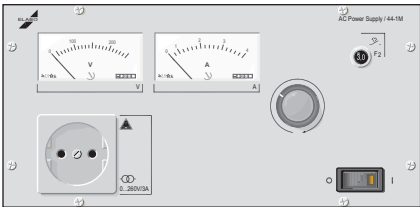
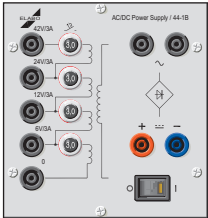
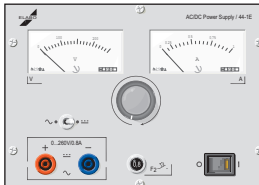


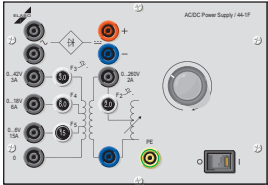

Elabo delivers worldwide. As a matter of course we therefore also offer special country solutions. Like sockets for the US, Switzerland, Great Britain or France and Denmark.

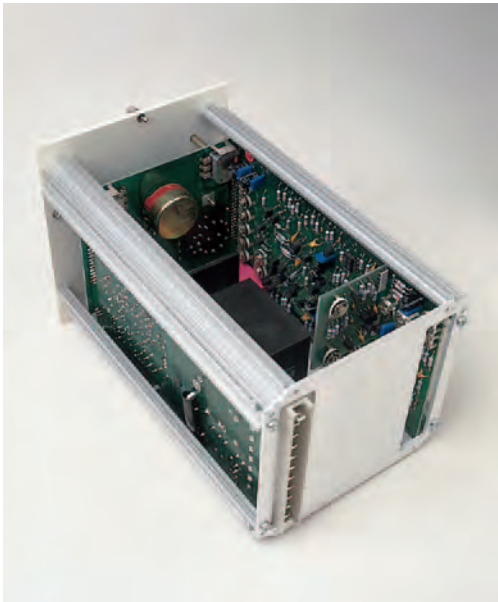
		Technical details	Order no.
AC power supply 1 ph Width 36 HP		Slide-in panel with 4 shock-proof sockets 230 V 1 shock-free socket with line current filtered 230 V / 4 A (high attenuation) 1 illuminated rocker switch	44-1K 
AC power supply 1 ph Width 24 HP	 	Slide-in panel with 4 shock-proof sockets	44-1L
		like type 44-1L but sockets Switzerland	44-1L ZC00
		like type 44-1L but sockets Denmark	44-1L ZD00
		like type 44-1L but sockets France	44-1L ZF00
		like type 44-1L but sockets Great Britain	44-1L ZG00
		like type 44-1L but sockets US	44-1L ZU00
AC power supply 1 ph Width 36 HP		Slide-in panel with 5 shock-proof sockets 1 illuminated rocker switch	44-1L Z817 
AC power supply 1 ph Width 36 HP		Slide-in panel with low AC voltage floating 230 V / 100 VA 1 illuminated rocker switch 1 thermic-magnetic circuit breaker 1 transformer with separated windings 1 socket	44-4B 
AC power supply 1 ph Width 36 HP		Slide-in panel with low AC voltage floating 2, 4, 6, 8, 10, 12 V / 10 A 1 illuminated rocker switch 1 transformer with separated windings 3 thermic-magnetic circuit breakers 4 safety lab terminals	44-4C 
AC power supply 1 ph Width 36 HP		Slide-in panel low AC voltage floating 6, 12, 18, 24, 36, 42 V / 3 A 1 illuminated rocker switch 1 transformer with separated windings 3 thermic-magnetic circuit breakers 4 safety lab terminals	44-4D 
AC power supply 1 ph Width 60 HP		Slide-in panel with three-phase current supply 3 ~ 10 / 173 V 5A 1 rotary switch I/O 3 incandescent bulbs 1 three-phase transformer with microfuses 3 thermic-magnetic circuit breakers 4 safety lab terminals	44-4E 

	Technical details	Order no.
AC power supply 1 ph Width 84 HP	Slide-in panel with direct and alternating current 0..24 V / 4 A, ungrounded, with analog displays 1 voltmeter 1 ammeter 1 isolating transformer 1 economical variable transformer 1 thermic-magnetic circuit breaker 1 illuminated rocker switch 2 safety lab terminals	44-4F 
AC power supply 1 ph Width 84 HP	Slide-in panel with AC grounded 0...260 V / 1 A and current 1 / N / PE ~ 50 1 illuminated rocker switch 1 economical variable transformer 1 thermic-magnetic circuit breaker 3 safety lab terminals 2 shock-proof sockets	44-4K 
AC power supply 1 ph Width 84 HP	Slide-in panel with AC grounded 0...260 V / 1 A and current 1 / N / PE ~ 50 with analog displays 1 illuminated rocker switch 1 economical variable transformer 1 thermic-magnetic circuit breaker 1 voltmeter 1 ammeter 3 safety lab terminals 2 shock-proof sockets	44-4L 
AC power supply 1 ph Width 84 HP	Slide-in panel with direct and alternating current grounded 0...260 V / 1 A and line current 1 / N / PE ~ 50 with analog displays 1 illuminated rocker switch 1 economical variable transformer 1 thermic-magnetic circuit breaker 6 safety lab terminals 2 shock-proof sockets	44-4M 
AC power supply 1 ph Width 76 HP	Slide-in panel with AC grounded 0...260 V / 2 A and low voltage grounded supply 0...12 V / 12 A, 0...24 V / 6 A with switchable external jumper rectifier 1 illuminated rocker switch 1 economical variable transformer 1 isolating transformer 3 thermic-magnetic circuit breakers 10 safety lab terminals 1 jumper rectifier	44-4N 
AC power supply 1 ph Width 76 HP	Slide-in panel with AC grounded 0...260 V / 2 A and low voltage grounded supply 0...6 V / 15 A, 0...18 V / 6 A, 0...42 V / 3A with switchable external jumper rectifier 1 illuminated rocker switch 1 economical variable transformer 1 transformer with separated coils 4 thermic-magnetic circuit breakers 11 safety lab terminals 1 jumper rectifier	44-4P 

Elabo cassettes can supply direct and alternating voltage to laboratory and test bay equipment. The voltage is set on a variable toroidal transformer via a rotary knob with 100% scale. Analogue moving-iron instruments with root-mean-square indication are fitted. DC output-voltage ripple is 48%.

		Technical details	Order no.
AC power supply 1 ph with isolating transformer Width 36 HP		Cassette with floating output voltage 230 V / 100 VA 1 isolating transformer 1 toggle switch to switch over from socket to safety lab terminals 1 socket without earthing contact 3 shock-proof sockets 2 safety lab terminals 1 thermic-magnetic circuit breakers 1 illuminated rocker switch	44-1C
AC power supply 3 ph Width 66 HP		Cassette with not floating three phase voltage 0...400 V / 3 A with analogue displays	44-1R
Adjustable AC power supply Width 36 HP		Cassette with floating, adjustable output voltage 0...260 V / 0,8 A 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...1 A 1 thermic-magnetic circuit breakers 1 shock-proof socket 1 illuminated rocker switch	44-1D
Adjustable AC power supply Width 52 HP		Cassette with floating, adjustable output voltage 0...260 V / 3 A Rating: 0...3 A, transient 4 A over the whole range 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...4 A 1 thermic-magnetic circuit breakers 1 shock-proof socket 1 illuminated rocker switch	44-1M
AC/DC power supply Breite 24 TE		Cassette with floating AC low voltage supply 6,12,18, 24, 30, 36 and 42 V / 3 A 1 externally switchable bridge rectifier (B2) 4 thermic-magnetic circuit breakers 9 safety lab terminals 1 illuminated rocker switch	44-1B
Adjustable AC/DC power supply Width 36 HP		Cassette with floating AC 0...260 V / 0,8 A switchable to DC 1 voltmeter 0... 300 V 1 ammeter 0... 1 A 1 thermic-magnetic circuit breaker 2 safety lab terminals 1 illuminated rocker switch	44-1E

	Technical details	Order no.
Adjustable AC/DC power supply Width 36 HP	Cassette with floating 0...30 V / 4 A, switchable to DC 1 voltmeter 0... 30 V 1 ammeter 0... 4 A 1 thermic-magnetic circuit breakers 2 safety lab terminals 1 illuminated rocker switch	44-1G
Adjustable AC/DC power supply Width 36 HP	 Cassette with steplessly adjustable AC and DC 0...260 V / 2 A not floating 0... 42 V / 3 A floating 0... 18 V / 6 A floating 0... 6 V / 15 A floating 1 separate bridge rectifier (B2) 4 thermic-magnetic circuit breakers 10 safety lab terminals 1 illuminated rocker switch	44-1F
Adjustable AC/DC power supply Width 52 HP	 Cassette with steplessly adjustable floating AC voltage 0...260 V / 3 A or 0...50 V / 10 A switchable to DC 1 voltmeter Range 1 0... 300 V Range 2 0... 50 V 1 ammeter Range 1 0... 4 A Range 2 0... 10 A Additional precaution: When switching from DC to AC or from extra low to low voltage, or vice versa, the load must be disconnected from the safety lab terminals. 2 thermic-magnetic circuit breakers 2 x 3 safety lab terminals 2 rocker switches 1 illuminated rocker switch	44-1P



Elabo plug-in panels and Elabo cassettes are constantly being adapted. Materials and technologies change in accordance with the requirements in the field of research and development and also in service and other sectors where electrical engineering and electrical applications are part of everyday operations.


























For many years now, Elabo has been offering a wide range of interface types. To these has now been added the possibility of installing an Ethernet interface on the rear side.

Ethernet technology offers a host of advantages when creating networks and processing information by EDP. Because other manufacturers of measuring devices and of automation components have also

adopted this technology, integration into a common network and the processing of various equipment data are possible. Alternatively, the RS232 and USB interfaces are of course still available.









More information on the Ethernet, RS232 and USB interfaces can be found in the chapter "Virtual Testing Laboratory", starting on page 44. Here, in addition to information about our Elabo EHP-Lab software (function testing, long-term and repeat tests and documentation of measuring results by EDP), you will also find a listing of all devices with interface technology (3HU, 6HU and 19").






	Technical details	Order no.
LPT Width 6 HP	SUB-D 25-pol female	46-7A 
COM / RS232 Width 6 HP	SUB-D 25-pol male SUB-D 9-pol male	46-7B 46-7C 
VGA Width 6 HP	SUB-D HD 15-pol female	46-7D 
DVI-I Width 6 HP	female	46-7E 
S-VHS Width 6 HP	Mini-DIN, 4-pol female	46-7M 
USB Width 6 HP	2 x USB, type A, female	46-7F 
PS/2 Width 6 HP	2 x PS/2, Mini-DIN, 6-pol female	46-7G 
Audio Width 6 HP	2 x Audio, cinch, red and white, female	46-7H 
Audio Width 6 HP	Jack socket 3,5 mm, stereo	46-7J 
FireWire Width 6 HP	IEEE-1394, 6-pol	46-7K 
RJ-45 Width 6 HP	8-pol female	46-7L 
RJ-45 Width 18 HP	Slide-in panel with 1 dual socket RJ45	44-2D 

	Technical details	Order no.
Flush-mounting box Width 18 HP	Slide-in panel with 1 flush-mounting box for installing an antenna, net- work or telephone outlet	40-1B Z004 
Antenna box Width 18 HP	Slide-in panel with 1 antenna outlet for radio, TV, SAT	44-2E 
IEEE 488 interface Width 6 HP	 GPIB, 24-pol female	46-7N  installable into 3HU power duct
Mounting rail Width 6 HP	 Slide-in panel with mounting rail with 2 BNC boxes 50 Ohm	46-7P  installable into 3HU power duct
ASi interface Width 6 HP	Slide-in panel interface ASi with 4 safety lab terminals 4 mm	46-7Q 
PROFI NET interface Width 6 HP	Slide-in panel PROFI NET with 1 RJ45 socket 8 pol 1 3 m patch cable	46-7R 
PROFI BUS interface Width 6 HP	Slide-in panel PROFI BUS with 1 Sub-D adapter 9 pol male with mating connector female	46-7S 
HDMI interface Width 6 HP	Slide-in panel with 1 HDMI connector type A 1 3 m patch cable and mating connector	46-7T 
Multiple interfaces Width 24 HP	Slide-in panel with 2 USB connectors type A female 2 PS/2 Mini-DIN 6 pol connectors female 1 Sub-D connectors 9 pol male 1 Sub-D connectors 15 pol HD female each with ca. 2 m connection cable and mating connector 2 Jack socket 3,5 mm Stereo with ca. 3 m connection cable and mating connector 1 RJ45 socket 8 pol on both sides pluggable	46-7V  installable into 3HU power duct



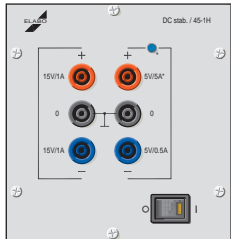

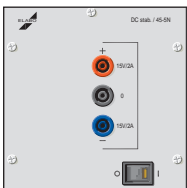
Elabo offers also a broad range of measuring equipment.

	Technical details	Order no.
DC stabilizer with fixed voltage output Width 36 HP	Slide-in panel with linear regulated stabilizer 5 V / 3 A with 1 illuminated rocker switch 2 safety lab terminals	45-5R 
DC stabilizer with fixed voltage output Width 60 HP	Slide-in panel with linear regulated stabilizers 2 x 15 V / 2 A equipment can be switched in parallel or series	45-5S 
DC stabilizer with fixed voltage output Width 36 HP	Slide-in panel with DC stabilizer with clocked output voltage ± 15 V / 2 A outputs to 3 safety lab terminals Rated power: 2 x 30 W Residual ripple: 120 mVp-p Voltage tolerance: $\pm 1.0\%$ Line regulation: $\pm 0,5\%$ Load regulation: $\pm 0,5\%$	45-5W 
DC stabilizer with fixed voltage output Width 52 HP	Slide-in panel with DC stabilizer with clocked output voltage 24 V / 6 A outputs to 2 safety lab terminals Rated power: 150 W Residual ripple: 150 mVp-p Voltage tolerance: $\pm 1.0\%$ Line regulation: $\pm 0,5\%$ Load regulation: $\pm 0,5\%$	45-5X 
DC stabilizer Width 76 HP 	Slide-in panel with DC stabilizer 0...30 V / 0...2 A 1 digital display V/A switchable 2 ten-turn potentiometer 1 preset for voltage and current limitation	45-1Y Z801 
DC stabilizer Width 60 HP	Slide-in panel with DC stabilizer 0...30 V / 0...1,5 A 1 digital display V/A switchable 2 ten-turn potentiometer	45-5F 
DC stabilizer Width 60 HP	Slide-in panel with DC stabilizer 0...30 V / 0...3 A 1 digital display V/A switchable 2 ten-turn potentiometer	45-5G 

	Technical details	Order no.
DC stabilizer Width 60 HP	Slide-in panel with DC stabilizer 2 x 0...15 V / 0...2 A 2 digital voltmeter and ammeter 2 x 2 ten turn potentiometers	45-5T 
DC stabilizer Width 60 HP	Slide-in panel with DC stabilizer 2 x 0...30 V / 0...1 A 2 digital voltmeter and ammeter 2 x 2 ten turn potentiometers	45-5U 
DC stabilizer Width 84 HP 	 Slide-in panel with DC stabilizer 2 x 0...30 V / 0...2 A 2 switchable digital displays 2 presets for voltage and current limitation voltage and current are adjustable steplessly 2 x 2 ten turn potentiometer	45-5U Z801 








Regulated DC power supplies with stabilized DC output in voltage and current regulated versions. Fixed output supplies for logic circuits, microprocessors and peripheral modules include up to four different sources. The outputs are galvanically isolated and floating.

	Technical details	Order no.	
DC stabilizer with fixed voltage output Width 18 HP	Cassette with DC stabilizer with fixed voltage output Ripple of output voltage: < 5 mV Transient time: 100 ms load stabilization: 0,1 % temperature coefficient: 0,01 %/°C 2 safety lab terminals, 1 illuminated rocker switch		
	Voltage / current 5 V / 3 A 15 V / 1,5 A 24 V / 1 A 24V / 3 A (24 HP)	45-1A 45-1B 45-1C 45-2M	
DC stabilizer with fixed voltage output Width 18 HP	Cassette with DC stabilizer with fixed voltage output Voltage / current 5 V / 12 A primary switched regulation with mains filter	45-2J	
DC stabilizer for microprocessors Width 24 HP		Cassette with DC stabilizer for generating all needed voltages for microprocessors and peripheral modules: All supplies are equipped with a fixed voltage limitation and a voltage surge protection (OVP). Residual ripple: < 20 mV Recovery time: ca. 100 µs 6 safety lab terminals 1 illuminated rocker switch voltage / current 1: +5 V / 5 A, floating, galvanically isolated from output terminals 3 and 4 2: -5 V / 0,5 A, floating 3: +12 V / 1 A, floating 4: -12 V / 1 A, floating	45-1G
	like type 45-1G, but with voltage / current 1: +5 V / 5 A, floating, galvanically isolated from output terminals 3 and 4 2: -5 V / 0,5 A, floating 3: +15 V / 1 A, floating 4: -15 V / 1 A, floating	45-1H	
DC stabilizer Width 24 HP	 	DC stabilizer in switching regulator version Transient time: maximal 500 µs 2-3 safety lab terminals 1 illuminated rocker switch	
	voltage / current 5 V / 5 A +/- 15 V / 2 A 24 V / 6 A	Residual ripple 80 mVp-p 120 mVp-p 150 mVp-p	45-5M 45-5N 45-5P

	Technische Daten	Best.-Nr.
Dual DC stabilizer Width 18 TE	Cassette with dual DC stabilizer Line regulation: < 0,12 % Load regulation (no-load/full load): < 0,9 % Residual ripple: < 1 mV _{eff} < 5,0 mV _{ss} Recovery time: max. 50µs, measured at a modulation of between 20 and 100 % at 1kHz and recovery within 0,1 % U _N Temperature coefficient: < ± 150 ppm / K 4 safety lab terminals 1 illuminated lab terminals	
	DC voltage 2 x 12 V 2 x 15 V	DC current 2 x 1,0 A 2 x 1,0 A 45-2S 45-2T





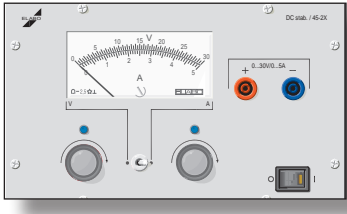
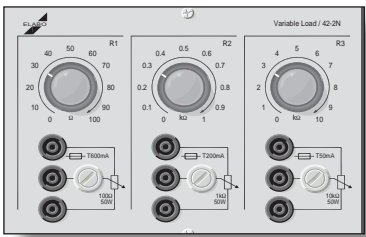



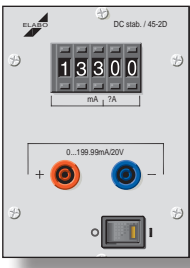

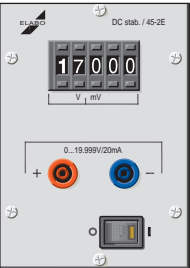
Elabo regulated DC power supply cassettes with steplessly variable output voltage are all fitted with switchable analogue or digital displays. High resolution ten turn potentiometers are installed for setting the voltage and current limits. Unless otherwise noted, all mains power supplies are linear regulated in the interest of noise immunity.

		Technical details	Order no.
AC stabilizer Width 66 HP	 	Cassette with AC floating output 2...260 V / 2 A. Electro-mechanical stabilization 1 digital display 4-digit for voltage 1 digital display 4-digit for current	44-5M
DC stabilizer Width 66 HP		Cassette with DC stabilizer 0...60 V / 0...5 A 2 digital displays for voltage and current 1 ten-turn potentiometer	45-2X Z803
DC stabilizer Width 66 HP		Cassette with DC stabilizer 0...30 V / 0...10 A 2 digital displays 4-digit for voltage and current 1 ten-turn potentiometer 1 preset for voltage and current limitation	45-2X Z807
DC stabilizer with digital display V/A Width 42 HP		Cassette with DC stabilizer 0...30 V / 0...5 A 1 illuminated rocker switch 2 ten-turn potentiometers 2 LEDs 1 switch V/A 1 safety lab terminal	45-2X Z001
DC stabilizer with digital display Width 24 HP		Cassette with DC stabilizer 0...30 V / 1 A 1 4-digit digital instruments, switchable between voltage display 0...30 V and current display 0... 1 A 2 LEDs for indicating 'voltage regulated' or 'current regulated' 1 preset for voltage and current limitation 2 ten-turn potentiometers 2 safety lab terminals 1 illuminated rocker switch	45-1P
Dual DC stabilizer with digital displays Width 36 HP	 	Cassette with dual DC stabilizer 2 x 0...15 V / 2 x 0...2 A 2 4-digit digital instruments, switchable between voltage display 0...15 V and current display 0... 2 A 2 x 2 LED's for indicating 'voltage regulated' or 'current regulated' 2 x preset for voltage and current limitation 4 ten-turn potentiometers 2 safety lab terminals 1 illuminated rocker switch	45-1U

Technical data for variable output DC regulated power supplies:

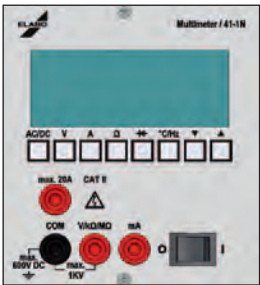
- Residual ripple of output voltage: 1 mV_{eff}
- Recovery time: 50 µs
- Temperature coefficient: 0,01 % / °C
- Load regulation: 0,015 %
- Ambient temperature: 0...45 °C

	Technical details	Order no.
Dual DC stabilizer with digital displays Width 42 HP  	Cassette with dual DC stabilizer 2 x 0...30 V / 2 x 0...2 A 2 4-digit digital instruments, switchable between voltage display 0...30 V and current display 0... 2 A 2 x 2 LED's for indicating 'voltage regulated' or 'current regulated' 2 x preset for voltage and current limitation 4 ten-turn helical potentiometers 4 safety lab terminal 1 illuminated rocker switch	45-0K
Dual DC stabilizer with fixed output voltage Width 42 HP 	Cassette with dual DC stabilizer 2 x 0...30 V / 2 x 0...2 A with additional 5 V / 3 A fixed output voltage 2 4-digit digital instruments, switchable between voltage display 0...30 V and current display 0... 2 A 2 x 2 LED's for indicating 'voltage regulated' or 'current regulated' 2 preset for voltage and current limitation 4 ten-turn helical potentiometers 4 safety lab terminals 1 illuminated rocker switch	45-0L
Further DC stabilizers 	DC voltage 0..15 V, DC current 0..2A, digital display, Width 24 HP DC voltage 0..30 V, DC current 0..2A, digital display, Width 24 HP	45-1N 45-1Y
DC stabilizer analogue Width 42 HP 	Cassette with DC stabilizer 0...30V / 0...5 A The output voltage and the current limit can be set continuously over the whole range. Residual ripple of output voltage: < 10 mVeff Recovery time: < 50 µs Load regulation: < 0,01 % Temperature coefficient: < 0,01 % / °C Ambient Temperature: 0...50 °C 1 moving-coil instrument, switchable between voltage display 0...30 V und current display 0... 5 A 2 LED's for indicating 'voltage regulated' or 'current regulated' 1 secondary switched regulator followed by a linear regulation drive. Due to this way of regulation, the dissipated power of the regulation device can be kept relatively low compared to power supplies with a linear regulation. 2 ten turn helical potentiometers 2 safety lab terminals 1 illuminated rocker switch	45-2X
Load resistances Width 36 HP 	Cassette mit 3 adjustable load resistances, max. load for each resistor is 50 W; Resistance values: 0...100 Ohm / 50 W 0... 1 kOhm / 50 W 0...10 kOhm / 50 W 3 fine wire fuses 9 safety lab terminals	42-2N

		Technical details	Order no.
Constant current supply Width 18 HP		<p>Cassette with constant current supply in 6 ranges: 10 μA...100 μA / 1 mA / 10 mA / 20 mA / 200 mA</p> <p>Adjustable range: ca. 0,2% from range up to the final value of the range</p> <p>Voltage level difference: maximal 20 V</p> <p>Temperature coefficient: 100 ppm / K</p> <p>1 ten-turn helical potentiometer with which a current can be set between appr. 0.2% of the total range at its maximum</p> <p>2 safety lab terminals</p> <p>1 illuminated rocker switch</p>	45-2C
Constant current supply Width 18 HP		<p>Cassette with constant current supply</p> <p>Current range: 0...199,99 mA</p> <p>Resolution: 10 μA</p> <p>Setting: by means of a 41/2-digit potentiometer</p> <p>Voltage level difference: max. 28 V</p> <p>Internal resistance: > 10 MΩ</p> <p>Nonlinearity: 0,15 %</p> <p>Temperature coefficient: 100 ppm / K</p> <p>2 safety lab terminals</p> <p>1 illuminated rocker switch</p>	45-2D
Constant current supply Width 24 HP		<p>Cassette with constant current supply with fixed values</p> <p>Current ranges: 4 mA, 20 mA, 50 mA, setting by step switch</p> <p>Continuously adjustable range: 0...50 mA adjustably by ten-turn potentiometer</p> <p>Display: 4-digit LED, 11 mm high</p> <p>Resolution for variable operation: 0,1 mA</p> <p>Voltage level difference: 20 V</p> <p>Internal resistance: > 5 MΩ</p> <p>Nonlinearity: 0,15 %</p> <p>Temperature coefficient: 150 ppm / K</p> <p>Residual ripple: 0,02 %</p> <p>2 safety lab terminals</p> <p>1 illuminated rocker switch</p>	45-2G
Constant current supply Width 18 HP		<p>Cassette with constant current supply</p> <p>Current ranges: 0...19,999 V</p> <p>Resolution: 1 mV</p> <p>Setting: by means of a 4½-digit potentiometer</p> <p>Output current: max. 20 mA</p> <p>Short circuit current: 40 mA</p> <p>Internal resistance: > 3 Ω</p> <p>Nonlinearity: 0,15 %</p> <p>Temperature coefficient: 50 ppm / K</p> <p>Load regulation: 0,015 %</p> <p>Residual ripple: max. 0,3 mV</p> <p>2 safety lab terminals</p> <p>1 illuminated rocker switch</p>	45-2E



Multimeter
Width 52 HP



Digital multimeter
Width 24 HP



Cassette with multimeter with dual display, manufactured by Philips, Fluke 45.

The vacuum fluorescence dual display allows two parameters of an input signal to be read simultaneously. In comparison mode it is also possible to arrange a measurement result above and below a certain range.

- True effective value measurement
- Frequency measurements up to and above 1 MHz
- 1µV DC voltage sensitivity
- Variable decibel impedance reference values and measurement of audio-sound amplifier power
- Selectable display resolution of 100,000; 30,000 and 3,000 digits at display rates of 2.5, 5, and 20 measurements per second.
- Built-in self-test routines and software calibration
- Diode and continuity test
- Overvoltage protection

DC voltage measurement range: 100 mV-750 V

Direct current (DC): 10 mA-10 A

AC current: 10 mA-10 A

AC true effective voltage: 100 mV-1000 V

Measuring range frequency: 1000 Hz-1000 kHz

Frequency range: 5 Hz ... > 1 MHz

Voltage supply: 90-240 V/AC

Measuring range resistance: 100 Ω-30 MΩ

Operating temperature range: 0° ... 50° C

Mains voltage: 90... 264 V AC, 50 and 60 Hz, <15 VA

Interface: RS232

Optionally available: Interface IEEE-488

Specifications available on request.

Plug-in panel with 5½-digit digital multimeter
Display: LCD with blue background lighting

DC voltage measurement

Range: 0.2 - 2 - 20 - 200 - 1000 V

Max. resolution: 10 µV (in the 200 mV range)

Input resistance : > 10 MΩ

DC measurement

Range: 0.2 - 2 - 20 - 200 - 2000 mA - 20 A

Max. resolution: 100 nA (in the 200 µA range)

AC voltage measurement

Range: 0.2 - 2 - 20 - 200 - 750 V

Max. resolution 10 µV (in the 200 mV range)

True effective value rectifier with crest factor of max 7

AC measurement

Range: 0.2 - 2 - 20 - 200 - 2000 mA - 20 A

Max. resolution: 10 nA (in the 200 µA range)

Resistance measurement

Range: 0.2kΩ - 2kΩ - 20kΩ - 200 kΩ - 2MΩ - 20MΩ

Max. resolution: 10 mΩ (in the 200 kΩ range)

Max. permissible measurement voltage: 230 V AC

Temperature measurement

Range -100...+250 with PT 100 sensor

Frequency measurement

Range 0 ... 50 kHz

Diode test


Measuring range switchover: automatic / manual switchover

Base accuracy: 0.05%




Specifications available on request

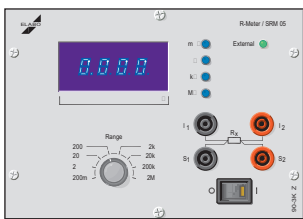
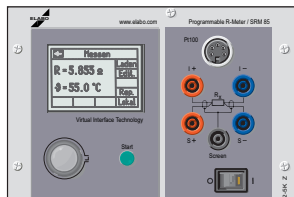
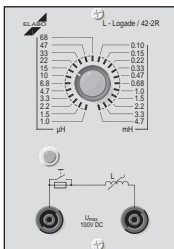

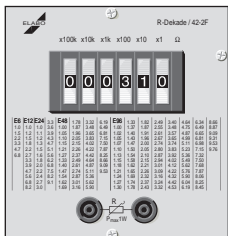



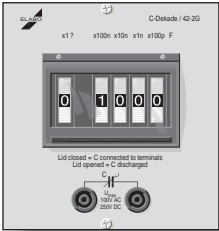

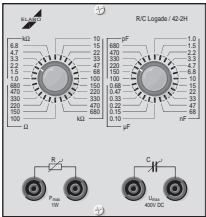

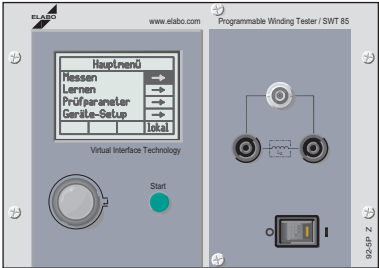
PC oscilloscopes are easy to use and are wholly operated via the supplied software. The user can thus benefit from all the advantages of the PC as regards storage capacity and display. Thanks to the Windows interface the device can be operated with the same familiar ease as standard applications and programs.

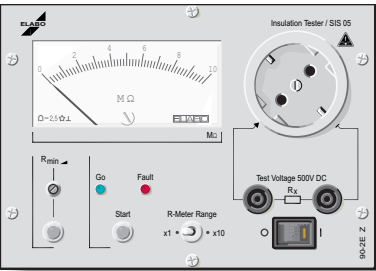
	Technical details	Order no.
<div>PC oscilloscope 2-channel</div> <div>Width 52 HP</div> <div></div>	<div></div> <div>Plug-in panel with PC oscilloscope, including Ethernet interface, manufacturer: Metrix Bandwidth: 150 MHz, bandwidth filter for 15 MHz, 1.5 MHz or 5 kHz 2 channels, Class 1 Vertical: 2.5 mV /div - 100 V / div up to 250 iV /div with Y-gain Time bases: 35 ranges from 1 ns/div up to 200 s/div Horizontal zoom: from x1 to x100, sequence 1-2-5 (display of 500 for 10 div) Trigger: Auto, triggered, single-shot Trigger source: CH1, CH2, EXT, mains Type: Flank, pulse width or delay (40 ns - 10.5 s) count (2-16384 events), TV (525 = NTSC, 625 = PAL/SECAM), pretrigger adjustable from 0 to 100%, hold-off (40 ns - 10.5 s) Max. sampling rate: Repeating signals = 100 MS/s, single shot = 200 MS/s Vertical resolution: 10 bit (9 used) Memory depth: 50,000 points (memory capacity depends on the PC used) Persistence: 100 ms, 200 ms, 500 ms, 1 s, 2 s, 5 s, 10 s and infinite Acquisition rate: 50 kwaveforms/s/channel Display of acquired samples: 19 MS/s/channel FFT: (Calculated over 2048 points), +, -, x, /-Editor for individual measurement functions Manual cursors: (dv, dt), PHASE and free Automatic measurements: 2-19 measurements of 19 + automatic phase, on all types of curves, markers and limiters Sampling duration: from 2 s to 31 days Sampling rate: With intervals of 40 µs to 53.57 s Scope of analysis: Base velocity up to the 31st harmonic, in 1 to 2 channels and at the same time a base oscillation of 40 Hz to 1 kHz. Evaluation: Permanent display of RMS value and THD - for selected harmonics: % F, phase, frequency, VRMS Optionally available: Differential voltage sensors.</div>	41-1Q Z102
<div>PC oscilloscope 4-channel</div> <div>Width 52 HP</div> <div></div>	<div></div> <div>like type 41-1Q Z102, but 4 channels, Class 1 Trigger source: CH1, CH2, CH3, CH4, EXT, Netz</div>	41-1R Z102

The Elabo RCL meter cassette is suitable for the exact determination of resistances, capacitances and inductances. With automatic function selection and autoranging this unit can be used to measure passive components quickly, with high precision and over wide ranges. The unit is particularly suited for laboratory applications, for quality control, in customer service workshops and for education and training purposes.

		Technical details	Order no.
RCL meter Width 66 HP		<p>Cassette with RCL meter Fluke PM 6303 A</p> <p>Connection: By means of two terminals. As optional features are a four-wire test lead or a four-pole test adapter available.</p> <p>Measurement ranges:</p> <p>Resistance R 0 Ohm ... 200 MOhm, Capacitance C 0 pF ... 100 mF, Inductance L 0 µH ... 32 kH, Quality factor Q 0,002 ... 500, Dissipation factor D 0,002 ... 500</p> <p>Measurement rate: 2 / s</p> <p>Max. resolution:</p> <p>R 1 mOhm; C 0,1 pF; L 0,1 µH; Q 0,001; D 0,001</p> <p>Inaccuracy: basic error $\pm 0,25\%$ ± 1 Digit</p> <p>Display: LCD 4.digit for numerical value, dimensions and the equivalent circuit symbol</p> <p>Parameter display:</p> <p>Quality factor Q, Dissipation factor D, Parallel resistance Rp, Series resistance Rs, Impedance Z, Parallel capacitance Cp, Parallel inductance Lp, Series capacitance Cs, Series inductance Ls, Phase angle.</p> <p>In the RCL AUTO mode the dominant component, either R, C or L of the component under test is automatically selected for display.</p>	41-1M
Continuity tester Width 12 HP		<p>Cassette with electronic continuity tester for checking wires, cables etc. and for checking resistors, capacitors and coils. The pitch of the generator audio signal varies from 50 Hz to appr. 3 kHz as the resistance of the test object changes. Measuring up to appr. 3 MOhm.</p> <p>Input: reverse voltage protected up to 400 V AC</p> <p>Volume: controlled by potentiometer; up to appr. 100 dB at 10 cm distance</p> <ul style="list-style-type: none"> 1 volume control 2 safety lab terminals 1 illuminated rocker switch 	42-1F
LF meter Width 24 HP		<p>Cassette with LF tester with signal tracer for use in the fields of radio and TV service as well as for wireless sets</p> <ul style="list-style-type: none"> 1 multiple connector 1 loud speaker 3 W / 100...15 000 Hz as signal control device 1 demodulator connected to BNC-input to trace amplitude modulated signals 1 volume control 1 powermeter for the LF output power of the test object 4 safety lab terminals 1 illuminated rocker switch 	43-1F

Digital ohmmeter Width 36 HP		<p>Cassette with digital ohmmeter for use in labs, production or for application in automatic test systems.</p> <p>Technical data:</p> <p>Ranges: 8 ranges from 200 mOhm...2 MOhm</p> <p>Display: 4½-digit 7 segment LED display</p> <p>Measuring currents: 100 mA ...1 µA</p> <p>Inaccuracy: 0,1 % of reading, + 0,005 % of reading/K, + 2 Digit</p> <p>Fault monitoring: CURRENT; SENSE; OVERLOAD; POLARITY</p> <p>Reference temperature: 20 °C</p> <p>4 safety lab terminals</p> <p>1 illuminated rocker switch</p>	90-3K								
Digital ohmmeter Width 36 HP		<p>Cassette with digital ohmmeter for use in labs, production or for application in test departments. The unit is equipped with an LG-Graphic-Display</p> <p>Technical data:</p> <p>Ranges: 8 ranges from 200 mOhm...2 MOhm - 50° C...200° C</p> <p>Measurement currents: 100 mA ...1 µA</p> <p>Inaccuracy: +/- 0,1 % reading, + 0,05 % reading/K, + 2 Digit</p> <p>Measuring rate: max. 3/s</p> <p>Memory: 300 parameter blocks</p> <p>Interfaces: CAN/RS232</p> <p>Connections: 5 safety lab terminals, 1 multiple connector</p>	92-5K								
Inductance logade Width 18 HP		<p>Slide-in panel with inductance logade 1 ...4700 µH</p> <p>Selections: 23 values, graded according to E6 series, to be set by rotary switch</p> <p>Inaccuracy: 1...33 µH, ± 10 % 47...4700 µH, ± 5 %</p> <p>Operating voltage: max. 100 V DC</p> <p>Current rating: max. 63 mA, protected by fine wire fuse</p> <p>2 safety lab terminals</p>	42-2R 								
R decade Width 24 HP		<p>Slide-in panel with R decade 1 Ohm...999,999 kOhm, can be selected in steps of 10Ohm by means of 6 preselector switches and shown in large numerals on the display.</p> <p>Tolerances:</p> <table><tr><td>1 Ohm... 9 Ohm</td><td>< 10 % + 0,9 Ohm</td></tr><tr><td>10 Ohm... 99 Ohm</td><td>< 2 % + 0,9 Ohm</td></tr><tr><td>100 Ohm... 999 Ohm</td><td>< 1 % + 0,9 Ohm</td></tr><tr><td>> 1000 Ohm</td><td>< 1 %</td></tr></table> <p>Load: max. 1 W</p> <p>Supply voltage: max. 250 V AC maximal 50 V DC</p>	1 Ohm... 9 Ohm	< 10 % + 0,9 Ohm	10 Ohm... 99 Ohm	< 2 % + 0,9 Ohm	100 Ohm... 999 Ohm	< 1 % + 0,9 Ohm	> 1000 Ohm	< 1 %	42-2F 
1 Ohm... 9 Ohm	< 10 % + 0,9 Ohm										
10 Ohm... 99 Ohm	< 2 % + 0,9 Ohm										
100 Ohm... 999 Ohm	< 1 % + 0,9 Ohm										
> 1000 Ohm	< 1 %										

	Technical details	Order no.
<div>C decade</div> <div>Width 24 HP</div> <div></div>	<div>Slide-in panel with C decade 100 pF..9,9999 µF, can be selected in steps of 100pF by means of 5 preselector switches and shown in large numerals on the display.</div> <div>Tolerance: 100 pF..1000 pF ± 10 % > 1000 pF ± 2 %</div> <div>Permissible operating voltage: 250 V DC</div>	<div>42-2G</div> <div></div>
<div>RC decade</div> <div>Width 24 HP</div> <div></div>	<div>Slide-in panel with RC logade</div> <div>Resistance range: 100 Ohm ... 680 kOhm ± 2 %</div> <div>Load: max. 0,5 W</div> <div>Permissible input voltage: 500 V DC</div> <div>Capacitance range: 100 pF ... 0,68 µF ± 10 %</div> <div>4 safety lab terminals</div>	<div>42-2H</div> <div></div>
<div>Winding tester</div> <div>Width 36 HP</div> <div></div>	<div>Cassette with digital winding tester for comparative measurements.</div> <div>With the Elabo-developed winding tester procedure WPV fast results can be obtained on the quality of the test-piece windings. The unit can be used in manual and automated applications in production environments where a rapid "pass/fail" decision is of particular importance.</div> <div>Measurement frequency: 5...200 kHz</div> <div>Measurement error: < 0,5% of range</div> <div>Test voltage: < 24 V</div> <div>Limiting values: +/- 99% in 1% steps</div> <div>Display: LC graphic display 128 x 64 pixels</div> <div>Resolution: 12 bit</div> <div>3 safety lab terminals</div> <div>1 illuminated rocket switch</div> <div>Interturn faults arise if damage occurs to the varnish insulation thereby allowing individual coils of a winding to short circuit. In most cases no immediate adverse effects are apparent, but interturn faults are frequently the cause of late failures.</div>	<div>92-5P</div>



Insulation Tester
Width 36 HP

Cassette to measure the insulation resistance of equipment and systems when de-energized in accordance with the relevant regulations.

Measuring voltage: 500 V DC, stabilized

Measuring current: max. 3 mA; no further safety measures are necessary for the operator

Functions: insulation measurement in accordance to VDE 0100, 0701 etc.

Limiting values: a bottom limit value of insulation resistance can be set by means of a trimmer potentiometer on the front panel

Display: analogue instrument with linear scale
0...10 MOhm / 0...100 MOhm

Item on test: alternatively to an earthing contact socket outlet or to two laboratory terminals

Fault alarm: If a value is recorded less than the limit value during the test a visual fault alarm is given (a red LED "Fault") otherwise a green LED signals "Pass". An audible signal is given at the same time (either "Pass" or "Fault").

Evaluation: analogue divider - therefore very accurate measurements

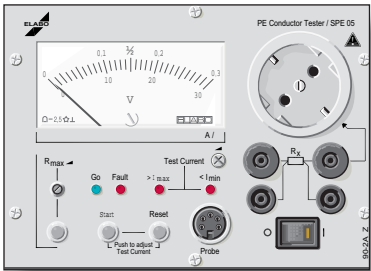
Outputs: analogue 0...10 V = 0...10 MOhm / 100 MOhm for application in automatic test systems. Two floating relay outputs for the lower limit and one internal adjustable limit for contact monitoring. Relay outputs, start signal, test voltage and analogue signal are available at a DIN41612 terminal strip at the rear.

Interfaces: optional feature RS 232 / IEEE-488

Inaccuracy: < 5% f.s.

Ambient temperature: +10°C...50°C

90-2E



Earth wire resistance tester
Width 36 HP

Measurement current: Preselectable between 10...25, the resistance is calculated from current and voltage.

Display: Analogue instrument with scale from 0...0,3 Ohm; there is a range changing button for 0...30 A.

Connection for test item: Alternatively to an earthing contact socket outlet or to two laboratory terminals. There are also two further safety lab terminals for using probe leads for the compensation of feeder and contact resistance.

Limiting values: Pressing the 'Rmax' button enables a maximum permitted value of resistance to be set. The tester also has an internally adjustable limit for the minimal test current.

Start of test: In order to prevent sticking of contacts at the measuring points on the item being tested, the test current does not start flowing until the "Start" button has been pressed. When the test probe is used the current is switched on automatically as the tip of the probe is pressed.

Fault alarm: If the maximum premitted value of resistance is exceeded during the measurement a visual fault alarm is given (a red LED "Fault") otherwise a green LED ("Go") lights up and an audible signal is given at the same time. The tester also indicates (by a red LED "Fault") upward or downward excursions from the minimum or maximum test current limit values.

Test run: The test is monitored as faulty if the maximal permitted resistance is exceeded.

Evaluation: by analogue divider

Outputs: analogue for resistance and test current; floating relay output for faults alarms

No load voltage: 12 V AC

Interface: D-A interface for external control, options for RS 232 / IEEE interface

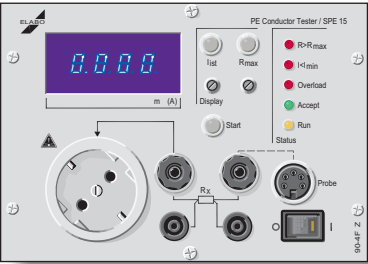
Inaccuracy: < 5% of range

Ambient temperature: +10°C. . .50°C

90-2A

Earth wire resistance tester 42 HP
likewise 90-2A, but
Measurement current: pre-selectable from 10...30 A

90-2B



Earth wire resistance tester
Breite 36 TE



Accessories

Measurement current: 10...25 A fully electronic stabilized, the resistance is calculated from current and voltage.

Display: Digital instrument with a range of 0...350 mOhm; there is a range changing button to display the current flow (0...30 A).

Connection for test item: Alternatively to an earthing contact socket outlet or to two laboratory terminals. There are also two further safety lab terminals for using probe leads for the compensation of feeder and contact resistance.

Limiting values: Pressing the 'Rmax' button enables a maximum permitted value of resistance to be set.

Start of test: In order to prevent sticking of contacts at the measuring points on the item being tested, the test current does not start flowing until the "Start" button has been pressed. When the test probe is used the current is switched on automatically as the trip of the probe pressed.

Fault alarm: If the maximum is premitted value of resistance is exceeded during the mearsurement a visual fault alarm is given (a red LED "Fault") and an audible signal is given at the same time. Otherwise a green LED ("Accept") lights up. There will be an automa-tic fault alarm I_{min} , if the set current will be undercut by 10%.

Test run: The test is continued as long as the test probe is operated. The test is monitored as faulty if the maximal permitted resistance is exceeded.

Evaluation: by analogue divider

Outputs: analogue for resistance and test current; floating relay output for faults alarms

No load voltage: 10 V AC

Interface: D-A interface for external control, options for RS 232 / IEEE interface

Inaccuracy: < 5% of range

Ambient temperature: +10°C. . .50°C

90-4F

Earth wire resistance tester 36 HP
likewise 90-4F, but
Measurement current: 0...25 A fully electronically stabilised
No load voltage: 6 V AC

90-4G

Test probe
2 m connecting lead

94-4S

Test probe
4 m connecting lead

94-4S Z04m



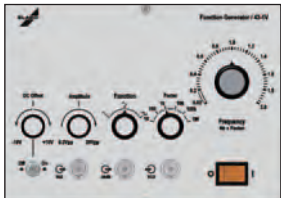


Test probe
6 m connecting lead


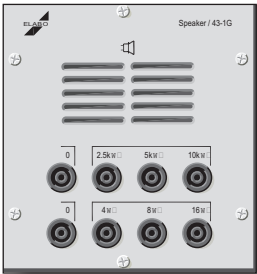
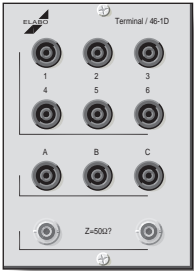

94-4S Z06m

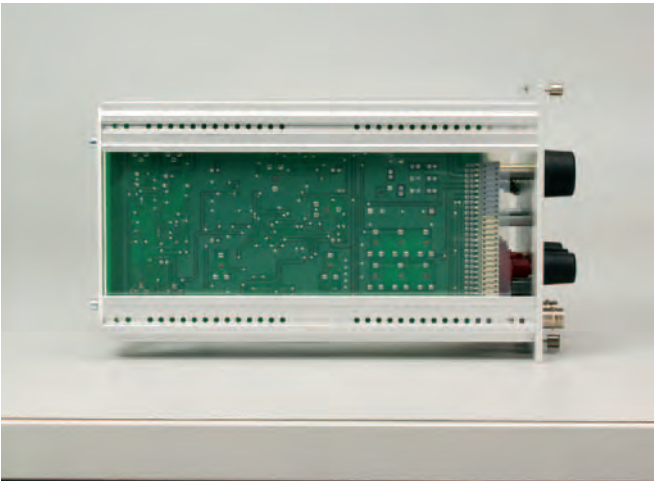
Elabo also offers a calibration service for all its testing and measuring devices.

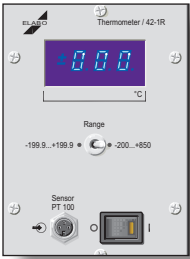
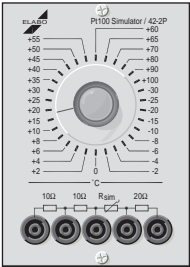

Our customer service (calibration, maintenance, telephone consultation, spare parts service, BGV A3 occupational health and safety investigations) can be reached via the service hotline +49 7951 307-202.



Function generators form a versatile group of equipment useful for applications in low frequency engineering. The wide frequency range and many different output functions also allows tests to be carried out on electrical systems with non-sinusoidal voltage forms.

		Technical details	Order no.
Function generator Width 60 HP		Cassette with function generator 0,01 Hz...20 Mz with RS232 interface and illuminated 4digit display Waveforms: Sine, Square, Rectangle Square: 0,01 Hz...20 MHz Rectangle: 0,01 Hz...1 MHz Amplitude: 5 mV to 10Vss on 50/600 Ohm without load 5 mV to 20 Vss Internal Sweep; linear or logarithmic Trigger: manual, external, remote-controlled Entering by means of a rotary encoder or a number pad realised by the Elabo software EHP-Lab	43-1U Z101
		with Ethernet interface with USB interface	43-1U Z102 43-1U Z103
Function generator Width 36 HP		Slide-in panel with function generator 0,2 Hz... 2 MHz The adjustment of the function generator is done by a potentiometer with a scale and rotary switches for six decades. Frequency ranges: 20/200 Hz, 2/20/200 kHz, 2 MHz Wave forms: Sine, Triangle, Square Distortion factor at Sine: <1,5% bis 100 kHz, < 5% bis 2 MHz Output voltage: Uss max. 20 V non load operation typical 10 V at 50 Ohm Output is short-circuit-protected Attenuator - 20 db at BNC jack DC-Offset switchable 0 bis +/- 10 V adjustable Sweeping external: Input for modulation VCO 0...5 V for Changing Frequency 100:1 Impedance of input appr. 17 kOhm	43-1V 
Function generator Width 60 HP		Cassette with function generator with LCD display, simultaneous display of frequency and amplitude Wave forms: Sine, Triangle, Square Function generator 0,03 Hz...3MHz Frequency counter up to 120 MHz Amplitude: 2 mV bis 10Vss an 50/600 Ohm without lead 2 mV bis 20 Vss Output: 50 Ohm, 600 Ohm Attenuator : 0, -20, -40 oder -60 db	43-1W
Power amplifier Width 24 HP		Cassette with power amplifier 40 Watt DC...150 kHz / 40 Vss, adaptable to all Elabo function generators 1 illuminated rocker switch 1 BNC connector socket Input 1 BNC connector socket Output Input voltage max. 20 Vss Mains supply 207...253 V 50 Hz	43-1T

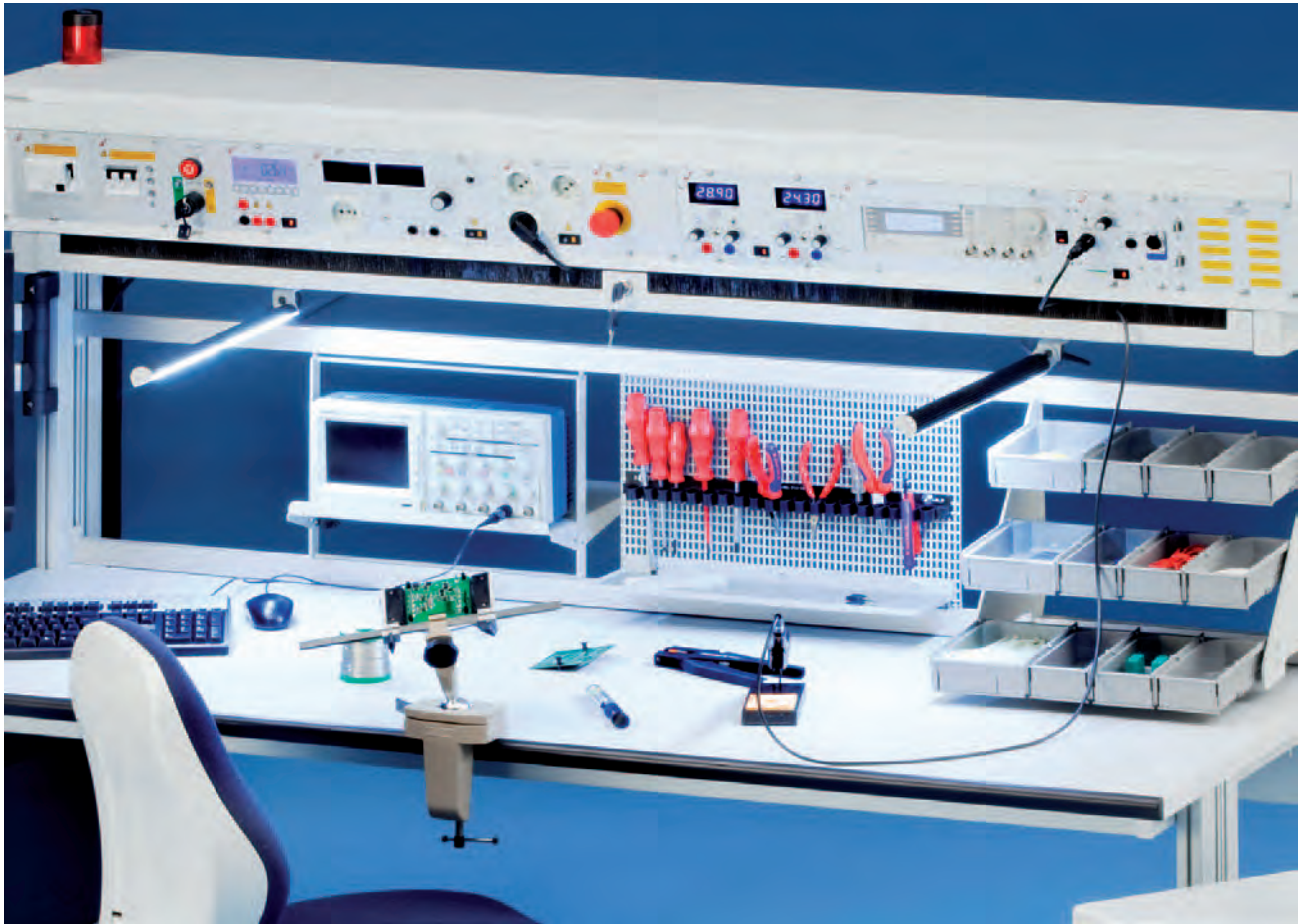
		Technical data	Order no.
Frequency counter Width 12 HP		<p>Slide-in panel with frequency counter and attenuator, matches the 43-1A/B/C function generators</p> <p>Outputs: TTL with fan-out 20 or C-MOS level 12V</p> <p>Attenuator: 20 dB</p> <p>Range: 1 Hz ... 999,999 kHz</p> <p>Display: 6-digit LED with 6mm high figures, with frequency measurement from 1 Hz to 999 999 kHz. Only the last six digits are displayed for frequencies exceeding 1 MHz.</p> <ul style="list-style-type: none">2 safety lab terminals TTL- and C-MOS- signals1 safety lab terminal ground connection for input/output2 BNC jacks for input/output and 1 BNC socket for the -30dB output.1 illuminated rocker switch	43-1D
Test loudspeaker Width 24 HP		<p>Slide-in panel with test loudspeaker 4W</p> <ul style="list-style-type: none">1 AF transformerprimary 2,5 Ohm 5 Ohm 10 Ohmsecondary 4 Ohm 8 Ohm 16 Ohm2 x 4 safety lab terminals	43-1G
Selectable pole panel Width 18 HP		<p>Slide-in panel with selective poles for interconnecting test stations</p> <ul style="list-style-type: none">9 not wired up safety lab terminals 16 A2 not wired up BNC-jacks Z = 50 Ohm	46-1D <div></div>

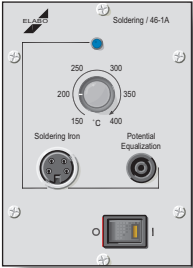
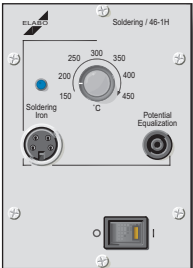
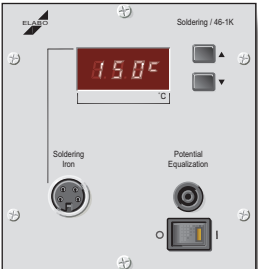
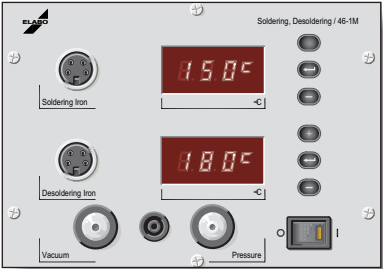


		Technical details	Order no.
Digital thermometer Width 18 HP		<p>Slide-in panel with thermometer</p> <p>Display: 11 mm high 3½-digit LED</p> <p>Range 1: - 199 °C to + 199 °C, resolution 0.1 °C</p> <p>Range 2: - 200 °C to + 850 °C, resolution 1 °C</p> <p>Inaccuracy: - 15 °C to + 750 °C: ± 0.2% ± 1 digit, beyond this: ± 0.35% ± 1 digit</p> <p>Sensor: Pt 100</p> <p>Optional feature: BCD output to multiple connector in accordance with DIN 41612, type C</p> <ul style="list-style-type: none">1 temperature probe connector1 illuminated rocker switch	42-1R
Universal temperature sensor		<p>Pt100 immersion temperature sensor, compatible with 42-1R</p> <p>Temperature range: - 50 °C to + 400 °C</p> <p>Length: 150 mm</p> <p>Diameter: 3 mm</p>	42-1S
Universal temperature sensor		<p>Pt100 temperature sensor for gases, compatible with 42-1R</p> <p>Temperature range: - 50 °C to + 400 °C</p> <p>Length: 150 mm</p> <p>Diameter: 3 mm</p>	42-1T
Universal temperature sensor		<p>Pt100 temperature sensor for surfaces, compatible with 42-1R</p> <p>Temperature range: - 50 °C to + 400 °C</p> <p>Length: 300 mm</p> <p>Diameter: 4 mm</p>	42-1U
Pt100 simulator Width 18 HP		<p>Slide-in panel with Pt100 simulator. A precision selector switch permits 30 fixed temperature values to be set in accordance with the characteristic curve to DIN 43760 for a Pt100 thermometer.</p> <p>Resistance material: Manganin</p> <p>Temperature coefficient: < 10 ppm/K</p> <p>Long-term stability: 0.02% over years</p> <p>5 safety lab terminals</p> <p>Standard values:</p> <p>-30, -25, -20, -15, -10, -8, -6, -4, -2 °C</p> <p>0 °C</p> <p>2, 4, 6, 8, 10, 15, 20, 25, 30 °C</p> <p>35, 40, 45, 50, 55, 60, 65 °C</p> <p>70, 80, 90, 100 °C</p>	42-2P 


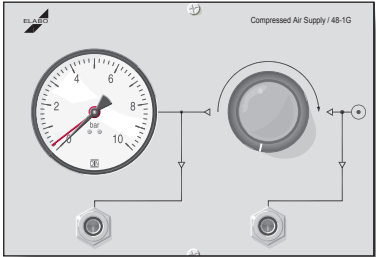

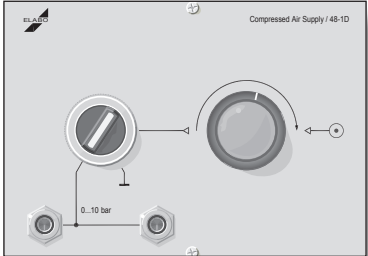

	Technische Daten	Best.-Nr.
Soldering station Width 36 HP	<p>Slide-in panel with temperature-controlled soldering station, manufactured by Erska Analog 80 temperature in range of 150...400 °C infinitely adjustable by means of rotary potentiometer; analogue regulation electronics; perfectly suited for lead-free solders, RoHS compliant</p> <p>1 soldering gun Basic tool 810 CDJ 1 soldering tip 0832 CD 1 stand 0A 41</p>	46-1F 
Soldering station Width 36 HP	<p>Slide-in panel with temperature-controlled soldering station, manufactured by Weller WS 81 temperature in range of 150...400 °C infinitely adjustable by means of rotary potentiometer; analogue regulation electronics with automatic tool detection to 80 W perfectly suited for lead-free solders, RoHS compliant; the soldering tip is potential-free at delivery</p> <p>1 soldering gun WSP 80 1 soldering tip LT B 1 1 safety stand WPH 80</p>	46-1G 

Thanks to the Elabo system racks, 3HU soldering stations can also be incorporated into a 6HU or 19" system superstructure.



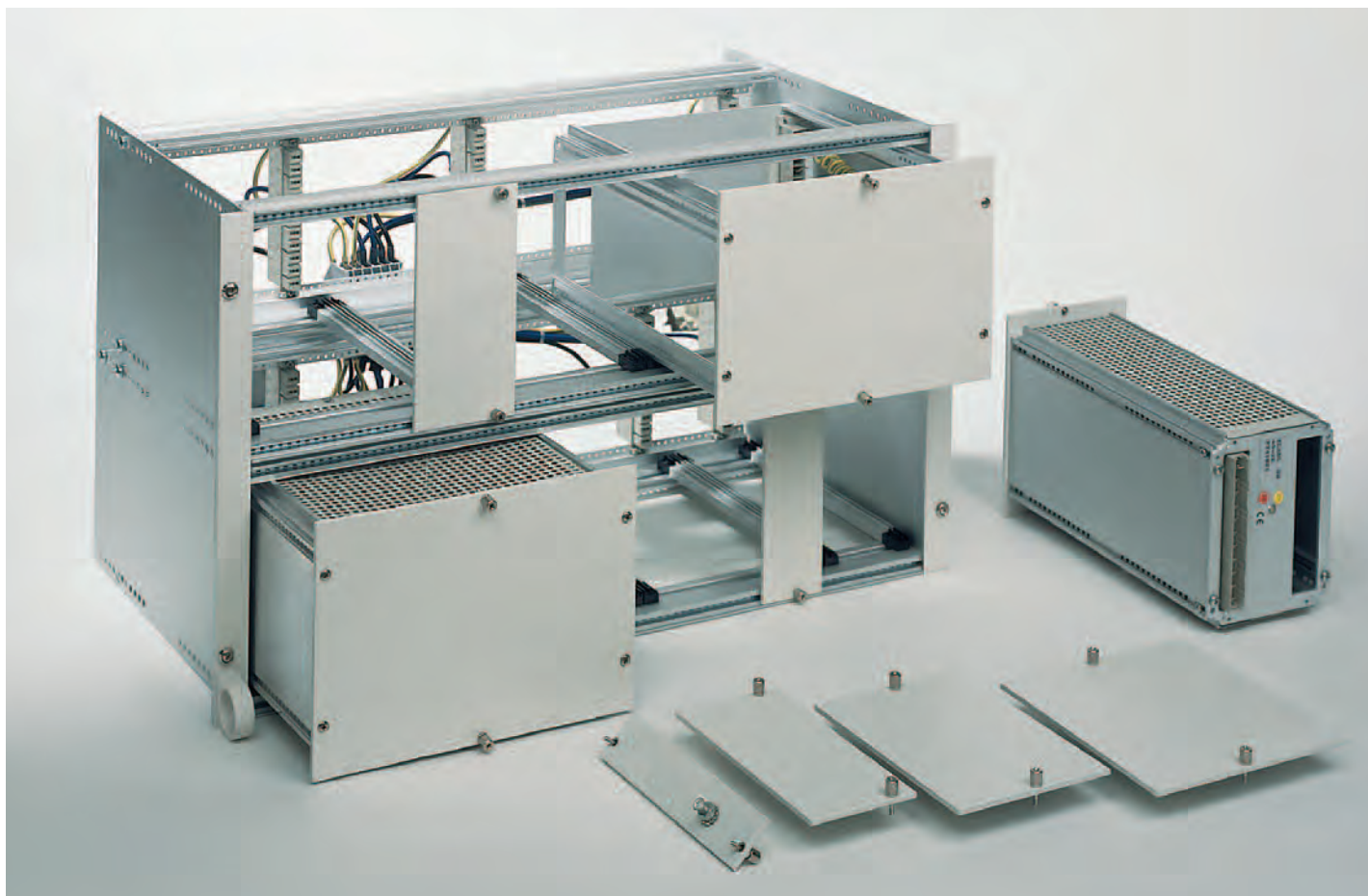
		Technical details	Order no.
Soldering station Width 18 HP		Cassette with temperature controlled soldering station 80 W, manufacturer Erska 1 soldering iron, temperature in the range from 150 to 450 °C adjustable 1 LED to indicate heating state 1 stand 1 illuminated rocker switch	46-1A
Soldering station Width 18 HP		Cassette with temperature controlled potential-free soldering station 80 W, temperature up to 450 °C steplessly adaptable, manufacturer Weller, perfectly suited for lead-free solders, RoHS compliant 1 soldering gun 1 LED to indicate heating state 1 stand 1 illuminated rocker switch	46-1H
Soldering station Width 24 HP		Cassette with temperature controlled antistatic soldering station 80 W, Temperature up to 450 °C steplessly adaptable, manufacturer Weller, perfectly suited for lead-free solders, RoHS compliant 1 digital display 1 antistatic soldering gun 1 stand 1 illuminated rocker switch	46-1K
Soldering and desoldering station Width 36 HP		Cassette with 80 W temperature controlled soldering and desoldering station, manuf. by Erska. Designed for industrial application and repair shops. Temperature steplessly adjustable from 150°C to 400°C, suitable for lead-free solders, compliant to the ROHS directive. 2 digital displays 1 built in vacuum/compressed air unit; permits the station to be operated independly of a compressed air supply. 1 soldering iron 80 W 840 CDJ 1 desoldering iron 80 W 720 ENJ 2 connection sockets for soldering/desoldering irons 1 safety lab terminal (ground) 2 rapid connectors for vacuum and compresses air 2 iron holders 1 illuminated rocker switch	46-1M

All slide-in panels can be supplied for different pressure ranges if required. Special designs can also be supplied for individual solutions: Special couplings, pressure reducing regulators, filters and controllers as requested.

	Technical details	Order no.
Compressed air supply Width 6 HP	Slide-in panel with 1 quick coupling NW 5 1/8 1 plug nipple NW 5 for plastic hose 6/4	48-1K 
Compressed air supply Width 36 HP	 1 pressure regulator 0.5...10 bar, 1 pressure gauge 0...10bar 1 quick coupling NW2,5 input pressure, 1 quick coupling NW2,5 adjustable pressure 1 plug nipple	48-1G 
Compressed air supply Width 36 HP	 Slide-in panel with compressed air supply 1 reducing valve of high precision to which the external supplied pressure is connected to 1 3/2- valve for directing the pressure to the output couplings or to disconnect the pressure 2 leakfree one- hand quick- acting couplings NW2,5 1 quick connector NW2,5	
	Pressure range 0 ... 4 bar 0 ... 10 bar	48-1D Z01 48-1D Z02

	Technische Daten	Best.-Nr.
Connector hose 6/4 mm	single-side plug nipple NW5 10 bar 500 mm single-side plug nipple NW5 10 bar 1000 mm single-side plug nipple NW5 10 bar 2000 mm single-side plug nipple NW2,5 10 bar 500 mm single-side plug nipple NW2,5 10 bar 1000 mm single-side plug nipple NW2,5 10 bar 2000 mm	48-5A 48-5B 48-5C 48-5P 48-5Q 48-5R
Manometer connectors	R 1/8" R 1/4" R 3/8" R 1/2"	48-5H 48-5J 48-5K 48-5L
High pressure hose DN4	Minimess couplings 400 bar 630 mm Minimess couplings 400 bar 1000 mm	48-5D 48-5E
Plug nipples for single-handed rapid-action conncetors	NW5 for coupling hose 6/4 mm NW2,5 for coupling hose 6/4 mm	48-5M 48-5N
10 bar air supply for bench rack plug-in modules	Coupling type 3 take off points Coupling type 5 take off points The supply lines are routed along the rear of the bench rack. Z = Please state associated rack.	48-5SZ 48-5TZ



**Blank panels:**

Blank panels for the eurocassette system are intended to fill blank spaces in bench racks. They are manufactured from 3 mm hard aluminium, powder coated with epoxy resin in light grey. At the top and bottom there are captive cross head screws for fastening the panel into racks or housings.

The height of all panels is
128.5 mm = 3 HU

Empty cassettes, open type:



The cassettes are supplied without side, top or bottom covers. The front panels are of the same design as the blank panels. The rack mount rails are made of aluminium extruded profile. The rear wall is manufactured of 2 mm aluminium and has a cut-out to take a DIN 41612 male multipoint connector. All empty cassettes are supplied with an 11 pin male and female multipoint connector with spring contacts and a pair of guide rails.

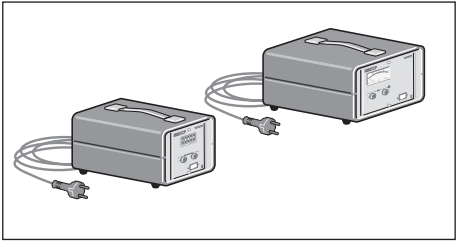
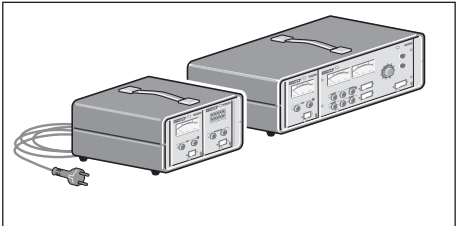
Height: 128.5 mm = 3 HU
Depth: 196 mm

Empty cassettes, closed type:

Similar to open type described previously, but with closed sides, top and bottom. The top/bottom covers are perforated.

Height: 128.5 mm = 3 HU
Depth: 196 mm

	Technical details	Order no.
<div><div></div><div><div>4 HP</div><div>6 HP</div><div>8 HP</div><div>12 HP</div><div>18 HP</div><div>24 HP</div><div>36 HP</div><div>42 HP</div><div>48 HP</div><div>60 HP</div><div>96 HP</div></div></div> <div><p>Blank panels are manufactured from 3 mm hard aluminium, powder coated on both sides in light grey (similar to RAL 7035). For fastening the panels captive cross head screws are provided that can also be used to pull the panels out. An M5 ground bolt is welded to the rear of the blank panels. Uniform front panel height of 3HU = 128.5 mm.</p><div><div>20,3 mm wide</div><div>30,4 mm wide</div><div>40,3 mm wide</div><div>60,9 mm wide</div><div>91,4 mm wide</div><div>121,9 mm wide</div><div>182,9 mm wide</div><div>213,3 mm wide</div><div>243,8 mm wide</div><div>304,8 mm wide</div><div>487,6 mm wide</div></div></div> <div><div>40-1H</div><div>40-1G</div><div>40-1J</div><div>40-1A</div><div>40-1B</div><div>40-1C</div><div>40-1D</div><div>40-1E</div><div>40-1F</div><div>40-1K</div><div>40-1L</div></div>		
<div><div></div><div><div>12 HP</div><div>18 HP</div><div>24 HP</div><div>36 HP</div><div>42 HP</div><div>48 HP</div></div></div> <div><p>In addition to the front panel empty cassettes are fitted with 4 rack mount rails made of aluminium extruded profile and a 2 mm aluminium rear wall with cut-out to take a DIN 41612 male multipoint connector. All empty cassettes are supplied complete with an 11 pin male and female multipoint connector with spring contacts and a pair of guide rails. Cassette depth is a uniform 196 mm.</p><div><div>60,9 mm wide</div><div>91,4 mm wide</div><div>121,9 mm wide</div><div>182,9 mm wide</div><div>213,3 mm wide</div><div>243,8 mm wide</div></div></div> <div><div>40-2A</div><div>40-2B</div><div>40-2C</div><div>40-2D</div><div>40-2E</div><div>40-2F</div></div>		
<div><div></div><div><div>12 HP</div><div>18 HP</div><div>24 HP</div><div>36 HP</div><div>42 HP</div><div>48 HP</div></div></div> <div><p>Closed empty cassettes are fitted with non-perforated aluminium sidewall profiles. The top and bottom covers are of perforated aluminium sheet that slides in and out of the sidewall profiles.</p><div><div>60,9 mm wide</div><div>91,4 mm wide</div><div>121,9 mm wide</div><div>182,9 mm wide</div><div>213,3 mm wide</div><div>243,8 mm wide</div></div></div> <div><div>40-3A</div><div>40-3B</div><div>40-3C</div><div>40-3D</div><div>40-3E</div><div>40-3F</div></div>		

	Technical data	Order no.
Portable housing	 Aluminium housing 3HU to accept 24 HP 1 connecting lead 1 ph with Schuko plug Colour: light grey Width = 170, Depth = 285, Height 150 mm	30-6L
	to accept 36 HP Width = 230, Depth = 285, Height 150 mm	30-6M
Portable housing	 Aluminium housing 3HU to accept 42 HP 1 connecting lead 1 ph with Schuko plug Colour: light grey Width = 260, Depth = 285, Height 150 mm	30-6P
	to accept 84 HP Width = 475, Depth 285, Height 150 mm	30-6N
	to accept 84 HP, wired up for PE-conductor testers and insulation testers Width = 475, Depth = 285, Height 150 mm	30-6R



These aluminium-shell type-housings allow the portable use of Elabo 3HU eurocassettes. Aluminium cross profiles are fitted to the front and rear on the inside of the housing. These have M 2.5 tapped holes drilled in a grid at 5.08mm intervals according to DIN 41494. A female multipoint connector with 11 high current contacts serves as a mating plug for the slide-in units.

The 3 HU housings can be populated with cassettes in the stated horizontal pitch (1 HP = 5.08 mm).

Supplied fully wired with 4 feet on the underside, carrying handle and 2.5 m connecting cable with Schuko (type F) socket.

Rack mounts for 6HE superstructures are listed on page E97 and rack mounts for 19" superstructures from E105 onwards. Accessories for cassettes and rack mounts are listed on page E109.



Elabo opens up new ways of doing things: The "Virtual Testing Laboratory" is now available for advanced, future-oriented work in the electrical laboratory or also in the service workshop.

The laboratory consists essentially of three components: The Elabo software package EHP-Lab, network technology and the devices equipped with interfaces.

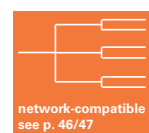
This system permits measuring and test sequences to be created more efficiently and at the same time to record measuring results on a long-term basis.

Elabo uses Ethernet technology for the Virtual Testing Laboratory. This technology allows an almost unlimited number of components to be integrated - there are scarcely any limitations on expansions.

Ethernet is regarded as a groundbreaking technology and is frequently used in the field of metrology as well as in industry. All the interface connections for the Elabo family of devices are found on the rear side. This is another step towards achieving a tidy and clearly laid-out workplace.

Most of the measuring and test devices as well as power and voltage supply systems can be retrofitted with interfaces. Ask your technical consultant.

All network-capable devices are appropriately identified in this catalogue.



A comprehensive, remote-controlled range of devices forms the basis of the Virtual Testing Laboratory. Regardless of whether it is voltage supply devices or signal generators that are required, Elabo offers the appropriate solution. Multimeters and oscilloscopes are available for recording measurement values.

	Technical data	Order no.
System 3HU AC stabilizer 1 ph	Cassette 3HU/66 HP AC-stab 0-260 V / 2 A, stabilized ungrounded Fitting Ethernet interface	44-5M N3-4S Z102
System 6HU AC stabilizer 1 ph	Cassette 2WU AC 1,5...260 V / 12 A, stabilized earthbound Fitting Ethernet interface	35-5C N3-3S Z102
System 6HU AC stabilizer 1 ph	Cassette 2WU AC 1,5...260 V / 5 A, stabilized ungrounded Fitting Ethernet interface	35-5H N3-3S Z102
System 6HU AC stabilizer 3 ph	Cassette 4WU AC 3~0...230/400 V 5 A, stabilized earthbound including two Ethernet interfaces	35-5A Z102
System 3HU DC stabilizer	Cassette 3HU/24 HP DC-stab 0-30 V / 2 A Fitting Ethernet interface	45-1Y N3-4S Z102
System 3HU DC stabilizer	Slide-in panel 3HU/36 HP DC-stab 0-30 V / 2 A Fitting Ethernet interface	45-1Y Z801 N3-4P Z102
System 3HU Dual DC stabilizer	Cassette 3HU/36 HP DC-stab 2 x 0-15 V / 2 A Fitting Ethernet interface	45-1U N3-4T Z102
System 3HU Dual DC stabilizer	Cassette 3HU/42 HP DC-stab 2 x 0-30 V / 2 A Fitting Ethernet interface	45-0K N3-4T Z102
System 3HU Dual DC stabilizer	Slide-in panel 3HU/84 HP DC-stab 2 x 0-30 V / 2 A Fitting Ethernet interface	45-5U Z801 N3-4Q Z102
System 6HU DC stabilizer	Cassette 2WU DC-stab 0-30 V / 0-3 A Fitting Ethernet interface	34-4B N3-3S Z102
System 6HU DC stabilizer	Cassette 2WU DC-stab 0-30 V / 0-10 A Fitting Ethernet interface	34-4E N3-3S Z102
System 6HU DC stabilizer	Cassette 2WU DC-stab 0-60 V / 0-10 A Fitting Ethernet interface	34-4K N3-3S Z102
System 6HU DC stabilizer	Cassette 4WU DC-stab 0-60 V / 0-16 A Fitting Ethernet interface	34-5C N3-3S Z102
System 6HU DC stabilizer	Cassette 2WU DC-stab 0-160 V / 0-3 A Fitting Ethernet interface	34-5E N3-3S Z102
System 6HU DC stabilizer	Cassette 4WU DC-stab 0-300 V / 0-4 A Fitting Ethernet interface	34-5K N3-3S Z102

	Technical data	Order no.
System 6HU DC stabilizer	Cassette 2WU DC-stab 0-30 V / 0-6 A Fitting Ethernet interface	34-5L N3-3T Z102
System 6HU Dual DC stabilizer	Cassette 2WU DC-stab 2 x 0-30 V / 2 x 0-5 A Fitting Ethernet interface	34-4D N3-3T Z102
System 6HU Dual DC stabilizer	Cassette 2WU DC-stab 2 x 0-30 V / 2 x 0-3 A Fitting Ethernet interface	34-4M N3-3T Z102
System 6HU Dual DC stabilizer	Cassette 2WU DC-stab 2 x 0-30 V / 2 x 0-5 A Fitting Ethernet interface	34-4U N3-3T Z102
System 6HU Dual DC stabilizer	Cassette 2WU DC-stab 2 x 0-30 V / 2 x 0-5 A Fitting Ethernet interface	34-4J N3-3T Z102
System 3HU Oscilloscope	PC oscilloscope 2-channel bandwidth 150 MHz including Ethernet interface	41-1Q Z102
System 3HU Oscilloscope	PC oscilloscope 4-channel bandwidth 150 MHz including Ethernet interface	41-1R Z102
System 3HU Multimeter	Slide-in panel 3HU/24 HP Digital multimeter Fitting Ethernet interface	41-1N N3-4P Z102
System 3HU Function generator	Cassette 3HU/60 HP; 0,01 Hz...20 MHz; waveforms: sine, square, triangle; positive and negative pulse including Ethernet interface	43-1U Z102
System 3HU Function generator	Cassette 3HU/52 HP; Function generator Agilent 332 10A; frequency: 1 µHz...10 MHz; waveforms: sine, square, triangle, ramp, pulse; DC signals including Ethernet interface	43-1X Z102
System 3HU Function generator	Cassette 3HU/52 HP like 43-1X Z102 but frequency range 20 MHz including Ethernet interface	43-1Y Z102

Space utilization with millimeter accuracy through the use of mounting racks: 3HU testing devices and measuring instruments as well as power and voltage supply systems can be integrated into 6HU superstructures without any difficulty in a space-saving manner.

Of course, you can also receive all of the devices optionally with RS232 and USB interface. In this case, please give order number ...Z101 instead of Z102 for the RS232 interface. Please use order number ... Z103 for the USB interface.



Elabo - das interaktive Elektrolabor **ELABO**
euromicron Gruppe

- Fernzugriff zur Ferndiagnose über Remotezugriff
- Videoüberwachung zur Kontrolle von Dauerlaufversuchen
- VoIP für die einfache Kommunikation
- Power over Ethernet (PoE)
- Fiber to the office (FTTO)
- Fiber to the desk (FTTD)

Lichtwellenleitertechnik

Lichtwellenleitertechnik

Vernetzung mittels MICROSENS 10Port Switch mit SFP

euromicron EM-RJ™ Stecker

Elabo puts visions into practice: Using the innovative Ethernet technology you can completely network a workstation, a room or even a company.

The coordination is substantially provided via switches, some of which are also designed as an intelligent hub.

The switches then form the virtual network. For example, with the 8-fold switch in the configuration, the Elabo testing devices and measuring instruments can be connected and the measuring results can be forwarded to in-house EDP.

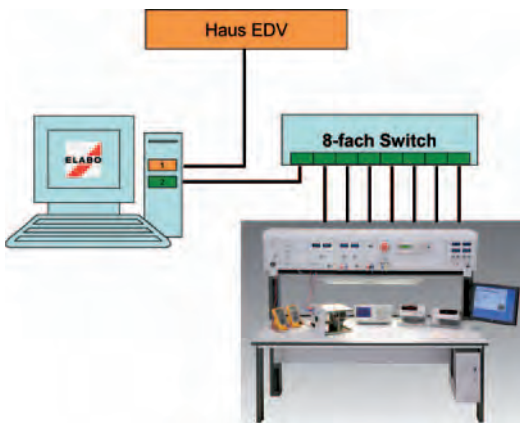
The opposite effect can be realized, too: By segmenting the overall network, certain areas can be sealed off, which means, among other things, that unauthorized access can be prevented.

Elabo supports customer businesses before, during and after purchase with setting up their network. The switch is already preassembled ex factory, so that EDP contacts can integrate the workstation into the company network quickly and easily. Of course, you can also order the assembly and network set-up at the same time.



Stabilizing communication

Networking the devices is carried out in the background: there are no cables running in front of the cover panels. This means accidental interruptions of the network and unauthorized access are much rarer or made more difficult.



Establishing communication

An Ethernet switch to which the individual devices are connected is installed in the Elabo configuration. One switch port is connected to the process control computer. This process control computer has two network cards.

Establishing communication

One network card is used to establish the connection to the in-house EDP, the second card is for the connection to the devices. The two networks are separate from one another, so that unauthorized access from the in-house network to the Elabo devices is not possible.

Integrating communication

As a further highlight, Elabo network technology can be used to equip any workstation system with modern communication devices. For instance, telephone service with Power of Ethernet (PoE) and Voice over IP (VoIP) can be integrated into the network. For larger data volumes, Elabo Systems offers fiber-optic technology.

Communication consulting

Because we are a part of the euromicron group, Elabo can also provide highly complex networks from a single source, from laying the data cables and power cords to equipping server rooms and data-processing centers to designing virtual test laboratories.

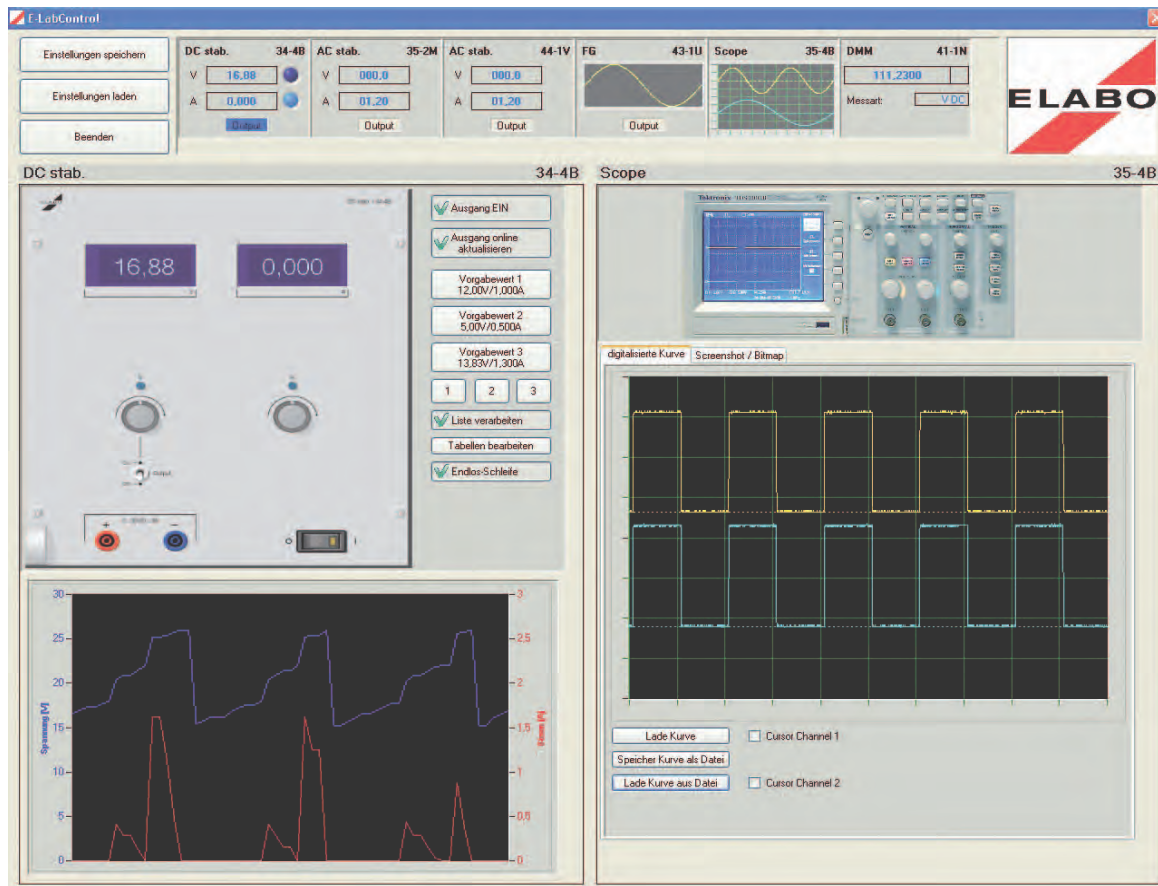


If the superstructures and network technology are ordered together, the network is preassembled – so all you need to do is connect it to the PC. However, customers also have the option of taking care of the substructure networking themselves - for example in the case of existing Elabo superstructures.

		Technical data	Order no.
Network		Network basic - 8-port switch - power supply - cable set for integration into Elabo superstructures	N3-1A
Network		Network VLAN - 8-port switch for VLAN - power supply - cable set for integration into Elabo superstructures	N3-1V
Network		Network WLAN - access point - 8-port switch for WLAN - power supply - cable set for integration into Elabo superstructures	46-1K
Network module		Network basic with 8 digital and 8 analog I/O for control of mains supply and emergency off monitoring (software neccessary)	N3-2C

EHP-Lab at a glance:

- Programming and control of measuring and testing tasks
- Recording and archiving set values and actual values of the connected devices
- Measured value analysis
- Simple programming of recurring measuring tasks
- Programming and logging of continuous operation tests
- Saving the settings



With the innovative EHP-Lab software all interface-capable measuring instruments are networked and assembled on a single operator interface.

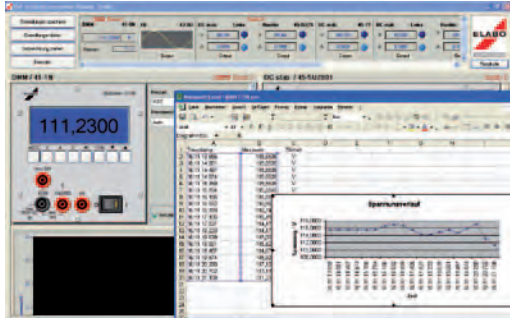
All of the measuring instruments working in parallel are shown on the task bar and can be selected

simply by mouse click or by touching the touch panel and bringing it to the foreground on the screen. The devices are easily programmed and remote controlled.

Measuring routines can be generated and saved with just a few mouse clicks. This means recurring measurement tasks can be

retrieved at any time and documented completely without any gaps. When new circuits or assemblies are tested, a detailed analysis and evaluation is provided through continuous data logging.

Elabo software is made in compliance with industry standards. The Measurement Studio from National Instruments, our “software language,” is an integrated collection for creating testing, measuring and automation applications. Easy-to-operate user interfaces are created through the connection to Microsoft Visual Studio 2008/2005/.NET 2003 and Visual Studio 6.0. NI Measurement Studio. Moreover, Measurement Studio also contains scientific analysis functions.



Remote control

All interface-capable devices can be remotely controlled using the Elabo network technology. For example, individual set values or complete voltage sequences can be programmed and transferred to the devices.

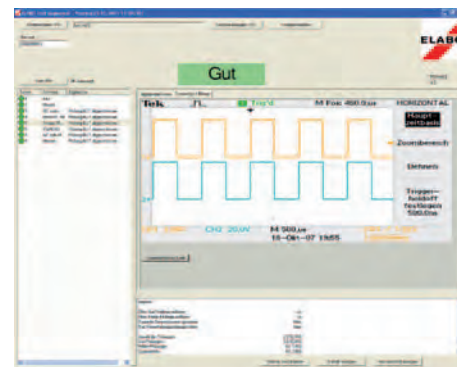
Measuring and Archiving

The software guarantees optimal data capture from Elabo devices as well as from devices manufactured by other manufacturers. Continuously recorded measurement values can be saved using the data logger function. Moreover, the software also archives the set value and actual value specifications of the supply devices used. This means that an optimal comparison between the set value of the supply devices and the actual value of the measuring instruments is always possible.



Continuous operation tests

For conducting continuous operation tests it is possible to program voltage ramps or sequences and run them as needed in endless loops. Overvoltages and undervoltages can thus act on the test specimens for longer periods and their behavior can be tested. The values are freely adjustable. An import function also makes it possible to scan in voltage curves from text files.



	Technical data	Order no.
EHP-InduLab for the industrial area System software Windows XP	<p>The remote control of Elabo power supply and test devices is considerably simplified with the help of the EHP InduLab software.</p> <p>The basic package contains interactive operation of the individual power supply and test devices as well as an automated test procedure.</p> <p>The scope of delivery includes: 1 CD 1 set of operating instructions 1 licence agreement for one workplace</p> <p>Minimum requirements: - Processor at least Pentium 4 2.0 GHz - Main memory at least 512 MB - Hard drive capacity at least 200 MB - CD/DVD-RW drive - USB/serial interface - Ethernet interface 100 MB - Graphics card 1280 / 1024 - Mouse or touchpad - TFT display at least 17" or corresponding monitor - Recommended screen resolution 1280 x 1024 Operating system WIN XP Prof</p> <p>Application .net-framework 3.5 will be installed by Elabo.</p>	N1-1A
EHP-EduLab for educational purposes System software Windows XP	Please have a look on our education catalogue.	
LabView device driver		N1-7L

Three individual ways to the Virtual Test Laboratory:

- EHP-InduLab covers the entire range of tasks for the modern test laboratory: Equipment testing, measured value logging or automated continuous operation testing.
- Drivers are provided upon request. They can be used to integrate measuring devices and test instruments, power and voltage supply systems into existing software quickly and easily.
- Elabo leaves the interfaces open. This means you can define your own drivers and use them to incorporate the devices.



Active access control

The Elabo software package has password protection. Users can be assigned different executive rights with the aid of the user administration. Activatable validity date is standard.

Everything saved

EHH-Lab logs all measured values and keeps them available at all times. The "Result Browser" program module makes it possible to search measured values collected by various features (e.g. serial number, test date, batch), even if this was years ago. And in addition to the measured values collected, the respective default values are also saved. There is therefore nothing to prevent full documentation without any gaps.

Ergebnis	Prozess
2.23	04.10.2007 17:12:17
2.23	05.10.2007 07:18:19
2.23	05.10.2007 07:18:49
2.23	10.10.2007 14:45:25
2.23	12.10.2007 15:38:07
2.23	15.10.2007 09:22:41
2.23	05.11.2007 15:41:45
2.23	05.11.2007 15:45:24
2.23	05.11.2007 15:47:20
2.23	05.11.2007 15:58:59
2.23	05.11.2007 16:26:23
2.23	05.11.2007 16:30:01
2.23	05.11.2007 17:06:43
2.23	05.11.2007 17:08:46
2.23	05.11.2007 17:43:28
2.23	05.11.2007 17:52:14
2.23	05.11.2007 18:18:00
2.23	05.11.2007 18:18:20
2.23	07.11.2007 09:20:06
2.23	10.12.2007 16:25:37
2.23	20.03.2008 12:01:40
2.23	20.04.2008 22:35:52
2.23	20.04.2008 22:37:39
2.23	29.04.2008 22:32:43
2.23	19.05.2008 11:09:05
2.23	02.06.2008 06:23:14
2.23	02.06.2008 06:23:24
2.23	02.06.2008 06:24:01
2.23	02.06.2008 06:24:15
2.23	02.06.2008 06:25:09
2.23	02.06.2008 06:25:19

Open driver structure

Drivers are already available for a number of Elabo devices in the basic package. This driver database is always being expanded. Existing software packages can be updated at any time. Communication with the devices and the transfer parameters of the individual program modules are no secret at Elabo. This means device drivers can be independently programmed and incorporated into the package. Corresponding drivers are available from Elabo for incorporating the devices in LabView.

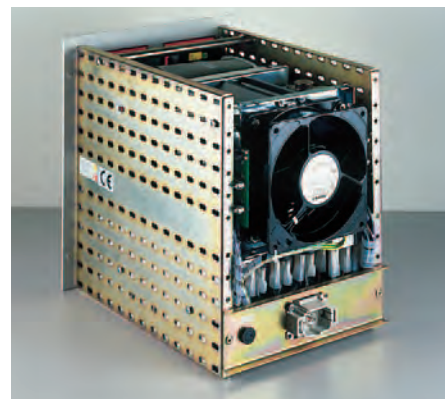


Command centre

The password-protected main menu forms the central switchboard of the software. From here the individual software modules can easily be called up. In addition, icons are available for the most important functions to facilitate quick access. The universal and open structure of the main menu means that it is always possible to add further software functions, including the assignment of user rights.

System 6HU

The wide range of products available for equipping the bench racks will meet every possible requirement. From straightforward assembly workstations with a multiple outlet strip through to a fully fitted “universal” set-up for all-round applications – the modular system allows the components to be configured as required.

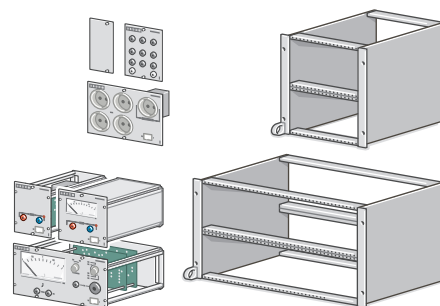


A high degree of mechanical strength together with solidly constructed slide-in units guarantee distortion-free stability, even for the heaviest components.

Rack mounts allow 3HU eurocassettes to be used with the system. Test and supply modules in various installation densities can be put together for a diverse range of applications.



Robust plug connectors with leading earth contacts ensure technically perfect network connections.

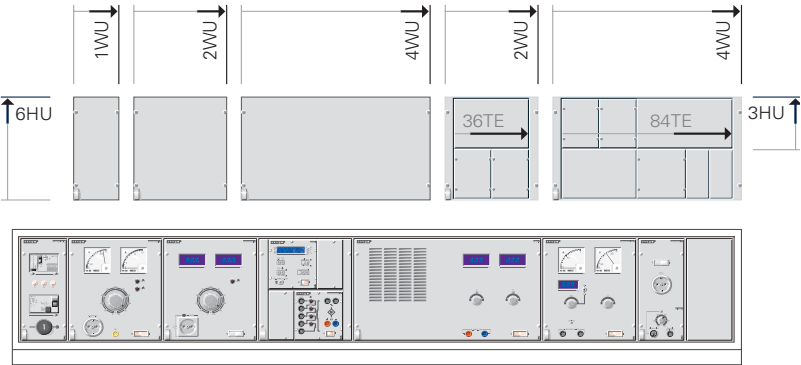
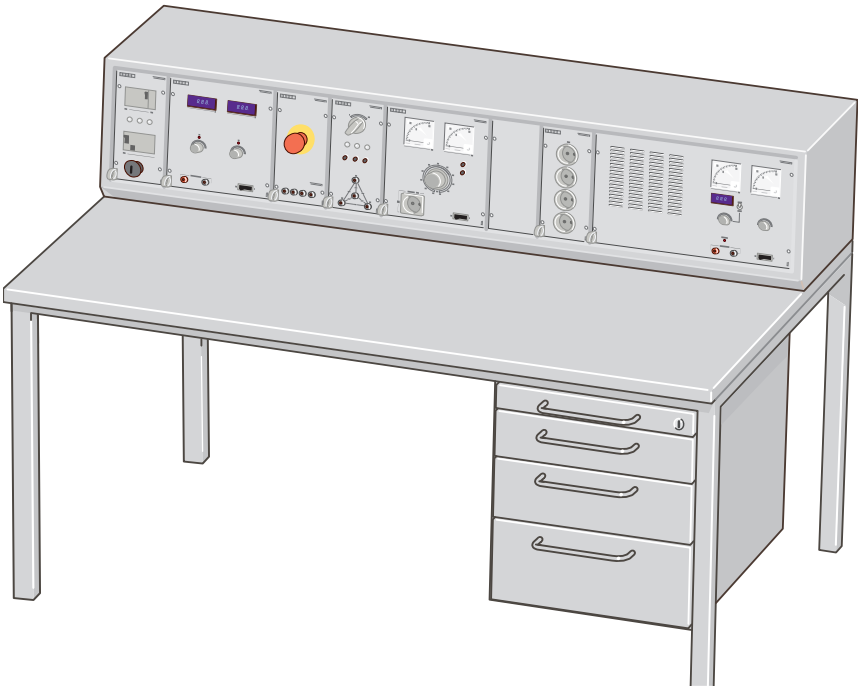
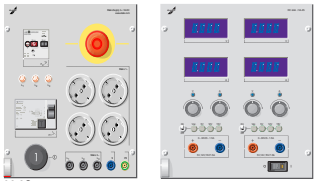


System 6HU

System 6HU is particularly suitable for applications that place higher requirements on power supply performance. The System 6HU slide-in units have therefore been designed to be highly robust and suitable for the installation of powerful transformers and other similar equipment. For almost all other applications the functional unit modules (panel height 266 mm) can be mixed and matched as required. The installation of System 6HU rack mounts allows the 3HU cassette range to be fitted one above another.

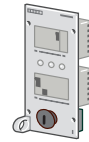
Dimensions	E56
Mains panel	E57
Socket outlet panel, floating AC voltage	E58
Variable AC supply, variable AC/DC supply	E62
AC power generators	E64
AC/DC power supplies	
DC stabilizer	E70
Continuity tester, multimeter	E74
Hameg modular range	E75
Oscilloscope	E76
High voltage testers	E78
Protective measure test devices	E79
Cable tester	E80
Accessories for HV testing	E80
Decade, logade	E82
Test bays	E83
Additional equipment for test bays	E85
Function generator	E87
Load resistance, voltage and current source	E88
Pneumatics	E89
Soldering stations	E94
Special slide-in panel	E95
Blank panel, push-in shelf	E96
Rack mounts	E97
Housings	E98
Motor test bay	E99

Can be combined with:
System 3 HU

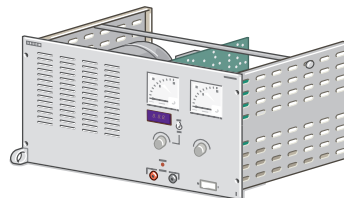
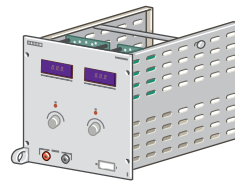


The System 6HU bench racks and housings can be equipped with the slide-in panels, slide-in units, rack mounts (for 3HU cassettes) and blank panels from the following list.

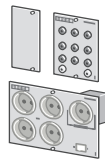
Installation variants



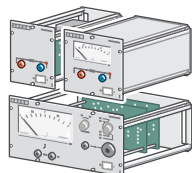
Slide-in panel 1WU



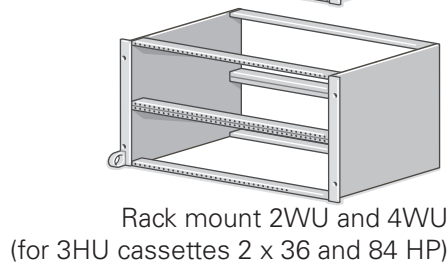
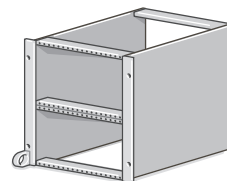
Slide-in unit 2WU and 4WU



3HU slide-in panels
12, 24 and 36HP



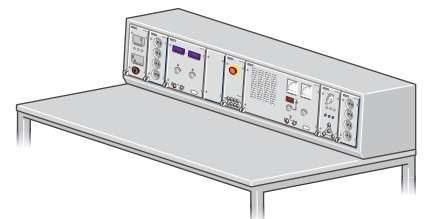
3HU cassettes
18 and 36 HP



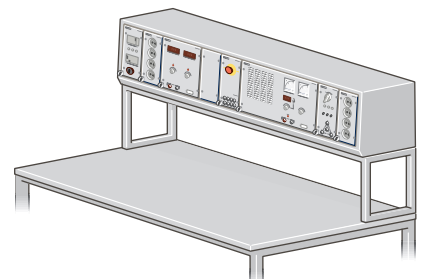
Rack mount 2WU and 4WU
(for 3HU cassettes 2 x 36 and 84 HP)



System 6HU housing



System 6HU bench rack



System 6HU bench
attachment with bench rack

Technical information

System 6HU comprises slide-in panels, slide-in units and two level rack mounts to accept the 3HU cassette system. These are available in different widths:

WU = System 6HU width unit

1 WU = installation width 111.5 mm

2 WU = installation width 229 mm

4 WU = installation width 464 mm

6 WU = installation width 699 mm

Installation depth = 260 mm

The bottom row of System 6HU bench racks can be additionally equipped with System 3HU slide-in panels.

Front panels: All front panels are manufactured from 3 mm hard aluminium, powder coated on both sides in light grey (similar to RAL 7035). The lettering is screen printed in black and is resistant to rubbing.

Slide-in units: All slide-in units are additionally fitted with perforated steel side panels, adjustable chassis panel and a carrying handle. The rear of the slide-in unit is fitted with a Harting 6-pole plug with leading earth contact.

Rack mounts: Accept eurocassettes from the 3HU cassette system.

Rack mounts: Accept eurocassettes from the 3HU cassette system.

Aluminium fixing panels, closed at the sides, that accept the front and rear rails of the cassettes.

Front and rear profiles with 5.08 mm hole pattern and M2.5 screw thread.





Inside profiles are fitted with integrated fastening rails that accept female multi-point connectors with spring contacts in accordance with DIN 41612.

2 widths available:





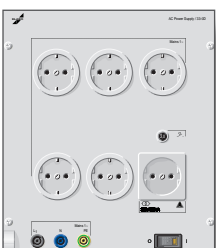
2 WU = 36 HP = 229 mm




4 WU = 84 HP = 464 mm



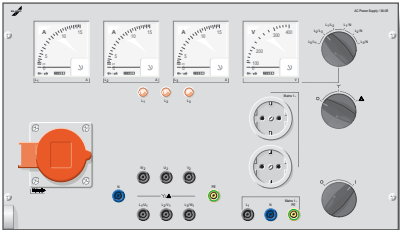
Elabo mains panels are used to turn on and off and protect the central power supply for bench racks. They are usually fitted on the left side of the bench rack but may be mounted to any suitable position in the bench rack. All slide- in units and slide- in panels are fitted and cabled ready for operation at the factory.


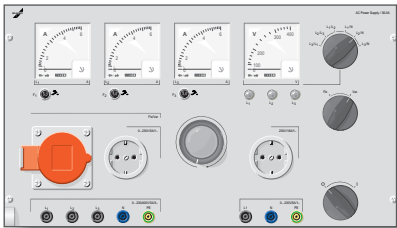
		Technical data	Order no.
Mains supply panel 1 ~ 1 WU		Mains supply panel 1 phase AC 1 1 phase earth- leakage circuit breaker, 2 pole, 16 A / 10 mA 1 automatic circuit breaker, 16 A C 1 contractor 1 keyswitch 1 off push-button 1 phase indicator lamp	32-0D
Mains supply panel 1 ~ 1 WU		Mains supply panel 1 phase AC 1 1 phase earth- leakage circuit breaker, 25 A / 30 mA 1 motor protection circuit breaker, 10...16A, with undervoltage trip 1 keyswitch 1 phase indicator lamp	32-0B
Mains supply panel 3 ~ 1 WU		Mains supply panel 3 phase AC 1 keyswitch 1 earth leakage circuit breaker, 25 A / 30 mA 1 motor protection circuit breaker, 10...16 A, with undervoltage trip 3 phase indicator lamps Type A, for AC fault current and pulsating DC fault current Type B, AC/DC sensitive, also for smooth DC fault current	32-0A 32-0F
Mains supply panel 3 ~ 2 WU		Mains supply panel 3 phase AC 1 earth- leakage circuit breaker 25 A / 30 mA 1 motor protection circuit breaker, 10...16 A with undervoltage trip 230 V / 50 Hz 4 ground socket outlets 5 safety lab terminals L1, L2, L3, N, PE 1 EMERGENCY OFF button with yellow ring (not wired up) 1 keyswitch 3 phase indicator lamps	32-0C




Elabo floating AC voltage slide-in units and slide-in panels are suitable for a wide range of applications. For example, measuring inductances and capacities, in manufacturing test bays or as floating power supplies in education, service and development.

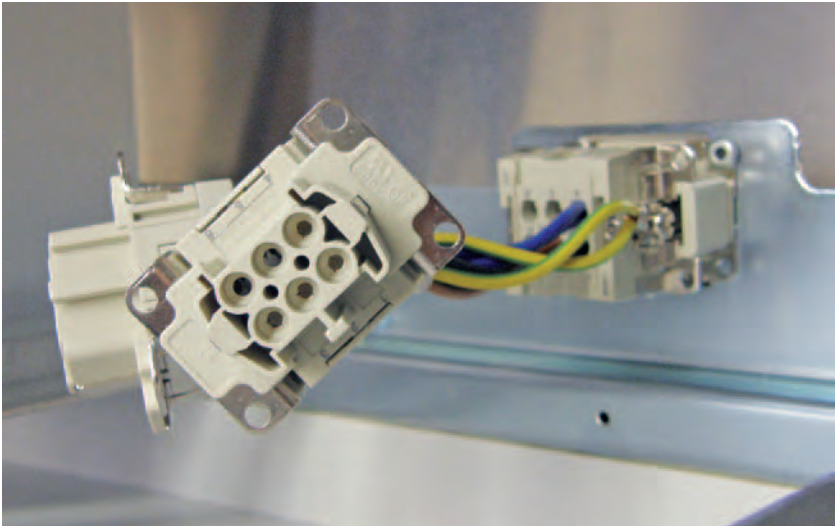
		Technical data	Order no.
AC supply 1 ~ 1 WU		Slide-in single-phase AC voltage supply panel for 230 V AC / 16 A 4 earth safety sockets 230 V / 16 A 3 earth safety sockets, 3 safety lab terminals L1, N, PE 2 earth safety sockets, 1 EMERGENCY OFF push-button with yellow ring (not wired up)	32-1J 32-1M 32-1P
AC supply 1 ~ 1 WU		Fixed panel with 4 safety lab terminals for supply with extra low voltages 2, 4, 6, 8, 10, 12 V AC / 10 A floating 3 thermic- magnetic circuit breakers 1 illuminated rocker switch	32-1E
AC supply 1 ~ 1 WU		Fixed panel with 4 safety lab terminals for supply with extra low voltages 6, 12, 18, 24, 36, 42 V AC / 3 A floating 3 thermic- magnetic circuit breakers 1 illuminated rocker switch	32-1F
AC supply 1 ~ with mains filter 1 WU		Slide-in panel for supply with filtered AC voltage 1 safety socket for drawing 230 V / 16 A mains voltage 1 safety socket for drawing AC voltage via line filter with high 230 V / 16 A attenuation (mains filter with special technical data upon request) 1 miniature fuse 1 illuminated rocker switch	32-1R
AC supply 1 ~ 1 WU		Slide-in panel with 1 socket without earth contact for supply of floating AC 230 V AC / 100 VA AC 1 isolating transformer 1 earth safety socket 230 V / 16 A 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	32-1S
AC supply 1 ~ 2 WU		Fixed panel with 5 earth safety sockets 230 V / 16 A and 3 safety lab terminals for supply with mains supply 230 V / 16 A 1 socket without earth contact for supply of floating AC 230V / 3A supply 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	33-0D

		Technical data	Order no.
AC supply 1 ~ 2 WU		Plug- in module for supply with not floating AC 0...260 V / 12.5 A 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...15 A Rating: 12.5 A, transient to 15 A over the whole range 1 earth safety socket for 0...260 V / 0...12.5 A (not floating) 1 PE safety lab terminal 2 thermic- magnetic circuit breakers 1 illuminated rocker switch	35-2C
AC supply 1 ~ 2 WU		Plug- in module for supply with floating AC 0...260 V AC / 3 A 1 digital voltmeter 0...300 V 1 digital ammeter 0...4 A Rating: 3A, short-duration load 4A over the whole setting range 1 socket without earth contact 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	35-3E
AC supply 1 ~ 2 WU		Plug- in module for supply with floating AC 0...260V/ 3A 1 analogue voltmeter 0...300V 1 analogue ammeter 0...4A Rating: 3A, transient to 4 A over the whole range 1 socket without earth contact 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	35-2E
Overview further adaptable AC supplies 1 ~ 2 WU		0...260 V / 3 A with analogue voltmeter and ammeter 0...260 V / 5 A with analogue voltmeter and ammeter 0...260 V / 800 W floating mit analogue voltmeter and power meter 0...260 V / 5 A floating with analogue voltmeter and ammeter 0...260V / 1500 W floating mit analogue voltmeter and power meter 0...260 V / 5 A floating with digital voltmeter and ammeter 0...260 V / 12 A floating with digital voltmeter and ammeter	35-2A 35-2B 35-2G 35-2F 35-2H 35-3F 35-2J





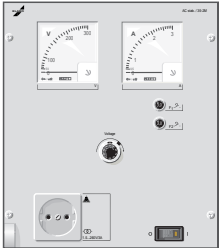
		Technical data	Order no.
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module with 1 CEE- socket outlet and 5 safety lab terminals L1, L2, L3; N, PE for 3- phase supply 3 earth safety socket 1 socket without earth contact for supply of floating AC, 230 V / 1 A floating 1 isolating transformer 230 VA 1 automatic circuit breaker 1 A 1 illuminated rocker switch 1 illuminated rocker switch	33-0A
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module as type 33-0A, but technical data as follows: 1 socket without earth contact for supply of floating AC, 230 V 3A floating 1 isolating transformer 690 VA 1 automatic circuit breaker 3 A	33-0B
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module with 3- phase AC 3/ N/ PE ~ 50Hz 400 V / 6 A- 1 voltmeter 0...400 V, can be switched to phase / phase or phase / neutral 1 ammeter 0...6 A can be switched into all phases 1 CEE- socket 5 safety lab terminals for 3- phase AC supply 1 earth safety socket 3 thermic- magnetic circuit breakers 3 indicator lamps 1 illuminated rocker switch	36-0F
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module with 3- phase AC 3/ N/ PE ~ 50 Hz 400 V / 6 A 1 voltmeter 0...400 V, can be switched to phase / phase or phase / neutral 1 ammeter 0...6 A 1 CEE socket 5 laboratory terminals for 3- phase AC supply 1 earth safety sockets 3 thermic- magnetic circuit breakers 3 indicator lamps 1 On/Off switch	36-0E

		Technical data	Order no.
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module with adjustable 3- phase AC supply: 3 / N / PE ~ 50 Hz 0...400 V / 2 A transient 2.5 A. 1 voltmeter 0...400 V, can be switched to phase / phase or phase / neutral 1 ammeter 0...2.5 A can be switched in each phase 5 safety lab terminals L1, L2, L3, N, PE 3 thermic- magnetic circuit breakers 3 indicator lamps 1 rotary switch On/Off	36-0D
AC supply 1 ~ and 3 ~ 2 WU		Plug- in module with adjustable 3- phase AC supply: 3/ N/ PE ~ 50 Hz 0...400 V / 5 A transient 6 A 1 voltmeter 0...400 V, can be switched to phase / phase or phase / neutral 3 ammeters 0...6 A 1 CEE socket outlet 5 safety lab terminals L1, L2, L3, N, PE 2 earth safety sockets 3 safety lab terminals L1, N, PE 3 thermic- magnetic circuit breakers 3 indicator lamps 1 rotary switch On/Off	36-0A
AC supply 1 ~ and 3 ~ 4 WU		Plug- in module for 3- phase AC like model 36-0A. Technical data: current output up to 8 A, transient to 10 A 3 ammeters 0...10 A	36-0B
AC supply 1 ~ and 3 ~ 4 WU		Adjustable, not ungrounded three-phase voltage similar to Type 36-0A, 3 / N / PE 0...290/500 V AC / 4 A 1 Voltage meter 0...500 V 3 Current meter 0...6 A 3 Automatic single-pole circuit breaker K 4 A	36-0C

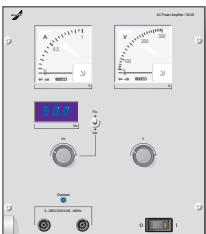
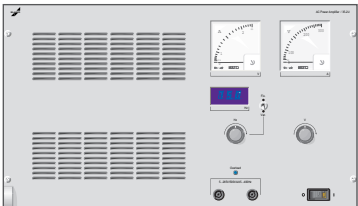
	Technical data	Order no.
AC supply 1 ~ and 3 ~ 1 WU	 <p>Plug-in panel for supply with ungrounded three-phase 3 ~ 23 / 40 V / 3 A voltage 4 safety laboratory jacks for drawing three-phase voltage 3 equipment safety switches 3 outer conductor indicator lights 1 rotary switch 1 three-phase voltage transformer with microfuses</p>	32-1G
AC supply 1 ~ and 3 ~ 1 WU	<p>Fixed panel with 5 safety lab terminals for 3- phase AC supply 3 / N / PE ~ 50 Hz 400/ 230 V / 16 A (not floating) 3 phase indicator lamps 1 rotary switch On/Off 1 shutoff switch</p>	32-1H
AC supply 1 ~ and 3 ~ 1 WU	 <p>Fixed panel with 1 CEE socket outlet 16 A and 5 safety lab terminals L1, L2, L3, N, PE for 3- phase AC supply 1 earth safety socket</p>	32-1L
Adapter-cable connecting two panels	 <p>An adapter cable is required when two plug-in panels of 1 BU each are to be connected in a structural panel of 2 BU size.</p> <p>With the combination of plug-in panel + blank panel or plug-in panel + panel without mains supply, e.g., decades or pneumatic, the adapter cable can be omitted.</p>	31-1D

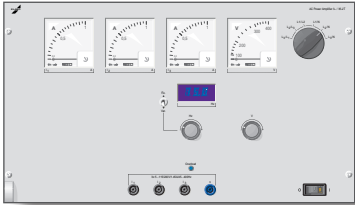


For regulated AC power supplies with variable output voltages stabilisation of the alternating current is achieved electromechanically using a motor-driven variable transformer, electronic stabiliser unit and a downstream isolation transformer. Drift is $\pm 2\text{ V}$ for an output voltage V_{desired} of 260V. The output voltage can be precisely set using a ten-turn helical potentiometer. At a mains voltage fluctuation of 10% the response time is approximately 0.5s.

			Technical data	Order no.
AC stabilizer 2 WU			AC stabilizer with grounded alternating current 2...260 V / 12 A electromechanical stabilizatoin with follow up control- ler and setpoint potentiometer 1 4-character digital display for voltage 1 4-character digital display for current	35-5C
AC stabilizer 2 WU			Adjustable ungrounded 2...260 V / 5 A AC voltage Electromechanical stabilization with follow-up control- ler and set value potentiometer. 1 Digital display, 4-digit, for voltage 1 Digital display, 4-digit, for current Switchable active power Output can be switched to a socket without earthing contact or to 2 laboratory sockets.	35-5H
AC stabilizer 2 WU			Plug-in module with adjustable, stabilized AC output voltage 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...4 A Rating: 0...3 A over the whole range Stabilizing: $V_{\text{rated}} \pm 2\text{ V}$ Response: at 10% mains variation approx. 0.5 s 1 socket without earth contact for floating output 1.5.. 260 V / 3 A 1 motor-operated, variable floating transformer and electronic stabilization 2 automatic circuit breakers 1 illuminated rocker switch	35-2M
			like type 35-2M, but 1,5...260 V AC / 6 A 1 analogue ammeter 0...6 A	35-2N

All power generators supply a variable, stabilized alternating or direct voltage (maximum 5...400 V) with variable frequency (maximum 45 Hz...400 Hz). They are used for testing, maintenance and repair of components and equipment that require a custom mains voltage, for example in aviation and maritime applications. They are also used as alternating voltage stabilizers for networks with special frequencies.

		Technical data	Order no.
Power generator 1 ~ 2 WU		Plug- in module with single phase AC power generator 220 VA 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...1 A 1 digital frequency meter 3 digit, resolution 0.1 Hz Output voltage: 5...265 V Output power: 220 VA at maximum output voltage Frequency: 50 Hz switchable to 45...400 Hz 2 safety laboratory terminals 1 10-turn potentiometer to adjust output voltage 1 10-turn potentiometer to adjust output frequency 1 overload protection 1 illuminated rocker switch	35-2S
Power generator 1 ~ 2 WU		Plug- in module with single phase AC power generator 220 VA 1 analogue voltmeter 0...150 V 1 analogue ammeter 0...2 A 1 digital frequency display 3 digit, resolution 0.1 Hz Output voltage: 5...135 V Output power: 220 VA at maximum output voltage Frequency: 60 Hz switchable to 45...75 Hz 2 safety laboratory terminals 1 10-turn potentiometer to adjust output voltage 1 10-turn potentiometer to adjust output frequency 1 overload protection 1 illuminated rocker switch	35-2V
Power generator 1 ~ 4 WU		Plug- in module with single phase AC power generator 500 VA 1 analogue voltmeter 0...300 V 1 analogue ammeter 0...2 A 1 digital frequency meter 3 digit, resolution 0.1 Hz Output voltage: 5...265 V Output power: 500 VA at maximum output voltage Frequency: 50 Hz stabilised to 45...400 Hz 2 safety laboratory terminals 1 10-turn potentiometer to adjust output voltage 1 10-turn potentiometer to adjust output frequency 1 overload protection 1 illuminated rocker switch	35-2U

	Technical data	Order no.
Power generator 1 ~ 4 WU	<p>Plug- in module with single phase AC power generator 500 VA</p> <p>1 analogue voltmeter 0...150 V</p> <p>1 analogue ammeter 0...4 A</p> <p>1 digital frequency meter 3 digit, resolution 0.1 Hz</p> <p>Output voltage: 5...135 V</p> <p>Output power: 500 VA at maximum output voltage</p> <p>Frequency: 60 Hz quartz stabilized, switchable to 45...75 Hz (not quartz stabilized)</p> <p>2 laboratory safety sockets</p> <p>1 10-turn helical potentiometer for setting the voltage</p> <p>1 10-turn helical potentiometer for setting the frequency</p> <p>1 overload safety device</p> <p>1 illuminated rocker switch</p>	35-2W
Power generator 1 ~ 4 WU	 <p>Plug- in module with 3- phase AC power generator 500 VA</p> <p>1 analogue voltmeter 0...200 V</p> <p>1 analogue ammeter 0...1.5 A</p> <p>1 digital frequency display 3 or 4 digit, resolution 0.1 Hz</p> <p>Output voltage: 3 x 5...115 / 200 V</p> <p>Output power: 500 VA at maximum output voltage</p> <p>Frequency: 400 Hz switchable to 45...400 Hz</p> <p>4 safety laboratory terminals to take off the 3- phase AC 3 x 5...115/ 200 V/ 500 VA</p> <p>1 10-turn potentiometer to adjust output voltage</p> <p>1 10-turn potentiometer to adjust output frequency</p> <p>1 overload safety device</p> <p>1 illuminated rocker switch</p> <p>By means of programming it is possible to switch over from a clockwise to an anticlockwise sequence.</p> <p>By means of phase shifting a bridge amplification can be realized.</p>	35-2T

Common technical data for the power generators:

Mains supply:	230 V / 50 Hz
Output voltage stability:	0.2% + 0.1 V
Distortion:	< 1.5 %
Load:	(-1 < cos < 1)
Displays:	
Voltage	analogue, class 1.5
Current	analogue, class 1.5
Frequency	digital, 4 digits resolution 0.1 Hz

The waveform of each phase can be programmed on request (e.g. periodical failure of a half- cycle or generating of interfering pulses). The modules are equipped with output transformers, therefore no DC component is permitted.

Optional features:

Digital displays for current and voltage	
Other fixed frequencies:	60, 75, 100, 150, 200, 300, 400 Hz
Other output voltages:	maximum 400 V
Different windows of variable frequency:	maximum 400 Hz




Please specify:

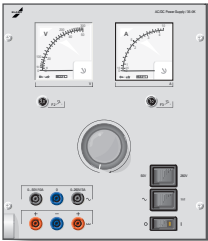
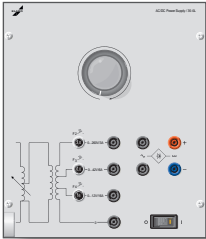
required output voltage, e.g.: 0... 50 V

required frequency, e.g.: 400 Hz

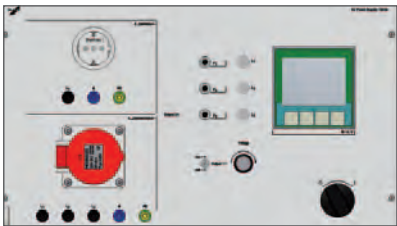
required frequency window, e.g.: 45 ..400 Hz


These Elabo slide-in units deliver continuously variable alternating voltage from zero load upwards and can be switched to supply direct voltage. The modules are fitted with moving-iron instruments giving an indication of root-mean-square values for current and voltage. A rotary knob with a 100% scale is used to set the voltage via a variable transformer. The pulsating DC output-voltage ripple is 48%. All units are fitted with an AC/DC selector switch.

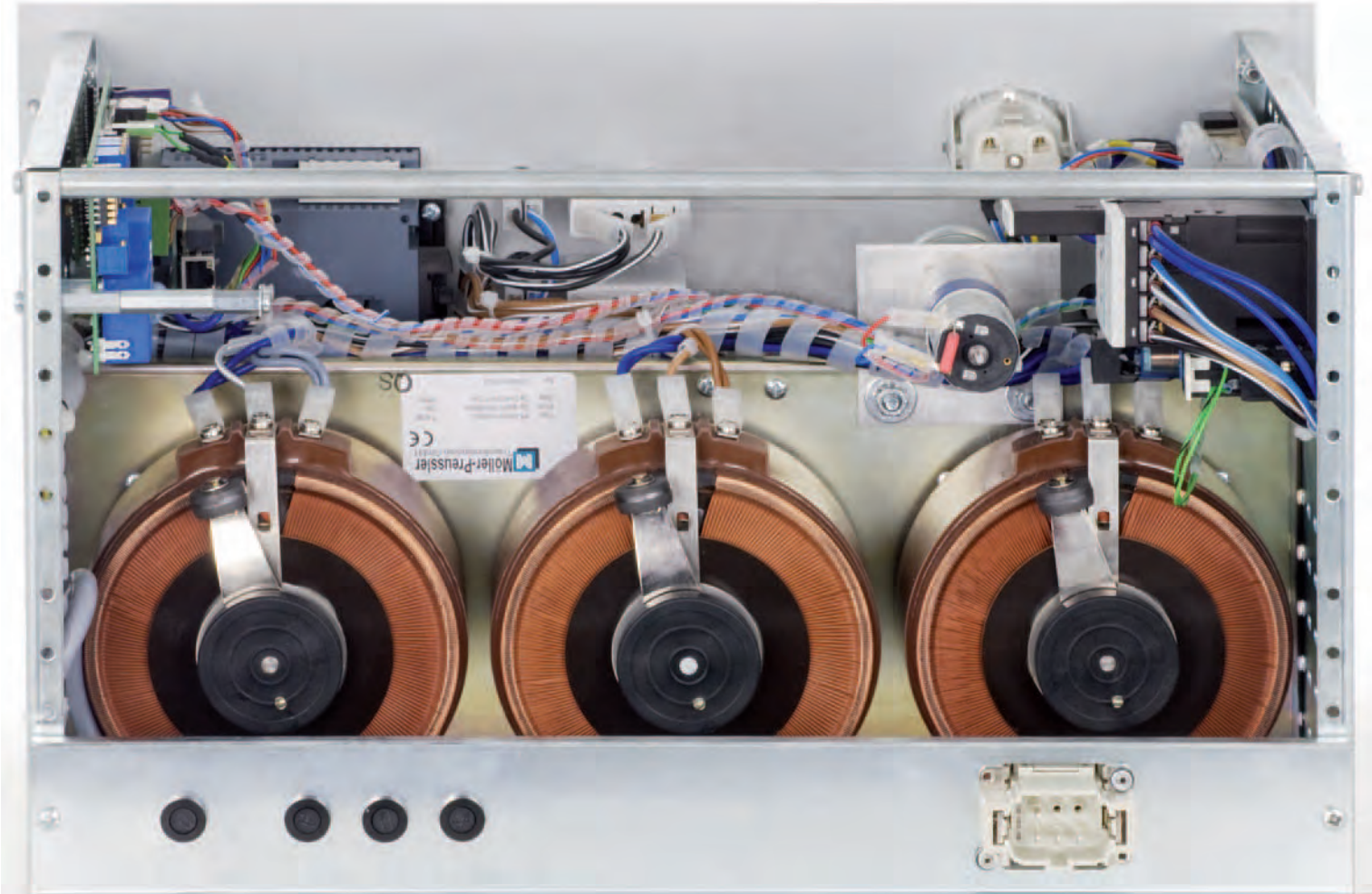
		Technical data	Order no.
AC/DC supply 2 WU		Plug- in unit for the supply with floating AC / DC AC 0...60 V / 8 A, switchable to DC 0...60 V / 8 A 1 analogue voltmeter 0...60 V 1 analogue ammeter 0...10 A Residual ripple of DC voltage: appr. 48% 2 safety laboratory terminals 1 rotary control knob to set the output voltage 1 switch over AC/DC 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	35-0D
AC/DC supply 2 WU		Plug- in unit for the supply with floating AC / DC AC 0...260 V / 3 A, switchable to DC 0...50 V / 3 A 1 analogue voltmeter Range 1 0...300 V Range 2 0...50 V 1 analogue ammeter 0...4 A Residual ripple of DC voltage: appr. 48% 2 safety laboratory terminals 1 rotary control knob to set the output voltage 1 switch over AC/DC 1 switch over 0 / 260 V 1 thermic- magnetic circuit breaker 1 illuminated rocker switch	35-0G
AC/DC supply 2 WU		Plug- in unit for the supply with floating AC/DC, like type 35-0E. Additional extra low voltages: 2, 4, 6, 8, 10 and 12 V / 10 A. 4 thermic circuit breakers 1 thermic-magnetic circuit breaker 1 switch over AC/DC 1 illuminated rocker switch	35-0H

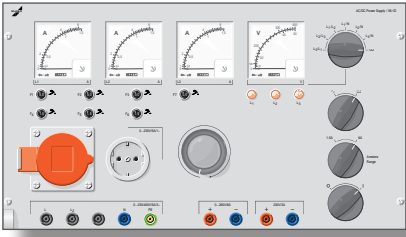
	Technical data	Order no.
<div>AC/DC supply</div> <div>2 WU</div> <div></div>	<p>Plug- in unit for the supply with floating AC / DC and additional precaution (re- arranging of connection of load).</p> <p>AC / DC 0...260 V / 3 A, switchable to 0...50 V / 10 A</p> <p>1 analogue voltmeter</p> <p>Range 1 0...300 V</p> <p>Range 2 0...50 V</p> <p>1 analogue ammeter</p> <p>Range 1 0...4 A</p> <p>Range 2 0...10 A</p> <p>Residual ripple of DC voltage: approx. 48%</p> <p>6 safety laboratory terminals</p> <p>1 rotary control knob set the output voltage</p> <p>1 switch over AC / DC</p> <p>1 switch over 50 / 260V</p> <p>2 thermic- magnetic circuit breakers</p> <p>1 illuminated rocker switch</p> <p>Additional safety is provided with the 35-0K device in that the devices have to be replugged to the safety laboratory jacks when switching from AC voltage to DC voltage, or from extra-low voltage to low voltage.</p>	35-0K
<div>Overview further floating</div> <div>AC/DC supplies</div> <div>2 WU</div>	<p>AC voltage 0...260 V / 3 A</p> <p>DC voltage 0...260 V / 3 A</p> <p>analogue voltmeter</p> <p>analogue ammeter</p> <p>AC voltage 0...260 V / 5 A</p> <p>DC voltage 0...260 V / 5 A</p> <p>analogue voltmeter</p> <p>analogue ammeter</p> <p>floating low voltages</p> <p>6, 12, 18, 24, 36, 42 V / 3 A</p> <p>DC voltage 0...260 V / 3 A</p> <p>analogue voltmeter</p> <p>analogue ammeter</p>	<p>35-0E</p> <p>35-0F</p> <p>35-0J</p>
<div>AC/DC supply</div> <div>2 WU</div> <div></div>	<p>Plug- in unit for the supply with floating AC / DC in the following ranges:</p> <p>0...260 V / 3 A</p> <p>0 ... 42 V / 6 A</p> <p>0 ... 12 V / 15 A</p> <p>1 freely-usable rectifier (B2 - 300 V/ 16 A) to rectify the AC voltages, residual ripple of DC voltage: approx. 48%</p> <p>1 rotary control knob to set the output voltage</p> <p>8 safety laboratory terminals</p> <p>3 thermic- magnetic circuit breakers</p> <p>1 illuminated rocker switch</p>	35-0L

AC/DC supply
4 WU





Technical data	Order no.
<p>Plug -in module with non floating 0...230/400 V / 5 A (transient to 6 A) with electromechanical stabilization</p> <ul style="list-style-type: none">1 CEE socket 16 A5 safety lab terminals1 shock-proof sockets3 safety lab terminals3 phase indicator lamps1 ten-turn potentiometer for manual setting of output voltage1 switch to disconnect output voltage <p>Display shows different electrical measurements such as voltages, currents, ratings, power values, frequency, power factor, symmetry and TDH.</p>	36-5A
 <p>like 36-5A with 2 ethernet interfaces for remote control</p>	36-5A Z102



	Technical data	Order no.
AC/DC supply 4 WU	<p>Plug- in module with continuously adjustable, not floating 3- phase AC and DC</p> <p>3-phase AC: 3 / N / PE 0...400 V AC / 8 A switchable to</p> <p>DC voltage: 0...500 V / 10 A, residual ripple approx. 5%</p> <p>1 analogue voltmeter 0...500 V</p> <p>3 analogue ammeters 0...10 A</p> <p>1 rotary knob to adjust output voltage</p> <p>1 switch over from 3-phase AC to DC</p> <p>1 voltmeter switch over from phase / phase or phase / neutral, resp. to DC circuit</p> <p>1 5-pole CEE socket</p> <p>1 earth safety socket for variable output voltage</p> <p>1 earth safety socket for DC supply</p> <p>5 safety laboratory terminals L1, L2, L3, N, PE</p> <p>3 safety laboratory terminals for DC voltage + / -</p> <p>1 PE safety laboratory terminal</p> <p>3 thermic- magnetic circuit breakers</p> <p>3 indicator lamps</p> <p>1 4-pole cam- type off switch</p>	36-1C
	<p>like 36-1C, but 3-phase AC: 3 / N / PE 0...400 V AC / 5 A / 50 Hz, switchable to DC voltage: 0...500 V / 6 A, 1 3-phase ring core adjusting transformer</p>	36-1E
AC/DC supply 4 WU	<div></div> <p>Plug- in module with continuously adjustable, not floating 3- phase AC and DC and additional fixed DC voltage</p> <p>3-phase: 3 / N / PE 0...400V AC / 5A / 50Hz switchable to</p> <p>DC voltage: 0...250 V / 6 A, residual ripple approx. 18%</p> <p>Fix DC voltage: 230 V / 3 A, residual ripple approx. 48%</p> <p>1 analogue voltmeter 0...400V</p> <p>3 analogue ammeters Range 1 0...6 A Range 2 0...1.5 A</p> <p>1 measuring range selector 1.5 / 6 A</p> <p>1 rotary knob to adjust output voltage</p> <p>1 switch over from 3-phase AC to DC</p> <p>1 voltmeter switch over from phase / phase or phase / neutral, resp. to DC circuit</p> <p>1 5-pole CEE socket (0...230 V / 400 V)</p> <p>1 earth safety socket for variable output voltages</p> <p>5 safety laboratory terminals L1, L2, L3, N, PE (0...230 V/ 400 V)</p> <p>2 safety laboratory terminals for variable DC voltage</p> <p>2 safety laboratory terminals for fixed DC voltage</p> <p>1 PE safety laboratory terminal</p> <p>7 thermic- magnetic circuit breakers</p> <p>3 indicator lamps</p> <p>1 4-pole cam-type off switch</p>	36-1D
	<p>like 36-1D, but 3-phase AC: 3 / N / PE 0...400 V AC / 8 A / 50 Hz, switchable to DC voltage: 0...250 V / 10 A, residual ripple approx. 18%</p> <p>Fixed DC voltage: 230V / 3A, residual ripple approx. 48%</p> <p>1 analogue voltmeter 0...400 V</p> <p>3 analogue ammeter Range 1 0...10 A; Range 2 0...2 A</p>	36-1E






Regulated DC power supplies with stabilized DC output in voltage and current regulated versions. The floating outputs are short circuit protected and can be connected in series or in parallel. All Slide-in units are fitted with displays for the “voltage limited” and “current limited” operating modes. Ten-turn potentiometers are installed for precise setting of voltage and current limits. The resolution of the ten-turn potentiometer is 0.03%.

		Technical data	Order no.
Regulated DC stabilizer 1 WU		Fixed panel with a DC stabilizer +/- 15 V / 1 A and 5 V / 3 A. The two outlets are electrically isolated from each other and are protected against short circuiting. Residual ripple: 5 mV _{rms} 15mV _{pp} Load smoothing: 50 mV (no load / full load) Recovery time: typically 50µs, maximum 100µs Temperature coefficient: 150ppm/K 5 safety lab terminals for DC output voltages + / - 15 V / 1 A and 5 V / 3 A 1 illuminated rocker switch	32-1D
Regulated DC stabilizer 1 WU		Regulated DC stabilizer in cost- effective switching regulator version Recovery time: max. 500 µs 1 illuminated rocker switch 5 V / 5 A Residual ripple 50 mV _{eff} 2 safety lab terminals +/- 15 V / 2 A Residual ripple 100 mV _{eff} 3 safety lab terminals 24 V / 6 A Residual ripple 240 mV _{eff} 2 safety lab terminals	32-5M 32-5N 32-5P

Technical data for fixed voltage units:

Interference voltage at output:	5 mV
Recovery time:	100 µs
Temperature coefficient:	0.01 % / °C
Load regulation:	0.1 %
Ambient temperature:	0...45 °C
Operating voltage:	230 V / 50 Hz ± 10%


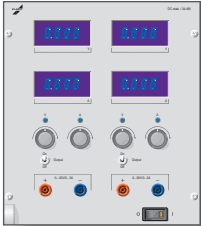





		Technical data	Order no.
DC stabilizer 4 WU		Plug-in module with variable, stabilized DC voltage supply 0...30 V / 30 A with digital displays 10-turn potentiometer for setting voltage and current limits	34-5B
DC stabilizer 2 WU		Plug-in module with variable, stabilized DC voltage supply 0...160 V / 0..3 A with digital displays 10-turn potentiometer for setting voltage and current limits	34-5E
DC stabilizer 4 WU		Plug-in module with variable, stabilized DC voltage supply 0...300 V / 0...4 A 10-turn helical potentiometer for setting voltage and current limits and digital measuring equipment	34-5K
DC stabilizer 4 WU		Plug-in module with variable, stabilized DC voltage supply 0...60 V / 0...6 A with digital displays 10-turn potentiometer for setting voltage and current limits	34-5M
DC stabilizer 2 WU	 	Variable, stabilised DC voltage supply 0...30 V / 0...6 A 1 voltmeter 4-digit 0...30 V, resolution 10 mV 1 ammeter 4-digit 0...6 A, resolution 1 mA 2 LEDs to display operating mode "voltage limited" / "current limited" 2 10-turn potentiometers for setting voltage and current limits 2 laboratory safety sockets 1 switch to disconnect the output voltage 1 illuminated rocker switch	34-5L
Overview further DC stabilizers with digital displays 2 WU		1 voltmeter, 1 ammeter 0...30 V / 0...3,0 A 0...30 V / 0...10 A 0...60 V / 0...10 A	 34-4B 34-4E 34-4K

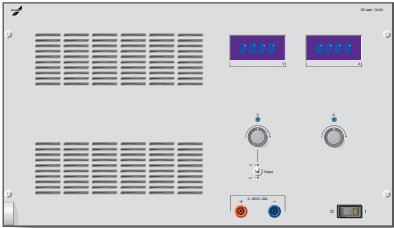
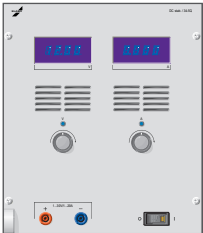


Technical data for variable voltage units:





Interference voltage at output:	1 mV
Recovery time:	typically 50, maximum 100 μ s
Temperature coefficient:	0.01 %/ $^{\circ}$ C
Load regulation:	0.015%
Ambient temperature:	0...45 $^{\circ}$ C
Operating voltage:	230 V / 50 Hz \pm 10%

	Technical data	Order no.
Dual DC stabilizer 4 WU	Variable, stabilized DC voltage supply 2 x 0...60 V / 2 x 0...1,5 A with digital displays 10-turn potentiometer for setting voltage and current limits	34-4N
Dual DC stabilizer 2 WU	Variable, stabilized DC voltage supply 2 x 0...30 V / 2 x 0...1,5 A with digital displays Regulated voltage +5 V / 3 A 10-turn potentiometer for setting voltage and current limits	34-4Q
Dual DC stabilizer 4 WU	Variable, stabilized DC voltage supply 2 x 0...30 V / 2 x 0...1,5 A with digital displays switchable to 5 V, 12 V or 15 V 10-turn potentiometer for setting voltage and current limits	34-4S
Dual DC stabilizer 2 WU	<div></div> <div></div> <div>2 variable, stabilized DC voltage supplies 2 x 0...30 V / 2 x 0...3 A 2 voltmeters 4-digit 0...30 V, resolution 10 mV 2 ammeters 4-digit 0...3 A, resolution 1 mA 2 x 2 LEDs to display operating mode "voltage limited" / "current limited" 2 x 2 10-turn potentiometers for setting voltage and current limits 2 x 2 laboratory safety sockets 1 switch to disconnect the output voltage 1 illuminated rocker switch</div>	34-4M
Overview further Dual DC stabilizers with digital displays 2 WU	<div></div> <div></div> <div></div> <div>2 voltmeter, 2 ammeter 0...30 V / 0...5,0 A 0...30 V / 0...3 A Regulated voltage 5 V / 3 A 0...30 V / 0...5A Regulated voltage 5 V / 3 A</div>	34-4D 34-4U 34-4J

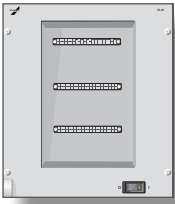







		Technical data	Order no.
High current DC stabilizer 4 WU		<p>Plug-in module for the supply of adjustable, stabilized DC 0...30 V / 0...20 A (floating and individually adjustable)</p> <ul style="list-style-type: none">1 digital voltmeter 0...30 V1 digital ammeter 0...20 A2 LED's for mode control "current regulated" or "voltage regulated"2 safety lab terminals1 illuminated rocker switch1 thermic- magnetic circuit breaker2 10-turn potentiometer for setting voltage and current limits	34-5A
		0...30 V / 40 A	34-5N
High current DC stabilizer "Eco" 2 WU		<p>Plug-in unit for supply with stabilized ungrounded 1...30 V / 1...20 A DC voltage</p> <p>Digital display instruments, voltage and current limitation are continuously variable independent of one another. The device has SoftStart and thermal protection.</p> <p>Residual ripple: 0.5% with voltage control 0.5% with current control</p> <p>Correction time: approx. 20 ms (off-load / full load)</p> <p>Power consumption: approx. 900 VA</p> <ul style="list-style-type: none">1 digital voltmeter 0...30 V, resolution 100 mV1 digital current meter 0...20 A, resolution 100 mA2 ten-turn helical potentiometers2 light-emitting diodes to display the 'voltage-regulated or current-regulated' operating mode2 safety laboratory jacks1 illuminated rocker switch3 microfuses1 three-phase fixed transformer1 control module	34-5Q



		Technical data	Best.-Nr.
Continuity tester 1 WU		Plug-in panel with two continuity testers 1 electronic high-impedance continuity tester up to a maximum of 5 MOhm (acoustic) Test current: maximum of 25 µA Voltage safety: up to approx. 400 V AC 1 low-impedance continuity tester (optical) Test voltage: 22 V AC 1 microfuse 1 illuminated rocker switch 1 transformer with separate input windings and output windings 1 incandescent lamp 1 miniature loudspeaker 2 x 2 safety laboratory jacks	32-1B
Continuity tester 1 WU		Plug-in panel with low-impedance continuity tester for testing switches; automatic cut-outs, etc. 1 incandescent lamp optical display 1 buzzer acoustic signal test voltage 22 V AC 3 safety laboratory sockets 1 illuminated rocker switch	32-1T
Digital multimeter 1 WU	 	Plug-in panel with 3 3/4-digit DYNATEC 9200 digital multimeters Measuring range: DC 400 mV ... 1000 V 400 µA... 20 A AC 400 mV ... 750 V 400 µA ... 20 A R 400 Ohm ... 40 MOhm F 4 kHz ... 4 MHZ Base accuracy: ± (0.5% from measured value + 1 digit) Operating modes: Continuity testing Pulse duty factor test Logic test Data Hold Peak Hold incl. power supply for mains operation	32-2H Z006
		operated by battery	32-2H Z007

As an extension to the System 6HU measurement and test equipment range, special rack mounts are available which can be equipped with "Hameg Modular System 8000" test units. The required power supply is part of the delivery of the individual module and will be factory-fitted into the rack when ordered. Further equipment available upon request.

	Technical data	Order no.
Plug-in module for Hameg modules 2 WU 	Plug-in module to accept Hameg modules of the Hameg Modular System 8000 test units 1 illuminated rocker switch	
	to accept one Hameg module to accept two Hameg modules to accept three Hameg modules	35-4KZ01 35-4KZ02 35-4KZ03
Digital multimeter	Digital multimeter HM 8012 fits plug-in module 35-4K 4 3/4-digit display with 50000 digits 42 measurement ranges; automatic range switching true measurement of effective values for AC and AC and DC basic precision 0.05 % max. resolution 10 μ V, 0.01 dBm, 10 nA; 10 mOhm, 0.1°C input resistance >1 GOhm (0.5 V and 5 VDC ranges) temperature measurement °C/°F in 0.1° increments RS-232 interface PC software for control and recording measured values incl. set of probes	35-4L
Function generator	Function generator HM 8030-6 fits plug-in module 35-4K Frequency range 0.05 - 10 MHz 5-digit digital frequency display. 7-segment LED Operating modes: sinus, square, triangular, free-running impulse, internally or externally frequency modulatable, with and without DC offset trigger output approx. + 5 V/TTL internal and external wobble adjustment square rise time typ. 15 ns distortion factor max. 0.5% up to 100 kHz, max. 3% up to 5 MHz. Optional accessories: BNC measuring cable HZ33, HZ34 50 Ohm throughput cable HZ22	35-4M
L/C measuring device	L/C measuring device HM 8018 fits plug-in module 35-4K 24 measurement ranges max. resolution: 0.1 pF, 0.1 μ H, 0.01 Ω , 0.01 μ S 3 measurement frequencies: 160 Hz, 1.6 kHz, 16 kHz 4-wire measuring technology basic precision 0.5% internal bias voltage for Elkos measurement of serial and parallel components Please note: With screwable lab clamps to allow clamping of components from below. Laboratory safety jacks can only be used with an adapter.	35-4N

		Technical data	Order no.
Oscilloscope 3 BE (+ 1BE)		Digital Real-Time Oscilloscope Tektronix, Type TDS 2002B colour display (1/4 VGA LCD) Digital Real Time (DRT) 60 MHz bandwidth 1 GS/s sample rate two input channels external triggering edge and video trigger capability triggerview cursor measurement with readout setup and waveform storage auto setup menuedriven measurements USB interface front and backside	35-4P Z103
Oscilloscope 1 BE	 network compatible see p. 46/47	 2-channel PC oscilloscope with Ethernet interface Mfr. Metrix MTX1052 The digital PC oscilloscope is easy to use and is operated completely with the included software. Bandwidth: 150 MHz Channels: 2 channels, Class 1 Common ground vertical: 2.5 mV/div - 100 V/div, to 250 iV/div with Y-elongation time bases 35 areas of 1 ns/div to 200 s/div Trigger: Auto, triggered, single-shot Trigger source: CH1, CH2, EXT, network. Type: Shoulder, impulse width or delay power supply: 100 - 230 V/AC 47 - 63 Hz Available options: Differential voltage sensors	35-4Q Z102
Oscilloscope 1 BE	 network compatible see p. 46/47	 4-channel PC oscilloscope with Ethernet interface Mfr. Metrix MTX1054 The digital PC oscilloscope is easy to use and is operated completely with the included software Bandwidth: 150 MHz Channels: 4 channels, Class 1, Common ground vertical: 2.5 mV/div - 100 V/div, to 250 iV/div with Y-elongation time bases 35 areas of 1 ns/div to 200 s/div Trigger: Auto, triggered, single-shot Trigger source: CH1, CH2, CH3, CH4, EXT, network Type: Shoulder, impulse width or delay power supply: 100 - 230 V/AC 47 - 63 Hz Available options: Differential voltage sensors	35-4R Z102


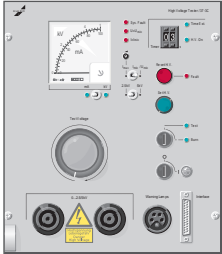
Oscilloscope
3 BE (+ 1BE)

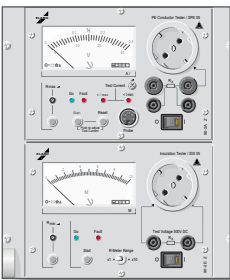


Technical data	Order no.
<p>Plug-in panel with digital real-time universal oscilloscope including one blank panel Manufactured by Tektronix, TDS 1002 model Digital Real Time (DRT) 60 MHZ 1 GS/s scan rate / channel Two input channels External triggering Flank trigger and video trigger Trigger view Cursor measurement with READOUT SETUP memory 5 automatic measurements Reference curve memory Auto setup Vector representation or dot representation Menu-guided measuring operations 10 selected languages Display: LCD with background illumination Representation: vectors or dots Bandwidth: 60 MHz Input channels: Two Scan rate per channel: 1 GS/s Recording length: 2500 / channel Triggering: external; "Trigger view" Trigger types: Flank, video, set (50%) Trigger methods: auto, normal, single, sweep Glitch capture: 10 s Sensitivity: 2 mV...5 V / div Vertical resolution: 8 bit Time basis range: 5 ns...5 s / div Horizontal accuracy: ± 0.01 % Recording methods: sample, average, peak detect Input impedance: 1 MOhm±2% 20 pF ± 3 pF Mains: 85...275 V, 47...63 Hz 2 Scanning heads</p>	35-4B
<p>like 35-4B, but with TDS2CM: RS232, IEEE 488 interface and printer connection (Centronics)</p>	35-4B Z001



The safety test instruments described here are used in high voltage testing applications and for measuring insulation and earth wire resistance. Such measurements are essential for equipment that must, subject to the applicable safety regulations, be checked by the manufacturer. Further equipment is also presented in our catalogue "Test Instruments".

	Technical data	Order no.
<div>High- voltage tester</div> <div>2 WU</div> <div></div>	<p>Plug- in module for the insulation and voltage proof testing of electrical equipment, machines, components and insulating materials which, according to relevant safety regulations, must be tested with a sinusoidal AC voltage.</p> <p>Operating modes: selectable by keyswitch</p> <p> "Test" overcurrent tripping release</p> <p> "Burn" burning out faults</p> <p>Display: 1 analogue moving coil instrument with double scale, switchable between current and voltage</p> <p>Test voltage: 0...5 kV, steplessly adjustable</p> <p>Release current: 0...100 mA, steplessly adjustable</p> <p>Rated power: 500 VA</p> <p>Short circuit current: ≥ 200 mA</p> <p>Response: ≤ 50 ms</p> <p>Mains supply: 230 V + 10% - 5% / 50 Hz / 600 VA</p> <p>Operating by means of operating devices, located at the front panel</p>	37-3B
<div>High- voltage tester</div> <div>2 WU</div> <div></div>	<p>Plug-in module with µP-controlled high voltage tester for the voltage proof testing of electrical equipment, machines, components and insulating materials which according to relevant safety regulations, must be tested with a sinusoidal AC voltage.</p> <p>Operating modes: selectable by key switch</p> <p> "Test" overcurrent tripping release</p> <p> "Burn" burnout of faults</p> <p> "Timer" test time setting between 1...99s</p> <p>Display: 1 analogue moving coil instrument with double scale, switchable between current and voltage measurement</p> <p>Test voltage: 0...2.5 / 0...5 kV, steplessly adjustable</p> <p>Release current: 0...100 mA, steplessly adjustable</p> <p>Rated power: 500 VA</p> <p>Short- circuit current: > 200 mA</p> <p>Response: < 50 ms</p> <p>Mains supply: 230 V + 10% - 5% / 50 Hz / 600 VA</p> <p>Safety function: internally adjustable monitoring of basic current and minimum voltage</p> <p>Operating: by means of operating devices, located at the front panel</p> <p>Interface: for external control by means of floating relay contacts for fault monitoring and external safety circuit</p> <p>A special socket on the front panel enables an additional set of warning lamps to be connected.</p>	37-3C



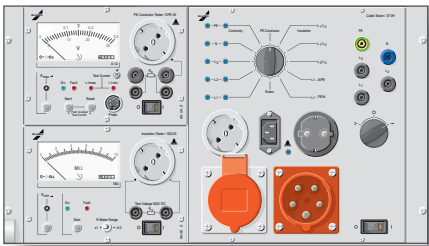

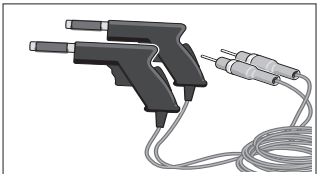
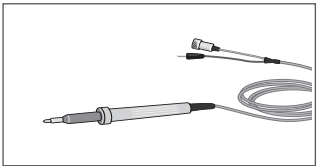
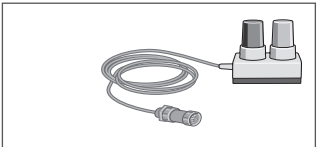
Insulation and PE tester
2WU

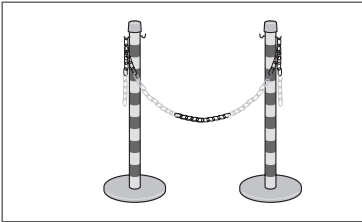
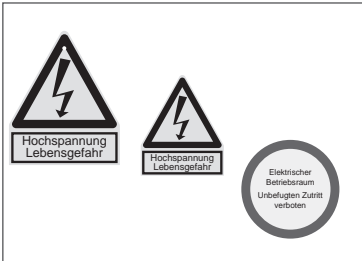


Safety tester VDE 0701/02
2WU

- Plug- in module with two safety testing instruments:
- 1 protective earth conductor measuring device 90-2A
Test current: 10...25 A
 - 1 analogue divider that calculates and displays the resistance of the protective earth conductor and its connections from the voltage drop and the momentary value of the current flowing
Measurement range: 0...0.3 Ohm
 - 1 spindle trimming potentiometer
 - 1 push- button enables the maximum permitted value of resistance to be set. If this value is exceeded during the measurement, a visual fault alarm is given. There is also a fault alarm given for too low or too high preset test currents (limit values are set inside the module).
 - 1 earth safety socket
 - 2 screw terminals
 - 2 safety lab terminals
 - 1 DIN- jack for PE- test probe 94-4S
 - 1 illuminated rocker switch
-
- 1 insulation resistance tester 90-2E
Test voltage: 500 V DC, stabilised
Short circuit: maximum 3 mA (no further safety measures are necessary for the operator)
 - 1 analogue divider with highly accurate measurement of resistance.
The resistance is displayed at two linear scales of the measurement instrument
0 ...10 MOhm
0..100 MOhm
 - 1 spindle trimming potentiometer, located at the front panel, for the setting of a bottom limit value of the insulation resistance. If a value below this limit is recorded during the test, a visual and an audible fault alarm are given.
 - 1 earth safety socket
 - 2 safety lab terminals
 - 1 illuminated rocker switch




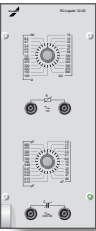
- Fixed panel with safety tester for the measurement of:
- PE conductor resistance
 - equivalent leakage current
 - PE conductor current / contact current
 - Insulation resistance on repaired or modified electrical equipment, according to VDE 0701/02.
- 1 4- line alphanumeric LC display, illuminated
 - 1 LED "Fault"
 - 1 LED "Pole reversal"
 - 2 function buttons "0701" and "0702"
 - 1 function button "Auto"
 - 1 test socket
 - 1 connection 4 mm safety lab terminal)
- Specification:
- Inaccuracy 5% ±1 digit (in all ranges)
- Resistance measurement of PE conductor
- Range 0 ... 1000 mOhm
- Limit value < 300 mOhm
- Measurement current 0.2 A DC (automatic pole reversal)
- Measurement of equivalent leakage current
- Range 0 ... 20 mA
- Limit value (acc. to VDE 0701) for devices with heating resistor
- [SC1] < 3.5 kW: <3.5 mA
- [SC1e] > 3.5 kW: < 1 mA / kW
- Measurement voltage 40 V AC
- Measurement of dielectric resistance
- Range 0.2 ... 20 MOhm
- Limit value (acc. to VDE 0701)
- [SC1] > 1 MOhm
- [SC2] > 2 MOhm
- Test voltage 500 V DC
- Short circuit current 4.9 mA
- Current measurement of the PE conductor
- Range 0 ... 10 mA
- Limit value (VDE 0702)
- [SC1] < 3.5 mA (automatic pole reversal)
- Measurement of the contact current
- Range 0 ... 10 mA
- Limit value (acc. to VDE 0702)
- [SC2] < 0.5 mA (automatic pole reversal)
- Complete with test probe and test clips.

		Technical data	Order no.
Cable tester 4 WU		<p>Plug-in module for the reliable checking of single and 3-phase cables for the following:</p> <ul style="list-style-type: none"> - Continuity test of individual cores using a test voltage of 5 V and a test current of 5 A. During the continuity test, cores which may be misconnected are indicated by LED's. - Insulation testing (3HU cassette 90-2E) and display of the measured value in MΩ. - PE conductor testing (3HU module type 90-2A), using an adjustable test current up to max. 25 A. The resistance of the PE- conductor is displayed Ω. <p>For tests conforming to VDE guidelines, the insulation measuring device and the protective conductor tester can be used separately.</p> <ul style="list-style-type: none"> 1 earth safety socket 1 CEE- earth safety socket 16 A 1 cold appliance connector 	37-3H
Adapter		<p>Adapter for type 37-3H</p>	
		<p>16 A CEE plug on 32 A CEE connector</p> <p>16 A CEE connector on 32 A CEE plug</p> <p>16 A CEE connector on 16 A perilex plug</p> <p>16 A CEE connector on 16 A perilex connector</p>	<p>37-3K</p> <p>37-3L</p> <p>37-3M</p> <p>37-3N</p>
Safety test probe		<p>Safety test probe with 2 m long cable and special plugs suitable for use up to 6kV_{rms}.</p> <p>4, 6, 10 and 15 m available upon request</p>	94-2A
Test probe		<p>Test probe with connecting lead for Elabo PE- conductor tester. One lead for the test current is connected to the sprung tip of the probe and the other to a second contact.</p> <p>Cable length 2 m</p> <p>4, 6, 10 und 15 m available upon request</p>	94-4S
Warning lamp set		<p>Warning- lamp set to VDE 0104 with red and green warning lamps, special plug with 2,5 m lead</p>	94-2C

		Technical data	Order no.
Barrier posts		Plastic barrier posts with PVC chain allows a correct barring off of test zones.	
		1 plastic barrier posts red/white with clamping strap Height 0,76 m PVC chain red/white please state length	94-2H 94-2J
Warning signs prohibitory signs		Warning signs, prohibitory signs	
		Combination warning sign yellow with black print. Complies with DIN 40 008. Required for test installations with voltages ≥ 1 kV. 240 mm wide, 200 mm high Combi warning sign like 94-2E, but 120 mm wide, 100 mm high Combi warning sign self- adhesive PVC. Warning sign, red ring and black lettering on a white background, self- adhesive PVC. Required for test rooms and cabins. Diameter 200 mm	94-2E 94-2F 94-2G

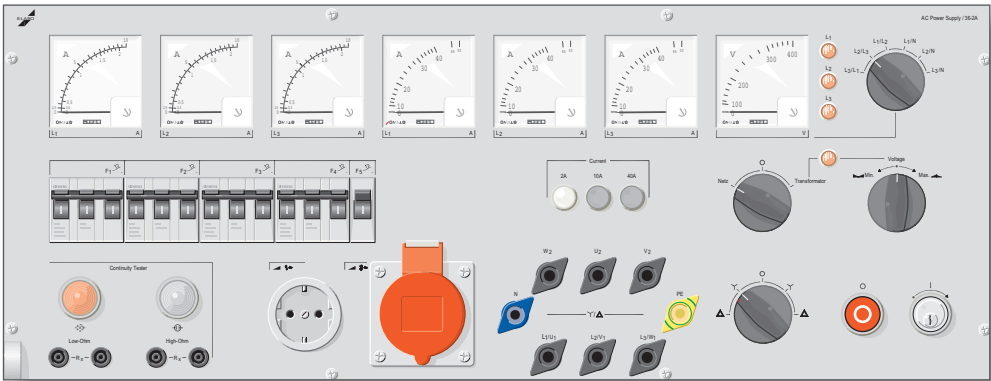


In laboratory situations the fast availability of typical resistance, capacitance and inductance values is a definite advantage.

		Technical data	Order no.
R-decade 1 WU		<p>Fixed panel with 6- decade resistance setting</p> <p>Range: 1 Ohm ... 999,999 kOhms</p> <p>Resolution: 1 Ohm</p> <p>Tolerances: 1 Ohm... 9 Ohms < 10% + 0.9 Ohm 10 Ohms... 99 Ohms < 2% + 0.9 Ohm 100 Ohms ... 999 Ohms < 1% + 0.9 Ohm > 1000 Ohms < 1 %</p> <p>Rating: Maximum 1 W</p> <p>Voltage: Maximum 250 V AC / maximum 50 V DC</p> <p>6 pre- set switches to set resistance values</p> <p>2 safety lab terminals</p>	32-2A
C-decade 1 WU		<p>Fixed panel with 5 C-decade setting</p> <p>Range: 100 pF...9.9999 µF</p> <p>Resolution: 100 pF</p> <p>Tolerance: 100 pF...1 µF ± 10% above this typically ± 2%</p> <p>Operating voltage: maximum 400 V DC</p> <p>5 pre- set switches to set capacitance values</p> <p>2 safety lab terminals</p>	32-2B
Inductive logade 1 WU		<p>Fixed panel with logarithmic interval inductances</p> <p>1 µH...4700 µH</p> <p>Ranges: 23 values between 1 µH...4700 µH are provided</p> <p>Inaccuracy: 1 µH... 33 µH ± 10% 47 µH...4700 µH ± 5%</p> <p>Operating voltage: maximum 100 V DC</p> <p>Operating current: maximum 63 mA, protected by fine wire fuse</p> <p>1 rotary knob for setting required values</p> <p>2 safety lab terminals</p>	32-2C
RC-logade 1 WU		<p>Fixed panel with logarithmic interval RC- values</p> <p>Resistance range: 100 Ohm...680 kOhm</p> <p>Rating: 1 W</p> <p>Tolerance: ± 2%</p> <p>Operating voltage: maximum 500 V DC</p> <p>Capacitance range: 100 pF...0.68 µF</p> <p>Tolerance: ± 10%</p> <p>Operating voltage: 100 pF... 6.8 nF/ 1000 V DC 10 nF... 68 nF/ 630 V DC 0.1 µF... 0.68 µF/ 400 V DC</p> <p>4 laboratory safety terminals</p>	32-2D

The test panels 36-2A and 36-3A are suitable for general use in test areas. The three phase 3/N/PE ~ 50 Hz 400 V 40 A mains supply is connected to a block of individual identified terminals. The main switch which also acts as the Emergency Off switch is keylock switch. The test panel is equipped with three- phase line indicator lamps, one control circuit fuse and 3 x 16 A circuit breakers for modules, integrated in the bench rack. The selection switch MAINS - 0 - TRAF0 allows the switching over from normal mains supply to a continuously adjustable voltage, fed- in through a seperatly ordered transformer.

Test panel with three current ranges
6 WU



Operating modes

- "Mains":

Mains voltage is connected, via the measurement instruments, to the lab terminals resp. socket outlets.
- "Trafo":

In this switch position the output terminals and sockets are supplied with a continuously adjustable voltage from a variable- ratio transformer (not part of the delivery, it has to be ordered separatly).
- Setting:

1 selector switch "Mains" - 0 - "Trafo"

Current measurement

- Selection:

3 ranges 2 A / 10 A / 40 A, selectable by using three mutually cancelling push- buttons.
- Display:

3 moving coil ammeters protected by two 3- pole automatic circuit breakers for each range. Current measurement ranges are combinedly switched over.
As range- changing does not interrupt the supply, no new inrush surges occur. This makes exact measurement of the current possible, e.g. after starting up an electric motor.

Voltage measurement:

- Selection:

1 button: Min and Max are used to set the voltage when a motorized variable- ratio transformer is in use (to be ordered separatly)
"Min" button decreases,
"Max" button increases the voltage
- Display:

1 moving-coil voltmeter 0...400 V with measuring rectifier and linear scale can be switched to phase / phase or phase / neutral.

- Continuity test

High- resistance 230 V AC, displayed by 230 V glow lamp
Low-resistance 24 V AC, displayed by 24 V incandescent lamp.
- Mains supply:

1 marked terminal block for 3- phase AC
3/ N/ PE 400 V AC / 40 A / 50 Hz
- Trapping off:

1 CEE- socket 16 A 5-pole
6 laboratory terminals 63 A, for combinations of push- lock terminal connection, in terminal board arrangement
W2 U2 V2
L1/ U1 L2 / V1 L3 / W1
2 laboratory terminals, 63A N/ PE with push- lock terminal connection
- Main switch:

1 key- switch- On
1 off push button
1 x 5- pole contactor
3 3- phase indicator lamps
- Protection:

1 fuse (control circuit)
1 3- pole circuit breaker 16 A for the reserve
- Motor start:

1 reversing star- delta switch
- Optional features:

Module rectifier 25 A model 36-2B,
Module rectifier 40 A model 36-2C
Module pole- changing switch model 36-2D.
- Remark:

The 3- phase variable- ratio transformer is not included in the delivery.
It has to be ordered separately (Model 36-2G or 36-2H).

This test panel allows 4 current ranges to be selected. For clear reading there are 4 large moving coil ammeters integrated. Used together with a 3- phase variable- ratio transformer the operator can perform a multitude of applications fault diagnosis of single and 3 phase equipment of all kind.

Test panel with four current ranges
6 WU



Operating modes

- "Mains": Mains voltage is connected, via the measurement instruments, to the lab terminals, resp. socket outlets.
- "Transformer": In this position the output terminals and socket outlets are supplied with a continuously adjustable voltage from a variable- ratio transformer (not part of the delivery, it has to be ordered separately).
- Setting: 1 selector switch "Mains" – 0 – "Transformer"

Current measurement

- Pre-selection: 4 ranges 1.5 A / 4 A / 15 A / 40 A, selectable by using four mutually cancelling push- buttons.
- Display: 3 moving-coil ammeters
Protected by 3 pole automatic circuit breakers for each range. Current measurement ranges are combinedly switched over. As range- changing does not interrupt the supply, no new inrush surges occur. This makes exact measurement of the current possible, e.g. after starting up an electric motor.

Voltage measurement

- Selection: 1 button: Min and Max are used to set the voltage when a motorized variable- ratio transformer is in use (to be ordered separately).
"Min" button decreases,
"Max" button increases the voltage.
- Display: 1 moving-coil voltmeter 0...400V, with measurement rectifier and linear scale; can be switched to phase / phase or phase / neutral

- Continuity testing: High-resistance 230 V AC, displayed by 230 V glow lamp
Low-resistance 24 V AC, displayed by 24 V incandescent lamp.

- Mains supply: 1 marked in-line terminal block for three-phase AC 3/ N/ PE 400 V AC / 40 A / 50 Hz

- Outputs: 1 CEE socket 16 A 5-pole
6 laboratory terminals 63 A, for combinations of push- lock terminal connection, in terminal board arrangement.
W2 U2 V2
L1/ U1 L2/ V1 L3/ W1
2 laboratory terminals, 63A N/ PE with push- lock terminal connection

- Main switch: 1 keyswitch ON
1 off push button
1 x 3 pole contactor
3- phase indicator lamp

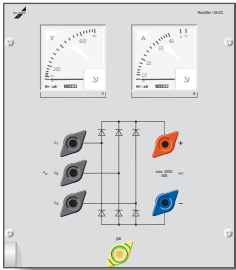
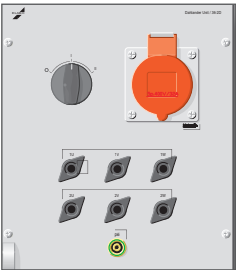
- Protection: 1 fuse (control circuit)
1 3- pole circuit breaker 16 A for reserve

- Motor start: 1 reversing star- delta switch

- Optional features: Module rectifier 25A model 36-2B,
Module rectifier 40 A model 36-2C
Module pole-changing switch model 36-2D

- Remark: The 3- phase variable- ratio transformer is not included in the delivery.
It has to be ordered separately (Model 36-2G or 36-2H)

An additional slide-in unit can be used for test applications that require fixed or variable DC voltage. This slide-in unit is fed from the laboratory terminals U1 – V1 – W1 of the 36-2A or 36-3A slide-in test bay via a three-phase variable toroidal transformer. Alongside its direct current supply function this setup allows wide-ranging tests to be carried out.

	Technical data	Order no.
Rectifier panel 2 WU	Plug-in module with 3- phase rectifier Input: 3 x 0...400 V AC / 50 Hz Output: 0...500 V / 25 A DC 1 moving-coil voltmeter 0...500 V 1 moving-coil ammeter 0...25 A Residual ripple of DC: approx. 5% for 3-phase connection approx. 48 % for AC connection 3 x screw type lab terminals for 3- phase supply 2 x screw type lab terminals for tapping off DC output voltage 1 x PE screw type lab terminal	36-2B
Rectifier panel 2 WU	 Plug- in module with 3- phase bridge rectifier Input: 3 / N / PE 0...400 V AC / 50 Hz Output: 0...500 V / 40 A DC 1 moving-coil voltmeter 0...500 V 1 moving-coil ammeter 0...40 A Residual ripple of DC: approx. 5% for 3-phase connection approx. 48 % for AC connection 3 screw type lab terminals for 3- phase supply 2 screw type lab terminals for tapping off DC output voltage 1 PE screw type lab terminal	36-2C
Pole- changing switch 2 WU	 Fixed panel with: 1 Dahlander pole changing switch 40 A 6 screw type lab terminals 63 A, arranged in terminal board layout 1 5- pole CEE- socket outlet 32 A 1 PE- screw type lab terminal The panel is used in combination with test panels 36-2A e.g. 36-3A	36-2D



Applications: Limiting the inrush current peak, checking disassembled stators and rotors, fault diagnosis e.g. faults between turns. All transformers can be loaded to maximum current at all settings. Drive is by a capacitor motor. Three Neozed fuses are built-in for protection. Each transformer is fitted with two 5m long connecting cables for the control device and for tapping off the secondary voltage. Our test bay for engines could be found at the pages 99 onwards.

	Technical data	Order no.
Variable ratio 3- phase transformer	<p>Variable ratio 3- phase transformer with motor drive for test panels 36-2A and 36-3A.</p> <p>Power output: 17.3 kVA Input: 3/ N/ PE ~ 50 Hz 400 V Output: 3/ N/ PE 0...400 V / 25 A Drive: Capacitor motor 230 V / 50 Hz</p> <p>1 powder coated sheet steel housing, W = 420mm, D = 405mm, H = 690mm, protected to IP 20</p>	36-2G
Variable ratio 3- phase transformer	<p>Variable ratio 3- phase transformer with motor drive for test panels 36-2A and 36-3A.</p> <p>Power output: 27.6 kVA Input: 3/ N/ PE 230 /400 V AC Output: 3/ N/ PE 0...230 V / 400 V /40 A Drive: Capacitor motor 230 V / 50 Hz</p> <p>1 powder coated sheet steel housing, W = 660mm, D = 410mm, H = 1030mm, protected to IP 20</p>	36-2H
Inrush current limiter	<p>Inrush current limiter for variable- ratio 3- phase transformer model 36-2G (25 A).</p> <p>When the transformer is switched on, a very high initial current flows which may trip the supply circuit breakers. By fitting the current limiting device, this inrush current is limited to a tolerable level. The device is installed in the transformer housing and wired into the primary circuit.</p> <p>W = 150 mm, D = 100, H = 120 mm</p>	36-2E
Inrush current limiter	<p>Inrush current limiter for variable- ratio 3-phase transformer model 36-2H (40 A)</p> <p>W = 150 mm, D = 100, H = 120 mm</p>	36-2F
Stabiliser unit for variable 3- phase transformers	<p>The output voltage of the transformers on this page varies with changes of the load. By using the stabilizing unit the output voltage will be kept stable to +/-2%. Response: appr. 100 V/s The voltage setting potentiometer is located at the test panel.</p>	36-2K

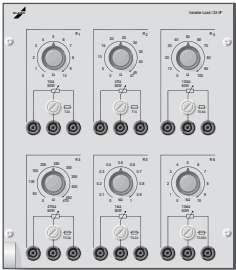
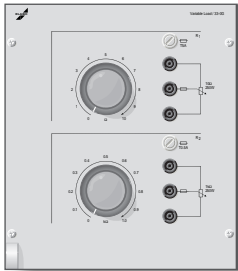
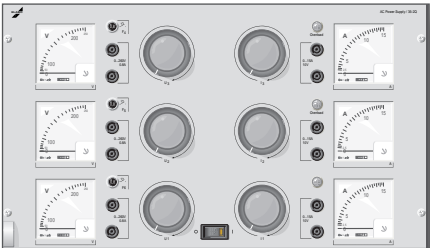


Elabo offers optimum packing density with highest performance capability and accurate imaging of all testing processes at the workplace. Also for the use of function generators .

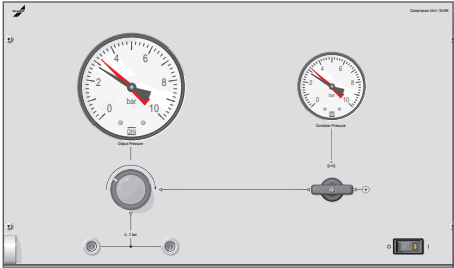
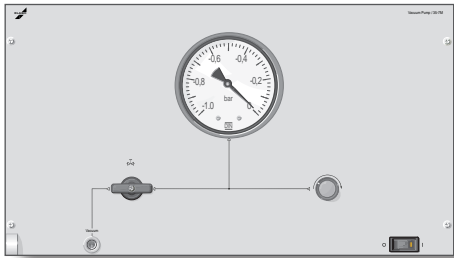
Through the 6HU mounting rack system, further devices, power and voltage supply systems can be installed in a space-saving way above or below the 3HU function generators.

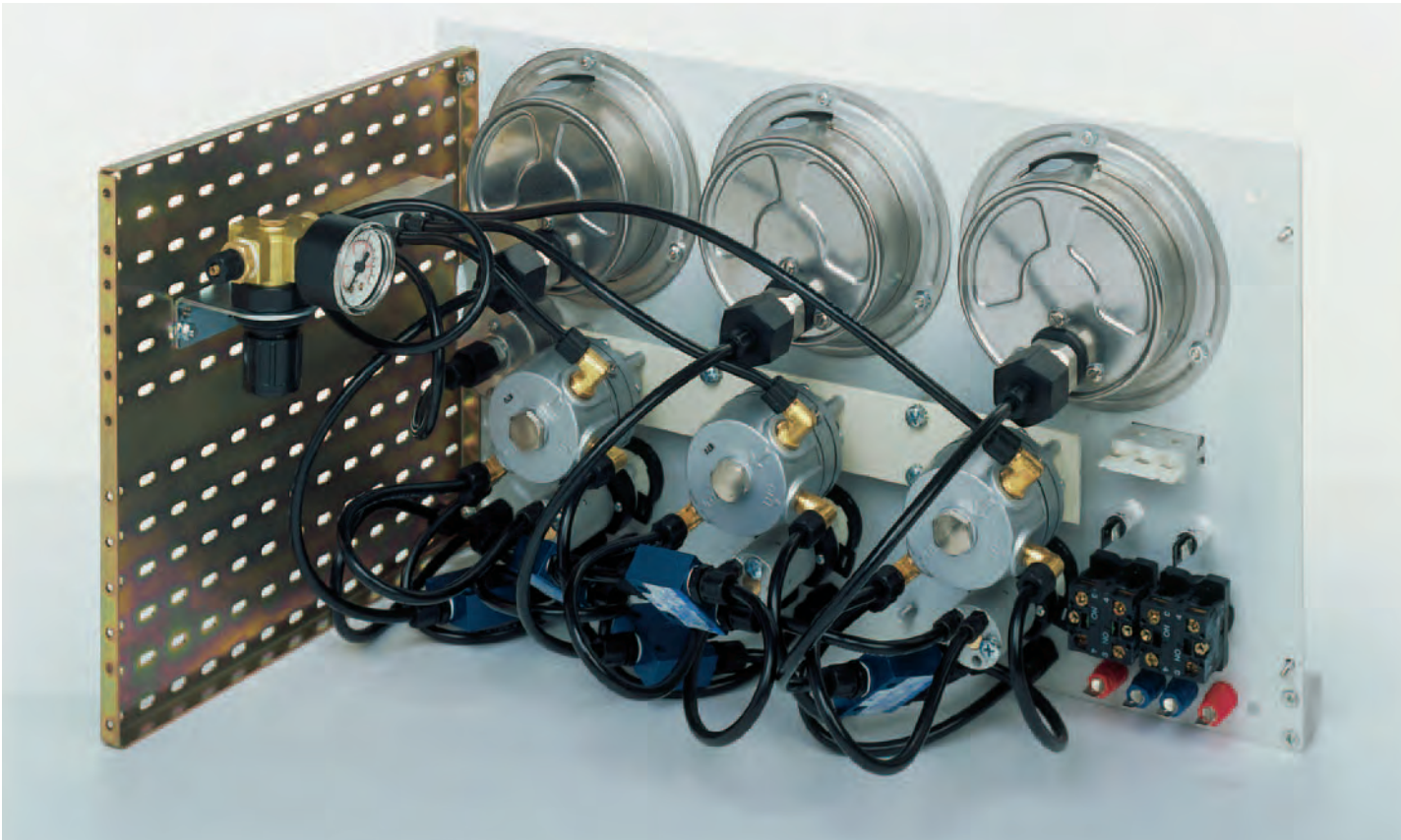
You will find a list of all deliverable Elabo function generators on E 33.

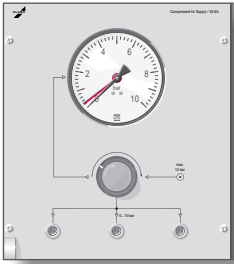
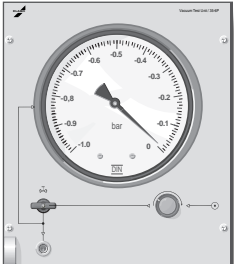

Function generators are an interesting and versatile group of devices in the field of low-frequency technology: Their large frequency range and the large number of different time-dependent output voltages make it possible to conduct tests on electric systems even with non-sinusoidal voltages.

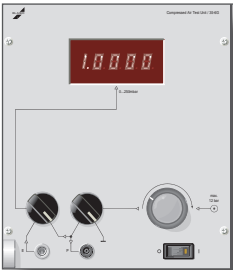
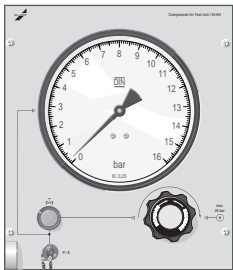
		Technical data	Order no.
Load resistances 2 WU		Plug- in module with: 6 adjustable load resistance 0...100% Standard values 10 Ohms, 47 Ohms, 100 Ohms, 470 Ohms, 1kOhm, 10kOhms Rating: maximal 50 W; other values on request 6 fine wire fuses 6 x 3 safety lab terminals	36-0F
Load resistances 2 WU		Plug- in module with: 2 adjustable load resistance 0...100% Standard values 10 Ohm, 1kOhm Rating: maximal 250 W; other values on request 2 fine wire fuses 2 x 3 safety lab terminals	36-0G
Voltage and current source 3 ~ 4 BE		Plug-in unit with 3- phase floating AC voltage and current sources for application in power station workshops. The module serves as a supply source for testing of voltage and current- relays, bimetal relays, over and under voltage relays. Floating current source 3 three toroidal transformers and current transformer current range: 0...15 A no load voltage: 0...10 V 3 x 2 safety lab terminals, labelled with I1, I2, I3 3 ammeters 0...15 A (moving-iron instruments, class 1.5) 3 overcurrent displays Floating voltage source 3 three toroidal transformers secondary voltage: 0...260 V load current: maximum 0.8 A 3 thermic- magnetic circuit- breakers 3 x 2 safety lab terminals, labelled with U1, U2, U3 3 voltmeters 0...300 V (moving-iron instruments, class 1.5) 1 illuminated rocker switch	36-2Q

Elabo has a comprehensive range of pressure supplies and vacuum generators; this is supplemented with test and measurement equipment. The diversity of pneumatic equipment for System 6HU slide-in units can be expanded by using rack mount 31-4A or 31-4B to take supply units from the System 3HU eurocassettes. Special pressure ranges are available for the slide-in pneumatic units. Custom designs are also possible, e.g. special couplings, water pressure measurement, flow rate meters etc.

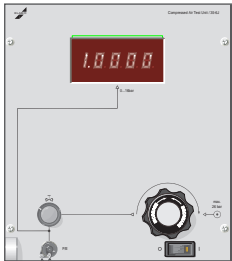
	Technical data	Order no.
Oil-free compressor 4 WU	 <p>Plug-in module with non lubrication compressor to generate shop air. Rated pressure: 7 bar Capacity: 35 l / min Sound pressure level: 57 dB(A) 1 pressure regulator 2 manometer 2 couplings NW5 2 quick connectors</p>	35-6R
Oil-free compressor 4 WU	 <p>Plug-in module with non- lubrication vacuum pump Capacity: 32 l / min Generated vacuum: Approx. 850 mbar Range: Approx. 850 ... 133 mbar (approx. 700 ... 100 Torr) Accuracy: Approx. 13 mbar (10 Torr) Mains supply: 230 V / 50 Hz Sound pressure level: Approx. 57 dB(A) 1 manometer 1 coupling NW5 1 quick connector</p>	35-7M



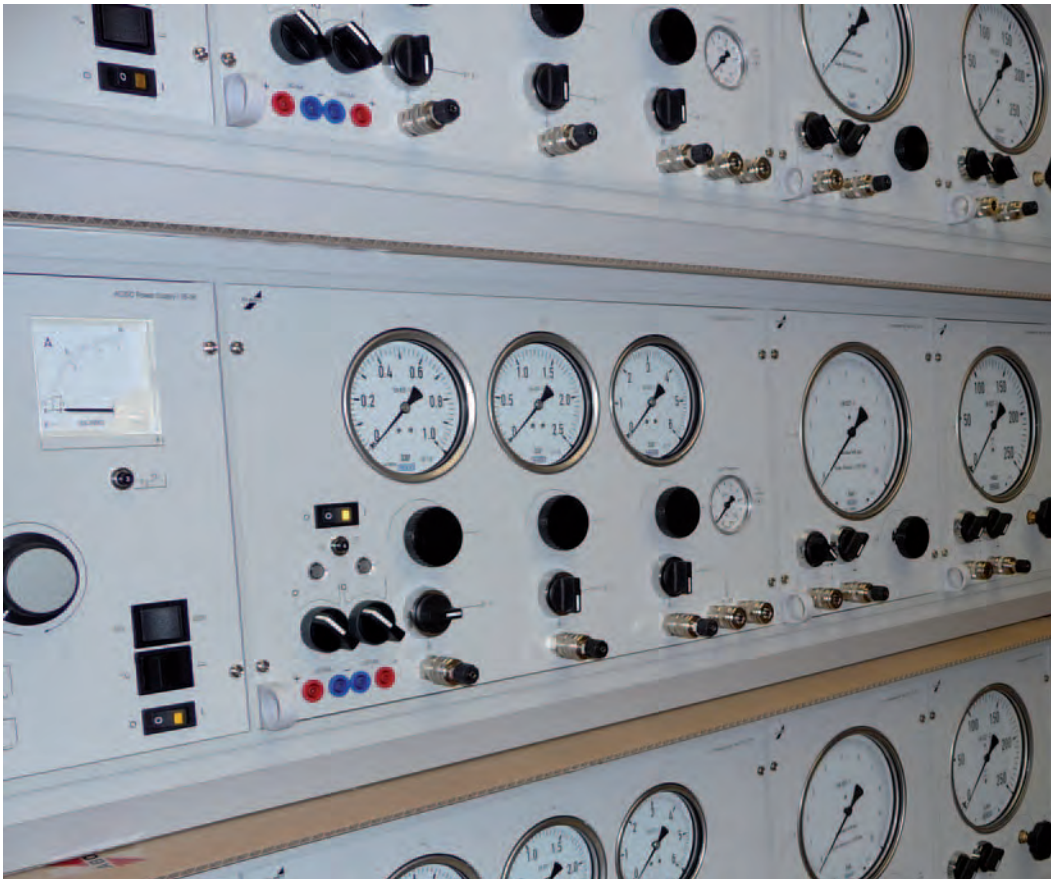
		Technical data	Order no.
Pneumatic supply unit 2 WU		Compressed air supply module 1 flange- mounted pressure gauge 0...10 bar 1 pressure regulator 0.5...10 bar 3 couplings NW5 2 quick connectors 1 connecting hose	35-6A
Pneumatic supply unit 2 WU		Compressed air supply module 1 flange- mounted pressure gauge 0,5...10 bar with water separator and oil misting unit 1 pressure regulator 3 couplings NW5 2 quick connectors 1 connecting hose	35-6B
Pneumatic supply unit 2 WU		Plug-in module with vacuum precision gauge 1 analogue precision gauge of quality class 0.6, range 0...-1000 mbar 1 precision pressure regulator with good adjustment accuracy and reproducibility for a correct setting of the output vacuum 1 coupling NW5 1 quick connector Vacuum has to be provided!	35-6P
Pneumatic measurement and test unit 2 WU		Plug-in module with pressure gauge to be used as a regulator (for pressure setting) or as an external measuring instrument and for leak testing. Input pressure maximum 12 bar. 1 precision manometer 0...1 bar, class 0.6 1 precision pressure regulator 1 3/2 valve to perform leak testing 1 3/2 valve to switch over from internal measurements to external use 2 self sealing couplings NW5 1 quick connector Pressure to be supplied on site!	
		0...1,0 bar	35-6C Z01
		0...2,5 bar	35-6C Z02
		0...6,0 bar	35-6C Z03
		0...10,0 bar	35-6C Z04

		Technical data	Order no.
Pneumatic measurement and test unit 2 WU		Plug- in module with pressure gauge with digital indicator to be used as a regulator (for pressure setting) or as an external measuring instrument and for leak testing. Output pressure can be set very precisely. Input pressure maximum 12 bar. 1 digital display 4½ digit 1 piezo- resistive precision transmitter, class 0.15 1 precision pressure regulator 1 3/2 valve to perform leak testing 1 3/2 valve to switch over from internal measurements to external use 2 self sealing couplings NW5 1 quick connector Pressure to be supplied on site!	
		0...250 mbar	35-6G Z01
		0...1 bar	35-6G Z02
		0...2 bar	35-6G Z03
		0...4 bar	35-6G Z04
		0...6 bar	35-6G Z05
		0...10 bar	35-6G Z06
High-pressure pneumatic measurement and test unit 2 WU		High-pressure pneumatic measuring and testing device with analogue display. The unit can be used as a regulator (for pressure setting) or as an external measuring instrument for leak testing. 1 analogue gauge class 0.6 1 precision pressure regulator 1 valve 1 minimess- coupling Pressure to be supplied on site!	
		0...16 bar	35-6H Z01
		0...25 bar	35-6H Z02
		0...40 bar	35-6H Z03
		0...60 bar	35-6H Z04
		0...100 bar	35-6H Z05

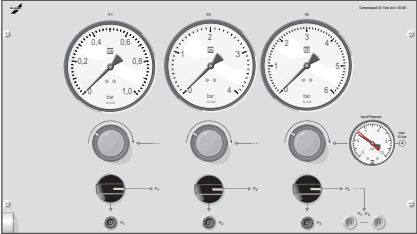
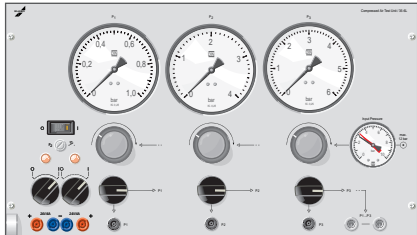
High-pressure pneumatic measurement and test unit
2WU





Technical data	Order no.
High- pressure pneumatic measuring and testing device with digital display. The unit can be used as a regulator (for pressure setting) or as an external measuring instrument for leak testing. 1 digital display 4½ digit 1 piezo- resistive precision transmitter, class 0.15 1 precision pressure regulator 1 valve 1 minimess coupling 1 illuminated rocker switch Pressure to be provided by the user.	
0...16 bar	35-6J Z01
0...25 bar	35-6J Z02
0...40 bar	35-6J Z03
0...60 bar	35-6J Z04
0...100 bar	35-6J Z05






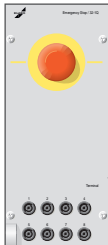

Five different measuring ranges can be covered: 0 ... 1 bar, 0 ... 2.5 bar, 0 ... 4 bar 0 ... 6 bar and 0 ... 10 bar. With the help of three 2/2-way valves, each of which has a measurement range allocated to it, the set test pressure is routed directly to the rapid-action output hose coupling. The internal compressed air pressure is displayed by an additional small manometer.


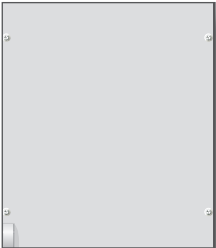
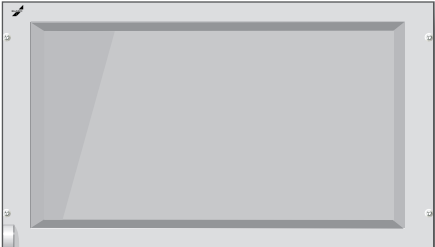
	Technical data	Order no.
<div><div>Pneumatic measurement module 4 WU</div><div></div></div>	<div>Plug-in module to check pneumatic or electro- pneumatic control components and transmitters. Input pressure maximal 12 bar.</div> <div>3 analogue gauges, class 1.0</div> <div>0...1 bar</div> <div>0...4 bar</div> <div>0...6 bar</div> <div>1 pressure gauge 0...10 bar to check input pressure</div> <div>3 precision pressure regulators</div> <div>3 x 2/2-way valves to select output couplings</div> <div>5 self sealing quick couplings NW5</div> <div>3 quick connectors</div>	
	0...1 / 2,5 / 6 bar	35-6K Z01
	0...2,5 / 4 / 6 bar	35-6K Z02
	0...1 / 4 / 6 bar	35-6K Z03
	Other ranges available on request.	
<div><div>Pneumatic measurement module 4 WU</div><div></div></div>	<div>Plug-in module to check pneumatic or electro-pneumatic control components and transmitters. Input pressure maximum 12 bar.</div> <div>3 analogue gauges, class 1.0</div> <div>0...1 bar</div> <div>0...4 bar</div> <div>0...6 bar</div> <div>1 small pressure gauge 0...10 bar to check input pressure</div> <div>3 precision pressure regulators</div> <div>3 x 2/2-way valves to select output couplings</div> <div>5 self sealing quick couplings NW5</div> <div>3 quick connectors</div> <div>1 additional DC supply with output voltage 2 x 24 V, 4 A total output current (for both outputs), residual ripple 48%.</div> <div>2 switches</div> <div>2 x 2 safety lab terminals</div> <div>1 circuit breaker</div> <div>1 illuminated rocker switch</div>	
	0...1 / 2,5 / 6 bar	35-6L Z01
	0...2,5 / 4 / 6 bar	35-6L Z02
	0...1 / 4 / 6 bar	35-6L Z03
	Other pressure ranges and output voltage ranges available on request.	


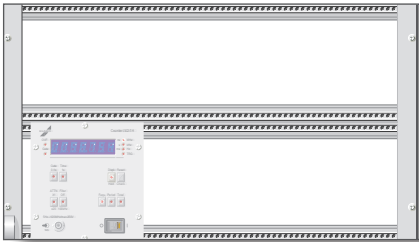
	Technical data	Order no.
Soldering station 1 WU	 <p>Soldering station Ersa 80 W with soldering gun 810 CDJ and stand A41. Analog temperature regulation using rotary potentiometer and a thermo-element temperature sensor inside the soldering tip. Line current 1/N/PE ~ 50 Hz 230 V / 16 A at one shock-free socket 1 illuminated rocker switch</p>	32-1W
Soldering station 1 WU	 <p>Fixed panel with soldering station 80 W (electronically stabilized, Weller) Temperature range: up to 450 °C, steplessly adjustable and electronically stabilized 1 LED for optical stabilizing control 1 earth safety socket 1 soldering pencil 1 pencil holder 1 illuminated rocker switch</p>	32-1Y

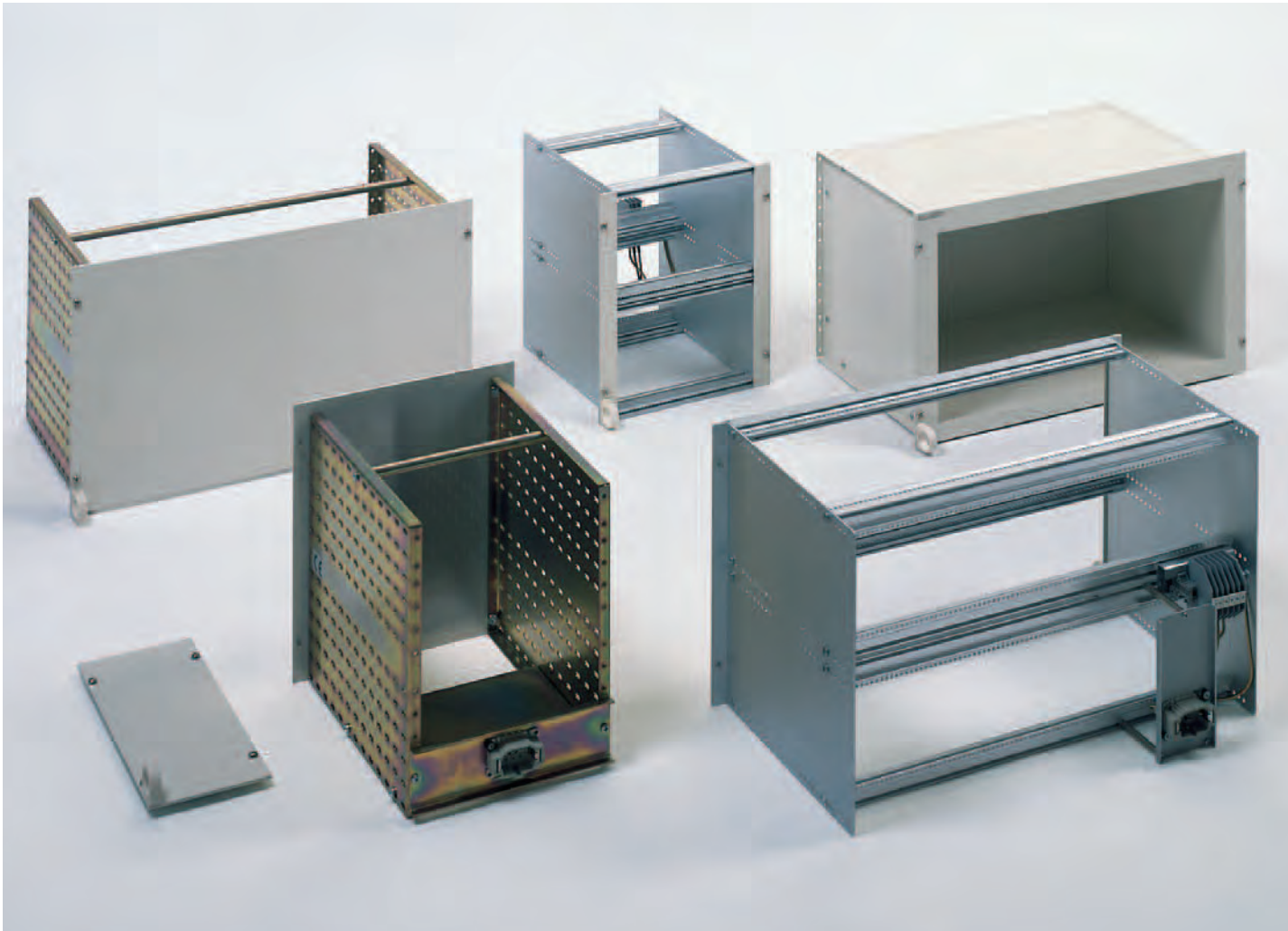
3HU soldering stations can also be used in the 6HU system in a space-saving way. Moreover, Elabo offers the patented Elabo cable management system for better cable routing. Here the soldering cable is guided invisibly to the place on the table where the soldering station is located. If the site is changed, the cable can be adjusted quickly and easily – without unplugging and replugging. More information in the Laboratory Catalog (2009 edition) or the Update Cable Management catalog appendix.



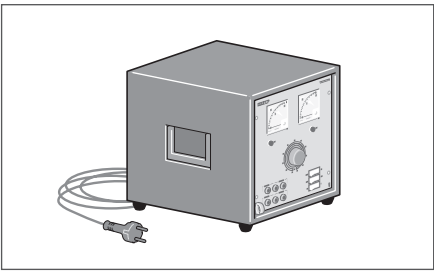
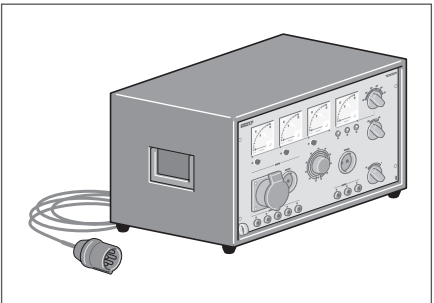
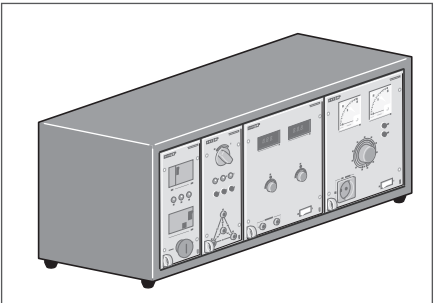
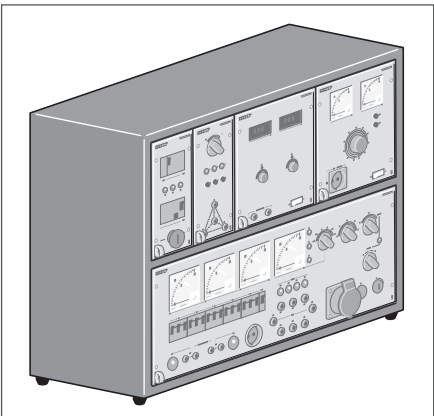
		Technical data	Order no.
Antenna socket 1 WU		Slide-in panel with antenna socket 2 earth safety socket 1 antenna socket TV, SAT, radio	32-1K
Test loudspeaker 1 WU		Fixed panel with 4W dynamic test loudspeaker Frequency range: 100 Hz...15 kHz Impedance: 4 Ohms Low freq. transformer: Primary 2.5 kOhm, 5 kOhm, 10 kOhm Secondary 4 Ohms, 8 Ohms, 16 Ohms 8 safety lab terminals	32-1A
3 ~ sequence indicator 1 WU		Fixed panel with 15 safety lab terminals, labeled (1 to 15) as selective poles	32-1U
Selective poles and EMERGENCY OFF 1 WU		Fixed panel with 8 safety lab terminals labeled selective poles 1 EMERGENCY OFF push- button (not wired up)	32-1Q
AC supply, 1 ~, BNC sockets 1 WU		Fixed panel with BNC sockets and earth safety sockets 2 not wired up BNC- sockets, Z = 50 Ohms 3 earth safety sockets	32-1N
Multiple interface field 1 WU		Plug-in panel with 2 USB connectors type A female 2 PS/2 mini-DIN 6-pole connectors female 1 Sub-D connector 9-pole male 2 Sub-D connector 15-pole HD female Each with approx. 2 m connecting lead and mating connector 2 Jack plug 3.5 mm stereo with approx. 3 m connecting lead and mating connector 2 RJ45 jack 8-pole, pluggable on both sides	32-1U Z01

	Technical data	Order no.
<div>Blank panel</div> <div>1 WU</div> <div></div>		31-1A
<div>Blank panel</div> <div>2 WU</div> <div></div>		31-1B
<div>Blank plug-in module</div> <div>4 WU</div>		31-1C
<div>Blank panel</div> <div>2 WU</div>		31-2B
<div>Blank plug-in module</div> <div>4 WU</div>		31-2C
<div>Push-in shelf</div> <div>4 WU</div> <div></div>		31-2F
<div>Push-in shelf</div> <div>6 WU</div>		31-2G

	Technical data	Order no.
<div>Rack mount 2 WU</div> <div></div>	Takes European Printed Circuit Boards (Eurocards) or eurocassettes 3HU / 2 x 36 HP	31-4A
<div>Rack mount 4 WU</div> <div></div>	Subrack, accepts Eurocards and Euro- Subdrawers 3HU / 2 x 84 HP	31-4B



Sheet steel housings are powder coated in light grey and some are fitted with two side folding carrying handles and four robust rubber feet. The rack and panel connector is fitted to the inside of the housing on the perforated rear wall. Supplied with guide rail and 2 m mains cable with strain relief sleeve.

		Technical data	Order no.
Single housing		<p>Sheet steel housing with space for 2 WU with 2 carrying handles and 4 rubber feet. Connector cable with Schuko (type F) plug W = 247, D = 340, H = 300 mm</p> <p>Connector cable with CEE plug for 3- phase supply W = 247, D = 340, H = 300 mm</p>	<p>30-6A Z01</p> <p>30-6A Z03</p>
Single housing		<p>Sheet steel housing with space for 4 WU with 2 carrying handles and 4 rubber feet. Connector cable with Schuko (type F) plug W = 483, D = 340, H = 300 mm</p> <p>Connector cable with CEE plug for 3- phase supply W = 483, D = 340, H = 300 mm</p>	<p>30-6C Z01</p> <p>30-6C Z03</p>
Multiple housing		<p>Sheet steel housing with space for 6 WU with 2 carrying handles and 4 rubber feet. Connector cable with Schuko (type F) plug W = 755, D = 315, H = 320 mm</p> <p>Connector cable with CEE plug for 3- phase supply W = 755, D = 315, H = 320 mm</p>	<p>30-5A Z01</p> <p>30-5A Z03</p>
Multiple housing		<p>Sheet steel housing with space for 2 x 6 WU 4 rubber feet. Connector cable with Schuko (type F) plug W = 755, D = 315, H = 320 mm</p> <p>Connector cable with CEE plug for 3- phase supply W = 755, D = 315, H = 320 mm</p>	<p>30-5B Z01</p> <p>30-5B Z03</p>

The Elabo motor test bay is the ideal test facility for electrical engineering applications and for industrial electrical workshops. Our equipment is designed with the benefit of decades of testing experience which, in the hands of professional electrical engineers, makes it perfect for the safe and proper handling of continually changing testing requirements. Combined with the three-phase variable transformer and modular auxiliary equipment the test bay is suitable not only for every possible testing application but for reliable diagnosis of almost all types of electrical equipment as well.



An Elabo motor test station comprises the following:

- Table superstructure with high-current and plug-in part
- 3-phase transformer unit
- Plug-in units of the 6HU system
- Work table with floor cabinet.

Various designs are available (see Laboratory Catalog) for the work table and floor cabinet.

The body of the table superstructure housing is made from 19 mm laminate and coated on both sides with melamine resin in basalt gray. Removable rear wall of 2 mm sheet aluminum, body powder-coated. Mains connection and connection of the connecting lead for the on-site regulating transformer on labeled series terminal strip.

High-current part:

The high-current part contains all of the control and safety elements necessary for operation as well as the protective combinations for the selectable power and voltage ranges. The installed large analog current measurement devices are equipped with linear scales. Overlapping measuring ranges make optimum resolution possible. Parallel to this, all of the important network parameters can be measured with the CVM power analyzer with the 3-fold digital display.

Other measuring and testing equipment: Depending on the application, a variety of measuring and testing devices can be additionally integrated into the design, for example, high-voltage test equipment.

Versatile use:

The combination of high-current unit, 3-phase transformer unit and the modular plug-in field render possible versatile tests of motors, transformers and devices using small and large capacity:

- Check of electrical machines of all types
- Stator and rotor testing even when uninstalled
- Heating of windings for drying or impregnation
- Error detection in the event of inter-turn short-circuit
- Power and voltage supply systems for 1-phase, 3-phase and DC devices
- Carrying out safety tests according to existing DIN standards on electrical components of all kinds

**Specification:**

Mains supply: 3/ N/ PE ~ 50 Hz 400 V on labeled terminal block
 Main switch: Keyswitch, serves also as Emergency- Off
 Protection: Motor protection circuit breaker with undervoltage trip in the range from 160...200 A

Control circuit: All control circuits are protected by triple automatic circuit breakers.

Current display: 3 moving coil ammeters 144 x 144 mm with measurement rectifier and linearer double scale

Current ranges: 1.5 A, 5 A, 15 A, 50 A, 100 A

Voltage ranges: I 3 / N / PE ~ 50 Hz / 0...230
 II 3 / N / PE ~ 50 Hz / 0...450
 III 3 / N / PE ~ 50 Hz / 0...690

Multipurpose display: Microprocessor controlled analyser with 16 mm high independend displays.
 Up to 30 parameters can be selected, e.g.:
 - Simultaneous measurement of the voltage of all phases
 - Simultaneous measurement of curent flows of all phases
 - Current measurement in the neutral core
 - Active power measurement (W)
 - Reactive power measm. (VAr kap, VAr ind)
 - Apparent power measurement (VA)
 - Power factor measurement (cos phi)
 - Frequency (Hz)

Tapping off: 1 Schuko socket outlet
 1 CEE socket outlet 3 pole 16 A, blue
 3 CEE socket outlets, 5 pole, 16, 32, 63 A, red
 8 high- current lab terminals, arranged in the terminal board
 1 Star-Delta reverse switch 100 A with zero position

DC supply: I 0...ca. 150 V
 II 0...ca. 300 V
 III 0...ca. 450 V

Residual ripple approx. 18%
 DC voltage display: Moving-coil voltmeter 144 x 144 mm with double scale, 100 V, switchable to 500 V

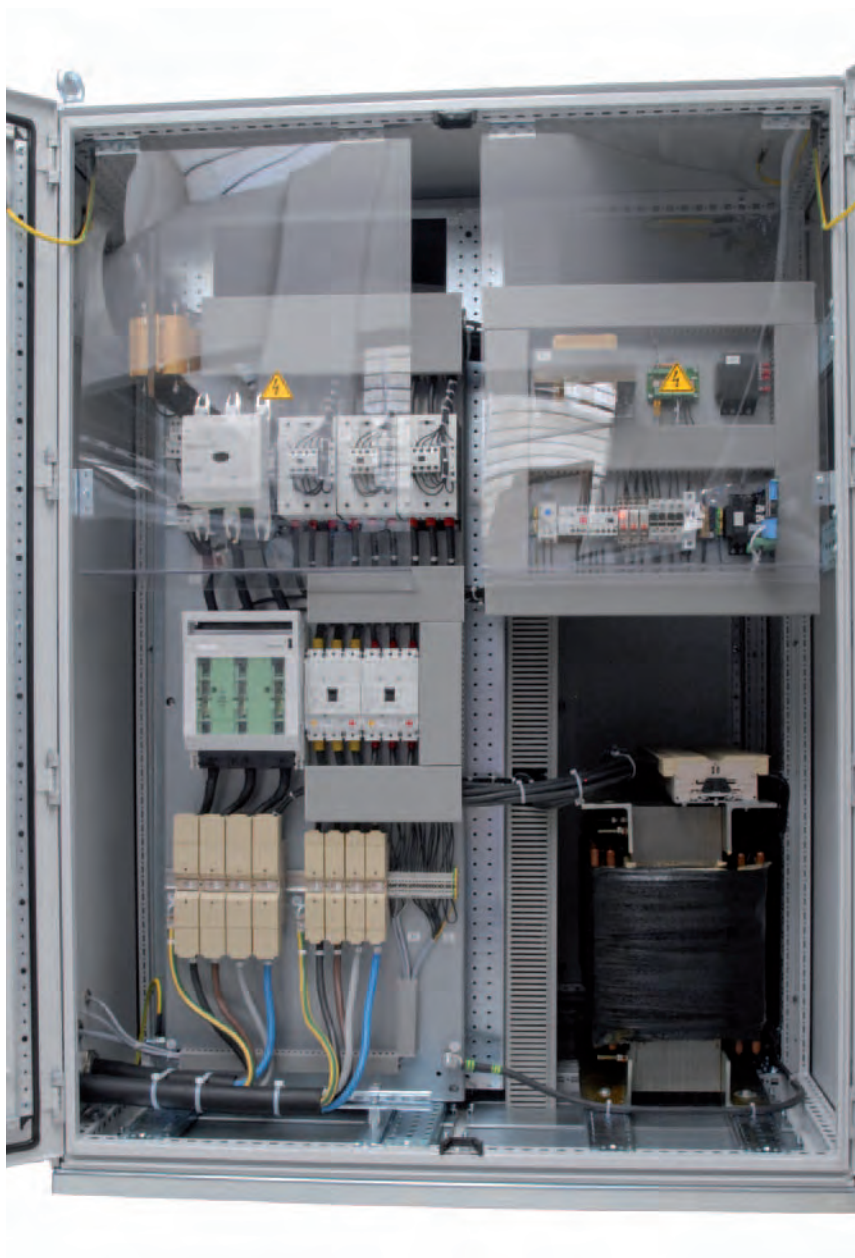
DC current display: Moving-coil ammeter 144 x 144 mm with double scale, 10 A, switchable to 100 A

Fusing: SILIZED fuse 100 A internally

3- phase variable column autotransformer with separate windings according to VDE 0552 part 5 for heavy- duty operation.

The transformer has to be installed separately from the bench and to be connected by means of flexible cables. Connection to terminal block fitted in the bench rack.

The unit is tailored to the individual customer's order.



Technical data

Power rating:	120 kVA
Input voltage:	3 / N / PE 400 V AC / 50 Hz
Output voltage:	I 3 / N / PE ~ 50 Hz / 0...230/ 133 V II 3 / N / PE ~ 50 Hz / 0...450/ 260 V III 3 / N / PE ~ 50 Hz / 0...690/ 400 V
Current output:	maximal 100 A within each voltage range, transient 150 A

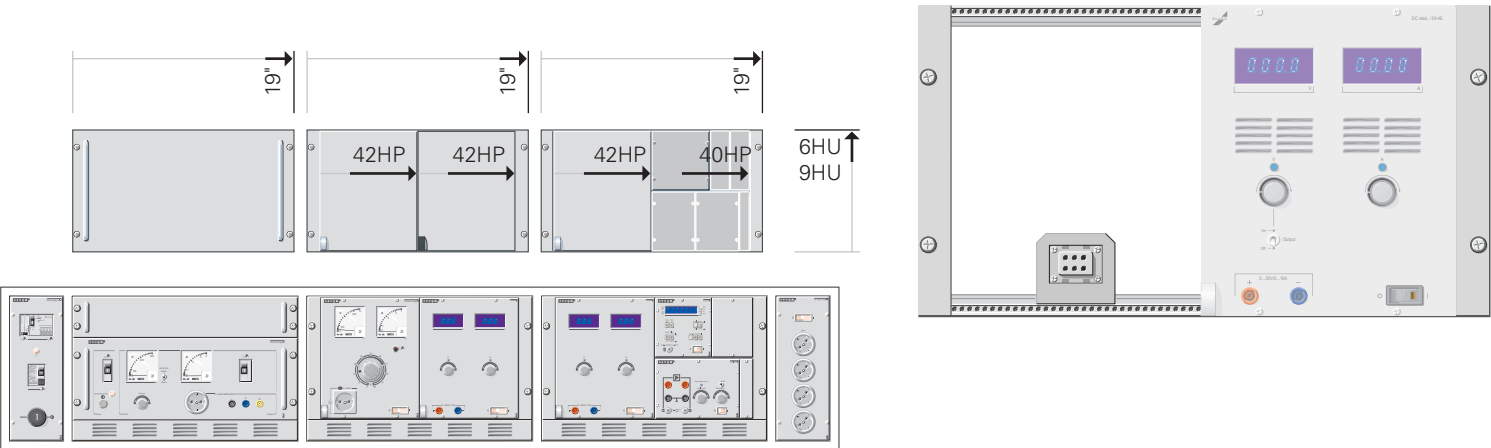
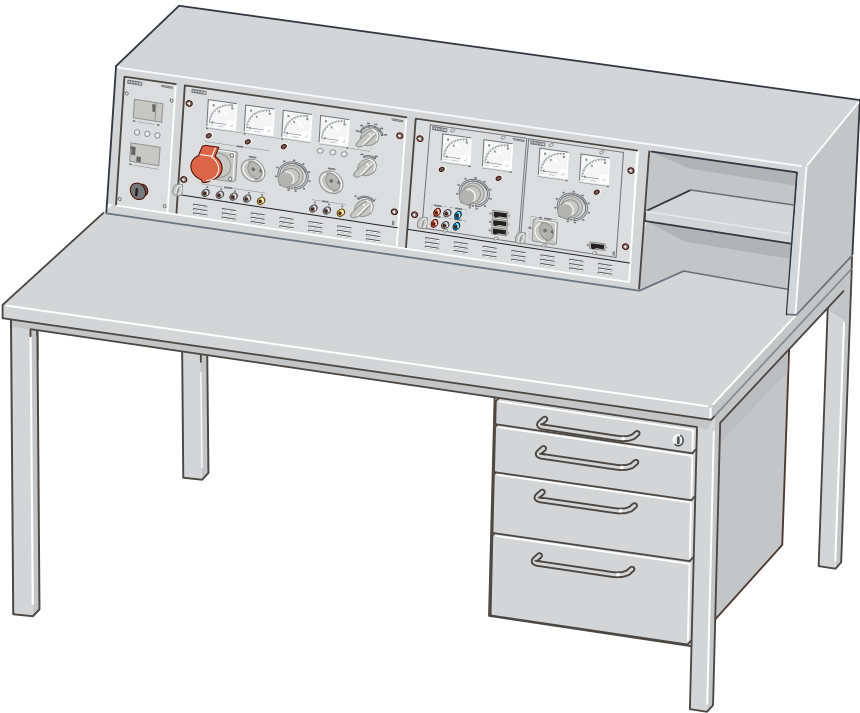
Cooling:	Natural air cooling
Housing:	steel sheet
Protection:	IP 20
Drive:	24 V DC with speed control by means of 10- turn potentiometer,
Actuating time:	approx. 10 ... 80 s, steplessly adjustable
Weight:	approx. 1200 kg
Ambient temperature:	40 °C
Dimensions:	W approx. 1200 mm, D approx. 1000 mm, H approx. 1800 mm

System 19"

This range of slide-in units, manufactured to DIN 41494, is available in 6HU and 9HU (1HU = 1 rack height unit = 44.45 mm). Standardisation means that System 19" components can be combined with both other Elabo and third party systems. The optional rack mount also allows the 3HU cassette range to be used with the 19" units.

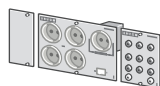
Can be combined with:
System 3HU
System 6HU

Dimensions	E103
Mains supply, AC supply	E104
DC stabilizer	E106
Rack mount	E108
Blank panel, slide-in module, field	E110

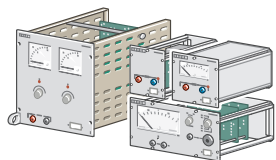


The 19" bench racks can be equipped with slide-in panels, slide-in units and DIN 41494 compatible rack mounts. Standardised third-party units up to a depth of 360 mm may also be fitted. All modules are supplied ready for use.

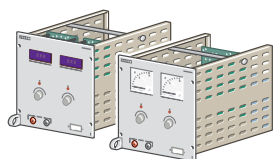
Installation variants



3HU-Euro-Cassettes
one and two-row



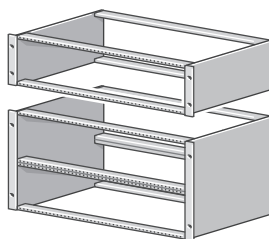
6HU-Euro-Cassette
3HU-Euro-Cassettes two-row



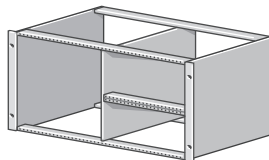
6HU-Euro-Cassettes



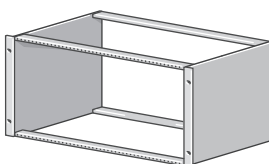
Slide-in Panel 7HE
(for unused bays in bench racks)



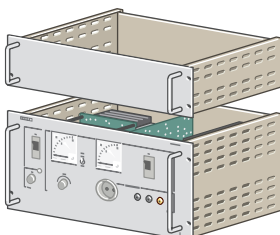
3HU- and 2x3HU-rack mounts
System 19"



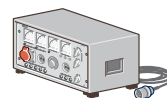
2x3HU-/6HU-rack mounts
System 19"



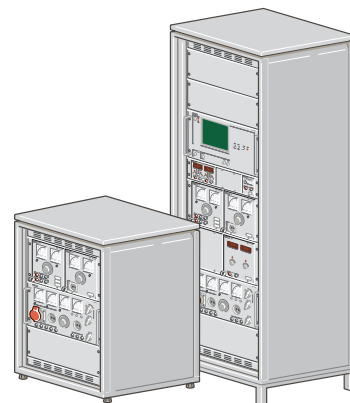
6HU-rack mounts System 19"



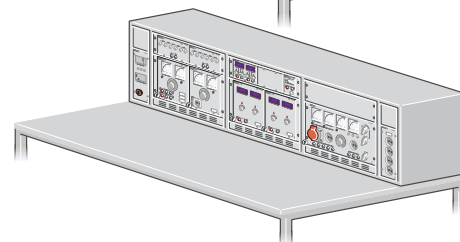
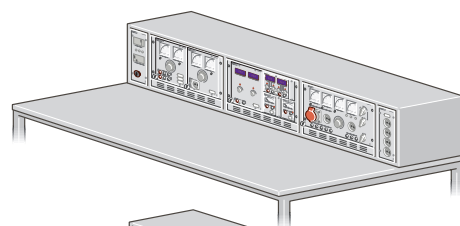
Plug-in modules System 19"



Housings System 19" (3HU to 16HU)



Cabinets System 19"



bench rack System 19"

Technical Information

19" system modules

All modules are 19" wide. By using rack mounts 3HU and 6HU eurocassettes can also be fitted.

Measurement units (according to DIN 41494)

Standard width = 19" = 483mm

1 rack height unit = 1 HU = 44.45mm.

1 horizontal pitch unit = HP = 5.08mm

For unused bays in the 19" bench rack:

1 width unit = 1 WU = 113 mm

Front panels:

All front panels are manufactured from 3 mm hard aluminium, powder coated on both sides in light grey (similar to RAL 7035). The lettering is applied with 2-component screen printing ink and is resistant to rubbing.






Slide-in panels take simple components that do not require a full slide-in unit.


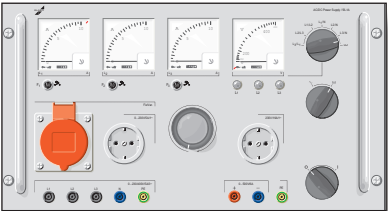
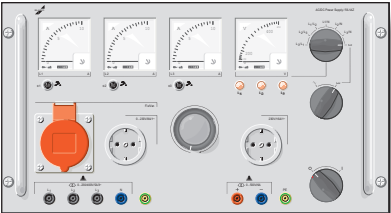
All slide-in units and 42 HP cassettes are also fitted with perforated steel sheet sidewalls, adjustable chassis plate and carrying handle.

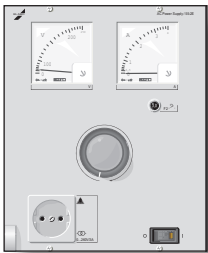
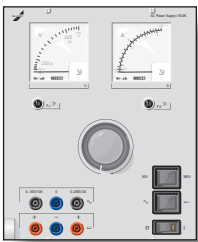
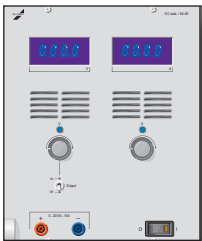
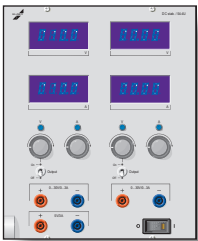
Rack mounts:

The 19" rack mounts accept 3HU and/or 6HU cassettes. They are fitted with closed aluminium sidewalls that take the front and rear cross profiles. The front and rear profiles have M 2.5 tapped holes drilled in a grid at 5.08 mm intervals. The internal profiles are prepared with integrated fixing rails according to DIN 41612. Four versions are available: 3HU, 2 x 3HU, 6HU and mixed 2 x 3HU / 6HU.

Elabo mains panels are used to turn the central power supply on and off and provide protection for bench racks. They may be mounted on the left or right depending upon the bench rack. Unless otherwise stipulated however, mains panels will be fitted on the left side. All mains panels and slide-in panels are wired at the factory and ready for operation.

		Technical data	Order no.
Mains supply panel 1 ph AC 7HU / 1 WU		Mains supply panel 1 ph AC 1 keyswitch 1 one phase earth leakage circuit breaker 25 A / 30 mA 1 motor protection circuit breaker 1 undervoltage trip 1 phase indicator lamp	52-0B
Mains supply panel 3 ph AC 7HU / 1 WU		Mains supply panel 3 ph AC 1 keyswitch 1 three phase earth leakage circuit breaker 25 A / 30 mA 1 under voltage trip 1 motor protection circuit breaker 3 phase indicator lamp	
		Residual current protective device Type A, for AC fault current and pulsating DC fault current Type B, AC/DC sensitive, also for smooth DC fault current	52-0A 52-0C
Mains supply panel 3 ph AC 7HU / 1 WU		Mains supply panel 3 ph AC 1 three phase earth leakage circuit breaker 25 A / 30 mA 1 undervoltage trip 1 motor protection circuit breaker 3 phase indicator lamp 1 EMERGENCY OFF button (not wired up)	52-0D
AC supply, 1 ~ 7HU / 1 WU		Fixed panel with 4 earth safety sockets 1 illuminated rocker switch	52-1J
AC supply 1 ~, 3~ 7HU / 1 WU		Fixed panel with 2 earth safety sockets 1 CEE- socket outlet 5pole, 400 V / 16 A 5 safety lab terminals	52-1L

	Technical data	Order no.
<div>AC supply 1 ~ 7HU / 1 WU</div> <div></div>	<div>Fixed panel with</div> <div>2 earth safety sockets</div> <div>1 EMERGENCY OFF button (not wired)</div> <div>1 illuminated rocker switch</div>	52-1P
<div>3 ~ AC supply 6HU / 19"</div> <div></div>	<div>Plug- in module with adjustable 3- phase AC supply</div> <div>Output: 3/ N/ PE ~ 50 Hz/ 0...400 V, switchable to:</div> <div>Fixed output: 3/ N/ PE ~ 50 Hz/ 0...400 V</div> <div>Rating: 0...8 A, transient 10 A over the whole range</div> <div>1 voltmeter 0...400 V, can be switched to phase / phase or phase/ neutral.</div> <div>3 ammeters 0...10 A</div> <div>1 switch over: "Mains", "Trafo"</div> <div>Tapping off 3 ~ AC</div> <div>1 CEE- socket outlet 16 A, in parallel with</div> <div>5 safety lab terminals L1, L2, L3, N, PE</div> <div>Tapping off 1 ~ AC:</div> <div>1 earth safety socket adjustable AC 0...230 V or fixed AC 230 V, in parallel with 3 safety lab terminal</div> <div>Mains supply:</div> <div>1 earth safety socket</div> <div>3 indicator lamps</div> <div>3 thermal- magnetic circuit breakers</div> <div>1 cam switch</div>	56-0B
<div>3 ~ AC supply 6HU / 19"</div> <div></div>	<div>Plug- in module with adjustable 3- phase AC supply:</div> <div>Output: 3/ N/ PE ~ 50 Hz/ 0...400 V, rating 0...5 A over the whole range, switchable to</div> <div>DC output: 0...500 V, residual ripple approx. 5%, rating 0...6 A over the whole range</div> <div>1 voltmeter 0...500 V, can be switched to phase / phase or phase / neutral or to DC</div> <div>3 ammeters 0...6 A AC/DC</div> <div>1 switch over: "AC", "DC"</div> <div>Tapping off 3ph AC:</div> <div>1 CEE socket outlet, 5pole 400 V / 16 A</div> <div>5 safety lab terminals L1, L2, L3, N, PE</div> <div>1 earth safety socket</div> <div>Tapping off DC:</div> <div>3 safety lab terminals</div> <div>Mains supply:</div> <div>1 earth safety socket</div> <div>3 indicator lamps</div> <div>3 thermic- magnetic circuit breakers</div> <div>1 cam switch</div>	56-1A

		Technical data	Order no.
AC supply 6 HU / 42 HP		<p>Plug-in unit for the supply with floating AC 0...260 V AC/ 3 A.</p> <p>Rating: 0...3 A, transient 4 A over the whole range</p> <p>Output: Floating via transformer with separate windings</p> <ul style="list-style-type: none"> 1 analogue voltmeter, 1 analogue ammeter 1 socket outlet without earth contact 1 illuminated rocker switch 1 thermic- magnetic circuit breaker 	
		<p>Display:</p> <p>analogue 0...300 V / 0...4 A</p> <p>digital 1 V bzw. 10 mA</p>	<p>55-2E</p> <p>55-3E</p>
AC/DC supply 6 HU / 42 HP		<p>Plug-in unit for the stepless supply with 0...50 V AC / 10 A or 0...260 V AC / 3 A, switchable to 0...50 V DC / 10 A or 0...260 V DC / 3 A (residual ripple 48%)</p> <p>1 analogue voltmeter:</p> <p>1. range: 0...300 V ; 2. range: 0...50 V</p> <p>1 analogue ammeter:</p> <p>1. range: 0...4 A; 2. range: 0...10 A</p> <ul style="list-style-type: none"> 6 safety lab terminals 1 switch over AC/ DC, 1 switch over 50 / 260 V 2 thermic- magnetic circuit breakers 1 illuminated rocker switch 	52-0K
DC stabilizer 6 HU / 42 HP		<p>Plug-in module for the supply of adjustable, stabilized DC 0...30 V / 0...10 A (individually adjustable)</p> <ul style="list-style-type: none"> 1 3-digit digital voltmeter 1 3-digit digital ammeter 2 mode indicators for "current regulated" and "voltage regulated" 2 10- turn potentiometers 2 safety lab terminals for adjustable output voltage 1 illuminated rocker switch 	54-4E
Dual DC stabilizer 6 HU / 42 HP		<p>Plug-in module for the supply of adjustable; stabilized DC 2 x 0...30 V / 2 x 0...3 A and fixed DC 5 V / 3 A</p> <ul style="list-style-type: none"> 2 digital voltmeters 2 digital ammeters 2 mode indicators for "current regulated" and "voltage regulated" 4 10- turn potentiometers 3 x 2 safety lab terminals for adjustable output voltage 1 illuminated rocker switch 	54-4U

	Technical data	Order no.
Dual DC stabilizer 6 HU / 42 HP	Plug-in module with dual DC stabilizer 2 x 0...30 V / 0...1,4 A with analogue displays fixed DC + 5 V / 3 A 1 ten-turn potentiometer	54-0Q
Dual DC stabilizer 6 HU / 42 HP	Plug-in module with dual DC stabilizer 2 x 0...30 V / 0...3 A with analogue displays fixed DC + 5 V / 3 A 1 ten-turn potentiometer	54-0U
Dual DC stabilizer 6 HU / 42 HP	Plug-in module with dual DC stabilizer 2 x 0...30 V / 0...1,5 A with digital displays fixed DC + 5 V / 3 A 1 ten-turn potentiometer	54-4Q

Technical data for variable output DC regulated power supplies:

Interference voltage at output: 1 mV
Recovery time: typically 50 ms, maximum 100 ms
Temperature coefficient: 0.01 %/ °C
Load regulation: 0.015%
Ambient temperature: 0...45 °C

Thanks to the 19" system rack, alternatively 3HU and 6HU measuring and testing devices as well as power and voltage supply systems can also be integrated into a 19" system. For example, the DC stabilizer 45-2X.





Rack mounts for eurocassettes:

Rack mounts are adapters between bench racks and the various system slide-in units.

While using the rack mounts described here it is possible to combine modules from the System 3HU eurocassette range and corresponding plug-in units with System 6HU and 19" bench racks in two rows.

Rack mounts are composed of two side sections together with front and rear connecting profiles made of anodised aluminium.

A distribution feeder is fitted to the rear of the rack for wiring purposes. The wiring from this feeder clamp set to the female multipoint connector with spring contacts on the cassettes is included in the price of the cassettes.

The rack mounts comply with DIN 41494 and IEC 279. They are divided into height and width according to modular sizes.

One unit of height (HU) equates to 44.45 mm. For width, horizontal pitch is used (HP). One HP equates to 5.08 mm which means that a 19" rack is 84 HP wide.

For the Elabo System 6HU two special rack mount sizes are available: 2 and 4 WU. Here, space is provided for two rows, each of 3HU, one above another.

The rack mounts are fixed using four screws on the vertical intermediate rod of the System 6HU bench racks. For fastening the slide-in units in place rails are fitted at the front of the rack. These have M 2.5 tapped holes drilled in a grid at 5.08 mm intervals.

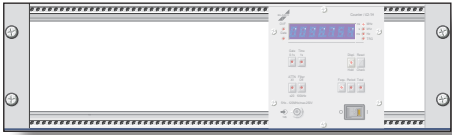
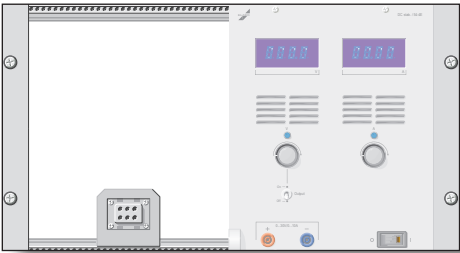

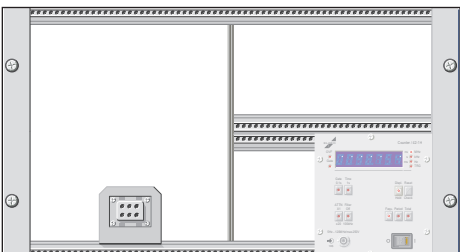
The rear Z-shaped rails are arranged such that the 196 mm deep slide-in units from the eurocassette system can be fitted.

The rack mounts are supplied without female multipoint connectors with spring contacts or guide rails. These components can be ordered separately in the required version.

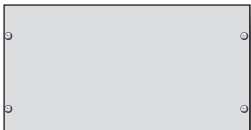

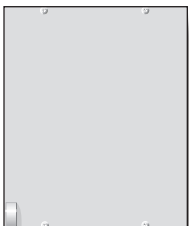
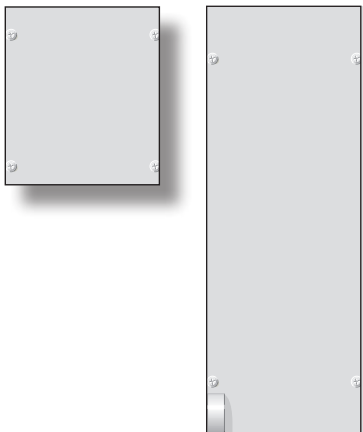
The mains supply is connected via compatible plug-in connectors in the same way as for slide-in units, each compatible with System 6HU. The high current contacts are in accordance with DIN 41612.


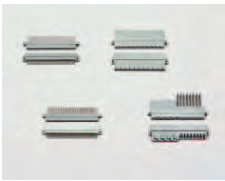
Female DIN multipoint connectors can be fitted into removable cassette carriers in a grid pattern of 5.08 mm; this allows a range of wiring methods to be used.

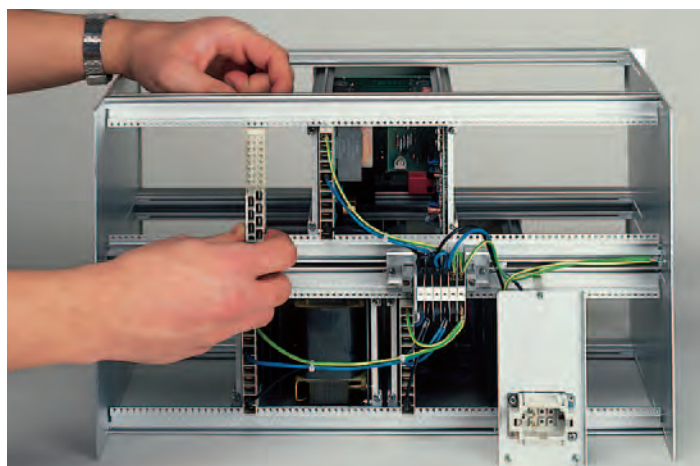
For extending systems using 3HU and 6HU cassettes both wired and unwired rack mounts are available. For all rack mounts W = 19"; D = 360 mm.

		Technical data	Order no.
Rack mount		Rack mount 19", 3HU to accept slide-in panels or Euro-cassettes 3HU/84 HP	
		not wired up wired up	51-4A 51-5A
Rack mount		Rack mount 19", 6HU to accept slide-in panels or Euro-cassettes 6HU/42 HP	
		not wired up wired up	51-4B 51-5B
Rack mount		Rack mount 19", 6HU, to accept slide-in panels or Euro-cassettes 2 x 3HU/84 HP	
		not wired up wired up	51-4C 51-5C
Rack mount		Rack mount 19", 6HU, wired up, to accept one Euro-cassette 6HU/42 HP and two Euro-cassettes 2 x 3 HU/40 HP	51-5F

Blank spaces in bench racks can be filled using blank panels or blank slide-in units. For all slide-in units W = 19"; D = 360 mm.

		Technical data	Order no.
Blank panel		1HU with vents 1HU 2HU 3HU 4HU 6HU	51-1L 51-1A 51-1B 51-1C 51-1E 51-1D
Blank plug-in module		3HU 6HU	51-2C 51-2D
Blank panel		84 HP, 6HU (262 x 426,7 mm)	51-0F
Blank panel		42 HP, 6HU (213,2 x 266 mm)	51-0E
Blank cassette		42 HP, 6HU (213,2 x 266 mm)	51-2E
Blank field		For covering unused bays on the left and right sides of the 19" bench racks. 3HU / Width 113 mm 7HU / Width 113 mm	51-0A 51-0B

	Technical data	Order no.
Distance pins	When subdrawer with a depth of 160 mm are used, the socket connector can be fitted into the subrack using the distance pins.	39-1A
Guides	One pair of guides for subdrawer depth of 160 mm.	39-1C
Guides	 <p>Guides (two pieces) made of aluminium with plastic headpiece. They can be snapped into the subrack in 5.08 mm pitch. One pair of guides for subdrawer depth of 196 mm.</p>	39-1B
Socket connector	Socket connector with 11 high- current contacts.	39-1D
Plug connector	Plug connector with leading PE contact, matches 39-1D	39-1E
Socket connector	Socket connector with 7 high- current contacts and 24 wire- wrap posts	39-1F
Plug connector	 <p>Plug connector with angled soldering pins, matches 39-1F</p>	39-1G
Socket connector	Socket connector with 64 mini- wire- wrap posts, rows and c equipped (DIN 41612, type of construction C)	39-1H
Plug connector	Plug connector with 64 angled soldering pins, matches 39-1H (DIN 41612, type of construction C)	39-1J
Socket connector	Socket connector with 96 mini- wire- wrap posts, rows a and c (DIN 41612, type of construction C)	39-1K
Plug connector	Plug connector with 96 angled soldering pins, matches 39-1K (DIN 41612, type of construction C)	39-1L



Ordering accessories for rack mounts is only necessary if spare parts are required or if the rack is to be extended. All Elabo slide-in panels, slide-in units and cassettes are always supplied fully equipped and ready for use. Includes cable set, guide rails and mains connectors (male/female multi-point connectors).

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