





## Motor Repair Electrical Engineering Maintenance



### ■ The HV-Class Pure high-voltage



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## The HV-Class

### GLP1-g HV | High-Voltage Tester AC/DC up to 50KV



#### Highlights

- very well readable color graphic display
- innovative handy entry via rotary button
- structured menu and practical functioning buttons
- multilingual user software
- 5 presets
- large result storage for a subsequent data transfer
- high-voltage test up to 50KV AC
- high-voltage test up to 6KV DC with lowest residual ripple
- electronic high-voltage setting
- high-voltage with ramp up/down time
- three HV-modes: manual, automatic with time lapse and burning
- voltage check and cable break monitoring (4-wire-technology)
- manual high-voltage setting via rotary button
- illuminated ring at the rotary button shows the voltage level
- worldwide voltage supply 110V...250V / 47...63Hz
- acoustical and visual status messages
- password protection
- digital I/O interface and analog actual value outputs
- interfaces for printer, remote control or result query
- integration into production lines with PLC / PC remote control
- switch-on sequence according to VDE 0104
- two-circuit safety inputs, two-hand start
- safety circuits with restraint-guided safety relays
- PrintCom-software to save and print test results on a PC
- designs: tabletop unit, box unit, mobile caddy, 19"-installation
- optimum OEM-preconditions

GLP1-g HV testers are designed for testing the electrical insulating property and electric strength (clearances and leakage paths) at electrical parts and components.

These testers are perfectly suited for a fast, uncomplicated test during the production. This can either be done manually with safety pistols or automatically. The testers allow programmed time processes, several other monitoring functions or locating insulation faults due to "burning".

The high-voltage is generated electronically. The manual voltage setting is done via the rotary button at the front. The automatic voltage setting with ramp profiles is done electronically.





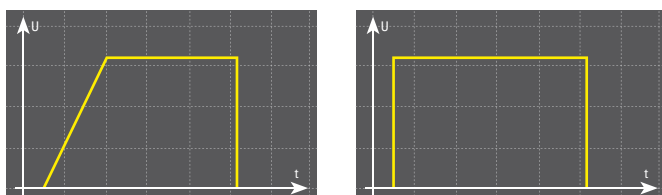


These testers are not only designed for a standard test voltage for routine tests but also provide a sufficient level of test voltage for type tests and material analysis.

Matching your applications we offer a great variety of different test pistols. For the tester's use in automatic production lines or test setups we also offer the corresponding high-voltage cables and contactings, of course.

The integrated interfaces allow printing test results. With our Windows® software PrintCom you can save results on a PC or continue to process them.

Alternatively the interfaces also allow a remote control of the tester via a PC, a PLC or LabView®. Digital I/O channels are also available. Thus the testers can be easily integrated in automatic production lines.



Test with or without voltage ramp profile



GLP1-g HV with 12KV AC



GLP1-g HV with 15KV AC



GLP1-g HV with 20KV AC



GLP1-g HV with 50KV AC



For general technical data of the testers please look at page 64

# The HV-Class

## GLP2-ce HV | High-Voltage Testers 1KV - 100KV

RS232

CAN

Ethernet

USB

LabView®

Profibus

PC

PLC

I/O

Analog

Print



### Highlights

- high-voltage testers AC
- high-voltage testers AC and DC
- high-voltage testers DC
- extremely low residual ripple at the DC high-voltage
- insulation resistances at DC high-voltage up to 10TΩ
- high-voltage with up / down ramp
- high-voltage with voltage cycle profile
- step voltage measurement
- fast switch-off at disruptive breakdown
- display of the measuring values in a graphic
- three HV-modes: manual, automatic with time lapse and burning
- voltage check and cable break monitoring (4-wire-technology) respectively
- minimum current monitoring
- voltage-free contacting with special test pistols
- zero voltage switch-on to protect the test object
- manual high-voltage setting via the rotary button
- automatic high-voltage setting via the actuator
- automatic fully electronic high-voltage setting
- electronic high-voltage control with very fast ramps
- long-term measurement for hours, days and weeks
- storage of the single long-term values
- high-voltage matrix to switch over between different test points
- matrix from 1KV to 50KV AC
- two-circuit safety inputs, two-hand start
- safety circuits with restraint-guided safety relay
- VDE 0104 compliant start-up sequence

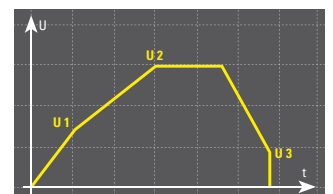
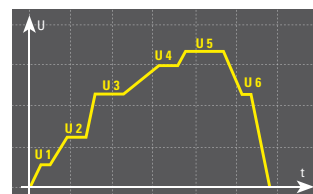
The GLP2-ce series offers the widest range of high-voltage testers that is currently in the market, regardless whether AC, AC with rectifier, DC with very low output ripple or AC plus DC are to be combined in one tester.

The high-voltage testers are designed for testing the electrical insulating property and electric strength (clearance and leakage paths) of all kinds of electrical parts and components.

The testers are perfectly suited for fast and uncomplicated tests in production and laboratories. Tests can be performed either manually by means of safety pistols or automatically.

### The testers can be operated in 3 modes.

- manual test without time lapse. A switch-off only occurs in case of overcurrent, which for example is generated by a disruptive breakdown.
- test with programmed time lapses and additional different monitoring functions
- location of insulating failures due to "burning"



high-voltage test with voltage profiles

### There are three types of high-voltage settings

- **manual voltage setting**  
The manual voltage is set with the rotary button at the front. This rotary button directly affects the adjusting transformer within the tester. In the automatic mode the voltage is set manually to the requested value.
- **automatic voltage setting with actuator**  
In the manual mode the voltage is set with the rotary button at the front. The rotary button affects an electronic which adjusts the adjusting transformer via an actuator. In the automatic mode the tester automatically sets the voltage to the requested value or automatically generates a ramp profile independently from the rotary button.
- **fully electronic voltage source**  
In the manual mode the voltage is set with the rotary button at the front. The rotary button directly sets the electronic voltage source. In the automatic mode the tester automatically sets the voltage to the requested value or automatically generates a ramp profile independently from the rotary button.

Depending on the ordered tester model, one of the three voltage settings is installed.

Compliant to your application, we offer several different test pistols. For the tester's use in laboratories, automatic production lines or test setups we also offer the matching high-voltage cables and contactings, of course.

The safest way to perform a high-voltage test is in a test cage. We offer test cages for different tasks in different designs and sizes. In case our standard cages do not cover your requirement we are pleased to design a test cage especially for you.



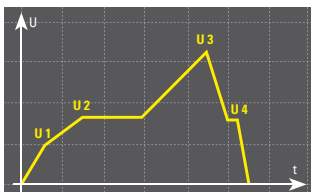
GLP2-e HV with 20KV AC



GLP2-e HV with 50KV AC



GLP2-e HV with 100KV AC



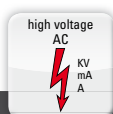
For general technical data of the testers please look at page 64

# The HV-Class

## GLP1-g | Technical Data

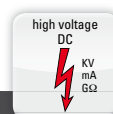


GLP1-g



### High-voltage testers AC

high-voltage AC	3000V...50000V – depending on the model
voltage setting	fully electronically
voltage ramp / profile	yes
test current	3mA...6A – depending on the model
safety current limitation	only at models up to max. 3mA
upper current limit	adjustable – range depends on the model
GO- / NO GO-evaluation	automatically
test time	adjustable from 0.1s...100h
manual operation	yes – without time control
automatic operation	yes – with automatic time lapse
burning	yes – with electronic control



### High-voltage testers DC

test voltage DC	1000V...6000V – depending on the model
voltage setting	fully electronically
residual ripple	< 0.2...1% – depending on the model
potential-free	no
test current	3mA...20mA – depending on the model
safety current limitation	only for models up to max. 10mA
voltage ramp	yes – electronically
upper current limit	adjustable – range depends on model
lower resistance limit	adjustable from 500KΩ...490MΩ
GO- / NO GO-evaluation	automatically
test time	adjustable from 0.1s...1h

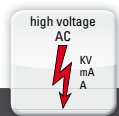




## GLP2-ce | Technical Data

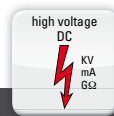


GLP2-ce



### High-voltage testers AC

test voltage AC	3000V...100000V – depending on the model
voltage setting	manually, , actuator, fully electronically
voltage ramp / profile	yes
test current	3mA...100mA – depending on the model
current measuring	total current, active current, cos_
measuring	effective value, peak value
safety current limitation	only models up to max. 3mA
upper current limit	adjustable –
	range depending on the model
GO-/NO GO-evaluation	automatically
test time	adjustable from 0.1s...1week
manual operation	yes – without time control
automatic operation	yes – with automatic time lapse
burning	yes – depending on the model



### High-voltage testers DC

test voltage DC	0...1000V; 50000V – depending on the model
voltage setting	fully-electronically
residual ripple	< 0,05...1% – depending on the model
test current	1mA...500mA – depending on the model
safety current limitation	all models up to max. 12mA!
voltage ramp	yes – electronically
upper current limit	adjustable –
	range depending on the model
insulation resistance measuring	yes
resistance measuring range	potential-free – 100KΩ...500MΩ
resistance measuring range	not potential-free – 100KΩ...1GΩ
lower resistance limit	adjustable from 100KΩ...990MΩ
GO-/ NO GO-evaluation	automatically
test time	adjustable from 0.1s...1week









## Motor Repair Electrical Engineering Maintenance



### ■ Software & Accessories



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## Software & Accessories

### PrintCom | Software for MotorAnalyzer, GLP1 & GLP2



#### Highlights

- importing test results during the test and from the tester's intermediate storage
- storage of test results in the Excel® format during the production
- print of test results in Excel® via protocol samples
- several ready-made protocol samples included in the delivery extent
- freely configurable Excel® protocol samples to print test results
- different storage modes (single or collection results)
- OpenOffice®-/MS Excel® compatible software
- Windows 7® compliant

#### Archive and print test results in Excel®

PrintCom – the quickest and most comfortable way of protocolling and storing test results of MotorAnalyzer, GLP1- and GLP2-high-voltage testers.

#### Importing

The software lists imported test results well-arranged on your computer screen.

#### Storing

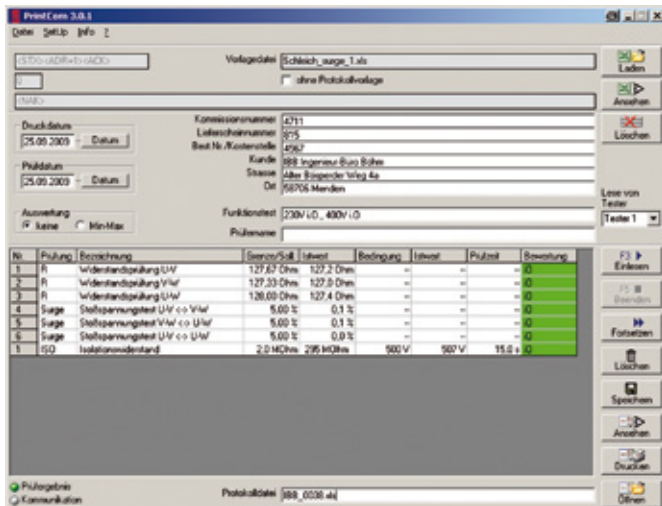
The test results are user-friendly stored in the Excel® format. The basis are Excel® protocol samples preconfigured by us.

PrintCom offers you to adapt the protocol to you requirements by adding additional information or by means of an individual protocol layout, for example with your logo. In the delivery extent you will already find a large variety of easily adaptable samples. Of course, you can also create completely new protocols.

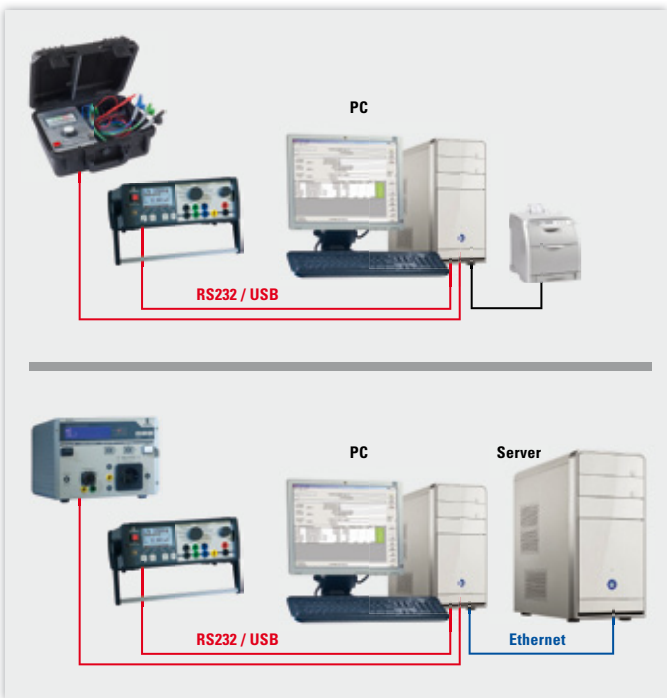
#### Printing

Owing to the integration of the test results in an Excel® file you are able to print your test results directly. Thus you can impressively document the tested quality to your customer.





## Connecting versions



## Test Protocol



An der Schloose 11  
DE-56675 Hemer  
Tel 02372 94980  
Email info@schleich.com  
www.schleich.com

**Kommissionsnummer** 4711  
**Lieferscheinnummer** 815  
**Bestell-Nr. / Kostenstelle** 4567  
**Kunde** IBS Ingenieur-Büro-Böhm  
**Straße** Alter Bösperder Weg 4a  
**Ort** 56706 Mendern  
**geprüft am** 25.12.2011  
**Gesamtergebnis** I.O.

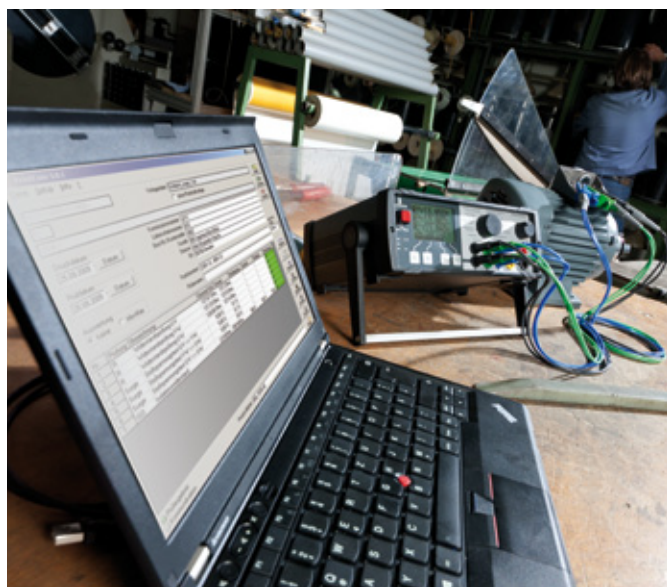
### Einzelergebnisse

Schritt	Methode	Prüfschrittbezeichnung	Grenzwert	Istwert	Prüfbedingung	Istwert	Prüfzeit	I.O.
1	PE	Schutzleiter an Schaltkasten links	0,2 Ohm	0,08 Ohm	90A	10,1A	1 s	OK
2	PE	Schutzleiter an Schaltkasten mitte	0,2 Ohm	0,07 Ohm	90A	10,1A	1 s	OK
3	PE	Schutzleiter an Schaltkasten rechts	0,2 Ohm	0,11 Ohm	90A	10,1A	1 s	OK
4	iso	Isolationswiderstand L1 - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
5	iso	Isolationswiderstand L2 - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
6	iso	Isolationswiderstand L3 - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
7	iso	Isolationswiderstand N - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
8	HF	Hochspannung L1 - PE	10mA	0,3mA	1500V	1523V	1 s	OK
9	HF	Hochspannung L2 - PE	10mA	0,3mA	1500V	1519V	1 s	OK
10	HF	Hochspannung L3 - PE	10mA	0,4mA	1500V	1510V	1 s	OK
11	HF	Hochspannung N - PE	10mA	0,3mA	1500V	1520V	1 s	OK
12	PE	Schutzleiterwiderstand Motor M1	0,2 Ohm	0,05 Ohm	90A	10,2A	1 s	OK
13	iso	Isolationswiderstand Motor M1: L1 - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
14	iso	Isolationswiderstand Motor M1: L2 - PE	2 MOhm	30 MOhm	500V	500V	1 s	OK
15	iso	Isolationswiderstand Motor M1: L3 - PE	2 MOhm	30 MOhm	500V	510V	1 s	OK
16	iso	Isolationswiderstand Motor M1: N - PE	2 MOhm	30 MOhm	500V	508V	1 s	OK
17	HF	Hochspannung Motor M1: L1 - PE	10mA	0,2mA	1500V	1530V	1 s	OK
18	HF	Hochspannung Motor M1: L2 - PE	10mA	0,2mA	1500V	1519V	1 s	OK
19	HF	Hochspannung Motor M1: L3 - PE	10mA	0,2mA	1500V	1519V	1 s	OK
20	HF	Hochspannung Motor M1: N - PE	10mA	0,3mA	1500V	1510V	1 s	OK
21	PE	Schutzleiterwiderstand Klemme X1:4 - PE	0,2 Ohm	0,05 Ohm	90A	10,2A	1 s	OK
22	PE	Schutzleiterwiderstand Klemme X1:5 - PE	0,2 Ohm	0,06 Ohm	90A	10,1A	1 s	OK

Die gewissermaßen Durchführung aller Prüfungen wird hiermit bestätigt.

*Stefan Mattern*      Offizieller Mitarbeiter  
Unterschrift      Prüfername

Geprüft mit einem Prüfgerät von SCHLEICH GmbH      Erweitert von PrintCom - Copyright SCHLEICH GmbH  
25.12.2011      Seite 1 von 1



PrintCom with MotorAnalyzer

### Lead Contactings



#### Highlights

- various standard contactings
- mechanical solid and persistent design
- four-wire contactings – Kelvin clamps
- customized solutions based on our standard solutions
- fast exchange of consumables

A typical task is the contacting of stripped line ends because test objects are often only equipped with line ends without a plug connection.

For contacting free line ends we can provide a wide range of clamp devices, for example for the application of stators' winding connections. They can be equipped in two- as well as four-wire-technology.

When low resistances are to be exactly measured Kelvin clamps are used for the four-wire-measuring. The four-wire-technology compensates the transition resistances within the clamping points.

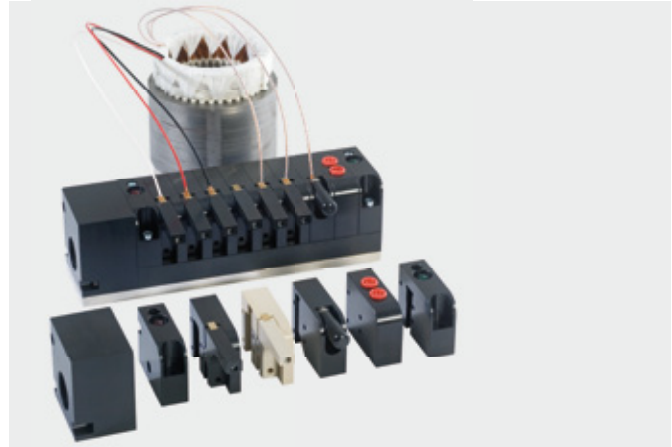
Our Kelvin clamps' special design guarantees high contact reliability, solid clamping, and a low wear and tear in the rough testing operation. Less exacting contactings are operated with our multi-purpose clamping levers.

The contactings can be supplied as loose single contacting or integrated within a clamp block. The clamp blocks can either be assembled in a fixed position within the test cover or can be moved flexibly within the testing space to always have the optimum position for being clamped to the lines.

Examples for Kelvin clamps, clamping levers, and modular contact blocks



clamp block in modular design



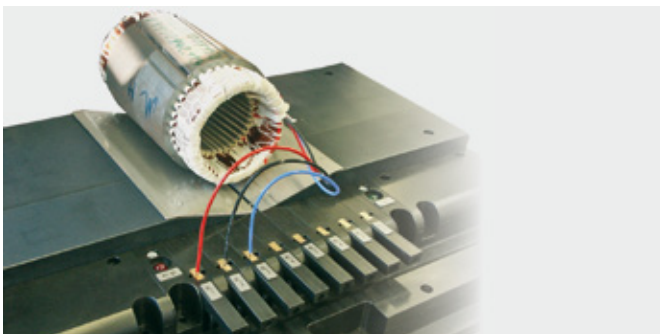
clamp block in modular design



Kelvin clamps in small-, medium-, and large-sized design



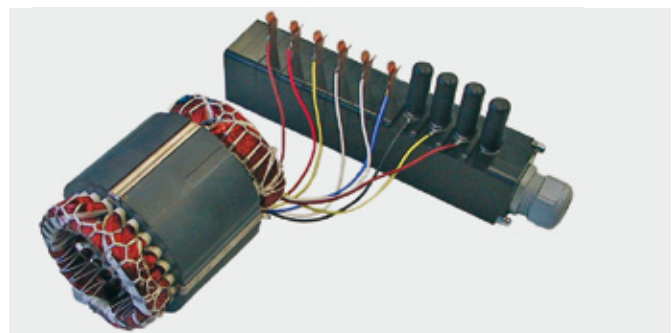
8-times Kelvin clamps block



Kelvin contacting in one test cage with prism



11-times clamping lever block



6-times four-wire contacting guide and 4-times clamping lever block



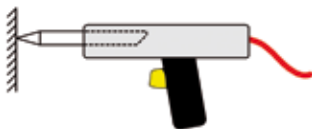
### Test Pistols | Test Probes | Safety Accessories



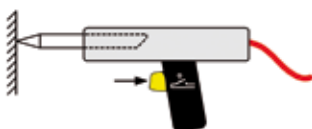
#### High-voltage

Safety pistols are required for a safe manual high-voltage test. Depending on the test voltage level there are different models.

To achieve a particular high usability we provide test pistols with an integrated start button. Here the high-voltage test only starts after activating the button.



high-voltage test pistol without start button



high-voltage test pistol with start button



high-voltage test pistol with start through mechanical press button



high-voltage test pistol up to 8KV AC/10KV DC



high-voltage test pistol up to 12KV AC/15KV DC



adaptor between test object and test pistol



high-voltage test probe up to 1500V safety current limited



high-voltage connection lead

### Warning- result lights

Warning lights show whether the test object is under voltage or voltage-free.

Result lights show the total test result of the test process. Customized special displays, which can also be controlled by the tester, are also within our product range.



warning or result light, horizontal



warning or result light, vertical

### Safety

Due to safety reasons a two-hand start is used at the high-voltage test without protection cover and safety test pistols. When operating test stations the corresponding standards have to be considered.



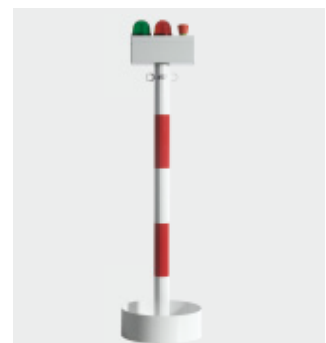
two-hand start



two-hand start support with warning light and emergency stop



safety barrier with warning message



barrier post with warning light and emergency stop

## Software & Accessories

### Rolling Tables



#### Highlights

- solid design made of aluminum profiles
- continuously height adjustable table plates and bottoms
- horizontal or diagonal table plate designs
- diagonal table plate with horizontal front e.g. to deposit a keyboard
- continuously height adjustable drawers with full extension
- continuously height adjustable holder for test probe
- continuously height adjustable windings for measuring leads
- integrated LED-warning light in the side rails
- delivery of assembled, directly usable rolling tables
- rolling tables and carriages of the company hera

Rolling tables facilitate the transport of testers that can also be combined with a test cover between the test objects. A high level usability is achieved by the large, high-resistant and lockable rubber guide rollers as well as an optional push handle at the table's front.

The rolling tables can additionally be equipped with self-closing drawer runners, in which e.g. adaptors, tools, or documentations can be stored.



rolling table with horizontal work plate and push handle

rolling table with horizontal work plate, push handle and a LED warning light integrated in the bars





rolling table with diagonal work plate and integrated high-voltage test



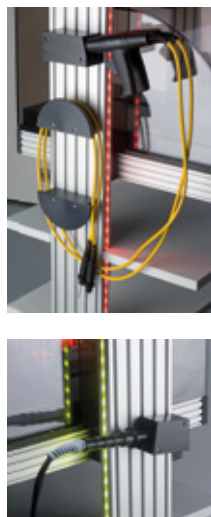
rolling table with diagonal work plate and drawer element



rolling table with diagonal work plate, drawer element and cable holders



rolling table with integrated test cover, push handle, LED-warning light in the bars and holders for cables, test pistols, and test probes



rolling table with integrated test cover, drawer element and cable holders



# Software & Accessories

## Black Boxes



black box for PE



black box for PE | IR | HV



black box HV for test pistols



calibration resistor in four-wire-technology



high-current calibration resistor in four-wire-technology



calibration resistor high-voltage proof

### Black Boxes

For a regular daily check of your tester a black box is used that is connected to the tester. It is tested whether the emerging measuring values correspond to the values in the black box. If this is not the case the tester is locked. The tester can only be used again when a black box test with a proper result is performed. As we only supply digital evaluating testers this test is normally not performed with a "pass-fail-black box". We only use one single black box and evaluate the emerging measuring values within tight tolerance limits.

Each black box consists of one connection possibility to the tester and one or several resistors and/or inductances. They can either be configured for one test method or for a combination of several test methods.

Each black box is delivered with the information on the resistance values and a calibration certificate so that the operator can set the tests properly.

### Calibration resistors

For the calibration of testers precise calibration resistors are required as well. They make sure that certain test currents flow at different test methods and voltages.

The calibration resistors have a high precision as well as a high temperature and long-term stability. In order to conduct the heat that occurs at high currents or long measurements, reliably, we supply all calibration resistors for high test currents in special heat sink enclosures. In addition to these characteristics the resistors are designed low capacitively and low inductively.

All resistors for high test currents and low test voltages are designed in four-wire-technology.

All resistors are supplied with the information on the resistance values in the calibration certificate so that the corresponding conversions of the measuring values considering the resistance value are possible.