



## MotorAnalyzer3

The expert level tester for your motor service

All-purpose application options for the detection of faults in non-energized windings and an extremely compact design distinguish the MotorAnalyzer3.

The impressive high-resolution display with more than 10 inches provides maximum operating comfort and ideal readability of the results.

The device includes 14 intelligent tests, including a **surge voltage test of up to 3 kV**.

Thanks to Makita® batteries that can be changed during operation, tests can be carried out without a power supply.

The MotorAnalyzer3 is the ideal all-in-one tester for electrical engineering, motor repair, maintenance and servicing.

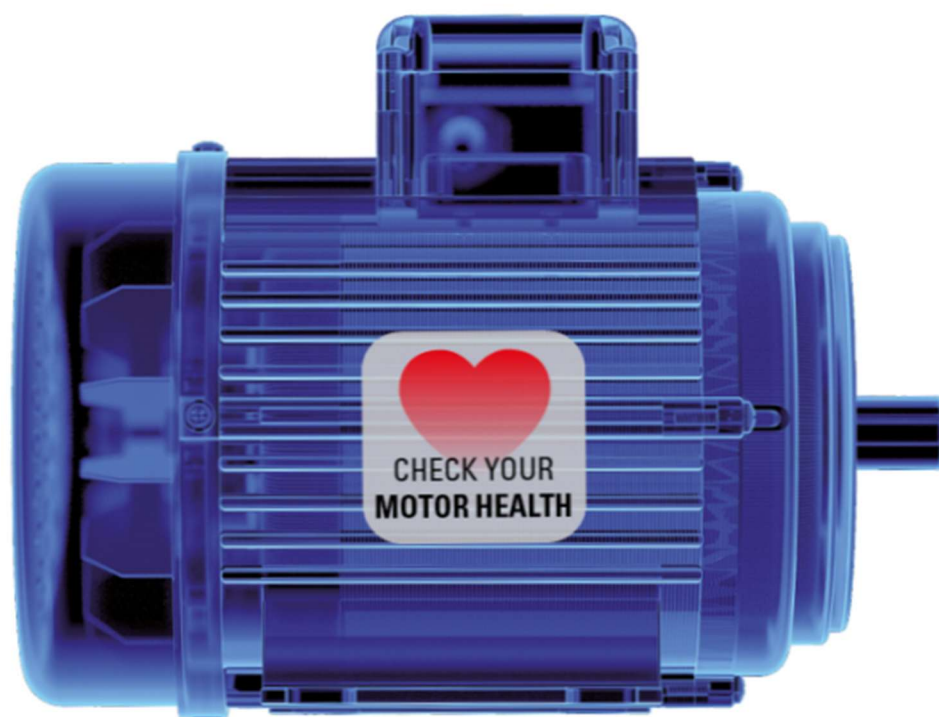
No other portable test device provides as much support for troubleshooting and testing of motors and generators as this tool.

Thanks to the included **PrintCom** software, Bluetooth transmission of test results to a PC is easy. All tests are always available in the searchable database: as a printout, PDF or Excel file.





## Key-Facts





## Unrivalled versatility. A class of its own.

- universal ALL-IN-ONE tester for
  - asynchronous motors, induction motors
  - generators AC, DC
  - synchronous motors AC, DC
  - servos
  - DC motors
  - brushless DC
  - coiled armatures and fields
  - motor brake coils, clutch coils
  - 1-phase motors
  - 1-, 3-phase transformers
  - ...
- full motor diagnostics in a few minutes
- testing motors up to 700 V nominal current
- ideal for
  - fault detection
  - fault localization
  - quality assurance
  - ingoing and outgoing inspection of new, defective and repaired windings
  - trend analysis
  - predictive maintenance
- Display
  - 10,1" capacitive touch TFT LCD panel with backlight
  - Large-format display of graphical test sequences for selected test methods
  - Ideal visibility in different light conditions, from different viewing angles and distances
- calibration and calibration certificate included
- battery-powered operation for the entire working day\*
- sturdy transport case containing all measuring accessories
- lightweight
- small, lightweight, carry-on size for air travel



- 14 test methods
  - fully automated autotest to check the motor's "health"
  - **surge voltage up to 3 kV, 100 nF surge capacitance incl. peak to peak testing!**
  - resistance in 4-wire measurement with temperature compensation
  - insulation resistance up to 6 kV with temperature compensation
  - high voltage DC up to 6 kV
  - polarization index PI and DAR up to 6 kV
  - inductance (L)
  - RIC-test at squirrel cage rotors (RIC: Rotor Influence Check)
  - impedance (Z)
  - capacitance (C) – winding to frame
  - PE/GB-resistance
  - adjusting the neutral zone at DC motors
  - rotary field of stator or motor
  - use a test probe to locate the slot/the coil in which the winding short circuit is located
- 4 test connections for 3 phases and the motor frame
- built-in multipath automatic switchover with display of the active test method via LEDs
- testing without having to reconnect test leads multiple times
- test can also be performed directly at the control cabinet via several hundred meters of connecting cables to the motor
- automatic testing with automatic pass/no pass-statement
- toggle between standard or expert mode
- type label information input possible
- built-in 10 GB test result memory for thousands of tests
- Comprehensive result logging with graphical analysis
- Transfer of results via Bluetooth to PrintCom software on your PC
  - PrintCom:
    - Create test protocols in PDF or Excel format, ideal for sharing via email
    - Easy-to-read printout of test reports, including your company logo, on any Windows® printer

## In Comparison.

Types of faults	SCHLEICH All in 1 tester MotorAnalyzer3	other "all in one" tester	Megohmmeter Insulation tester	DMM Multimeter
Open connection				
Short to housing				
Short between phases				
Short between turns				
Winding faults				
Connecting faults				
Insulation faults				
Contamination				
Stator faults				
Rotor faults				
Coils faults				
Temperature sensor fault				

Test methods				
Insulation resistance	6 kV   500 GΩ			
Polarization index PI				
Dielectric Absorption DAR				
Surge test	3 kV			
Resistance test	100 μΩ – 500 kΩ   4W			
4 wire measurement	Kelvin clamps			
Temperature compensation	resistance & insulation			
Inductance	10 μH – 1500 H			
Impedance	1 mΩ – 500 kΩ			
RIC-Test				
Phase symmetry				
Capacitance	10 nF – 50 μF			
Stator rotating field				
Motor rotating field				
Additional functions				
Fault location in the slot				
Neutral zone adjustment				
Conclusion	TOP ALL in 1	restricted	critical	unsuitable

## Description

### The universal tool.

The universal MotorAnalyzer3 is used to test electric motors and winding goods. It combines 14 different test methods in a single user-friendly and mobile device. The combination of test methods, its extremely compact design and the battery operation option make the MotorAnalyzer3 an ideal tool for on-site use – even in difficult installation situations.

To test a three-phase motor, the three winding connections and the motor housing are connected to the tester. For highly accurate resistance measurement, this should be done using the four-wire method. The MotorAnalyzer3 then automatically starts the surge voltage, resistance, inductance and high voltage tests one after the other. To do this, the various test methods are automatically switched in sequence to the four measuring points via the internal relay matrix.

In addition to the motor test, the MotorAnalyzer3 also provides assistance in adjusting the brush rocker for DC motors and for locating faults in the two slots in which the coil with the turn-to-turn fault is located.

The MotorAnalyzer3 is housed in a very compact, robust and waterproof case. In addition to the generously designed display it features a storage compartment for all measuring cables and test probes. This means that the operator always has all the necessary components quickly at hand when taking measurements on site.

# Technology

## Technical specifications overview.

### Autotest



Description : Motor 3~ D 230V (new)  
DUT type :  
DUT SN :

14 Nov 2024  
12:36:58

**AutoTest configurator**

**DUT type**

Motor

Stator

Coil

3~  
three phase

1~  
single phase

Δ  
Delta

Y  
Wye

**Nominal voltage**

110 V

230 V

380 V

400 V

480 V

500 V

575 V

660 V

690 V

max.

**Standard**

Europe

EASA

NEMA

IEEE

none

**DUT condition**

new

reconditioned

Acceptance

**Test voltage at**

IR

500

V

DC HiPot

1800

V

Surge

800

V

All test voltage specifications are suggestions and do not have to be correct in relation to the selected standard. The user of the MotorAnalyzer is solely responsible for the correct setting of the test voltage. All information/settings are without guarantee and do not claim to be complete.

**Configure new AutoTest**

DUT properties,  
nominal voltage,  
test standard range,  
DUT condition ...

Done!

- automatic stator and motor test
- fully-automatic fault analysis
- connect once – then test everything
  - automatic switching between the test methods
  - automatic switching between all test leads

### **Surge voltage**

- up to 3,000 V
- automatic and manual surge voltage tests
- surge voltage tests specifically designed for stators
- surge voltage tests specifically designed for fully assembled motors
  - automatic step-by-step test voltage increase (peak to peak)
- 1, 2 and 3-phase
- graphical visualization of the surge wave
- automatic analysis

### **Resistance**

- 1, 2 and 3-phase
- unbalance detection – scattering between phases
- high-precision 4-wire measurement (4W)
- ambient/winding temperature compensation

### **Inductance**

- 1-, 2- and 3-phase
- unbalance detection – scattering between phases
- high-precision 4-wire measurement (4W)

### **RIC-Test (Rotor Influence Check) – squirrel cage rotor test**

- 3-phase
- measurement of the angle-dependent unbalance of the squirrel-cage rotor



## **Impedance**

- 1-, 2- and 3-phase
- unbalance detection – scattering between phases
- high-precision 4-wire measurement (4W)

## **High voltage DC**

- 0 – 6,000 V DC
- manually adjustable
- programmable (automatic)
- step voltage test

## **Polarization index & DAR**

- 0 – 6,000 V DC
- PI test
- DAR test
- automated measurement

## **Insulation resistance**

- 0 – 6,000 V DC
- up to 500 G $\Omega$  (1 T $\Omega$ )
- e.g. with 500 V in accordance with VDE 0701
- ambient/winding temperature compensation

## **PE/GB-resistance**

- in accordance with VDE 0701

## **Capacitance**

- Capacitance between the entire winding and the motor frame

## **Neutral Zone adjustment for DC motors**

- bar chart indicating the deviation from the neutral zone
  - acoustic indication of the misalignment from the neutral zone by means of a signal tone
- This allows the user to focus on the adjustment of the brushes during the measurement, without having to look at the display.

## **Rotary Field of the stator**

- stator – rotary field measurement with a rotary field probe

## **Sense of rotation of the motor**

- motor – sense of rotation measurement

## **Locating the slots with Turn-to-Turn fault**

- Locating the slot in which the turn-to-turn fault is located by means of a test probe
  - for stators and wound rotors
  - bar chart indicating the slot-to-slot deviation
  - modulated acoustic notification if test results are outside the specified limits
- This allows the user to focus on the positioning of the measuring probe above the slot during the measurement, without having to look at the display.

## **Power Supply**

- replaceable Makita® batteries – exchangeable during operation, available for purchase worldwide
- world voltage range 90 – 250 V, 47 – 63 Hz

## Applications

In the workshop.



- Testing a motor with the fully automated Autotest or directly with single test methods.

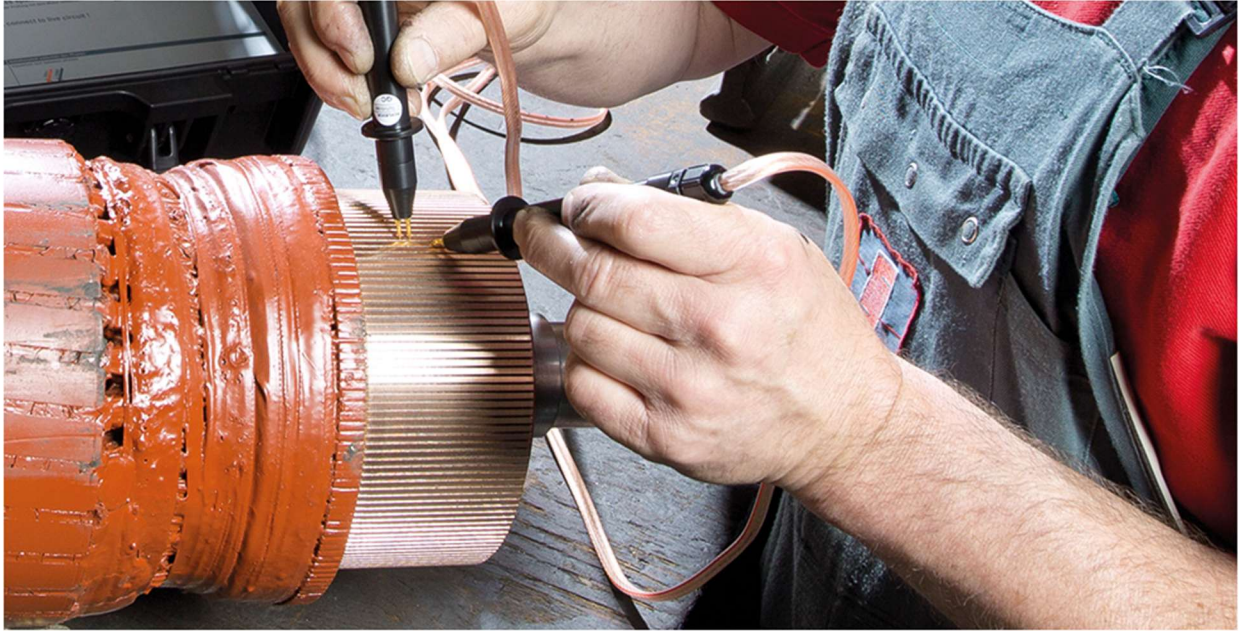
High-voltage test.



- Testing with test probes to find faults to frame and phase-to-phase faults.



## Inspection of a rotor.



- Resistance test, moving from bar to bar with 4-wire test probes.

## Where is the turn-to-turn fault?



- Turn-to-turn fault detection of a stator with a test probe, moved from slot to slot through the entire stator.



**SCHLEICH is a leading manufacturer of electrical safety, functional, winding and electric motor testing technology.**

SCHLEICH is a world-renowned company that focuses on the development of innovative products in the field of testing technology for electrical products of all kinds.

From A to Z - everywhere SCHLEICH testing technology is in use worldwide. Our customers come from over 50 countries and regions. Everything is developed and produced in Germany.

Quality work - Made in Germany.

2022 - SCHLEICH is awarded for the fifth time as TOP100-Innovator

2016 - SCHLEICH released the first VoltageAnalyzer for measuring the real voltage directly at the winding terminals

2012 - SCHLEICH is awarded as TOP100-Innovator for the first time

2005 - SCHLEICH released the first stator tester with partial discharge test

1995 - SCHLEICH integrates touch-displays into testing devices as a world leader

1990 - SCHLEICH released the first safety and function tester with fully automatic integrated test terminal changeover

1987 - SCHLEICH released the first surge tester with PC-control under DOS and fully automatic integrated test terminal changeover

1985 - SCHLEICH released the first MotorAnalyzer

1982 - SCHLEICH focuses fully on electrical test engineering of electrical products

1952 - SCHLEICH is founded as a motor repair shop

Pioneering spirit, competence, curiosity, brand new technologies and innovations. This is what the 150-strong SCHLEICH team stands for - led by Martin & Jan-Philipp Lahrmann. Father & son. Your guarantors for long-term partnership.