MotorAnalyzer 1+2
Multi-purpose testers for electric motors and windings

Made in Germany

Expect more.
The MotorAnalyzer 2 – unbeatably versatile

The all-purpose MotorAnalyzer 2 is used for checking electric motors and windings. It combines 13 different test methods within a user-friendly and mobile tester. The combination of test methods, its compact design, as well as the battery operation, turn the MotorAnalyzer 2 into an ideal tool for on-site operation, especially in difficult applications.

For checking a 3-phase motor the three winding connections and the motor’s frame are connected to the tester. This testing is done with four wire technology, providing high precision resistance measurements. After the Kelvin resistance test, the MotorAnalyzer 2 performs fully automatic testing via surge test, resistance and inductance. The MotorAnalyzer 2 automatically switches between different tests via its internal relay matrix. Finally, a high voltage test is done to evaluate the motor’s quality.

In addition, the MotorAnalyzer 2 provides information on brush holders and turn-to-turn faults within DC motors.

KEY-FACTS

- 13 test methods
- Surge voltage up to 3000 V
- High-voltage DC up to 6000 V
- Large, highly readable color display
- Innovative input via rotary button
- Structured menu and practical functioning buttons
- Fully-automatic fault analysis
- Automatic switchover between the three motor connecting leads
- Manual and automatic tests
- Locate turn-to-turn faults
- Adjust the neutral zone
- Rotary button for quick test method selection
- Integrated result storage for a subsequent transfer via USB interface
- Store and print test results via PrintCom
- AC or battery operation
- Worldwide power supply 100-250 V/47-63 Hz
- Low weight
- All-purpose solid case including all test leads on board
The MotorAnalyzer 2 – State-of-the-art technology, robust packaging

The MotorAnalyzer 2 combines 13 methods for testing motors in one single device. This test method variety is unique in this tester class. The combination of test methods with its compact and sturdy case, turn the MotorAnalyzer 2 into an ideal tool for on-site operation or production.

All required measuring leads are stored within reach in the MotorAnalyzer 2’s case and, due to the battery operation option; it is immediately ready for use at all times and places.

The MotorAnalyzer 2 is equipped with a unique integrated test method switchover, which automatically switches all integrated test methods to the winding connections. Clamping between single test methods is not necessary.

The complete hardware and software is developed by SCHLEICH itself and – according to our motto “Made in Germany”. Our innovations set technological standards for modern winding inspection.
For the automatic test of a three-phase motor, the three winding connections and the motor frame are connected to the tester. The MotorAnalyzer 2 analyzes the motor automatically via resistance, inductance, impedance, capacity, insulation resistance, surge, and high-potential tests. It checks whether the winding is ohmically or inductively symmetrical. If there are large deviations within the three phases, the motor may be defective. Along with this, the dielectric strength between the motor and motor frame is also tested.

The MotorAnalyzer 2 analyzes the winding connections and motor frame. The winding connections and motor frame are also tested.

**Polarization Index test | PI/DAR**

For the DAR and polarization index test, the MotorAnalyzer 2 generates a test voltage from 50 to 6000 V DC. The voltage can be set manually at the rotary button, it can be automatically set for a programmable value and a step voltage measuring is possible. The safety-current-limitation of the high voltage- and insulation resistance test is safety-current-limited, this means, that no extra protection against accidental contact is required when working with test probes. However, during high voltage- or insulation resistance tests the test object is electrically charged! The maximum permissible charging energy, stored in the test object, is clearly defined in the respective, country-dependent safety regulations. Based on the measured insulation capacity and the connected test voltage, the MotorAnalyzer automatically reduces the test voltage to a safe maximum value. If requested, this function may also be disabled in the expert mode.

**Resistance test**

The resistance test is performed with very high precision four-wire technology. The symmetry evaluation of the three winding resistances or the comparison to a preset value is performed automatically. If required, temperature compensation converts the copper resistance to 20° C/68° F. For ambient temperature measuring, an ambient temperature sensor needs to be connected to the MotorAnalyzer 2.

**Inductance test | Impedance test**

The inductance and the impedance test also utilizes the four-wire technology. The symmetry evaluation of the three winding inductances or the comparison to a preset value is performed automatically.

**High-potential test DC**

For the high-potential test, the MotorAnalyzer 2 generates a test voltage from 50 to 6000 V DC. In the automatic test, the voltage is max. 3000 V and at the manual test it is max. 6000 V due to the test probes. The voltage can be set manually at the rotary button, set automatically to a programmable value and a step voltage measurement is possible as well.

**Insulation resistance test**

For the insulation resistance test the MotorAnalyzer 2 generates a test voltage from 50 to 6000 V DC. The automatic test has a 3000V max voltage, whereas, the manual test has a max voltage of 6000 V. This is due to the test probes. The voltage is set manually at the rotary button, it can be automatically set for a programmable value and also step voltage measuring is possible. If required, temperature compensation converts the insulation resistance to 40° C/104° F.

**GB-resistance test | Capacity test**

The DC earth/ground-bond resistance test is performed with high precision in four-wire technology. The capacity measurement is possible as well. The measuring time runs automatically.

**Surge voltage test up to 3000 V**

MotorAnalyzer 2 generates surge pulses up to 3000 V that can be continuously adjusted. The patented automatic surge voltage comparison of the windings to each other or to a reference test object provides precise data regarding winding symmetry. The MotorAnalyzer 2 detects any non-symmetries automatically.

**Automatic analysis**

The measuring time runs automatically. It checks whether the winding is ohmically or inductively symmetrical. If there are large deviations within the three phases, the motor may be defective. Along with this, the dielectric strength between the motor and motor frame is also tested.

The graphic display of the brush holder’s false position facilitates the location of the neutral zone for DC motors. Via a bar graph with central point, the user can see whether it is in the neutral zone or in which direction the brush holder needs turned.

With use of the induction test probe, the operator can locate the slots in which the turn-to-turn fault occurred. The probe also serves for measuring stators, armatures and for searching for bar-to-bar problems in a squirrel-cage motor.

Further information: www.schleicher.com/en/motoranalyzer2
The MotorAnalyzer 1 – the multi-purpose tool

The MotorAnalyzer 1 is an all-purpose tester for testing electric motors and windings. It combines 10 different test methods in a user-friendly, mobile case. The combination of test methods, its compact design, as well as the option of a battery operation turns the MotorAnalyzer 1 into an ideal tool for the on-site use – especially in difficult installation positions.

Further information: www.schleich.com/en/motoranalyzer1

KEY-FACTS

• 10 test methods
• High-voltage up to 4 KV
• Fully automatic fault analysis
• Automatic switchover between three motor connecting leads
• Manual and automatic tests
• Location of turn-to-turn-faults
• Mains and/or battery operation
• Low weight
• Can also be supplied in a sturdy measuring case
• Rotary button for quick test method selection
• Integrated result storage for later transfer via RS232 or USB interfaces
• Storing and printing of test results via PrintCom

The MotorAnalyzer 1 – the multi-purpose tool

The test methods

Automatic analysis

Surge test

Resistance test

High-potential test DC

Polarization index

Insulation resistance test

For automatic testing of a three-phase current motor, the three winding connections and the motor frame are connected to the tester. The MotorAnalyzer 1 analyzes the motor automatically via the surge and resistance test. It checks whether the winding is ohmically or inductively symmetrical. If deviations within the three phases are too large the motor is defective.

For checking three-phase motors, the three winding connections as well as the motor cabinet are connected to the tester. The MotorAnalyzer 1 analyzes the motor automatically using the surge and resistance test. Lastly, a high potential test is also performed at the motor in order to evaluate the motor’s quality.

For the inductive winding check, the MotorAnalyzer 1 generates low-level surge voltages. The patented automatic surge voltage comparison of the windings or to a reference test object provides precise data regarding the winding’s symmetry. The MotorAnalyzer 1 detects any non-symmetries automatically.

The resistance test is performed with high precision four-wire technology. The symmetry evaluation of the three winding resistances or the comparison to a preset value is performed automatically. If required, temperature compensation converts the copper resistance to 20° C/68° F.

For the DC high-potential test, the MotorAnalyzer 1 generates a test voltage ranging from 50 to 4000 V DC. The voltage can be set manually with the rotary button or automatically as a programmable value.

For the DAR and polarization index test, the MotorAnalyzer 1 generates a test voltage ranging from 50 to 4000 V DC. The voltage can be set manually with the rotary button, or automatically as a programmable value.

For the insulation resistance test, the MotorAnalyzer 1 generates a test voltage ranging from 50 to 4000 V DC. The voltage can be set manually with the rotary button, automatically as a programmable value or a stop voltage measurement is also possible.

GB-resistance test

Neutral-zone-setting

Rotation direction test at stator or motor

Turn-to-turn fault location

The MotorAnalyzer 1 generates a test voltage ranging from 50 to 4000 V DC. The voltage can be set manually with the rotary button or automatically as a programmable value.

The graphic display of the brush holder’s false position facilitates the adaptation of the “neutral zone” for direct current motors. Via a bar display with central point, the user can see whether it is in the neutral zone or in which direction the brush holder needs turned.

In single or three-phase motors, it is displayed during the manual rotation of the motor shaft if the shaft rotates to the left or right.

With use of the induction test probe, the operator can locate the slots in which the turn-to-turn fault occurred. The probe also serves for measuring stators, armatures or for searching for bar to bar problems in a squirrel-cage motor.

Further information: www.schleich.com/en/motoranalyzer1
The test protocol with PrintCom G2

All test results may be transferred from the MotorAnalyzer to PC via the software PrintCom G2 and they can be printed on a modern standard printer either directly after finishing a test or later.

With PrintCom G2, it is possible to create a clearly structured test protocol, including all necessary information, in no time.

Customizable content with company logo and address

General motor data, date and time etc.

Overview of all results

Detailed view resistance

- Phase resistances compensated to 20°C | 68°F
- Deviation
- Set values (if existing)

Detailed view surge voltage

- Signal plots of all three phases in a single diagram
- Display of the symmetry of all 3 phases
- Percentage deviation to reference coil
- Set values (if existing)

Detailed view insulation resistance

- Signal plots:
  - Voltage-current | resistance-current | resistance-voltage
  - Insulation resistance at measured temperature
  - Insulation resistance compensated to 40°C | 104°F
  - Set values (if existing)
## Technical data

### MotorAnalyzer 1
- **Model**: MotorAnalyzer 1
- **Art. no.**: 403101
- **Test voltage**: 12 V
- **Joules**: 0.45 J
- **Capacitor**: 100 nF

### MotorAnalyzer 1 portable
- **Model**: MotorAnalyzer 1 portable
- **Art. no.**: 403141
- **Test voltage**: 12 V
- **Joules**: 0.45 J
- **Capacitor**: 100 nF

### MotorAnalyzer 2
- **Model**: MotorAnalyzer 2
- **Art. no.**: 403168
- **Test voltage**: 3000 V
- **Joules**: 0.001 µF
- **Capacitor**: 0.5 µF

### Technical specifications

#### Surge voltage test
- **Test voltage**: max. 3 KV
- **Surge capacity**: max. 100 nF
- **Pulse rise time**: 100-200 ns
- **Evaluations**: in addition to our patented correlation method, further evaluation methods are included in the tester: EA9, diff. EA9, peak to peak
- **Deviation display**: in %
- **Comparison**: Comparison between phases or to a reference stator
- **Switchover**: automatically between test methods and the 3 connections
- **Symmetry evaluation**: yes, between the three phases

#### Resistance test
- **Measuring range**: in 4-wire-technology
- **Resistance test**: 100 µΩ-500 Ω
- **Accuracy**: ±5 %
- **Automatic switchover**: yes, automatically between test methods and the 3 connections
- **Symmetry evaluation**: yes, between the three phases

#### High-potential test DC
- **Measuring range**: 0.001 µF-500 µF
- **Surge current**: 3 mA
- **Automatic switchover**: no
- **Test time**: manually, continuous operation or automatic test program

#### Capacity test
- **Measuring range**: 0.01 µF-10 mF
- **Accuracy**: ±5 %
- **Automatic switchover**: yes

#### Impedance | Inductivity
- **Measuring range**: 0.01 Ω-10 kΩ
- **Accuracy**: ±5 %
- **Automatic switchover**: yes

#### Note:
- Only included in MotorAnalyzer 2

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Further information: www.schleich.com/en/motoranalyzer2
Further information: www.schleich.com/en/accessories
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 50 years ago, is present in over 40 markets all around the globe.

Electric motors- and winding testers

- MotorAnalyzer 1+2
  Multi-purpose testers for electric motors and windings

- MTC2
  Multi-purpose winding testers

- EncoderAnalyzer
  Testers for checking shaft encoders

- Dynamic MotorAnalyzer
  On-line monitoring for electric motors

- MTC3
  Multi-purpose winding testers

- GLP3
  Multi-purpose motor testers

- Bending machines

Electrical safety- and function testers

- Handheld
  Mobile multi-purpose testers

- GLP1
  Safety-, functional and high-voltage testers

- GLP2 Modular
  Safety-, functional and high-voltage testers

- GLP3
  Multi-purpose Windows®-testers

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Expect more.