THERE IS A
SCHLEICH
FOR THAT!

MA3

MotorAnalyzer3
Universal winding and electric motor test device

DESIGNED & PRODUCED
IN GERMANY

SCHLEICH®
Advanced Test Technologies

The MotorAnalyzer3 – the mobile ALL-IN-ONE test device for repair, maintenance and service

The combination of high-precision measurement technology, state-of-the-art software, intuitive operation and 16 built-in test methods makes the MotorAnalyzer3 the most powerful mobile motor tester for electric motor service and repair. The device has a unique built-in test method switch-over function that automatically switches all available test methods to the winding connections. It is simply a matter of connecting the device once to run through all tests automatically.

No other portable test device provides this level of support for troubleshooting and testing motors and generators.

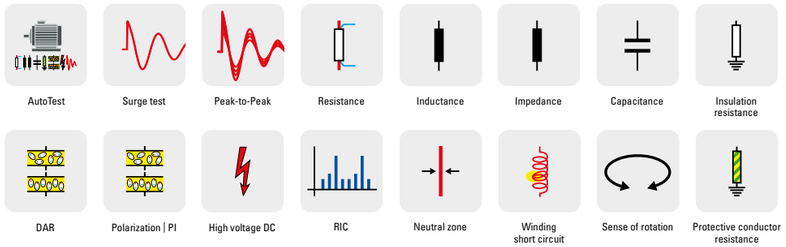
The selection of test methods, the extremely compact design and battery operation make the MotorAnalyzer3 ideal for on-site use – especially when the device under test is in a difficult installation location.

It is also ideally suited for use in the workshop.

The MotorAnalyzer3 is the mobile ALL-IN-ONE test device for motor repair, maintenance and service.

Get an instant quote

The ALL-IN-ONE test device with 16 test methods and fully automatic test method switch-over

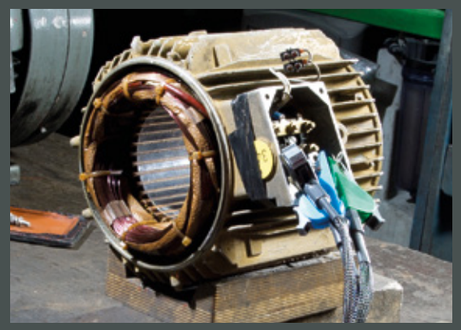


Unrivaled worldwide –
the mobile ALL-IN-ONE test device

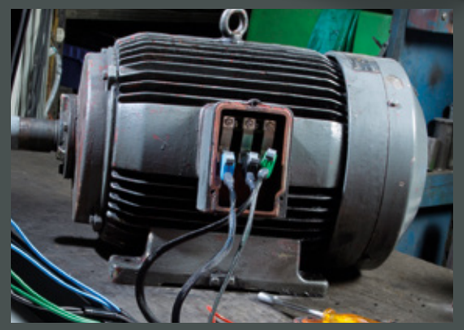
AutoTest –
the fastest way to find faults

Battery operation –
non-stop testing

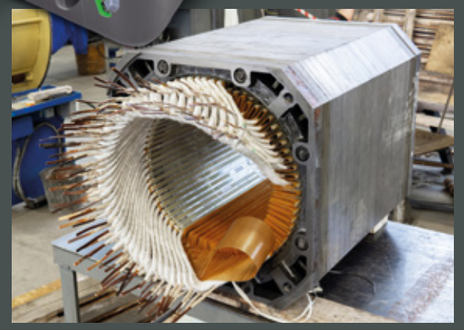
Testing of installed, de-energized motors



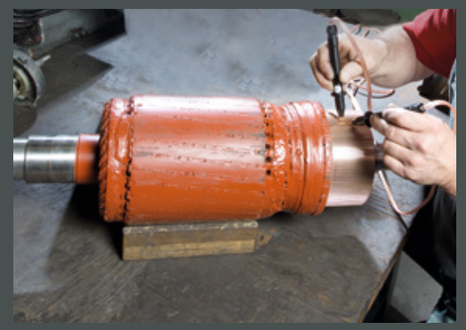
Stator testing



Motor testing



In-between tests during motor repair



Testing of DC armatures

Further information: www.schleich.com/en/product/motoranalyzer3-en

SCHLEICH Advanced Test Technologies

Made for everyday workflow

Building on our decades of experience in motor and winding testing, the ALL-IN-ONE concept of the MotorAnalyzer3 is consistently geared to the workflow in electric motor service and repair. The MotorAnalyzer3 provides all the relevant measurement and test functions required in daily use.

The proven, precise measurement technology and the easy-to-understand, intuitive software are the foundation for fast and efficient working.

Whether it's for motor maintenance at the customer's site or motor repair in the workshop, the highly flexible MotorAnalyzer3 provides decisive technical and economic advantages.

An ideal addition to the MotorAnalyzer3 is a 6000 V AC high-voltage and a 6000 V surge tester by SCHLEICH.

Motor Maintenance

A user-friendly "AutoTest" analyzes the motor fully automatically during maintenance work. The MotorAnalyzer3 automatically switches the different test methods to the four measuring sockets one after the other via its internal relay matrix. If the motor is inaccessible, the test can also be carried out directly on the control cabinet via the existing connection cables to the motor.

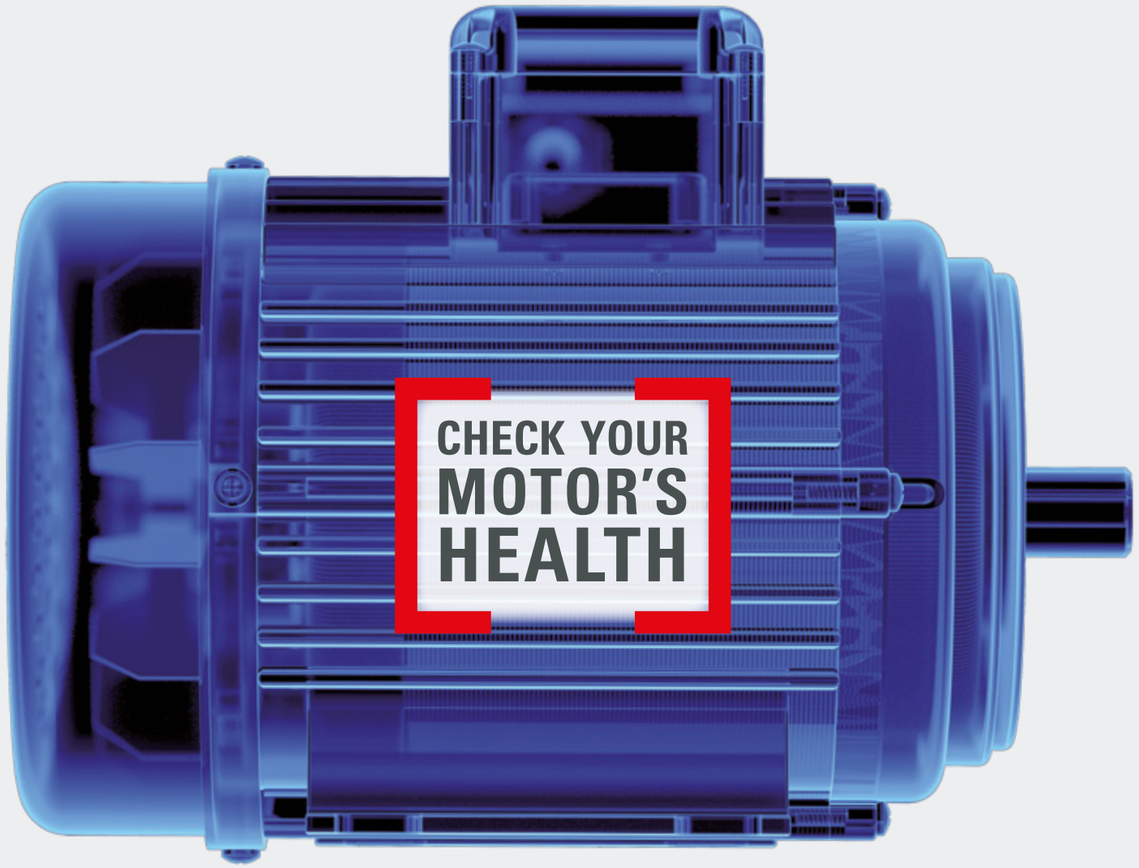
If any discrepancies occur, individual manual tests can also be run afterwards. It is perfect for fault analysis.

The AutoTest includes the following tests:

- Resistance
- Impedance
- Inductance
- Capacitance
- Insulation resistance, DAR, PI
- High voltage
- Surge

The regular maintenance measurements are stored in the results memory and can thus be retrieved throughout the entire service life of the motor, e.g. for trend analysis.

After transfer to the PrintCom PC software, the results can be documented in a comprehensive test protocol.



Motor Repair

The AutoTest is ideal for motor repairs:

- Incoming test
- Intermediate tests
- Outgoing test

After each repair step, the motor and/or stator can be analyzed quickly and easily. Of course, individual tests can also be carried out manually.

For more in-depth troubleshooting, fault localization, and control measurements in all repair states, the MotorAnalyzer3 provides additional helpful multifunction tools such as:

- Surge tester
- Ohmmeter
- Continuity tester
- Megaohmmeter
- High voltage up to 6 kV
- Squirrel-cage rotor test with the RIC method
- Motor sense of rotation
- Stator sense of rotation
- Winding short-circuit search
- Neutral zone adjustment
- Protective conductor resistance

Operation

Using the MotorAnalyzer3 via the touchscreen is as intuitive and easy as using a smartphone or tablet. Just tap, swipe right or left, and scroll up and down.

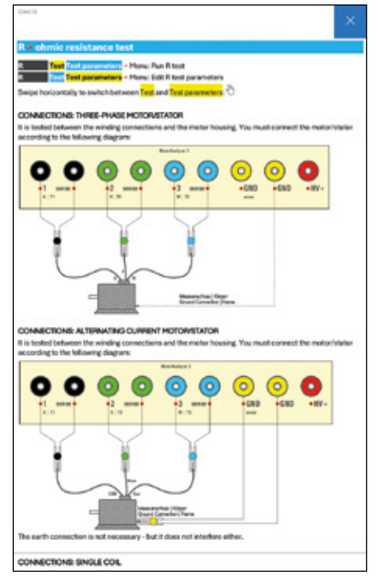
The Navigation Center is the central menu for selecting options. The Home button always brings you back here quickly and easily from any test or function.

It is divided into two groups of tests/functions:

1. AutoTest
   - Fully automatic test
   - Manual partial tests based on the fully automatic test

2. MultifunctionTools
   - Helpful tools for fault analysis and troubleshooting

Do you have questions about operation? Simply tap the ⓘ icon located at the top right of each page. The MotorAnalyzer3 immediately displays ⓘ icons above the various symbols, graphics, tables, and functions. Tap an ⓘ icon to get the exact information you need. No more searching through operating manuals.



Quickly comprehensible, structured explanations including graphics and symbols.

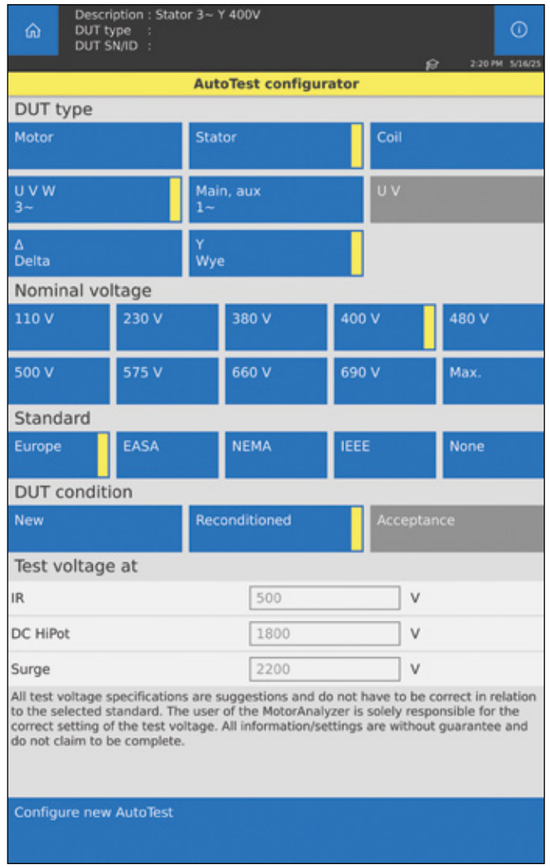
Basic or Expert know-how

You can choose whether the operator should see some or all of the test parameters, depending on whether they have basic or expert knowledge.

This makes using the MotorAnalyzer3 even easier for less experienced users.

To use this feature, you need to set up user management. This involves creating users with their own passwords and assigning them the appropriate knowledge levels in the MotorAnalyzer3.

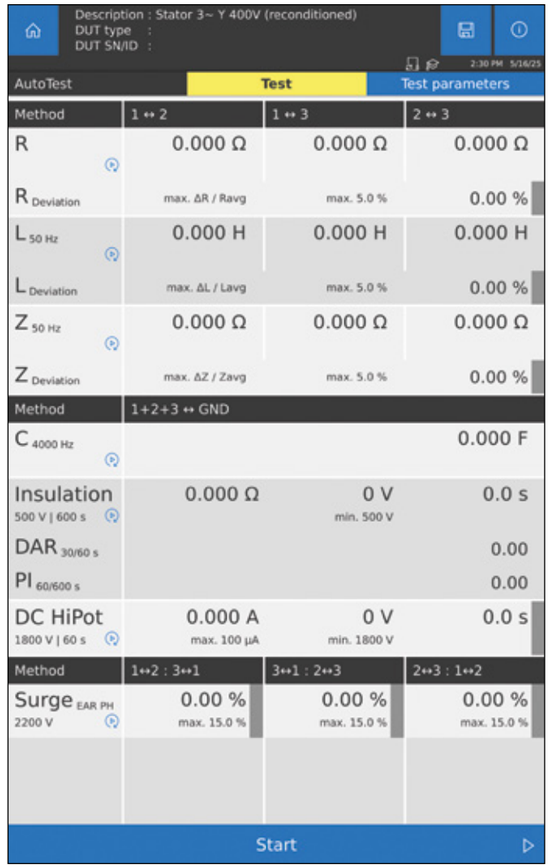
The AutoTest principle



Setting up the AutoTest

The AutoTest is set up using a simple checklist. To avoid illogical entries, it dynamically adapts to previous selections.

After entering the test object type, nominal voltage, and test standard, the MotorAnalyzer3 automatically generates the test sequence for performing the test correctly.



Test run

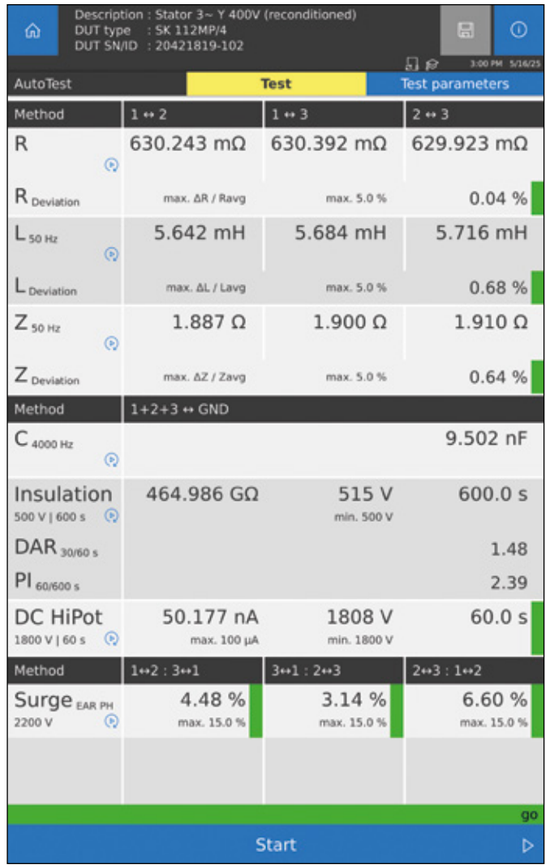
For a three-phase device under test, the AutoTest runs between the following measuring points:

| 1 ↔ 2 | 1 ↔ 3 | and | 2 ↔ 3 | or | 1+2+3 ↔ GND |

The single test methods are listed in the display from top to bottom. The AutoTest is also run in this order.

The test parameters such as test voltage level, tolerances, etc. have been automatically preset by the configuration tool.

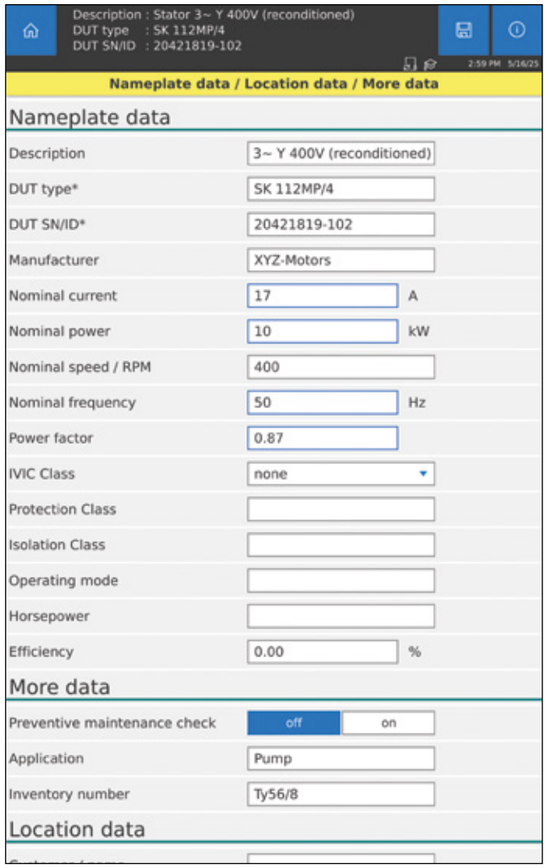
This test plan can be used immediately. However, it is also possible to adjust the test parameters to your own specifications. To do this, swipe left on the display and the AutoTest parameters are displayed. Depending on whether the operator has basic or expert know-how, only the most important parameters or all parameters are displayed.



Test evaluation

For each test method, an automatic evaluation is performed to determine whether the test result is within the specified tolerances. Depending on whether the test result is GO or NOGO, a green or red bar is displayed.

Detailed views are also available for the individual test methods of the AutoTest. These can be accessed via the navigation center.

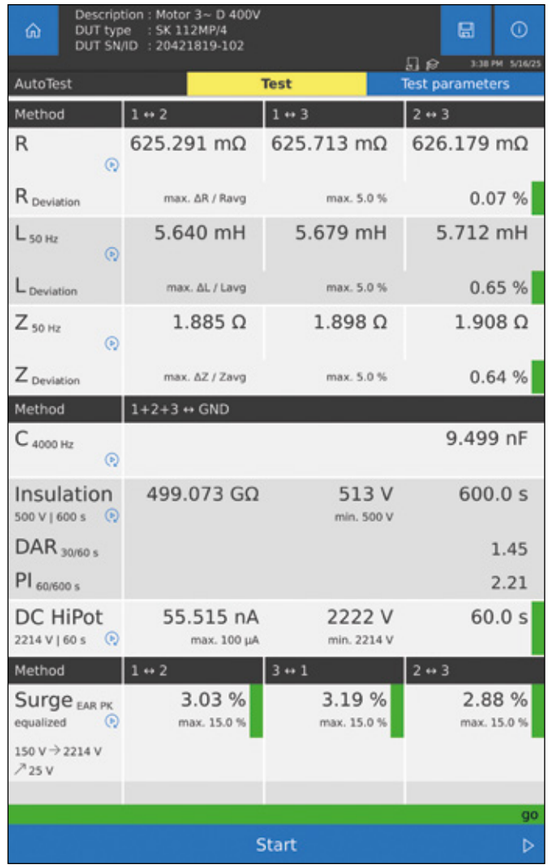


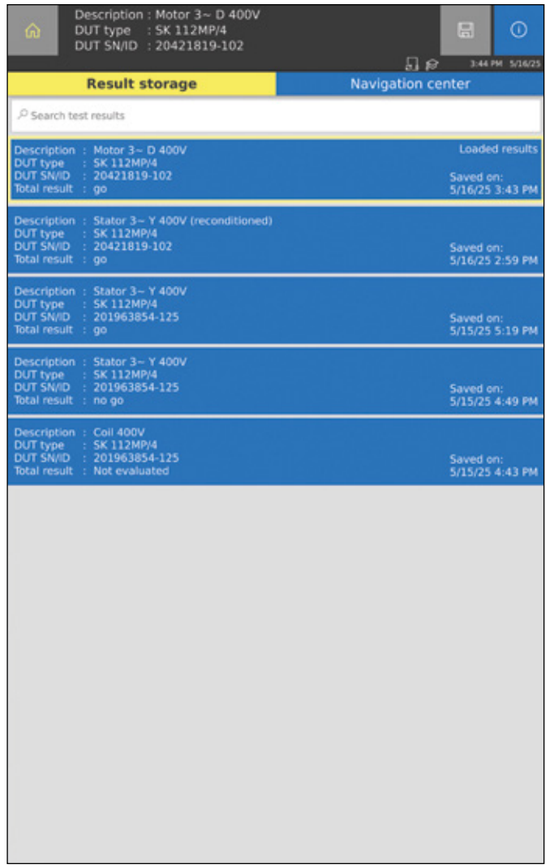
Enter nominal, customer, and location data

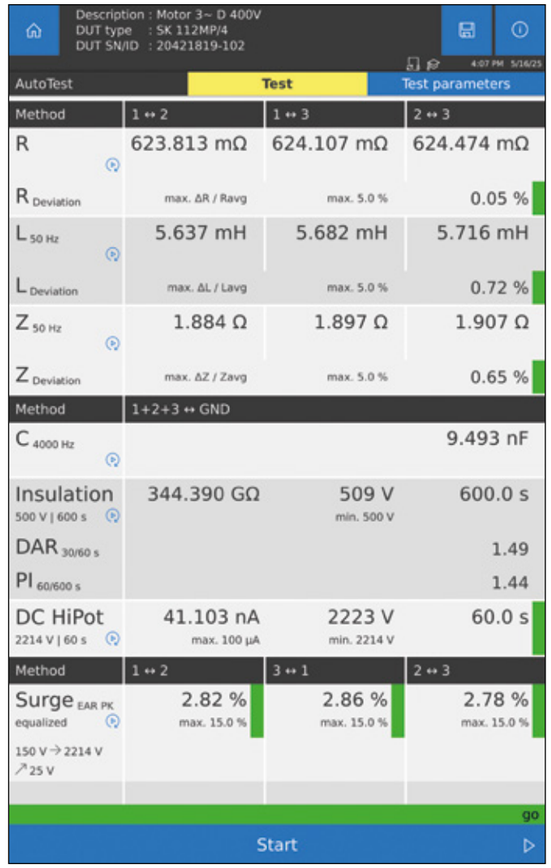
At the top center of the display the most important data of the device under test is shown. This includes the motor type and motor serial number. These characteristics are used for saving, searching, and loading in the test results memory.

Additional information can be printed out in the test protocol. This includes the nominal data of the motor, customer and location data. It can be entered before or after the test.

The AutoTest in predictive maintenance







The workflow

The configurator is used once for the first maintenance check, e.g. at annual intervals. All subsequent maintenance tests are based on the last test result saved. The last maintenance test is loaded from the results database and this test plan is used as the basis for the next maintenance test.

For the first maintenance test, the motor type, serial number, nominal data, location data and customer data must be entered once.

This first maintenance test is stored in the results memory with the date and time.

A test protocol can be created on a PC for each maintenance test using PrintCom.

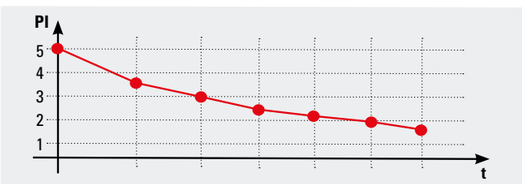
All test results are stored in the results memory. The last maintenance test run is loaded for the next maintenance test.

To do this, switch to the contents overview of the results memory. Use the quick search to find and load the motor type and/or serial number. The test results loaded from the last test are then displayed in the AutoTest.

The start of the new test is now prepared.

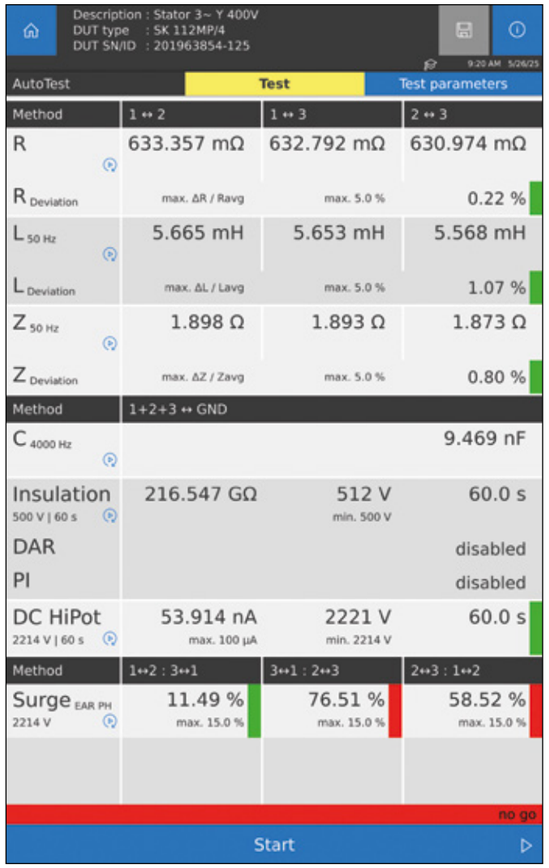
The next maintenance test is run and stored in the test results memory with a new date. The results of all maintenance tests run to date remain available, enabling trend analysis. This helps you identify relevant changes in the device under test at an early stage and respond strategically, for example by scheduling maintenance.

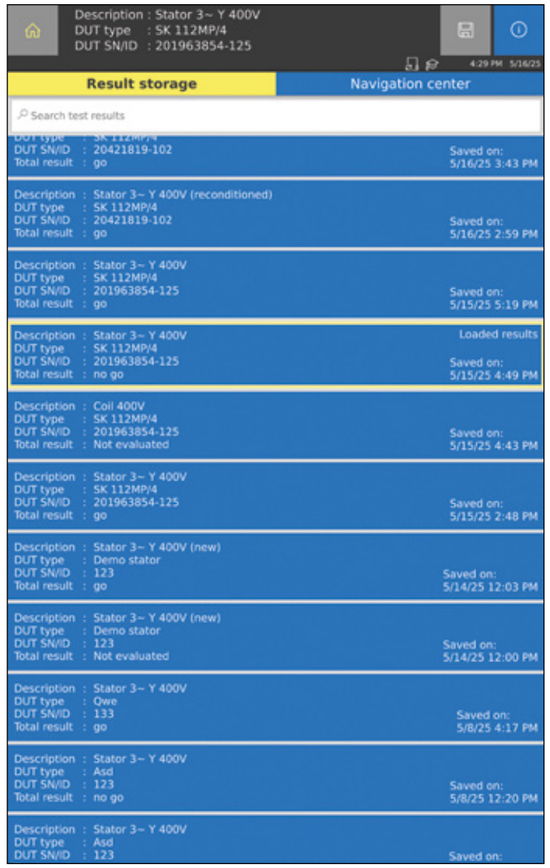
The polarization index (PI) is ideal for preventive maintenance. It indicates signs of aging/insulation weaknesses in a motor at an early stage.

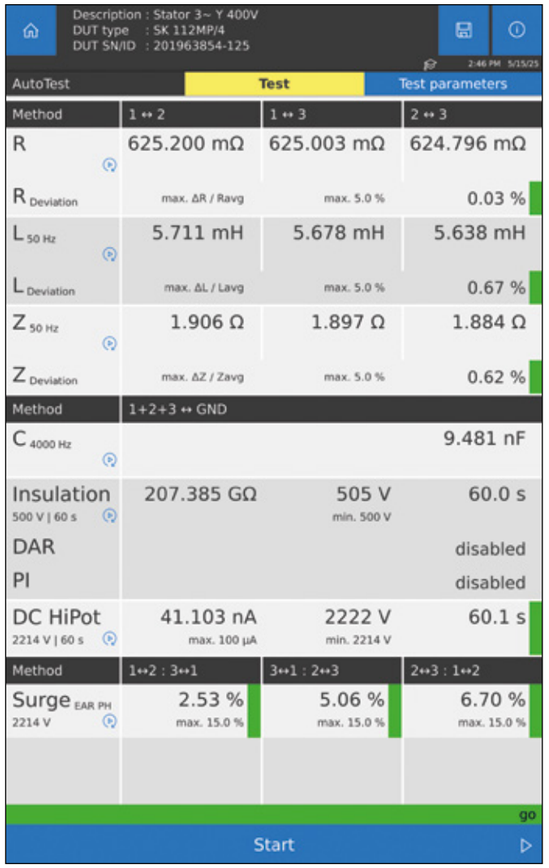


Further information: www.schleich.com/en/product/motoranalyzer3-en

The AutoTest in repair applications







The workflow

The AutoTest for an incoming test during repairs is configured using a simple checklist.

To avoid illogical entries, it dynamically adapts to previous selections. After entering the test object type, nominal voltage, and test standard, the MotorAnalyzer3 automatically generates the test plan for performing the test correctly.

Creating a test plan with the configurator is convenient, but not mandatory. You can also design the test plan yourself.

During the incoming test, the motor type, the serial number of the motor for storing the results and, if applicable, the motor nominal data, the location data and the customer data must be entered for the test protocol.

The incoming test serves to determine the extent of the damage and can be helpful in estimating repair costs for your customer. A test protocol of the incoming test can be created on a PC using PrintCom.

All test results are stored in the results memory. To run the outgoing test, first load the incoming test that was run previously.

To do this, switch to the results memory overview. Use the quick search to find the motor type and/or serial number. The test results loaded from the incoming test are then displayed in the AutoTest.

The outgoing test is now ready to start.

The outgoing test is run and stored with a new date in the test results memory. A test protocol of the outgoing test can be created on a PC using PrintCom.

The communication structure and information exchange

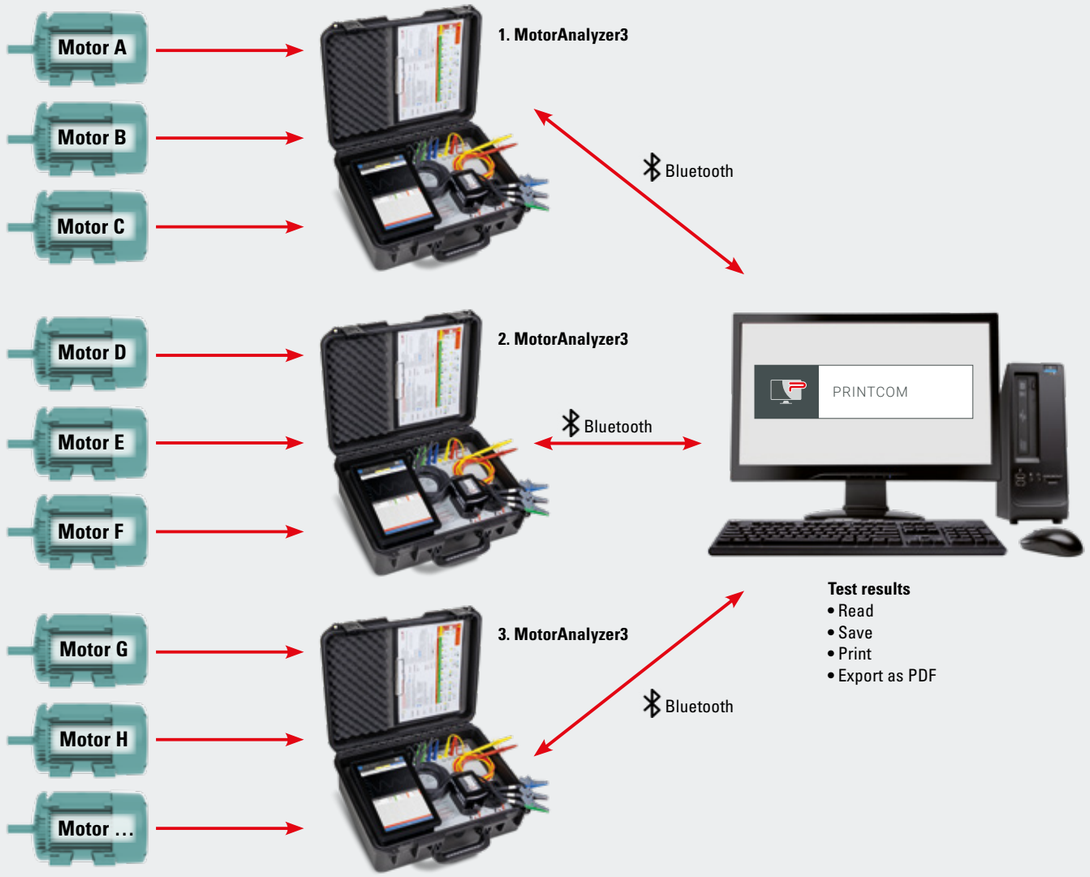
Results memory in the MotorAnalyzer3

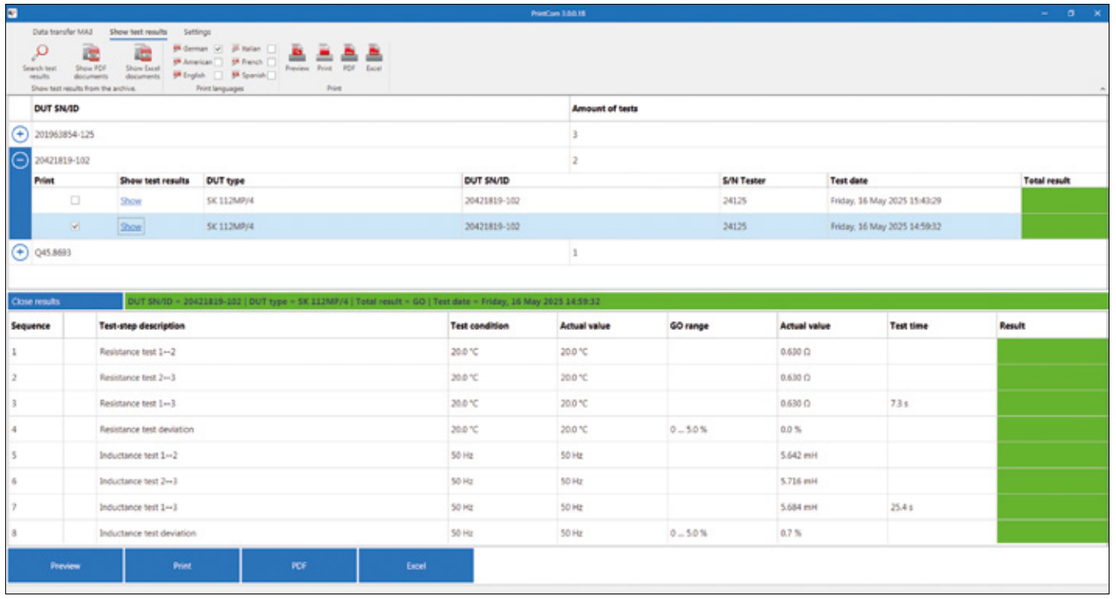
The MotorAnalyzer3 has a huge test results memory. It can store tens of thousands of test results, including all individual measurements including the graphics. The data is stored in memory chips that do not require battery buffer memory.

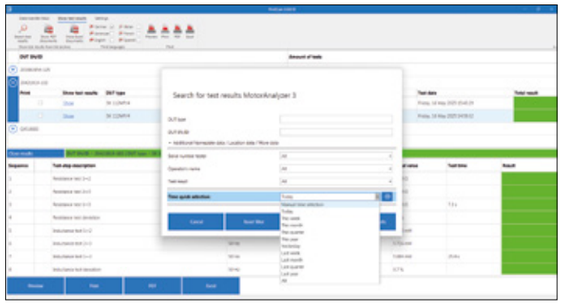
Bluetooth communication

A PC with a Bluetooth connection is used so that any type of printer can be used for printing the test protocol; test protocols can also be sent directly to customers in PDF format via email. The PC communicates with **one or more** MotorAnalyzer3 devices via the Bluetooth connection.

The Bluetooth connection is used bidirectionally. The test results are automatically transferred from the MotorAnalyzer3 to the PC, and the latest firmware updates with the newest features are transferred to the MotorAnalyzer3.







PRINTCOM

PrintCom

We supply the SCHLEICH PrintCom software for your PC free of charge. It automatically takes over the pairing management of the Bluetooth interface to the MotorAnalyzers. It loads the test results from the test devices and saves them on the PC.

PrintCom has a search algorithm to quickly find and load test results based on the motor type and motor serial number. From the loaded test results, PrintCom generates the test protocol with a printout on paper or as a PDF file.

PrintCom automatically takes over the update management for your MotorAnalyzer3. If an update is available, PrintCom automatically downloads it from the SCHLEICH server and transfers it to the MotorAnalyzer3.

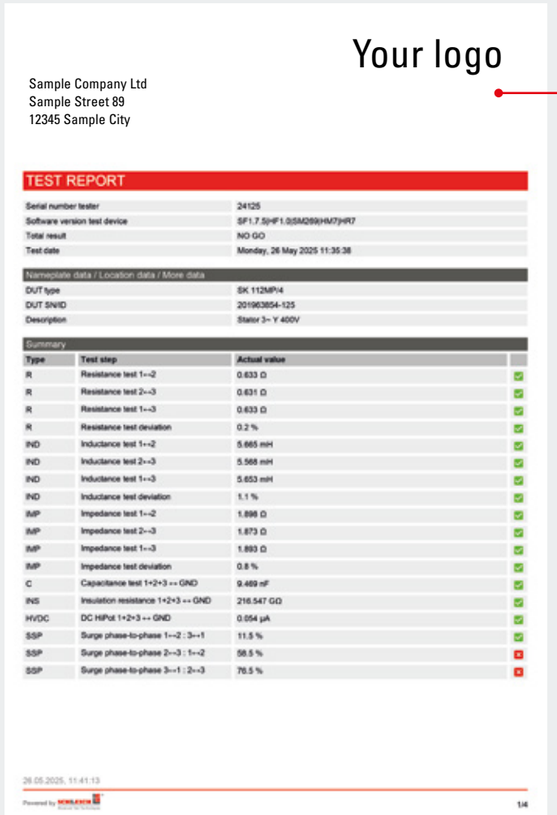
The test protocol

All test results from the MotorAnalyzer3 can be transferred to a PC via Bluetooth using the PrintCom software. All tests are always at hand in the searchable results memory: as a printout, PDF or Excel file. The test results can be exported either immediately after the test or at a later time using the modern test report template.

The language of the protocol can be set individually before output. Included standard languages are German, English, Chinese, Danish, French, Italian, Dutch, Polish, Portuguese, Swedish, Slovenian, Spanish, Czech and Hungarian.

With PrintCom, you can easily create a suitable test protocol containing all the necessary information..

PRINTCOM


Your logo

Sample Company Ltd
Sample Street 89
12345 Sample City

TEST REPORT

Serial number tester	24125
Software version test device	SF1.7.5(HF1.0(SM269(HM7)HR7
Total result	NO GO
Test date	Monday, 26 May 2025 11:35:38

Nameplate data / Location data / More data

DUT type	SK 112MP/4
DUT SN/ID	201963854-125
Description	Stator 3~ Y 400V

Summary

Type	Test step	Actual value	
R	Resistance test 1↔2	0.633 Ω	✓
R	Resistance test 2↔3	0.631 Ω	✓
R	Resistance test 1↔3	0.633 Ω	✓
R	Resistance test deviation	0.2 %	✓
IND	Inductance test 1↔2	5.665 mH	✓
IND	Inductance test 2↔3	5.568 mH	✓
IND	Inductance test 1↔3	5.653 mH	✓
IND	Inductance test deviation	1.1 %	✓
IMP	Impedance test 1↔2	1.898 Ω	✓
IMP	Impedance test 2↔3	1.873 Ω	✓
IMP	Impedance test 1↔3	1.893 Ω	✓
IMP	Impedance test deviation	0.8 %	✓
C	Capacitance test 1+2+3 ↔ GND	9.469 nF	✓
INS	Insulation resistance 1+2+3 ↔ GND	216.547 GΩ	✓
HVDC	DC HiPot 1+2+3 ↔ GND	0.054 µA	✓
SSP	Surge phase-to-phase 1↔2 : 3↔1	11.5 %	✓
SSP	Surge phase-to-phase 2↔3 : 1↔2	58.5 %	✗
SSP	Surge phase-to-phase 3↔1 : 2↔3	76.5 %	✗

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1/4

Customizable area with your company logo and address


Details

No.	Type	Name	Test condition	Set/Limit value	Actual value	
1	R	Resistance test 1↔2	20.0 °C		0.633 Ω	✓
				Temperature compensation	off	✓
2	R	Resistance test 2↔3	20.0 °C		0.631 Ω	✓
				Temperature compensation	off	✓
3	R	Resistance test 1↔3	20.0 °C		0.633 Ω	✓
				Temperature compensation	off	✓
4	R	Resistance test deviation	20.0 °C	0 … 5.0 %	0.2 %	✓
				Temperature compensation	off	✓
5	IND	Inductance test 1↔2	50 Hz		5.665 mH	✓
6	IND	Inductance test 2↔3	50 Hz		5.568 mH	✓
7	IND	Inductance test 1↔3	50 Hz		5.653 mH	✓
8	IND	Inductance test deviation	50 Hz	0 … 5.0 %	1.1 %	✓
9	IMP	Impedance test 1↔2	50 Hz		1.898 Ω	✓
10	IMP	Impedance test 2↔3	50 Hz		1.873 Ω	✓
11	IMP	Impedance test 1↔3	50 Hz		1.893 Ω	✓
12	IMP	Impedance test deviation	50 Hz	0 … 5.0 %	0.8 %	✓
13	C	Capacitance test 1+2+3 ↔ GND	4000 Hz		9.469 nF	✓
14	INS	Insulation resistance 1+2+3 ↔ GND	500 V	2.000 MΩ … ∞	216.547 GΩ	✓
				Temperature compensation	off	✓

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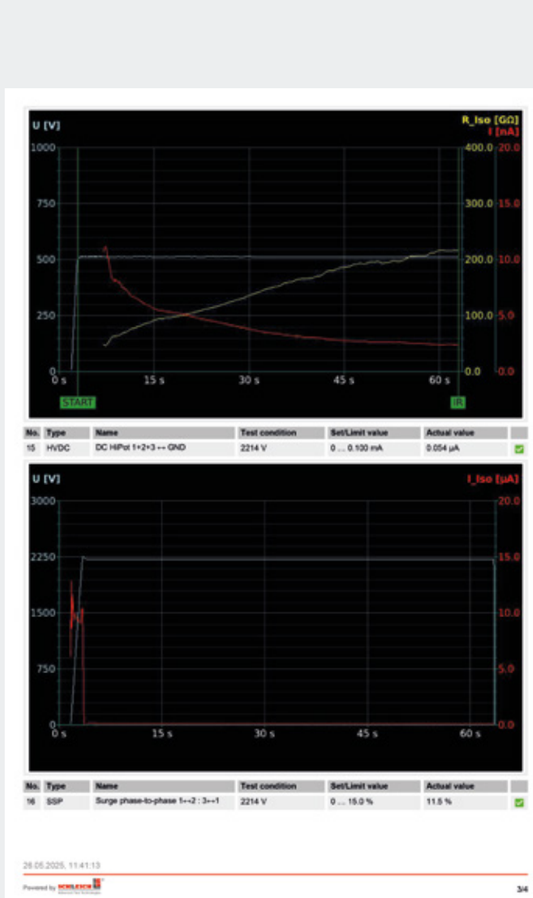
2/4



No.	Type	Name	Test condition	Set/Limit value	Actual value	
15	HVDC	DC HiPot 1+2+3 ↔ GND	2214 V	0 … 0.100 mA	0.054 µA	✓

No.	Type	Name	Test condition	Set/Limit value	Actual value	
16	SSP	Surge phase-to-phase 1↔2 : 3↔1	2214 V	0 … 15.0 %	11.5 %	✓

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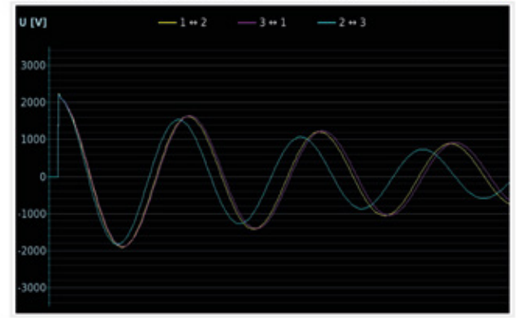
3/4

No.	Type	Name	Test condition	Set/Limit value	Actual value	
17	SSP	Surge phase-to-phase 2↔3 : 1↔2	2214 V	0 … 15.0 %	58.5 %	✗
18	SSP	Surge phase-to-phase 3↔1 : 2↔3	2214 V	0 … 15.0 %	76.5 %	✗



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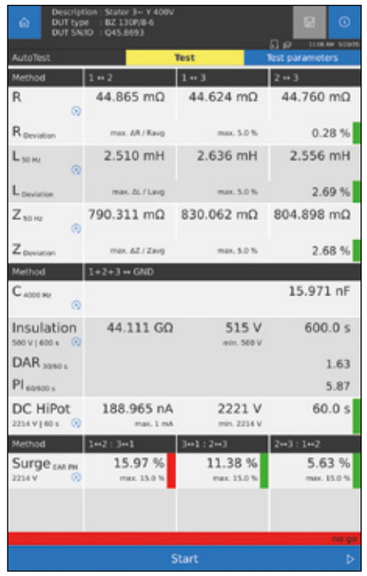
4/4

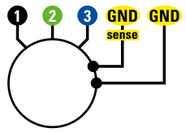
The title page with the customizable area, general data of the device under test, and an overview of the test results. The following pages show the detailed test results of the single test steps.

The test methods of the AutoTest



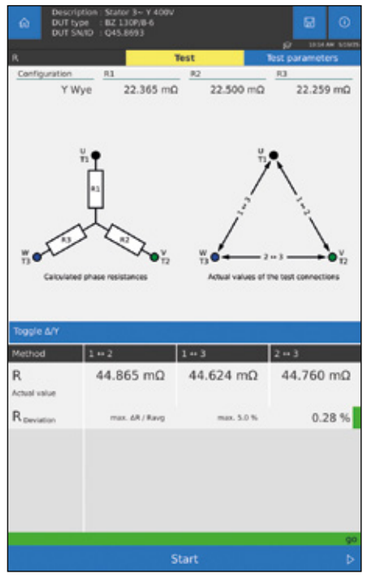
Autotest | Automatic test up to 3 kV

For automatic testing of a three-phase motor, the three winding connections and the motor housing must be connected to the test device. The MotorAnalyzer3 analyzes the device under test fully automatically. The windings on stators should be ohmic and inductively symmetrical. If the deviations are too large, there is a fault. In addition, the dielectric strength within the windings and to the laminated core is tested.



Automatic test between the test points:

- Resistance 1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3
- Inductance 1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3
- Impedance 1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3
- Capacitance 1+2+3 ↔ GND/GND sense
- Insulation 1+2+3 ↔ GND
- DAR 1+2+3 ↔ GND
- PI 1+2+3 ↔ GND
- High voltage 1+2+3 ↔ GND
- Surge 1 ↔ 2+GND | 3 ↔ 1+GND | 2 ↔ 3+GND

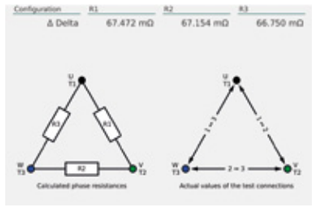


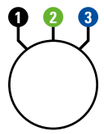
Resistance test

The resistance test is performed with high accuracy using four-wire technology. The symmetry evaluation of the winding resistances or the comparison with a set value is performed automatically.

Winding temperature sensors installed in the device under test can also be tested individually.
The temperature compensation converts the resistance to 20 or 25 °C if required.

This requires an optional ambient temperature sensor. Alternatively, a temperature determined using a temperature measuring device can also be entered via the on-screen keyboard.



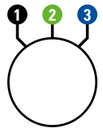


Automatic test between the test points:

1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3

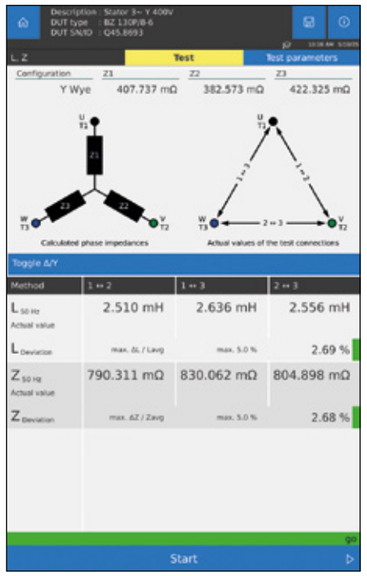
Inductance test

The inductance test is run with high accuracy using four-wire technology.
The test frequency can be selected: 50 or 60 Hz. Compared to various other inductance measurement methods, the test current is significantly higher. This provides the advantage that the laminated core is more effectively excited due to the higher field strength. This leads to more precise measurement results. The symmetry evaluation of the inductances or the comparison with a specified value is performed automatically.



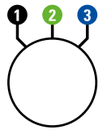
Automatic test between the test points:

1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3



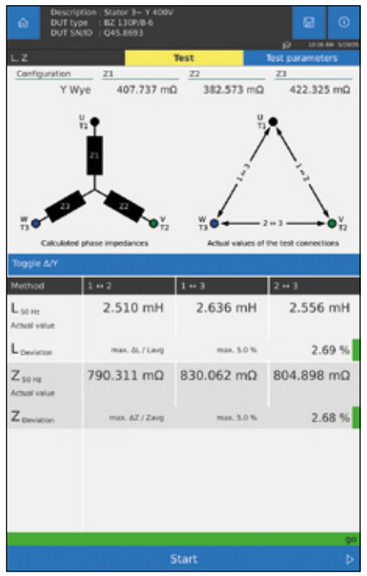
Impedance test

The impedance test is run with high precision using four-wire technology. The test frequency can be selected: 50 or 60 Hz. Compared to various other impedance measurement methods, the test current is significantly higher. This has the advantage that the laminated core is more strongly excited due to the higher field strength. This leads to more precise measurement results. The symmetry evaluation of the impedance or the comparison with a specified value is performed automatically.



Automatic test between the test points:

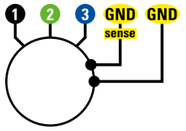
1 ↔ 2 | 1 ↔ 3 | 2 ↔ 3



The test methods of the AutoTest

Capacitance test

The capacitance test is run between the winding and the motor housing. The capacitance is compared with a specified value.



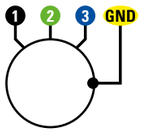
Test between the test points:

1+2+3 ↔ GND/GND sense

Polarization index PI and DAR

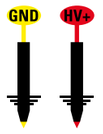
The test is used to diagnose the insulation of stators, motors, generators, transformers, cables, etc. The automatic test is performed via the 4 measurement leads at 3000 V max., the manual test with 2 test tips at 6000 V max.

The test voltage is set via the configurator but can also be changed by the operator. If necessary, temperature compensation converts the insulation resistance to 40 °C. This requires an optional ambient temperature sensor. The polarization index test, insulation resistance test, and step voltage test in combination with HV DC can be combined to on large test step.



Automatic test between the test points:

1+2+3 ↔ GND with **3 kV max.**



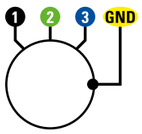
Manual test with two test tips:

between any test points with **6 kV max.**

Insulation resistance test

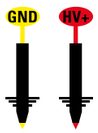
The automatic insulation resistance test via the 4 measurement leads is performed at 3000 V max., the manual test with 2 test tips at 6000 V max.

The test voltage is set via the configurator, but can also be changed by the operator. If necessary, temperature compensation converts the insulation resistance to 40 °C. This requires an optional ambient temperature sensor. Alternatively, a temperature determined using a temperature measuring device can also be entered via the keyboard.



Automatic test between the test points:

1+2+3 ↔ GND with **3 kV max.**



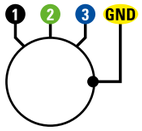
Manual test with two test tips:

between any test points with **6 kV max.**

High voltage test

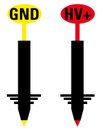
The test voltage is applied to the device under test either directly or via a voltage rise ramp.

The insulation must not break down during the test. A breakdown is detected by the resulting excess current.



Automatic test between the test points:

1+2+3 ↔ GND with **3 kV max.**

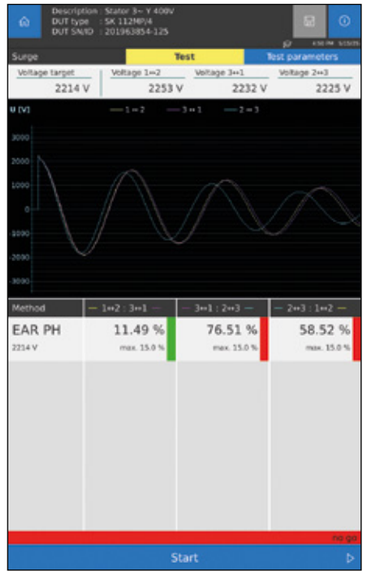


Manual test with two test tips:

between any test points with **6 kV max.**

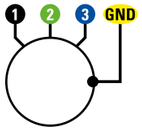
Further information: www.schleich.com/en/product/motoranalyzer3-en

The test methods of the AutoTest



Surge test up to 3 kV

For winding tests of stators, the MotorAnalyzer3 generates surge pulses of up to 3 kV. This results in the typical voltage oscillations. These are determined by the MotorAnalyzer3 in three test steps between the three motor/stator connections. The three voltage oscillations are then automatically compared with each other or, alternatively, with a stored reference object. The comparison is based on the EAR method. It provides a precise statement about the symmetry of the windings. Excessive asymmetries are automatically displayed as faults.



Automatic test between the test points:

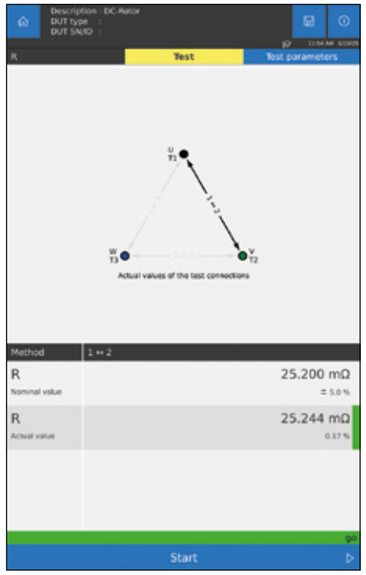
1 ↔ 2+GND | 3 ↔ 1+GND | 2 ↔ 3+GND

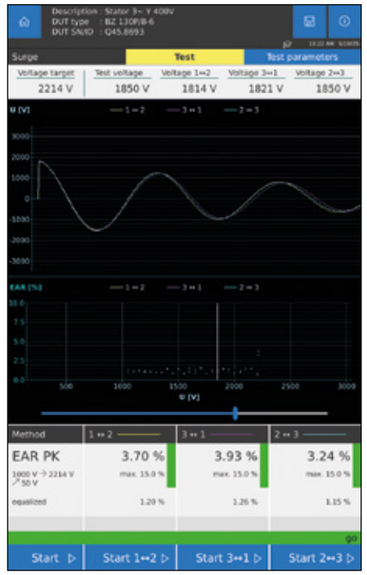
Resistance in DC armatures

DC armatures are tested using the bar method. This involves measuring the resistance between all adjacent bars. The first resistance measurement serves as a reference. All further measurements are compared with this reference value. The bar graph shows the deviation between the bars.

Manual test with two test tips:

Bar ↔ Bar





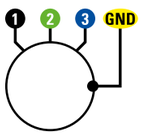
Surge test peak-to-peak up to 3 kV

The peak-to-peak method makes it possible to measure an entire motor. Starting from a low initial test voltage, the test voltage is gradually increased by a constant amount until the final test voltage is reached. The deviation between the oscillation of the current test voltage and the previous lower test voltage is determined as a percentage. Similar deviations should occur from step to step. However, if the deviation suddenly increases sharply, there is a voltage-dependent insulation fault in the winding.

The diagram clearly shows both the oscillations of the surge test voltage and the deviations in percent of all measurements.

A key feature is that the peak voltage oscillation of each individual measurement can be displayed later as a separate graph. In this way, the voltage value at which the winding insulation breaks down can be determined.

The equalized evaluation and graphical representation of the peak-to-peak analysis is patented!



Automatic test between the test points:

1 ↔ 2+GND | 3 ↔ 1+GND | 2 ↔ 3+GND

The MultiFunctionTools

Troubleshooting made easy

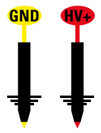
With these handy measurement and adjustment tools, the MotorAnalyzer3 simplifies the typical tasks that arise every day when repairing electric motors and winding goods.

The MultifunctionTools are not about providing documentation in the test protocol. They are about recognizing and finding faults or making sure that work steps have been carried out correctly.

Megaohmmeter

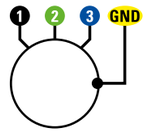
- Quickly test the insulation…
- Determine insulation resistance quickly – without using standards or time limits.
- How good is the insulation on the collector?
- How good is the insulation on the sliprings?
- Is the winding damp?
- Has the insulation of the winding improved after drying?

All this – and much more – are typical quick checks and measurements that occur repeatedly in the repair process.



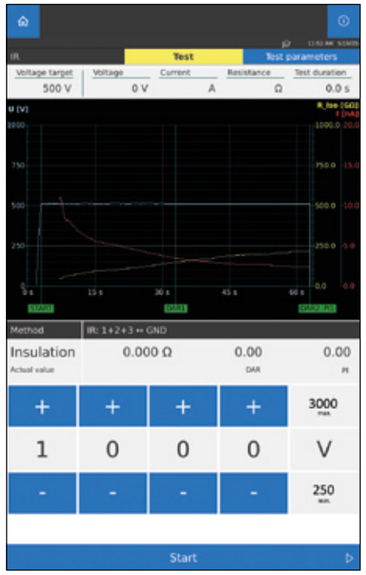
Manual test with two test tips:

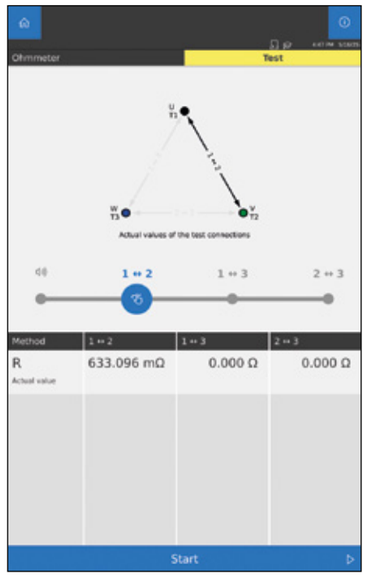
between any test points with **6 kV max.**



Automatic test between the test points:

1+2+3 ↔ GND with **3 kV max.**

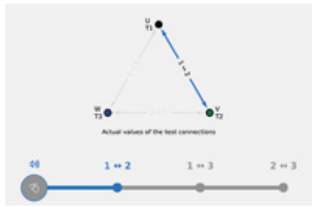


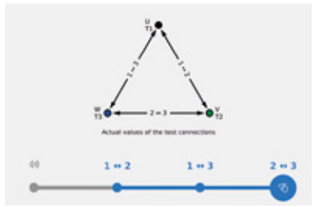


Ohmmeter | Continuity test

- Quickly measure ohmic resistance…
- Determine the beginning and end of a winding…
- Check the terminal assignment on a terminal board…
- Test a diode…
- Test a rectifier…
- Test brake connections…
- Measure temperature sensors…

All this – and much more – are typical quick checks and measurements that have to be carried out repeatedly on the job in a wide variety of situations.



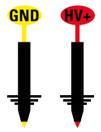


Continuity measurement with acoustic support. And the special thing about it: the MotorAnalyzer3 can do this not only for single-phase, but also for three-phase motors/stators.

High voltage test

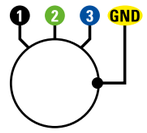
- Quickly test the voltage resistance…
- Quickly find out where the breakdown occurs…
- Use the manual voltage setting to analyze at what voltage the breakdown occurs…
- Test phase insulations.
- Is the temperature sensor well insulated from the winding?
- Was the motor damaged electrically during assembly or were cables crushed in the motor?

All this – and much more – are typical quick tests and measurements. Test the quality of your work before connecting the motor to the mains supply. All of this can also be done with an AC high voltage test device. However, if the insulation breaks down, this can lead to permanent damage. AC high voltage testing is much more destructive than DC high voltage testing. Therefore, always test with DC high voltage first!



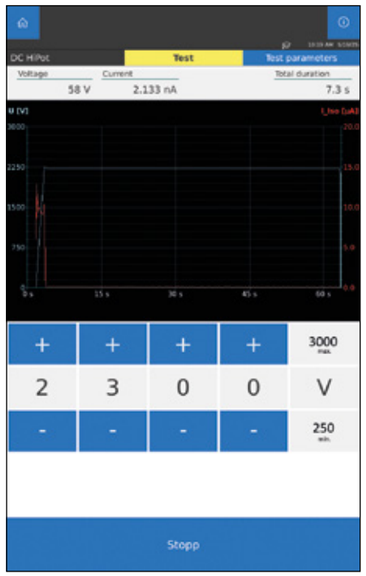
Manual test with two test tips:

between any test points with **6 kV max.**



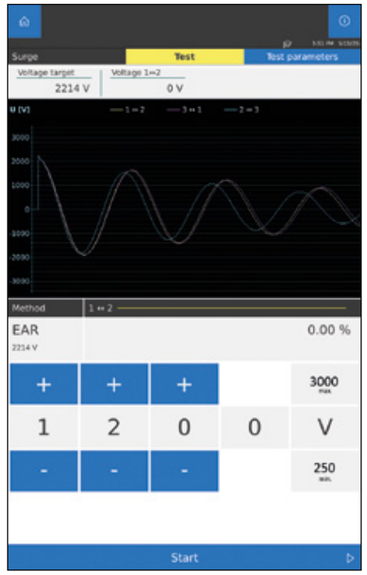
Automatic test between the test points:

1+2+3 ↔ GND with **3 kV max.**



Further information: www.schleich.com/en/product/motoranalyzer3-en

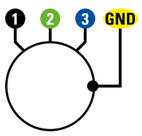
The MultiFunctionTools



Surge test up to 3 kV

- Quickly test the voltage resistance within a winding…
- Quickly find out where the breakdown occurs…
- Use the manual voltage setting to analyze at what voltage the breakdown occurs or whether everything is OK…

All this – and much more – are typical quick tests and measurements.
Test the quality of your work before connecting the motor to the mains supply.



Protective conductor resistance

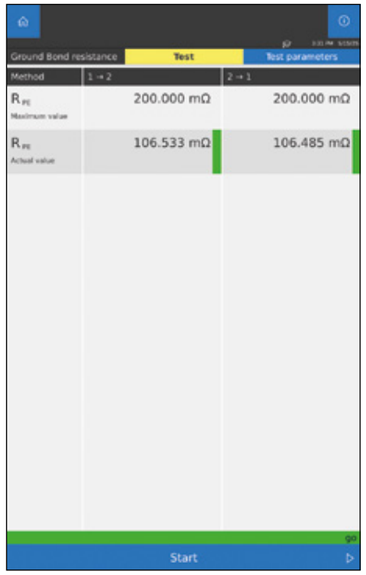
The test is carried out in accordance with DIN VDE 0701-0702 (Testing after repair, modification of electrical devices – Repeat testing of electrical devices).

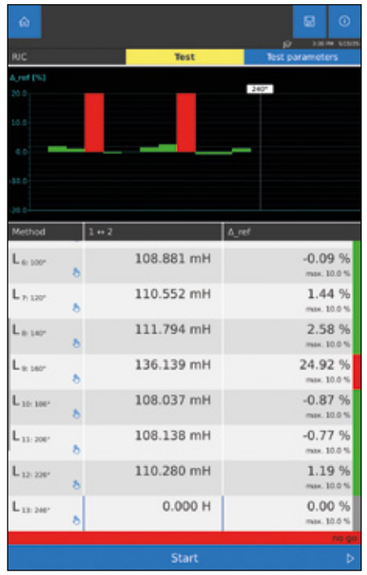
The protective earth resistance test is run with high precision using the four-wire method. The measurement is taken using DC. The two test tips are held at the beginning and end of the protective earth conductor to be tested, for example at the PE connection of the mains plug or the motor housing.

The measurement is run automatically in two test steps. In the second step, the polarity of the test voltage is reversed by the MotorAnalyzer. The higher of the two measured resistances is the protective earth conductor resistance.

Automatic test between the test points:

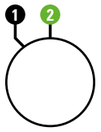
1 ↔ 2 | 2 ↔ 1





Squirrel-cage rotor test | RIC test

If a squirrel-cage rotor has a broken rotor bar, this affects the inductance of the phase under which the broken rotor bar is currently located. For testing purposes, the inductance is therefore measured on one motor phase. The rotor is rotated through a full revolution in several test steps at equal angular intervals. In a 2-pole motor with a broken rotor, there is a double inductance deviation over the entire revolution. In a 4-pole motor, the deviation is detected four times.

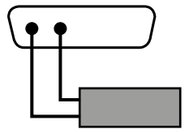


Test between the test points:

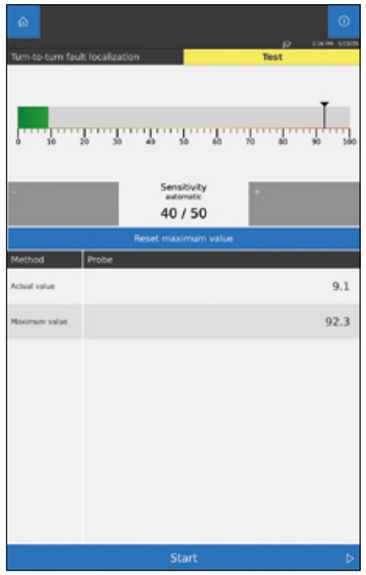
1 ↔ 2

Turn-to-turn fault localization on the stator or rotor

An induction test probe is used to locate the slots in which a turn-to-turn short circuit is present. To do this, the test probe is positioned directly above a slot and the measured value is stored. All other slots are then tested. The measured value must not deviate significantly from the first measurement.



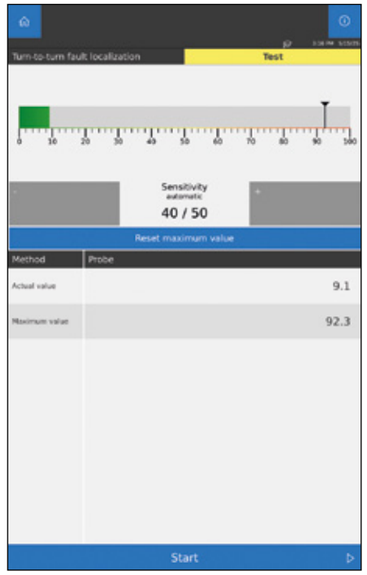
Test with special stator or rotor test probes



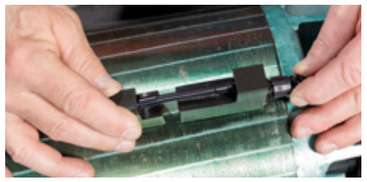
Further information: www.schleich.com/en/product/motoranalyzer3-en

SCHLEICH
Advanced Test Technologies

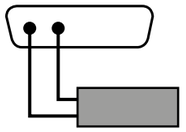
The MultiFunctionTools



Broken rotor bar detection on squirrel-cage rotors



An induction test probe is used to locate the slots in which a rotor bar is broken. To do this, the test probe is positioned directly above a slot and the measured value is stored. All other slots are then tested. The measured value must not deviate significantly from the first measurement. The test can only be run if the bars are not fully embedded in the rotor laminations. If only one of the two double bars is broken in a double bar rotor, the fault cannot be located using this method.



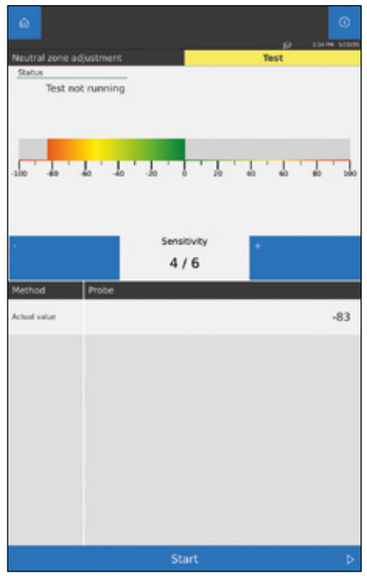
Test with special rotor test probes

Rotating field test on the motor

The motor shaft of a single-phase or three-phase motor is turned clockwise by hand. This tests whether the rotating field of the winding also turns clockwise.

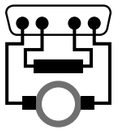
Test between the test points:

1, 2 and 3



Neutral zone adjustment

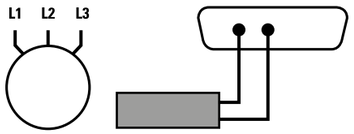
Function for assisting with adjusting the neutral zone on DC motors. A bar display with a centered point immediately shows whether the brush bridge is in the neutral zone or needs to be adjusted. The graphical representation of the misalignment of the brush bridge makes it much easier to adjust the neutral zone. The operator can immediately see in which direction the carbon brushes must be turned to reach the neutral zone.



Test with special measurement leads

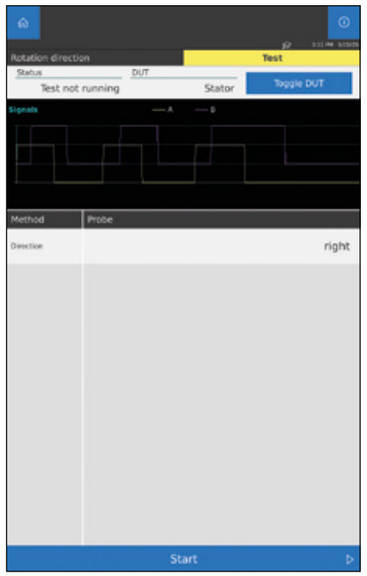
Rotating field test on the stator

For the test, the single-phase or three-phase stator is supplied with external three-phase supply. A rotating field probe located in the stator determines the sense of rotation of the magnetic field.



Test with special rotating field probe:

Low-voltage three-phase power is fed into L1, L2, and L3 from your test field.



Further information: www.schleich.com/en/product/motoranalyzer3-en

MotorAnalyzer3 – outstanding technology in a robust design

As a standard, the MotorAnalyzer3 comes in a very compact, impact-resistant case. The measurement technology is protected from shocks by built-in shock absorbers within the case.

Adjacent to the large display is a storage compartment for all measurement leads and test tips. This ensures that all necessary components are quickly and easily accessible for on-site measurements.

Alternatively, the MotorAnalyzer3 is also available as a built-in version for easy integration into control cabinets, laboratory tables or training workbenches, etc.

Scope of delivery

- MotorAnalyzer3 in a robust case
- Four specialized measurement leads with Kelvin test tongs for connecting the windings and the motor housing
- Two specialized measurement leads with test tips for manual high voltage testing
- One contact magnet with measurement lead connection for contacting the laminated core
- One Makita® BL1860B battery pack with Makita® charger
- Calibration certificate in PDF format
- Built-in operating manual
- PrintCom software

Further information: www.schleich.com/en/product/motoranalyzer3-en

Battery operation

The MotorAnalyzer3 is designed for mobile use on site at the customer's premises or in the workshop. A high-quality battery is essential for this. This is ensured by the Makita® power tool battery, which is globally available. The device has two battery slots.

One or both batteries can be plugged in. Each slot can be switched on and off individually. If one battery is running low, a second battery can be switched on without any problems. The empty battery is removed from the slot and charged in a Makita® charger independently of the MotorAnalyzer3. The "flying change" of batteries ensures uninterrupted testing. This is particularly important for DAR and PI tests. If these tests are interrupted, they cannot be repeated because the insulation will already be partially polarized by the time the test is canceled. This means that you usually have to wait a long time before repeating the measurement so that the insulation can completely depolarize.

No loss of data due to empty battery!

With many measurement and test devices, test results that have not yet been saved are irreversibly lost when the device is switched off or the battery has run out.

However, this is not the case with the MotorAnalyzer3. The operating system, which is designed for mobile use, permanently keeps all relevant values in the background. This means that no measured values are lost due to accidental switching off. After switching back on, the MotorAnalyzer3 is in the same state as before it was switched off. Even an interrupted test can be continued.

Optional mains operation

The MotorAnalyzer3 can also be operated without a battery using an optional mains adapter. To do this, plug the mains adapter into a free slot.

The features

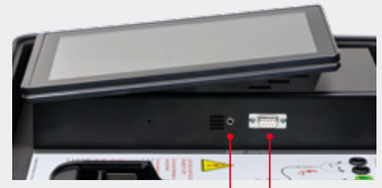
10.1” capacitive touch TFT LCD panel with backlighting for excellent readability in different lighting conditions, for different viewing angles and distances

Test results are transferred from the MotorAnalyzer3 to the PC via Bluetooth

SHOCK PROTECTION

Robust, impact-resistant outdoor carrying case with built-in shock absorbers

LED indicators
- User guidance
- Displays active test points



Foot switch
Start button on test tip

Test probes

Slots for 2 Makita® rechargeable batteries, which can be swapped out during operation

Additional Makita® batteries are available worldwide from local retailers

An additional mains adapter is available for purchase (see Accessories)

Function and technology

- Fully automatic test sequence
- Manual test sequence
- Built-in 10 GB memory for thousands of test results
- Real-time clock for storage with time and date
- Entry of motor and order data

Safety

- Built-in plausibility checks for all inputs
- Safety and warning messages
- Built-in helpful explanation texts for each parameter input
- Foot switch connection

Communication

- Bluetooth
- WiFi connectivity for remote training

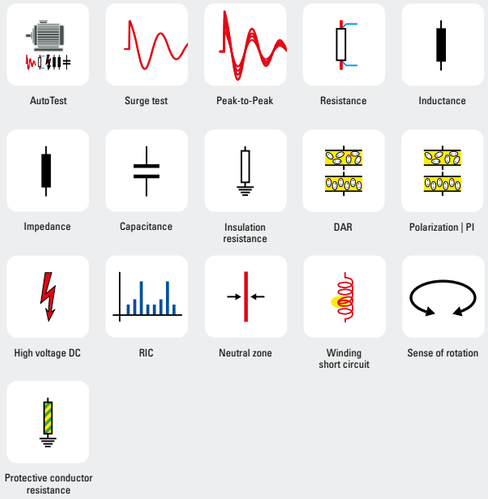
Further information: www.schleich.com/en/product/motoranalyzer3-en

The technical data

Rechargeable battery	Makita® rechargeable battery
Battery life with one rechargeable battery	up to 8 hours, depending on the tests
Mains voltage (with optional mains adapter)	Worldwide voltage supply 90-250 V/47-63 Hz
Interface	Bluetooth
Memory capacity	10 GB for thousands of test results including graphics
Dimensions of case	488 mm x 386 mm x 185 mm (W x D x H)
Weight of case device	11 kg / 24.25 lbs.

The facts overview

- Universal ALL-IN-ONE test device for
  - 3-phase motors and generators
  - Asynchronous motors, induction motors
  - AC and DC generators
  - AC and DC synchronous motors
  - Servos
  - DC motors
  - Brushless DC
  - Wound armatures and fields
  - Motor brake coils, clutch coils
  - 1-phase motors
  - 1-, 3-phase transformers
  - …
- 16 test methods in one device



- Complete motor condition analysis in just a few minutes
- Manual and automatic tests
- Fully automatic test method switching on the 4 measurement leads
- Testing can also be carried out directly on a switch cabinet via long existing connection cables to the motor
- Built-in voltage measurement function before the start of the test to protect the test device
- Very easy-to-read, large, high-resolution touch display
- Integrated test results memory for thousands of tests
- Real-time clock for storing time and date
- Entry of motor nominal data, customer data and location data for the perfect test protocol
- PC software PrintCom for storing and printing the test results on a PC
- Transfer of test results via Bluetooth to a PC
- Software with built-in manual and help texts
- Free lifetime updates for your MotorAnalyzer3 via PrintCom and Internet connection
- Makita® rechargeable batteries – high productivity thanks to operation without mains power supply
- Low weight
- Robust, impact-resistant outdoor carrying case with all measurement leads “on board”
- Optimized for
  - Fault detection and localization
  - Quality control
  - Incoming and outgoing testing of new, defective, and repaired windings
  - Trend analysis
  - Predictive maintenance
  - …

INCLUDING
CALIBRATION

The Accessories

Kelvin test tongs | robust design

Four-wire Kelvin test tongs in robust design for high-precision resistance testing.

Type	Small	Medium	Large
Opening width	7 mm	15 mm	33 mm
Clamping force	20 N	30 N	100 N
Four-wire technology	yes	yes	yes
Pluggable measurement lead	yes	yes	yes
Dimensions (W x H x L)	13 x 37 x 90 mm	20 x 63 x 168 mm	25 x 107 x 253 mm
Article number	4023184	4023122	4023109

Note: Additional measurement leads required for each Kelvin test tong.

Kelvin test tongs for threaded bolts on terminal board

Specialized Kelvin test tongs for contacting the threaded bolts on the motor terminal board

Bolt diameter	4-10 mm	8-14 mm
Four-wire technology	yes	yes
Article number	40001182	40001183

Note: Additional measurement leads required for each Kelvin test tong.

Measurement leads for Kelvin test tong

Measurement lead per Kelvin test tong

Length of leads	2.5 m
Article number (1 piece)	403184

The measurement leads can be connected to the Kelvin test tongs (4023184, 4023122, 4023109, 40001182, and 40001183)! Three measurement leads are required for testing.

Motor terminal plugs

The motor terminal plugs enable quick connection to 6-pole motor terminal boards. The individual types are designed to match the motor-side connection threads from M4 to M10. Due to different distances between the threaded bolts, different versions are available for each type.

More information can be found on our website:
www.schleich.com/en/product/motor-terminal-plugs-en

The Accessories

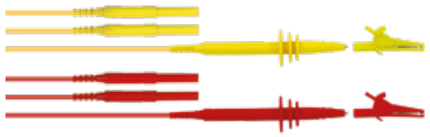
Spare Kelvin test tongs set

Length of leads	2 m
Opening width	c. 20 mm
Four-wire technology	yes
Article number	403180

Set consisting of 4 Kelvin test tongs for high-precision resistance measurement, including measurement leads.

(The set is included in the scope of delivery.)

Spare high-voltage test leads



Length of leads	2.2 m
Article number	403187

Set consisting of 2 high-voltage test tips, 2 crocodile clips and measurement leads. (The set is included in the scope of delivery.)

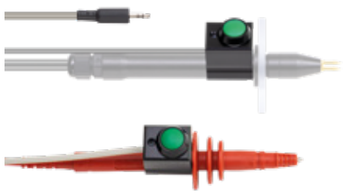
Four-wire resistance test probe with protective cap for DC armature testing

Length of leads	3 m
Article number (1 piece)	403172

For resistance testing with very high precision.

Note: Two four-wire test tips are required for testing.

Start/stop button for four-wire and high-voltage test tips



Ideally suited for starting and stopping the test when both test tips are held in hands.

Length of leads	3.2 m
Article number (1 piece)	403111

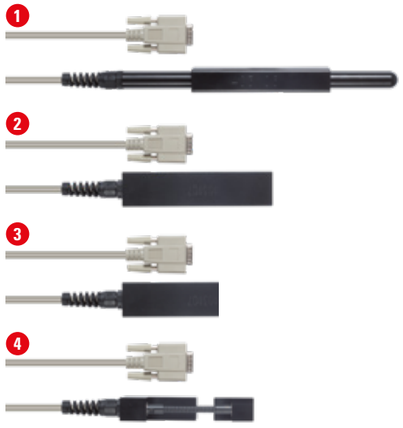
Note: Suitable for resistance test tip 403172 and high-voltage test tip 403187

Foot switch to start the test

Length of leads	2 m
Article number	4010611

The alternative to a start/stop button

Induction probes for fault location



Slot distance	1 9 mm	2 19 mm	3 9 mm	4 9 mm flexible
Dimensions (W x H x L)	20 x 25.5 x 120 mm	30 x 25.5 x 130 mm	20 x 25.5 x 105 mm	20 x 40 x 115 mm
Length of leads	3 m	3 m	3 m	3 m
Application	Stator	Stator	Small armature	Squirrel-cage rotor
Article number	403106	403107	4000442	403123

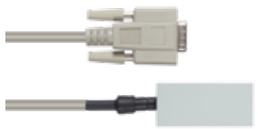
Probe for testing windings in stators and armatures using the induction method.
The probes are used to locate a short circuit in a winding.

Neutral zone measurement leads

To adjust the neutral zone on DC motors, connect the field and the armature (the carbon brushes) to the MotorAnalyzer3. Turn the brushes to adjust the “neutral zone”.

Type	Standard
Length of leads	1.5 m
Article number	403102

Rotating field probe for measuring direction of rotation of stator



The sense of rotation of the stator is detected using a Hall rotary field sensor. For this purpose, the stator is operated in the test field at a low rotary field voltage and the rotary field sensor is placed in the stator.

Length of leads	3 m
Article number	403103

Ambient temperature sensor

Ambient (object) temperature compensation for resistance and insulation resistance testing

Article number	403109

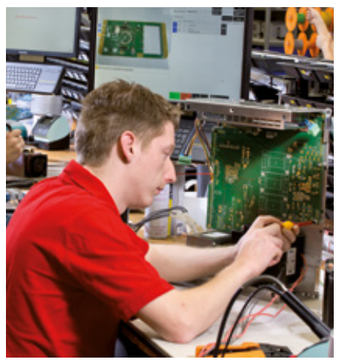
Mains adapter

For direct mains operation without battery. The mains connection adapter is plugged into one of the two battery slots. The unused battery slot remains empty.

Length of leads	4.5 m
Article number	4031202

Another word for “Made in Germany”:

SCHLEICH



Comprehensive production facilities allow designing and manufacturing almost all tester components at our site in Hemer.

For example, our measuring and electronic PCBs are produced with an ultra-modern in-line-SMD-placement system, which assures a stable quality of our products.

Modern high-end processors in our testers process the test tasks in a fast, precise and reliable manner. With our modern CNC-machines, we also design and manufacture a great number of accessory components such as test covers, contacting units, workpiece carriers with DUT-holders or robot gripping tools as well as complete automatic production lines.

Whatever you want to test…

…SCHLEICH has the solution!

SCHLEICH is a leading system provider in the area of testing motors and windings. Our extensive range of products allows us to provide you with testers, test systems and complete production lines for almost every test task.

Decades of experience, listening to our customers and satisfying their wishes – facing individual tasks with technical creativity and realize them in a team of highly skilled engineers and designers – this is what we do. This is SCHLEICH.

Every single one of our more than 150 employees works on guaranteeing and optimizing the high quality standard of our testing devices each and every day. Our customers, our sales department, our motivated engineers and manufacturing staff – with their ideas and suggestions for improvement they are all part of the innovation process.

Further information: www.schleich.com/en/product/motoranalyzer3-en

Service without limits.

We are there for you – wherever you are.

First-class customer service is our top priority. From detailed consulting during the planning phase to training and After-Sales-Service – we support you during the entire process.

In training sessions adapted to your requirements, our technicians will teach you the necessary know-how allowing you to avail yourself of the functional variety of our testing devices to the full extent. Should there be questions or technical problems, our technical support team will assist you by phone, on-line or on-site fast and reliably. Constant software updates and extensions make sure that you can always work with state-of-the-art test software.

The periodic calibration of test equipment is an essential precondition for quality assurance. We calibrate your test equipment according to standards – on site or via remote maintenance.

It goes without saying that we calibrate in accordance with national and international standards. Our Service Centers support you around the world – with dedication, competence and reliability.

Sales and Service Centers

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Sales and Service Centers

Sales Centers

SCHLEICH Advanced Test Technologies

Expect more!

Whatever you want to test, SCHLEICH has the solution! As a leading supplier of electric safety and function test systems as well as motor and winding testers we offer solutions for any task in this sector. Our owner-managed company, founded more than 70 years ago, is present in over 40 markets all around the globe.

Test devices for electric motors and windings

MotorAnalyzer3
Universal tester for electric motors and windings

MTC2 *R7*
Multi-purpose winding testers

VoltageAnalyzer
Accurate surge measurement directly at the winding

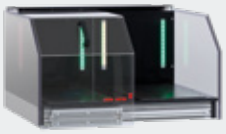
EncoderAnalyzer
For testing encoders

Dynamic-MotorAnalyzer3
Online Monitoring of electric motors

MTC3
Multi-purpose winding testers for motor production

GLP3-M
Multi-purpose motor testers

Thermal-bonding machines, impregnation and resistive-heating systems



Test covers, test cabins and protection devices
Personal protection against dangerous test voltages

Motor terminal plugs
Contact electric motors quickly

Electrical safety- and function testers

Handheld
Mobile multi-purpose testers

GLP1-g
Safety, function and high-voltage testers

GLP2-BASIC
Safety, function and high-voltage testers

GLP2-MODULAR
Safety, function and high-voltage testers

GLP3
Multi-purpose Windows®-testers

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