



GOSSEN METRAWATT METRAHIT T-COM Plus Cable Multimeter for Measurement of Symmetrical Copper Cable Units Instruction Manual

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GOSSEN METRAWATT METRAHIT T-COM Plus Cable Multimeter for Measurement of Symmetrical Copper Cable Units



The product being described is the METRAHITT-COM PLUS Cable Multimeter. It is a device used for measuring symmetrical copper cable units. The package includes the following items:

- 1 Cable multimeter
- 1 Protective rubber cover
- 1 Cable set KS21-T (1000 V CAT III) consisting of:
 - 1 two-core measurement cable (yellow/blue), 2 m long with test probes
 - 1 earth connection line (black), 2 m long with test probe
- 1 Short-form operating instructions in German/English
- 1 CD-ROM with operating instructions in German/English
- 2 Batteries (1.5 V, type AA) were inserted into the unit

Please note that detailed operating instructions are available for download in PDF format at www.gossenmetrawatt.com.

The short-form instructions provided are not a substitute for the detailed instructions. In terms of safety, it is important to follow the safety instructions provided in the user manual. The maximum rated voltage for the device is 1000 V, and it falls under Measuring Category CAT III. The maximum rated current is 1 A with the safety cap applied and 16 A without the safety cap applied. It is crucial to observe the maximum values of the electrical safety of the device.

When using the METRAHITT-COM PLUS Cable Multimeter, please keep in mind the following usage instructions:

1. Read and thoroughly understand the detailed operating instructions before using the device. The short-form instructions provided are not comprehensive enough.
2. Always use original fuses for the current measuring ranges. The input of the current measuring ranges is fitted with a fuse. Refer to the label on the housing or technical data section for the correct fuse type.
3. Make sure to insert batteries into the instrument before operating it. Without batteries, dangerous currents or voltages will not be indicated, and the instrument may be damaged.
4. Do not operate the device with the fuse or battery compartment cover removed.

Following these instructions will help ensure the proper and safe usage of the METRAHITT-COM PLUS Cable Multimeter.

The symbol indicates parameter settings that are only described in the detailed operating instructions.

Standard Equipment

- 1 Cable multimeter
- 1 Protective rubber cover
- 1 Cable set KS21-T (1000 V CAT III) consisting of:
 - 1 ea. two-core measurement cable (yellow/blue), 2 m long with test probes,
 - 1 ea. earth connection line (black) 2 m long with test probe
- 1 Short-form operating instructions in German/English
- 1 CD-ROM with operating instructions in German/English *
- 2 Batteries 1.5 V, type AA inserted in the unit

Instrument Service

When you need service, please contact:

Gossen Metrawatt GmbH Product Support Hotline

- **Telephone** +49 911 8602-0
- **Phone** +49 91 81 602-0
- **Fax** +49 149 81 602-709
- **E-mail** support@gossenmetrawatt.com

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Gossen Metrawatt

Gossen Metrawatt GmbH Südwestpark 15 90449 Nürnberg

- Germany Phone +49 911 8602-0
- Fax +49 911 8602-669

- E-Mail info@gossenmetrawatt.com www.gossenmetrawatt.com

Detailed operating instructions are available for download on the Internet at www.gossenmetrawatt.com.

Standard Equipment

- 1 Cable multimeter
- 1 Protective rubber cover
- 1 Cable set KS21-T (1000 V CAT III) consisting of:
 - 1 two-core measurement cable (yellow/blue), 2 m long with test probes
 - 1 earth connection line (black), 2 m long with test probe
- 1 Short-form operating instructions in German/English
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- 2 Batteries (1.5 V, type AA) were inserted in the unit

Application of measuring cable set KS21-T

<i>Maximum Rated Voltage</i>	1000 V	1000 V
<i>Measuring Category</i>	CAT III	CAT II
<i>Maximum Rated Current</i>	1 A	16 A
<i>with a safety cap applied</i>	·	—
<i>without a safety cap applied</i>	—	·

Please observe the maximum values of the electrical safety of the device.

Safety Instructions

In order to maintain the flawless condition of the instrument, and to ensure its safe operation, it is imperative that you read the operating instructions thoroughly and carefully before placing your instrument into service, and that you follow all instructions contained therein

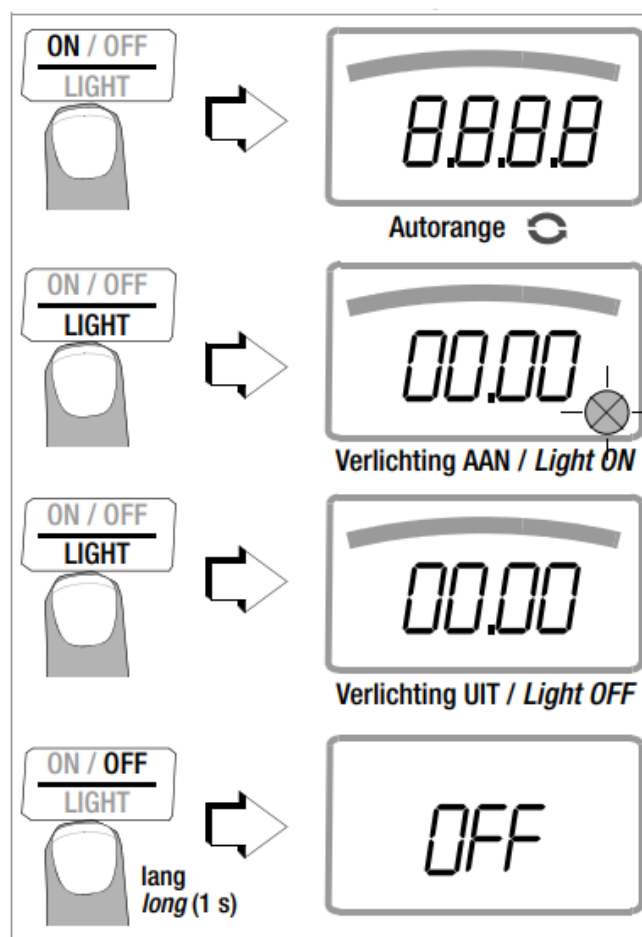
Observe the following safety precautions:

- The multimeter may not be used in potentially explosive atmospheres.
- The multimeter may only be operated by persons who are able to recognize contact hazards and take the appropriate safety precautions. Contact hazards exist wherever voltages of more than 33 V (RMS value) and/or 70 V DC occur.
- The maximum voltage allowable according to standard between the voltage inputs or all inputs towards earth respectively is equal to 600 V, category II / 300 V, category III.
- **Attention:** Unexpected voltages may occur at defective devices, capacitors,...!
- The insulation of the measurement cables may not be damaged, cables and plugs may not be interrupted!
- No measurements may be made in electrical circuits with corona discharge (high-voltage)! Special care is required when measurements are made in HF electrical circuits where dangerous pulsating voltages may be

present.

- Measurements under moist ambient conditions are not permissible.
- Do not overload the measuring ranges beyond their allowable capacities!
- The input of the current measuring ranges is fitted with a fuse. Use original fuses only, see label on the housing or technical data section!
- Only operate the instrument with batteries inserted. Otherwise dangerous currents or voltages will not be indicated and your instrument may be damaged.
- The device may not be operated with the fuse or battery compartment cover removed.

Switching on / off / Light on



Battery Test



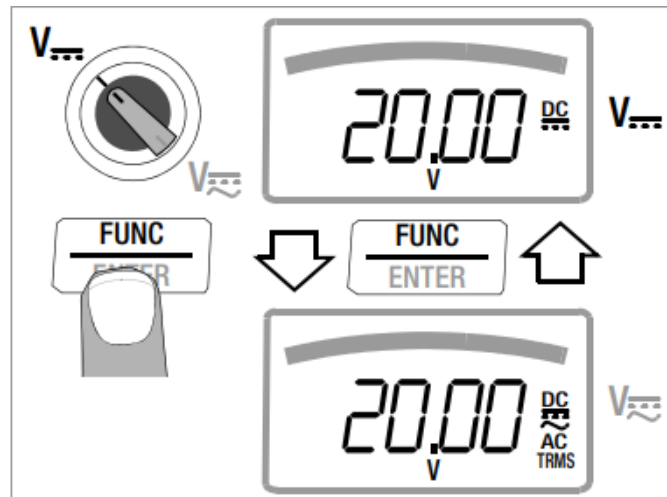
Battery Replacement

- **2 Batteries:** IEC LR6

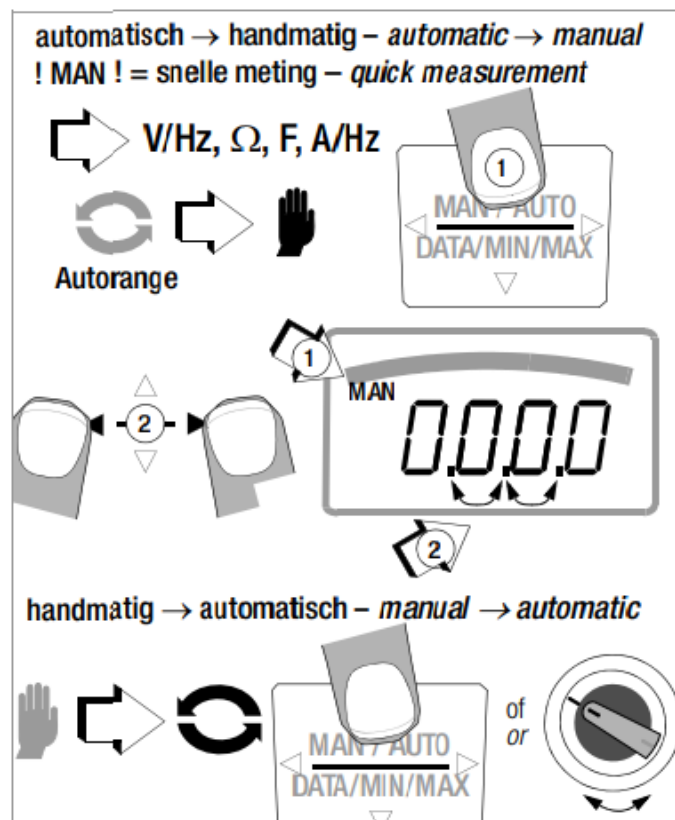
Disconnect the instrument from the measuring circuit before opening the battery compartment lid! Turn the slotted head screw counter-clockwise for this purpose. Observe the correct polarity of the batteries! When refitting the battery compartment lid the side with the guide hooks must be inserted first. Then turn the slotted head screw

clockwise.

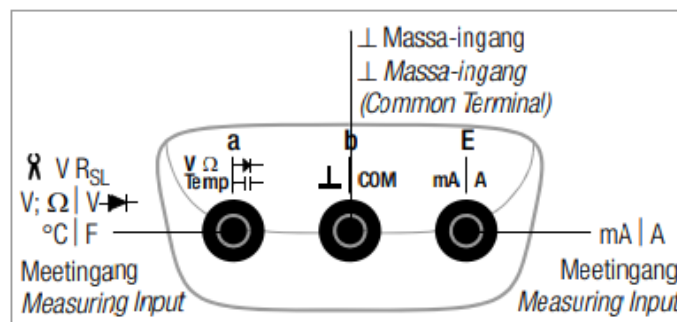
Select Measuring Function



Measuring Range Selection



Measuring Inputs



Repair and Replacement Parts Service DAKKS Calibration Lab and Rental Instrument Service Neem desgewenst contact op met:

When you need service, please contact: GMC-I Service GmbH Service center Beuthener Strasse 41 90471 Nürnberg Germany

- **Phone** +49 911 817718-0
- **Fax** +49 911 817718-253
- **E-Mail** service@gossenmetrawatt.com www.gmci-service.com

Product Support

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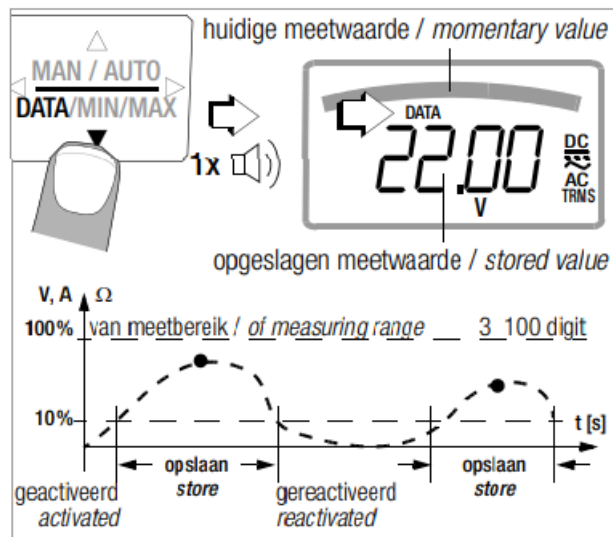
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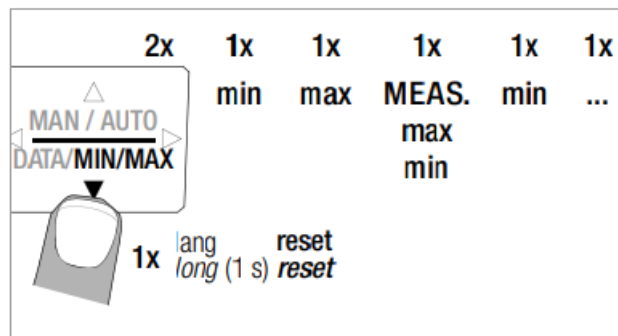
Gossen Metrawatt GmbH Südwestpark 15 90449 Nürnberg Germany

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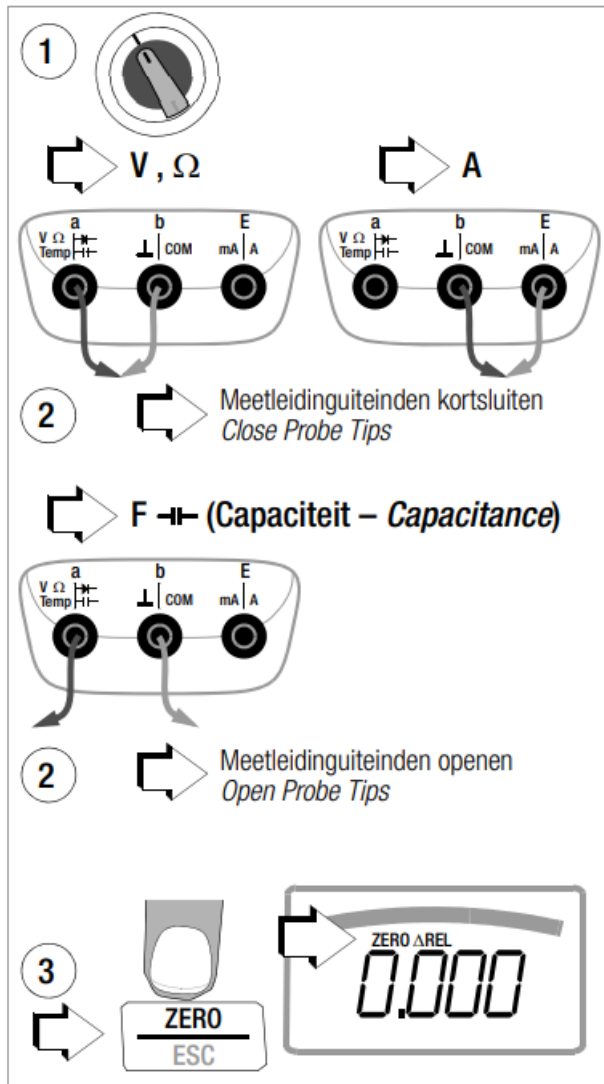
DATA-Hold/-Compare



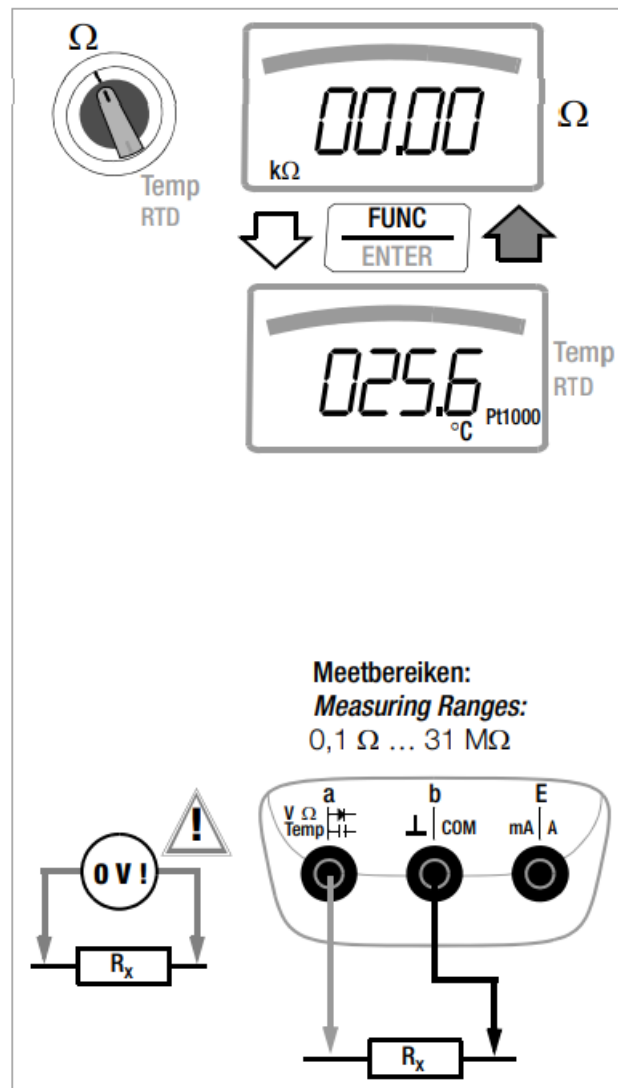
MIN/MAX memory



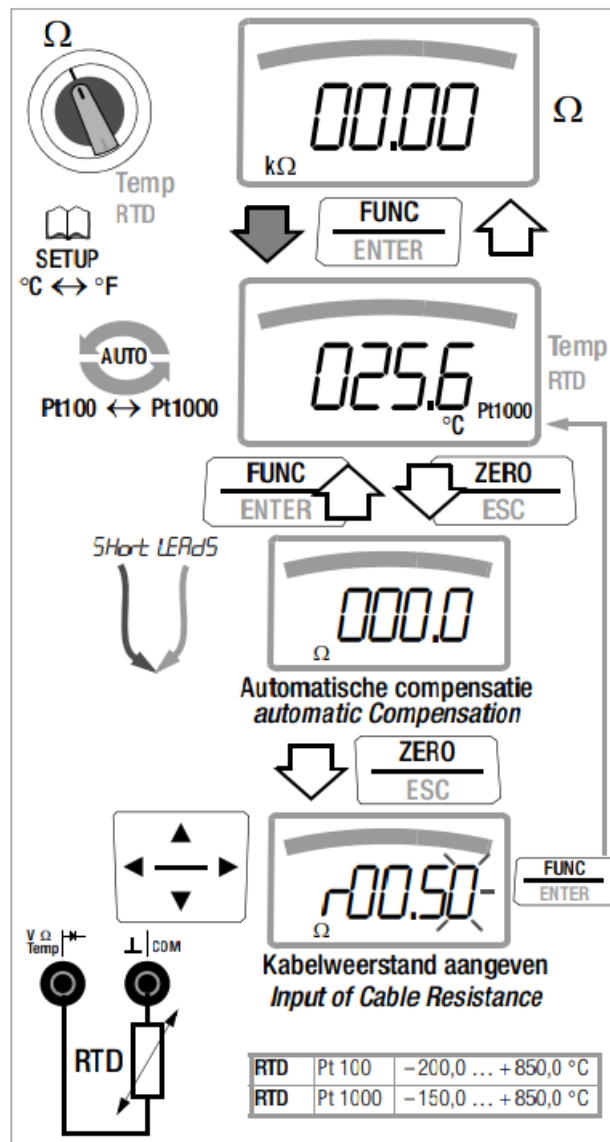
Zero Balancing



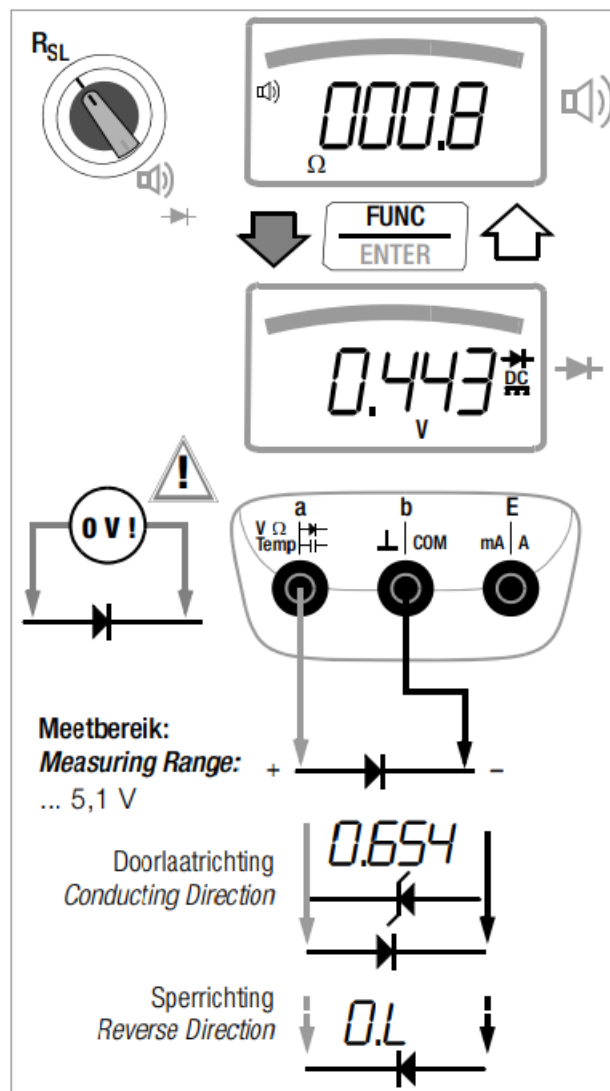
Resistance Measurement




Temperature Measurement

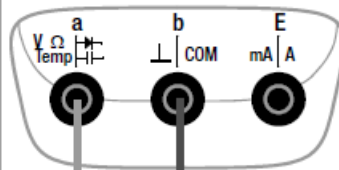
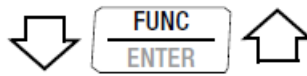


Diode Testing



Direct Voltage / Pulsating Voltage Measurement

CLiP = OFF ! → SETUP 



Meetbereiken:

Measuring Ranges:

V_{DC} : 100 μV ... 610 V

V_{AC} : 10 mV ... 610 V

max. 600 V (< 10 kHz)



$P_{\text{max}} = 6 \times 10^6 \text{ V} \times \text{Hz}$

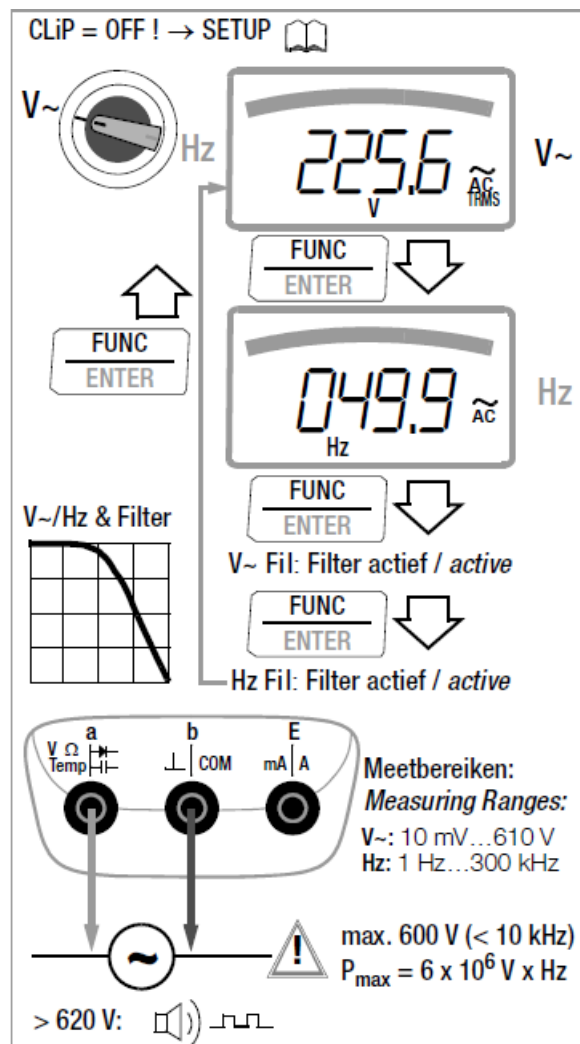
Waarschuwingen voor gevaarlijke spanningen:

Caution! Dangerous Voltages:

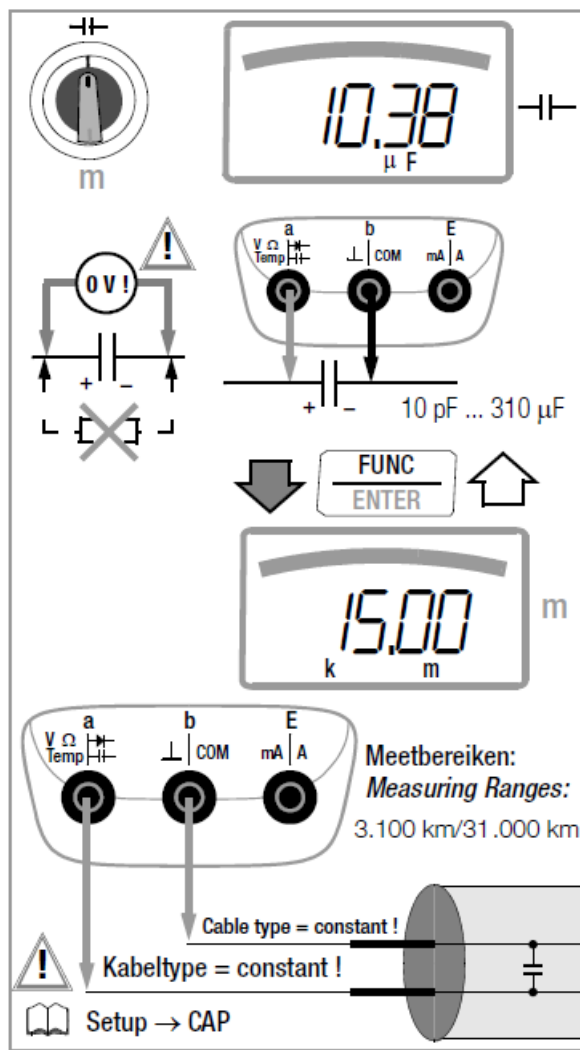
> 15 V AC of/or > 25 V DC:



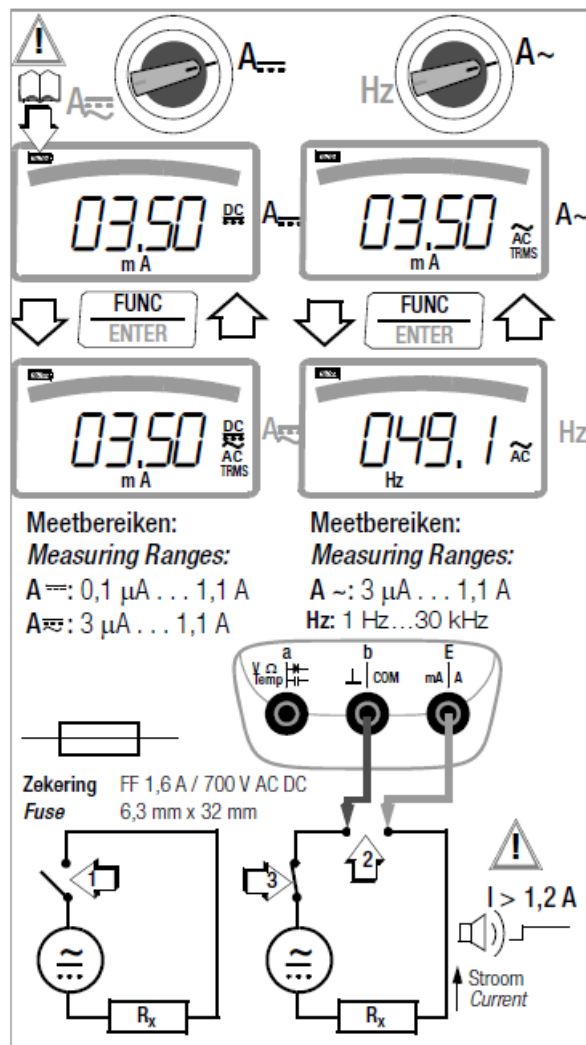
> 620 V:  



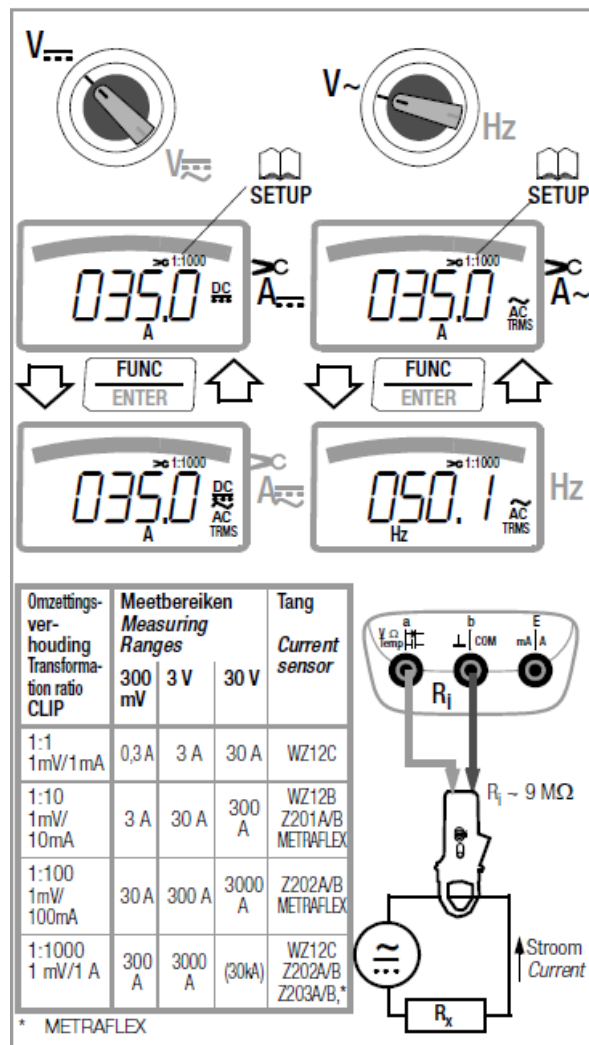
Capacitance Cable Length Measurement



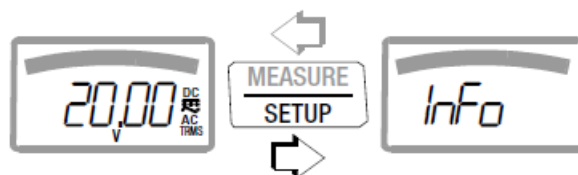
DC/Pulsating/Alternating Current/Frequency Measurement



Measurement with Clip-on Current Transformer

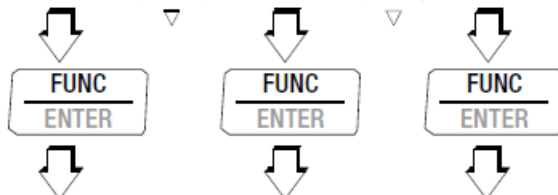


Device and Measuring Parameters



Hoofdmenu's / Main Menus → SEnd ... StorE ...

... InFo ← SET → tEMP ...



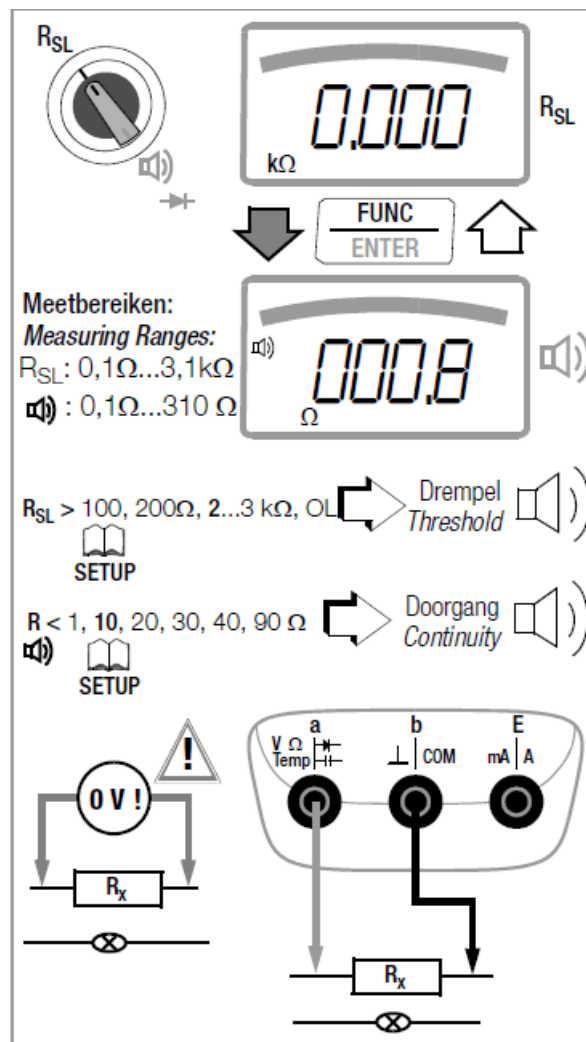
Submenu's / parameters / Sub-menus / Parameters ↓

opvragen read		instellen set		instellen set	
bAtt: 2.92 V	△	rAtE 0:05:00	△	°C	△
verSion: 1.00	—	0.diSP 0000.0/0.0	—	°F	—
dAtE: 13.09.06	▼	A.diSP bArG/Point	▼		▼
tiME: 11:15:19		CLiP OFF/1:1...1000			
OCCUP: 100.0%		APoFF 10...59min/on			
		U_ISo 10V/100V			
		CAP 10 ... 500nF			
		r_SL 100...3,1KΩ,			
		bEEP 01... 90Ω			
		irStb ir on/off			
		Addr 01...15			
		dAtE 13.09.			
		tiME 11:15			

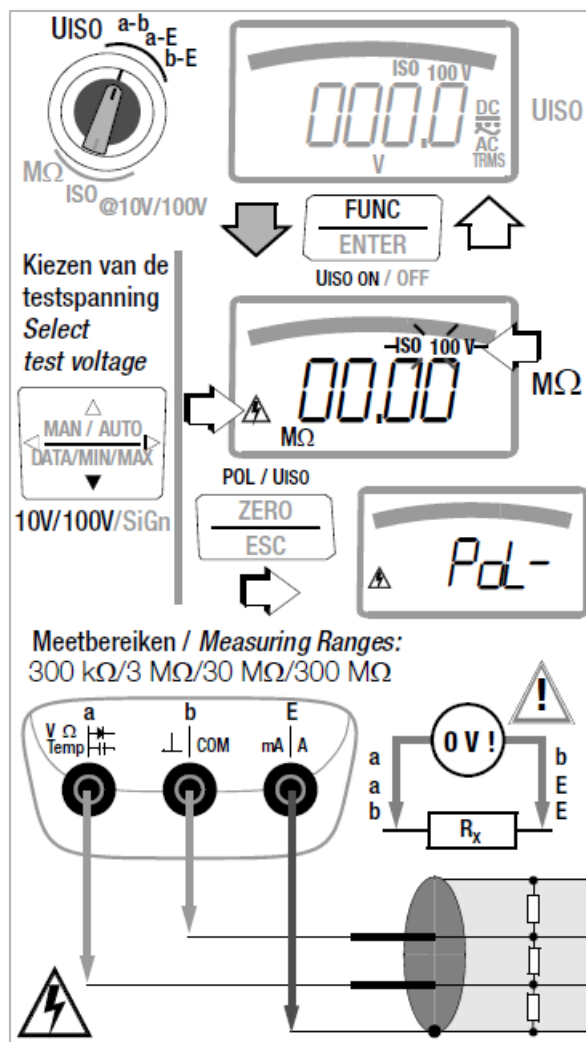
bevestigen
confirm

FUNC
ENTER

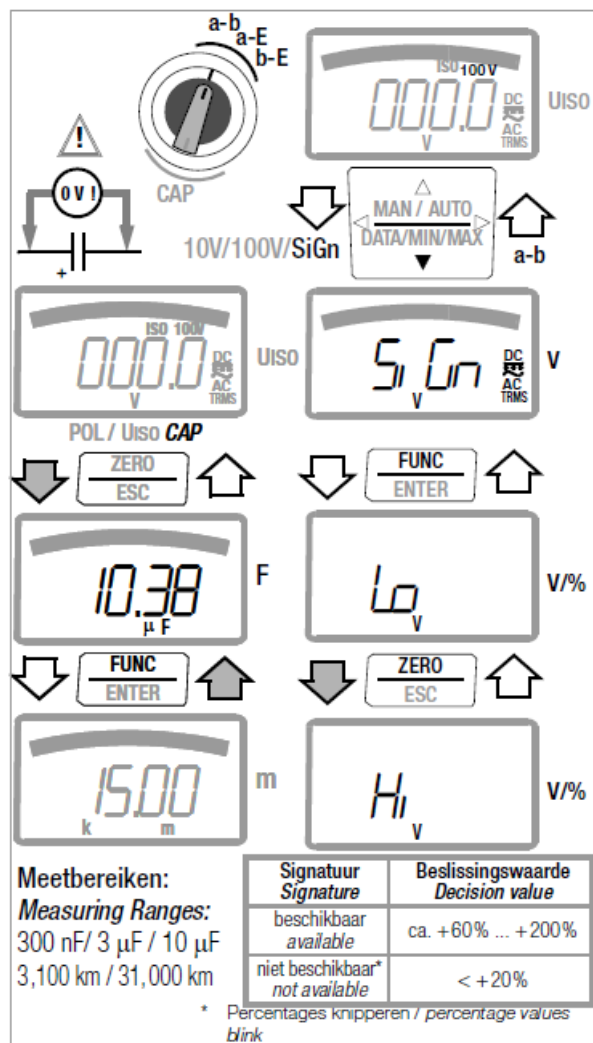
Loop Resistance Measurement Continuity Testing



Insulation Resistance Measurement Measuring Inputs



Capacitance (low disturbance) galv. Signature detection



Technical Data

Meetbereik <i>Measuring Range</i>	Meetfouten / <i>Measuring Error</i>		Overbelastbaarheid	
		/	1) <i>Overload capacity</i>	
300 mV	±(0,5% + 3 D) 2)	±1,5% + 3 D (> 300 D)	600 V DC AC eff Sinus/ <i>sin</i> e	Continue <i>continuous</i>
3 V	±(0,5% + 1 D)	±1,5% + 3 D (> 100 D)		
30 V				
300 V				
600 V				

1 Hz ... 300,00 kHz		±(0,5% + 1 D)	600 V 3)	max. 10 s
		/		
300 mA	±(0,5% + 5 D)	±1,5% + 5 D (> 100 D)	0,3 A	Continue <i>continuous</i>
3 mA	±(0,5% + 3 D)			
30 mA				
300 mA				
1 A	±(0,5% + 5 D)		1,6 A	5 min
1 Hz ... 30,00 kHz		±(0,5% + 1 D)	4)	
	±(... % v. MW/rdg. + ... D)			
300 W	0,5 + 3 2)		600 V DC AC eff/rms Sinus/ <i>sine</i>	max. 10 s
3 kW	0,5 + 1			
30 kW				
300 kW				
3 MW				
30 MW	2 + 5			
RSL 300 W	3 + 5			
RSL 3 kW	3 + 5			
300 W	3 + 5			
5,100 V	2 + 5			
30 nF	±(3% + 6 D) 2)			

		600 V DC AC eff Sinus/ <i>sin</i> <i>e</i>	max. 10 s
300 nF	±(1% + 6 D)		
3 mF			
30 mF			
300 mF	±(5% + 6 D)		

1. at + 40 C
2. with function ZERO active
3. Power limiting: 6 · 106 V · Hz (max. 600 V 1 kHz)
4. maximale stroomwaarden
5. max. current values see current measuring range

Insulation Resistance Measurement

<i>Measuring Range</i>	UIISO	<i>Measuring Error</i> $\pm(\% v. MW/rdg + D)$
6 ... 110 V 1)	Ri ca. 120 kW	3 + 30
5 ... 310,0 kW	10//100 V	3 + 5
0,280 ... 3,100 MW	10//100 V	3 + 5
02,80 ... 31,00 MW	10//100 V	5 + 5
028,0 ... 310,0 MW	100 V	5 + 5

Interference voltage measurement

Electrical Safety

- Protection class II
- EN 61010-1:2010
- Measuring Category CAT II / CAT III
- Nominal Voltage 600 V / 300 V
- Pollution degree 2
- Test Voltage 3,5 kV~ / per IEC 61010-1/EN 61010-1
- Protection/ Housing:
- IP54 pressure equalization by means of housing

- Extract from table on the meaning of IP codes

IP XY (1. Cijfer X) (1 st digit X)	Bescherming tegen binnendringende vaste deeltjes <i>Protection against foreign object entry</i>	IP XY (2. Cijfer Y) (2 nd digit Y)	Bescherming tegen binnendringend water <i>Protection against the penetration of water</i>
5	Stofbestendig <i>dust protected</i>	4	Spatwater <i>splashing water</i>

Electromagnetic Compatibility EMC

- Interference Emission
- EN 61326-1:2013 class B
- Interference Immunity
- EN 61326-2-1:2013

Ambient Conditions

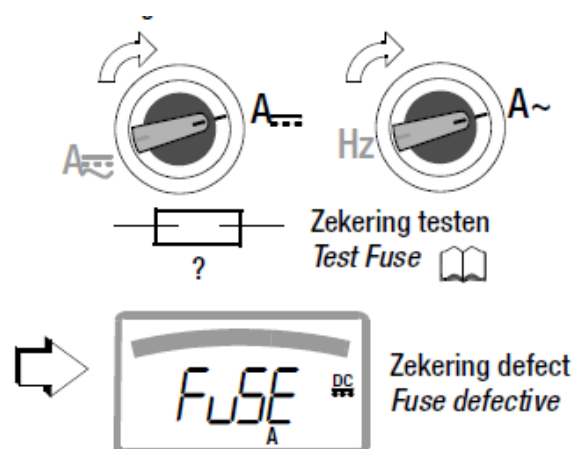
- Accuracy range 0C ... + 40 C
- Operating temperature –10C ... + 50C
- Storage temperature
- without battery – 25C ... + 70C
- relative humidity 40 ... 75 % no condensation allowed
- Elevation up to 2000 m maximum

Fuse

- FF: 1,6 A / 700 V AC DC 6,3 mm x 32 mm
- breaking capacity: 50 kA (min. 10 kA)

If you use other fuses than the one indicated above you forfeit your product guarantee.

Internal Fuse Test



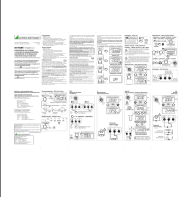
Fuse Replacement

1. Disconnect the instrument from the measuring circuit before opening the fuse compartment lid! Turn the (captive) slotted head screw counter-clockwise for this purpose. Remove the fuse with the flat end of the fuse

compartment lid.

2. When refitting the fuse compartment lid the side with the guide hooks must be inserted first. Then turn the slotted head screw clockwise.

Documents / Resources

	<p>GOSSEN METRAWATT METRAHIT T-COM Plus Cable Multimeter for Measurement of Symmetrical Copper Cable Units [pdf] Instruction Manual 3-349-559-53, METRAHIT T-COM Plus Cable Multimeter for Measurement of Symmetrical Copper Cable Units, METRAHIT T-COM Plus, Cable Multimeter for Measurement of Symmetrical Copper Cable Units</p>
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References

- [Servicepartner für Kalibrierungen, Reparaturen, Ersatzteile, Mietgeräte | GOSSEN METRAWATT GMC-I Service GmbH](#)
- [GOSSEN METRAWATT, GMC-I Messtechnik, GMC-Instruments](#)