

# SAFE TESTING OF ELECTRIC MACHINES + SYSTEMS

ALL-IN-ONE INSULATION,  
MILLIOHM & MULTIMETER PLUS  
COIL TESTER COMBINED IN  
ONE HANDHELD DEVICE



**.IQ**

## METRAHIT IM SERIES

METRAHIT IM TECH BT • METRAHIT IM E-DRIVE BT • METRAHIT IM XTRA BT



# FLEXIBLE

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The unique flexibility offered by METRAHIT IM multimeters permits mobile testing in industrial settings, in the electrical trades, in building applications, in the fields of aviation and aerospace, as well as in all areas of electromobility.

METRAHIT IM series multimeters are intended for performance of the following measurements:

- Direct voltage measurement
- Alternating voltage measurement
- Direct and pulsating voltage measurement
- Current measurement
- Direct and pulsating current measurement
- Alternating current measurement
- Frequency measurement
- Duty cycle measurement (E-DRIVE BT / XTRA BT)
- RPM measurement (E-DRIVE BT / XTRA BT)
- Resistance measurement
- Capacitance measurement
- Temperature measurement
- Continuity testing
- Milliohm measurement, 2-wire (E-DRIVE BT / XTRA BT)
- Milliohm measurement 4-wire

# INTELLIGENT

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## MEASURING SEQUENCES

Measuring sequences can be created for the execution of continuously recurring testing tasks which involve an identical series of individual measurements and subsequent documentation.

## CLONE FUNCTION

Measurement sequences can be read out to a PC, managed and transferred to a multimeter (optional).

## AUTOMATIC EVALUATION OF MEASUREMENT RESULTS (INTER-TURN SHORT CIRCUIT MEASUREMENT WITH METRAHIT IM E-DRIVE BT / XTRA BT)

Automatic evaluation of measurement results begins when the second measurement is started. The respective measurement view (graph or list view) shows maximum deviation from the previous measurement as a percentage.

# ACCURATE

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Highly accurate measurements are made possible by the technology used in the METRAHIT IM Series:

- 4-wire measurement / 4-pole connection according to Kelvin for very low resistances
- Zero balancing in all measuring ranges for automatic compensation of connector cable resistances
- Temperature measurement with thermocouple or resistance temperature detector
- TRMS multimeter for maximum precision while measuring any waveform

# RELIABLE

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With the METRAHIT IM Series, special attention is focused on safeguarding the user as well as the instrument:

## AUTOMATIC BLOCKING SOCKETS

The multimeter is equipped with an automatic socket blocking mechanism for your safety, and in order to safeguard your instrument. This mechanism is linked to the rotary switch and only allows access to those jacks which are actually required for the selected function. It also prevents the user from turning the rotary switch to impermissible functions after the measurement cables have already been plugged in

## CAT III / CAT IV

The METRAHIT IM multimeter, as well as our recommended measuring accessories, comply with measuring categories CAT III 1000 V and CAT IV 600 V.



Multimeter and Milliohmmeter,  
Insulation and Coil Tester for  
Service and Diagnostics at  
Electric Machines and Systems



## METRAHIT IM TECH BT / E-DRIVE BT / XTRA BT

METRAHIT IM TECH BT / IM E-DRIVE BT / IM XTRA BT multimeters are portable, extremely rugged instruments designed for use in the field. These robust handheld multimeters offer a globally unique range of functions with a compact design.

They're suitable for maintenance, service and diagnosis of electric machines, drive units and systems, for example in automotive, energy and automation applications, as well as for electro-mobility (IM E-DRIVE BT) including testing in accordance with UN ECE R100 and more.

Surge tests with 1 kV within an inductance range of 10  $\mu$ H to 5 H (at 100 Hz) are possible in combination with the optional COIL ADAPTER XTRA for model **IM E-DRIVE BT** and **IM XTRA BT**. This range corresponds to motors in accordance with DIN standards with power ratings of roughly 160 VA to 80 MVA.

METRAHIT IM TECH BT  
ARTICLE NO. M272S

METRAHIT IM E-DRIVE BT  
ARTICLE NO. M274S

METRAHIT IM XTRA BT  
ARTICLE NO. M273S

COIL ADAPTER XTRA  
ARTICLE NO. Z270M

Information regarding packages and accessories is included in the data sheet.



600V CAT IV  
1000V CAT III

\* COIL ADAPTER XTRA not included in scope of delivery



# HIGHLIGHTS

## MULTIFUNCTIONAL

- Insulation test with 50 to 1000 V (E-DRIVE BT / XTRA BT)
- Bonding test
- Equipotential bonding test
- Coil test with 1 kV (E-DRIVE BT / XTRA BT)

## ABS – AUTOMATIC BLOCKING SOCKETS

- Incorrect socket allocation is ruled out
- Patented safety function

## QUICK-CHANGE RECHARGEABLE BATTERY

Excellent availability

## PROBE WITH START AND STOP KEYS

Efficient operation

## UNIVERSAL INTERFACES

Easy data exchange via USB and Bluetooth

## INCLUDING SOFTWARE LICENSE

for IZYTRONIQ Business Starter

## HIGH-VOLTAGE TEST

Safety test in accordance with UN ECE R100

## OUTDOOR HOUSING

Compact, impact-resistant housing

## COLOR GRAPHIC DISPLAY

- Brilliant colors with high resolution
- Suitable for use in daylight with ambient light sensor

## DAKKS CALIBRATION CERTIFICATE

- Traceability to national standards
- In-house GMC-I calibration center

## ROTARY SWITCH WITH OPERATING LEVELS AND SOFTKEYS

Quick access to measuring and test functions

# TECHNICAL FEATURES



- **Insulation resistance measurement up to 3.1 GΩ**  
with interference voltage detection, test voltages: 50 V, 100 V, 250 V, 500 V, 1000 V per EN 61557-2 / VDE 0413-2 (E-DRIVE BT / XTRA BT)
- **2-wire  $R_{low}$  measurement**  
with 200 mA test current per EN 61557-4 / VDE 0413-4 (E-DRIVE BT / XTRA BT)
- **Multifunctional instrument**  
TRMS<sub>AC/AC+DC</sub> measurement for current/voltage up to 10/100 kHz
- **Low-pass filter**<sub>AC, AC+DC</sub>
- **Direct current measurement**
- **Current measurement with clamp sensors**  
The transformation ratio can be adjusted with the CLIP from 1:1 to 1:1000 and is taken into account in the amperage display.
- **Capacitance measurement**  
Precision temperature measurement in °C, °F for RTD and type K TC sensors

## METRAHIT IM TECH BT

ARTICLE NO.: M272S

For use in electrical systems and installations, measurements in the field of power generation and in industrial equipment.



- Milliohm multimeter
- TRMS measurement
- AC/AC+DC TRMS measurement for current / voltage
- 2 ea. Kelvin clip
- KS17-2 cable set
- IZYTRONIQ Business Starter

## METRAHIT IM E-DRIVE BT

ARTICLE NO.: M274S

For use in electrical systems and installations, measurements in the field of high-voltage technology of electric vehicles and electromobility.



- Milliohm multimeter
- Insulation resistance measurement
- High-voltage test in acc. with UN ECE R100
- Kelvin clip and probe
- KS17-2 cable set
- Probe with keys
- IZYTRONIQ Business Starter

## METRAHIT IM XTRA BT

ARTICLE NO.: M273S

For use in electrical systems and installations, measurements in the field of power generation and in industrial equipment for inter-turn short circuit tests.



- Milliohm multimeter
- Insulation resistance measurement
- Motor coil test (with optional coil adapter)
- 2 ea. Kelvin clip
- KS17-2 cable set
- Probe with keys
- IZYTRONIQ Business Starter

# APPLICATIONS

## Electrical Systems and Installations

Systems testing usually involves multiple measurements which are performed at various test points. The multifunctional instruments included in the METRAHIT IM series permit standards-compliant testing of all electrical installations and systems. Whether power distribution, automation or electromechanical applications are involved, all of the necessary measurements can be performed accurately and conveniently, results can be stored and the required test reports can be generated individually after the measurement data have been transferred to a PC. Data exchange is quick and easy thanks to push-print communication via Bluetooth.



## Power Generation

The generation of power from renewable sources of energy is a central pillar of the energy revolution. Expansion of these renewable sources is steadily progressing. The goal is a climate-neutral, environmentally compatible energy supply which is both affordable and reliable. Whether wind power, hydroelectric power or solar energy is involved, testing the safety of power generating systems is a significantly expanding field of endeavor. METRAHIT IM series multimeters can be used in the field to perform insulation tests, inter-turn short circuit tests and equipotential bonding tests independent of location and mains power.



## Electromobility

Electric mobility is a global key to environmentally friendly mobility. The charging infrastructure has a decisive influence on reliable charging operation for electric vehicles. By observing just a few important safety aspects, electromobility is rendered safe and trouble-free for all users. The METRAHIT IM E-DRIVE BT can be used to test the high-voltage technology used by electric vehicles, as well as all of the components within the charging infrastructure – comprehensively and in compliance with the standards.



## Industrial Systems

The complex structures of modern production machines necessitate a great variety of test steps, which are included in the overall test procedure. These encompass visual inspections and function tests, as well as metrological testing. Testing of electrical safety and for correct functioning can be performed in production systems and for all floor conveyor vehicles with the METRAHIT IM XTRA BT. METRAHIT IM multimeters make it possible to create and execute individually prepared sequences.





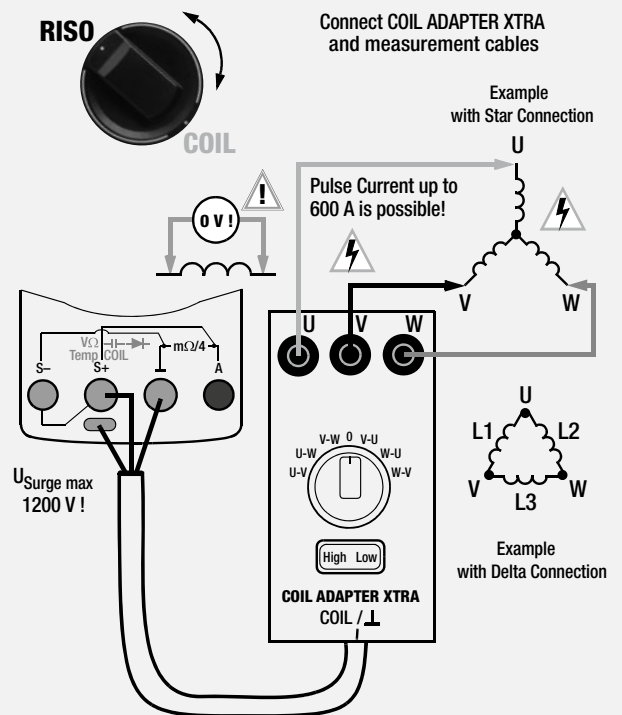
# INTER-TURN SHORT CIRCUIT TEST WITH COIL ADAPTER XTRA

## (E-DRIVE BT AND XTRA BT)

Surge tests with 1 kV within an inductance range of 10  $\mu$ H to 5 H (at 100 Hz) are possible in combination with the optional COIL ADAPTER XTRA. This range corresponds to motors in accordance with DIN standards with power ratings of roughly 160 VA to 80 MVA.

Inter-turn short circuits are readily detected within the coil by comparing the electrical characteristics of the windings in multi-phase motors with each other.

The METRAHIT IM XTRA BT or IM XTRA BT in combination with the COIL ADAPTER XTRA conduct testing with a 1 kV surge voltage (surge test). In this way, defects are reliably detected which only occur when operating voltage is applied. Testing is possible for coils with inductances within a range of 10  $\mu$ H to 5 H, which corresponds to nominal power from approximately 160 VA to 80 MVA for 3-phase motors with a nominal voltage of 400 V. The sequence is semiautomatic.



## TESTED ACCESSORIES – FOR ALL MEASURING TASKS



CURRENT CLAMP SENSOR  
CP330

KELVIN CLIPS  
KC4

KELVIN PROBES  
KC27

FLEXIBLE CURRENT SENSOR  
METRAFLEX 300M

PROBE WITH KEYS  
Z270S

## TRAINING CENTER

Ongoing qualification enjoys top priority because complex measuring tasks, standards and regulations are subject to continuous change. Our instructors are experienced experts who are familiar with the requirements based on their own actual practice and always keep themselves up to date.

### We can provide you with:

- Training at GMC-I's training center
- Training on-site at your location
- Individualized training concepts customized to meet your needs
- Webinars on selected topics



## PRODUCT SUPPORT

Our product support department makes numerous support services available, regardless of whether you need to solve a problem with a product, require on-site technical support, want help with one of our software products or are seeking technical advice regarding standards or measuring applications.

### We can provide you with:

- Telephone and e-mail support for technical questions and problems
- Consultation concerning applicable standards and products
- Software support
- Extensive FAQs

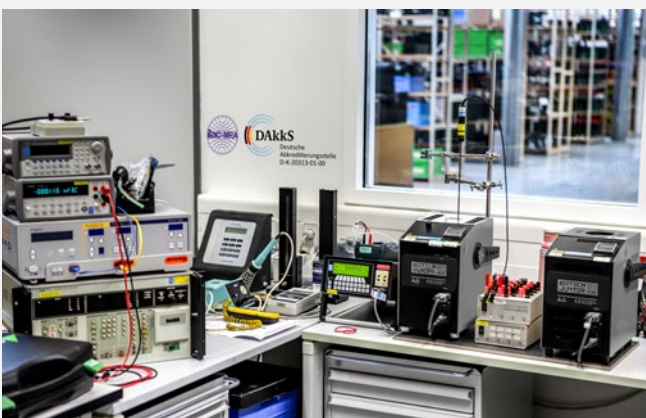


## CALIBRATION CENTER

Calibration as a standard feature is an essential QA factor for professional test equipment monitoring. Our calibration center is accredited per DIN EN ISO / IEC 17025 as a DAkkS calibration lab under registration no. D-K-20313-01-00.

### Our services:

- DAkkS calibration
- Factory calibration
- Test equipment monitoring
- Verification of energy meters at our state-approved test laboratory

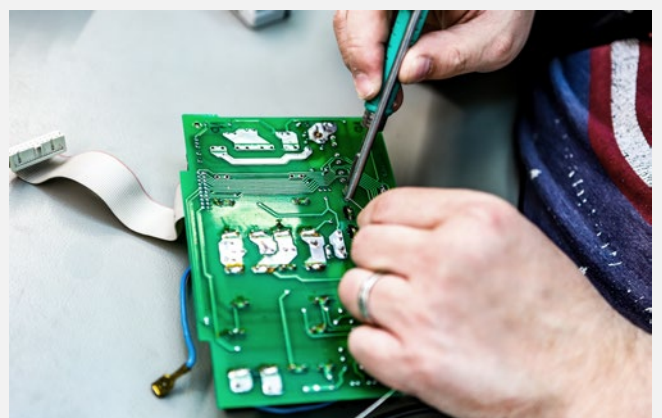


## SERVICE CENTER

In order to assure that your measuring and test instruments are always ready for use, the employees at our GMC-I Service Center complete any necessary repairs quickly, reliably and economically.

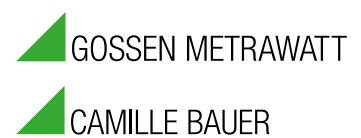
### Our services:

- Repair services executed by qualified personnel
- Rental instrument service
- Replacement parts for a long service life
- Update service for reliable measuring and testing in the future as well





**GMC INSTRUMENTS**



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