GOSSEN METRAWATT M273B-D-S Handheld Multimeter Instruction Manual

Contents

GOSSEN METRAWATT M273B-D-S Handheld Multimeter

Read the detailed operating instructions in pdf format at: **www.gossenmetrawatt.com.**
The short-form instructions are nosubstitute for the detailed instructions

Scope of Supply

- 1 Multimeter with rubber holster
- 1 Hard case HC40 (Z270K black or Z270H orange)
- 1 Quick change, rechargeable lithium polymerf module with USB charger (5 V DC, 2 A) (Z270A or Z270G)
- 1 Remote probe (Z270S)(only METRAHIT IM XTRA BT and METRAHIT IM E-DRIVE BT) 1 Cable set KS17-2 (GTY362003P0002)
- 1 Pair Kelvin clips KC4 (Z227A) (only METRAHIT IM XTRA BT and METRAHIT IM TECH BT) 1 Kelvin clip and 1 Kelvin probe KC&S (Z227C) (only METRAHIT IM E-DRIVE BT)
- 1 DAkkS calibration certificate
- 1 Short-form Operating Instructions*
  Detailed operating instructions for download on the Internet at www.gossenmetrawatt.com
- 1 IZYTRONIQ Business Starter License (Card with registration key for the software)

Features

Function	METRAHIT IM XTRA BT E-DRIVE BT	METRAHIT IM TECH BT
V_{DC} (Ri = 9 MΩ)	•	•
V_{AC} / Hz TRMS (Ri = 9 MΩ)	1kHz filter	1kHz filter
V_{AC+DC} TRMS (Ri = 9 MΩ) [1]	1kHz filter	1kHz filter
V_{AC+DC} TRMS (Ri = 1 MΩ) R_{ISO} range (interference voltage)	•	
Hz (V_{AC})	... 300 kHz	... 300 kHz
$V_{AC,\ AC+DC}$ bandwidth	100 kHz	100 kHz
$A_{DC,\ AC,\ AC+DC}$ / Hz TRMS	10 nA ... 1 A	10 nA ... 1 A
Fuse F1 current measurig function	1 A/1000 V - 30 kA [4]	1 A/1000 V - 30 kA [4]
Current sensor transformation ratio	1 mV : 1 • 10 • 100 • 1000 mA	1 mV : 1 • 10 • 100 • 1000 mA
Hz (A AC)	... 30 kHz	... 30 kHz
Insulation resistance RISO: test voltages	50 • 100 • 250 • 500 • 1000 V	
Short-circuited coil test (1 kV) with COIL adapter	Option	
Duty cycle measurement as %	•	
Speed measurement in RPM	•	
Resistance Rlo with 200 mA per EN 61557	•	
Milliohm with 4-wire method, mΩ with 200 mA	•	•
Milliohm with 4-wire method, mΩ with 1 A pulse	•	•
Fuse Rlo measuring function	315 mAA/1000 V – 30 kA [4]	
Resistance Ω	•	•
Continuity	•	•
Diode ... 4.5 V	•	•
Temperature: °C/°F TC type K and Pt100/1000 [2]	•	•
Capacitance	•	•
Min-Max / data hold	•	•
Test sequence	1 (with 10 steps)	
Sequence Functions Expert	Option	Option
64 MBit memory [3]	•	•
Bluetooth interface	•	•
3.5" TFT color graphic display	•	•
2-key Remote probe: start/stop and store	•	
Mains supply module with USB interface	Option	Option
Protection	IP52	IP52
Measuring category	1000 V CAT III, 600 V CAT IV	1000 V CAT III, 600 V CAT IV

Safety Instructions

Observe this documentation, in particular all included safety informa-tion, in order to protect yourself and others from injury, and to prevent damage to the instrument.

- Carefully and completely read and adhere to these condensed operating instructions, as well as the instrument's operating instruc-tions.
- The documents can be found at http://www.gossenmetrawatt.com. Retain these documents for future reference.
- Tests/measurements may only be performed by a qualified electri-cian, or under the supervision and direction of a qualified electrician. The user must be instructed by a qualified electrician concerning performance and evaluation of the tests/measurements.

- The multimeter may only be operated by persons who are capable of recognizing touch hazards and taking the appropriate safety pre-cautions. Touch hazards in accordance with the standard exist any-where, where dangerous voltages may occur. Avoid working alone when taking measurements which involve touch hazards. Be certain that a second person is present.
- Observe and comply with all safety regulations which are applicable for your work environment.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the device.
- Use only the specified accessories (included in the scope of delivery or listed as an option) with the instrument.
- Carefully and completely read and adhere to the product documen-tation for optional accessories. Retain these documents for future reference.
- Use the instrument in undamaged condition only.
- Inspect the device before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- Damaged components must be replaced immediately.
- Accessories and cables may only be used as long as they’re fully intact.
- Inspect accessories and all cables and before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the instrument or its accessories don’t function flawlessly, perma-nently remove the instrument/accessories from operation and secure them against inadvertent use.
- If the instrument or accessories are damaged during use, for exam-ple if they’re dropped, permanently remove the instrument/accesso-ries from operation and secure them against inadvertent use.
- Do not use the instrument and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not use the device and its accessories after extraordinary stress-ing due to transport.
- Only use the instrument and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP pro-tection code, measuring category etc.).
- Do not use the device in potentially explosive atmospheres.
- The device must not be exposed to direct sunlight.
- The device and the accessories may only be used for the tests/measurements described in the documentation for the device.
- Maximum allowable voltage between the voltage measuring sock-ets or all connector sockets and ground is 1000 V for measuring category III and 600 V for measuring category IV.
- The multimeter may only be operated with installed rechargeable battery pack or mains module. Dangerous currents and voltages are otherwise not indicated! In addition, the device may be damaged.
- Weak (insufficiently charged) rechargeable battery: Do not perform safety-relevant measurements if the “weak battery” icon appears in the battery level indicator. Furthermore, compliance with the listed specifications is no longer assured.
- Be prepared for the occurrence of unexpected voltages at devices under test (e.g. defective devices). For example, capacitors may be dangerously charged.
- Do not perform any measurements in electrical circuits with corona discharge (high-voltage).
- Dangerous pulsating voltages in HF electrical circuits. Be careful, if you perform measurements in them.
- Do not use the device if the fuse cover has been removed. Touch contact with dangerous voltage is otherwise possible.
- The device is equipped with fuses. The device may only be used as long as the fuses are in flawless condition. Defective fuses must be replaced.

- Plugging in the measurement cables must not necessitate any undue force.
- Never touch conductive ends (e.g. of test probes).
- Fully unreel all measurement cables before starting a test/measure-ment. Never perform a test/measurement with the measurement cable rolled up.
- Ensure that alligator clips, test probes or Kelvin probes make good contact.
- The instrument is equipped with a Bluetooth® module. Determine whether or not use of the implemented frequency band of 2.402 to 2.480 GHz is permissible in your country.
- Always create a backup copy of your measurement data.

Battery Module

The test instrument is powered by a rechargeable battery module. Therefore, observe the following:

- Carefully and completely read and adhere to the “Safety Informa-tion Supplement” for the rechargeable battery module Z270A or Z270G (3-349-997-15 or 3-447-030-51).
- The manufacturer’s safety data sheet is included in the supple-ment. Read and adhere to this safety data sheet as well.
- The battery module must not be exposed to direct sunlight (neither inside nor outside of the device).
- Only charge the battery module within temperatures of 10 … 45 °C.
- Only store the battery module within temperatures of –20 … 50 °C.
- Only charge the battery module within temperatures of –10 … 50 °C.
- Danger of excessive depletion: In some cases, a deeply depleted battery module cannot be recharged (immediate failure) and must be replaced. Its service life might also be reduced.
- In order to prevent the battery module from becoming fully depleted, you must recharge it least once a year, but preferably at more frequent, regular intervals.
- Battery module transport:
- Read the “Safety Information Supplement” for the rechargeable battery module Z270A or Z270G (3-349-997-15 or 3-447-030-51)!

Applications

Please read this important information!Intended Use / Use for Intended Purpose

- The METRAHIT IM XTRA BT is a multimeter and milliohmmeter, insula-tion measuring instrument, coil tester, and data logger. The METRA-HIT IM E-DRIVE BT is a multimeter, milliohmmeter, insulation measur-ing instrument, coil tester and data logger for hybrid and electric drives. The METRAHIT IM TECH BT is a multimeter and milliohmme-ter, and data logger.
- They are portable devices which can be held in the hand during the performance of measurements. With them the measurements described in these short-form operating instructions and those described in the operating instructions can be performed. Description of included features: “Features” on p. 5.
- The multimeter is equipped with an automatic socket blocking mecha-nism 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 required for the selected function. It also pre-vents turning the rotary switch to impermissible functions when mea-surement cables are plugged in.

- Safety of the operator, as well as that of the instrument, is only assured when it’s used for its intended purpose.

Use for Other than Intended Purpose

- Using the instrument for any purposes other than those described in the condensed operating instructions or these instrument operating instructions is contrary to use for intended purpose.

Liability and Guarantee

- Gossen Metrawatt GmbH assumes no liability for property damage, personal injury or consequential damage resulting from improper or incorrect use of the product, in particular due to failure to observe the product documentation.
- Furthermore, all guarantee claims are ren-dered null and void in such cases.
- Nor does Gossen Metrawatt GmbH assume any liability for data loss.

Opening the Instrument / Repairs

- The instrument may only be opened by authorized, trained personnel in order to ensure flawless, safe operation and to assure that the guar-antee isn’t rendered null and void. Even original replacement parts may only be installed by authorized, trained personnel. Unauthorized modifications to the instrument are prohibited.
- If it can be ascertained that the battery tester has been opened by unauthorized personnel, no guarantee claims can be honored by the manufacturer with regard to personal safety, measuring accuracy, compliance with applicable safety measures or any consequential damages.

Symbols on the Device and the Included Accessories


- Warning concerning a point of danger (attention, observe documentation!)

- Ground

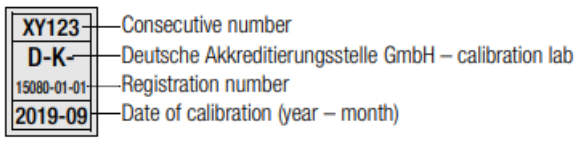

- Measuring category III or IV device


- Continuous, doubled or reinforced insulation


- Indicates European Conformity
- Fuse

- This device, ts electronic accessories, batteries and rechargeable batteries may not be disposed of with the trash. For more information, refer to the Operarting Instructions.

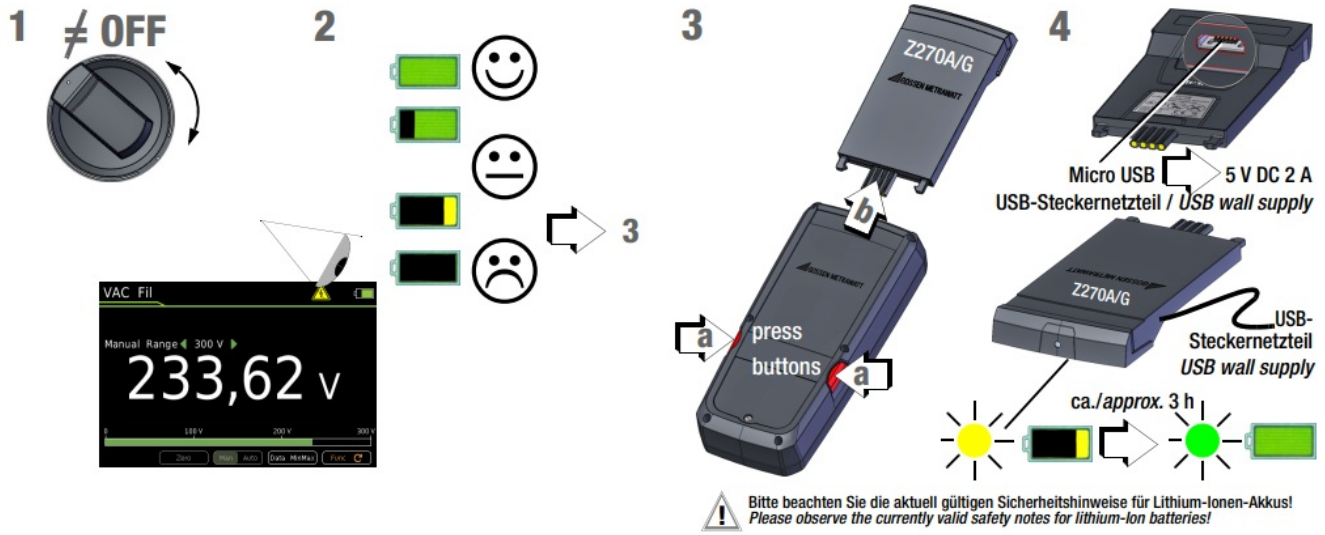
Calibration seal (blue seal)



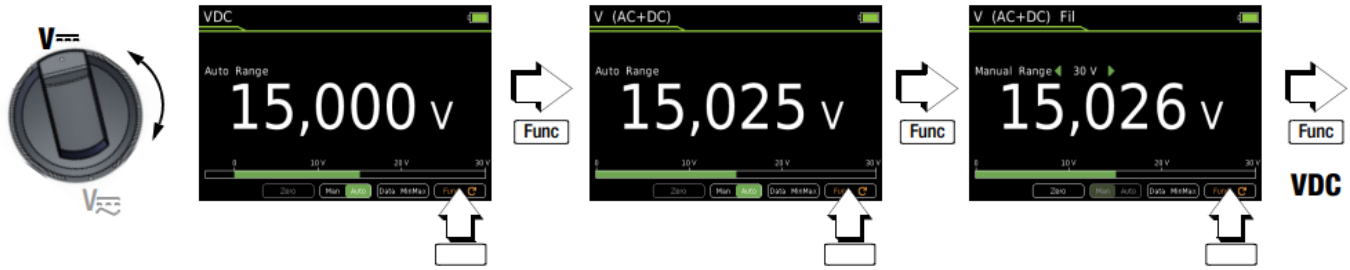
INSTRUCTION

1. Switching On

2. Battery Control
3. Battery Removal
4. Battery Charging



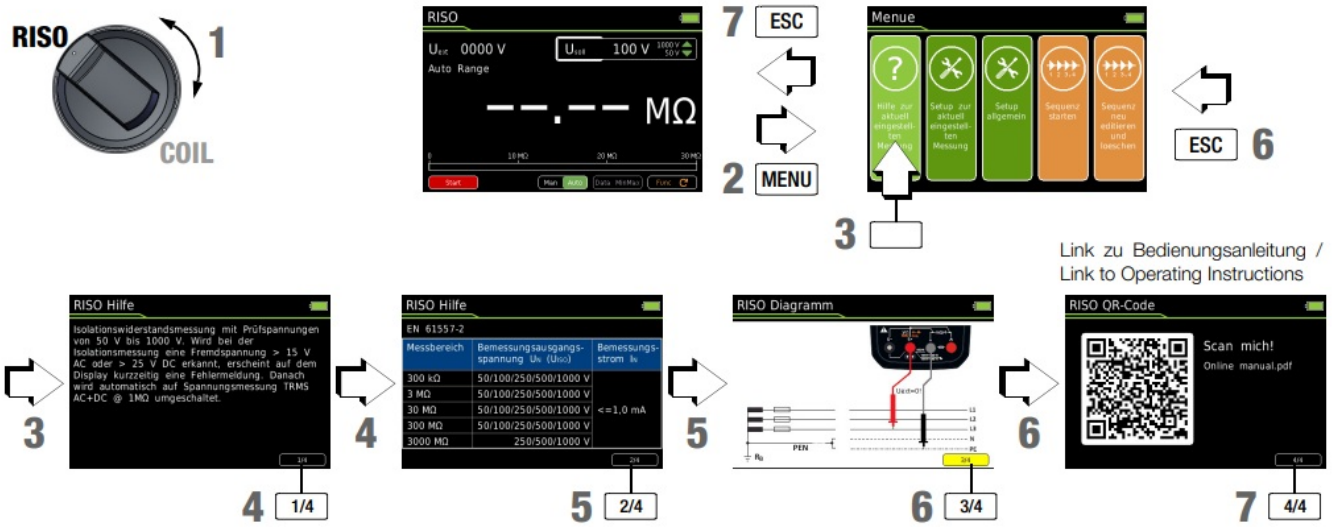
Select Measuremen



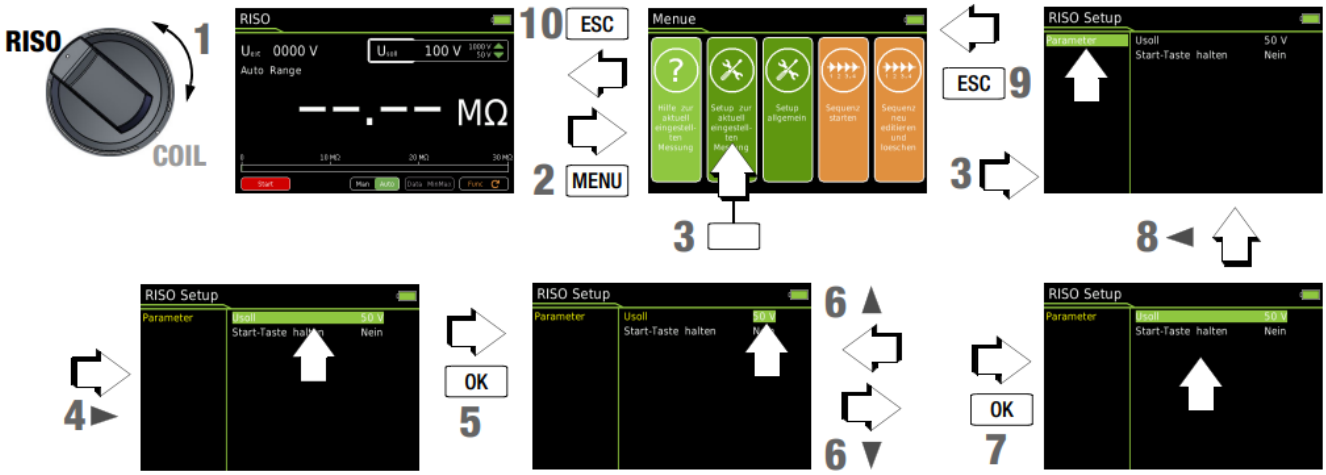
	Func	FUNC 1 x	FUNC 2 x	FUNC 3 x	FUNC 4 x		FUNC 1 x
RISO / RINS 1)	0/4	Coil 1)	DAR 1)	PI 1)			
V~ / VAC 2)	0/5	Hz 2)	Duty AC 1) 2)	RPM AC 1) 2)	V AC Fil 2)	A~ / AAC 3)	Hz 3)
V⎓ / VDC 2)	0/3	V (AC+DC)	V (AC+DC) Fil			A⎓ / ADC 3)	A (AC+DC) 3)
Ω	0/4	F ⊣⊢	Temp RTD	Temp TC			
🔊	0/2	▶|					
Rlo/2L 1)	0						
mΩ/4 – Rlo/4L	0						
A⎓ /A DC	0/4	A (AC+DC)	A AC	Hz			

1) nicht METRAHIT IM TECH BT / not METRAHIT IM TECH BT
2) Clip = Aus / Off
3) Clip = 1:1 / 1:10 / 1:100 / 1:1000

Call up Help, Data and Wiring Diagram RISO

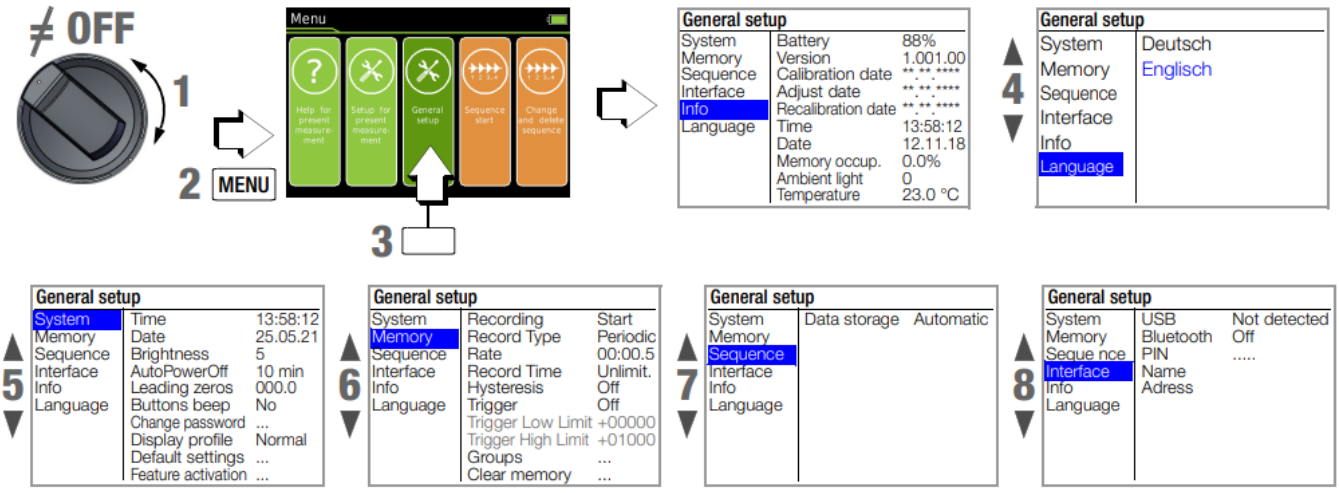


Setup for Currently Selected Measurement RISO



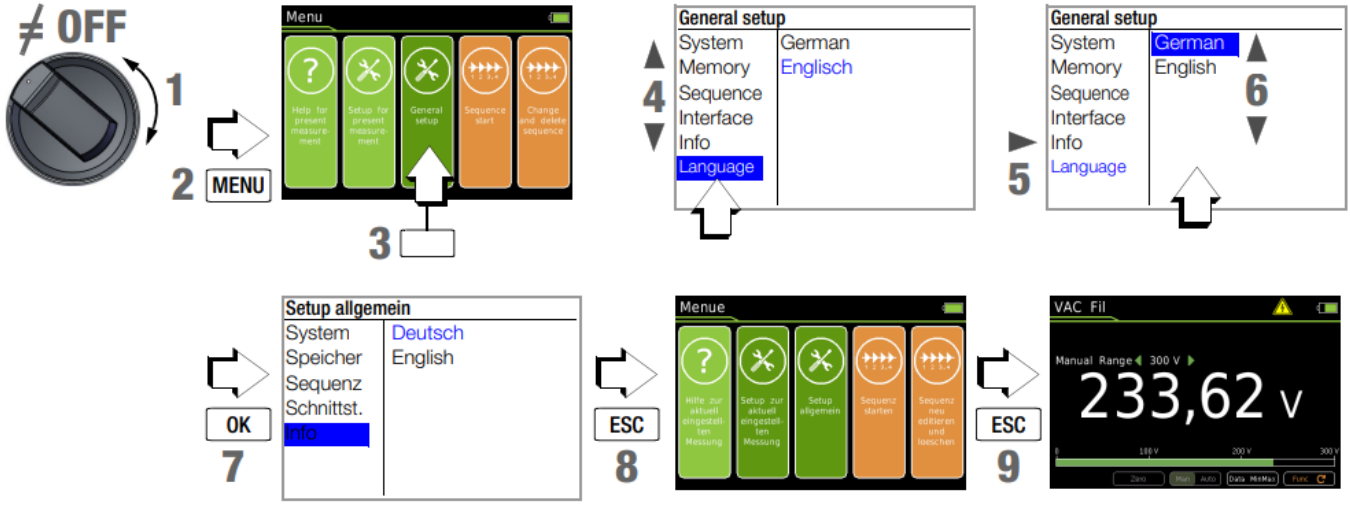
General Setup

Overview of System Parameters



Set System Parameters

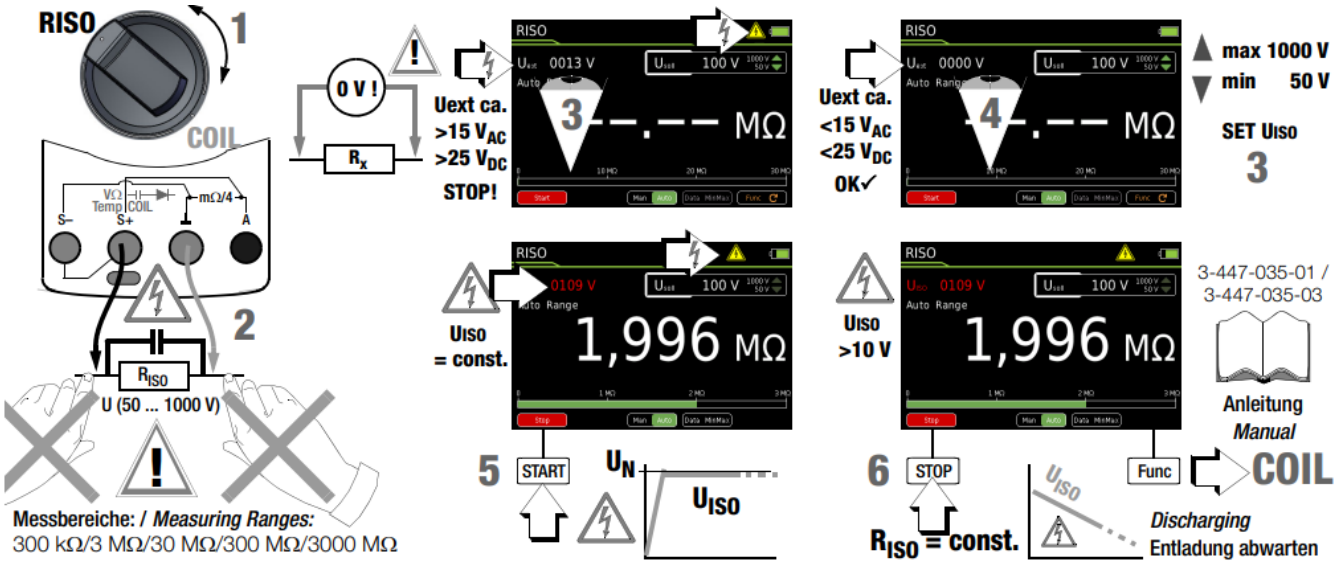
Example: Language English > Deutsch (German



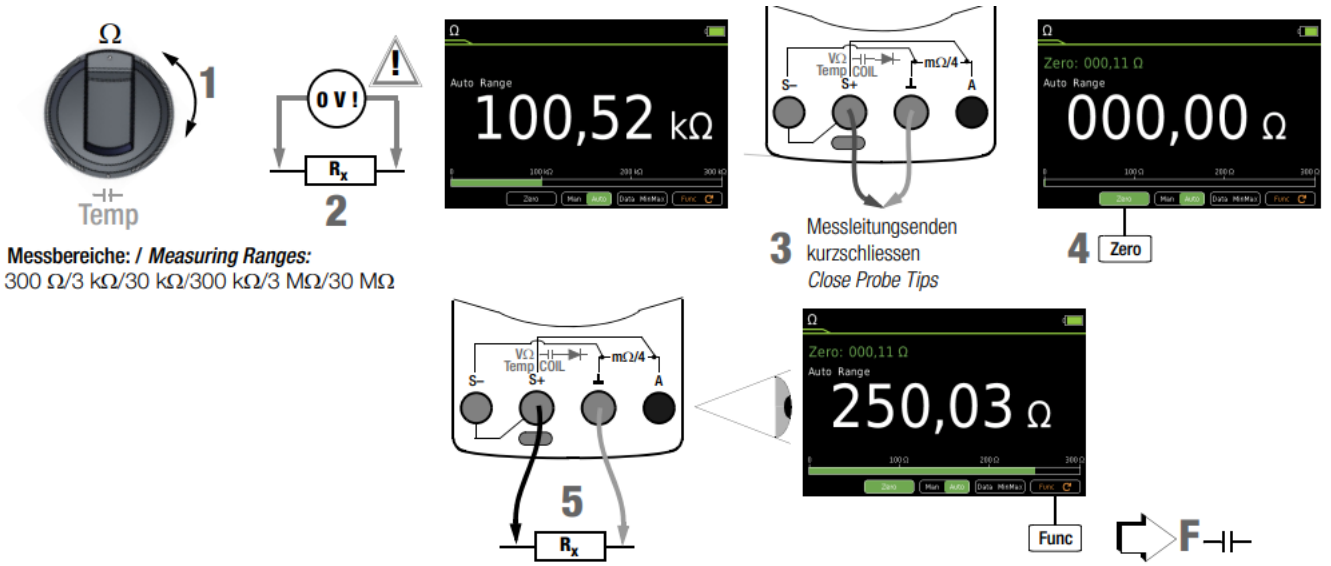
RISO RIo

Interference voltage control: The following measurements are only possible on voltage-free devices under test. Interference voltage disables the measurement

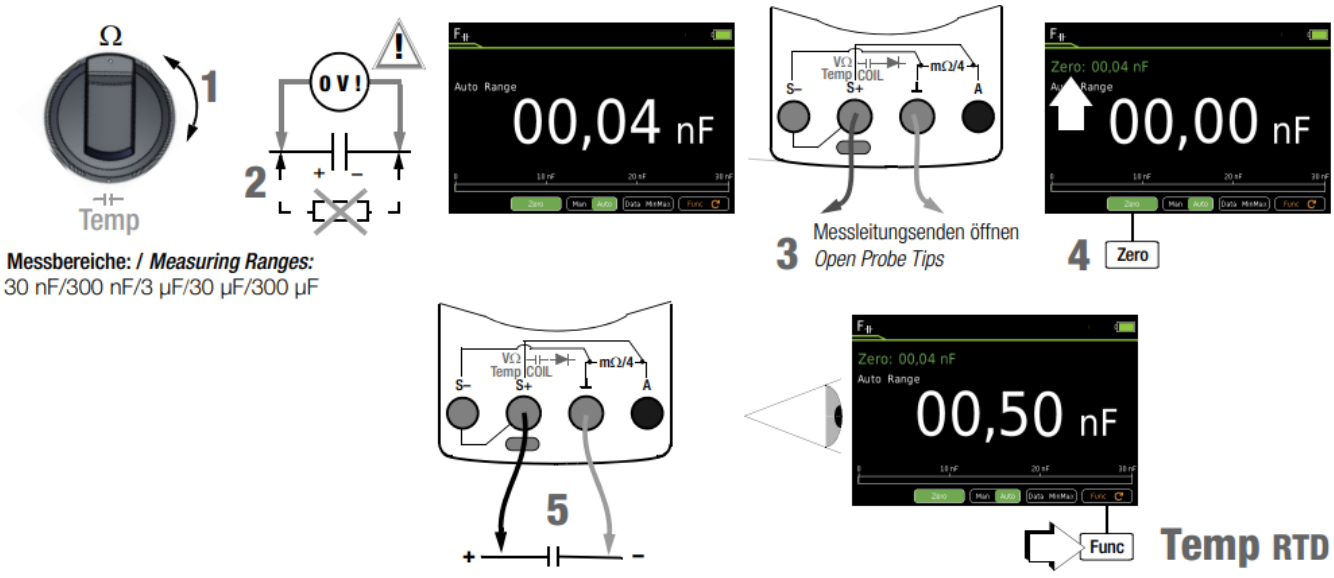
Isolation Measurement (not METRAHIT IM TECH BT)



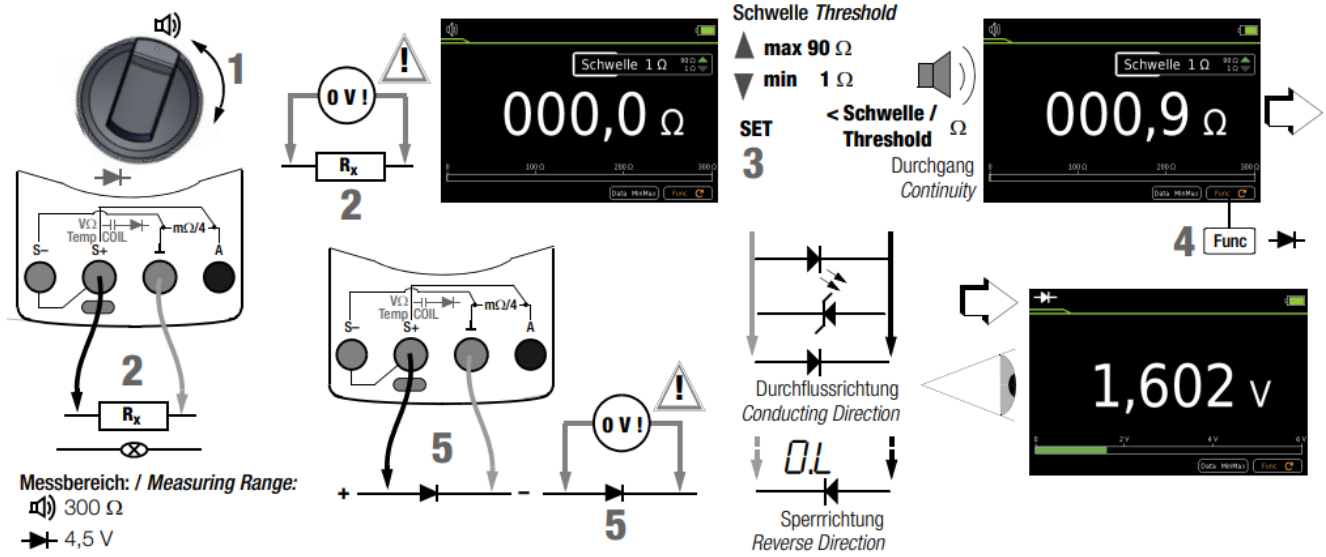
2-Wire Resistance Measurement



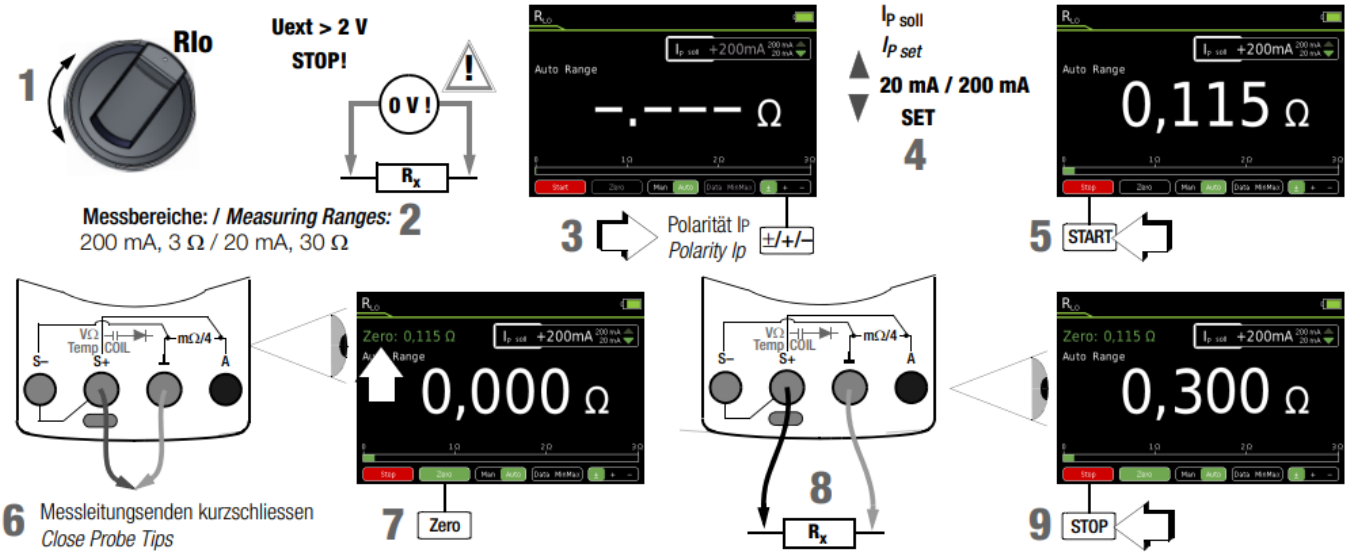
Capacitance Measurement
S– A
V
Temp
m /4
COIL
S+
S– A
V



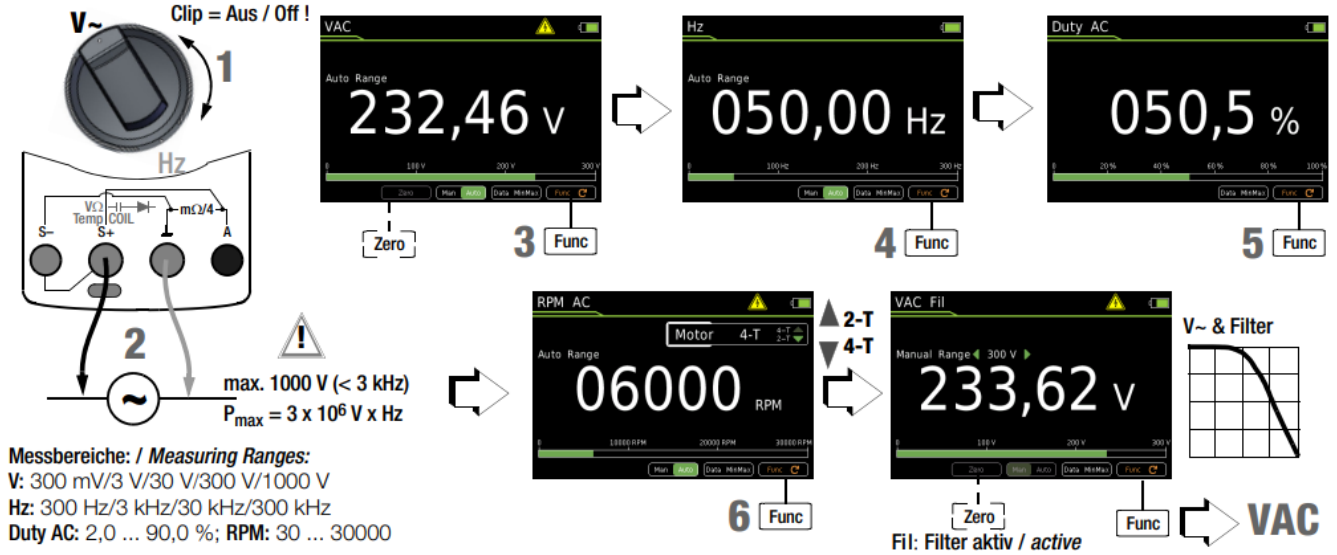
Continuity Measurement **Diode Measurement**



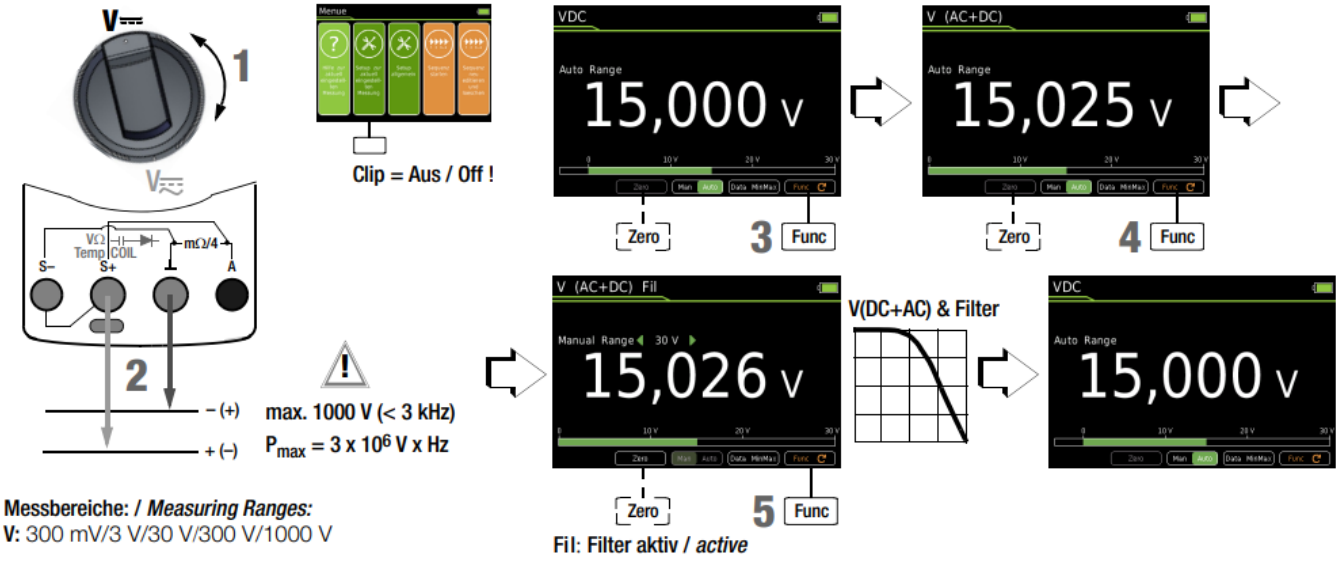
2-wire Milliohm Measurement (not METRAHIT IM TECH BT)



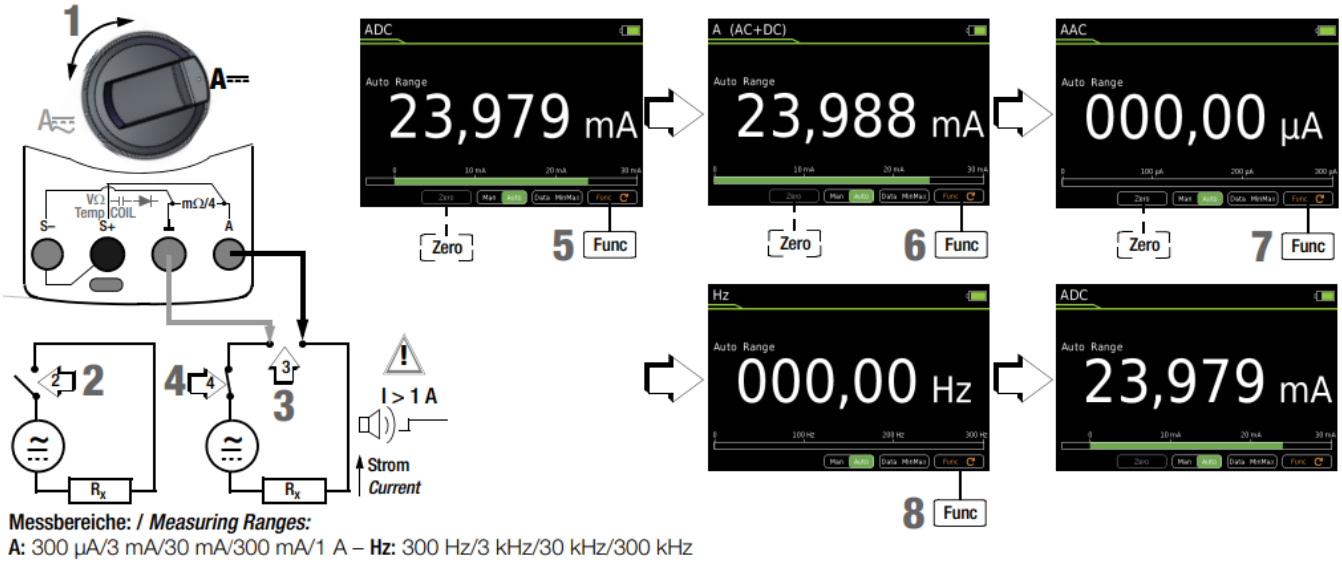
RPM AC (nicht/not METRAHIT IM TECH BT), VAC Fil



VDC, V (AC+DC), V (AC+DC) Fil

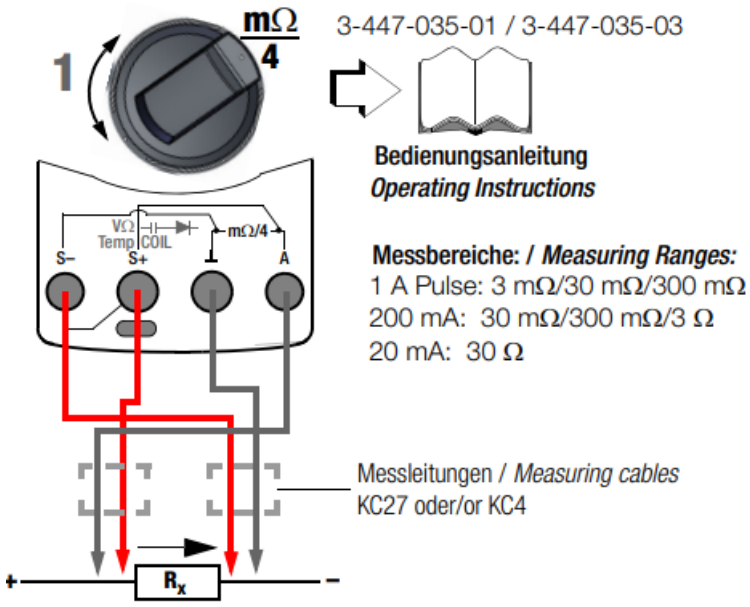


ADC, A (AC+DC), AAC, Hz



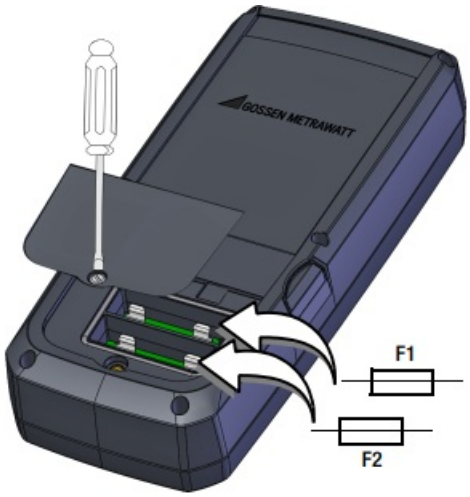
Messbereiche: / *Measuring Ranges:*
A: 300 µA/3 mA/30 mA/300 mA/1 A – **Hz:** 300 Hz/3 kHz/30 kHz/300 kHz

mΩ/4 (4L)

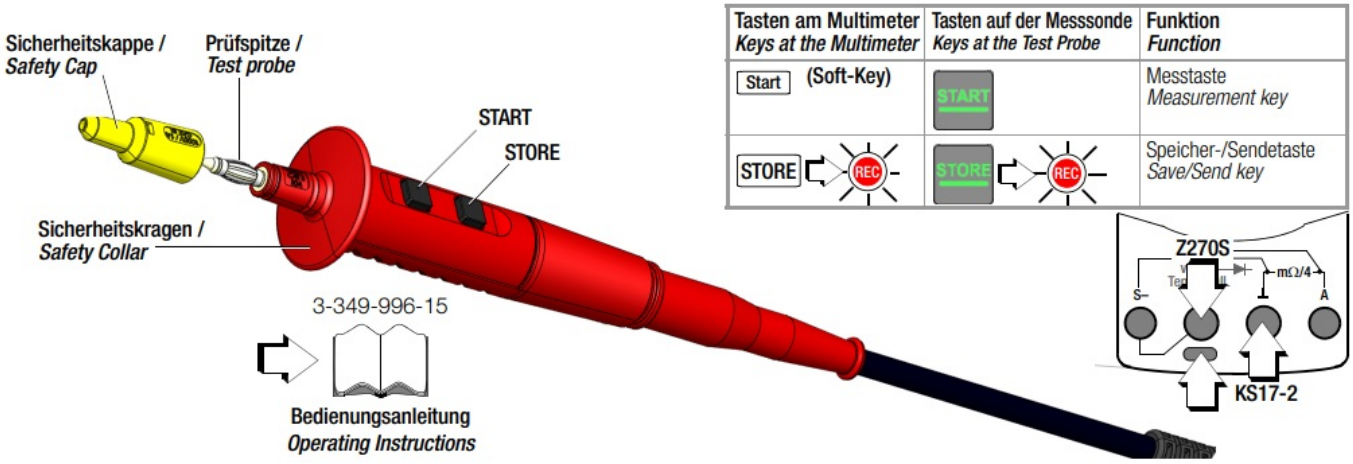


Fuses

- **F1:** Measuring range 300 µA … 1 A): FF 1A/1000 V AC/DC
- **F2:** Measuring range mΩ): FF 0,315 A/1000 V AC/DC
  only METRAHIT IM XTRA BT and METRAHIT IM E-DRIVE BT)



Remote Probe (Z270S) (not METRAHIT IM TECH BT)



Gossen Metrawatt GmbH	Begleitende Formulare zum PEP EU-Konformitätserklärung / EU Declaration of Conformity	Form E0F34

Hersteller / Manufacturer:	Gossen Metrawatt GmbH
Anschrift / Address:	Südwestpark 15, 90449 Nürnberg
Produktbezeichnung/	Multimeter, Isolationstester & Milliohmmeter
Product name:	Multimeter, Isolation Tester & Milliohm Meter
Typ / Type:	METRAHIT IM TECH (BT) | XTRA (BT) | E-DRIVE (BT)
Bestell-Nr / Order No:	M272B /S | M273B /D /S | M274B /S
Zubehör / Accessory:	Netzteil / Power Supply: AUKRU BS-12W0502000W

Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsvorschriften der Union: / The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

2014/53/EU	RED - Richtlinie	RED Directive

Anforderungen an die Sicherheit gemäß 2014/35/EU (Niederspannungsrichtlinie) /
Safety requirements according to 2014/35/EU (Low Voltage Directive)

EN/Norm/Standard:

EN 61010-1 : 2010 , EN 61010-2-033 : 2012

Anforderungen an die elektromagnetische Verträglichkeit gemäß 2014/30/EU (EMV Richtlinie) /
Requirements for electromagnetic compatibility according to 2014/30/EU (EMC Directive)

EN/Norm/Standard:

EN 61326-1 : 2013

2011/65/EU	RoHS - Richtlinie	RoHS Directive
(EU) 2015/863	Deligierte Richtlinie	Deligate Directive

EN/Norm/Standard:
None

Nürnberg, 11.05.2021
Ort, Datum / Place, Date:

Geschäftsführung / Managing Director

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller. Sie beinhaltet jedoch keine Zusicherung von Eigenschaften. Die Sicherheitshinweise der mitgelieferten Produktdokumentationen sind zu beachten.

This Declaration of Conformity is issued under the sole responsibility of the manufacturer but does not include a property assurance. The safety notes given in the product documentation which are part of the supply, must be observed.

Datei:	Ausgabe:	Erstellt:	Freigabe:
21-3-003-M272X-M273X-M274X-CE-Entwurf	15.01.2021	Eckl	Weiß

QR SCAN

Download Center

Product Support /Technical Queries (Use, Operation…)

If required please contact:

- Gossen Metrawatt GmbH
- Hotline Produktsupport / Product Support Hotline
- **Phone:** +49-911-8602-0
- **Fax** +49 911 8602-709
- **E-mail:** support@gossenmetrawatt.com

Register your device at
www.gossenmetrawatt.com myGMC

Your Benefits for your digital multimeter

- 2 years warranty extension
- backup for serial number
- free downloads
- info hotline
- update information
- application notes

Prepared in Germany

- Subject to change, errors excepted
- PDF version available on the Internet

Gossen Metrawatt GmbH

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- **Fax** +49 911 8602-669
- **E-mail** info@gossenmetrawatt.com
- www.gossenmetrawatt.com

Documents / Resources

	GOSSEN METRAWATT M273B-D-S Handheld Multimeter [pdf] Instruction Manual M273B-D-S, M274B-S, M272B-S, M273B-D-S Handheld Multimeter, M273B-D-S, Handheld Multimeter, Multimeter

References

- GOSSEN METRAWATT, GMC-I Messtechnik, GMC-Instruments