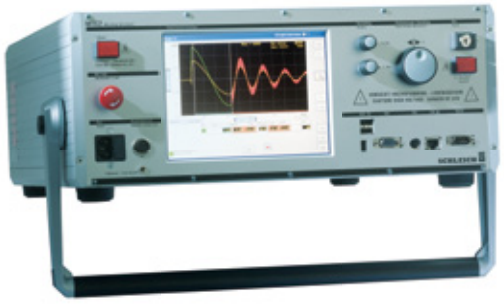

Hochspannungs-Einstellung
High Voltage Adjustment
Vorsicht!
Caution!
VORSICHT! HOCHSPANNUNG – LEBENSGEFAHR
CAUTION! HIGH VOLTAGE · DANGER OF LIFE
USB
VGA
PS2
LAN
RS232
SCHLEICH

Motor Repair
Electrical Engineering
Maintenance



The MTC2-Class
Surge voltage par excellence

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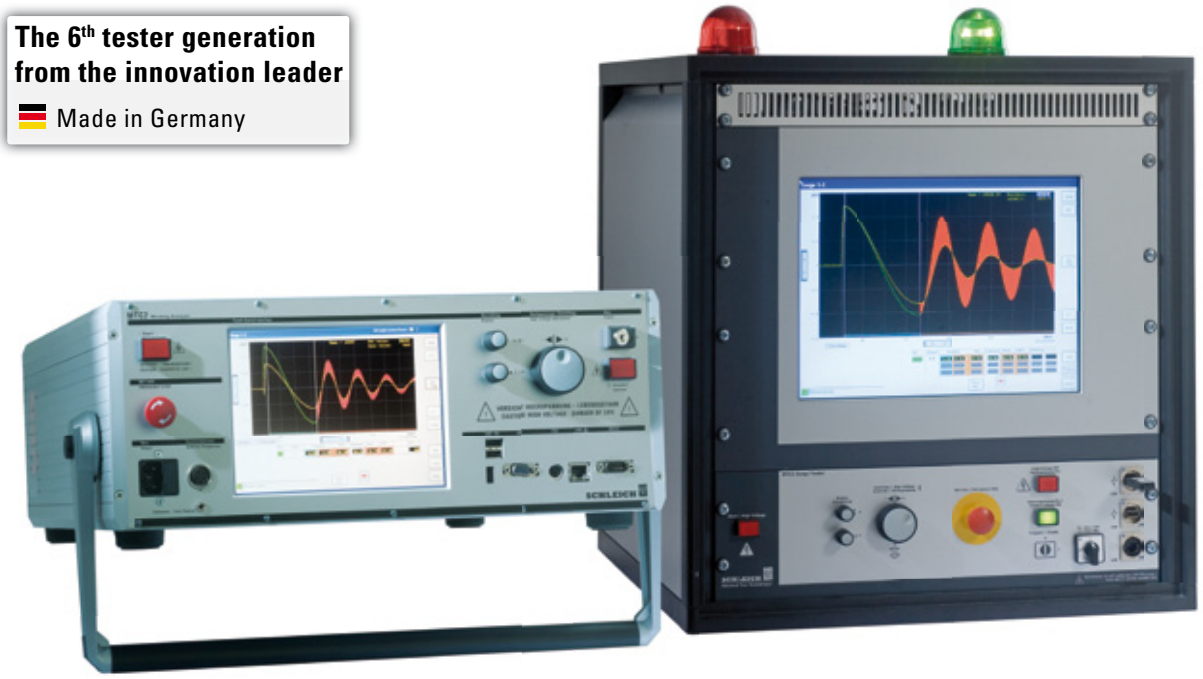
MTC2 | All-purpose winding tester

The 6th tester generation from the innovation leader

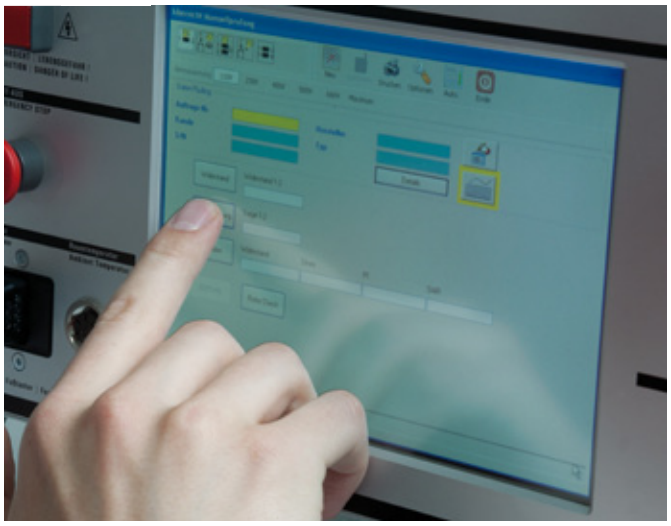
Made in Germany



RS232
USB
Ethernet
I/O
PLC
Print

Highlights

- digital surge-voltage test with patented evaluation
- surge-voltage with 100nF/200nF and up to 1500A surge-current (depending on the tester)
- partial discharge analysis for a standard-compliant detection of special insulating faults
- resistance measuring in four-wire technology with temperature compensation
- insulation resistance test with automatic PI-measuring
- inductivity test | LCR-inductivity measuring bridge
- fully-automatic switchover between the different test methods
- four winding connections (windings + star point) plus frame connection
- optimized for the repair operation
- automatically running test with automated GO-/NO GO-comparison
- integrated armature test assistant, automatic armature adaptor and armature booster
- remote controlling an AC-high-voltage tester and scanning the test results
- integrated PC with Windows®
- simple operation via touch screen or mouse and keyboard
- option for remote maintenance and remote calibration
- data base for numerous test programs and test results
- storing test results including motor type plate data and surge graphs
- meets the IEEE requirements



intuitional operation via large touch display

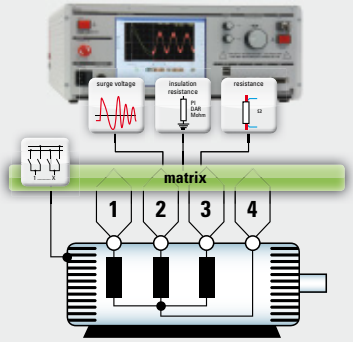
Testers of the MTC2-Class test windings at for example generators, three-phase stators, one-phase stators, transformers, armatures, and motors.

They feature a manual as well as an automatic operating mode. The manual mode can be ideally used for repair and maintenance tests. For these tests the manual auto test function does a very good job. The auto test supports the inexperienced operator in making a clear statement regarding the motor's fault.

In the automatic mode the complete test processes run independently. The test programs are prepared manually for each type to be tested in a very simply way. Thus the MTC2 can also be used for fully-automatic production tests.

Unique on the market:
The automatic test method switchover up to 50000V

Connecting scheme of the four-wire measuring leads with a connected motor

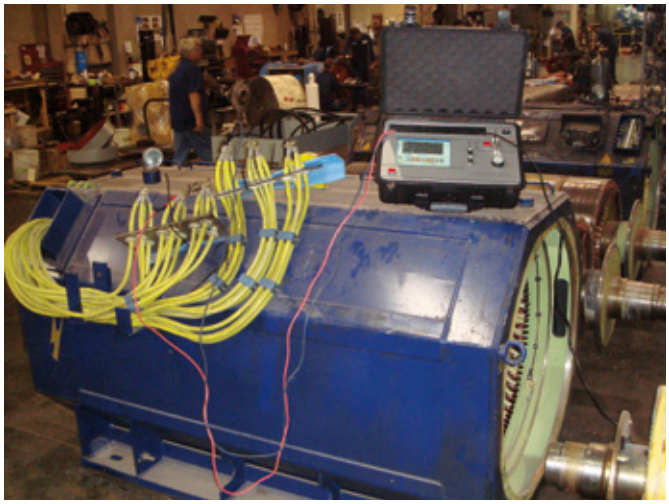


There are the following measuring paths:
1 <-> 2 · 1 <-> 3 · 2 <-> 3
1 <-> 4 · 2 <-> 4 · 3 <-> 4
The test leads are switched to the different connections based on a relay matrix in the tester.

Depending on the tester's design the MTC2 features up to four connections for connecting the winding to the tester. Each MTC2-design also provides an additional connection for connecting the test object's cabinet.

The integrated, unique automatic test method and measuring lead switchover offers the comfort of switching the test methods to the different test leads. At a tester with four connections and a test object with accessible star point connection you are able to measure each phase individually. This increases the test's sensitivity compared to competitive products to a multiple times.

Railway drive with MTC2



MTC2-portable on a wind plant capacitor

Optional extensions

Armature booster

For the armature test an additional armature booster is available for MTC2-testers. This is necessary for the test at larger, low-inductive DC-armatures.

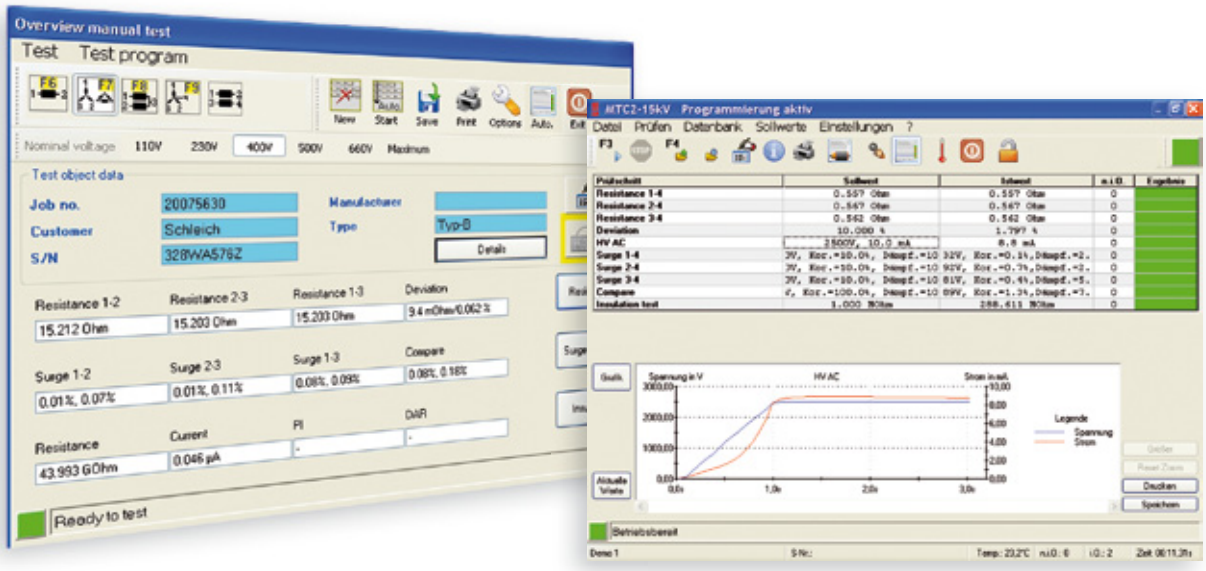
For detailed information please look at page 40

Squirrel Cage

Optimum test procedure for testing and locating faults at squirrel-cage motors, armatures, stators, and capacitors. This test procedure operates in combination with the surge voltage tester MTC2.

For detailed information please look at page 41

MTC2 | Testing and documentation



Testing in manual mode

In manual mode, the operator can start the individual test methods (surge voltage, insulation resistance, resistance, high voltage AC, ...) in any desired order. For every test method, the respective user-optimized picture appears. At the MTC2, no further inputs or parameterizations are necessary for testing.

Before starting the individual manual tests, the operator selects the type of test object. The MTC2 then automatically adjusts itself to the respective test configuration.

The following selection is possible:

- single coil
- single-phase winding with three leads
- single-phase winding with four leads
- winding with star or delta connection and three leads
- winding with star connection and conducted star point with four connections

Depending on the test object, results are collected for every test method at the individual connections of the test object. The MTC2 automatically collects the test results in a result overview.

For performing the manual tests, the MTC2 offers two different procedures:

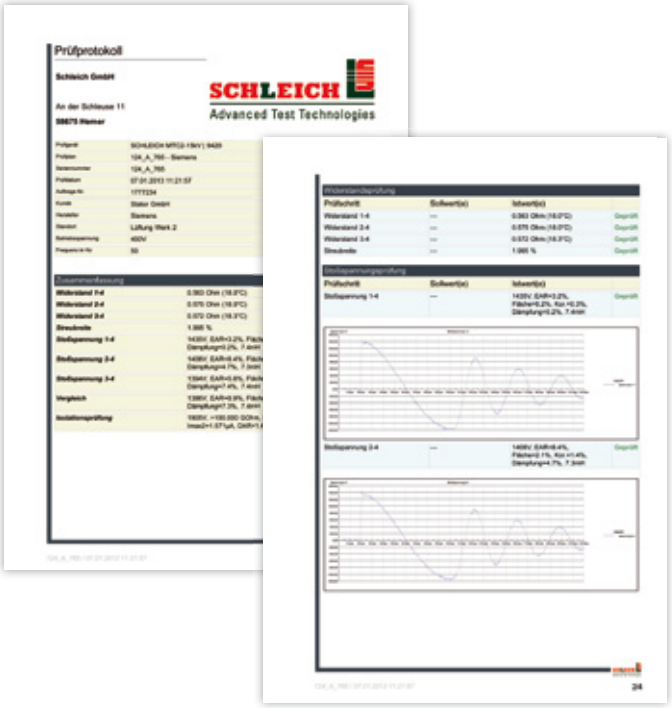
1. For collecting the test results, you can conveniently use the unique autotest. In auto. test mode, the MTC2 automatically performs all integrated test methods. The MTC2 automatically calculates the level of the test voltage with the nominal voltage of the test object, which has been entered before. This procedure is ideally suited for unskilled operators.

2. The operator performs the individual tests himself and collects the test results. After the tests have been completed, the operator can also use the built-in automatic analysis .

In addition to the collected test results, entering various label data is possible. You can configure the MTC2 as desired so that the tester stores exactly the label data you need. Up to 30 different label data can be defined.

As soon as all test results and the label data are complete, you can store the data in the Access®-database integrated in the tester. The data can either be printed right away or later. If you want to print later, the test results can be found in the database fast and conveniently. As search key, you can use various label data, the motor definition and the serial number of the motor.

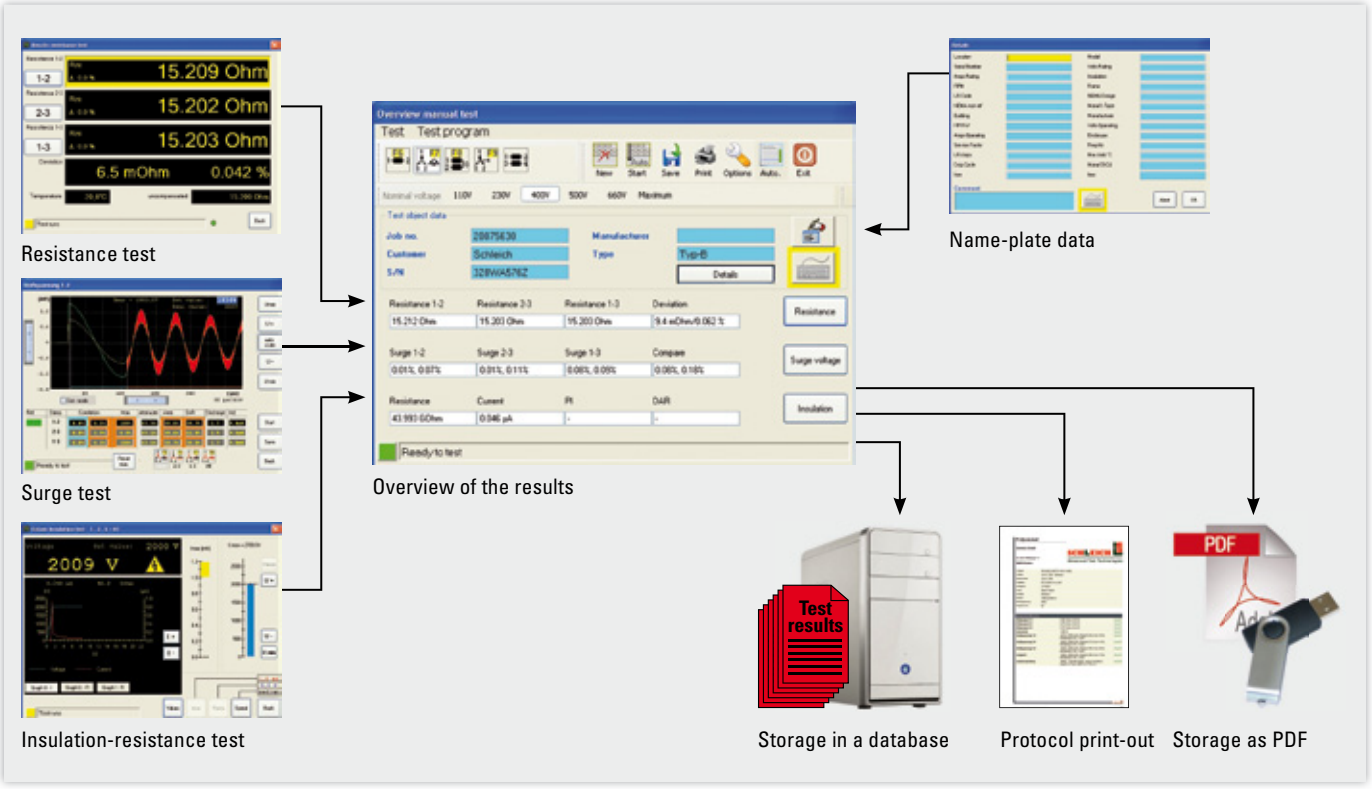
For the print-out, a predefined test protocol is used. Your company data and your logo can be integrated in the head of the protocol conveniently. The printing is carried out in pdf format. By this, you can store the test protocol on mobile storage devices (e.g. USB sticks). The pdf file can then be imported and directly sent to your customer via email.



Typical repair process for a motor

When you receive a motor for maintenance, you start with an inspection during which you store all results together with the label data. Based on of the test results, the operator can see, whether the motor is defective or not. The defective motor is taken apart. In this condition, further tests are possible. These test results are also stored in the database. Now, you rewind the motor. To be sure, you should check the new winding with the MTC2 before impregnating. If required, you can store these test results in the database, as well. If the winding is OK, it is impregnated. If desired, the completed stator can again be tested and the test results can be stored. Now, the motor is put together again. You can perform a final check and store the results.

The database of the MTC2 now contains test results from various steps. When searching for this respective motor, the MTC2 will show you that you have collected data in various stages. You can either print all data or select exactly the data you need. Most of your customers will only need a protocol of the entry and exit control. The MTC2 is the perfect tool for documenting the quality of your service to your customer.



MTC2 | Armature Booster

For the armature test an additional armature booster is available for MTC2-testers. This is necessary for the test at larger, low-inductive DC-armatures.

The evaluation is performed fully-automatically via the patented evaluation developed by SCHLEICH.

Assembly and connections

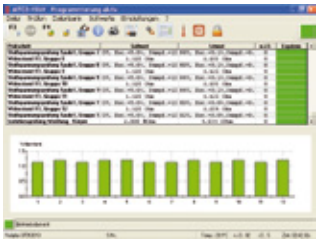
The armature booster is connected to the MTC2's measuring leads. At the booster's output there are two solid test probes with integrated start button available. In addition a warning light shows whether the clamps are voltage-free and an acoustic signal indicates whether the test is GO or NO GO.

Functioning

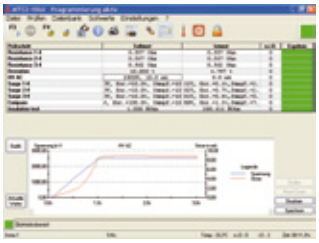
The test is performed with two test probes that are pushed on the bars (**bar to bar method**). Here the test can be performed directly between bar-bar or e.g. between ¼ of the commutator. The test is started via the two start buttons in the test probes.

The test is evaluated via a fully-automatic test process which guides the operator through the measuring. Alternatively it can also be tested manually without preset test step sequence. At both methods the MTC2 compares the surge graphs to the previously stored reference already during the measuring.

Thus it is possible to remove any faults directly and to repeat the test at these points again.



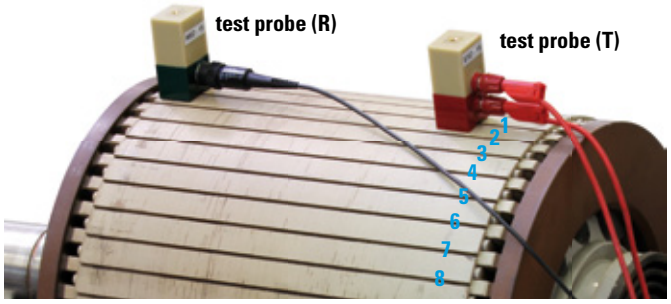
armature test in the automatic mode



armature test in the manual mode

MTC2 | Squirrel Cage

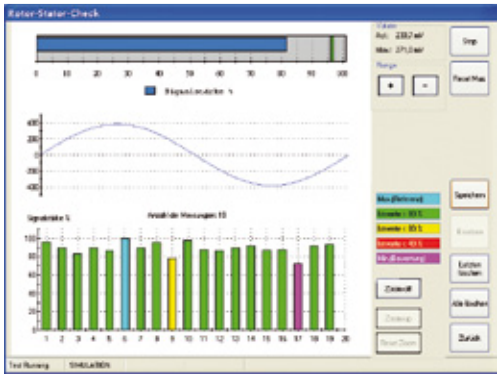
Ideal test procedure for checking and locating faults at squirrel-cage motors, armatures, stators, and capacitors. The test procedure operates in combination with the surge voltage tester MTC2. For this an extension unit is connected to the MTC2.



Functioning

Two test probes are used for the test. They are to be connected at the test object's outside above the slots. The first probe (T) transmits a signal to the test object; the second probe (R) receives the signal. The receipt signal is measured in the MTC2 and the signal strength is displayed on the screen.

Please number the individual slots in advance. At the subsequent measuring please position the probes above the individual slots at the test object's opposite outer edges in a way that the maximum signal strength in the MTC2 is displayed. The MTC2-software supports you in an optimum way. After finding the optimum probe position you can store the signal in the MTC2 with the corresponding slot number. Please perform this measuring at each slot one after another. The MTC2 collects and stores the measuring values at each slot until all slots are measured.

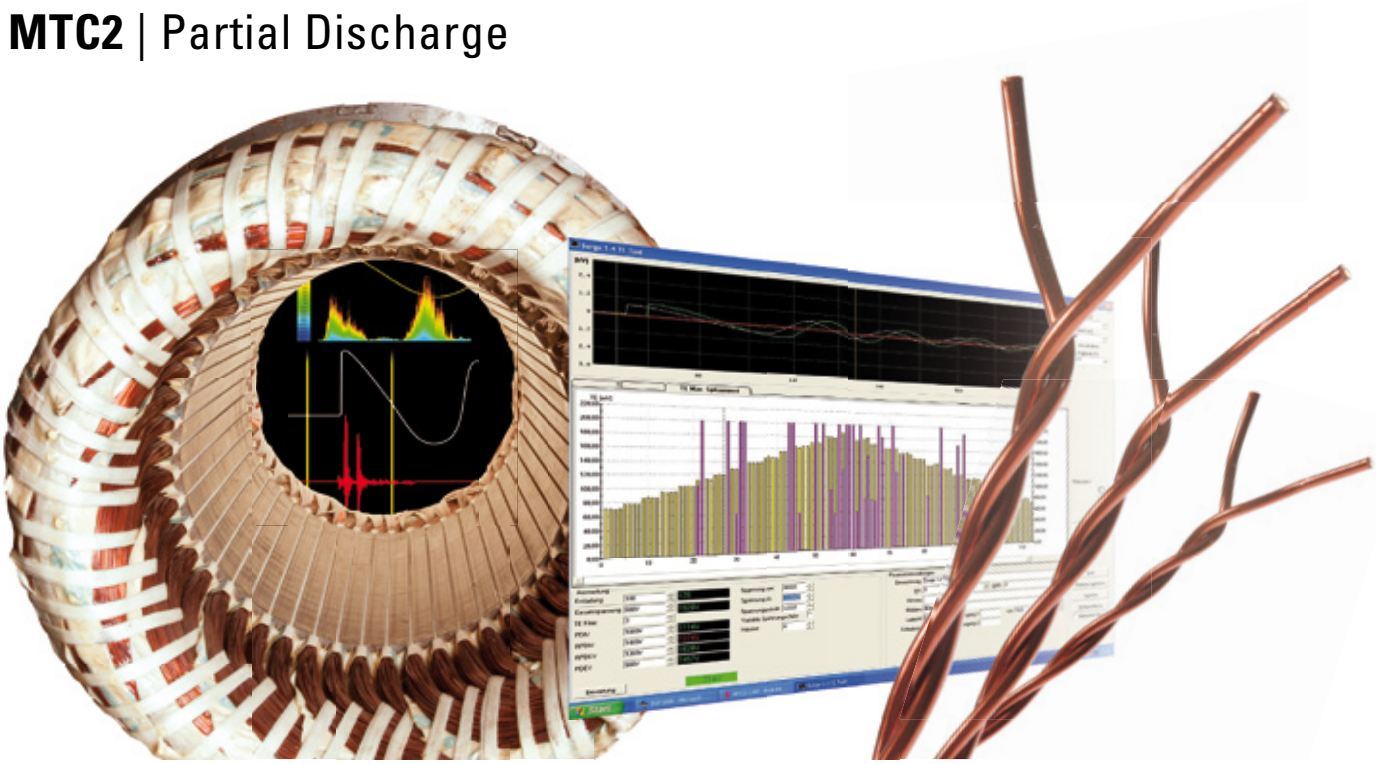


Already during the measuring the MTC2 compares the available measuring values and detects any irregularities of the resistances within the slots. The slots' measuring values among each other should be almost the same. If the differences are too high there is a fault. Based on your numbering you can immediately locate the defect space and repair it if necessary.

Rotor testing

Stator testing

MTC2 | Partial Discharge

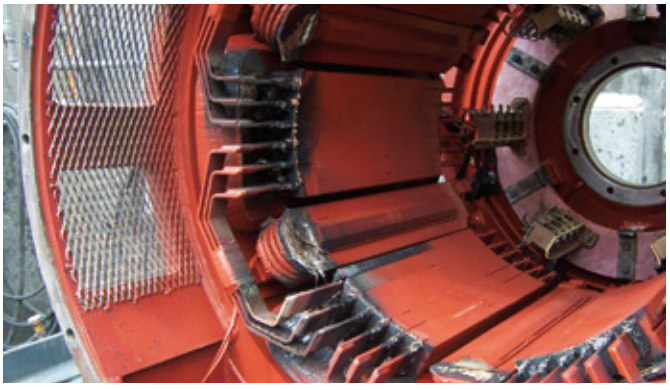


Highlights

- determining the inception and extinction voltage according to IEC 61934
- very high reproducibility owing to special filter technology
- special coupling technology for measuring completely assembled motors
- extremely free of any disturbances due to special high-frequent filter technology
- no shielding of the test area necessary
- partial discharge test up to 25KV
- qualification of
  - enameled copper wire (twisted pair)
  - enamel-insulation
  - impregnation procedure

The partial discharge test serves for checking the winding quality of winding goods. The test can be performed in combination with the high-voltage test (sine) as well as with the surge test. The main aspect is detecting any quality faults at windings that cannot be detected with the conventional high-voltage test or surge test.

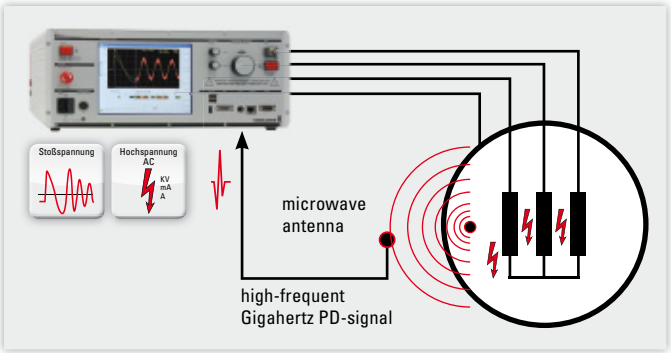
Owing to the coupling technology combined with a high-frequent filter technology the system is extremely free of any disturbances. Thus it can be very well used directly on-site or in the production.



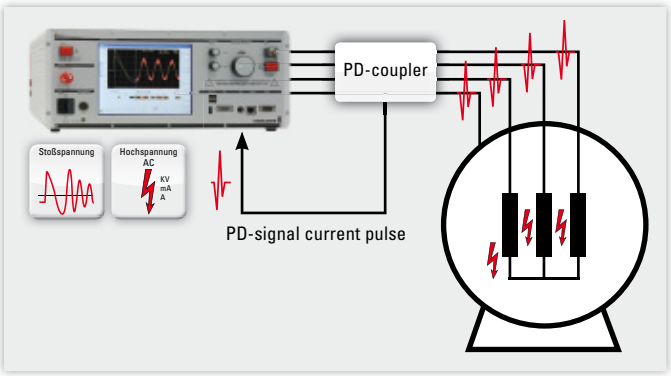
defect stator

Assembly and connections

The partial discharge measuring (filtering and analysis) is completely integrated in the MTC2. Only the uncoupling (measuring) of the actual partial discharge signal is performed outside the tester. This is necessary for an ideal adaption to the respective measuring situation. The test at an open stator winding or at a completely assembled motor is no problem for the MTC2.



The partial discharge measuring at an open stator winding is performed via a highly sensitive measuring antenna which is put inside the test object or in its direct surrounding.



The measuring at a completely assembled motor cannot be performed via an antenna as the high-frequent signals are shielded by the closed motor cabinet. In these cases the measuring is performed via a special coupler which is grinded in the measuring lead.

The antenna as well as the coupler can be optionally connected to the MTC2. Thus you are well equipped for every test application.

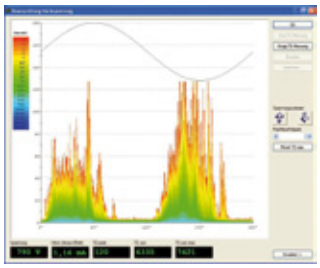
The combination of these two measuring methods for a partial discharge test in one tester is unique on the market.

Partial discharge test at HV-AC

The test is performed fully-automatically via a previously set test sequence. A ramp function is run in which the test voltage is continuously increased. As soon as the first partial discharges occur this voltage is stored as PDIV (inception voltage).

Now the voltage is reduced again until the partial discharge completely disappears. This point is detected as PDEV (extinction voltage) and also stored. Due to preferably short test times in the production the partial discharge's intensity can also be determined at a preset voltage. Thus it can be distinguished between "GO" and "NO GO" within milliseconds.

It addition it is also possible to perform the test manually. Here the operator continuously increases the voltage while monitoring the partial discharge signal.



Partial discharge test in the manual operation

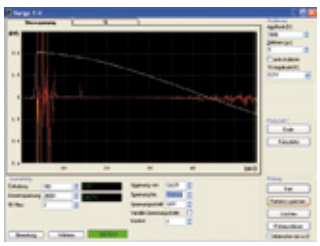
Partial discharge test at surge voltage

The test is performed either manually or automatically. In the manual mode the operator increases the voltage continuously while monitoring the partial discharge signal.

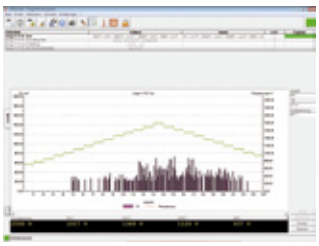
Via a test sequence the automatic operation fully-automatically provides an analysis of all three phases. The following values are determined per phase: PDIV (inception voltage), PDEV (extinction voltage), RPDIV (repeating inception voltage), and RPDEV (repeating extinction voltage).

Here it is also not necessary to run the complete ramp. If it has to be distinguished quickly between GO and NO GO in the production it can be operated with a preset test voltage.

All results are automatically stored and protocolled.



Surge voltage pulse with 150ms, rise time, and PD-effects



Automatic process of the PD-test according to the standards

MTC2 | Product and accessory overview

MTC2-portable 6KV

MTC2-Caddy 6KV | 12KV | 15KV

MTC2-module

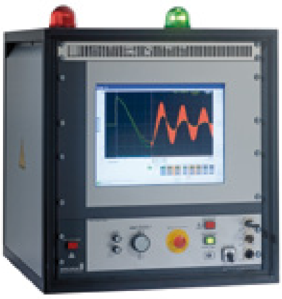
MTC2 6KV | 12KV | 15KV

Model	art. no.	surge voltage surge voltage & auto. analysis	partial discharge surge voltage with partial discharge test art. no. 40001574	high voltage DC manual & automatic	insulation resistance manual & automatic 0…100GΩ	polarization manual
MTC2-portable-6KV	4023169	6KV	○	6KV	6KV	6KV
MTC2-Caddy-6KV	4023170	6KV	○	6KV	6KV	6KV
MTC2-6KV	4023101	6KV	○	6KV	6KV	6KV
MTC2-Caddy-12KV	4023149	12KV	○	12KV	12KV	12KV
MTC2-12KV	4023100	12KV	○	12KV	12KV	12KV
MTC2-Caddy-15KV	4023171	15KV	○	15KV	15KV	15KV
MTC2-15KV	4023124	15KV	○	15KV	15KV	15KV
MTC2-25KV	4023195	25KV	○	25KV	25KV	25KV
MTC2-25KV	4023195 + 4023139	25KV	○	25KV	25KV	25KV
MTC2-30KV	4023155	30KV	○	30KV	30KV	30KV
MTC2-30KV	4023155 + 4023139	30KV	○	30KV	30KV	30KV
MTC2-40KV	4023206	40KV	○	40KV	40KV	40KV
MTC2-40KV	4023206 + 4023139	40KV	○	40KV	40KV	40KV
MTC2-50KV	4023203	50KV	○	50KV	50KV	50KV
MTC2-50KV	4023203 + 4023139	50KV	○	50KV	50KV	50KV
Measuring probes | measuring leads						
armature booster	4023165	②	—	—	—	—
4-wire test probe for armature test	4023110	—	—	—	—	—
4-wire Kelvin tongs small	4023184	—	—	—	—	—
4-wire Kelvin tongs medium	4023122	—	—	—	—	—
4-wire Kelvin tongs large	4023109	—	—	—	—	—

Accessory	
foot switch	4010611
transport box only for MTC2 4023100, 4023101,4023124	4023116
backpack for MTC2 portable	4023196

For accessories please look at page 66

Available languages: DE, UK, FR, ES, NL, IT, PL, RU, CH…



MTC2 25KV

MTC2 30KV

MTC2 40KV | 50KV

resistance	inductivity	high voltage AC	high voltage AC	sense of rotation	visual test	switch-over test methods	matrix	
1mΩ…100KΩ four-wire measuring + ambient temperature compensation	inductivity measuring	high-voltage AC	high-voltage AC with GLP1-HV or GLP2-HV	automatic sense of rotation test	visual test	automatic test method switchover	automatic measuring clamp switchover	test leads with alligator clamps
art. no. 4023103 + 4023104		**art. no. 4023158 = 3KV 4023183 = 6KV**	**art. no. 402323**	**art. no. 4023196**				
●	○	—	—	—	●	—	—	2 + ground
○	○	—	①	—	●	❶	U-V-W-star | ground	4 + ground
○	○	○	①	○	●	❶	U-V-W-star | ground	4 + ground
○	○	—	①	—	●	❶	U-V-W-star | ground	4 + ground
○	○	○	①	○	●	❶	U-V-W-star | ground	4 + ground
○	○	—	①	—	●	❶	U-V-W-star | ground	4 + ground
○	○	○	①	○	●	❶	U-V-W-star | ground	4 + ground
○	○	—	①	—	●	❶	U-V | ground	2 + ground
○	○	—	①	—	●	❶	U-V-W | ground	3 + ground
○	○	—	①	—	●	❶	U-V | ground	2 + ground
○	○	—	①	—	●	❶	U-V-W | ground	3 + ground
○	○	—	①	—	●	❶	U-V | ground	2 + ground
○	○	—	①	—	●	❶	U-V-W | ground	3 + ground
○	○	—	①	—	●	❶	U-V | ground	2 + ground
○	○	—	①	—	●	❶	U-V-W | ground	3 + ground
—	—	—	—	—	—	—	—	—
③	—	—	—	—	—	—	—	—
③	—	—	—	—	—	—	—	—
③	—	—	—	—	—	—	—	—
③	—	—	—	—	—	—	—	—

● included in the delivery extent
❶ Automatic switchover of the test methods and the measuring clamps (connecting leads) incl. resistance test in four-wire technology.
○ test method that needs to be ordered in addition
① serial interface to contact a GLP1- or GLP2-high-voltage tester. The high-voltage tester needs to be ordered in addition.
② armature booster only for MTC2 4023100, 4023101 and 4023124
③ For increasing the measuring accuracy at resistances below 1Ω it is recommended to use four-wire Kelvin tongs or four-wire test probes in addition.
— not available


STYLE UL 3239 VW-1

Motor Repair
Electrical Engineering
Maintenance

Software & Accessories

- PrintCom Software 68
- Lead Contactings 70
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- Rolling Tables 74
- Black Boxes 76

PrintCom | Software for MotorAnalyzer, GLP1 & GLP2

RS232
Ethernet
USB
Print

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.

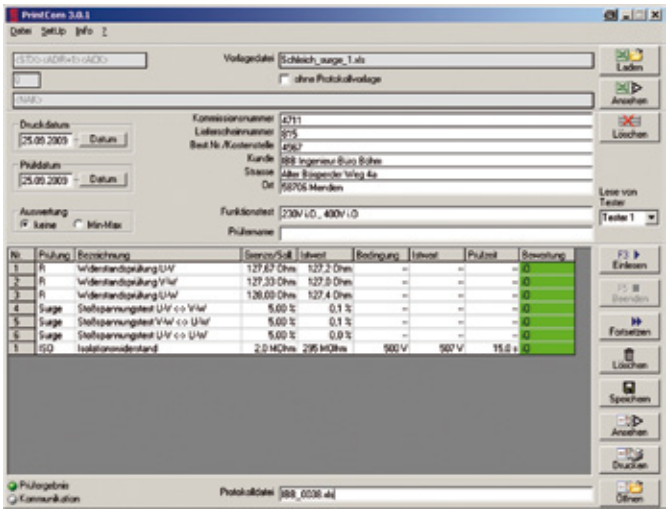
Storing

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.



Test Protocol

SCHLEICH
Advanced Test Technologies

An der Schleuse 11
DE-58675 Hemer
Tel 02372 94980
Email info@schleich.com
www.schleich.com

Kommissionsnummer	**4711**
Lieferscheinnummer	815
Bestell-Nr. / Kostenstelle	4567
Kunde	IBB Ingenieur-Büro-Böhm
Straße	Alter Bösperder Weg 4a
Ort	58706 Menden
geprüft am	23.12.2011
Gesamtergebnis	**I.O.**

Einzelergebnisse

Schritt	Methode	Prüfschrittbezeichnung	Grenzwert	Istwert	Prüfbedingung	Istwert	Prüfzeit	I.O.
1	PE	Schutzleiter an Schaltschranktür rechts	0,2 Ohm	0,08 Ohm	10A	10,1A	1 s	IO
2	PE	Schutzleiter an Schaltschranktür mitte	0,2 Ohm	0,07 Ohm	10A	10,1A	1 s	IO
3	PE	Schutzleiter an Schaltschranktür links	0,2 Ohm	0,11 Ohm	10A	10,1A	1 s	IO
4	Iso	Isolationswiderstand L1 - PE	2 MOhm	30 MOhm	500V	505V	1 s	IO
5	Iso	Isolationswiderstand L2 - PE	2 MOhm	30 MOhm	500V	507V	1 s	IO
6	Iso	Isolationswiderstand L3 - PE	2 MOhm	30 MOhm	500V	505V	1 s	IO
7	Iso	Isolationswiderstand N - PE	2 MOhm	30 MOhm	500V	506V	1 s	IO
8	HV	Hochspannung L1 - PE	10mA	0,3mA	1500V	1525V	1 s	IO
9	HV	Hochspannung L2 - PE	10mA	0,3mA	1500V	1535V	1 s	IO
10	HV	Hochspannung L3 - PE	10mA	0,4mA	1500V	1510V	1 s	IO
11	HV	Hochspannung N - PE	10mA	0,3mA	1500V	1520V	1 s	IO
12	PE	Schutzleiterwiderstand Motor M1	0,2 Ohm	0,05 Ohm	10A	10,2A	1 s	IO
13	Iso	Isolationswiderstand Motor M1: L1 - PE	2 MOhm	30 MOhm	500V	507V	1 s	IO
14	Iso	Isolationswiderstand Motor M1: L2 - PE	2 MOhm	30 MOhm	500V	505V	1 s	IO
15	Iso	Isolationswiderstand Motor M1: L3- PE	2 MOhm	30 MOhm	500V	510V	1 s	IO
16	Iso	Isolationswiderstand Motor M1: N - PE	2 MOhm	30 MOhm	500V	508V	1 s	IO
17	HV	Hochspannung Motor M1: L1 - PE	10mA	0,2mA	1500V	1530V	1 s	IO
18	HV	Hochspannung Motor M1: L2 - PE	10mA	0,2mA	1500V	1535V	1 s	IO
19	HV	Hochspannung Motor M1: L3 - PE	10mA	0,2mA	1500V	1515V	1 s	IO
20	HV	Hochspannung Motor M1: N - PE	10mA	0,3mA	1500V	1510V	1 s	IO
21	PE	Schutzleiterwiderstand Klemme X1:4 -PE	0,2 Ohm	0,05 Ohm	10A	10,2A	1 s	IO
22	PE	Schutzleiterwiderstand Klemme X1:5 -PE	0,2 Ohm	0,06 Ohm	10A	10,1A	1 s	IO

Die gewissenhafte Durchführung aller Prüfungen wird hiermit bestätigt.

Ottoker Mustermann
Unterschrift Prüfername

Geprüft mit einem Prüfsystem von SCHLEICH GmbH
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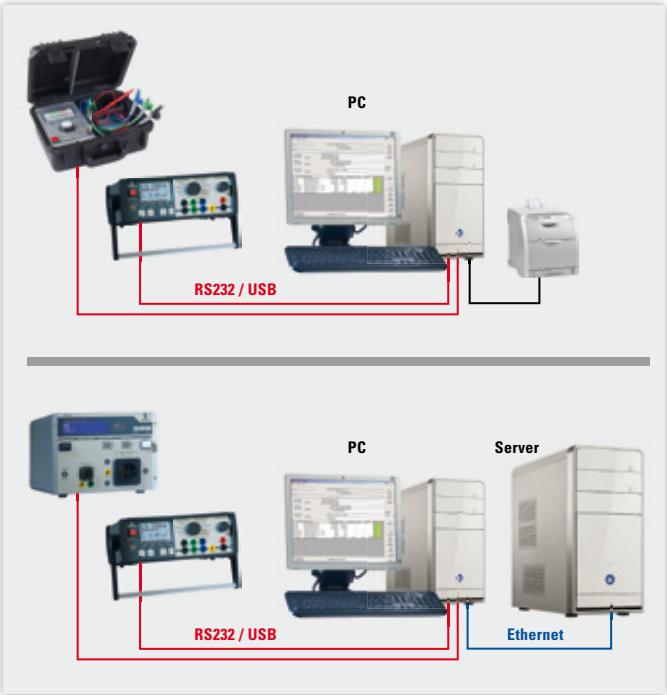
23.12.2011 Seite 1 von 1

Connecting versions



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.

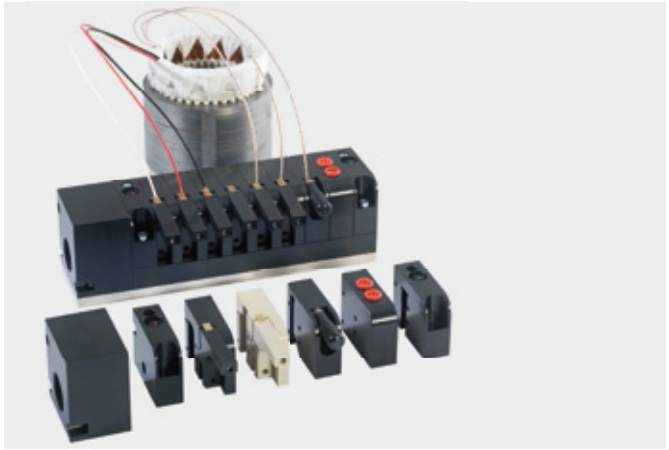
When low resistances are to be exactly measured Kelvin clamps are used for the four-wire-measuring. The four-wire-technology compensates the transition resistances within the clamping points.

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

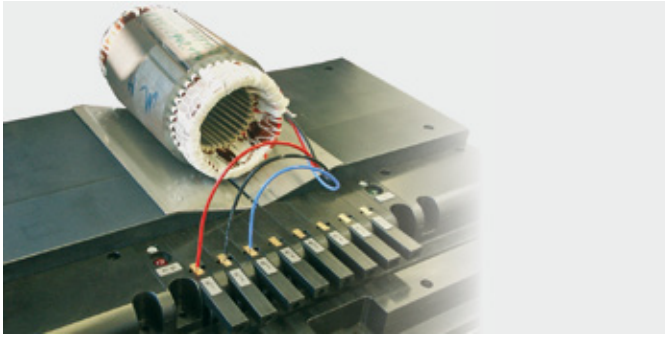
clamp block in modular design



clamp block in modular design

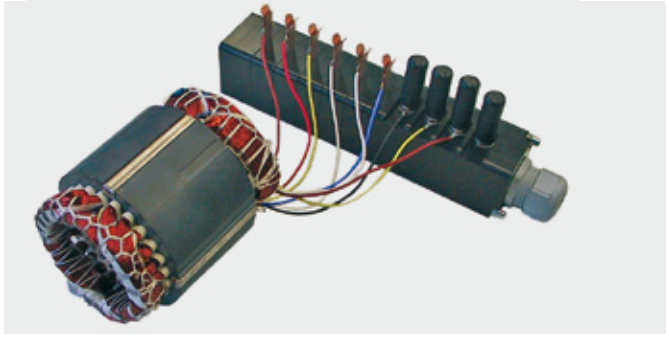
Kelvin clamps in small-, medium-, and large-sized design

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

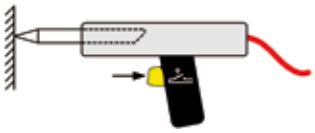
Test Pistols | Test Probes | Safety Accessories

High-voltage

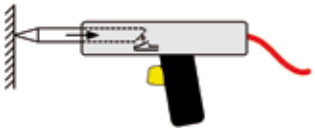
Safety pistols are required for a safe manual high-voltage test. Depending on the test voltage level there are different models.

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

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.

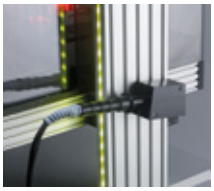
rolling table with horizontal work plate and push handle

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

Black Boxes

black box for PE

black box for PE | IR | HV

back 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 measurings, 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.