

Technical Catalogue



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Primus One



1

1.1 Tables

Primus One

System tables



Highlights

- Rear table legs as system profile column with integrated cable duct
- Centrally positioned lowerable cable flap
- Large-volume cable with access from front
- With tables arranged in a row, option of feed-through cabling, level adjuster to compensate floor unevenness
- Optionally with height adjustment – can also be retrofitted
- Possibility of customized color scheme
- System column expandable at the rear
- Front table legs can be moved back for more legroom
- ESD variant for EPA systems

Scope of delivery

System table with cable flap and cable trough

Accessories

Profile panels in the colors traffic red (RAL 3020), signal blue (RAL 5005), black gray (RAL 7021)

Other colors available at extra charge

Socket outlet inserts, table supports, under-table cabinets, safety modules, profile panels with socket outlets, PC holder

Primus One

System tables

Recommended additional products:
Table racks, shelf boards

Technical Data

Table top	
Thickness	30mm
Front edges	S-edge strip 3mm thick F-Flexi-Line edge, exchangeable
Finish	HPL laminate 0.8mm, glare-free, abrasion-resistant to EN 438, heat-resistant for short period, flame-resistant
Color	Light gray RAL 7035
Cable duct	
Dimensions	Height 145mm, depth 170mm
Cable flap	
Design	Retractable, with brush strip on rear side
Dimensions	W = 880mm, D = 124mm
Loading capacity	
Weight load	200kg surface load
ESD variant	
Table top	As standard design, but also volume-conductive
Design according to	DIN EN 61340-5-1 Part 5-1
Dimensions	
Widths	1200 / 1500 / 1600 / 1800 / 2000mm
Depths	800 / 900 / 1000mm
Height	750mm
	MA = Manual from 750–1050mm
	EM = Electric from 750–1030mm

1.2 Table accessories

Primus One

System Corner Panels



With cable grid channel



With facing panel

Highlights

- Corner panels suitable for legless corner combinations with system tables
- Available as standard in various angles
- Asymmetric variants for connecting system tables of different table depths
- 90° corner panels with additional support leg for increased stability
- Simple cable routing in variants with cable grid channel
- Design variants with facing panels for visual harmonization with system tables
- ESD variant for EPA systems

Scope of delivery

Corner panel, complete, with installation materials, 90° corner panels with support leg

Variants

Standard, with cable grid channels and facing panels

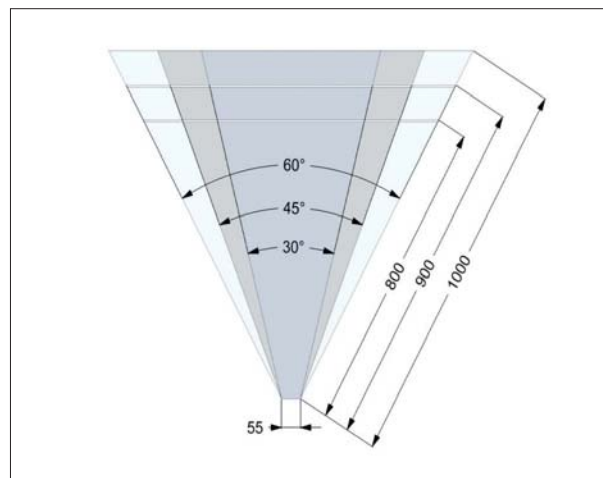
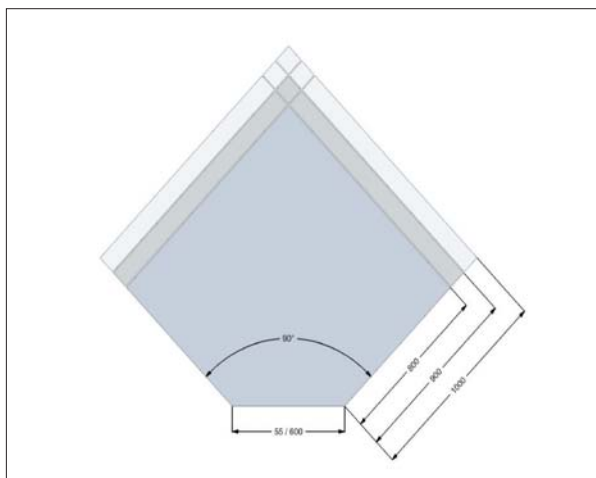
Primus One

System corner panels

Technical Data

Table top	
Thickness	30mm
Front edges	S-edge strip 3mm thick F-Flexi-Line edge, exchangeable
Finish	HPL laminate 0.8mm, glare-free, abrasion-resistant to EN 438, heat-resistant for short period
Color	Light gray RAL 7035
Support leg for 90° corners	
Dimensions	Height 750mm
Cable grid channel	
Dimensions	Width 100mm, Height 35mm
Loading capacity	
Max. total weight	80kg surface load
ESD variant	
Table top	As standard design, but also volume-conductive
Design according to	DIN EN 61340-5-1 Part 5-1
Dimensions	
Front edge	55 / 600mm
Depths	800 / 900 / 1000mm
Angles	30°, 45°, 60°, 90°
Height (support leg)	750mm

Design variants



Primus One

System Under-table Cabinets



K2-1A



K2-4A



K2-1C



K2-4C



K2-1E



K2-4E



K2-1F



K2-4F



K2-1J/K2-1K



K2-4J/4K



K2-1S/K2-1R



K2-4S/4R

Highlights

- Handle-less fronts
- All drawers with 110% full pullout
- Easy-running metal drawers with soft closing feature
- Optionally convertible to roller container
- Central lock with hinged key, optionally with locking system capability
- Tamper-proof pullout stop
- Extensive range of organization elements

Scope of delivery

Under-table cabinet, complete, with 2 hinged keys and installation materials

Accessories

Roller set, organization elements

Recommended additional products:

System tables

Primus One

System under-table cabinets

Technical Data

Corpus	
Stärke	19mm
Thickness	Melamine-coated, resistant to organic solvents, weak acids, gasoline and oil
Color	Light gray RAL 7035
Casters	
Diameter	75mm
Design	4 double-swivel casters, 2 lockable, polyurethane running tread
Loading capacity	
Max. load capacity per partial pullout	25kg
ESD variant	
Design according to	DIN EN 61340-5-1 Part 5-1 Corpus volume-conductive
Dimensions	
Width	430mm
Depths	587mm
Height	191 / 550mm

Accessories

	Order number
Roller set: 4 double-swivel casters, 19mm Cover plate	K9-2R
Roller set ESD: 4 double-swivel casters, conductive	K9-2R ESD

Primus One

System Trays



Table with Storage element



Table with Functional shelf

Highlights

- Functional shelf steplessly height-adjustable and tiltable
- Functional shelf grooved at front and back
- Option to integrate LED lighting for storage element
- Option to integrate organization panel for storage element
- Storage element at each side for downward cable routing

Scope of delivery

Storage element with system carrier/functional shelf including installation materials

Recommended additional products

Vertical profiles, profile panels, organization panel with lighting

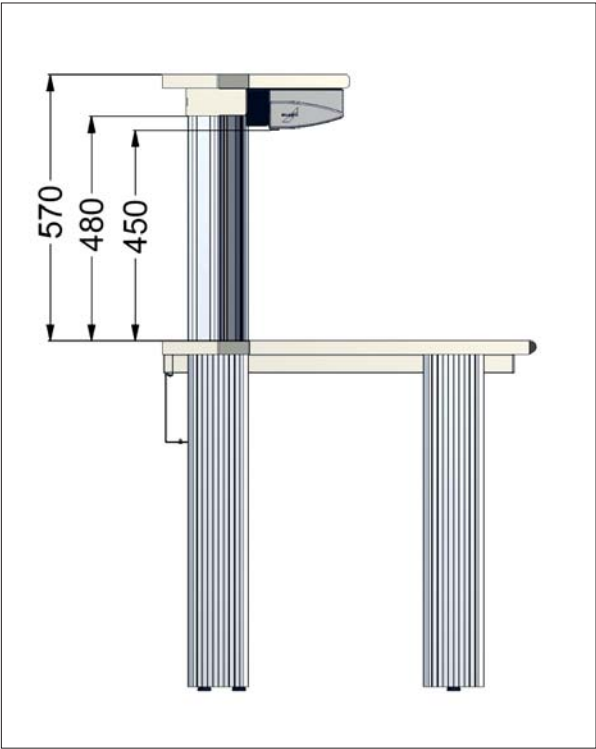
Primus One

System trays

Technical Data

Shelf panel	
Thickness	30mm
Finish	HPL laminate 0.8mm, glare-free, abrasion-resistant to EN 438, heat-resistant for short period
Color	Light gray RAL 7035
Loading capacity	
Weight load	80kg surface load up to 1600mm width 60kg surface load up to 2000mm width
ESD variant	
Table top	As standard design, but also volume-conductive
Design according to	DIN EN 61340-5-1 Part 5-1
Dimensions	
Widths	1200 / 1500 / 1600 / 1800 / 2000mm
Depths	400mm
Height	30mm (+ 60mm system carrier)

Dimensional sketch



Primus One

System Accessories



K9-9K



K9-9M

Technical Data

K9-9K Cable-hanging fixture, 2x
W = 220mm, D = 61mm, H = 120mm

K9-9M Measurement line holder, 14x
W = 380mm, D = 200mm, H = 25mm

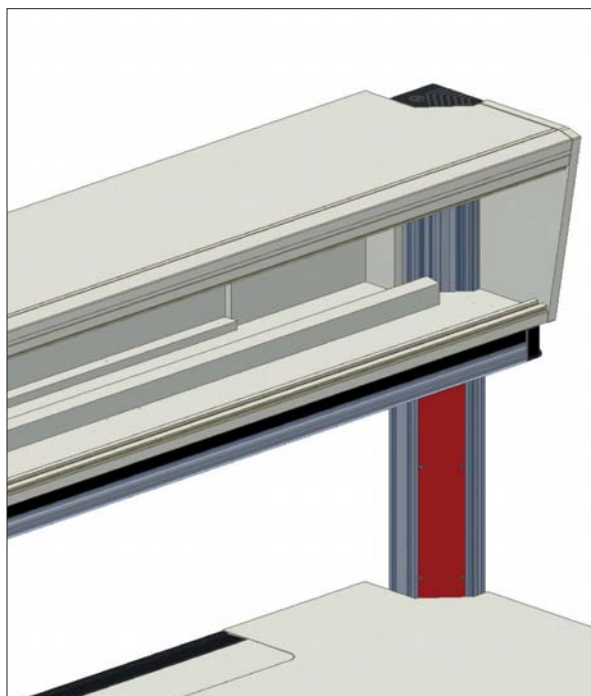
- 1.3 Superstructures 3HU
- 1.4 Superstructures 6HU

Primus One

System Superstructures



3HU superstructure



6HU superstructure

Highlights

- Ergonomically inclined toward the operator
- Fully electrically prewired with device connections
- Suitable for equipping with Elabo or other-make devices
- Seamless integration of 19" modules
- Removable rear metal wall
- Option to integrate LED lighting
- Option to integrate organization panel

Scope of delivery

System rack with system carrier, complete, fully electrically prewired

Accessories

Vertical profiles, 19" adapter profiles, organization panel, lighting

Recommended additional products

Elabo built-in device system 3HU or 6HU/19"

Primus One

System Superstructures

Technical Data

Korpus		
Thickness	19mm	
Finish	Melamine-coated, resistant to organic solvents, weak acids, gasoline and oil	
Color	Light gray RAL 7035	
ESD variant		
Design according to	DIN EN 61340-5-1 Part 5–1 Corpus volume-conductive	
Dimensions	Width	Equipment 3HU / 6HU
Widths	1200mm	216HP
	1500mm	270HP
	1600mm	294HP
	1800mm	330HP
	2000mm	372HP
Depths	3HU	Top: 386 / bottom: 350mm
	6HU	Top: 412 / bottom: 350mm
Height	3HU	210 / 270mm (with system carrier)
	6HU	360 / 420mm (with system carrier)

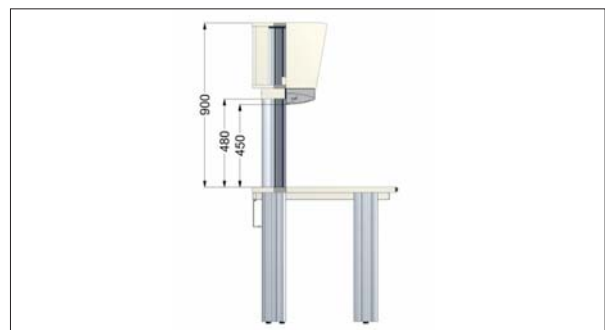
Accessories

<p>Elabo-Primus One 19" adapter for integration of 19" front panels and plug-in modules in 6HU Primus One table racks. W = 95HP</p>		K9-4A
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Dimensional drawing



3HU superstructure

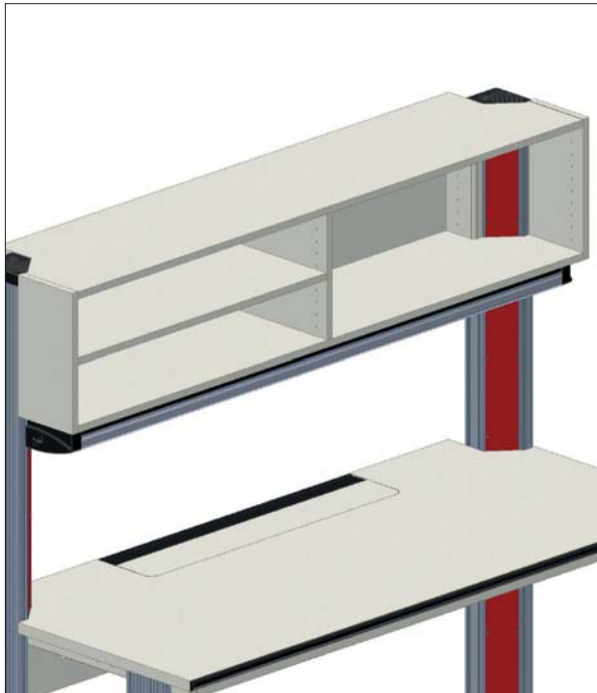


6HU superstructure

1.5 Further superstructures

Primus One

System Shelf Units



Shelf unit rack



Roller shutter rack

Highlights

- Storage space directly at the workplace
- Suitable for DIN A4 file folders
- Shelf unit version additionally with a height-adjustable shelf
- Roller shutter rack with lock and hinged key, optionally with central release capability
- Option to integrate LED lighting
- Option to integrate organization panel

Scope of delivery

System shelf unit, complete, with system carrier

Accessories

Organization panel with lighting

Primus One

System shelf units

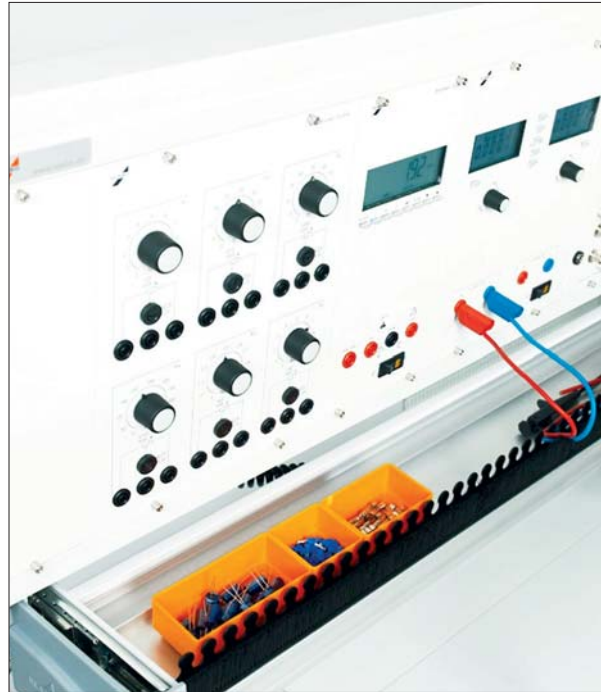
Technical Data

Corpus		
Thickness	19mm	
Finish	Melamine-coated, resistant to organic solvents, weak acids, gasoline and oil	
Color	Light gray RAL 7035 Corpus volume-conductive	
ESD variant		
Design according to	DIN EN 61340-5-1 Part 5–1	
Dimensions	Width in mm	
Widths	1200, 1500, 1600, 1800, 2000mm	
Depths	Outside	375mm
	Inside	356 / 296mm (in case of roller shutter shelf unit)
Height	Outside	372 / 432mm (with system carrier)
	Inside	330mm

1.6 Superstructures accessories

Primus One

System Organization Panel



Highlights

- Optimal and extensive workplace lighting by means of LED technology
- Choice of warm white and cold white as luminous color
- Optimal cable routing by means of cable rakes
- Lighting can be adjustably directed at the working surface
- Lockable drawer, optionally with central release capability
- Container for small parts optionally available

Scope of delivery

Organization panel with brush strip and cable rake, as well as locks with hinged key
LED lighting

Accessories

Container for small parts

Recommended additional products

Measurement lines, test probes

Primus One

System organization panel

Technical Data

Lighting	Table width	Length	Light output*
	1200mm	900mm	750lm
	1500mm	1200mm	750lm
	1600mm	1200mm	1300lm
	1800mm	1500mm	1600lm
	2000mm	1500mm	1600lm
	* in case of color temperature cold white		
Color temperature			
LED lighting	4000K (warm white) or 6000K (cold white)		
Loading capacity			
Weight load of organization panel	10kg surface load		
Dimensions			
Widths	1200 / 1500 / 1600 / 1800 / 2000mm		
Depths	164mm		
Height	90mm		

Accessories

Boxes for small parts	
52x52x35mm	K9-4E
52x78x35mm	K9-4F
52x104x35mm	K9-4G

Primus One

System Profile Plates



Overview

- Power-ON panels
- Socket outlet panels
- Network
- PC connection panel
- Filler panels
- Safety box

Other variants available on request.

Standard colors of profile panels:

Traffic red (RAL 3020)

Black gray (RAL 7021)

Signal blue (RAL 5005)

Other colors available on request.

Please quote desired color in order number.





Primus One

System power-ON panels

Technical Data




Variants

Order number		Description
K5-1A00DE.480.3020		<p>Power-ON panel, 1-phase with socket outlets W = 80mm, H = 480mm Front panel color RAL 3020 traffic red</p> <p>Equipment:</p> <ul style="list-style-type: none"> 1 illuminated rocker switch for organization lamp 1 OFF switch 1 key-operated ON switch 1 phase control lamp 2 Schuko sockets 3 safety lab sockets <p>Country-specific variants possible for Schuko sockets.</p>
K5-1B00DE.480.3020		<p>Power-ON panel, 3-phase with socket outlets W = 80mm, H = 480mm Front panel color RAL 3020 traffic red</p> <p>Equipment:</p> <ul style="list-style-type: none"> 1 illuminated rocker switch for organization lamp 1 OFF switch 1 key-operated ON switch 3 phase control lamps 1 CEE socket 5 safety lab sockets

Primus One

System socket outlet panels


Technical Data

Order number		Description
K5-2A00DE.240.3020		<p>Socket outlet panel 1/N/PE ~ 50Hz 230V 16A at Schuko sockets Front panel color RAL 3020 traffic red W = 80mm, H = 240mm Equipment: 2 Schuko sockets 1 illuminated rocker switch</p> <p>Country-specific variants possible for Schuko sockets.</p>
K5-2A00DE.480.3020		<p>Socket outlet panel 1/N/PE ~ 50Hz 230V 16A at Schuko sockets Front panel color RAL 3020 traffic red W = 80mm, H = 480mm</p> <p>Equipment: 5 Schuko sockets 1 illuminated rocker switch</p> <p>Country-specific variants possible for Schuko sockets.</p>
K5-2B00DE.480.3020		<p>Socket outlet panel with emergency OFF 1/N/PE ~ 50Hz 230V 16A at Schuko sockets Front panel color RAL 3020 traffic red W = 80mm, H = 480mm</p> <p>Equipment: 4 Schuko sockets 1 emergency OFF switch, unwired 1 illuminated rocker switch</p> <p>Country-specific variants possible for Schuko sockets.</p>

Primus One

System socket outlet panels


Technical Data

Order number		Description
K5-2E00DE.480.3020		<p>Socket outlet panel with PC multimedia socket 1/N/PE ~ 50Hz 230V 16A at Schuko sockets with emergency OFF switch Front panel color RAL 3020 traffic red W = 80mm, H = 480mm</p> <p>Equipment: 3 Schuko sockets 1 emergency OFF switch, unwired 1 illuminated rocker switch 1 PC multimedia socket 60mm equipped with:</p> <ul style="list-style-type: none">- 3x USB ports- 2x audio jacks 3.5mm- Multi card reader for SD/MMC/SDHC/MS/MS pro/MS Duo/MS pro Duo- 1.2m connecting leads with 2x USB/2x jack <p>Country-specific variants possible for Schuko sockets.</p>

Primus One

System network panel

Technical Data



Order number		Description
K5-7S00DE.240.3020		Network panel Front plate color RAL 3020 traffic red W = 80mm, H = 240mm Equipment: 1 installation switch from Microsens 4-Port 10/100 2 USB

Primus One

System PC connection panels

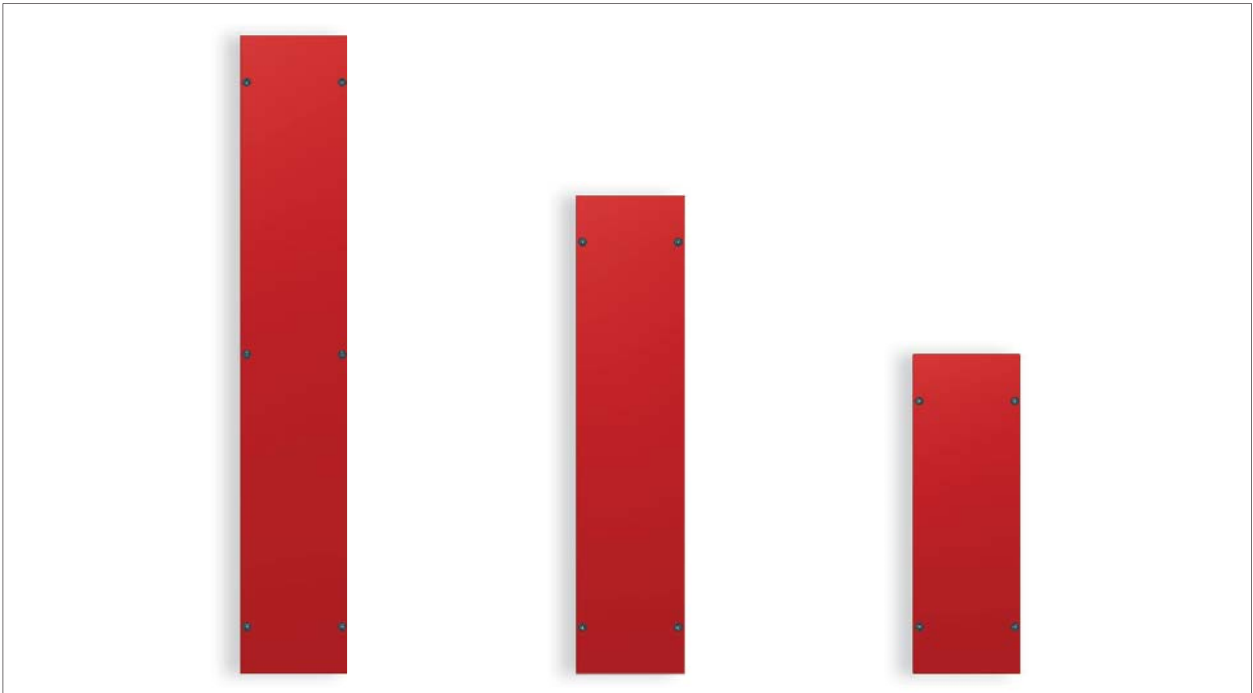
Technical Data

Insert panels, height 523 mm (table leg)

Order number		Description
K5-0L0100.523.3020		<p>Profile panel with cable feed-through Front panel color RAL 3020 traffic red W = 80mm, H = 523mm</p> <p>Equipment: Cable set, 2-part, round, black 60mm diam.</p>
K5-2H00DE.523.3020		<p>PC connection panel 1/N/PE ~ 50Hz 230V 16A at Schuko socket with network connection and cable feed-through socket 60mm Front panel color RAL 3020 traffic red W = 80mm, H = 523mm</p> <p>Equipment: 1 Schuko socket 1 RJ-45 jack/jack 1 cable feed-through socket, black 60mm diam.</p> <p>Country-specific variants possible for Schuko sockets.</p>

Primus One

System Filler Panels



Technical Data

Filler panels, height 240mm / 480mm / 523mm

Order number	Description
K5-0L0000.240.3020	W = 80mm, H = 240mm
K5-0L0000.480.3020	W = 80mm, H = 480mm
K5-0L0000.523.3020 preferably for table leg	W = 80mm, H = 523mm

AC Safety Box

System Safety Boxes



Highlights

- For protection of downstream equipment (power-ON panel, socket strips, etc.) with residual current circuit breaker Model A or Model B
- Positioned in cable trough of table for easy access
- Network connection by means of series terminal strip

Note

If residual current circuit breakers are used in classrooms or experimental facilities in which parts of the electrical equipment are capable of producing smooth or pure DC residual currents (e.g. frequency converters), the residual current circuit breaker must always be of Model B in accordance with VDE 0100, Part 723.412.5.

AC Safety Box

System safety boxes

Technical Data

	K5SAFETY. 000.1A-00	K5SAFTEY. 000.1B-00	K5SAFTEY. 000.3A-00	K5SAFETY. 000.3B-00
Type	1/N/PE		3/N/PE	
Line frequency	50Hz / 60Hz			
Nominal input voltage	230V		400V	
Maximum output current	16A			
Residual current circuit breaker	Model A	Model B	Model A	Model B
Tripping current	30mA			
Dimensions	W = 299mm , D = 81mm , H = 80,5mm			

1.7 Mobiles

Primus One

System Laboratory Cart



Highlights

- Height-adjustable lower shelf with cross-profile
- 4 hard-wearing double-swivel casters with precision ball bearings for easy handling, 2 of which lockable for parking at the workplace
- Table top with high loading capacity and exchangeable front edge
- ESD variant for EPA systems

Scope of delivery

Laboratory cart, complete

Accessories

Under-table cabinets K2-1A

Primus One

System laboratory cart

Technical Data

Table top	
Thickness	30mm
Front edges	S-edge strip 3mm thick F-Flexi-Line edge, exchangeable
Finish	HPL laminate 0.8mm, glare-free, abrasion-resistant to EN 438, heat-resistant for short period
Color	Light gray RAL 7035
Casters	
Diameter	75mm
Design	4 double-swivel casters, 2 lockable, polyurethane running tread
Loading capacity	
Max. total weight	180kg
ESD variant	
Table top	Also volume-conductive
Design according to	DIN EN 61340-5-1 Part 5-1
Double-swivel casters	Electrically conducting
Dimensions	
Width	510mm
Depths	800 / 900 / 1000mm
Height	750mm

InForm

You will find in our catalogue Laboratory Systems and Education Systems

EcoTec

You will find in our catalogue Laboratory Systems and Education Systems

Lowering mechanism

You will find in our catalogue Education Systems

TaMas

You will find in our catalogue TaMas (Download on www.elabo.com)

TaCom

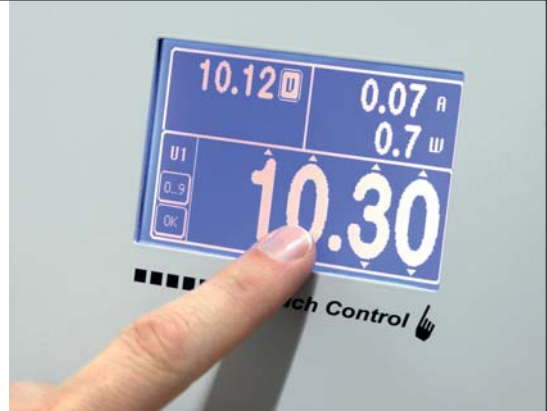
You will find in our catalogue Process Control Systems

Furniture

You will find in our catalogue Laboratory Systems and Education Systems

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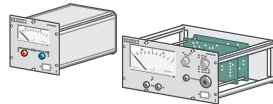
Electronics and electro-technics



Systemoverview 3HU

All of the built-in components of the Elabo eurocassette system have a uniform front plate height of 3HU = 128.5 mm. The device components are comprised of insert plates or eurocassettes, the widths of which are specified in horizontal pitches = HP.

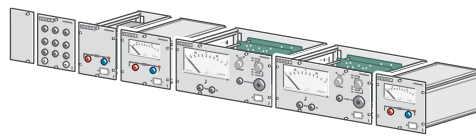
Installation variants



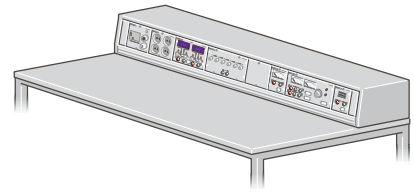
3HU eurocassettes



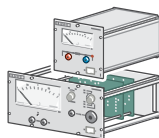
Housing system 3HU



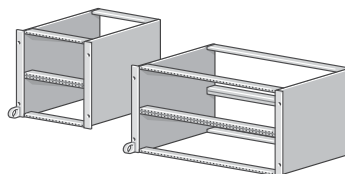
3HU eurocassettes and insert plates



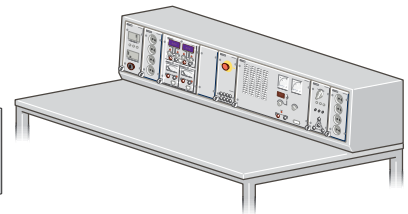
Desktop rack system 3HU



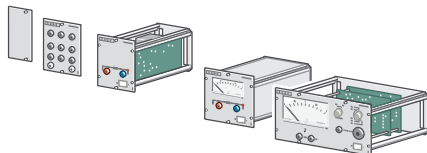
3HU eurocassettes and insert plates



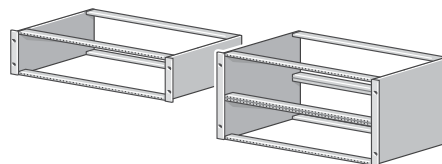
Rack mount system 6HU



Desktop rack system 6HU



3HU eurocassettes and insert plates



Rack mount system 19"

Desktop rack system 19"

Technical information

Built-in components system 3HU

Dimensional units in accordance with DIN 41494

1 height unit = 1HU = 44.45mm.

The width is specified in HP (horizontal pitches) (1HP = 5.08mm):

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

Front plates:

All front plates are comprised of 3 mm hard aluminium, light grey powder-coated on both sides (similar to RAL 7035). The lettering is applied using indelible screen printing.

Insert plates contain simple built-in components for which a plug-in structure is not required.

Eurocassettes are additionally equipped with 4 depth profiles and with a rear wall and an 11-pin male multipoint connector with leading earth contact in accordance with DIN 41612.

Eurocassettes which are enclosed on all sides are also available.

Rack mounts:

The use of corresponding system rack mounts also makes it possible to integrate the Elabo 3HU eurocassettes in the 6HU and 19" assembly systems. Third-party products which have been constructed in accordance with DIN 41494 can also be used.

3HU aluminium channel:

All of the devices which can be introduced into the 3HU aluminium channel assembly are marked with this symbol:



Systemoverview 6HU

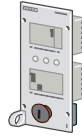
The racks and housing of the System 6HU can be loaded with the following insert plates, inserts, rack mounts (for 3HU eurocassettes) and blank plates.

Installation variants

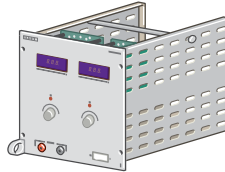
2 widths to choose from:

2WU = 36HP = 229mm

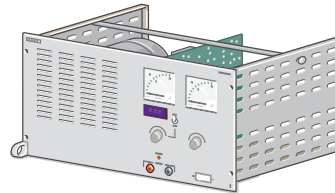
4WU = 84HP = 464mm



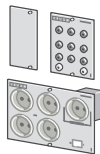
Insert plate 1WU



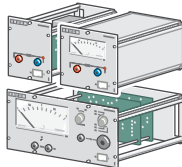
Inserts 2WU and 4WU



Rack mounts 2WU and 4WU (for 3HU eurocassettes 2 x 36 or 84HP)



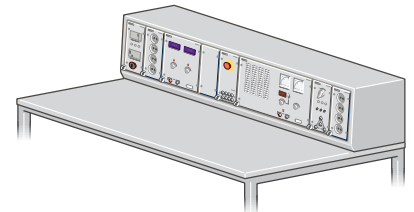
3HU insert plates
12, 24 and 36HP



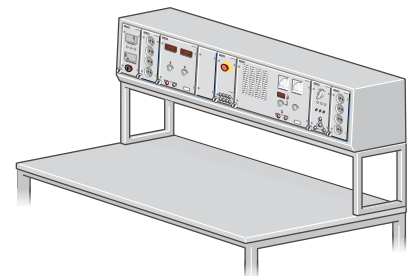
3HU eurocassettes
18 and 36HP



Housing System 6HU



Desktop rack system 6HU



Desktop attachment
with desktop rack System 6HU

Technical information

The System 6HU is comprised of insert plates, inserts and 2-row rack mounts for holding System 3HU eurocassettes, which are available in a variety of installation widths:

1WU = installation width 111.5mm

2WU = installation width 229mm

4WU = installation width 464mm

6WU = installation width 699mm

Insertion depth = 260 mm

Front plates:

All front plates are comprised of 3 mm hard aluminium, powder-coated in light grey on both sides (similar to RAL 7035). The lettering is applied with indelible screen printing.

Inserts:

All inserts are additionally equipped with perforated steel side panels, an adjustable chassis plate and a mounting bracket. The rear side of the insert is equipped with a 6-pin Harting plug with a leading earth contact.

Rack mounts:

For supporting eurocassettes from the 3HU eurocassette system. Laterally closed aluminium support sheets, which support the front and rear traverse profiles.

Front and rear profiles equipped in 5.08mm grids with M2.5 threads. Interior profiles are equipped with an integrated fastening rail for female multipoint connectors in accordance with DIN 41612.

6HU devices can be used in superstructures of the product lines InForm and EcoTec, as well as in Primus One.

For use in Primus One please mention the ordering supplement „K“ when ordering.

Example:

32-1J for InForm/EcoTec

32-1J.K for Primus One


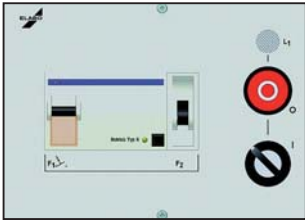

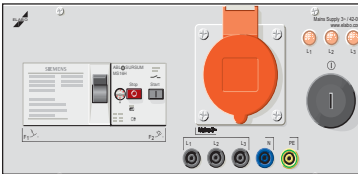
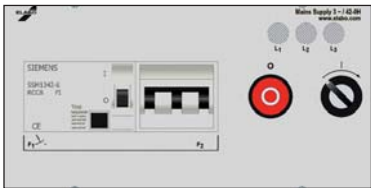
Devices having an integrated interface or can be supplied with an interface are marked with the symbol shown. Elabo Elution device drivers are available for these devices.






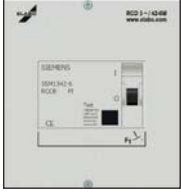



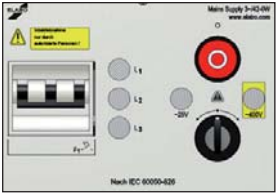




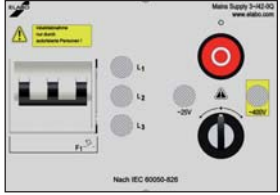

8.1 Safety and protection module






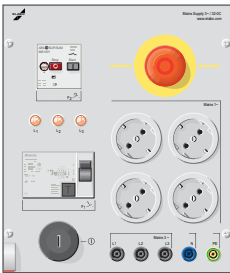
Central fuse and release module

Elabo supply panels for switching on and off and as fuses for the central mains supply in desktop racks. They can be mounted anywhere in the desktop rack, although they are usually installed on the left-hand side of the rack. All insert plates are wired ex-works for correct functioning.

		Technical Data	Order no.
Alternating current supply panel 3HU / 24HP		Insert plate with 1 residual current circuit breaker type A 2-pin 25A / 30mA 1 circuit breaker 16A 1 external conductor indicator lamp 1 Off button 1 key-operated On button 1 main contactor	42-0B
Alternating current supply panel 3HU / 36 HP		Insert plate with 1 residual current circuit breaker type B 2-pin 25A / 30mA 1 circuit breaker 16A 1 external conductor indicator lamp 1 Off button 1 key-operated On button 1 main contactor	42-0C
Alternating current supply panel 3HU / 24 HP		Insert plate with 1 residual current circuit breaker type A 2-pin 16A / 10mA 1 circuit breaker 16A 1 external conductor indicator lamp 1 Off button 1 key-operated On button 1 main contactor	42-0D
3-phase alternating current supply panel 3HU / 60 HP		Insert plate with 1 residual current circuit breaker type A 4-pin 25A / 30mA 1 adjustable motor circuit breaker 10...16A 1 undervoltage release 230V / 50Hz 1 key-operated mushroom switch 5 laboratory safety sockets L1, L2, L3, N, PE 1 CEE socket 16A 3 external conductor indicator lamps	42-0F
		as with type 42-0F, residual current circuit breaker, but type B, sensitive to all current types, also for non-pulsating direct residual currents	42-0G
3-phase alternating current supply panel 3HU / 48 HP		Insert plate with 1 residual current circuit breaker type A 4-pin, 25A / 30mA 1 circuit breaker, 3-pin C 16A 1 key-operated On button 1 Off button 1 contactor 3 external conductor indicator lamps	42-0H
		as with type 42-0H, but with residual current circuit breaker type B, sensitive to all current types, also for non-pulsating direct residual currents	42-0J


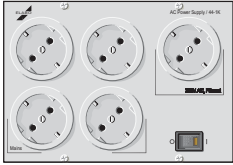

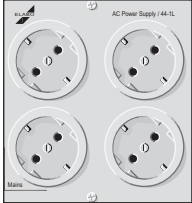



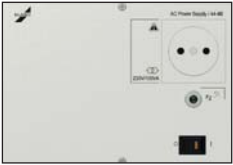

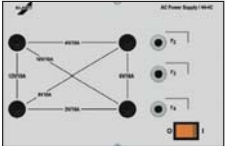


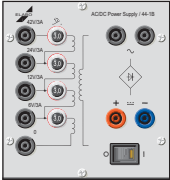
Central fuse and release module

		Technical data	Order no.
Alternating current circuit breaker 3HU / 18HP 		Insert plate with 1 residual current circuit breaker type A 2-pin 25A / 30mA	42-0K
		as with type 42-0K, residual current circuit breaker, but type B, sensitive to all current types, also for non-pulsating direct residual currents, 24HP	42-0L
Three phase alternating current circuit breaker 3HU / 24HP 		Insert plate with 1 residual current circuit breaker type A 4-pin 25A / 30mA	42-0M
		as with type 42-0M, residual current circuit breaker, but type B, sensitive to all current types, also for non-pulsating direct residual currents, 24HP	42-0N
Fuse protection and switch unit 3HU / 36HP 		Insert plate with 1 circuit breaker 1-pin C 16A 1 key switch button I/O/II 1 Off button 2 contactors 1 external conductor indicator lamp 1 indicator lamp Group I 1 indicator lamp Group II	42-0V
Fuse protection and switch unit 3HU / 36HP 		Insert plate with 1 circuit breaker, 3-pin C 16A 1 key switch button I/O/II 1 Off button 2 contactors 3 external conductor indicator lamps 1 indicator lamp Group I 1 indicator lamp Group II	42-0W
Fuse protection and switch unit 3HU / 36HP 		Insert plate with 1 circuit breaker 1-pin C 16A 2 contactors 3 relay 1 external conductor indicator lamp 1 indicator lamp Group I 1 indicator lamp Group II Note: N3-2x required. Please include this article in your order.	42-0P 
Fuse protection and switch unit 3HU / 36HP 		Insert plate with 1 circuit breaker 1-pin C 16A 2 contactors 3 relay 1 external conductor indicator lamp 1 indicator lamp Group I 1 indicator lamp Group II Note: N3-2x required. Please include this article in your order.	42-0Q 

		Technical Data	Order no.
Emergency-off mushroom button 3HU / 12HP 		Insert plate with 1 emergency-off mushroom button with snap-on contact and yellow signal ring (non-wired)	44-1J
Alternating current supply panel 6HU / 1WU		Insert plate, alternating current supply panel 1 residual current circuit breaker type A 2-pin, 16A / 10mA 1 circuit breaker 16A C 1 contactor 1 key switch button 1 Off button 1 external conductor indicator lamp	32-0D
Alternating current supply panel 6HU / 1WU		Insert plate, alternating current supply panel 1 residual current circuit breaker type A 2-pin, 25A / 30mA 1 motor circuit breaker 10...16A with thermal and magnetic actuation 1 undervoltage actuator for protection against autonomous voltage return 1 key-operated switch 1 external conductor indicator lamp	32-0B
3-phase alternating current supply panel 6HU / 1WU		1 key-operated switch 1 residual current circuit breaker, 4-pin 25A / 30mA 1 motor circuit breaker 10...16A with undervoltage actuator 3 external conductor indicator lamps Type A, for alternating residual currents and pulsating direct residual currents Type B, sensitive to all current types, also for non-pulsating direct residual currents	32-0A 32-0F
3-phase alternating current supply panel 6HU / 2WU		Insert plate, 3-phase alternating current supply panel 1 residual current circuit breaker type A 4-pin, 25A / 30mA 1 motor circuit breaker 10...16A 1 undervoltage actuator 230V / 50Hz 4 Schuko sockets for drawing 230V / 16A 5 laboratory safety sockets for drawing from 400V / 16A, designated L1, L2, L3, N, PE 1 non-wired emergency-off mushroom button with snap-on contact and yellow signal ring 1 key-operated mushroom switch 3 external conductor indicator lamps	32-0C
		as with 32-0C, but 1 residual current circuit breaker type B 4-pin 25A / 30mA	32-0C Z001






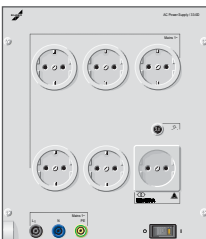
8.2 AC-supply 1-phase, fixed

AC and AC/DC-supply 1-phase

		Technical Data	Order no.
AC-supply 1-phase 3HU / 36HP 		Insert plate with 4 Schuko sockets 230V 1 Schuko socket with line filter 230V / 4A, high attenuation 1 illuminated rocker switch	44-1K
AC-supply 1-phase 3HU / 24HP 		Insert plate with 4 Schuko sockets as with type 44-1L with Swiss sockets as with type 44-1L with Danish sockets as with type 44-1L with French sockets as with type 44-1L with British sockets as with type 44-1L with USA sockets	44-1L 44-1L ZC00 44-1L ZD00 44-1L ZF00 44-1L ZG00 44-1L ZU00
AC-supply 1-phase 3HU / 36HP 		Insert plate with 5 Schuko sockets 1 illuminated rocker switch	44-1L Z817
AC-supply 1-phase 3HU / 36HP 		Insert plate with floating alternating current voltage 230V / 100VA 1 illuminated rocker switch 1 thermal magnetic circuit breaker 1 transformer with separated coils 1 socket without earth contact	44-4B
AC-supply 1-phase 3HU / 36HP 		Insert plate with floating extra-low alternating current 2, 4, 6, 8, 10, 12V / 10A 1 illuminated rocker switch 1 transformer with separated coils 3 thermal magnetic circuit breakers 4 laboratory safety sockets	44-4C
		as 44-4C with floating extra-low alternating current 6, 12, 18, 24, 36, 42V / 3A	44-4D
Laboratory safety sockets 3HU / 12HP 		Insert plate with mains voltage L / N / PE ~ 50Hz with 3 laboratory safety sockets L1, N, PE	44-1W
Adjustable AC/DC-supply 3HU / 36HP		Eurocassette with floating extra-low alternating current voltage 6, 12, 18, 24, 30, 36 and 42V / 3A 1 externally switchable bridge rectifier (B2) 4 thermal magnetic circuit breakers 9 laboratory safety sockets 1 illuminated rocker switch	44-1B



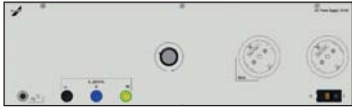









AC-supply 1-phase

Elabo plates and inserts with floating alternating current voltage can be used in many ways – e.g. for measurements of inductivities and capacities, in production test rooms or as floating voltage supply systems for training, servicing and development.

		Technical data	Order no.
AC-supply 1-phase 6HU / 1BE		<p>Insert plate for supplying with alternating current voltage 230V AC / 16A</p> <p>4 Schuko sockets</p> <p>3 Schuko sockets, 3 laboratory safety sockets L1, N, PE</p> <p>2 Schuko sockets, 1 emergency-off mushroom button, non-wired</p>	<p>32-1J</p> <p>32-1M</p> <p>32-1P</p>
AC-supply 1-phase 6HU / 1BE		<p>Insert plate for supplying with floating extra-low alternating current voltage</p> <p>2, 4, 6, 8, 10, 12V AC / 10A</p> <p>4 laboratory safety sockets for drawing extra-low alternating current voltages</p> <p>3 circuit breakers</p> <p>1 illuminated rocker switch</p>	32-1E
AC-supply 1-phase 6HU / 1BE		<p>Insert plate for supplying with extra-low alternating current voltage 6, 12, 18, 24, 36, 42V AC / 3A</p> <p>4 laboratory safety sockets for drawing extra-low alternating current voltages</p> <p>3 circuit breakers</p> <p>1 illuminated rocker switch</p>	32-1F
AC-supply, 1-phase with line filter 6HU / 1BE		<p>Insert plate for supplying with filtered alternating current voltage</p> <p>1 Schuko socket for drawing mains voltage 230V / 16A</p> <p>1 Schuko socket for drawing alternating current voltage through line filter with high attenuation 230V / 16A (line filters with special technical data upon request)</p> <p>1 fine wire fuse</p> <p>1 illuminated rocker switch</p>	32-1R
AC-supply 1-phase 6HU / 1BE		<p>Insert plate for supplying with alternating current voltage 230V AC / 100VA</p> <p>1 socket without earth contact for drawing 230V / 100VA, floating</p> <p>1 isolating transformer</p> <p>1 Schuko socket for drawing alternating current voltage</p> <p>1 circuit breaker</p> <p>1 illuminated rocker switch</p>	32-1S
AC-supply 1-phase 6HU / 2BE		<p>Insert for supplying with alternating current voltage 230V AC</p> <p>5 Schuko sockets and</p> <p>3 laboratory safety sockets for drawing mains voltage 230V / 16A</p> <p>1 socket without earth contact for drawing 230V / 3A, floating</p> <p>1 circuit breaker</p> <p>1 illuminated rocker switch</p>	33-0D

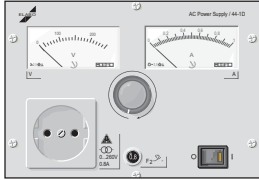
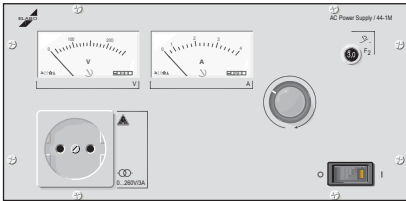
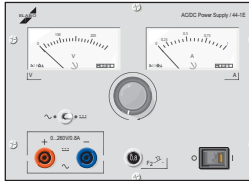

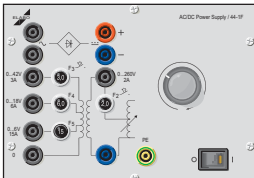
8.3 AC-supply 1-phase, adjustable

AC- und AC/DC-supply 1-phase





		Technical data	Order no.
AC/DC-supply 1-phase 3HU / 84HP	 	Insert plate with floating direct current and alternating current voltage 0...24V / 4A with analogue displays 1 voltmeter 1 ammeter 1 transformer with separated coils 1 economy variable transformer 1 thermal magnetic circuit breaker 1 illuminated rocker switch 2 laboratory safety sockets	44-4F
AC-supply 1-phase 3HU / 84HP	 	Insert plate with non-floating alternating current voltage 0...260V / 1A and mains voltage 1/N/PE ~ 50Hz 1 illuminated rocker switch 1 economy variable transformer 1 thermal magnetic circuit breaker 3 laboratory safety sockets 2 Schuko sockets	44-4K
AC-supply 1-phase 3HU / 84HP	 	Insert plate with non-floating alternating current voltage 0...260V / 1A and mains voltage 1 / N / PE ~ 50Hz with analogue displays 1 illuminated rocker switch 1 economy variable transformer 1 thermal magnetic circuit breaker 1 voltmeter 1 ammeter 3 laboratory safety sockets 2 Schuko sockets	44-4L
AC/DC-supply 1-phase 3HU / 84HP	 	Insert plate with non-floating direct current and alternating current voltage 0...260 V / 1A and mains voltage 1 / N / PE ~ 50Hz 1 illuminated rocker switch 1 economy variable transformer 1 thermal magnetic circuit breaker 6 laboratory safety sockets 2 Schuko sockets	44-4M
AC-supply 1-phase 3HU / 76HP	 	Insert plate with non-floating alternating current voltage 0...260V / 2A and floating extra-low voltages 0...12V / 12A, 0...24V / 6A with externally switchable bridge rectifier 1 illuminated rocker switch 1 economy variable transformer 1 transformer with separated coils 3 thermal magnetic circuit breakers 10 laboratory safety sockets 1 bridge rectifier	44-4N
AC-supply 1-phase 3HU / 76HP	 	Insert plate with non-floating alternating current 0...260 V / 2 A and floating low-level voltages 0...6 V / 15 A, 0...18 V / 6 A, 0...42 V / 3A with externally switchable bridge rectifier 1 illuminated rocker switch 1 economy variable transformer 1 transformer with separated coils 4 thermal magnetic circuit breakers 11 laboratory safety sockets 1 bridge rectifier	44-4P

Eurocassette for AC and AC/DC-supply

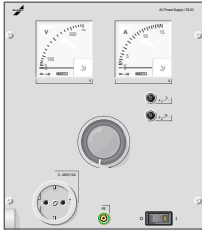
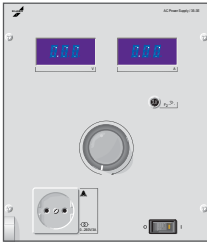

Elabo eurocassettes with direct current and alternating current voltage for supplying devices in the laboratory and in the test room. Voltage setting by means of a ring core variable transformer with rotary knob, analogue moving armature instruments installed with effective value display.

		Technical Data	Order no.
AC-supply 1-phase with isolating transformer 3HU / 36HP		<p>Eurocassette with floating, adjustable alternating current voltage 0...260 V / 0.8A</p> <ul style="list-style-type: none"> 1 analogue voltmeter 0...300V 1 analogue ammeter 0...1A 1 thermal magnetic circuit breaker 1 socket without earth contact 1 illuminated rocker switch 	44-1D
Adjustable AC-supply 3HU / 36HP		<p>Eurocassette with floating, adjustable alternating current voltage 0...260V / 3A</p> <p>Load: 0...3A, transient 4A across the entire setting range</p> <ul style="list-style-type: none"> 1 analogue voltmeter 0...300V 1 analogue ammeter 0...4A 1 thermal magnetic circuit breaker 1 socket without earth contact 1 illuminated rocker switch 	44-1M
Adjustable AC-supply 3HU / 52HP		<p>Eurocassette with floating alternating current voltage 0...260V / 0.8A, can be switched to direct current 0...260V / 0.8A, RW 48%</p> <ul style="list-style-type: none"> 1 voltmeter 0...300V 1 ammeter 0...1A 1 toggle switch 1 thermal magnetic circuit breaker 2 laboratory safety sockets 1 illuminated rocker switch 	44-1E
AC-supply 3-phase 3HU / 66HP		<p>Eurocassette with floating alternating current voltage 0...30V / 4A, can be switched over to direct current 0...30V / 4A, RW 48%</p> <ul style="list-style-type: none"> 1 voltmeter 0... 30 V 1 ammeter 0... 4A 1 toggle switch 1 thermal magnetic circuit breaker 2 laboratory safety sockets 1 illuminated rocker switch 	44-1G
AC/DC-supply 3HU / 24HP		<p>Eurocassette with continuously adjustable direct current and alternating current voltage.</p> <ul style="list-style-type: none"> 0...260V / 2A non-floating 0... 42V / 3A floating 0... 18V / 6A floating 0... 6V / 15A floating 1 externally switchable bridge rectifier (B2) 4 thermal magnetic circuit breakers 10 laboratory safety sockets 1 illuminated rocker switch 	44-1F

Eurocassette for AC and AC/DC-supply

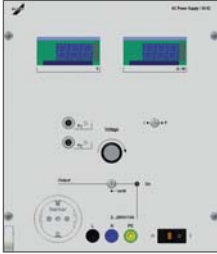

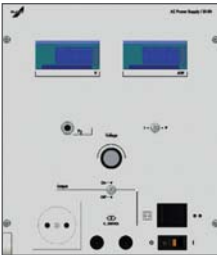

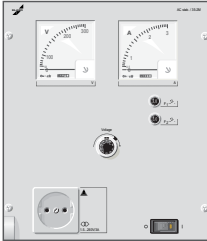
	Technical data	Order no.
<div>Adjustable AC/DC-supply</div> <div>3HU / 52HP</div> <div></div>	<div>Eurocassette with continuously adjustable floating alternating current voltage</div> <div>0...260V / 3A or 0...50V / 10A</div> <div>can be switched over to DC with RW 48%</div> <div>0...260V / 3 A or 0...50V / 10A</div> <div><div>1 voltmeter</div><div>1st range0... 300V</div><div>2nd range0... 50V</div></div> <div><div>1 ammeter</div><div>1st range0... 4A</div><div>2nd range0... 10A</div></div> <div>Additional protection function: When switching from direct current to alternating current voltage or from mains voltage to extra-low voltage or vice-versa, the load must be unplugged and then replugged at the laboratory safety sockets.</div> <div>2 thermal magnetic circuit breakers</div> <div>2x 3 laboratory safety sockets</div> <div>2 changeover rocker switches</div> <div>1 illuminated rocker switch</div>	<div>44-1P</div> <div></div>
<div>Adjustable AC-stabiliser</div> <div>3HE / 66HP</div> <div></div>	<div>Eurocassette with floating alternating current voltage</div> <div>2...260V / 2A. Electromotive stabilisation with tracking controller and setpoint potentiometer.</div> <div>1 digital display 4-digit for voltage</div> <div>1 digital display 4-digit for current</div> <div>switch-selectable active power</div> <div>1 rocker pushbutton switch for output on/off</div> <div>Output to 2 safety lab terminals</div>	<div>44-5M</div> <div></div>

Adjustable AC-supply

		Technical Data	Order no.
AC-supply 1-phase 6HU / 2WU		Adjustable, non-floating alternating current voltage 0...260V AC / 12.5A 1 analogue voltmeter 0...300V 1 analogue ammeter 0...15A Load: 12.5A, transient 15A across the entire setting range 1 Schuko socket for drawing 0...260V / 0...12.5A non-floating 1 PE laboratory safety socket 2 circuit breakers 1 illuminated rocker switch	35-2C
		0...260V / 3A with analogue voltmeter and ammeter 1 Schuko socket, 1 laboratory safety socket	35-2A
		0...260V / 5A with analogue voltmeter and ammeter 1 Schuko socket, 1 laboratory safety socket	35-2B
AC-supply 1-phase 6HU / 2WU		Adjustable, floating alternating current voltage 0...260V AC / 3A 1 digital voltmeter 0...300V 1 digital ammeter 0...4A Load: 3A, transient 4A across the entire setting range 1 socket without earth contact 1 circuit breaker 1 illuminated rocker switch	35-3E
		0...260V / 5A floating with analogue voltmeter and ammeter socket without earth contact	35-3F
AC-supply 1-phase 6HU / 2WU		Adjustable, floating alternating current voltage 0...260V AC / 3A 1 analogue voltmeter 0...300V 1 analogue ammeter 0...4A Load: 3A, transient 4A across the entire setting range 1 socket without earth contact 1 circuit breaker 1 illuminated rocker switch	35-2E
		0...260V / 800W floating with analogue voltmeter and wattmeter socket without earth contact	35-2G
		0...260V / 5A floating with analogue voltmeter and ammeter socket without earth contact	35-2F
		0...260V / 1500W floating with analogue voltmeter and wattmeter socket without earth contact	35-2H
		0...260V / 12A floating with analogue voltmeter and ammeter socket without earth contact	35-2J

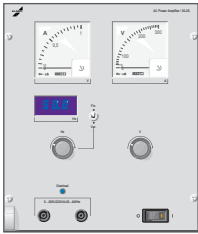
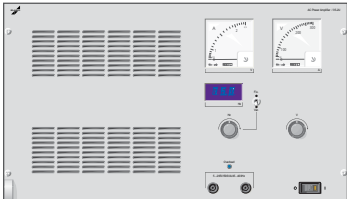
Adjustable AC-stabiliser

With the adjustable AC-stabilisers, the stabilisation of the alternating current voltage takes place electromechanically: variable transformer with motor drive, electronic stabilisation unit and downstream isolating transformer. With an output voltage of U_{nominal} , stability is rated at $260\text{V} \pm 2\text{V}$. The output voltage can be set precisely by means of a ten turn potentiometer. The control time is approx. 0.5s with a network voltage fluctuation of 10%.

		Technical data	Order no.
AC-stabiliser 6HU / 2WU		Adjustable, non-floating alternating current voltage 2...260V / 12A Electromechanical stabilisation with tracking controller and setpoint potentiometer 1 4-digit digital display for voltage 1 4-digit digital display for current switch-selectable active power 1 rocker pushbutton switch for output on/off Output parallel on Schuko and laboratory safety sockets	35-5C 
AC-stabiliser 6HU / 2WU		Adjustable, floating alternating current voltage 2...260V / 5A Electromechanical stabilisation with tracking controller and setpoint potentiometer 1 4-digit digital display for voltage 1 4-digit digital display for current switch-selectable active power 1 rocker pushbutton switch for output on/off Output can be switched to one socket without earth contact or to 2 laboratory outlets	35-5H 
AC-stabiliser 6HU / 2WU		Adjustable, stabilised, floating alternating current voltage 1.5...260V AC / 3A 1 analogue voltmeter 0...300V 1 analogue ammeter 0...4A Load: 0...3A across the entire setting range Stabilisation: $V_{\text{nom}} \pm 2\text{V}$ Actuating time: approx. 0.5s with 10% mains voltage change 1 socket without earth contact 1 motor-driven variable transformer with separated coils and electronic stabilisation unit for maintaining constant voltage in accordance with the electromechanical principle 2 circuit breakers 1 illuminated rocker switch	35-2M
		as with type 35-2M, but 1.5...260V AC / 6A 1 analogue ammeter 0...6A	35-2N

Power generators

All power generators provide an adjustable, stabilised alternating current voltage or 3-phase alternating current (5...400V) with adjustable frequency (45Hz...400Hz). They are used for testing, repair and maintenance of components and devices which are operated with a dedicated network voltage – e.g. in air and sea travel. They are also used as alternating current-stabilisers for networks with special frequencies.

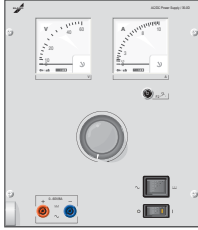


		Technical Data	Order no.
Power generator 1-phase 6HU / 2WU		<p>Single-phase power generator with stabilised alternating current voltage 5...265V AC / 220VA</p> <p>1 analogue voltmeter 0...300V</p> <p>1 analogue ammeter 0...1A</p> <p>1 digital frequency display 3-digit, resolution 0.1Hz</p> <p>Output voltage: 5...265V</p> <p>Output power: 220VA with maximum output voltage</p> <p>Frequency: 50Hz crystal stable, can be switched over to 45...400Hz (not crystal stable)</p> <p>2 laboratory safety sockets</p> <p>1 ten turn helical potentiometer for voltage adjustment</p> <p>1 ten turn helical potentiometer for frequency adjustment</p> <p>1 overload protection</p> <p>1 illuminated rocker switch</p>	35-2S
Power generator 1-phase 6HU / 2WU		<p>Single-phase power generator with stabilised alternating current voltage 5...135V AC / 220VA</p> <p>1 analogue voltmeter 0...150V</p> <p>1 analogue ammeter 0...2A</p> <p>1 digital frequency display 3-digit, resolution 0.1Hz</p> <p>Output voltage: 5...135V</p> <p>Output power: 220VA with maximum output voltage</p> <p>Frequency: 60Hz crystal stable, can be switched over to 45...75Hz (not crystal stable)</p> <p>2 laboratory safety sockets</p> <p>1 ten turn helical potentiometer for voltage adjustment</p> <p>1 ten turn helical potentiometer for frequency adjustment</p> <p>1 overload protection</p> <p>1 illuminated rocker switch</p>	35-2V
Power generator 1-phase 6HU / 4WU		<p>Single-phase power generator with stabilised alternating current voltage 5...265V AC / 500VA</p> <p>1 analogue voltmeter 0...300V</p> <p>1 analogue ammeter 0...2A</p> <p>1 digital frequency display 3-digit, resolution 0.1Hz</p> <p>Output voltage: 5...265V</p> <p>Output power: 500VA with maximum output voltage</p> <p>Frequency: 50Hz crystal stable, can be switched over to 45...400Hz (not crystal stable)</p> <p>2 laboratory safety sockets</p> <p>1 ten turn helical potentiometer for voltage adjustment</p> <p>1 ten turn helical potentiometer for frequency adjustment</p> <p>1 overload protection</p> <p>1 illuminated rocker switch</p>	35-2U

Power generators

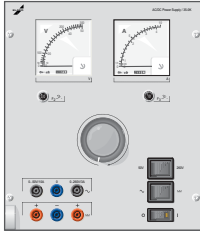
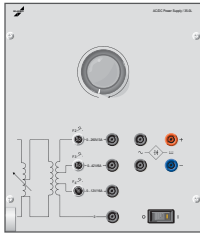
	Technical data	Order no.
Power generator 1-phase 6HU / 4WU	1-phase power generator with stabilised alternating current voltage 5...135V AC / 500VA 1 analogue voltmeter 0...150V 1 analogue ammeter 0...4A 1 digital frequency display 3-digit, resolution 0.1Hz Output voltage: 5...135V Output power: 500VA with maximum output voltage Frequency: 60Hz crystal stable, can be switched over to 45...75Hz (not crystal stable) 2 laboratory safety sockets 1 ten turn helical potentiometer for voltage adjustment 1 ten turn helical potentiometer for frequency adjustment 1 overload protection 1 illuminated rocker switch	35-2W

Adjustable AC/DC-supply

These inserts provide alternating current voltage which can be continuously adjusted, starting from 0, and can be switched over to direct current. Moving armature instruments with effective value displays are installed for current and voltage measurement. The voltage adjustment is accomplished by means of a variable transformer. The pulsating direct current exhibits a ripple of 48 %. All devices are equipped with an AC/DC selection switch and can also be obtained with digital displays upon request.





		Technical Data	Order no.
AC/DC-supply 6HU / 2WU		Insert for supplying with floating alternating current voltage or direct current AC: 0...60V / 8A, can be switched over to DC with 0...60V / 8A Effective ripple of the direct current approx. 48% 1 analogue voltmeter 0...60V 1 analogue ammeter 0...10A 2 laboratory safety sockets 1 rotary knob for adjusting the voltage 1 changeover switch from alternating current voltage to direct current 1 circuit breaker 1 illuminated rocker switch	35-0D
		Alternating current voltage 0...260V / 3A Direct current 0...260V / 3A analogue voltmeter analogue ammeter 2 laboratory safety sockets	35-0E
		Alternating current voltage 0...260V / 5A Direct current 0...260V / 5A analogue voltmeter analogue ammeter 2 laboratory safety socketsw	35-0F
AC/DC-supply 6HU / 2WU		Insert for supplying with floating alternating current voltage or direct current AC/DC 0... 260V / 3A, can be switched over to 0...50V / 3A Effective ripple of the direct current approx. 48% 1 analogue voltmeter 1st range 0...300V 2nd range 0...50V 1 analogue ammeter 0...4A 2 laboratory safety sockets 1 rotary knob for adjusting the voltage 1 changeover switch from alternating current voltage to direct current 1 changeover switch 50 / 260V 1 circuit breaker 1 illuminated rocker switch	35-0G
		Insert for supplying with floating alternating current voltage or direct current, as with type 35-0E, but with additional extra-low alternating current voltages 2, 4, 6, 8, 10 and 12V / 10A. 4 thermal circuit breakers 1 thermal magnetic circuit breaker 1 changeover switch from alternating current voltage to direct current 1 illuminated rocker switch	35-0H
AC/DC-supply 6HU / 2WU		floating extra-low alternating current voltage 6, 12, 18, 24, 36, 42 V / 3A Direct current 0...260 V / 3A analogue voltmeter analogue ammeter 2 laboratory safety sockets	35-0J

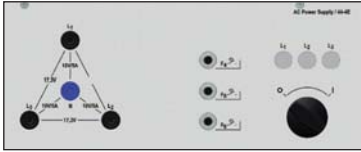
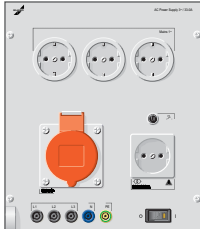

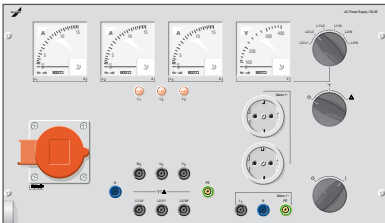
Adjustable AC/DC-supply

	Technical data	Order no.
AC/DC-supply 6HU / 2WU	<div></div> <p>Insert for supplying with floating alternating current voltage or direct current and additional protective function (forced replugging of the load). AC/DC 0... 260V / 3A, can be switched over to 0...50 V / 10 A</p> <ul style="list-style-type: none">1 analogue voltmeter<ul style="list-style-type: none">1st range 0...300V2nd range 0...50V1 analogue ammeter<ul style="list-style-type: none">1st range 0...4A2nd range 0...10A <p>Effective ripple of the direct current: approx. 48%</p> <ul style="list-style-type: none">6 laboratory safety sockets1 rotary knob for adjusting the voltage1 changeover switch from alternating current voltage to direct current1 changeover switch 50V / 260V2 circuit breakers1 illuminated rocker switch <p>Additional safety is ensured with the 35-0K device in that the load must be unplugged and then replugged at the laboratory safety sockets when switching from alternating current voltage to direct current or from extra-low voltage to low voltage.</p>	35-0K
AC/DC-supply 6HU / 2WU	<div></div> <p>Insert for supplying with floating alternating current voltage in the ranges: 0...260V / 3A 0...42V / 6A 0...12V / 15A</p> <ul style="list-style-type: none">1 freely switchable rectifier (B2 - 300V / 16A) for rectifying the alternating current voltages <p>Ripple of the rectified voltages: approx. 48%</p> <ul style="list-style-type: none">1 rotary knob for adjusting the voltage8 laboratory safety sockets3 circuit breakers1 illuminated rocker switch	35-0L



8.4 AC-supply 3-phase, fixed

AC-supply

Technical data			Order no.
<div>CEE socket 3HU / 24HP</div> <div></div>		Insert plate with mains voltage 3 / N / PE ~ 50Hz with 1 CEE socket	44-2C
		Insert plate with mains voltage 3 / N / PE ~ 50Hz with 1 CEE socket 5 laboratory safety sockets L1, L2, L3, N, PE	44-2C Z001
<div>Laboratory safety sockets 3HU / 12HP</div> <div></div>		Insert plate with mains voltage 3 / N / PE ~ 50Hz with 5 laboratory safety sockets L1, L2, L3, N, PE	44-1X

		Technical Data	Order no.
AC-supply 1-phase 3HU / 36HP <div data-bbox="167 356 248 441" data-label="Image"> </div>		Insert plate with floating 3-phase alternating current supply 3 ~ 10 / 17.3V 5A 1 rotary switch I/O 3 glow lamps 1 3-phase current transformer with fine wire fuses 3 circuit breakers 4 laboratory safety sockets	44-4E
AC-supply 1- and 3-phase 6HU / 2WU		Insert for supplying with 3-phase alternating current and alternating current voltage 1 CEE socket and 5 laboratory safety sockets for drawing 3-phase alternating current 3 Schuko sockets for drawing alternating current voltage 1 socket without earth contact for drawing 230V / 1A, floating 1 isolating transformer 230VA 1 circuit breaker 1 A 1 illuminated rocker switch	33-0A
		as with type 33-0A, but with technical data: 1 socket without earth contact for drawing 230V / 3A, floating 1 isolating transformer 690VA 1 circuit breaker 3A 1 illuminated rocker switch	33-0B
AC-supply 1- and 3-phase 6HU / 2WU		Insert for supplying with non-floating 3-phase alternating current 3 / N / PE 400V AC / 6A / 50Hz 1 voltmeter 0...400V, can be switched to outer conductor / outer conductor or outer conductor / neutral conductor via changeover switch 1 ammeter 0...6A, can be switched on via changeover switch in any phase 1 CEE socket 5 laboratory safety sockets for drawing 3-phase alternating current 1 Schuko socket 3 circuit breakers 3 external conductor indicator lamps 1 Off switch	36-0F
AC-supply 1- and 3-phase 6HU / 4WU		Insert for supplying with non-floating 3-phase alternating current 230 / 400V 16A delta or wye with analogue displays 1 rotary switch I/O 1 rotary switch 0 / delta / wye 3 glow lamps 1 rotary switch, 6-stage 1 voltmeter analogue 0...400V, moving armature Class 1.5 3 ammeter analogue 0...15A with 45A overload scale, moving armature Class 1.5 1 CEE socket 5p380V16AB 5 laboratory safety sockets L1/U1, L2/V1, L3/W1, N, PE 3 laboratory safety sockets U2, V2, W2 2 Schuko sockets 3 laboratory safety sockets	36-0E

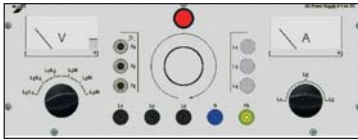


AC-supply

		Technical data	Order no.
AC-supply 1- and 3-phase 6HU / 1WU		Insert plate for supplying with floating 3-phase alternating current 3 ~ 23 / 40V / 3A 4 laboratory safety sockets for drawing 3-phase alternating current 3 circuit breakers 3 external conductor indicator lamps 1 rotary switch 1 3-phase current transformer with fine wire fuses	32-1G
AC-supply 1- and 3-phase 6HU / 1WU		Insert plate for supplying with non-floating 3-phase alternating current 3 / N / PE ~ 50Hz 230 / 400V 16 A 5 laboratory safety sockets for drawing 3-phase alternating current 3 external conductor indicator lamps 1 Off switch	32-1H
AC-supply 1- and 3-phase 6HU / 1WU		Insert plate for supplying with 3-phase alternating current 1 CEE socket 16A and 5 laboratory safety sockets L1, L2, L3, N, PE for drawing 3-phase alternating current 1 Schuko socket for drawing alternating current voltage	32-1L

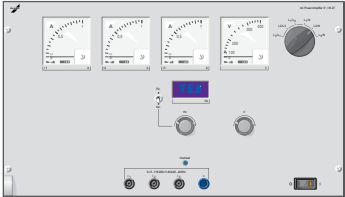
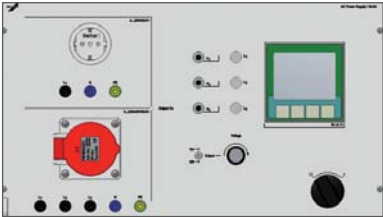

8.5 AC-supply 3-phase, adjustable

AC-supply 3-phase

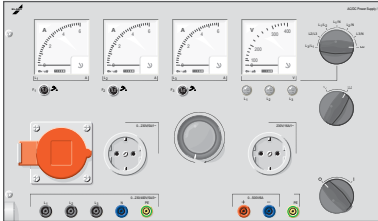
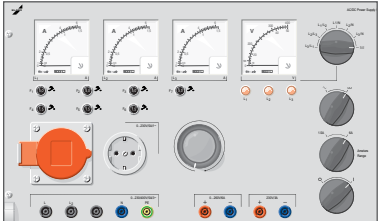
Elabo eurocassettes with direct current and alternating current voltage for supplying devices in the laboratory and in the test room. Voltage setting by means of a ring core variable transformer with rotary knob, analogue moving armature instruments installed with effective value display.

		Technical data	Order no.
AC-supply 3-phase 3HU / 66HP		<p>Eurocassette with non-floating 3-phase alternating current 0...400V / 3A with analogue displays</p> <ul style="list-style-type: none"> 1 illuminated pushbutton switch 3 external conductor indicator lamps 1 3-phase ring core variable transformer with economy coil 3 circuit breakers, 1-pin, 3A 1 moving armature voltmeter 0-400V, Class 2.5 1 voltmeter changeover switch 1 moving armature ammeter 0...4A Class 2.5 1 ammeter changeover switch 5 laboratory safety sockets 	44-1R
AC-supply 1- and 3-phase 6HU / 2WU		<p>Adjustable, non-floating 3-phase alternating current 3 / N / PE 0...400V AC / 2A, transient to 2.5A</p> <ul style="list-style-type: none"> 1 voltmeter 0...400V, can be switched to outer conductor / outer conductor or outer conductor / neutral conductor via changeover switch 1 ammeter 0...2.5A, can be switched to every outer conductor via changeover switch 5 laboratory safety sockets L1, L2, L3, N, PE 3 circuit breakers 3 external conductor indicator lamps 1 Off switch 	36-0D
AC-supply 1- and 3-phase 6HU / 4WU		<p>Adjustable, non-floating 3-phase alternating current 3 / N / PE 0...400V AC / 5A, transient 6A with analogue displays and mains voltage 1 / N / PE ~ 50Hz 230V 16A</p> <ul style="list-style-type: none"> 1 rotary switch I/O 3 glow lamps 1 economy variable transformer for 3-phase current 1 mains/transformer rotary switch 3 circuit breakers TMT5A 3 ammeters, analogue 0...6A, moving armature Class 1.5 1 rotary switch, 6-stage 1 voltmeter analogue 0...400V, moving armature Class 1.5 1 CEE socket 5-pin 400V/16 A 5 laboratory safety sockets 1 Schuko socket 0...230 V / 5 A or 1 / N / PE ~ 50 Hz 230 V 5 A 1 Schuko socket 230 V 16 A 3 laboratory safety sockets 	36-0A
		as with type 36-0A, but with output current up to 8A, transient up to 10A 3 ammeters 0...10A	36-0B
		similar to type 36-0A, 3 / N / PE 0...290/500V AC / 4A	36-0C
		<ul style="list-style-type: none"> 1 voltmeter 0...500V 3 ammeters 0...6A 3 circuit breakers 1-pin K 4A 	

Power generator, AC-supply

	Technical Data	Order no.
<div>Power generator</div> <div>3-phase</div> <div>6HU / 4WU</div> <div>  </div>	<div>Insert with 3-phase power generator</div> <div>500VA</div> <div>1 analogue voltmeter 0...200V</div> <div>1 analogue ammeter 0...1.5A</div> <div>1 digital frequency display 3- or 4-digit, resolution 0.1Hz</div> <div>Output voltage: 3 x 5...115 / 200V</div> <div>Output power: 500VA with maximum output voltage</div> <div>Frequency: 400Hz crystal stable, can be switched over to 45...400Hz (not crystal stable)</div> <div>4 laboratory safety sockets for drawing the stabilised 3-phase alternating current</div> <div>3 x 5...115 / 200V / 500VA</div> <div>1 ten turn helical potentiometer for voltage adjustment</div> <div>1 ten turn helical potentiometer for frequency adjustment</div> <div>1 overload protection</div> <div>1 illuminated rocker switch</div> <div>The programming can be altered to allow the user to switch between an anti-clockwise rotating field or a clockwise rotating field. The utilisation options of the device can be expanded with phase shift – e.g. as a bridge amplifier (option).</div>	<div>35-2T</div>
<div>AC-supply</div> <div>6HU / 4WU</div> <div>  </div>	<div>Insert with non-floating 3-phase alternating current 0...230 / 400V / 5A (transient 6A) with electromotive control for variable voltage adjustment</div> <div>1 CEE socket 16 A</div> <div>5 laboratory safety sockets</div> <div>1 Schuko socket</div> <div>3 laboratory safety sockets</div> <div>3 phase monitoring lamps</div> <div>1 ten turn potentiometer for manual adjustment of the output voltage</div> <div>1 rocker pushbutton switch for switching off the output voltage</div> <div>The following measurement values can be selected for display by means of a multi-function display feature: Neutral conductor current, active power measurement (W), idle power measurement (VAr kap, VAr ind), apparent power measurement (VA), power factor measurement (cos phi), frequency.</div>	<div>36-5A</div>
	<div>as with 36-5A</div> <div>with 2 Ethernet interfaces for remote control</div>	<div>36-5A Z102</div> <div>  </div>

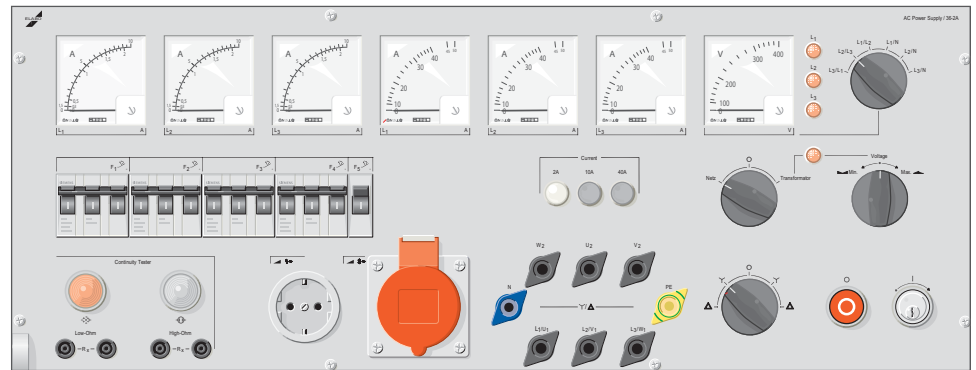
AC/DC-supply 3-phase

	Technical data	Order no.
AC/DC-supply 6HU / 4WU	 <p>Insert with continuously adjustable, non-floating 3-phase alternating current and direct current with 5% RW 3-phase alternating current: 3 / N / PE 0...400 V AC / 8A</p> <p>can be switched over to direct current: 0...500V / 10A, ripple approx. 5% effective</p> <ul style="list-style-type: none">1 analogue voltmeter 0...500V2 analogue voltmeters 0...10A1 rotary knob for adjusting the voltage1 changeover switch for 3-phase alternating current and direct current1 voltmeter changeover switch – can be switched to outer conductor/outer conductor or to outer conductor / neutral conductor, as well as into the direct voltage circuit1 5-pin CEE socket1 Schuko socket for variable voltage1 Schuko socket for mains voltage5 laboratory safety sockets L1, L2, L3, N, PE3 laboratory safety sockets for direct current1 protective earth wire laboratory socket3 circuit breakers3 external conductor indicator lamps1 4-pin Off switch	36-1C
	<p>as with 36-1C, but with 3-phase alternating current: 3 / N / PE 0...400 V AC / 5 A / 50 Hz, can be switched over to direct current: 0...500V / 6A, 1 3-phase ring core variable transformer</p>	36-1A
AC/DC-supply 6HU / 4WU	 <p>Insert with continuously adjustable, non-floating 3-phase alternating current and direct current with 18% RW and additional fixed direct current with 48% RW 3-phase alternating current: 3 / N / PE 0...400V AC / 5A / 50Hz</p> <p>can be switched over to direct current: 0...250V / 6A, ripple approx. 18% effective</p> <p>Fixed direct current: 230V / 3A, ripple approx. 48% effective</p> <ul style="list-style-type: none">1 analogue voltmeter 0...400V3 analogue ammeters 1st range 0...6A 2nd range 0...1.5A1 measurement range changeover switch 1.5 / 6A1 rotary knob for adjusting the voltage1 changeover switch for 3-phase alternating current or direct current1 voltmeter changeover switch – can be switched to outer conductor/outer conductor or to outer conductor / neutral conductor, as well as into the direct voltage circuit1 5-pin CEE socket1 Schuko socket for variable voltage5 laboratory safety sockets L1, L2, L3, N, PE2 laboratory safety sockets for variable direct current2 laboratory safety sockets for fixed direct current1 protective earth wire laboratory socket7 circuit breakers3 external conductor indicator lamps1 4-pin Off switch	36-1D
	<p>as with 36-1D, but with 3-phase alternating current: 3 / N / PE 0...400V AC / 8A / 50Hz, can be switched over to direct current: 0...250V / 10A, ripple approx. 18% effective</p> <p>Fixed direct current: 230V / 3A, ripple approx. 48%, effective</p> <ul style="list-style-type: none">1 analogue voltmeter 0...400V3 analogue ammeters 1st range 0...10A; 2nd range 0...2A	36-1E

Test rooms

The test rooms 36-2A and 36-3A are appropriate for general utilisation at test stations in production and repair operations. The mains connection supplies 3-phase alternating current 3 / N / PE 400V AC / 40A / 50Hz to a labelled serial terminal board. The main switch is designed as a key switch button. The test room is equipped with 3 outer conductor monitoring lamps, 1 control fuse and 16A 3-way automatic devices for the backup rooms in the desk rack. A selection switch with the settings "Mains" - 0 - "Transformer" makes it possible to switch from mains supply to supply with adjustable voltage by means of a transformer (available separately).

Test room insert with three current measurement ranges 6HU / 6WU



Operating modes

- "Mains" The mains voltage is switched directly through the measuring instruments to the drawing terminals or sockets.
- "Transformer" In this position, the drawing terminals or sockets are fed with continuously adjustable selectable voltage (possible only with variable transformer, must be ordered separately).
- Setting: 1 selection switch "Mains or Transformer"

Continuity testing: high-impedance with 230V AC, displayed with 230V glow lamp, low-impedance with 24V AC, displayed with 24V glow lamp.

Current measurement

- Preselection: 3 ranges 2A / 10A / 40A, selectable through a pushbutton assembly with mutual actuation.
- Display: 3 moving armature ammeters with two ranges and dual scale 0...2A / 0...10A, each secured with one triple circuit breaker (2A and 10A) 3 moving armature ammeters 0...40A with overload scale 120A (switching-current transient). Because the switchover takes place without voltage interruption, no switch-on peaks arise. This makes it possible to always be able to measure the current exactly, e.g. after the completed startup of an electrical motor.

Mains connection: 1 labelled serial terminal board for 3-phase alternating current 3 / N / PE 400V AC / 40A / 50Hz

Approvals: 1 CEE socket 16A / 5-pin 6 screw-type terminals, 63A, aligned like a terminal board, with 4mm plug-in option W2 U2 V2 L1 / U1 L2 / V1 L3 / W1 2 screw-type terminals 63A N / PE with 4mm plug-in option

Voltmeter

- Preselection: pushbutton selection switch: Min: for lowering the voltage Max: for raising the voltage via the variable transformer which must be ordered separately.
- Display: 1 moving armature voltmeter 0...400V can be switched with changeover switch to outer conductor / outer conductor or outer conductor / neutral conductor.

Main switch: 1 key-operated On button 1 Off button 1 air-break contactor, 5-pin 3 external conductor indicator lamps

Fuse protection: 1 control fuse 1 triple circuit breaker 16A for the backup panels

Motor startup: 1 delta-wye switch with neutral setting

Options: insert rectifier 25A 36-2B, insert rectifier 40A 36-2C, insert polarity reversal panel 36-2D

Note: the 3-phase current transformer is not included in the scope of delivery. 3-phase current transformer 36-2G or 3-phase current transformer 36-2H each in a separate housing made of steel plating

Order no. 36-2A

Test rooms

Four current ranges can be selected with the test field 36-3A. In the interest of improved legibility, each of these is displayed above large moving coil ammeters with a meter rectifier and linear scale. When used in conjunction with an optional 3-phase variable transformer, the opportunities for error diagnostics with 1-phase and 3-phase test items of all types can be broadened considerably.

Test room insert with four current measurement ranges
6HU / 6WU



Operating modes

"Mains"	The mains voltage is switched directly through the measuring instruments to the drawing terminals or sockets.	Continuity testing:	high-impedance with 230V AC, displayed with 230V glow lamp, low-impedance with 24V AC, displayed with 24V glow lamp.
"Transformer"	In this position, the drawing terminals or sockets are fed with continuously adjustable selectable voltage (variable transformer, must be ordered separately).	Mains connection:	1 serial terminal board for 3-phase alternating current 3 / N / PE ~ 50Hz 400V / 40A 1 CEE socket 5-pin 16A 6 screw-type terminals, aligned like a terminal board 63A with 4mm plug-in option W2 U2 V2 L1/ U1 L2 / V1 L3 / W1 2 screw-type terminals 63 A N / PE with 4mm plug-in option
Setting:	1 selection switch "Mains" - 0 - "Transformer"	Approvals:	1 key-operated On button 1 off button 1 air-break contactor, 5-pin 3 external conductor indicator lamps 1 control fuse 1 triple circuit breaker 16A for the backup panels 1 delta-wye switch with neutral setting

Current measurement

Preselection:	4 ranges 1.5A / 4A / 15A / 40A, selectable through pushbuttons with mutual actuation.	Main switch:	1 key-operated On button 1 off button 1 air-break contactor, 5-pin 3 external conductor indicator lamps 1 control fuse 1 triple circuit breaker 16A for the backup panels 1 delta-wye switch with neutral setting
Display:	3 moving coil ammeters 3-pin circuit breakers secure each range. Current and measurement ranges are switched over together. Because the switchover takes place without voltage interruption, no switch-on peaks arise. This makes it possible to measure the current exactly, e.g. after the completed startup of an electrical motor.	Fuse protection:	1 delta-wye switch with neutral setting

Voltmeter

Preselection:	pushbutton selection switch: Min: for lowering the voltage Max: for raising the voltage via the variable transformer which must be ordered separately.	Options:	insert rectifier 25A 36-2B insert rectifier 40A 36-2C Insert polarity reversal panel 36-2D
Display:	1 moving coil voltmeter 0...400V with meter rectifier and linear scale, can be switched with changeover switch to outer conductor / outer conductor or outer conductor / neutral conductor.	Note:	the 3-phase current transformer is not included in the scope of delivery. 3-phase current transformer 36-2G or 3-phase current transformer 36-2H, each in a separate housing made of steel plating

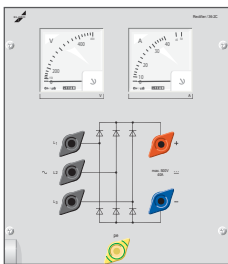
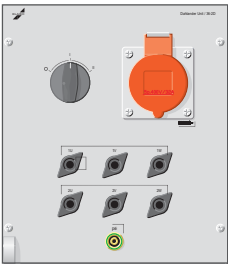
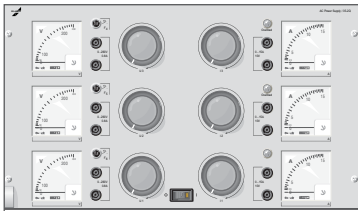
Order no. 36-3A

Auxiliary equipment for test rooms

	Technical Data	Order no.
3-phase variable transformer 6HU	<p>3-phase ring core variable transformer with economy coil and motor drive for the test rooms 36-2A and 36-3A</p> <p>Rated output: 17.3kVA Input: 3 / N / PE ~ 50Hz 400V Output: 3 / N / PE 0...400V / 25A Drive: capacitor motor 230V / 50Hz</p> <p>Housing made of lacquered steel plating, W = 420mm, D = 405mm, H = 690mm, Protection class IP 20</p>	36-2G
3-phase variable transformer 6HU	<p>3-phase variable transformer with ring core economy coil and motor drive for the test rooms 36-2A and 36-3A.</p> <p>Rated output: 27.6kVA Input: 3 / N / PE 230 / 400V AC Output: 3 / N / PE 0...230 / 400V / 40A Drive: capacitor motor 230V / 50Hz</p> <p>Housing made of lacquered steel plating, W = 660 mm, D = 410mm, H = 1030mm, Protection class IP 20</p>	36-2H
Current limitation 6HU	<p>Inrush current limitation for 3-phase current variable transformer type 36-2G (25A)</p> <p>A high current peak occurs when the transformer is switched on which could under certain circumstances cause the upstream fuses to respond. This apparatus limits the inrush current. The combination is installed in the transformer housing.</p> <p>W = 150mm, D = 100mm, H = 120mm</p>	36-2E
Current limitation 6HU	<p>Inrush current limitation for 3-phase current variable transformer type 36-2H (40A)</p> <p>W = 150mm, D = 100mm, H = 120mm</p>	36-2F
Stabilisation unit for 3-phase current transformer 6HU	<p>The output voltage of the transformers fluctuates with changing loads. The stabilisation unit holds the output voltage constant at approx. $\pm 2\%$. Manipulating speed: approx. 100V / s The setpoint potentiometer is located on the front plate of the test room.</p>	36-2K

Application: Limitation of the startup current, testing of stators and rotors in dismantled state, error diagnostics, e.g. as with short-circuited coils. All variable transformers can be loaded with the maximum amount of current across the entire setting range. Driven by a capacitor motor. 3 Neozed elements are installed as fuses. The transformers are each equipped with a 5m connection cable for connection to the test room inserts. You will find our motor test bay on page 124 onwards.






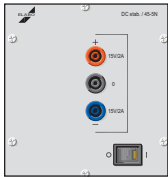


If a fixed or an adjustable direct current is required for testing, then an additional insert for direct current supply can be utilised here. This insert is fed from the laboratory terminals U1 - V1 - W1 of the testing insert 36-2A or 36-3A in conjunction with the utilisation of a 3-phase ring core variable transformer. In addition to the function of supplying direct current, extensive testing can also be implemented with this configuration.

		Technical data	Order no.
Rectifier insert 6HU / 2WU		Insert with rectifier in DB(B6) switching. Input: 3 x 0...400V AC / 50Hz Output: 0...500V / 25A DC 1 moving coil voltmeter 0...500V 1 moving coil ammeter 0...25A Ripple of the direct current: approx. 5% with 3-phase current connection approx. 48% with alternating current connection 3 screw-type terminals 63A for feeding the alternating current voltage with 4mm plug-in option 2 screw-type terminals 63A for drawing the direct current with 4mm plug-in option 1 PE-screw-type terminal	36-2B
Rectifier insert 6HU / 2WU		Insert with rectifier in DB(B6) switching. Input: 3 / N / PE 0...400V AC / 50Hz Output: 0...500V / 40A DC Moving coil voltmeter 0...500V Moving coil ammeter 0...40A Ripple of the direct current: approx. 5% with 3-phase current connection approx. 48% with alternating current connection 3 screw-type terminals 63A for feeding the alternating current voltage with 4mm plug-in option 2 screw-type terminals 63A for drawing the direct current with 4mm plug-in option 1 PE-screw-type terminal	36-2C
Pole reverser 6HU / 2WU		Insert with 1 Dahlander pole reverser 40A 6 screw-type terminals 63A, aligned like a terminal board aligned with 4mm plug-in option 1 CEE socket 5-pin 32A 1 PE screw-type terminal The insert is pre-wired with the test rooms 36-2A or 36-3A.	36-2D
Voltage and current transmitter 3-phase 6HU / 4WU		Insert with floating, 3-phase voltage and current transmitter for application in the area of EVU workshops. The insert is used not only for checking voltage and current relays, but also overvoltage, overcurrent and bimetallic relays. Floating current transmitter 3 variable transformers with downstream current transformers Current setting range: 0...15A No-load voltage: 0...10V 3x 2 laboratory safety sockets, designated I1, I2, I3 3 ammeters 0...15A (moving armature instruments, class 1.5) 3 overcurrent displays Floating voltage transmitter 3 variable transformers Secondary voltage: 0...260V Load current: maximum 0.8A 3 thermal magnetic circuit breakers for fusing on the secondary side 3x 2 laboratory safety sockets, designated U1, U2, U3 3 voltmeters 0...300V (moving armature instruments, class 1.5) 1 illuminated rocker switch	35-2Q

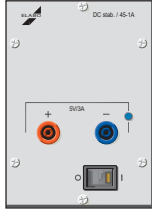
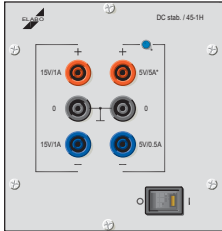
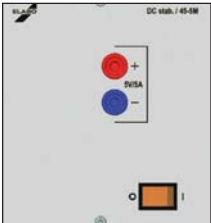
8.6 DC-stabiliser fixed

DC-stabiliser

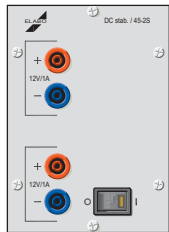
Elabo offers a wide array of products, not only in testing devices and meters but also in power supply systems.

Technical data			Order no.
<div>Regulated DC-stabiliser</div> <div>3HU / 36HP</div> <div></div>		<div>Insert plate with linearly regulated stabiliser</div> <div>5V / 3A with</div> <div>1 illuminated rocker switch</div> <div>2 laboratory safety sockets</div>	45-5R
<div>Regulated DC-stabiliser</div> <div>3HU / 60HP</div> <div></div>		<div>Insert plate with linearly regulated DC-stabiliser</div> <div>2 x 15V / 2A</div> <div>switchable either parallel or in series</div> <div>1 illuminated rocker switch</div> <div>4 laboratory safety sockets</div>	45-5S
<div>Regulated DC-stabiliser</div> <div>3HU / 24HP</div> <div></div>		<div>Insert plate with DC-stabiliser with pulsed output</div> <div>voltages $\pm 15V$ / 2A</div> <div>Outputs guided to 3 laboratory safety sockets</div> <div>Output power: 2 x 30W</div> <div>Ripple: 120mVp-p</div> <div>Output tolerance: $\pm 1.0\%$</div> <div>Input control: $\pm 0.5\%$</div> <div>Load control: $\pm 0.5\%$ overload protection</div>	45-5N
<div>Regulated DC-stabiliser</div> <div>3HU / 42HP</div> <div></div>		<div>Insert plate with pulsed output voltage</div> <div>24V / 6A</div> <div>Outputs guided to 2 laboratory safety sockets</div> <div>Output power: 150W</div> <div>Ripple: 150mVp-p</div> <div>Output tolerance: $\pm 1.0\%$</div> <div>Input control: $\pm 0.5\%$</div> <div>Load control: $\pm 0.5\%$ overload protection</div>	45-5X

DC fixed voltage stabiliser with stabilised direct current in current-limited and voltage-limited design. Stabilisers for supplying logic circuits, microprocessors and periphery modules contain up to four different sources. The outputs are galvanically separated from one another and floating.



		Technical Data	Order no.
DC-stabiliser 3HU / 18HP		<p>Eurocassette with DC fixed voltage stabiliser</p> <p>Ripple of the output voltage: < 5mV</p> <p>Recovery time: 100µs</p> <p>Load recovery: 0.1 %</p> <p>Temperature coefficient: 0.01 %/°C</p> <p>2 laboratory safety sockets</p> <p>1 illuminated rocker switch</p> <p>Voltage / current</p> <p>5V / 3A</p> <p>15V / 1.5A</p> <p>24V / 3A (24HP)</p>	45-1A 45-1B 45-2M
DC-stabiliser 3HU / 18HP		<p>Eurocassette with DC fixed voltage stabiliser</p> <p>Voltage / current</p> <p>5V / 12A</p> <p>Primary switching regulator with mains interference filter</p>	45-2J
DC-stabiliser for microprocessors 3HU / 24HP		<p>Eurocassette with DC-stabiliser for generating all of the voltages required for microprocessors and periphery modules:</p> <p>All supplies are equipped with a permanently fixed current limitation and overvoltage protection (OVP).</p> <p>Ripple of the output voltage: < 20mV</p> <p>Recovery time: approx. 100µs</p> <p>6 laboratory safety sockets</p> <p>1 illuminated rocker switch</p> <p>1: +5V / 5A, floating, galvanically separated from outputs 3 and 4</p> <p>2: -5V / 0.5A, floating</p> <p>3: +12V / 1A, floating</p> <p>4: -12V / 1A, floating</p>	45-1G
		<p>as with type 45-1G, but with voltage / current</p> <p>1: +5V / 5A, floating, galvanically separated from outputs 3 and 4</p> <p>2: -5V / 0.5A, floating</p> <p>3: +15V / 1A, floating</p> <p>4: -15V / 1A, floating</p>	45-1H
DC-stabiliser 3HU / 24HP		<p>DC-stabiliser in switching regulator design</p> <p>Recovery time: maximum 500µs</p> <p>2-3 laboratory safety sockets</p> <p>1 illuminated rocker switch</p> <p>Voltage / current Ripple</p> <p>5V / 5A 80mVp-p</p> <p>+/- 15V / 2A 120mVp-p</p> <p>24V / 6A 150mVp-p</p> <p>Note: Could not be installed into the 3HU power supply duct.</p>	45-5M 45-5N 45-5P

DC-stabiliser

	Technical data	Order no.						
Dual stabiliser 3HU / 18HP	<div></div> <p>Eurocassette with dual stabiliser</p> <p>Recovery mains: < 0.12%</p> <p>Recovery load (no load/full load): < 0.9%</p> <p>Ripple: < 1mV_{eff} < 5.0mV_{ss}</p> <p>Recovery time: max. 50µs, measured with a modulation between 20 and 100% at 1kHz and recovery within 0.1% U_N</p> <p>Temperature coefficient: < ± 150ppm / K</p> <p>4 laboratory safety sockets</p> <p>1 illuminated rocker switch</p> <table><tr><td>Direct voltage</td><td>Direct current</td></tr><tr><td>2 x 12V</td><td>2 x 1.0A</td></tr><tr><td>2 x 15V</td><td>2 x 1.0A</td></tr></table>	Direct voltage	Direct current	2 x 12V	2 x 1.0A	2 x 15V	2 x 1.0A	45-2S 45-2T
Direct voltage	Direct current							
2 x 12V	2 x 1.0A							
2 x 15V	2 x 1.0A							

Regulated DC-stabiliser



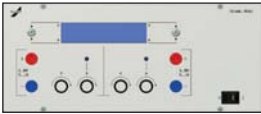

DC-stabiliser with stabilised direct current in voltage-limited and current-limited design. The floating outputs are short circuit-proof and can be switched both in series and parallel.

		Technical Data	Order no.
Regulated DC-stabiliser 6HU / 1WU		<p>Insert plate for supplying with stabilised direct currents $\pm 15V / 1A$ and $5V / 3A$ galvanically isolated and short circuit-proof</p> <p>Ripple: $< 5mV_{eff} < 15mV_{ss}$ Load regulation: $< 50mV$ (no load/full load) Recovery time: typically $50\mu s$, max. $100\mu s$ Temperature coefficient of the output voltages: $150ppm / K$</p> <p>1 illuminated rocker switch 5 laboratory safety sockets for drawing the direct currents</p>	32-1D
Eco-regulated DC-stabiliser 6HU / 1WU		<p>Fixed stabiliser in inexpensive switching regulator design Recovery time: max. $500\mu s$ 1 illuminated rocker switch</p> <p>5V / 5A Ripple: $80mV_{eff}$ Load regulation: $\pm 1\%$ Temperature coefficient: $0.03\%/^{\circ}C$ Operating voltage: 88-264V AC 2 laboratory safety sockets</p> <p>$\pm 15V / 2 \times 2A$ Ripple: $2 \times 120mV_{eff}$ Load regulation: $\pm 0.5\%$ Temperature coefficient: $0.03\%/^{\circ}C$ Operating voltage: 88-264 V AC 3 laboratory safety sockets</p> <p>24V / 6A Ripple: $150mV_{eff}$ Load regulation: $\pm 0.5\%$ Temperature coefficient: $0.05\%/^{\circ}C$ Operating voltage: 85-264V AC 2 Laboratory safety sockets</p>	32-5M 32-5N 32-5P

8.7 DC-stabiliser adjustable

Insert plate DC-stabiliser

Elabo offers a wide array of products, not only in testing devices and meters but also in power supply systems.

		Technical Data	Order no.
Adjustable DC-stabiliser 3HU / 60HP		Insert plate with DC-stabiliser 0...30V / 0...1.5A 1 digital display V/A switch-selected 2 10-turn potentiometers	45-5F
Adjustable DC-stabiliser 3HU / 84HP		Insert plate with DC-stabiliser 0...30V / 0...3A 2 digital displays 2 10-turn potentiometers	45-5G
Adjustable DC-stabiliser 3HU / 60HP		Insert plate with DC-stabiliser 2 x 0...30V / 0...1A 2 voltmeter and ammeter, digital 2 x 2 10-turn potentiometers	45-5U
Adjustable DC-stabiliser 3HU / 84HP		Insert plate with DC-stabiliser 2 x 0...30V / 0...2A 2 digital display, switch-selected 2 presets for voltage limitation and current limitation Voltage and current are continuously adjustable 2 x 2 10-turn potentiometers 1 rocker pushbutton switch for output on/off	45-5U Z801



Smart DC Lab Power Supply Systems

with arbitrary function



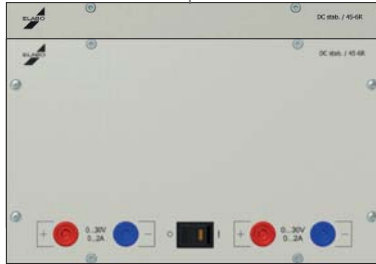
Highlights

- Master-slave operation
- Parallel operation (0–4A)
- Serial operation (0–60V)
- Tracking operation ($\pm 30V$)
- Predefined curve progressions for sine, square, triangle, sawtooth, PWM
- Arbitrary function for free programming of voltage and current progressions
- Output limitation, password-protected
- Predefinable power-ON values
- Ethernet and USB interfaces
- Integrated web server for simple remote control via web browser
- 1 or 2 channels

Smart DC Lab Power Supply Systems

with arbitrary function

3 control concepts



Automatic version



Rotary switch version



Touch version

Operating modes

The different operating modes of dual-output power supply units offer the option to control the output voltage of Part 2 as a function (0–100%) of Part 1 while complying with all control characteristics. Output voltage in serial and parallel operation is drawn from the left channel.

- Master-slave operation
Both power modules are electrically isolated from one another, but are controlled together.
- Parallel operation
Both power modules are connected internally in parallel, so that the double output current can be drawn from the output terminals of power module 1
- Serial operation
Both power modules are connected internally in series. The double output voltage can be drawn from the respective external terminals.
- Tracking operation
Both power modules are connected internally in series, so that, with reference to the two terminals in the middle, plus (+30V) or minus (–30V) voltage can be drawn.

Power supply unit with measuring function

Elabo power supply units, in addition to supplying power, are also perfectly suited for the accurate measurement of actual values. Current and voltage values are measured at intervals of 50 ms and can be read out on the interface of the device.

Device limitation

Output voltage and output current can be limited via remote control or also in local mode. This is particularly useful in a training environment or for protecting sensitive components. Such settings are password-protected.

Smart DC Lab Power Supply Systems

with arbitrary function

Arbitrary function

The lab power supply units have an arbitrary function that makes it possible to program and execute pre-determined functions or freely definable voltage and power curves.

The following functions can be selected:

- Sine
- Square
- Triangle
- Sawtooth
- PWM

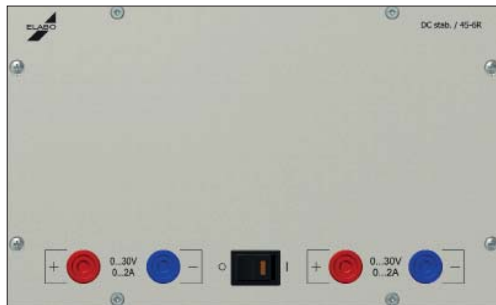


The freely programmable mode makes it possible to program up to 6 curves each with 99 support points. In this mode, one always presets the start value and end value for current and voltage, and also the duration. In the automatic and rotary switch versions, the arbitrary function can be used only via the interface.

Power class	120W	120W	300W	600W
Feature				
Channel	2	2	1	1
Voltage	2x0...30V	2x0...30V	0...30V	0...60V
Current	2x0...2A	2x0...2A	0...10A	0...10A
Size	3HU / 42HP	6HU / 2WU	3HU / 66HP	6HU / 2WU
Version:				
Automatic	45-6R	–	45-6G	–
Digital	45-7R	34-7T	45-7G	34-7L
Touch	45-8R	34-8T	45-8G	34-8L

Smart DC Lab Power Supply System

2x0...30V / 0...2A / 120W



45-6R.3



45-7R.3



45-8R.3



A3-5S.3

Highlights

- 4 operating modes for master-slave operation/dual output voltage (0–60V)/dual output current (0–4A)/ symmetrical voltage supply ($\pm 30V$)
- Output limitation, password-protected
- Predefinable power-ON values
- Direct and remote control operation in parallel possible
- Interference voltage protection
- Ethernet and USB interfaces
- Integrated web server
- Arbitrary function

Scope of delivery

45-xR.3 Cassette 3HE / 42HP

Accessories:

83-5B ZBL Safety test lead, blue, 100mm
83-5B ZRT Safety test lead, red, 100mm

Smart DC Lab Power Supply System

2x0...30V / 0...2A / 120W

Recommended additional products:

N2-1A Elabo software package Elution® Device

N2-5A Elution® device driver for Smart DC

Voltage	
Output voltage	2x0...30V
Adjusting resolution	10mV
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	typ. 0,75mV _{eff} max. 1mV _{eff}
Current	
Output current	2x2A
Adjusting resolution	10mA
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Arbitrary function	
Number of support points	6x99 support points
Structure of support points	Start/stop voltage, start/stop current, time
Predefined curves for	Sine, triangle, square, sawtooth and more (up to 10Hz)
Operation	Rotary switch version, automatic version: via interface/Elution® software, Touch version: via display
General information	
Stability over 8 hours	0.3%
Adjusting resolution	12bit
Protection	Short circuit-proof, thermal overload protection, interference voltage protection
Output insulation	Ungrounded and isolated ± 250 V to ground
Humidity	25–75% rel. humidity
Operating temperature range	0...50°C
Line voltage	230V ± 10%, 49–61Hz
Display	Rotary switch version 2x two-line LCD, blue Touch operation 4.3" x 128 pixels, blue
Interface	Ethernet and USB, RS232 alternative to USB
Degree of protection	Protection class I (EN61010-1)
Power consumption	140W
Cassette dimensions	W = 213.3mm, D = 196.0mm, H = 128.5mm
Weight	5.3kg

Smart DC Laboratory Power Supply System

2x0...30V / 0...2A / 120W



34-7T.3



34-8T.3

Highlights

- 4 operating modes for master-slave operation/dual output voltage (0–60V)/dual output current (0–4A)/ symmetrical voltage supply ($\pm 30V$)
- Output limitation, password-protected
- Predefinable power-ON values
- Direct and remote control operation in parallel possible
- Interference voltage protection
- Ethernet and USB interfaces
- Integrated web server
- Arbitrary function

Scope of delivery

34-xT.3 Plug-in module 6HU / 2WU

Accessories:

83-5B ZBL safety test lead, blue, 100mm
83-5B ZRT Safety test lead, red, 100mm

Smart DC Laboratory Power Supply System

2x0...30V / 0...2A / 120W

Recommended additional products:

N2-1A Elabo software package Elution® Device

N2-5A Elution® device driver for Smart DC

Voltage	
Output voltage	2x0...30V
Adjusting resolution	10mV
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	typ. 0.75 mV _{eff} max. 1mV _{eff}
Current	
Output current	2x2A
Adjusting resolution	10mA
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Arbitrary function	
Number of support points	6x99 support points
Structure of support points	Start/stop voltage, start/stop current, time
Predefined curves for	Sine, triangle, square, sawtooth and more (up to 10Hz)
Operation	Rotary switch version via interface/Elution® software, Touch version: via display
General information	
Stability over 8 hours	0.3%
Adjusting resolution	12bit
Protection	Short circuit-proof, thermal overload protection, interference voltage protection
Output insulation	Ungrounded and isolated ± 250 V to ground
Humidity	25–75% rel. humidity
Operating temperature range	0...50°C
Line voltage	230V ± 10%, 49–61Hz
Display	Rotary switch version 2x two-line LCD, blue Touch operation 4.3" x 128 pixels, blue
Interface	Ethernet and USB, RS232 alternative to USB
Degree of protection	Protection class I (EN61010-1)
Power consumption	140W
Cassette dimensions	W = 229mm, D = 260mm, H = 266mm
Weight	5.5kg

Smart DC Laboratory Power Supply System

0...30V / 0...10A / 300W



45-6G.3



45-7G.3



45-8G.3

Highlights

- Output limitation, password-protected
- Display for voltage, current and power
- Predefinable power-ON values
- Direct and remote control operation in parallel possible
- Interference voltage protection
- Ethernet and USB interfaces
- Integrated web server
- Arbitrary function

Scope of delivery

45-xG.3 Cassette 3HU / 66HP

Accessories:

83-5B ZBL Safety test lead, blue, 100mm
83-5B ZRT Safety test lead, red, 100mm

Smart DC Laboratory Power Supply System

0...30V / 0...10A / 300W

Recommended additional products:

N2-1A Elabo software package Elution® Device
N2-5A Elution® device driver for Smart DC

Voltage	
Output voltage	0...30V
Adjusting resolution	10mV
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	<2mV _{eff}
Current	
Output current	0...10A
Adjusting resolution	10mA
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	< 1mA _{eff}
Arbitrary function	
Number of support points	6x99 support points
Structure of support points	Start/stop voltage, start/stop current, time
Predefined curves for	Sine, triangle, square, sawtooth and more (up to 10Hz)
Operation	Rotary switch version, automatic version: via interface/Elution® software, Touch version: via display
General information	
Stability over 8 hours	0,3%
Adjusting resolution	12bit
Protection	Short circuit-proof, thermal overload protection, interference voltage protection
Output insulation	Ungrounded and isolated ± 250V to ground
Humidity	25–75% relative humidity
Operating temperature range	0...50°C
Line voltage	230V ± 10%, 49–61Hz
Display	Rotary switch version 2x two-line LCD, blue Touch operation 4.3" x 128 pixels, blue
Interface	Ethernet and USB, RS232 alternative to USB
Degree of protection	Protection class I (EN61010-1)
Power consumption	345W
Cassette dimensions	W =334.8mm, D =196.0mm, H =128.5mm
Weight	12.7kg

Smart DC Laboratory Power Supply System

0...30V / 0...10A / 300W



34-7L.3



34-8L.3

Highlights

- Output limitation, password-protected
- Display for voltage, current and power
- Predefinable power-ON values
- Direct and remote control operation in parallel possible
- Interference voltage protection
- Ethernet and USB interfaces
- Integrated web server
- Arbitrary function

Scope of delivery

34-xL.3 Slide-in module 6HU / 2WU

Accessories:

83-5B ZBL Safety test lead, blue, 100mm
83-5B ZRT Safety test lead, red, 100mm

Smart DC Laboratory Power Supply System

0...60V / 0...10A / 600W

Recommended additional products:

N2-1A Elabo software package Elution® Device

N2-5A Elution® device driver for Smart DC

Voltage	
Output voltage	0...60V
Adjusting resolution	10mV
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	<2mV _{eff}
Current	
Output current	0...10A
Adjusting resolution	10mA
Adjusting precision	± 3 digits (typ. ± 2 digits)
Measuring accuracy	0.15% (display ± 3 digits)
Residual ripple	< 1mA _{eff}
Arbitrary function	
Number of support points	6x99 support points
Structure of support points	Start/stop voltage, start/stop current, time
Predefined curves for	Sine, triangle, square, sawtooth and more (up to 10Hz)
Operation	Rotary switch version: via interface/Elution® software Touch version: via display
General information	
Stability over 8 hours	0,3%
Adjusting resolution	12bit
Protection	Short circuit-proof, thermal overload protection, interference voltage protection
Output insulation	Ungrounded and isolated ± 250V to ground
Humidity	25–75% rel. humidity
Operating temperature range	0...50°C
Line voltage	230V ± 10%, 49–61Hz
Display	Rotary switch version 2x two-line LCD, blue Touch operation 4.3" x 128 pixels, blue
Interface	Ethernet and USB, RS232 alternative to USB
Degree of protection	Protection class I (EN61010-1)
Power consumption	690W
Cassette dimensions	W = 229mm, D = 260mm, H = 266mm
Weight	19.3kg

8.8 Software

PRODAS

Data. Knowledge. Competitive edge.

Automation of information processes

PRODAS impresses through its functionality

PRODAS is the professional data analysis system for your quality assurance and data analysis. The data and measured values from your systems are recorded and stored in the PRODAS database. PRODAS accesses these data and allows them to be interactively evaluated. Analysis can take the form of tables, charts and reports. Pivot Grid enables an ad-hoc analysis and interpretation of your data.

Synergy for you

The trend toward ever greater data transparency explains why software specialists Consipio and test systems manufacturer Elabo have teamed up to develop PRODAS. The interdisciplinary know-how of both these companies has given rise to an outstanding solution for your needs as a customer. A must-have for any company wishing to address the constantly growing demand for information.

Early identification of trends

Vorteile durch besondere Eigenschaften

- Developed through collaboration between the market/technology leaders
- Open import and export structures
- Flexible visualization and analysis features
- Customizable report functions
- Automation of information processes
- Streamlined and fast retrieval processes thanks to filter functions

Your special advantage

The experienced Consipio team is there to advise you on how to successfully integrate PRODAS within your company in line with your ideas.

Defect analysis and traceability

You operate test systems for quality assurance

PRODAS allows the early identification of trends in your production processes. This enables you to prevent defects and cut costs. Trace defects without limits on time and identify previously unknown connected events. Fast and flexible analysis of the required data makes it easier for your employees to understand what is happening and allows them to draw conclusions with regard to hidden problems. This results in continuous process improvements.

PRODAS Data. Knowledge. Competitive edge.

- Tracing of data
- Detection of defects
- Understanding of connected events
- Improvement of processes

Wide range of import and export options

Dynamic, flexible, customizable

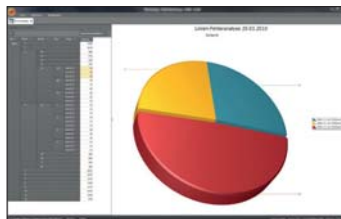
The processes at your company have grown over the years, been optimized and have developed their own precious dynamism.

Our software adapts to your processes by outputting the results in commonly used file formats (Excel, PDF, etc.) at the click of a button. It is also possible to import spreadsheets, which allows your employees to continue with their proven working practices using, for example, Excel – while, however the data remain globally accessible with PRODAS.

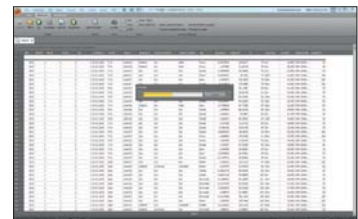
- Dynamic data in fixed formats
- Import from many different sources
- Flexibly customizable reports
- Variety of export options
- Globally available



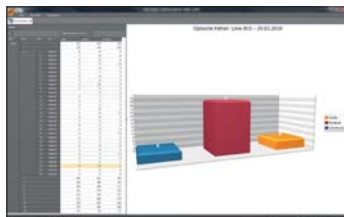
Charts



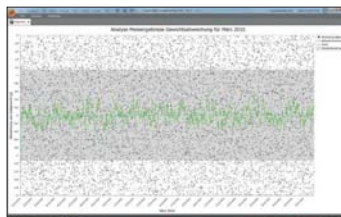
Defect analysis



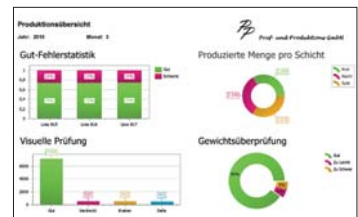
Data export



Evaluations



Measured data visualization



Cockpit charts



Traceability



Intranet/internet connectivity



Data sharing

PRODAS Data. Knowledge. Competitive edge.

Globally informed through the web interface

Intranet / internet

PRODAS enables you to access your reports and analyses, in their most recently updated form, from anywhere in the world. Networking delivers advantages across departmental boundaries.

From quality management to sales, from purchasing to management. Your employees have indeoendent access to all the relevant information they require.

Information at the right time in the right place.

Elabo Elution® Suite

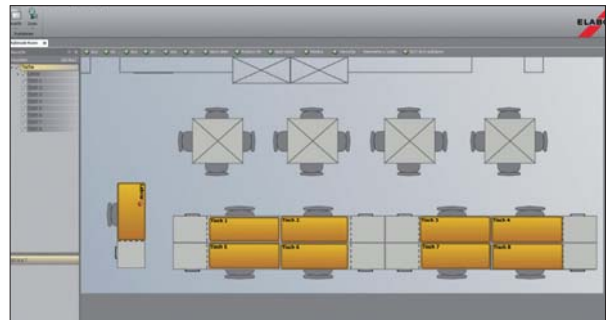
Elution® Training

Control and monitoring of classrooms

Modern classrooms are now centrally controlled and monitored. Functions such as two-stage voltage release or the operation of foldaway systems can be easily selected by mouse click for either a single table or entire rooms. The operation of an emergency STOP button is immediately visually indicated.



The Elabo software allows classrooms to be faithfully and realistically reproduced and controlled. At all times, a perfect overview of the individual tables guarantees that instruction can proceed smoothly. The monitors at the individual student workstations can be remotely viewed and, if necessary, the instructor can intervene.



Limitation of devices and organization of experiments

In the course of training, it can perfectly well happen that devices or components become damaged as a result of incorrect wiring or excessively high supply voltages. This is where technology now makes it possible to limit the output power of devices for specific experimental setups. This means that sensitive components remain protected. Also, the devices can be placed under central remote control from the instructor's desk. For example, where necessary, a variable voltage supply can be turned into a fixed voltage source.



Once they have been created, experimental setups can be selected at any time and sent to the devices in the room. New setups can be created quickly and transparently and distributed through the network to the devices.



Elabo Elution[®] Suite

Elution[®] Training

Measuring like a professional

Why not use the same tools for training as those used by a professional? Modern-day development laboratories employ networked devices and systems. Automated series of measurements and circuit analyses, combined with continuous documentation, facilitate the functional checking of components and circuits.

Direct input of setpoint values, graphic display of actual values and programming of voltage curves are just a few of the highlights offered by the Elabo software. All networked devices can be represented and controlled by dragging and dropping on the monitor.

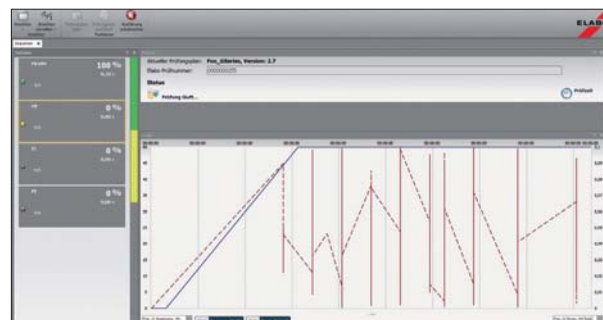


Structured preparation and documentation of measurement sequences

Automated quality assurance with complete documentation provides the guarantee of product quality in industry. With just a few mouse clicks, simple measurement sequences can be generated and automatically executed. The existing devices can be used as measuring devices.



Laboratory experiments for the determination of component characteristics can be easily prepared and executed. The result includes the prepared measurement sequence and the achieved measured values.



Elabo Elution[®] Suite

Elution[®] Training

Available devices

Elabo offers a wide range of networkable devices.

AC power supplies, 1- and 3-phase

DC-stabilizers, 1x and 2x

Digital multimeters

Function generators

I/O modules



System environment

The Elabo software is designed for use with Windows 7 and XP operating systems.

The data are stored in an SQL database, from where data can be exported at any time.

Minimum requirements:

Memory: 1GB

CPU: Pentium 4, 2.8GHz

Graphics card: 128MB GPU memory

System recommendation:

Memory: Min. 2GB

CPU: Dual Core (Core2Duo with 2.6GHz or Athlon X2 with 2.6GHz)

Graphics card: 256MB GPU non-shared memory graphics card

Software package

Elabo software package for vocational training.

The package contains the following modules:

- Interactive Window Sequencer
- Multimode Room (instructor's version only)
- Measured value printout
- User administration and configuration

Order number: N2-1E Site license

N2-1L Instructor's license for installation on an instructor's computer

Elabo Elution® Suite

Elution® Training



Highlights

Elabo Elution® Device simplifies the testing of electrical and electronic components used in research and development, production and quality assurance, as well as for service and repair. In addition to measuring electrical parameters, the software can also process digital and analog signals.

General data

- Scope of delivery: 1 DVD box including Elution® Device, SQL Server Express, operating instructions and online help
- License: single workstation
- Languages: German and English, other languages available on request
- Login: password-protected or as Windows user
- Operation: mouse, touch, with Windows look & feel; multiple monitoring possible
- SQL platform; local database or server solution
- Data export in csv files for further processing
- Programming language: C#

Elabo Elution® Suite

Elution® Device

For research and development

- Elabo Elution® Device can reproduce values for you at any time
- The recording function gives you continuous logging of all measured values, without any gaps
- With Elution® Device you can carry out long-term test runs fully automatically
- The measured values are stored in an SQL database, which means that you can transfer all data at any time to other platforms
- Long-term tests and stress tests
- Clock generator
- Setpoint/actual value comparison in graphs and tables



For production and quality assurance

- With Elabo Elution® you can define a test sequence with chronological processing of test steps that subsequently runs in semi-automatic or fully automatic mode
- As required, you can integrate test instructions, digital images or wait steps into the test sequence
- You can work with product identifiers such as bar codes, etc. and, as a result, you can track the values of a device throughout its entire lifetime

We also offer the Elution® System software package as part of the Elution® Suite for use in production and quality assurance. Please contact us, if necessary, to determine which program is better suited for your needs.

For service and repair

- Elabo Elution® Device can reproduce values for you at any time
- The recording function gives you continuous logging of all measured values, without any gaps
- With Elution® Device you can carry out long-term test runs fully automatically
- The measured values are stored in an SQL database, which means that you can transfer all data at any time to other platforms
- You can work with product identifiers such as bar codes, etc. and, as a result, you can track the values of a device throughout its entire lifetime
- Troubleshooting is simplified by means of predefined test sequences
- Setpoint lists can be programmed for calibration purposes

Requirements

Operating systems supported: Windows XP, Windows 7, 32 and 64bit

System requirements: 1GB memory, CPU Pentium 4 2.8GHz, graphics card 128MB GPU memory

System recommendations: 2GB memory, Dual Core 2 2.6GHz, graphics card 256MB GPU memory

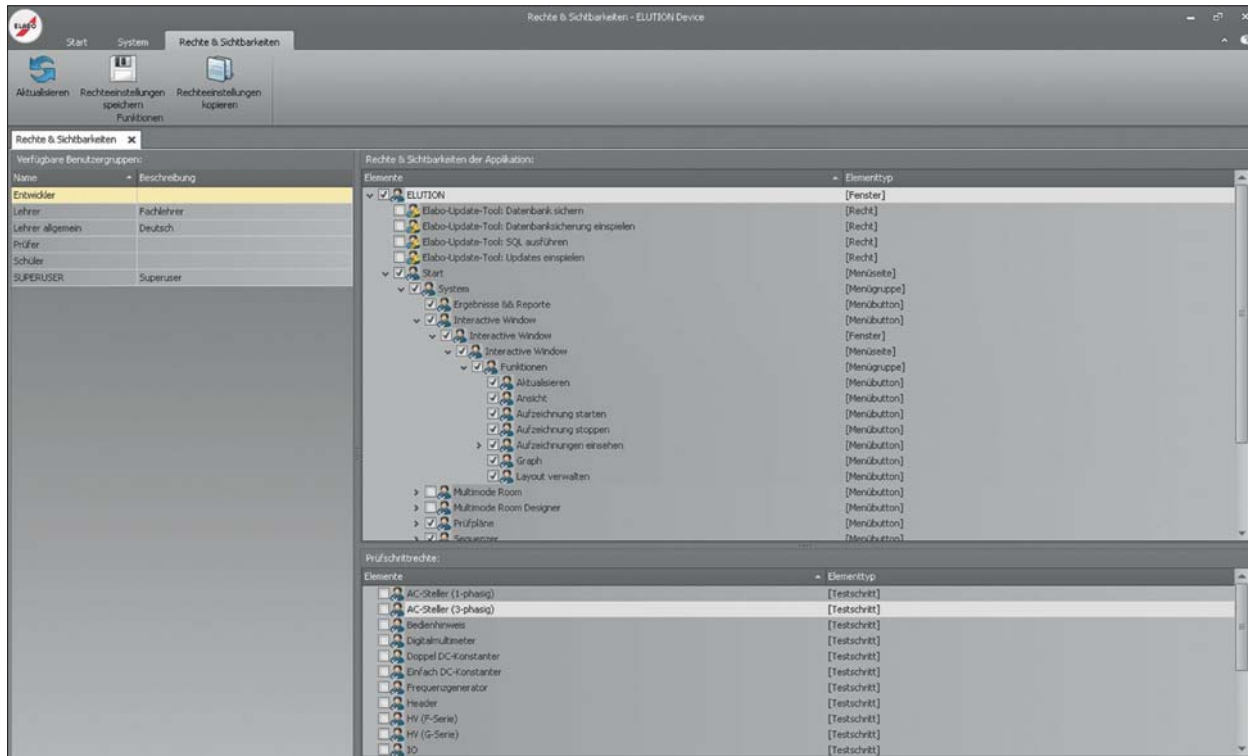
Additional requirements: Devices with Ethernet interfaces, additional equipment licenses, .NET framework must be installed on the computer(s)

Elabo Elution[®] Suite

Elution[®] Device

Specifications

Module: System



- System administration
- User administration
- Group administration
- Update

Features

1. Fine-tuned granting of user rights
2. User-dependent menu structures
3. Central configuration of all equipment and systems

Functions

- Assignment of names for devices and equipment
- Administration of product types, number ranges
- Administration of licenses
- Determination of network configuration
- Selection of language
- Create users and assign rights to them
- Create user groups, allocate users and assign rights to them

Elabo Elution® Suite

Elution® Device

Module: Interactive Window



- Direct operation of devices
- Graphic display
- Logging
- Export function

Features

1. Graph scaling freely adjustable
2. Each individual decimal point can be selected and modified
3. All devices viewable at a glance

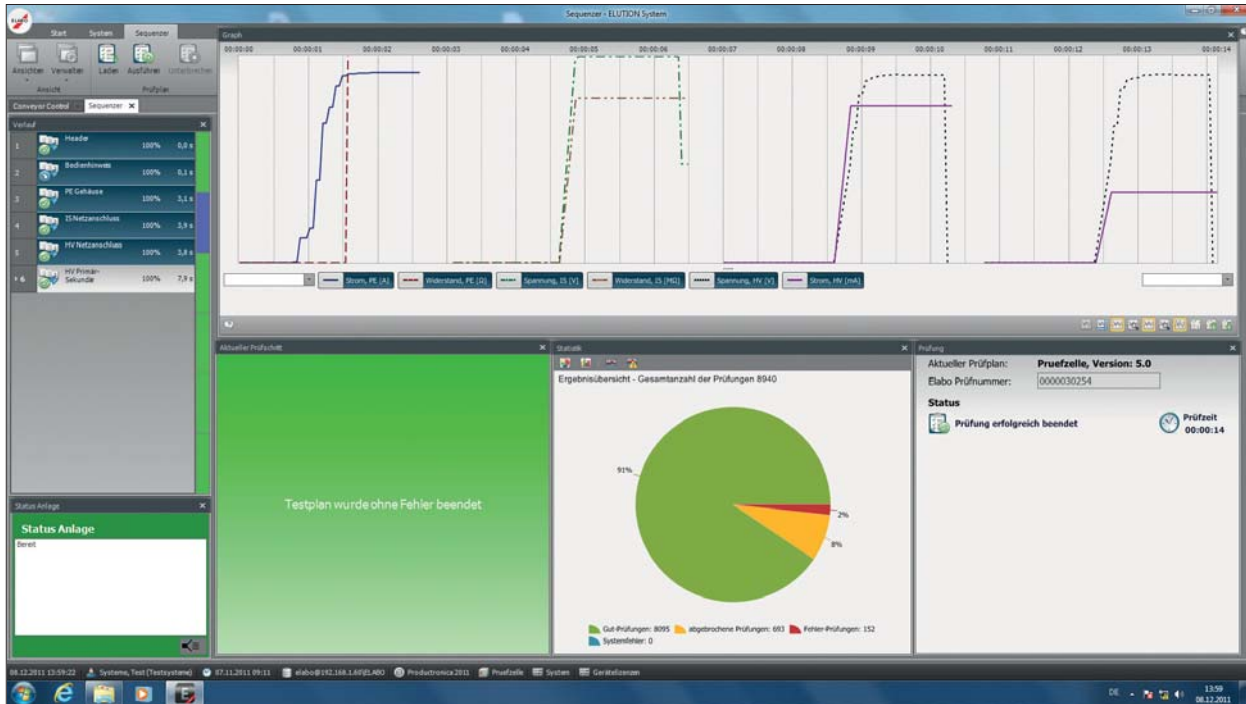
Functions

- All active devices displayed
- All measured values displayed in one or more graphs
- Measuring of Delta X and Delta Y values in the graphic display with possibility of directly comparing the time curves
- Data logging function with adjustable measurement rate
- Storage of measured values in an SQL database (manually, automatically)
- On-top function for using individual devices in other applications

Elabo Elution[®] Suite

Elution[®] Device

Module: Sequencer



- Sequential test sequence
- Statistics
- Graphic display

Features

1. Chronological, graphic display of the test sequence
2. Permanent display of the current measured values and limit values
3. Permanent logging of all values and storage in the SQL database
4. Showing of instructions
5. Colored display of history with defect identification

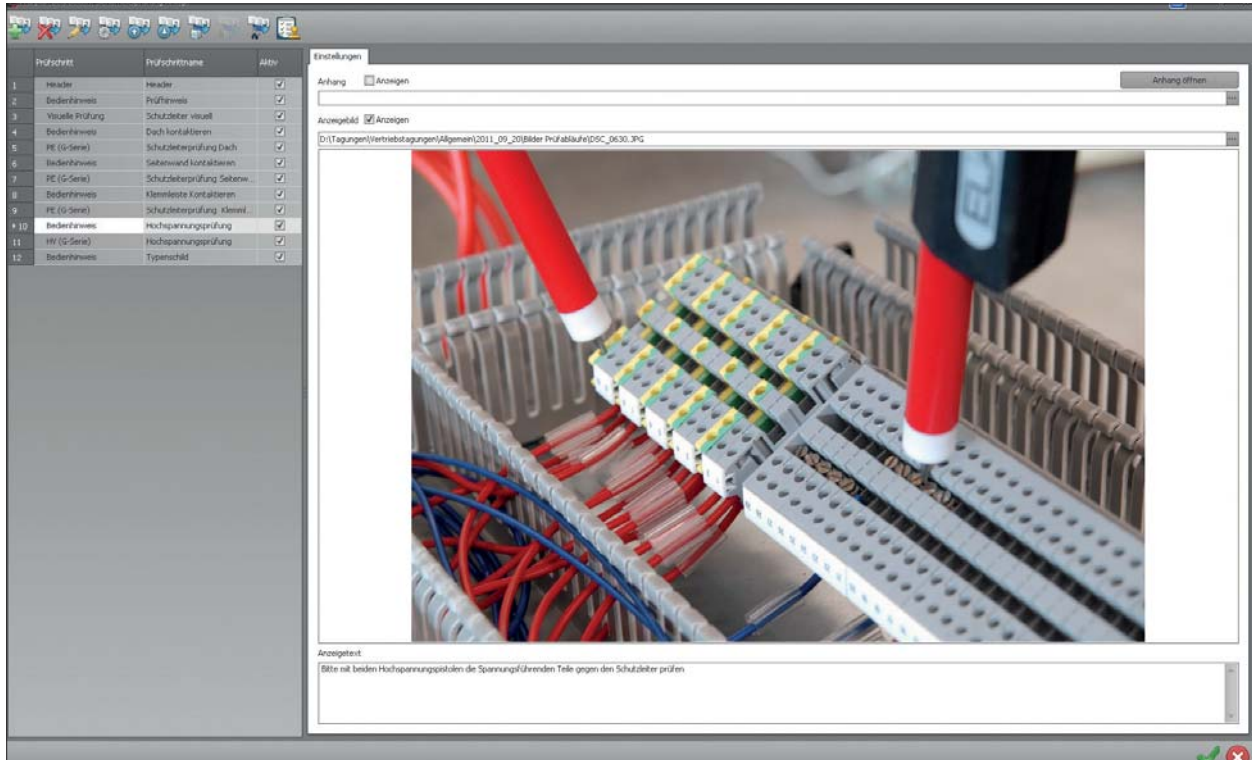
Functions

- Selection of test plans (manually, automatically)
- Fully automatic test sequence
- Status and error reports
- Display of all current results
- Identification of test object (manually, bar code, RFID)
- Visualization of all parameters
- Display of all GOOD/FAULT statistics
- Storage of measured values in an SQL database (automatically)

Elabo Elution® Suite

Elution® Device

Module: Test plans



- Preparation of test plans
- Block administration
- Template administration

Features

1. Input of test parameters is in some cases graphically supported
2. Definition of polarity/connection to the test object required for the test step
3. Incorporation of images is possible
4. Full-screen display of all test results, also as a chart

Functions

- Input of basic settings such as test setup, description part, test object identifiers for automatic selection of a test plan
- Input and parameterization of test steps such as current consumption or required voltage
- Incorporation into parameterization of user instructions/visual test steps/wait steps
- Determination of the sequence of the inputted test steps
- Programming of voltage steps and voltage curves for circuit analysis
- Programming of automated measurement routines

Elabo Elution® Suite

Elution® Device

Module: Results & Reports

Prüfnummer	Prüfplanname	Version	Ergebnis	Startdatum	Enddatum	Prüfzeit [s]	Produkttypnummer	Kundenseriennummer	Ergebnisstatus
0000011642	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 14:31:03	18.11.2011 14:37:49	406			Cancelled
0000011149	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 12:24:23	18.11.2011 14:31:02	7599			Cancelled
0000011143	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 12:23:52	18.11.2011 12:24:15	23			Cancelled
0000011028	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 11:53:20	18.11.2011 12:23:06	1786			Cancelled
0000010985	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 11:26:20	18.11.2011 11:53:17	1617			Cancelled
0000010984	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 11:24:17	18.11.2011 11:25:19	62			Cancelled
0000010983	Leistungselektronik_S...	5.4	Fehler	18.11.2011 11:22:56	18.11.2011 11:23:59	63			Failed
0000010788	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 10:49:38	18.11.2011 11:22:50	1992			Cancelled
0000010780	Leistungselektronik_S...	5.4	Gut	18.11.2011 10:17:28	18.11.2011 10:19:13	105			Passed
0000010613	Leistungselektronik_S...	5.4	Gut	18.11.2011 09:34:23	18.11.2011 09:35:22	59			Passed
0000010544	Leistungselektronik_S...	5.4	abgebrochen	18.11.2011 09:05:38	18.11.2011 09:34:17	1719			Cancelled
0000010478	Leistungselektronik_S...	5.4	Gut	18.11.2011 08:27:45	18.11.2011 08:29:03	78			Passed
0000010318	Leistungselektronik_S...	5.4	abgebrochen	17.11.2011 17:00:08	17.11.2011 17:37:19	2231			Cancelled
0000010317	Leistungselektronik_S...	5.4	Gut	17.11.2011 16:58:23	17.11.2011 16:59:36	73			Passed
0000010294	Leistungselektronik_S...	5.4	Gut	17.11.2011 16:46:18	17.11.2011 16:58:11	713			Passed
0000010283	Leistungselektronik_S...	5.4	Fehler	17.11.2011 16:43:06	17.11.2011 16:46:05	179			Failed
0000010240	Leistungselektronik_S...	5.4	abgebrochen	17.11.2011 16:32:35	17.11.2011 16:43:03	628			Cancelled
0000009255	Leistungselektronik_S...	5.4	Gut	17.11.2011 12:09:04	17.11.2011 12:10:07	63			Passed
0000008430	Leistungselektronik_S...	5.4	abgebrochen	16.11.2011 17:53:03	16.11.2011 17:58:49	346			Cancelled
0000008421	Leistungselektronik_S...	5.4	abgebrochen	16.11.2011 17:50:58	16.11.2011 17:52:42	104			Cancelled
0000008394	Leistungselektronik_S...	5.4	Gut	16.11.2011 17:47:55	16.11.2011 17:50:31	156			Passed
0000008377	Leistungselektronik_S...	5.4	Gut	16.11.2011 17:39:44	16.11.2011 17:41:03	79			Passed
0000008349	Leistungselektronik_S...	5.4	Gut	16.11.2011 17:32:57	16.11.2011 17:34:29	92			Passed
0000007605	Leistungselektronik_S...	5.4	Gut	16.11.2011 14:21:10	16.11.2011 15:43:35	4945			Passed
0000007414	Leistungselektronik_S...	5.4	abgebrochen	16.11.2011 13:32:20	16.11.2011 14:21:06	2926			Cancelled
0000006956	Leistungselektronik_S...	5.4	abgebrochen	16.11.2011 11:41:45	16.11.2011 13:20:49	5944			Cancelled
0000006883	Leistungselektronik_S...	5.4	Fehler	16.11.2011 11:30:58	16.11.2011 11:34:40	222			Failed
0000006868	Leistungselektronik_S...	5.4	Gut	16.11.2011 11:12:39	16.11.2011 11:16:09	210			Passed
0000006785	Leistungselektronik_S...	5.4	abgebrochen	16.11.2011 10:51:10	16.11.2011 11:12:32	1282			Cancelled
0000005699	Leistungselektronik_S...	5.4	Gut	15.11.2011 15:41:22	15.11.2011 15:45:53	271			Passed

- Measured value browser
- Report printout
- Export function

Features

1. 3 templates for test logs included
2. Database organized by automatically allocating test numbers, also test plans are provided with titles and comments
3. Timeframe for preparation of statistics can be freely selected

Functions

- Subsequent access to all stored test results
- Export of all data, SQL, CSV, text
- Output of setpoint/actual values, test person ID, date stamp, serial number, equipment number
- Preparation of test logs
- Traceability of test results

Elabo Elution® Suite

Elution® Device

Good to know

Convenience assured

It's the end of the working day, and you're not quite finished? With Elabo Elution® that's not a problem. When you start up the computer and the software the next day, you will be exactly at the same point where you left off the day before.

Usefulness assured

For task A you only need device B? Then simply drag the device onto the desktop, close the software and continue working conveniently and easily via remote control. This is ideal if you have other programs open or if you just want to avoid having to adjust the speed all the time.

Security assured

Elabo devices are frequently connected not just to each other but also to other devices, systems and programs. To make sure that you do not lose any data even in an emergency, we have incorporated numerous security mechanisms. Even in the event of a total outage, you can rest assured that your test results will not be lost and you can continue to work locally with peace of mind.

Functionality assured

Elabo not only offers you all the functions of your devices via the software but goes even further when it comes to power supply panels/power supply systems/variable power supply units. Here, for example, you also have arbitrary functionality and pre-settings.

Order number for package

Software packages Elution® Device N2-1A with the modules:

- Interactive Window Sequencer
- Test plans
- Results & reports
- System

Order number for individual device drivers

Device driver for Smart DC	N2-5A	
Device driver for AC source	N2-5D	
Device driver for digital multimeter	N2-5G	
Device driver for frequency generator	N2-5N	
Device driver for BestPerformance	N2-7A	HV device
Device driver for BestPerformance	N2-7B	combi-tester
Device driver for HighPerformance	N2-7D	HV device
Device driver for HighPerformance	N2-7E	combi-tester

8.9 Network engineering

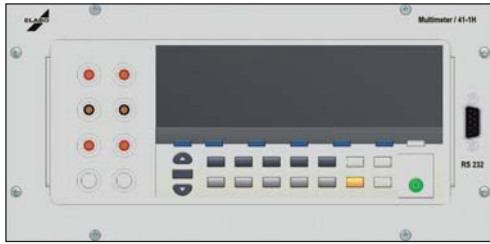
Network modules

If racks and network equipment are ordered at the same time, then the networking is preinstalled, which means that it then only needs to be connected to the PC. However, customers also have the option of carrying out the assembly integration themselves – e.g. if they already have Elabo racks.

		Technical Data	Order no.
Assembly integration		Assembly integration Basic - 8-way switch industry standard - power supply unit - cable set for installation in the Elabo assembly	N3-1A
Assembly integration		Assembly integration with optical fibre waveguide technology - 6-way gigabit Ethernet switch with 2x SFP LWL modules Multimode LC - power supply unit - cable set for installation in the Elabo assembly	N3-1L
Assembly integration		Assembly integration with VLAN - 8-way switch for VLAN industry standard - power supply unit - cable set for installation in the Elabo assembly	N3-1V
Assembly integration		Assembly integration with WLAN - Access point - 8-way switch including WLAN - power supply unit - cable set for installation in the Elabo assembly	N3-1W
Network module		Network module base with 8 digital outputs and inputs each, e.g. for the mains panel / bench enable (control software required)	N3-2C
Duplex patch cable Optical fibre waveguide		LWL duplex patch cable 2 x 1G50/125µm, mini Plug on both sides, each LC/PC dx Casing colour orange Length 5m Length 7.5m Length 10m Length 12m Length 15m Length 23m	N3-1K Z05M N3-1K Z07,5M N3-1K Z10M N3-1K Z12M N3-1K Z15 M N3-1K Z23 M

8.10 Measurement device

Multimeter



Multimeter
3HU / 52HP

Eurocassette with multimeter with dual display, manufactured by Philips, Fluke 45

The vacuum fluorescence dual display makes possible to read two properties of an input signal simultaneously. In comparison mode, it is also possible to classify a measurement result above and below a particular range.

- real effective value measurement
- frequency measurements up to greater than 1MHz
- 1 μ V direct voltage sensitivity
- fluctuating decibel impedance reference values and measurement of audio tone amplification power
- selectable display resolution of 100,000, 30,000 or 3,000 digits with display speeds of 2.5, 5 or 20 measurements per second
- built-in self-test routines and software calibration
- diode and continuity testing
- overvoltage protection

Measurement range DC voltage: 100mV...750V

Direct current: 10mA...10A

AC current: 10mA...10A

AC true effective voltage: 100mV...1000V

Measurement range frequency: 1000Hz...1000kHz

Frequency range: 5Hz...>1MHz

Voltage supply system: 90-240V / AC

Measurement range resistance: 100 Ω -30 M Ω

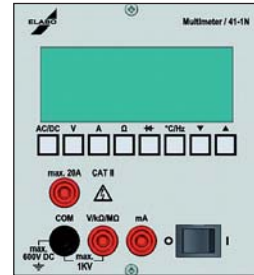
Operating temperature range: 0 $^{\circ}$...50 $^{\circ}$ C

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

Interface: RS232

optionally available: IEEE-488 interface

Additional specifications available upon request.



Digital multimeter
3HU / 24 HP



Insert plate with 5½-digit digital multimeter
Display: LCD with blue backearth illumination

Direct voltage measurement

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

max. resolution: 0.01mV (in the 200 mV range)

Direct current measurement

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

max. resolution: 0.0001mA (in the 200 μ A range)

Alternating current voltage measurement

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

max. resolution: 0.01mV (in the 200mV range)

Alternating current measurement

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

max. resolution: 0.0001mA (in the 200 μ A range)

Resistance measurement

Range: 0.2k Ω - 2k Ω - 20k Ω - 200k Ω - 2M Ω - 20M Ω

max. resolution: 0.001k Ω (in the 200k Ω - range)

max. permissible measurement voltage: 230V / AC

Temperature measurement

Range -100...+250 with PT100 measuring head

Frequency measurement

Range: 0...50kHz

Diode test

Measurement range switch-over: automatic /
manual changeover switch

Base precision: 0.05%

Additional specifications available upon request.



Order no.

41-1H-EBS Mounting kit for multimeter

41-1H-Modul Precision multimeter

Order no. 41-1N

fitting measuring heads:

Order no. 42-1S Z41-1N

Order no. 42-1U Z41-1N

diving measuring head Pt 100

surface measuring head Pt 100

I/O-Module for digital and analog signals

Inputs/outputs

Digital:

8 digitale inputs	DI 1...8	24V level
8 digitale outputs	DO 1...8	Floating relay contacts, switching capacity 260V/2A

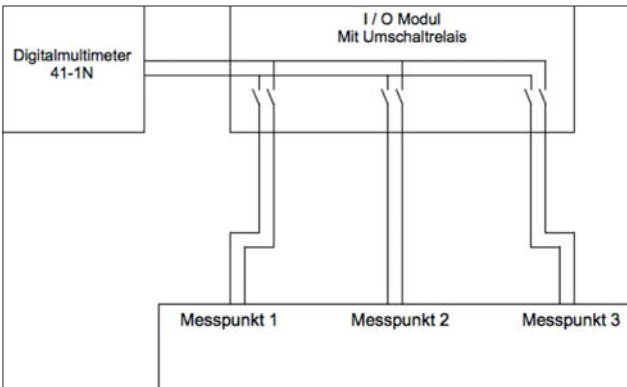
Analog:

1 analog input	AI	0...20mA
1 analog input	AI	0...10V
1 analog output	AO	0...20mA
1 analog output	AO	0...10V

All inputs and outputs routed to 4 mm safety lab sockets.

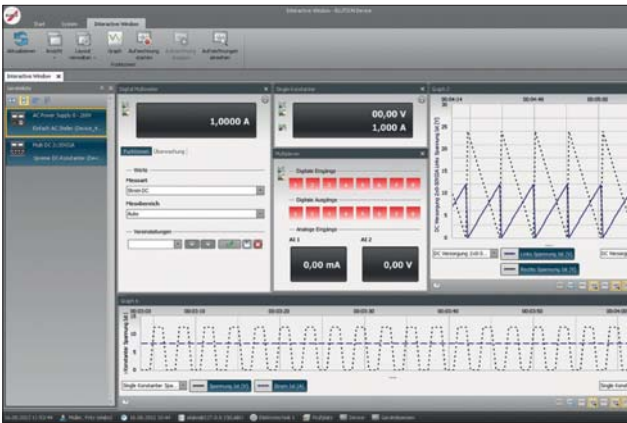
Functional example

When performing a measuring task, voltages can be measured at three different points using a multimeter. In automated form, without an I/O module this task would be possible only if 3 multimeters were used. With the help of the I/O module, the 3 measuring points can be connected to the multimeter one after the other and the measurements can be automatically recorded.



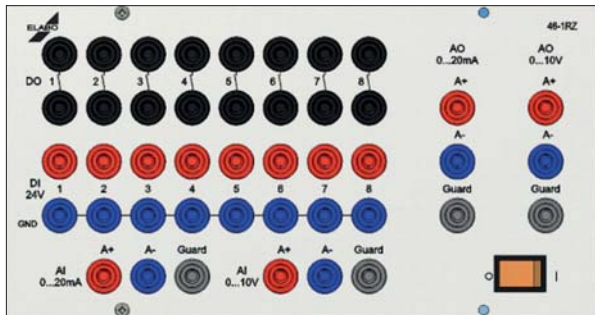
The Elabo I/O module is integrated directly into the extensive Elabo Elution software package. Each input/output can be activated/read in either individually or collectively.

Required additional products:
Software Elution, N2-1A Elution Device,
N2-5R device driver for I/O module

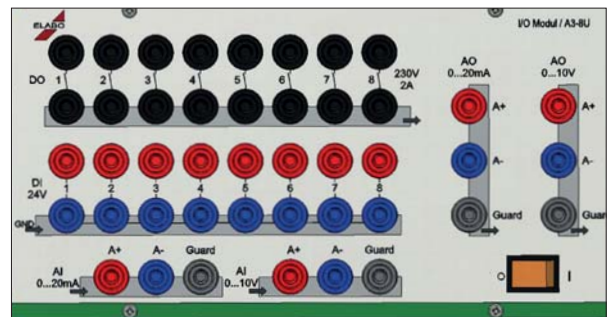


I/O-Module

For digital and analog signals



46-1R.3Z102



A3-8U.3Z102

Highlights


- The I/O module is the ideal addition to Elabo network technology
- In the compact 3HU / 48HP type, the module can be used in both 3HU and 6HU systems
- It can be easily integrated even in the Elabo 3HU profile channel

Areas of application

Measuring	Remotely controlled switching from various measuring points to a central measuring device
Control	Activation of pneumatic components and reading-in of end positions
Measured data recording	Integration of analog signals in the measurement process and documentation of the result
Actuator control	Actuators with analog input signals can be integrated into measurement processes




Oscilloscope

Oscilloscopes are easy to use and can be operated completely using the software provided. The user can thus take advantage of all of the advantages of the PC, such as large memory capacity and high-quality display. The Windows user interface, means that the device can be operated in the same familiar way as standard applications and programmes.

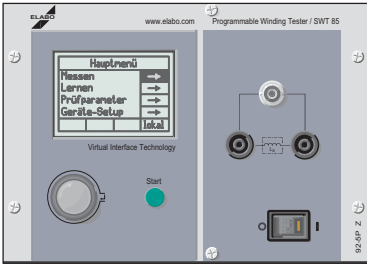

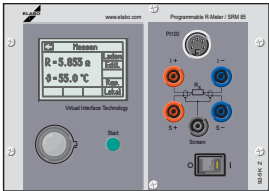
Technical data		Order no.
2-channel oscilloscope 3HU / 52HP	<div></div> <div>Insert plate with PC oscilloscope, including Ethernet interface, manufactured by Metrix Bandwidth: 150MHz, bandwidth filter for 15MHz, 1.5MHz or 5kHz 2 channels, Class 1 Vertical: 2.5mV / div - 100V / div up to 250iV / div with Yexpansion Time bases: 35 ranges from 1ns/div to 200s/div Horizontal zoom: from x 1 to x 100, sequence 1-2-5 (display of 500 for 10 div) Trigger: Auto; Triggered Single Shot Trigger source: CH1, CH2, EXT, network Type: Slope, Pulse width or Delay (40ns-10.5s), Counting (2-16384 events), TV (525 = NTSC, 625 = PAL/SECAM), Pretrigger adjustable from 0 to 100%, Hold-off (40ns-10.5s) Max. sampling rate: Repeating signals = 100MS/s, Single Shot=200MS/s Vertical resolution: 10bit (9 used) Memory depth: 50,000pts. (memory capacity depends on the PC used) Afterglow duration: 100ms, 200 ms, 500ms, 1s, 2s, 5s, 10s and infinite Acquisition rate: 50 kwaveforms / s / channel Display acquired samples: 19MS / s / channel FFT: calculation across 2048pts.), +, -, x, /- Editor for individual measurement functions Manual cursors: (dv, dt), PHASE and free Automat. measurements: 2-19 measurements of 19 + automatic phase, on all curve types, marker and limiter Sampling duration: from 2 s to 31 days Sampling rate: with intervals from 40µs to 53.57s Extent of analysis: basic speed up to 31st harmonic, in 1 to 2 channels and simultaneous fundamental harmonic oscillation of 40Hz to 1kHz Evaluation: continuous display of RMS value & THD - for selected harmonic: % F, Phase, Freq., VRMS Optionally available: differential voltage probes</div>	41-1Q Z102-EBS 41-1Q Z102-Modul 
4-channel oscilloscope 3HU / 52HP	<div></div> <div>the same as with type 41-1Q Z102, but 4 channels, Class 1 Trigger source: CH1, CH2, CH3, CH4, EXT, mains</div>	41-1R Z102-EBS 41-1R Z102-Modul 

RCL meter, continuity tester, LF testing equipment




The Elabo eurocassette with RCL meter is suitable for the precise determination of resistances, capacities and inductivities. The use of automatic function and range settings makes it possible for this device to measure passive components rapidly, with great precision and across wide ranges. The device is particularly suitable for laboratory use, for quality control and for customer service workshops.

		Technical Data	Order no.
RCL meter 3HU / 66HP		<p>Eurocassette with Fluke PM 6303 A RCL meter</p> <p>Test item connection: via a two-pin test terminal.</p> <p>A four-conductor test cable or a four-pin test adapter are optionally available.</p> <p>Measurement ranges:</p> <p>Resistance R 0Ohm ... 200MOhm</p> <p>Capacity C 0pF ... 100mF</p> <p>Inductivity L 0μH ... 32kH</p> <p>Quality factor Q 0.002 ... 500</p> <p>Dissipation factor D 0.002 ... 500</p> <p>Measurement rate: 2 / s</p> <p>Maximum measured value resolution:</p> <p>R 1 mOhm; C 0.1 pF; L 0.1 μH; Q 0.001; D 0.001</p> <p>Measurement accuracy: intrinsic error ± 0.25% ± 1 digit</p> <p>Display: LCD 4-digit for amount, dimension and associated equivalent circuit symbol</p> <p>Measured value display:</p> <p>Quality factor Q, Dissipation factor D, Parallel resistance Rp, Series resistance Rs, Impedance Z, Parallel capacitance Cp, Parallel inductance Lp, Serial capacitance Cs, Series inductance Ls, Phase angle</p> <p>In the operating mode RCL AUTO, the dominant component R, C or L of the test item is determined automatically and its value is displayed.</p>	<p>41-1M-EBS</p> <p>41-1M-Modul</p>
Continuity tester 3HU / 12HP		<p>Eurocassette with continuity tester and for rough testing of resistances, condensers and coils.</p> <p>The pitch of the generator declines as the resistance value of the test item increases. A change can be reliably detected up to several MOhm.</p> <p>Device input: voltage-proof up a maximum of 400V AC</p> <p>Volume: continuously adjustable via potentiometer up to approx. 100dB at a distance of 10cm</p> <p>1 volume controller</p> <p>2 laboratory safety sockets</p> <p>1 illuminated rocker switch</p>	42-1F
LF testing equipment 3HU / 24HP		<p>Eurocassette with low-frequency testing equipment</p> <p>1 Signal tracer for applications in radio and television technology and for repair and maintenance of operations radio equipment, etc.</p> <p>1 diode socket as measurement input</p> <p>1 loudspeaker 3W / 100...15000Hz for monitoring purposes</p> <p>1 demodulator with BNC input for tracking amplitude-modulated signals</p> <p>1 volume controller</p> <p>1 power meter for the LF output emitted by the test item</p> <p>4 laboratory safety sockets</p> <p>1 illuminated rocker switch</p>	43-1F

Wound equipment testing equipment, Ohmmeter

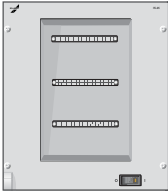



	Technical data	Order no.
Wound equipment testing equipment 3HU / 36HP	<div></div> <p>Eurocassette with digital wound equipment testing equipment for comparison measurements. With the wound equipment testing process WPV that was developed by Elabo a quality display of the wound equipment test item is obtained in a very short time. The "Pass/Fail" statement which must of necessity be particularly fast in manufacturing permits the utilisation of the device not only for manual but also for automated production.</p> <p>Measurement frequency: 5...200kHz Measurement error: < 0.5% f.F. Test voltage: < 24V Limit values: +/- 99% in 1% increments Display: LC graphic display 128 x 64 Pixel Resolution: 12bit</p> <p>3 laboratory safety sockets 1 illuminated rocker switch</p> <p>Shorted coils arise when damage occurs to the enamel isolation, causing individual windings in a coil to short-circuit with one another. Often no impairment of the function will be apparent at first, although shorted coils are often the cause of late failures.</p>	92-5P
Digital resistance meter 3HU / 36HP	<div></div> <p>Eurocassette with digital resistance meter for stand-alone operation in production, laboratory and input monitoring as well as for utilisation in automatic test systems.</p> <p>Technical data: Measurement ranges: 8 ranges from 200mOhm...2MOhm Display: 4 1/2-digit LED 7-segment display Measuring currents: 100mA ...1µA Measurement errors: 0.1% f.m., + 0.005% f.m./C, + 2digit Error monitoring: CURRENT; SENSE; OVERLOAD; POLARITY Temperature reference: 20°C 4 laboratory safety sockets 1 illuminated rocker switch</p>	90-3K
Digital resistance meter 3HU / 36HP	<div></div> <p>Eurocassette with digital resistance meter for utilisation in laboratories, in production and in test rooms. The device is equipped with a TFT display.</p> <p>Technical data: Measurement ranges: 8 ranges from 200mOhm...2MOhm - 50°C...200°C Measurement currents: 100mA ...1µA Measurement error: +/- 0.1% f.m., + 0.05% f.m./C, + 2 digit Measurement cycle: max. 3/s</p> <p>Memory: 300 parameter sets Interfaces: CAN/RS232 Connection: 5 connectors, 1 diode plug</p>	92-5K

Continuity tester, multimeter

		Technical Data	Order no.
Continuity tester 6HU / 1WU		<p>Insert plate with two continuity testers</p> <ul style="list-style-type: none"> 1 electronic, high-impedance continuity tester up to a maximum of 5MΩ (acoustic) Test current: maximum 25μA Voltage safety factor: up to approx. 400V AC 1 low-impedance continuity tester (optional) Test voltage: 22V AC 1 fine wire fuse 1 illuminated rocker switch 1 transformer with separated input and output coils 1 incandescent lamp 1 miniature loudspeaker 2x 2 laboratory safety sockets 	32-1B
Continuity tester 6HU / 1WU		<p>Insert plate with low-impedance continuity tester for testing switches, circuit breakers, etc.</p> <ul style="list-style-type: none"> 1 light bulb, visual display 1 buzzer, acoustic signal test voltage 22V AC 3 laboratory safety sockets 1 illuminated rocker switch 	32-1T
Digital multimeter 6HU / 1WU		<p>Insert plate with 3 3/4-digit digital multimeter DYNATEC 9200</p> <p>Measurement ranges:</p> <ul style="list-style-type: none"> DC 400mV...1000V 400μA...20A AC 400mV...750V 400μA...20A R 400Ω...40MΩ F 4kHz...4MHz <p>Basic accuracy: ± (0.5% v. M. + 1digit)</p> <p>Operating modes: Continuity testing</p> <ul style="list-style-type: none"> Pulse duty cycle test Logic test Data Hold Peak Hold <p>with battery-operated</p>	32-2H Z007

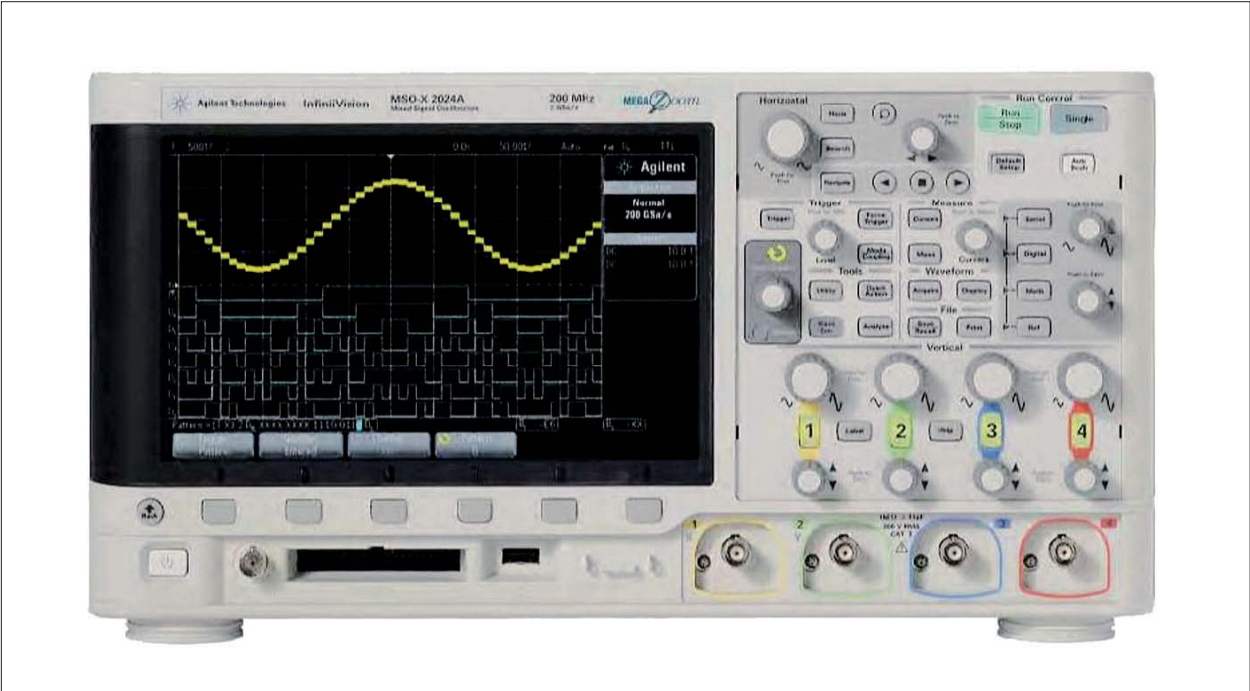
Hameg modular series

Special rack mounts for supporting the measurement and testing equipment of the "Hameg Modular System 8000" are available as supplements for the 6HU measurement and testing equipment program. The necessary power supply systems for the modules are included in the scope of delivery of the individual modules and are installed in the rack mount when an order is placed. Additional devices available upon request.

	Technical data	Order no.
<div>Insert for Hameg modules 6HU / 2WU</div> <div></div>	<div>Insert for supporting Hameg modules of the device series 8000</div> <div>1 illuminated rocker switch</div> <div>Insert for one Hameg module</div> <div>Insert for two Hameg modules</div> <div>Insert for three Hameg modules</div>	<div></div> <div>35-4KZ01</div> <div>35-4KZ02</div> <div>35-4KZ03</div>
<div>Function generator</div> <div></div>	<div>Function generator HM 8030-6 of the Hameg modular series 8000</div> <div>For use with insert 35-4K</div> <div>Digital frequency display, 5-digit 7-segment LED</div> <div>Frequency range 0.05 up to 10MHz</div> <div>Operating mode: Sinusoidal, Square, Triangle, Pulse free-running, internally or externally frequency-modulated, with or without DC-offset</div> <div>Trigger output approx. + 5 V/TTL</div> <div>internal and external wobble apparatus</div> <div>Square rise time, typically 15ns</div> <div>Harmonic distortion max. 0.5% up to 100kHz, max. 3% up to 5MHz</div> <div>optional accessories:</div> <div>BNC measurement cable HZ33, HZ34</div> <div>50 Ohm feed-through terminal HZ22</div>	<div>35-4M</div>
<div>Digital multimeter</div> <div></div>	<div>Programmable digital multimeter HM 8012 of the Hameg modular series 8000</div> <div>For use with insert 35-4K</div> <div>4 3/4-digit display with 50.000 digit</div> <div>42 measurement ranges; automatic change of range</div> <div>real effective value measurement for AC and AC and DC Basic accuracy 0.05%</div> <div>max. actuation 10µV; 0.01dBm, 10nA; 10mOhm, 0.1°C</div> <div>Input resistance >1GOhm (0.5V and 5VDC range)</div> <div>Temperature measurement in °C/°F in 0.1° increments</div> <div>RS-232 interface</div> <div>PC software for control and measurement value logging</div> <div>1 set test pins HZ15</div>	<div>35-4L</div>
<div>L/C meter</div> <div></div>	<div>L/C meter HM 8018 of the Hameg modular series 8000</div> <div>For use with insert 35-4K</div> <div>24 measurement ranges</div> <div>Max. resolution: 0.1pF, 0.1µH, 0.01U, 0.01µS</div> <div>3 measurement frequencies: 160Hz, 1.6kHz, 16kHz</div> <div>4-wire measurement technology</div> <div>Basic accuracy 0.5%</div> <div>internal bias voltage for electrolytic capacitors</div> <div>Measurement of the series and parallel components</div> <div>With threaded laboratory terminals in order to make it possible to clamp the components from below.</div> <div>The use of safety laboratory lines is possible only with an adapter.</div>	<div>35-4N</div>

Oscilloscope

Agilent InfiniVision 2000x and 3000x Series



Highlights

- The Agilent InfiniVision can be installed either in 19" systems or alternatively in the 6HU device system
- Separate installation set available

Technical Data

	InfiniVision 2000X Series	InfiniVision 3000X Series
Analog channels	2 or 4 analog channels	
Digital timing channels	8 on MSO models or with upgrade DSOX2MSO	16 on MSO models or with upgrade DSOX2MSO
Bandwidth (extendable)	70, 100, 200MHz	100, 200, 350, 500MHz
Sampling rate	1 GSa/s per channel, 2 GSa/s with half number of channels (interleaved)	2 GSa/s per channel, 4 GSa/s with half number of channels (interleaved)
Memory depth	100kpts	2Mpts as standard, 4Mpts optional (option DSOX3MemUp)
Signal update rate	50000 signals/s	1000000 signals/s
Built-in 20 MHz WaveGen function generator	Yes (option DSOX2WAVEGEN)	Yes (option DSOX3WAVEGEN)
Search and navigation functions	No	Yes
Analysis of serial protocols	No	Yes (several options)
Segmentable memory	Yes (option DSOX2SGM)	Yes (option DSOX3SGM)
Alarm mask test	Yes (option DSOX2MASK)	Yes (option DSOX3MASK)
AutoProbe interface	No	Yes

More technical details can be found in the Agilent data sheets.

Oscilloscope

Agilent InfiniVision 2000x and 3000x Series

Model variants

InfiniVision 2000 X-Series

Model (Agilent)	Description	Bandwidth
DSOX2002A	Oscilloscope, digital, 2-channel	70MHz, 2 x 1 GS/s
DSOX2004A	Oscilloscope, digital, 4-channel	70MHz, 4 x 1 GS/s
DSOX2012A	Oscilloscope, digital, 2-channel	100MHz, 2 x 1 GS/s
DSOX2014A	Oscilloscope, digital, 4-channel	100MHz, 4 x 1 GS/s
DSOX2022A	Oscilloscope, digital, 2-channel	200MHz, 2 x 1 GS/s
DSOX2024A	Oscilloscope, digital, 4-channel	200MHz, 4 x 1 GS/s
MSOX2002A	Oscilloscope, mixed, 2-channel	70MHz, 2 x 1 GS/s
MSOX2004A	Oscilloscope, mixed, 4-channel	70MHz, 4 x 1 GS/s
MSOX2012A	Oscilloscope, mixed, 2-channel	100MHz, 2 x 1 GS/s
MSOX2014A	Oscilloscope, mixed, 4-channel	100MHz, 4 x 1 GS/s
MSOX2022A	Oscilloscope, mixed, 2-channel	200MHz, 2 x 1 GS/s
MSOX2024A	Oscilloscope, mixed, 4-channel	200 MHz, 4 x 1 GS/s


InfiniVision 3000X Series

Model (Agilent)	Description	Bandwidth
DSOX3012A	Oscilloscope, digital, 2-channel	100MHz, 2 x 2 GS/s
DSOX3014A	Oscilloscope, digital, 4-channel	100MHz, 4 x 2 GS/s
DSOX3024A	Oscilloscope, digital, 4-channel	200MHz, 4 x 2 GS/s
DSOX3032A	Oscilloscope, digital, 2-channel	350MHz, 2 x 2 GS/s
DSOX3034A	Oscilloscope, digital, 4-channel	350MHz, 4 x 2 GS/s
DSOX3052A	Oscilloscope, digital, 2-channel	500MHz, 2 x 2 GS/s
DSOX3054A	Oscilloscope, digital, 4-channel	500MHz, 4 x 2 GS/s
MSOX3012A	Oscilloscope, mixed, 2-channel	100MHz, 2 x 2 GS/s
MSOX3014A	Oscilloscope, mixed, 4-channel	100MHz, 4 x 2 GS/s
MSOX3024A	Oscilloscope, mixed, 4-channel	200MHz, 4 x 2 GS/s
MSOX3032A	Oscilloscope, mixed, 2-channel	350MHz, 2 x 2 GS/s
MSOX3034A	Oscilloscope, mixed, 4-channel	350MHz, 4 x 2 GS/s
MSOX3052A	Oscilloscope, mixed, 2-channel	500MHz, 2 x 2 GS/s
MSOX3054A	Oscilloscope, mixed, 4-channel	500MHz, 4 x 2 GS/s

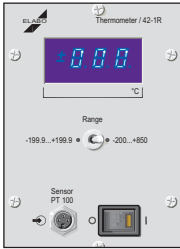
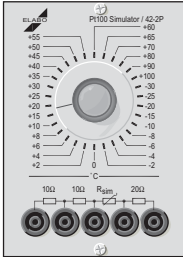
More technical details can be found in the Agilent data sheets.

Order number	Description
35-4S.3ZEBS	ES 6HU/4WU installation set for Agilent InfiniVision (Elabo system 6HU)
35-4S.3Z19"	ES 19"/5HU installation set for Agilent InfiniVision (Elabo system Primus One)
35-4S.3Zxxxxx	Agilent InfiniVision oscilloscope (please quote the desired model number when ordering)

Oscilloscope

		Technical Data	Order no.
Oscilloscope 6HU / 3BE (+ 1WU)		<p>Digital real-time oscilloscope with colour display (1/4 VGA LCD), including one blank plate Manufactured by Tektronix, model TDS 2002B Digital Real Time 60MHz 1 GS/s sampling rate/channel Two input channels External triggering Slope and video trigger Trigger view Cursor measurement with readout Setup memory Reference curve memory Auto Setup</p> <p>at the front and rear with USB port can be integrated in the Elabo EHP Lab software</p>	35-4P Z103-EBS 35-4P Z103-Modul
Oscilloscope 6HU / 1WU		<p>2-channel oscilloscope Manufactured by Metrix MTX1052 Band width: 150MHz 2 channels, Class 1, shared earth vertical: 2.5mV / div-100V / div up to 250iV / div with Y-expansion Time bases: 35 ranges from 1 ns/div up to 200s/div Trigger: Auto, Triggered, Single Shot Trigger source: CH1, CH2, CH3, CH4, EXT, mains Type: Slope, Pulse width or Delay Mains supply: 100-230V / AC 47-63Hz Ethernet interface Software</p> <p>Optionally available: differential voltage probes</p>	35-4Q Z102 
Oscilloscope 6HU / 1WU		<p>4-channel oscilloscope Manufactured by Metrix MTX1054 Bandwidth: 150MHz 4 channels Class 1, shared earth vertical: 2.5mV / div-100 V / div up to 250iV / div with Y-expansion Time bases: 35 ranges from 1 ns/div up to 200 s/div Trigger: Auto, Triggered, Single Shot Trigger source: CH1, CH2, CH3, CH4, EXT, mains Type: Slope, Pulse width or Delay Mains supply: 100...230V / AC 47...63Hz Ethernet interface Software</p> <p>Optionally available: differential voltage probes</p>	35-4R Z102 



Thermometer, temperature sensor, Pt100 simulator

		Technical data	Order no.
Digital thermometer 3HU / 24HP		<p>Insert plate with digital thermometer for Pt100/Pt1000</p> <p>Measurement range 1: - 50.0°C to + 200.0°C, resolution 0.1°C</p> <p>Measurement range 2: - 200°C to + 850°C, resolution 1°C</p> <p>1 illuminated rocker switch I/O 1 digital display 4 digit 1 diode jack socket</p>	42-1R.3Z601
Universal temperature sensor		<p>Pt100 immersion temperature sensor, suitable for the 42-1R.3Z601</p> <p>Temperature range: - 50°C to + 400°C</p> <p>Length: 150mm</p> <p>Diameter: 3mm</p>	42-1S
Temperature sensor		<p>Pt100 temperature sensor for gases, suitable for 42-1R.3Z601</p> <p>Temperature range: - 50°C to + 400°C</p> <p>Length: 100mm</p> <p>Diameter: 3mm</p>	42-1T
Temperature sensor		<p>Pt100 temperature sensor for surfaces, suitable for 42-1R.3Z601</p> <p>Temperature range: - 50°C to + 400°C</p> <p>Length: 300mm</p> <p>Diameter: 4mm</p>	42-1U
Pt100 simulator 3HU / 18HP		<p>Insert plate with Pt100 simulator, on which 30 fixed temperature values can be depicted by means of a precision rotary switch which correspond to the characteristic curve in accordance with DIN 43760.</p> <p>Resistance material: Manganin</p> <p>Temperature coefficient: < 10ppm / K</p> <p>Long-term stability: 0.02% over years</p> <p>5 laboratory safety sockets</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

8.11 High-voltage testing equipment

High-voltage testing equipment

The safety testing equipment described here is used for high voltage testing and for measuring the isolation and protective earth wire resistance. These measurements are obligatory with equipment which the manufacturer must check in accordance with applicable safety regulations.

	Technical data	Order no.
High-voltage testing equipment 6HU / 2WU	 <p>Insert for isolation and dielectric strength testing of electrical equipment, machinery, construction elements and insulation materials which, according to applicable safety regulations, must be tested with a sinusoidal alternating current voltage.</p> <p>Operating modes: can be preselected via key switch button</p> <p>"Test" overcurrent actuation</p> <p>"Burn" burning-out an error</p> <p>Display: 1 analogue instrument with dual scale, can be switched between current and voltage</p> <p>Test voltage: 0...5kV, continuously adjustable</p> <p>Actuation current: 0...100mA, continuously adjustable</p> <p>Rated output: 500VA</p> <p>Short-circuit current: $\geq 200\text{mA}$</p> <p>Disconnection response time: $\leq 50\text{ms}$</p> <p>Mains: 230V + 10% - 5% / 50Hz / 600VA</p> <p>Operation: with operator controls on the front plate</p> <p>In addition, a connection for warning lamps (94-2C) is available on the front plate.</p>	37-3B
High-voltage testing equipment 6HU / 2WU	 <p>Insert with μP-controlled device for isolation and dielectric strength testing of electrical equipment, machinery, construction elements and insulation materials which, according to applicable safety regulations, must be tested with a sinusoidal alternating current voltage.</p> <p>Operating modes: can be preselected via key switch button</p> <p>"Test" overcurrent actuation</p> <p>"Burn" burning-out an error</p> <p>"Timer" preselection of the testing time in the range 1...99s</p> <p>Display: 1 analogue instrument with dual scale, can be switched between current and voltage</p> <p>Test voltage: 0...2.5 / 0...5kV, continuously adjustable</p> <p>Actuation current: 0...100mA, continuously adjustable</p> <p>Rated output: 500VA</p> <p>Short-circuit current: $\geq 200\text{mA}$</p> <p>Disconnection response time: $\leq 50\text{ms}$</p> <p>Mains: 230V + 10% - 5% / 50Hz / 600VA</p> <p>Safety function: internally adjustable monitoring of base current and minimum voltage, displayable at the push of a button</p> <p>Operation: with operator controls on the front plate or via the interface</p> <p>Interface: with floating relay outputs for error messages, external safety circuit and floating inputs for activation. In addition, a connection for the warning lamp set 94-2C is available on the front plate.</p>	37-3C
Recommended equipment for 37-3B for 37-3C	Safety testing pistol Footswitch	94-2A 94-2D Z001

Additional devices can be found in the Test Instruments catalogue page 16ff and 108ff.

**8.12 Isolation resistance
measuring device**

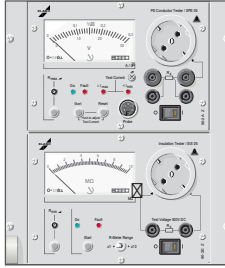
**8.13 PE conductor
resistance measuring device**

**8.14 Leakage current
measuring device**

This products you will find in our TestSystem
catalogue „Instruments“.

8.15 Compact tester

Isolation and PE meter, safety testing equipment



Isolation and protective earth wire meter
6HU / 2WU



Safety testing equipment VDE 0701/02
6HU / 2WU

Rack mount with two analogue safety meters:

1 protective earth wire meter 90-2A

Test current: 10...25A

- 1 analogue divider, which calculates and displays the resistance value of the protective earth wire and its connections from the voltage drop which occurs in the test item and the currently flowing test current.
Measurement range: 0...0.30Ohm
- 1 multi-turn trimmer and
- 1 probe for preselecting a maximum resistance value. A visual and acoustic error message is output when this is exceeded. The error message is also output when the test current is set too high or too low (the limit values can be adjusted internally).
- 1 Schuko socket
- 2 screw-type terminals
- 2 laboratory safety sockets
- 1 DIN socket for connecting the test probe 94-4S
- 1 illuminated rocker switch

1 isolation meter 90-2E

Measurement voltage: 500V DC, stabilised

Short-circuit current: maximum 3mA (no protective measures for operating personnel are required)

- 1 analogue divider with high measuring accuracy
The resistance value is displayed in two linear ranges:
0... 10MOhm
0..100MOhm
- 1 spindle-operated potentiometer on the front plate for a lower limit value for the isolation resistance; if the level is below this value, then a visual and acoustic error message will appear.
- 1 Schuko socket
- 2 laboratory safety sockets
- 1 illuminated rocker switch

Order no. 37-3G

Insert plate for the measurement of:

- protective earth wire resistance
- replacement discharge current
- protective earth wire current / contact current
- isolation checking of repaired or modified electrical devices in accordance with VDE 0701/02.

1 four-line dot matrix display, illuminated

1 LED "Error"

1 LED "Polarity reversal"

2 Function keys "0701 and 0702"

1 Function key "Auto"

1 test socket

1 connection for test item (4mm safety socket)

Technical data:

Imprecision 5% ± 1 digit (in all ranges)

Protective earth wire resistance measurement

Measurement range 0 ... 1000 mOhm

Limit value < 300mOhm

Measurement current 0.2A DC (autom. polarity reversal)

Replacement discharge current measurement

Measurement range 0 ... 20 mA

Limit value (in accordance with VDE 0701) for devices with heat resistance

[SK1] < 3.5kW: <3.5mA

[SK1e] > 3.5kW: < 1mA/kW

Measurement voltage 40V AC

Isolation resistance measurement

Measurement range 0.2...20 MOhm

Limit value (in accordance with VDE 0701)

[SK1] > 1MOhm

[SK2] > 2MOhm

Test voltage 500V DC

Short-circuit current 4.9mA

Protective earth wire current measurement

Measurement range 0...10mA

Limit value (in accordance with VDE 0702)

[SK1] < 3.5 mA (autom. polarity reversal)

Contact current measurement

Measurement range 0...10mA

Limit value (in accordance with VDE 0702)

[SK2] < 0.5mA (autom. polarity reversal)

Delivered complete with test probe and connection terminals.

Order no. 37-2L

Additional devices can be found in the Test Instruments catalogue.

Motor test bay 120 kVA

The Elabo motor test bay contains the ideal test room equipment for electrical engineer operations and industrial electrical workshops. The device concept has been developed following decades of practical testing experience, and enables the professional electrician to carry out continuously changing testing tasks safely and carefully. Together with the 3-phase variable transformer and the additional modular equipment, it is possible to perform every conceivable test – and reliable diagnostics – on almost any load.



An Elabo motor test bay is comprised of:

- desktop rack with high-current and insert component
- 3-phase transformer assembly
- inserts of the 6HU system
- worktable with floor cabinet.

A number of different versions are available for the worktable and the floor cabinet (see laboratory catalogue).



The corpus of the desktop rack housing is made of 19mm laminated board and coated on both sides with a layer of basalt grey melamine resin. Removable rear wall made of 2mm aluminium plating, corpus colour powder-coated. Mains connection and connection for the variable transformer to the labelled serial terminal board at the installation site.

High-current component:

The high-current component contains all of the control and fuse elements required for operation as well as all of the contact combinations required for the selectable current and voltage ranges. The large analogue current meters installed are equipped with linear scales. Overlapping measurement ranges enable optimum resolution. All of the important mains parameters can be measured in parallel fashion with the 3-way digital-display mains analyser.

Additional meter and testing equipment:

Depending on the application, a wide variety of meters and testing equipment can also be integrated in the setup, e.g. various high-voltage testing equipment.

Versatile utilisation:

The combination made up of high-current component, 3-phase transformer-assembly and the modular insert panel enables a variety of testing on motors, transformers and on the loads of smaller and larger power:

- Testing electrical machines of every type
- Stator and rotor testing also uninstalled
- Heating up coils for either drying or waterproofing
- Troubleshooting with short-circuited coils
- Current and voltage supply system for 1-phase, 3-phase and DC devices
- Performance of safety checks on electrical components of every type in accordance with existing DIN standards.

High-current component motor test bay



Technical data:

Mains connection:	3 / N / PE ~ 50Hz 400V on labelled terminal board	- reactive power measurement (VAR cap, VAR ind)
Main switch:	key-operated switch, can be used simultaneously as an emergency-off switch	- apparent power measurement (VA)
Main fuse:	motor circuit breaker with undervoltage actuation; continuously adjustable thermal actuation response from 160...200A	- power factor measurement (cos phi)
Control circuit:	all current ranges are secured with 3-pin thermal-magnetic circuit breakers	- frequency (Hz)
Assembly:	3 moving coil ammeters (144 x 144mm) embedded with linear scale, two ranges and meter rectifier	programmable using keys on the front plate on the device
Current ranges:	1.5A, 5A, 15A, 50A, 100A	1 Schuko socket
Voltage ranges:	I 3 / N / PE ~ 50Hz / 0...230V II 3 / N / PE ~ 50Hz / 0...450V III 3 / N / PE ~ 50Hz / 0...690V individual load capacity up to 100A, for short periods up to 150A	1 CEE socket, 3-pin, 16A, blue 3 CEE sockets, 5-pin, 16A, 32A, 63A, red 8 high-current butterfly clamp, aligned like a terminal board
Multifunction display:	microprocessor-controlled network analyser with 3 independent green displays, digit height 16 mm Up to 30 parameters are to be assigned according to preference, e.g.: - simultaneous measurement of the voltages of all of the phases - simultaneous display of all of the currents of all of the phases - measurement of the neutral conductor current - active power measurement (W), including with asymmetrical load	1 delta-wye switch
		DC-supply: I 0...approx. 150V II 0...approx. 300V III 0...approx. 450V ripple of the direct current 18%
		DC voltage display: moving coil voltmeter 144 x 144mm with 100V double scale, can be switched to 500V
		DC current display: moving coil voltmeter 144 x 144mm with 10A double scale, can be switched to 100A
		Fuse: SILIZED fuse

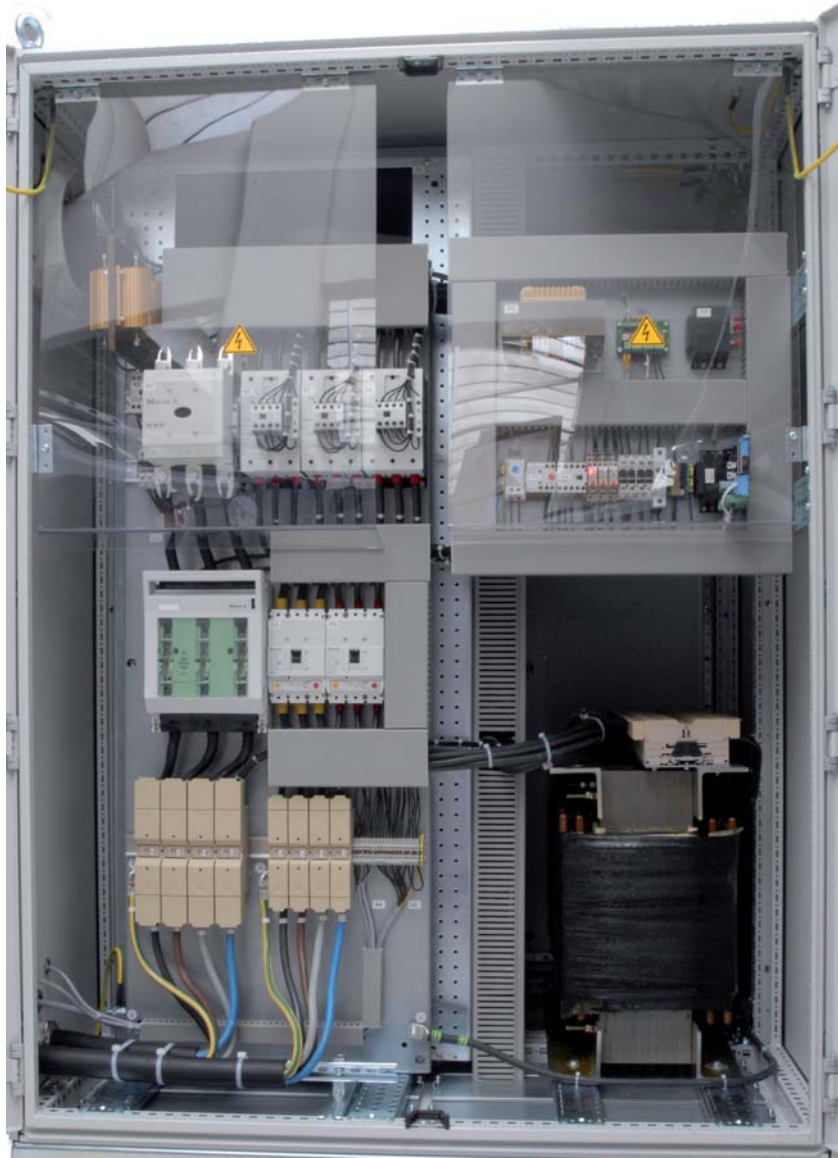
Order no. 36-3A Z802

Motor test bay transformer assembly, 3-phase

3-phase transformer assembly
with separated coils for heavy-duty operation
pursuant to VDE 0552, § 5.

The transformer is to be setup separately from
the test station and to be connected with
flexible cable. Connection with serial terminal
board at the test room

The assembly is tailored to
each respective project.



Technical data:

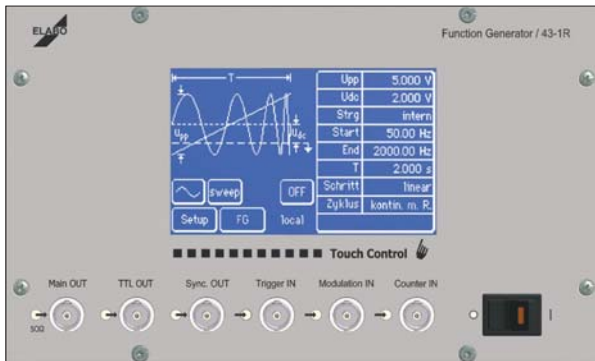
Rated output:	120kVA	Cooling:	AN (natural air cooling)
Mains input voltage:	3 / N / PE 400V AC / 50Hz	Housing:	steel plate housing
Mains output voltages:	I 3 ~ 0...133 / 230V II 3 ~ 0...260 / 450V III 3 ~ 0...400 / 690V	Protection Class:	IP 20
Current drop:	maximum 100A in each voltage range, for short periods 150A; uniform low transition resistances caused by hard silver plating of the bank contacts and bus bars	Motor drive:	24V DC with power supply unit, step controller with nominal value setting by means of ten turn potentiometer at the test station
		Transformer actuating time:	approx. 10...80s, continuously adjustable
		Weight:	approx. 1200kg
		Ambient temperature:	40°C
		Dimensions:	W approx. 1200mm, D approx. 1000mm, H approx. 1800mm

Order no. 36-2P

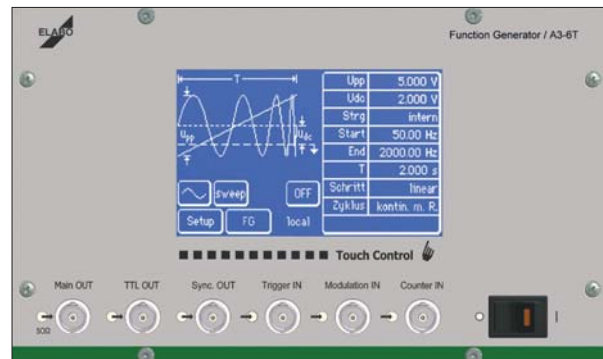
8.16 Function generator

Smart FG Function Generator

10mHz – 20MHz



43-1R.3



A3-6T.3

Highlights

- Quartz-stabilized DDS function generator
- Signals: sine, square, triangle, pulse, DC voltage
- AC output amplitude: 1 mV–20V_{ss} (no load)
- DC offset voltage: ± 10 V (no load)
- Operating modes: continuous, frequency sweep, amplitude ramp/offset ramp, pulse width modulation
- Frequency and event counter
- Trigger/modulation internal/external
- Touch display with blue LED lighting, multilingual
- Ethernet and USB interfaces

Scope of delivery

43-1R.3/A3-6T.3 Cassette 3HU / 42HP

Recommended additional products:

- N2-1A Elabo software package Elution® Device
N2-5N Elution® device driver for function generator


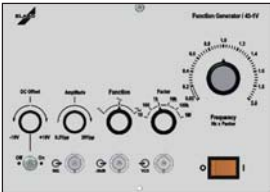

Smart FG Function Generator

10mHz – 20MHz

Signal forms	
Sine	10mHz–20MHz
Square	10mHz–20MHz
Triangle	10mHz–1MHz
Pulse	10 mHz–1MHz, duty cycle 5–95%, resolution 1%
Frequency resolution	10mHz ≤ 10kHz 100mHz ≤ 100kHz 1Hz ≤ 1MHz 10Hz ≤ 10MHz 100Hz ≤ 20MHz
Frequency accuracy	25ppm
AC output amplitude	1mV-20 Vss (no load) Resolution: 1mV ≤ 2.5V, 2.5mV > 2.5V
DC offset voltage	± 10V (no load) Resolution 1mV ≤ 2.5V, 2.5mV > 2.5V
Modulations	
Frequency sweep	Internal or external (input: 0–5V), controllable - Adjustment via start/stop frequency and sweep time, linear or logarithmic increments - Sweep individual (trigger: button, external, remotely controlled) or continuous (also with return)
Amplitude ramp (sweep) Offset ramp	Internal or external (input: 0–5V), controllable - Adjustment via start/stop amplitude and sweep time, linear increments - Sweep individual (trigger: button, external, remotely controlled) or continuous (also with return)
Pulse width modulation	Internal or external (input 0–5V), controllable - With internal control: adjustment via lowest/highest duty cycle and sweep time, linear increments - Sweep individual (trigger: button, external, remotely controlled) or continuous (also with return) - With external control: 0V: 0%–5V: 100% duty cycle, adjustable
Frequency and event counter	
Measuring range	0,1Hz to 30MHz
Input voltage	0,5V _{eff} to 100V _{eff}
Event counter	Positive edge, switching threshold 1.6V Start, stop, pause, reset
Connections	
Outputs (BNC)	Main OUT: Impedance 50Ω, overvoltage protection, safety cutout TTL OUT: TTL/CMOS level Sync. OUT: TTL/CMOS level
Inputs (BNC)	Trigger IN: TTL/CMOS opto-decoupled, overvoltage protection Modulation IN: 0–5 V input level, overvoltage protection Counter IN: 0–100 V input level, overvoltage protection

Function generator


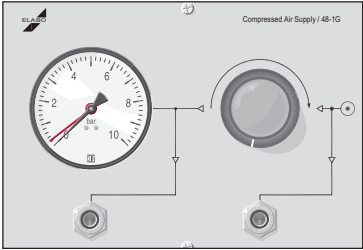
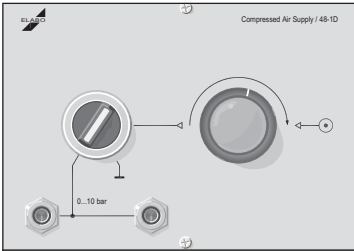
Function generators form an interesting and versatile group of devices in the area of LF technology: the large frequency range and the multitude of different, time-dependent output voltages make it possible to perform investigations on electrical systems even without non-sinusoidal voltages.

	Technical Data	Order no.
<div>Function generator</div> <div>3HU / 36HP</div> <div></div>	<div></div> <div>Insert plate with function generator 0.2Hz...2MHz Setting via potentiometer with scaling and rotary switch in six decade ranges Frequency ranges: 20/200Hz, 2/20/200kHz, 2MHz Signal form: Sinusoidal, Square, Triangle Harmonic distortion of the sine wave: <1.5% to 100kHz, < 5% to 2MHz Output amplitude: U_{ss} max. 20V with no load typically 10V at 50Ohm Output is no load-safe and short circuit-safe Attenuation - 20db via BNC connector DC offset can be switched 0 to +/- 10V adjustable External wobble: modulation input VCO 0...5V for frequency modification 100:1 Input impedance approx. 17kOhm</div>	43-1V
<div>Power amplifier</div> <div>3HU / 24HP</div>	<div></div> <div>Eurocassette with power amplifier 40 Watt DC 150kHz / 40V_{ss}, suitable for all Elabo function generators 1 illuminated rocker switch 1 BNC connector input 1 BNC connector output Input voltage max. 20V_{ss} Mains connection 207...253V 50Hz</div>	43-1T

8.17 Pneumatic supply

Pneumatic supply

All of the pneumatics insert plates are also available with other pressure ranges upon request. Customised versions are also possible in individual cases: special couplings, pressure reducers, filters and controllers according to specification.

	Technical Data	Order no.
Compressed air supply 3HU / 6HP	 Insert plate with <ul style="list-style-type: none"> 1 quick-release coupling NW 5 1/8 1 plug nipple NW 5 for plastic hose 6/4 	48-1K
Compressed air supply 3HU / 36HP	 1 pressure regulator 0.5...10bar, 1 small pressure gauge 0...10bar 2 rapid-release couplings NW 2.5 for input pressure and controlled pressure 1 plug nipple	48-1G
Compressed air supply 3HU / 36HP	 Insert plate with supply unit for pressure <ul style="list-style-type: none"> 1 adjustment valve at which the externally supplied pressure is connected 1 3/2 way valve, with which the set pressure can either be connected or switched off at the two one-handed rapid release couplings 2 one-handed rapid release couplings NW 2.5 1 plug nipple NW 2.5 Pressure range 0 ... 4bar 0 ... 10bar	48-1D Z01 48-1D Z02

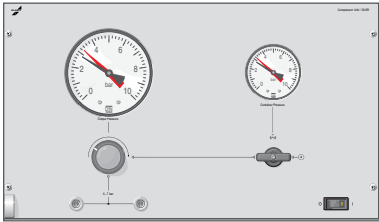
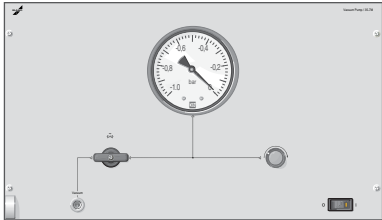
Pneumatic accessories

	Technical data	Order no.
Connection hose 6/4mm	one-sided plug nipple NW 5 10bar 500mm	48-5A
	one-sided plug nipple NW 5 10bar 1000mm	48-5B
	one-sided plug nipple NW 5 10bar 2000mm	48-5C
	one-sided plug nipple NW 2.5 10bar 500mm	48-5P
	one-sided plug nipple NW 2.5 10bar 1000mm	48-5Q
	one-sided plug nipple NW 2.5 10bar 2000mm	48-5R
Pressure gauge threads	R 1/8"	48-5H
	R 1/4"	48-5J
	R 3/8"	48-5K
	R 1/2"	48-5L
High-pressure hose DN4	Mini-measurement connections 400bar 630mm	48-5D
	Mini-measurement connections 400bar 1000mm	48-5E
Plug nipple for one-handed quick-release couplings	NW 5 for KU hose 6/4mm	48-5M
	NW 2.5 for KU hose 6/4mm	48-5N
Air supply 10bar for inserts in desktop racks	Coupling type 3 demands	48-5SZ
	Coupling type 5 demands	48-5TZ
The line is laid on the rear side with the desktop rack. Z = please specify respective assembly.		

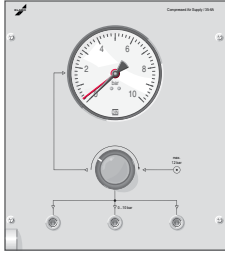
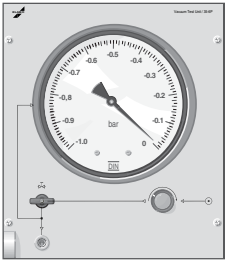



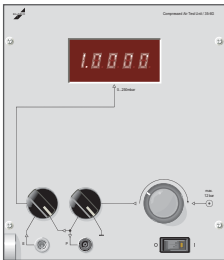
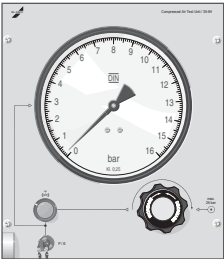
Pneumatic compressor, vacuum pump

Elabo offers an extensive product range of pressure and vacuum supplies, supplemented by testing and meters. This variety can be extended even further when a rack mount is used to support supplies from the 3HU system. The pneumatic inserts are available with special pressure ranges. Customised versions are also possible, e.g. special couplings, water pressure measurement, flow measurement, etc

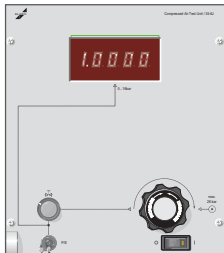
	Technical Data	Order no.
<div>Oil-free compressor 6HU / 4WU</div> <div></div>	<div>Insert with oil-free compressor for generating oil-free instrument air.</div> <div>Nominal pressure: 7bar</div> <div>Flow rate: 35l / min</div> <div>Sound pressure level: 57dB(A)</div> <div>1 pressure reducer</div> <div>2 pressure gauges</div> <div>1 self-closing quick-release couplings NW5, can be switched via ball valve</div> <div>2 plug nipples</div>	35-6R
<div>Oil-free vacuum pump 6HU / 4WU</div> <div></div>	<div>Insert with vacuum pump in oil-free operation</div> <div>Flow rate: 32l / min</div> <div>Generated vacuum: approx. 850mbar</div> <div>Control range: approx. 850...133mbar (approx. 700...100Torr)</div> <div>Setting accuracy: approx. 13mbar (10Torr)</div> <div>Mains supply: 230V / 50Hz</div> <div>Sound pressure level: approx. 57dB(A)</div> <div>1 pressure gauge</div> <div>1 self-closing quick-release coupling NW5, can be switched via ball valve</div> <div>1 plug nipple</div>	35-7M

Pneumatic pressure supply, meter and testing equipment

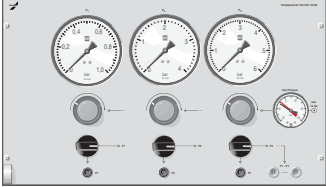
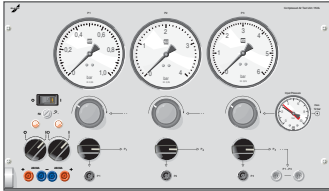
		Technical data	Order no.
Pressure supply 6HU / 2WU		Insert for pressure supply 1 flange pressure gauge 0...10bar 1 pressure regulator 0.5...10bar 3 self-closing coupling sockets NW5 for pressure tapping 2 plug nipples 1 hose thread for connection to the pressure supply	35-6A
Pressure supply 6HU / 2WU		Insert for pressure supply 1 flange pressure gauge and pressure reducer 0.5...10bar, with water separator and oil mister 1 pressure regulator 3 self-closing coupling sockets NW5 for pressure tapping 2 plug nipples 1 hose thread for connection to the pressure supply	35-6B
Pressure supply 6HU / 2WU		Insert with vacuum pressure meter 1 analogue fine pressure gauge, class 0.6 Measurement range 0...-1000mbar 1 precision vacuum regulator with good reproducibility for precise adjustment of the output pressure 1 self-closing coupling socket NW5 for vacuum tapping 1 plug nipple Vacuum must be supplied at the installation site!	35-6P
Pneumatic meter and testing equipment 6HU / 2WU		Insert for pressure measurement and testing with analogue display Can be used as a regulator (setpoint device) or as an external meter and for performing leakage tests. Input pressure maximum 12bar. 1 fine pressure gauge 0...1bar, class 0.6 1 precision pressure regulator for delicate pressure settings 1 3/2-way valve for performing leakage tests 1 3/2-way valve for utilisation of the pressure meter as an external meter 2 self-closing coupling sockets NW5 for pressure tapping or measurement pressure feed 1 plug nipple The pressure supply must be provided at the installation site. 0...1.0bar 0...2.5bar 0...6.0bar 0...10.0bar	35-6C Z01 35-6C Z02 35-6C Z03 35-6C Z04

	Technical Data	Order no.
Pneumatic meter and testing equipment 6HU / 2WU	 <p>Insert for pressure measurement and testing with digital display</p> <p>Can be used as a regulator (setpoint device) or as an external meter and for performing leakage tests.</p> <p>Input pressure maximum 12bar.</p> <ul style="list-style-type: none"> 1 digital display 4.5-digit 1 piezo-resistive precision pressure absorber, class 0.15 1 precision pressure regulator for delicate pressure settings 1 3/2-way valve for performing leakage tests 1 3/2-way valve for utilisation of the pressure meter as an external meter 2 self-closing coupling sockets NW5 for pressure tapping or measurement pressure feed 1 plug nipple <p>The pressure supply must be provided at the installation site.</p>	
	0...250mbar	35-6G Z01
	0...1bar	35-6G Z02
	0...2bar	35-6G Z03
	0...4bar	35-6G Z04
	0...6bar	35-6G Z05
	0...10bar	35-6G Z06
Pneumatic high pressure Meter and testing equipment 6HU / 2WU	 <p>Insert for high pressure measurement and testing with analogue display</p> <p>Can be used as a regulator (setpoint device) or as an external meter and for performing leakage tests.</p> <ul style="list-style-type: none"> 1 class 0.6 analogue pressure gauge 1 precision pressure regulator for delicate pressure settings 1 pressure shut-off valve 1 mini-measurement coupling for pressure tapping or supplying measured pressure <p>The pressure supply must be provided at the installation site.</p>	
	0...16bar	35-6H Z01
	0...25bar	35-6H Z02
	0...40bar	35-6H Z03
	0...60bar	35-6H Z04
	0...100bar	35-6H Z05

Pneumatic meter and testing equipment

	Technical data	Order no.										
Pneumatic high pressure Meter and testing equipment 6HU / 2WU	<div></div> <div><p>Insert for high-pressure measurement and testing with digital display</p><p>Can be used as a regulator (setpoint device) or as an external meter and for performing leakage tests.</p><ul style="list-style-type: none">1 digital display 4.5-digit1 piezo-resistive precision pressure absorber, Class 0.151 precision pressure regulator for delicate pressure settings1 pressure shut-off valve1 mini-measurement coupling for pressure tapping or supplying measured pressure1 illuminated rocker switch<p>The pressure supply must be provided at the installation site.</p></div> <div><table><tr><td>0...16 bar</td><td>35-6J Z01</td></tr><tr><td>0...25 bar</td><td>35-6J Z02</td></tr><tr><td>0...40 bar</td><td>35-6J Z03</td></tr><tr><td>0...60 bar</td><td>35-6J Z04</td></tr><tr><td>0...100 bar</td><td>35-6J Z05</td></tr></table></div>	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	
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											

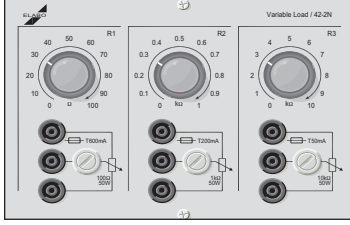
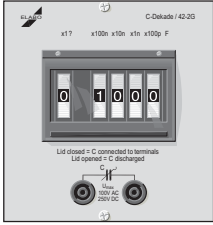
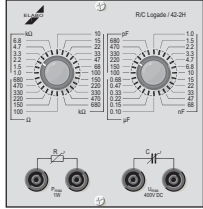
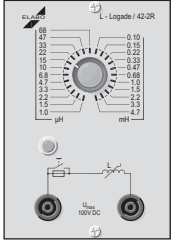
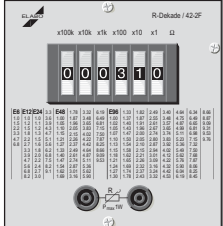
The pneumatic inserts presented below could represent five different measurement ranges: 0...1bar, 0...2.5bar, 0...4bar, 0...6bar and 0...10bar. The set test pressure is switched directly to the outlet quick-release fasteners with the aid of the three 2/2-way valves, each of which is assigned to a measurement range. The internal compressed air is displayed with the aid of an additional small pressure gauge.



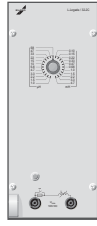
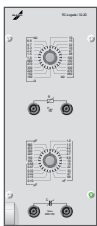
		Technical Data	Order no.
Pneumatic testing equipment 6HU / 4WU		Insert for testing pneumatic control elements and transmitters Inlet pressure: maximum 12 bar 3 class 1.0 analogue instruments 0...1bar 0...4bar 0...6bar 1 small pressure gauge 0...10bar for monitoring the internal compressed air 3 precision pressure regulator 3x 2/2-way valves for switching the test pressures to the output quick-release couplings for pressure tapping 5 self-closing coupling sockets NW 5 3 plug nipple	
		0...1 / 2.5 / 6bar	35-6K Z01
		0...2.5 / 4 / 6bar	35-6K Z02
		0...1 / 4 / 6bar	35-6K Z03
		Additional measurement ranges available upon request.	
Pneumatic testing equipment 6HU / 4WU		Insert for testing pneumatic or electropneumatic control elements and transmitters (with jog mode) Inlet pressure: maximum 12 bar 3 class 1.0 analogue instruments 0...1bar 0...4bar 0...6bar 1 small pressure gauge 0 ... 10 bar for monitoring the internal compressed air 3 precision pressure regulator 3x 2/2-way valves for switching the test pressures to the output quick-release couplings for pressure tapping 5 self-closing coupling sockets NW 5 3 plug nipple 1 additional direct current supply, with 2 x 24V, 4A total current (for both outputs), ripple 48 % 2 switches and 2 x 2 laboratory safety sockets 1 circuit breaker 1 illuminated rocker switch	
		0...1 / 2.5 / 6bar	35-6L Z01
		0...2.5 / 4 / 6bar	35-6L Z02
		0...1 / 4 / 6bar	35-6L Z03
		Additional measurement ranges and output voltages available upon request.	

8.18 Decade and logade

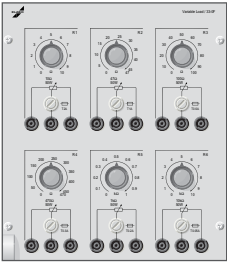
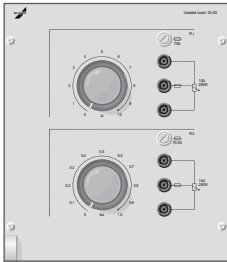
Load resistors, Decade, logade

Rapid accessibility of such typical values as resistances, capacities and inductivities is particularly advantageous in the laboratory environment.

		Technical Data	Order no.
Load resistors 3HU / 36HP		Eurocassette with 3 adjustable load resistors, each capable of bearing loads of 50W Resistance values: 0...1000Ohm / 50W 0...1kOhm / 50W 0...10kOhm / 50W 3 fine wire fuses 9 laboratory safety sockets	42-2N
C decade 3HU / 24HP		Insert plate with C decade 100pF...9.9999μF, adjustable in 100pF increments via 5 preselection switches with large numbers in their display windows Tolerance: 100pF...1000pF ± 10% > 1000pF ± 2% Permissible operating voltage: 250V DC	42-2G
RC decade 3HU / 24HP		Insert plate with RC logade R range: 1000Ohm ... 680kOhm ± 2%. Load: maximum 0.5W Permissible input voltage: 500V DC C range: 100pF ... 0.68μF ± 10% 4 laboratory safety sockets	42-2H
Inductivity logade 3HU / 18HP		Insert plate with inductivity logade 1...4700μH Preselection: 23 values, staggered according to the E 6 series, adjustable with rotary switch Imprecision: 1...33μH, ± 10% 47...4700μH, ± 5% Operating voltage: maximum 100V DC Operating current: maximum 63mA; secured with fine wire fuse 2 laboratory safety sockets	42-2R
R decade 3HU / 24HP		Insert plate with R decade 10Ohm...999.999kOhm, adjustable in 10Ohm increments via 6 preselection switches with large numbers in their display windows Tolerance: 1 Ohm... 90Ohm < 10%+ 0.9Ohm 10 Ohm... 990Ohm < 2%+ 0.9Ohm 100 Ohm... 9990Ohm < 1%+ 0.9Ohm > 1000 Ohm < 1% Load: maximum 1W Connection voltage: maximum 250V AC maximum 50V DC	42-2F





		Technical data	Order no.
R decade 6HU / 1WU		<p>Insert plate with 6-stage R decade</p> <p>Range: 1 Ohm...999.999kOhm</p> <p>Resolution: 1 Ohm</p> <p>Tolerances: 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%</p> <p>Load: maximum 1W</p> <p>Connection voltage: maximum 250V AC / maximum 50V DC</p> <p>6 two-button switches for adjusting the resistance values</p> <p>2 laboratory safety sockets</p>	32-2A
C decade 6HU / 1WU		<p>Insert plate with 5-stage C decade</p> <p>Range: 100pF...9.9999μF</p> <p>Resolution: 100pF</p> <p>Tolerance: 100pF...1μF ± 10%, typically ± 2% above this</p> <p>Operating voltage: maximum 400V DC</p> <p>5 two-button switches for adjusting the capacity values</p> <p>2 laboratory safety sockets</p>	32-2B
Inductivity logade 6HU / 1WU		<p>Insert plate with inductivity logade 1μH...4700μH</p> <p>Ranges: 23 values between 1μH and 4700μH, staggered according to the E 6 series</p> <p>Imprecision: 1μH...33μH ± 10% 47μH...4700μH ± 5%</p> <p>Operating voltage: maximum 100V DC</p> <p>Operating current: maximum 63mA secured with fine wire fuse</p> <p>1 rotary switch for adjusting the desired inductivity</p> <p>2 laboratory safety sockets</p>	32-2C
RC logade 6HU / 1WU		<p>Insert plate with RC logade</p> <p>Resistance range: 100 Ohm...680k Ohm</p> <p>Load: 1W</p> <p>Tolerance: ± 2%</p> <p>Operating voltage: maximum 500 V</p> <p>Capacity range: 100pF...0.68μF</p> <p>Tolerance: ± 10%</p> <p>Operating voltage: 100pF... 6.8nF / 1000V DC 10nF... 68nF / 630V DC 0.1μF...0.68μF / 400V DC</p> <p>4 laboratory safety sockets</p>	32-2D


Load resistors

	Technical Data	Order no.
<div>Load resistors</div> <div>6HU / 2WU</div>	<div></div> <div>Insert with</div> <div>6 load resistors, continuously adjustable between 0...100%</div> <div>Standard resistance values: 10Ohm, 470Ohm, 1000Ohm, 4700Ohm, 1kOhm, 10kOhm</div> <div>Load capacity: maximum 50 W; other values upon request</div> <div>6 fine wire fuses</div> <div>6x 3 laboratory safety sockets</div>	33-0F
<div>Load resistors</div> <div>6HU / 2WU</div>	<div></div> <div>Insert with</div> <div>2 load resistors, continuously adjustable between 0...100%;</div> <div>Standard resistance values: 10Ohm, 1kOhm</div> <div>Load: maximum 250W; other values upon request</div> <div>2 fine wire fuses</div> <div>2x 3 laboratory safety sockets</div>	33-0G




8.19 Interface

Interface

		Technical Data	Order no.
LPT interface 3HU / 6HP		1 SUB-D 25-pin female with approx. 3m connection cable and mating connector	46-7A
COM interface / RS232 3HU / 6HP		1 SUB-D 25-pin male 1 SUB-D 9-pin male both with approx. 3 m connection cable and mating connector	46-7B 46-7C
VGA interface 3HU / 6HP		1 SUB-D HD 15-pin female with approx. 3m connection cable and mating connector	46-7D
DVI-I interface 3HU / 6HP		1 female with approx. 3m connection cable and mating connector	46-7E
S-VHS interface 3HU / 6HP		1 PS / 2 Mini-DIN, 4-pin female with approx. 2 m connection cable and mating connector	46-7M
USB interface 3HU / 6HP		2 USB, type A, female with approx. 3m connection cable and mating connector	46-7F
PS/2 interface 3HU / 6HP		2 PS / 2 Mini-DIN, 6-pin female with approx. 3m connection cable and mating connector	46-7G
Audio interface 3HU / 6HP		2 Audio, Cinch, red and white, female with approx. 2.5m connection cable and mating connector	46-7H

		Technical data	Order no.
Audio interface 3HU / 6HP		1 stereo jack socket 3.5mm, stereo with approx. 3m connection cable and mating connector	46-7J
FireWire interface 3HU / 6HP		1 IEEE-1394, 6-pin with approx. 3m connection cable and mating connector	46-7K
RJ-45 interface 3HU / 6HP		1 RJ-45 connector 8-pin, female, with lettering plate, pluggable on both sides with approx. 3m patch cable	46-7L
Data socket RJ-45 3HU / 18HP		Insert plate with 1 double socket RJ45 Cat. 6 shielded non-wired	44-2D
Hollow wall socket 3HU / 18HP		Insert plate with 1 hollow wall socket for installation of an antenna, mains or telephone socket	40-1B Z004
Antenna socket 3HU / 18HP		Insert plate with 1 antenna socket for radio, TV, SAT	44-2E
IEEE 488 interface 3HU / 6HP		IEEE-488 Centronics 24-pin female with approx. 3m connection cable and mating connector	46-7N
Supply strip 3HU / 6HP		Insert plate with supply strip with 2 BNC installation jack sockets 50 Ohm can be pluggable on both sides un-wired	46-7P
ASi interface 3HU / 6HP		Insert plate interface panel ASi with 4 laboratory safety sockets 4mm yellow non-wired	46-7Q

Interface

		Technical Data	Order no.
PROFI NET interface 3HU / 6HP		Insert plate PROFI NET interface panel with 2 RJ45 connector, 8-pin, pluggable on both sides with approx. 3m patch cable	46-7R
PROFI NET interface 3HU / 6HP		Insert plate PROFI BUS interface panel with 1 Sub-D adapter 9-pin, male, with mating connector female un-wired	46-7S
HDMI interface 3HU / 6HP		Insert plate with 1 HDMI 1.3 feed-through with 19-pin HDMI connector on both sides	46-7T
Multiple interface panel 3HU / 24HP		Insert plate with 2 USB connectors, type A female 2 PS/2 Mini-DIN 6-pin connectors, female 1 Sub-D connector 9-pin male 1 Sub-D connector 15-pin HD female each with approx. 2m connection cable and mating connector 2 jack sockets, 3.5mm stereo with approx. 3m connection cable and mating connector 1 RJ45 connector, 8-pin, pluggable on both sides	46-7V


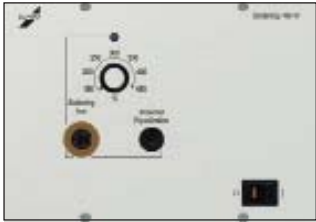

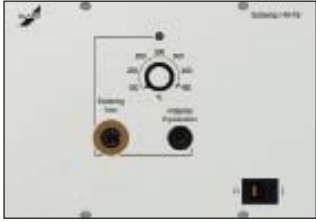
Elabo also supplies modular plug-in connections for special applications. A wide variety of signals through one plug – all the way to compressed air.

Adjustable AC-supply, special insert plate

		Technical data	Order no.
Adjustable AC-supply 3HU / 18HP <div data-bbox="169 333 250 418" data-label="Image"> </div>		Eurocassette with floating, adjustable alternating current voltage 0...260V / 0.8A 1 analogue voltmeter 0...300V 1 analogue ammeter 0...1A 1 thermal magnetic circuit breaker 1 socket without earth contact 1 illuminated rocker switch	46-1D
Antenna socket 6HU / 1WU		Insert plate with antenna socket 2 Schuko sockets 1 antenna socket TV, SAT, Radio	32-1K
Selectable pole 6HU / 1WU		Insert plate with 15 non-wired laboratory safety sockets as selectable pole with labelling 1 to 15	32-1U
Selectable pole and emergency-off button 6HU / 1WU		Insert plate with 8 laboratory safety sockets as selectable pole with labelling 1...8 1 non-wired emergency-off mushroom button with snap-on contact and signal ring	32-1Q
Multiple interface panel 6HU / 1WU		Insert plate with 2 USB connectors, type A female 2 PS/2 Mini-DIN 6-pin connectors, female 1 Sub-D connector 9-pin male 1 Sub-D connector 15-pin HD female each with approx. 2 m connection cable and mating connector 2 jack sockets, 3.5mm stereo with approx. 3m connection cable and mating connector 2 RJ45 socket 8-pin, pluggable on both sides	32-1U Z001


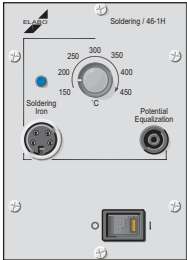
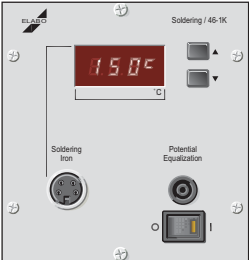
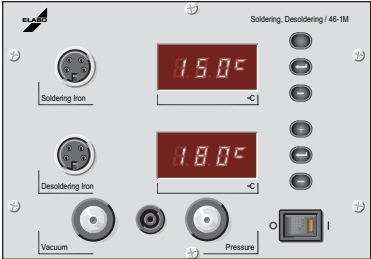
8.20 Soldering station

Insert plate soldering station



		Technical data	Order no.
Soldering station 3HU / 36HP 		<p>Insert plate with temperature-controlled soldering station, temperature in the range 150...400°C continuously adjustable by means of a rotary potentiometer analogue control technology ideal for lead-free soldering, RoHS-compliant</p> <p>1 soldering iron Basis tool 810 CDJ 1 soldering tip 0832 CD 1 stand 0A 41</p>	46-1F
Soldering station 3HU / 36HP 		<p>Insert plate with temperature-controlled soldering station, model Weller WS 81 Temperature in the range 150...400°C continuously adjustable by means of a rotary potentiometer analogue control electronics with automatic tool recognition up to 80W ideal for lead-free soldering, RoHS-compliant the soldering tip is floating at the time of shipment</p> <p>1 soldering iron WSP 80 1 soldering tip LT B 1 1 safety compartment WPH 80</p>	46-1G

With the aid of the Elabo rack mount, 3HU soldering stations can also be installed in an assembly of the 6HU system or of the 19" system.

Soldering and unsoldering station

	Technical Data	Order no.
Soldering station 3HU / 18HP	 <p>Front panel of the Soldering station 46-1A. It features a temperature control knob with markings from 150 to 400 °C, a 'Soldering Iron' port, a 'Potential Equalization' port, and an illuminated rocker switch at the bottom.</p>	<p>Eurocassette with temperature-controlled 80W soldering station, temperature in the range 150...400°C continuously adjustable and electronically controlled, ideal for lead-free soldering, RoHS-compliant.</p> <ul style="list-style-type: none">1 soldering iron,1 LED for regular visual inspection1 stand1 illuminated rocker switch
Soldering station 3HU / 18HP	 <p>Front panel of the Soldering station 46-1H. It features a temperature control knob with markings from 150 to 450 °C, a 'Soldering Iron' port, a 'Potential Equalization' port, and an illuminated rocker switch at the bottom.</p>	<p>Eurocassette with temperature-controlled, floating 80W soldering station, temperature continuously adjustable up to 450°C, manufactured by Weller, ideal for lead-free soldering, RoHS-compliant.</p> <ul style="list-style-type: none">1 soldering iron,1 LED for regular visual inspection1 stand1 illuminated rocker switch
Soldering station 3HU / 24HP	 <p>Front panel of the Soldering station 46-1K. It features a digital temperature display showing 150°C, a 'Soldering Iron' port, a 'Potential Equalization' port, and an illuminated rocker switch at the bottom.</p>	<p>Eurocassette with temperature-controlled, antistatic 80W soldering station, temperature continuously adjustable up to 450°C, manufactured by Weller, ideal for lead-free soldering, RoHS-compliant.</p> <ul style="list-style-type: none">1 digital display1 antistatic soldering iron1 stand1 illuminated rocker switch
Soldering and unsoldering station 3HU / 36HP	 <p>Front panel of the Soldering and unsoldering station 46-1M. It features two digital temperature displays (150°C and 180°C), 'Soldering Iron' and 'Desoldering Iron' ports, 'Vacuum' and 'Pressure' ports, and an illuminated rocker switch at the bottom.</p>	<p>Eurocassette with electronic soldering and unsoldering station for industrial application and for repair stations, temperature continuously adjustable between 150...400°C, ideal for lead-free soldering, RoHS-compliant.</p> <ul style="list-style-type: none">2 digital temperature displays1 installed vacuum/compressed air unit; this results in the station being independent of compressed air supplies1 soldering iron 80W 840 CDJ1 unsoldering iron 80W 720 ENJ2 connection jack socket for soldering/desoldering irons1 potential equalisation connector2 quick-release couplings for vacuum and compressed air2 stands1 illuminated rocker switch

Soldering station

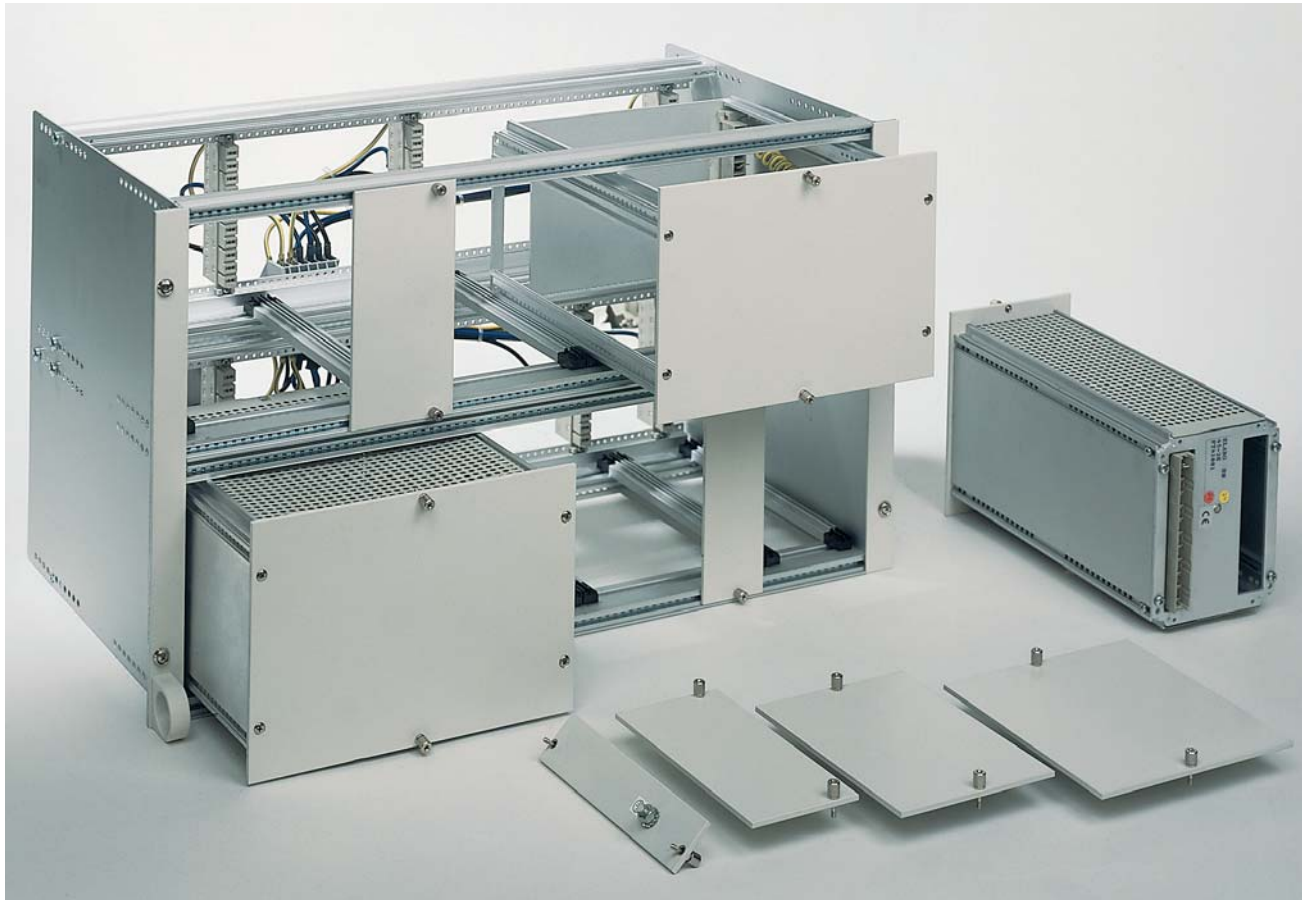
	Technical data	Order no.
Soldering station 6HU / 1WU	 <p>Insert plate with temperature-regulated soldering station 80W, ideal for lead-free soldering, RoHS-compliant Temperature range: 150...400°C, continuously variable and electronically regulated</p> <ul style="list-style-type: none"> 1 Schuko socket 1 soldering iron 810 CDJ 1 stand A41 1 illuminated rocker switch 	32-1W
Soldering station 6HU / 1WU	 <p>Insert plate with electronically regulated soldering station 80W, manufactured by Weller, ideal for lead-free soldering, RoHS-compliant Temperature range: up to 450°C, continuously variable and electronically regulated</p> <ul style="list-style-type: none"> 1 LED for regular visual inspection 1 Schuko socket 1 soldering iron, 1 stand 1 illuminated rocker switch 	32-1Y

As a way of saving space, 3HU soldering stations can also be utilised in the 6HU system.

Elabo also offers the unrivalled **Elabo cable management system** for improved cable handling. Here the soldering cable is guided out of sight to the position on the table where the soldering station located. If the location changes, then the cable can be readily and rapidly adjusted – without unplugging and replugging. More detailed information can be found in the Laboratory Catalogue.

8.21 Blank plate, housing, cassette

Blank plate, empty eurocassette



Blank plates:

Blank plates in the system eurocassettes fill remaining space in the desktop rack. They are comprised of 3mm thick hard aluminium with an epoxy resin powder coating, colour: light grey. Undetachable Philips head screws are mounted above and below for fastening in the rack mount or in the housing.

The height of all of the plates is 128.5mm = 3HU.

Empty eurocassettes, open version:

The eurocassettes are shipped without lateral and upper or lower covers. The front plates correspond in their design to the blank plates. The depth profiles are comprised of an extruded aluminium strand profile. The rear wall is made of 2mm aluminium and provided with a punch-out for male multipoint connectors in accordance with DIN 41612. Empty eurocassettes are always shipped with an 11-pin male and female multipoint connector with high-current contacts and a pair of guide rails.

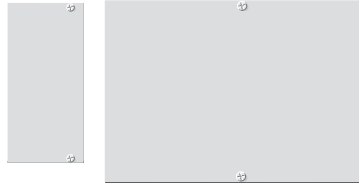
Height: 128.5mm = 3HU
Depth: 196mm

Empty eurocassettes, closed version:

Version as above, but with closed sides, upper and lower covering. The upper or lower cover is perforated.

Height: 128.5mm = 3HU
Depth: 196mm

Blank plate, empty eurocassette



Blank plates are comprised of 3mm thick hard aluminium, powder-coated in light grey on both sides (similar to RAL 7035). Special undetachable Philips screws are mounted for fastening purposes which can also be used for dismantling purposes. An earthing bolt size M5 is welded to the rear side of the blank plate. Uniform front plate height 3HU = 128.5mm.

3HU / 4HP	20,3mm wide	40-1H
3HU / 6HP	30,4mm wide	40-1G
3HU / 8HP	40,3mm wide	40-1J
3HU / 12 HP	60,9mm wide	40-1A
3HU / 18HP	91,4mm wide	40-1B
3HU / 24HP	121,9mm wide	40-1C
3HU / 36HP	182,9mm wide	40-1D
3HU / 42HP	213,3mm wide	40-1E
3HU / 48HP	243,8mm wide	40-1F
3HU / 60HP	304,8mm wide	40-1K
3HU / 96HP	487,6mm wide	40-1L



Empty eurocassettes, open version

In addition to the front plate, empty eurocassettes contain an additional 4 depth profiles comprised of an extruded aluminium stand profile, a 2 mm thick aluminium rear wall with punch-out for one male multipoint connector in accordance with DIN 41612. Empty eurocassettes are shipped with 11-pin male and female multipoint connector and a pair of guide rails. Eurocassette depth is a uniform 196 mm.

3HU / 12HP	60,9mm wide	40-2A
3HU / 18HP	91,4mm wide	40-2B
3HU / 24HP	121,9mm wide	40-2C
3HU / 36HP	182,9mm wide	40-2D
3HU / 42HP	213,3mm wide	40-2E
3HU / 48HP	243,8mm wide	40-2F

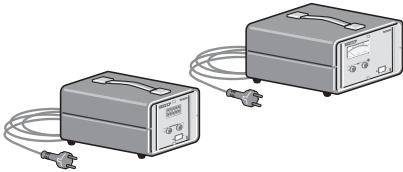
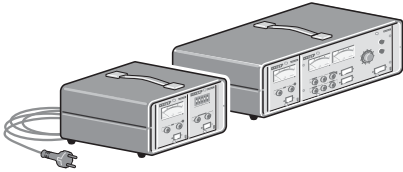


Empty eurocassettes, closed version

Closed empty eurocassettes are equipped with a closed aluminium side wall profile. The upper and lower covering is provided by a perforated aluminium sheet which is supported in removable fashion in the side wall profile.

3HU / 12HP	60,9mm wide	40-3A
3HU / 18HP	91,4mm wide	40-3B
3HU / 24HP	121,9mm wide	40-3C
2HU / 36HP	182,9mm wide	40-3D
3HU / 42HP	213,3mm wide	40-3E
3HU / 48HP	243,8mm wide	40-3F

Housing

	Technical data	Order no.
Support housing	Aluminium housing 3HU 1 connection cable, 1-phase, with Schuko plug Colour: light grey	
	with space for 24HP W = 170mm, D = 285mm, H = 150mm	30-6L
	with space for 36HP W = 230mm, D = 285mm, H = 150mm	30-6M
Support housing	Aluminium housing 3HU 1 connection cable, 1-phase, with Schuko plug Colour: light grey	
	with space for 42HP W = 260mm, D = 285mm, H = 150mm	30-6P
	with space for 84HP W = 475mm, D = 285mm, H = 150mm	30-6N
	with space for 84HP, with wiring for PE and IS testing equipment W = 475mm, D = 285mm, H = 150mm	30-6R



The aluminium shell housing enables the mobile utilisation of Elabo 3HU eurocassettes. Aluminium traverse profiles are mounted inside with M 2.5 threads at the front and the rear in 5.08mm separation grids in accordance with DIN 41494. A female multipoint connector with 11 high-current contacts serves as the insert mating connector.

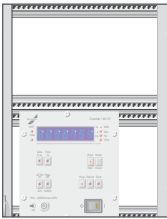

The 3HU housing can be loaded in the specified horizontal pitches (1HP = 5.08mm) with eurocassettes. The version is completely wired with 4 housing feet, carrying grip and 2.5m of connection cable with with Schuko plug.

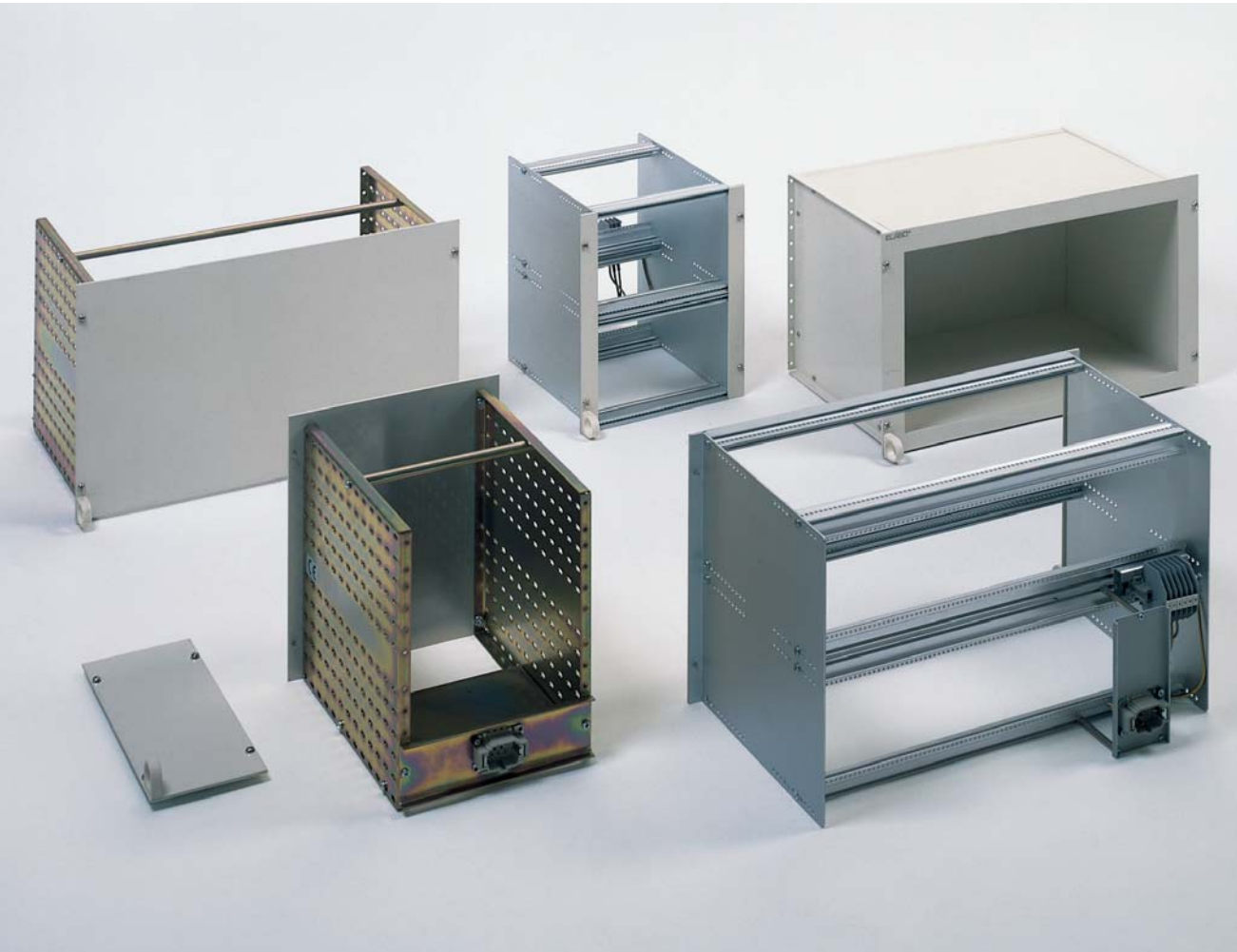
Rack mounts for 6HU racks can be found on page 157. Accessories for for eurocassettes and rack mounts for all systems can be found on page 169.

Blank plate, rack insert

Blank panel insert plate 6HU / 1WU		31-1A
Blank panel insert plate 6HU / 2WU		31-1B
Blank panel insert plate 6HU / 4WU		31-1C
Blank panel insert 6HU / 2WU		31-2B
Blank panel insert 6HU / 4WU		31-2C
Rack insert 6HU / 4WU		31-2F
Rack insert 6HU / 6WU		31-2G

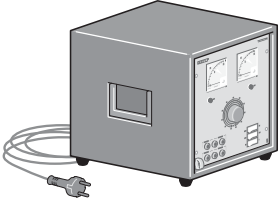
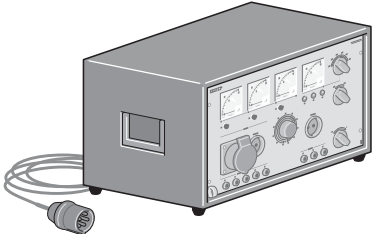
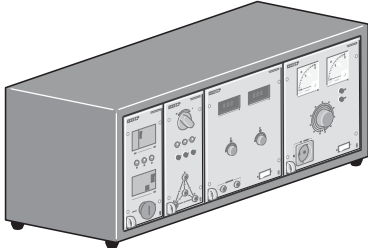
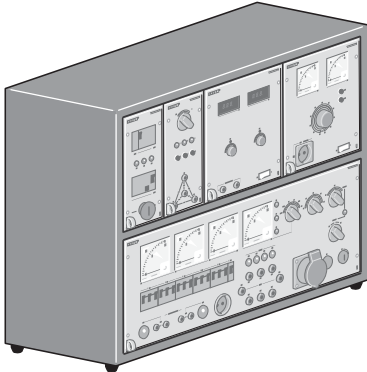
Rack mount

	Technical data	Order no.
Blank panel insert plate 6HU / 2WU	 Rack mount for holding euroboards or eurocassettes 3HU / 2 x 36HP	31-4A
Blank panel insert plate 6HU / 4WU	 Rack mount for holding euroboards or eurocassettes 3HU / 2 x 84HP	31-4B



Housing

Housings made of steel plating are powder-coated in light grey and sometimes equipped with two fold-away side handles and four robust rubber feet. The rack-and-panel-type connector is mounted on the interior side of the perforated rear wall of the housing. Version complete with guide rails and 2 m connection cable with strain relief.

	Technical Data	Order no.
Individual housing	<div></div> <div>Housing made of steel plating with space for 2WU with 2 carrying grips and 4 rubber feet Connection cable with Schuko plug W = 247mm, D = 340mm, H = 300mm</div> <div>Connection cable with Cekon plug for 3-phase alternating current W = 247mm, D = 340mm, H = 300mm</div>	<div>30-6A Z01</div> <div>30-6A Z03</div>
Individual housing	<div></div> <div>Housing made of steel plating with space for 4WU with 2 carrying grips and 4 rubber feet Connection cable with Schuko plug W = 483mm, D = 340mm, H = 300mm</div> <div>Connection cable with Cekon plug for 3-phase alternating current W = 483mm, D = 340mm, H = 300mm</div>	<div>30-6C Z01</div> <div>30-6C Z03</div>
Multiple housing	<div></div> <div>Housing made of steel plating with space for 6WU, 4 rubber feet Connection cable with Schuko plug W = 755mm, D= 315mm, H = 320mm</div> <div>Connection cable with Cekon plug for 3-phase alternating current W = 755mm, D= 315mm, H = 320mm</div>	<div>30-5A Z01</div> <div>30-5A Z03</div>
Multiple housing	<div></div> <div>Housing made of steel plating with space for 2 x 6WU, 4 rubber feet Connection cable with Schuko plug W = 755mm, D= 315mm, H = 320mm</div> <div>Connection cable with Cekon plug for 3-phase alternating current W = 755mm, D= 315mm, H = 320mm</div>	<div>30-5B Z01</div> <div>30-5B Z03</div>

8.22 Accessories

Measurement Line Holders

Lockable



Highlights

- Measurement line holder for mounting on wall or vertical profile, suitable for holding 60–80 measurement lines by means of 10 equally wide receptacle slots of $W = 5.5\text{mm}$
- The measurement lines are held by two overlapping metal elements that slide on one another and which can be moved in relation to one another
- Lockable by means of an ELABO security lock, optionally with central release capability

Scope of delivery

Measurement line holder of sheet steel, epoxy-resin powder-coated in color light gray RAL 7035. Fastening materials for mounting on wall or vertical profile.

Order number	Description
83-6N	Measurement line holder, lockable $W = 295\text{mm}$, $D = 170\text{mm}$, $H = 65.5\text{mm}$

Warning Lamps

to indicate that power is ON



Highlights

- The warning lamp indicates that power to the table is ON
- If a dangerous voltage is present, this is indicated by the lamp beyond the immediate vicinity of the table
- Thanks to LED technology, power consumption is extremely low and service life is very long
- Depending on the application, the warning lamp can be installed directly on the rack or on the vertical profiles using adapters

Order number	Description
94-2C Z611	Warning lamp, red, installed on vertical profiles, wired to power supply panel, retrofitting at cost

Alternative variants available on request.

Multifunction Plug Connectors

Configurable



Highlights

- For the common transmission of supply voltage, data networks and pneumatics
- Ideally suitable for supplying mobile experimental facilities with different supply voltages and data
- Depending on the application, up to 6 modules can be equipped
- All connection lines can be routed together in a protective tube and are therefore protected against damage
- The connection socket is in the form of a 3HE insert panel and can thus easily be integrated into existing racks

Choice of:

- Main contacts, 6-pole
- Signal contacts, 12-pole
- Compressed air
- RJ45
- 9-pole D-Sub

Accessories



Tool Sets



Highlights

- Twin-color foam inserts, which fit into the 2HU drawers of Elabo under-table cabinets and roller containers, offer optimal storage for the two-part tool sets “Mechanical” and “Universal” as well as for the one-part tool set “Electronic”
- The recesses for the tools in the black-green insert prevent damage; to save space, the tool sets can also be stacked one on top of the other if necessary
- Dimensions: W = 325mm, D = 490mm, H = 40mm
- High-quality branded tools with availability guarantee
- Clearly arranged and always readily to hand



Scope of delivery

Foam insert (1- or 2-part), complete with tools


Recommended additional products:

Under-table cabinets EcoTec, InForm or Primus One

Tool Sets

Tool set	Technical data	Order number
Electronic 	Foam insert with: 1 needle nose pliers 1 power combination pliers 180mm 1 high-leverage diagonal cutter 1 wire stripper 1 flat-bladed screwdriver 2.5mm 1 flat-bladed screwdriver 4.0mm 1 flat-bladed screwdriver 5.5mm 1 flat-bladed screwdriver 6.5mm 1 Phillips screwdriver PH 0 1 Phillips screwdriver PH 1 1 Phillips screwdriver PH 2 1 hex socket wrench with triangular handle 4.0mm 1 hex socket wrench with triangular handle 5.0mm 1 hex socket wrench with triangular handle 5.5mm 1 hex socket wrench with triangular handle 6.0mm 1 hex socket wrench with triangular handle 7.0mm 1 hex socket wrench with triangular handle 8.0mm 1 key file set, 6-part 1 precision tweezers, flat, non-glare, 130mm long	81-8R
Mechanical 	Foam insert 1 with: 1 metal hack saw 1 scribe 250mm 1 tool set, 6-part 1 pocket caliper gauge 1 nylon hammer 1 locksmith's hammer ROTBAND-PLUS 1 folding wooden ruler 2m Foam insert 2 with: 1 file brush 1 flat blunt file 8", 200 x 20mm, cut 2 1 triangular file 8", 200 x 14mm, cut 2 1 half-round blunt file 8", 200 x 20mm, cut 2 1 flat scraper 1 triangular hollow scraper 1 key file set, 6-part	81-8S

Tool Sets

<div>Universal</div> <div></div>	<div>Foam insert 1 with:</div> <div>1 metal hack saw</div> <div>1 universal pliers 10", 15x adjustable</div> <div>1 open-ended wrench, adjustable 10"</div> <div>1 open-ended wrench, adjustable 6"</div> <div>1 flat blunt file 8", 200 x 20mm, cut 2</div> <div>1 triangular file 8", 200 x 14mm, cut 2</div> <div>1 half-round blunt file 8", 200 x 20mm, cut 2</div> <div>1 locksmith's hammer ROTBAND-PLUS</div> <div>1 folding wooden ruler 2m</div> <div>Foam insert 2 with:</div> <div>1 flat-bladed screwdriver 3.0mm</div> <div>1 flat-bladed screwdriver 4.0mm</div> <div>1 flat-bladed screwdriver 6.5mm</div> <div>1 flat-bladed screwdriver 8.0mm</div> <div>1 flat-bladed screwdriver, short form, 5.5mm</div> <div>1 Phillips screwdriver PH 1</div> <div>1 Phillips screwdriver PH 2</div> <div>1 Phillips screwdriver PH 3</div> <div>1 Phillips screwdriver, short form, PH 2</div> <div>1 voltage tester 150–250V, slot 3.0mm</div> <div>1 power combination pliers 180mm</div> <div>1 high-leverage diagonal cutter 160mm</div> <div>1 needle nose pliers</div> <div>1 three-way pliers</div>	<div>81-8T</div>
<div>Compensation foam insert</div>	<div>Foam insert with recess for small parts</div> <div>provides a neat finish for under-table cabinets and</div> <div>roller containers with a useful depth of 690cm;</div> <div>W = 325mm, D = 200mm, H = 40mm</div>	<div>81-8U</div>

Air-cushioned Swivel Chair with Star Base



Highlights

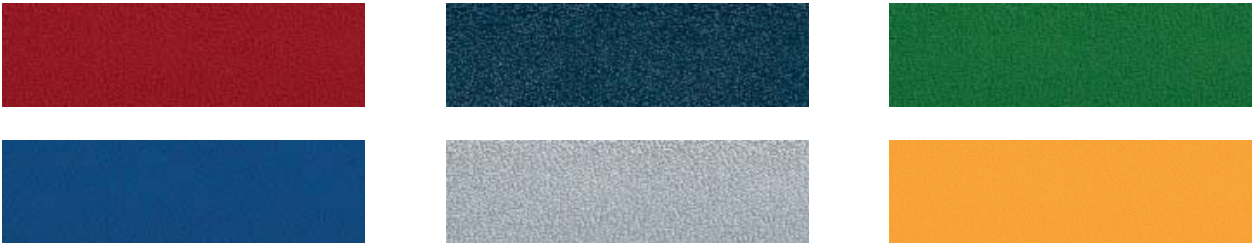
- Ergonomic, healthy sitting
- 3D rocker mechanism toward the front, to the side and to the rear
- Air-cushioned chair recommended by the Federal Association of German Back Training Specialists
- Seat base made of double-walled, structured polypropylene – a very tough and scratch-resistant material
- Rugged and resistant five-point star base; the casters are soft and designed for hard floors
- Seat height adjustable from 450 to 550mm, suitable for individuals of height 1.55m or over (according to DIN ISO 5970 and CEN); seat width 440mm and seat depth 460mm

Air-cushioned Swivel Chair with Star Base



Available colors

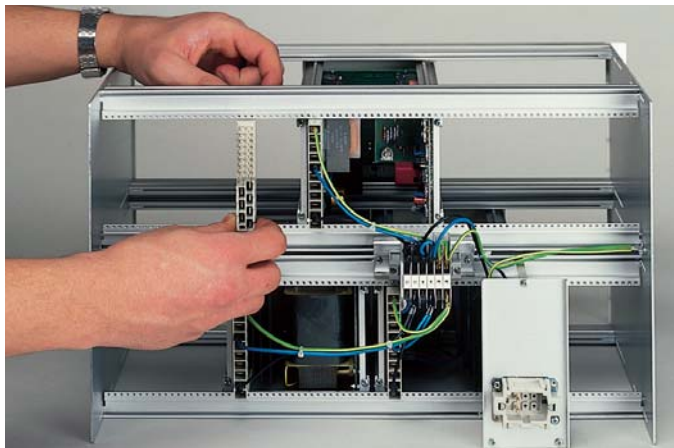
Artikel	Farbe	Bestellnummer
Air-cushioned chair	Dark red	S4-1R
Air-cushioned chair	Black gray	S4-1S
Air-cushioned chair	Dark green	S4-1T
Air-cushioned chair	Dark blue	S4-1U
Air-cushioned chair	Dolphin gray	S4-1V
Air-cushioned chair	Yellow orange	S4-1W

Please note that the actual color of the material will differ from the printed product.



Accessories for eurocassettes and rack mounts

	Technical data	Order no.
Spacer bolt	Spacer bolt for eurocassettes with a depth of 160mm. The bolt fits the female multipoint connector in the rack mount.	39-1A
Guide rails	Guide rails (2 pcs.) for 160mm deep eurocassettes.	39-1C
Guide rails	 <p>Aluminium guide rails (2 pcs.) with plastic head; for eurocassettes with a depth of 196mm. The rails can be utilised in 5.08mm section widths in the rack mount.</p>	39-1B
Female multipoint connector	Female multipoint connector with 11 high current contacts	39-1D
Male multipoint connector	Male multipoint connector with leading earth contact, for female multipoint connector 39-1D	39-1E
Female multipoint connector	Female multipoint connector with 7 high current contacts and 24 wire wrap posts	39-1F
Male multipoint connector	 <p>Male multipoint connector for female multipoint connector 39-1F, equipped with angled soldering contacts</p>	39-1G
Female multipoint connector	Female multipoint connector with 64 wire wrap posts, rows a and c loaded (DIN 41612, model C)	39-1H
Male multipoint connector	Male multipoint connector for female multipoint connector 39-1H (model C), equipped with 64 angled soldering contacts	39-1J
Female multipoint connector	Female multipoint connector with 96 wire wrap posts, rows a, b and c loaded (DIN 41612, model C)	39-1K
Male multipoint connector	Male multipoint connector for female multipoint connector 39-1K (model C), equipped with 96 angled soldering contacts	39-1L



Article number search keys

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30-5A Z01	158	34-7T	80
30-5A Z03	158	34-7T	83
30-5B Z01	158	34-8L	80
30-5B Z03	158	34-8L	87
30-6A Z01	158	34-8T	80
30-6A Z03	158	34-8T	83
30-6C Z01	158	34-xL	88
30-6C Z03	158	34-xT	84
30-6L	155	35-0D	57
30-6M	155	35-0E	57
30-6N	155	35-0F	57
30-6P	155	35-0G	57
30-6R	155	35-0H	57
31-1A	156	35-0J	57
31-1B	156	35-0K	58
31-1C	156	35-0L	58
31-2B	156	35-2A	53
31-2C	156	35-2B	53
31-2F	156	35-2C	53
31-2G	156	35-2E	53
31-4A	157	35-2F	53
31-4B	157	35-2H	53
32-0A	45	35-2J	53
32-0B	45	35-2M	54
32-0C	45	35-2N	54
32-0C Z001	45	35-2Q	70
32-0D	45	35-2S	55
32-0F	45	35-2T	65
32-1B	113	35-2U	55
32-1D	75	35-2V	55
32-1E	48	35-2W	56
32-1F	48	35-3E	53
32-1G	62	35-3F	53
32-1H	62	35-4KZ01	114
32-1J	48	35-4KZ02	114
32-1K	147	35-4KZ03	114
32-1L	62	35-4L	114
32-1M	48	35-4M	114
32-1P	48	35-4N	114
32-1Q	147	35-4P Z103-EBS	117
32-1R	48	35-4P Z103-Modul	117
32-1S	48	35-4Q Z102	117
32-1T	113	35-4R Z102	117
32-1U	147	35-4S	115
32-1U Z001	147	35-4S	116
32-1W	151	35-4S.3Z19"	116
32-1Y	151	35-4S.3ZEBS	116
32-2A	141	35-4S.3Zxxxxx	116
32-2B	141	35-5C	54
32-2C	141	35-5H	54
32-2D	141	35-6A	135
32-2H Z007	113	35-6B	135
32-5M	75	35-6C Z01	135
32-5N	75	35-6C Z02	135
32-5P	75	35-6C Z03	135
33-0A	61	35-6C Z04	135
33-0B	61	35-6G Z01	136
33-0D	48	35-6G Z02	136
33-0F	142	35-6G Z03	136
33-0G	142	35-6G Z04	136
34-7L	80	35-6G Z05	136
34-7L	87	35-6G Z06	136

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35-6H Z01	136	40-1A	154
35-6H Z02	136	40-1B	154
35-6H Z03	136	40-1B Z004	145
35-6H Z04	136	40-1C	154
35-6H Z04	137	40-1D	154
35-6H Z05	136	40-1E	154
35-6J Z01	137	40-1F	154
35-6J Z02	137	40-1G	154
35-6J Z03	137	40-1H	154
35-6J Z05	137	40-1J	154
35-6K Z01	138	40-1K	154
35-6K Z02	138	40-1L	154
35-6K Z03	138	40-2A	154
35-6L Z01	138	40-2B	154
35-6L Z02	138	40-2C	154
35-6L Z03	138	40-2D	154
35-6P	135	40-2E	154
35-6R	134	40-2F	154
35-7M	134	40-3A	154
35-G	53	40-3B	154
36-0A	64	40-3C	154
36-0B	64	40-3D	154
36-0C	64	40-3E	154
36-0D	64	40-3F	154
36-0E	61	41-1H-EBS	107
36-0F	61	41-1H-Modul	107
36-1A	66	41-1M-EBS	111
36-1C	66	41-1M-Modul	111
36-1D	66	41-1N	107
36-1E	66	41-1Q Z102-EBS	110
36-2A	67	41-1Q Z102-Modul	110
36-2B	70	41-1R Z102-EBS	110
36-2C	70	41-1R Z102-Modul	110
36-2D	70	42-0B	43
36-2E	69	42-0C	43
36-2F	69	42-0D	43
36-2G	69	42-0F	43
36-2H	69	42-0G	43
36-2K	69	42-0H	43
36-2P	126	42-0J	43
36-3A	68	42-0K	44
36-3A Z802	125	42-0L	44
36-5A	65	42-0M	44
36-5A Z102	65	42-0N	44
37-2L	123	42-0P	44
37-3B	120	42-0Q	44
37-3C	120	42-0V	44
37-3G	123	42-0W	44
39-1A	169	42-1F	111
39-1B	169	42-1R.3Z601	118
39-1C	169	42-1S	118
39-1D	169	42-1S Z41-1N	107
39-1E	169	42-1T	118
39-1F	169	42-1U	118
39-1G	169	42-1U Z41-1N	107
39-1H	169	42-2F	140
39-1J	169	42-2G	140
39-1K	169	42-2H	140
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		42-2P	118
		42-2R	140
		43-1F	111

Article number search keys

43-1R	128	45-7R	80	80		N	
43-1R	129	45-8G	80	81-2X Z01	8	N2-1A	82
43-1T	130	45-8G	85	81-2X Z02	8	N2-1E	95
43-1V	130	45-8R	80	81-8R	165	N2-1L	95
44-1B	47	45-xR	82	81-8S	165	N2-5A	82
44-1D	51	45-xR.3	81	81-8T	166	N2-5A	103
44-1E	51	46-1A	150	81-8U	166	N2-5D	103
44-1F	51	46-1D	147	83-5B ZBL	81	N2-5G	103
44-1G	51	46-1F	149	83-5B ZBL	83	N2-5N	103
44-1J	45	46-1G	149	83-5B ZBL	87	N2-5R	108
44-1K	47	46-1H	150	83-5B ZRT	81	N2-7A	103
44-1K ZF00	47	46-1K	150	83-5B ZRT	83	N2-7B	103
44-1L	47	46-1M	150	83-5B ZRT	87	N2-7D	103
44-1L Z817	47	46-1R.3Z102	108	83-6N	160	N2-7E	103
44-1L ZC00	47	46-1R.3Z102	109	90		N3-1A	105
44-1L ZD00	47	46-7A	144	90-3K	112	N3-1K Z05M	105
44-1L ZG00	47	46-7B	144	92-5K	112	N3-1K Z07,5M	105
44-1L ZU00	47	46-7C	144	92-5P	112	N3-1K Z10M	105
44-1M	51	46-7D	144	94-2A	120	N3-1K Z12M	105
44-1P	52	46-7E	144	94-2C	120	N3-1K Z15M	105
44-1R	64	46-7F	144	94-2C Z611	161		
44-1W	47	46-7G	144	94-2D Z001	120		
44-1X	60	46-7H	144	A			
44-2C	60	46-7J	145	A3- 5S	82		
44-2C Z001	60	46-7K	145	A3-1R.3	128		
44-2D	145	46-7L	145	A3-6T	128		
44-2E	145	46-7M	144	A3-8U.3Z102	108		
44-4B	47	46-7N	145	A3-8U.3Z102	109		
44-4C	47	46-7P	145	K			
44-4D	47	46-7Q	145	K0-7	36		
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44-4F	50	46-7S	146	K1-xx	10		
44-4K	50	46-7T	146	K2-1A	12		
44-4L	50	46-7V	146	K2-1C	12		
44-4M	50	48-1D Z01	132	K2-1E	12		
44-4N	50	48-1D Z02	132	K2-1F	12		
44-4P	50	48-1G	132	K2-1J	12		
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45-1B	73	48-5B	133	K2-1S	12		
45-1G	73	48-5C	133	K2-4A	12		
45-1H	73	48-5D	133	K2-4C	12		
45-2J	73	48-5E	133	K2-4E	12		
45-2M	73	48-5H	133	K2-4F	12		
45-2S	74	48-5J	133	K2-4J	12		
45-2T	74	48-5K	133	K2-4K	12		
45-5F	77	48-5L	133	K2-4R	12		
45-5G	77	48-5M	133	K2-4S	12		
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45-5U	77			K9-4A	19		
45-5U Z801	77			K9-4E	25		
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45-6G	80			K9-4G	25		
45-6G	85			K9-9K	16		
45-6R	80			K9-9M	16		
45-7G	80						
45-7G	85						

Working environments for inventive people.



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