



GOSSEN METRAWATT Metrahit ISO Aero TRMS Multimeter Instruction Manual

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Metrahit ISO Aero TRMS Multimeter

Please make sure to read the detailed operating instructions at www.gossenmetrawatt.com.

The short-form instructions are no substitute for the detailed instructions!

Symbol  indicates parameter settings which are only described in the detailed operating instructions.

Standard Equipment

- 1 Isolation multimeter
- 1 Protective rubber cover
- 1 Cable set KS17-2
- 1 DAkkS calibration certificate
- 2 Batteries 1.5 V, type AA inserted in unit
- 1 Power pack NA X-TRA
- 1 Short-form operating instructions*
- * Detailed operating instructions for download on the Internet at www.gossenmetrawatt.com

Application of measuring cable set KS17-2

Maximum Rated Voltage	600 V	1000V
Measuring Category	CAT III	CAT I I
Maximum Rated Current	1 A	16 A
with safety cap applied	•	—
without safety cap applied	—	•

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 1000 V, category II / 600 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!

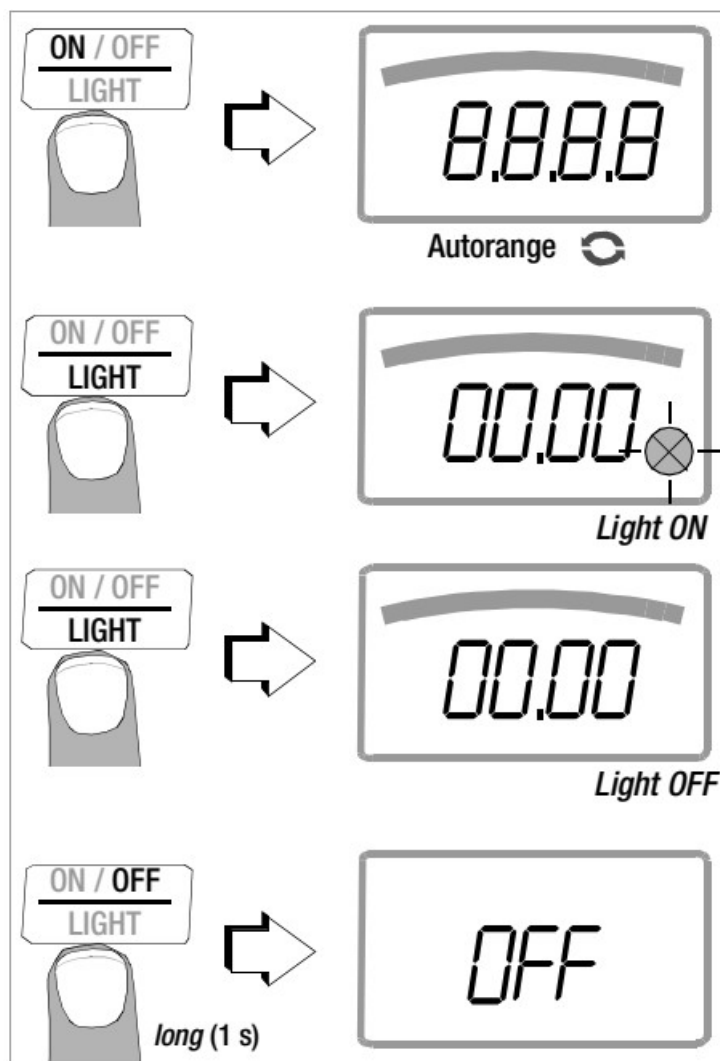
The input of the current measuring ranges is fitted with a fuse.

Use original fuses only, see label on the housing or technical data section!

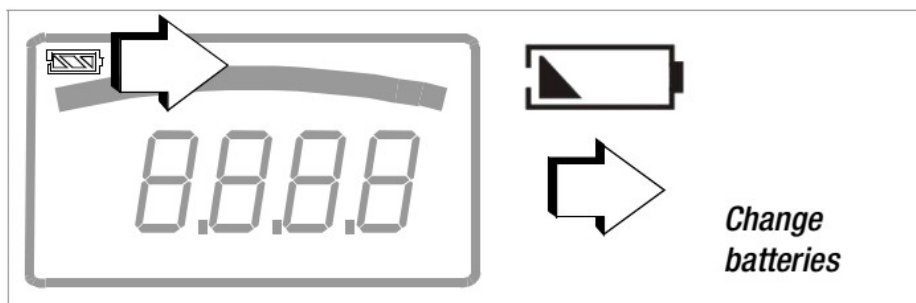
Only operate the instrument with batteries inserted. Otherwise dangerous currents or voltages will not be indicated and your instrument may be damaged.

The device may not be operated with the fuse or battery compartment cover removed.

Switching on / off / Light on



Battery Test

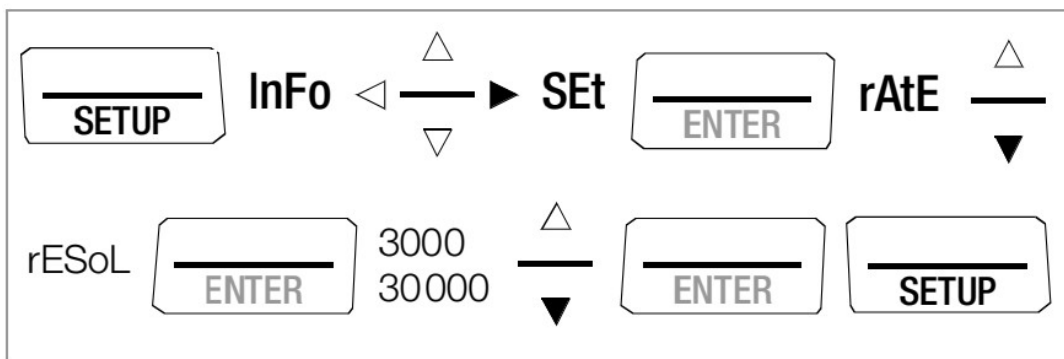


Battery Replacement

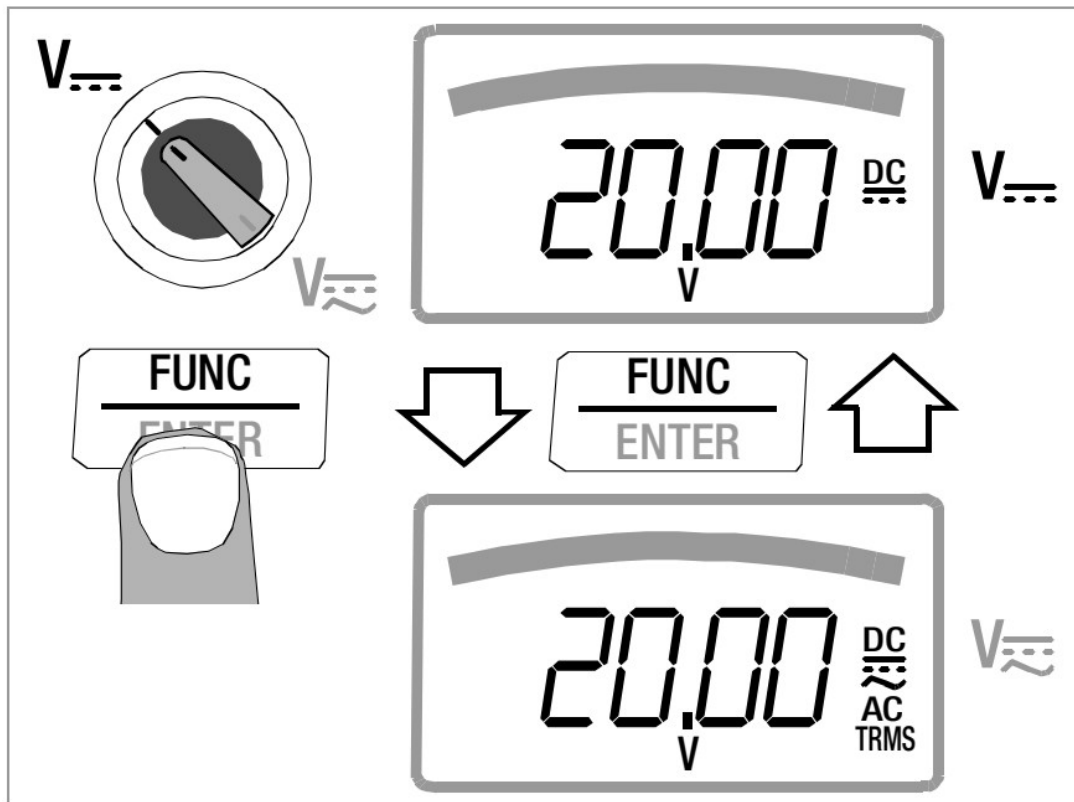
2 Batteries: IEC LR6 / AA – AM3 – Mignon

! 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.

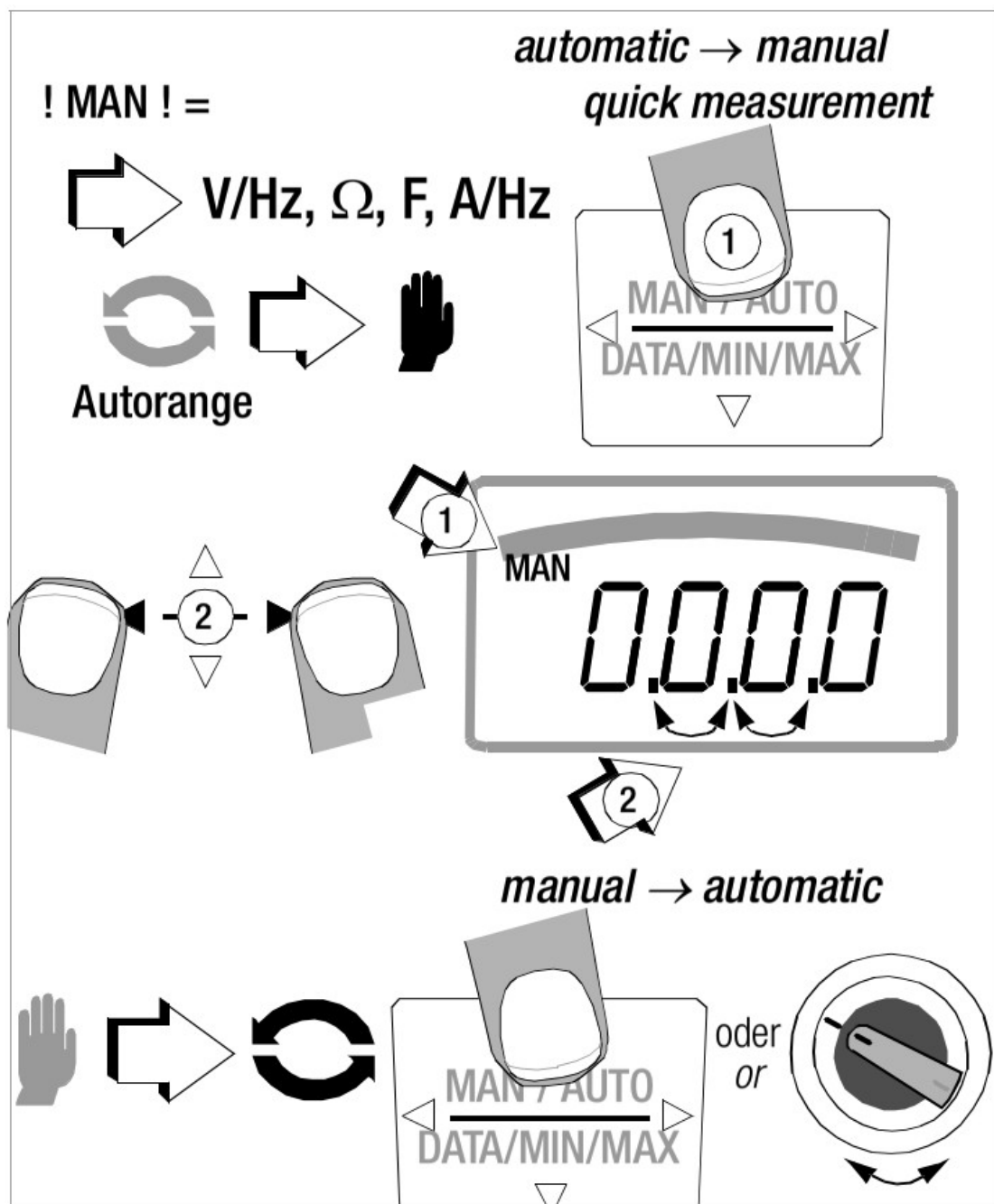
Select Resolution



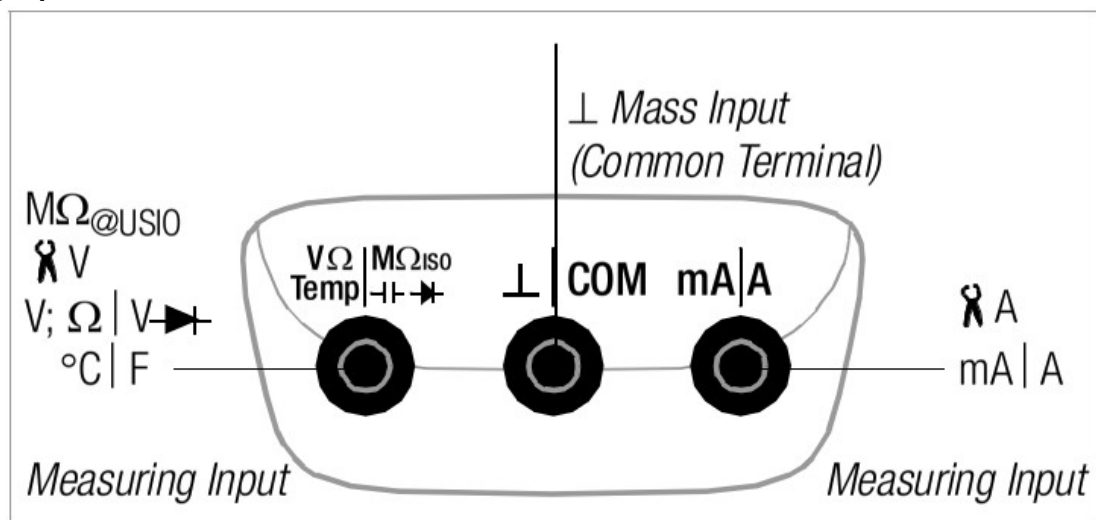
Select Measuring Function



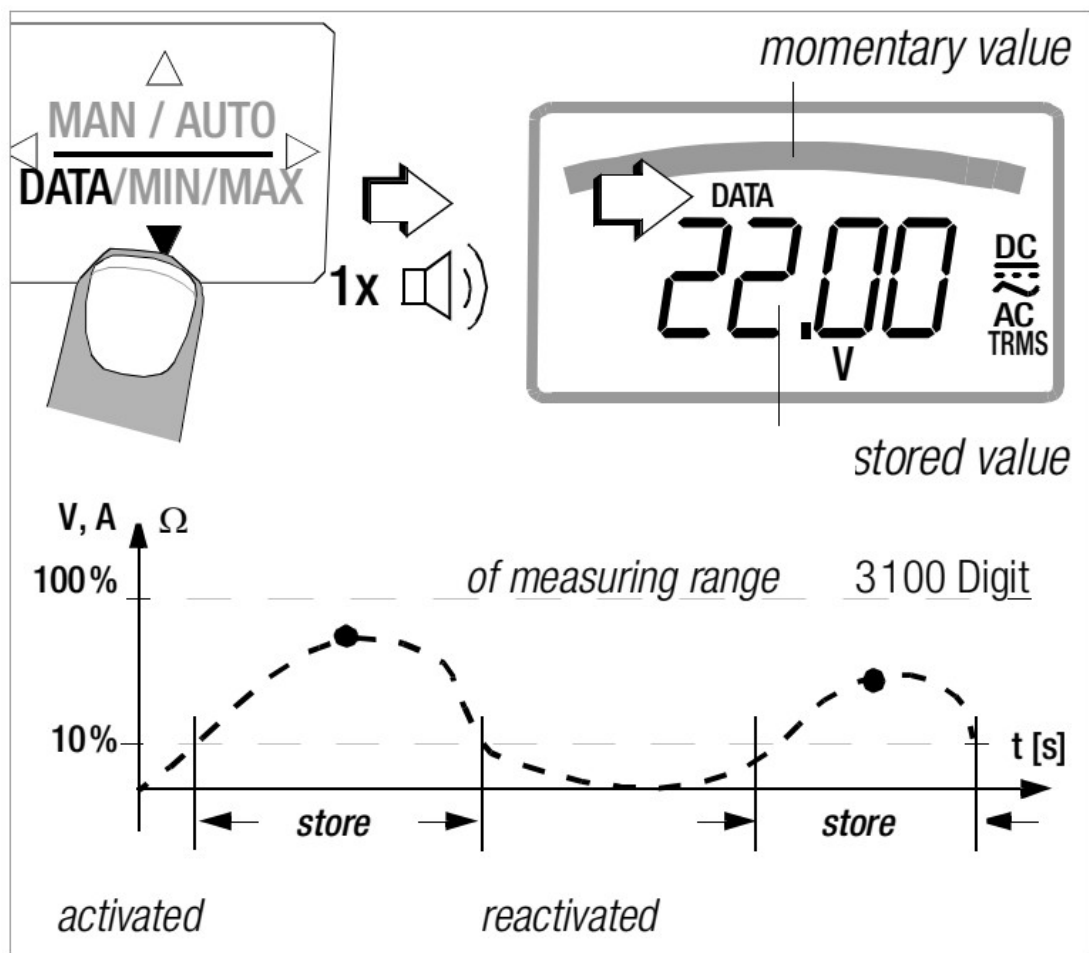
Measuring Range Selection



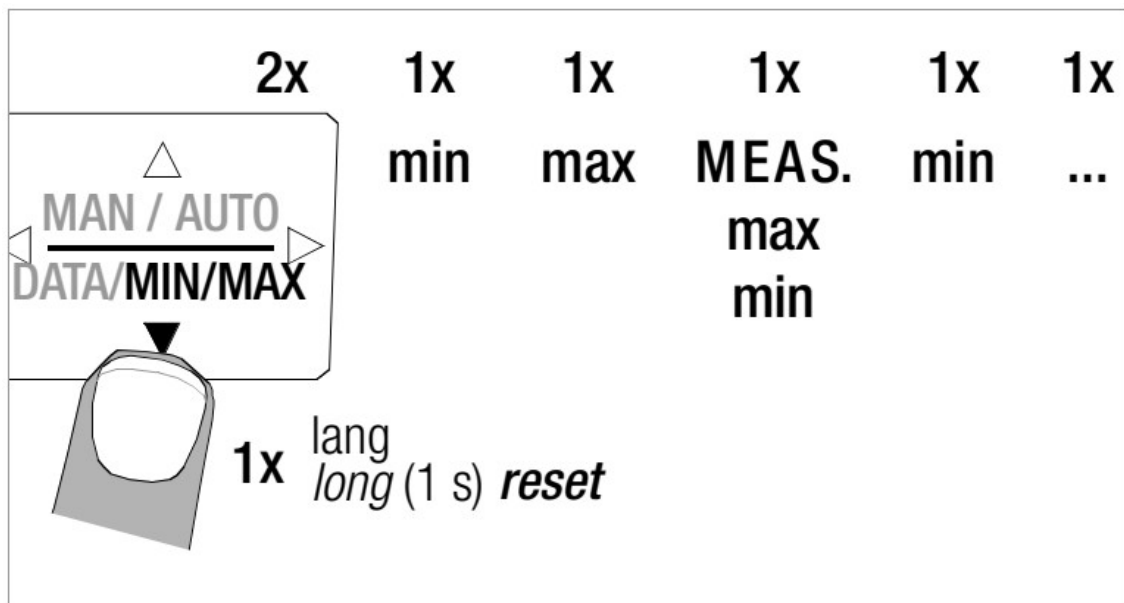
Measuring Inputs



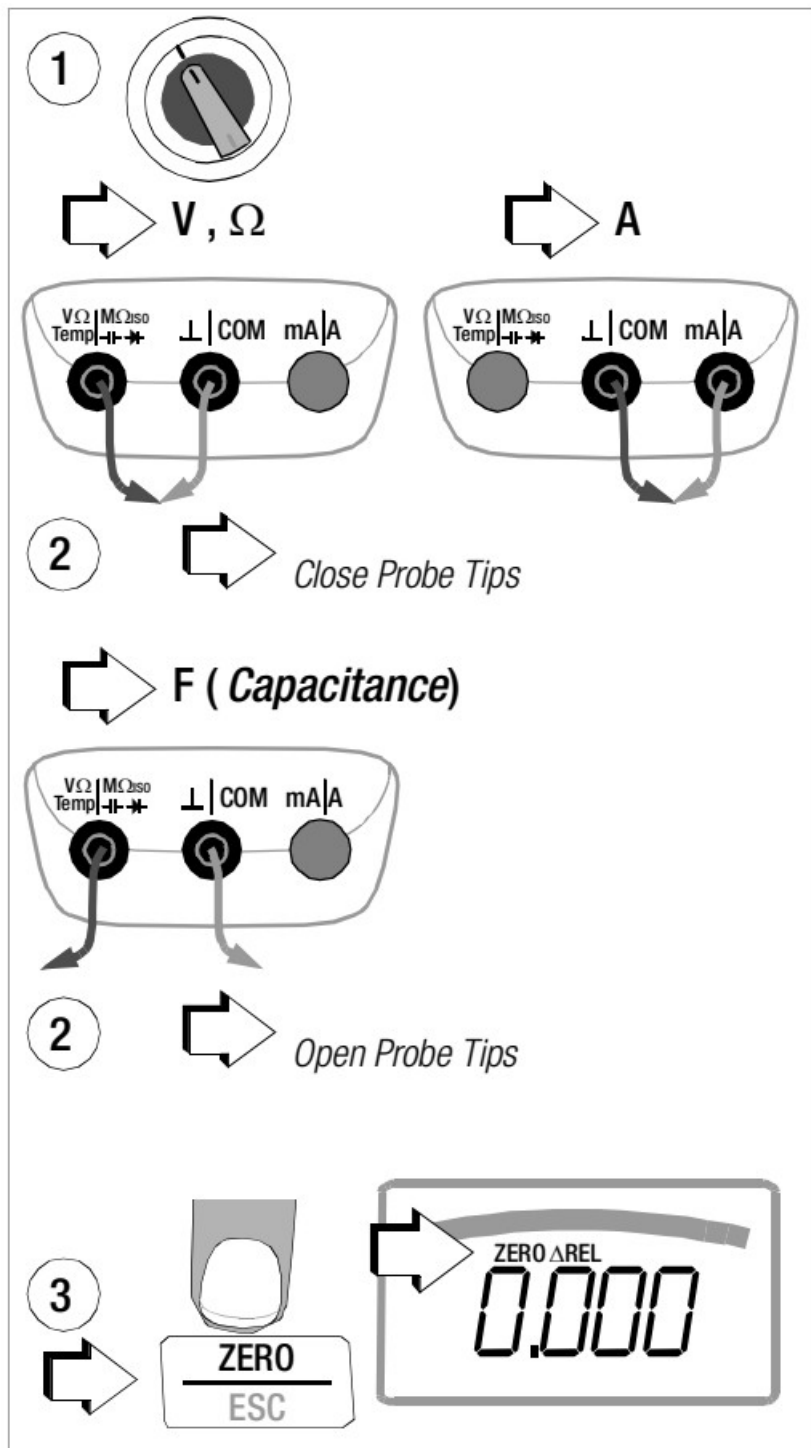
DATA-Hold/-Compare



MIN/MAX memory

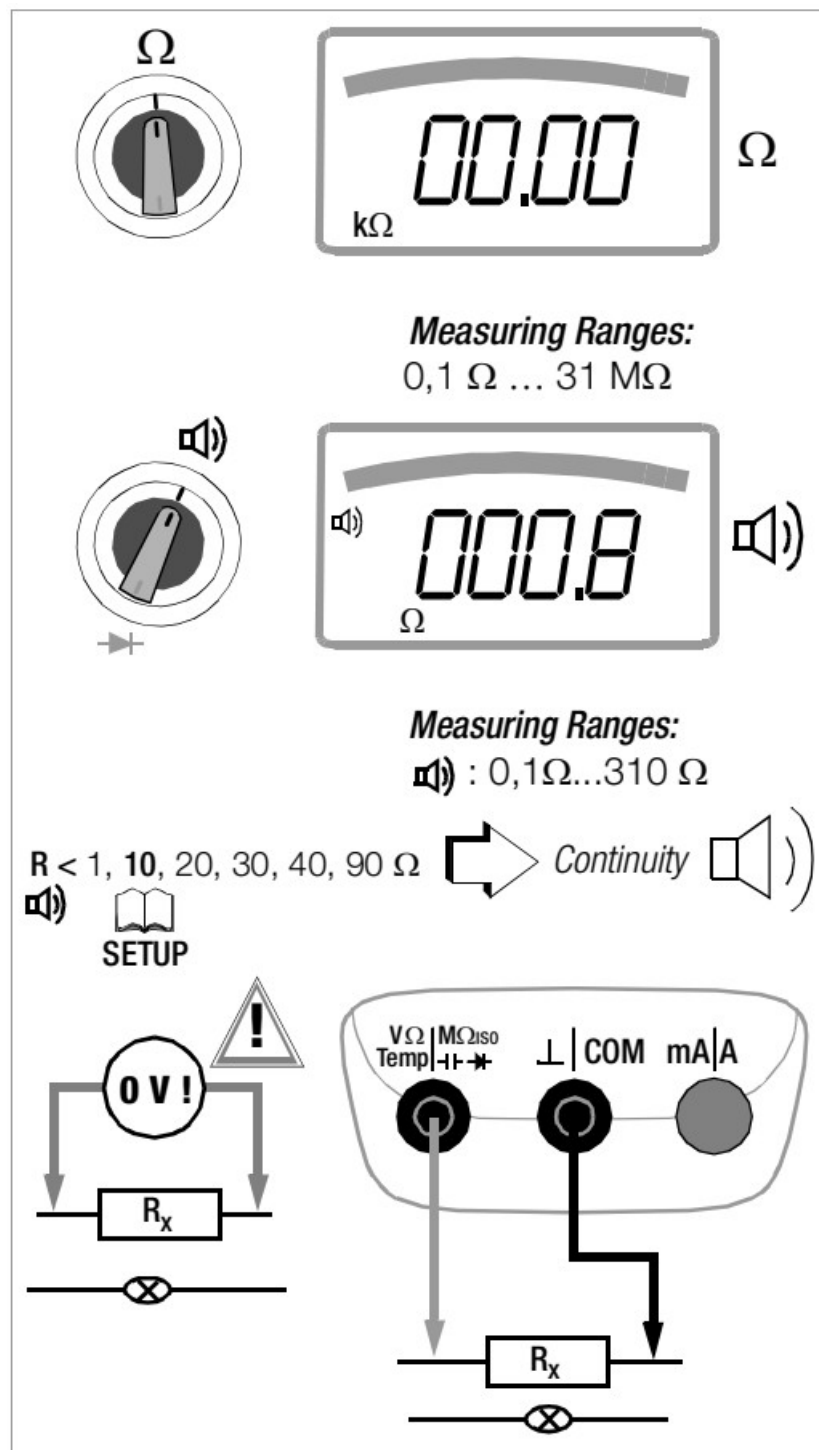


ZERO Zero Balancing

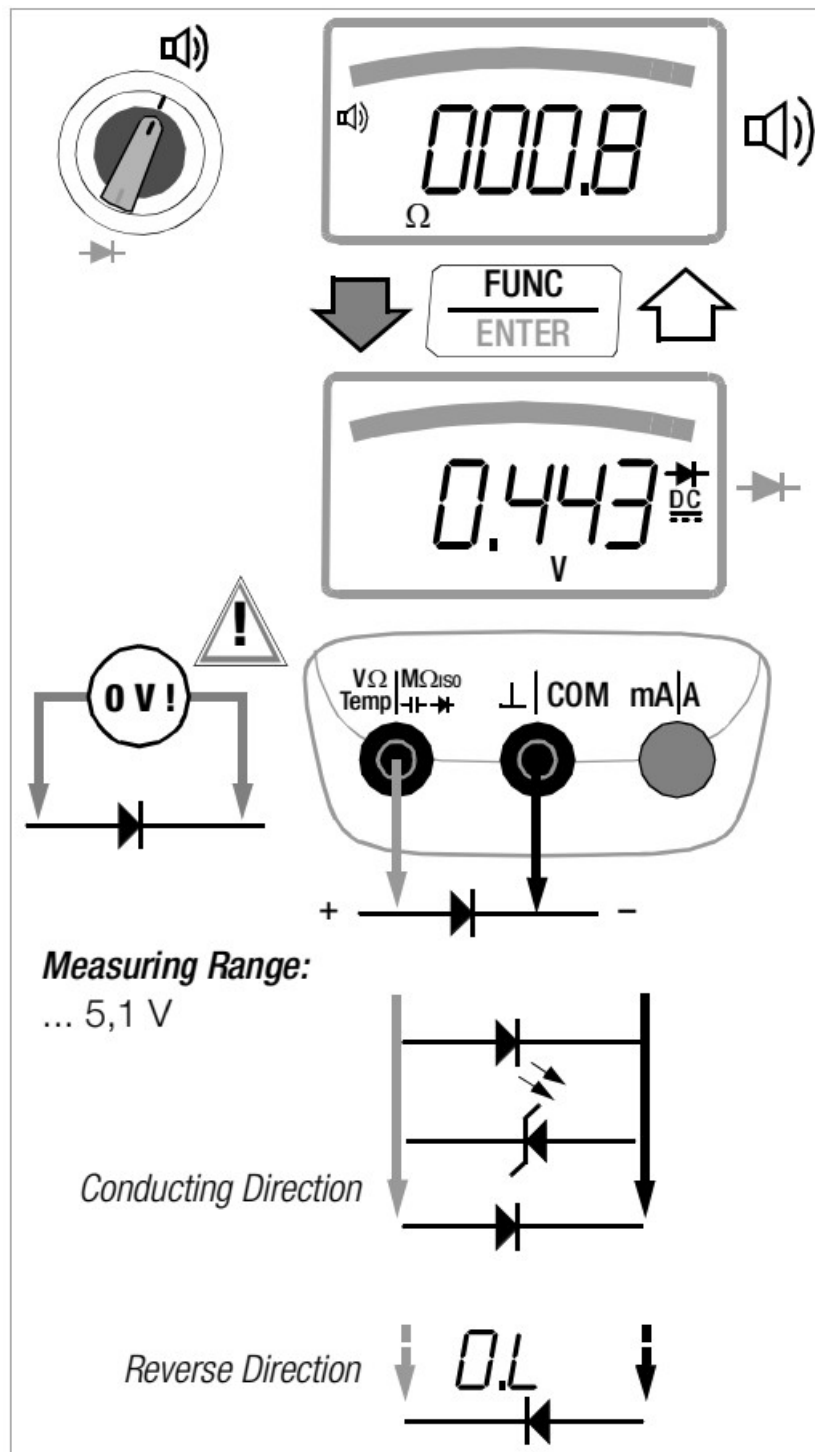


Ω Resistance Measurement

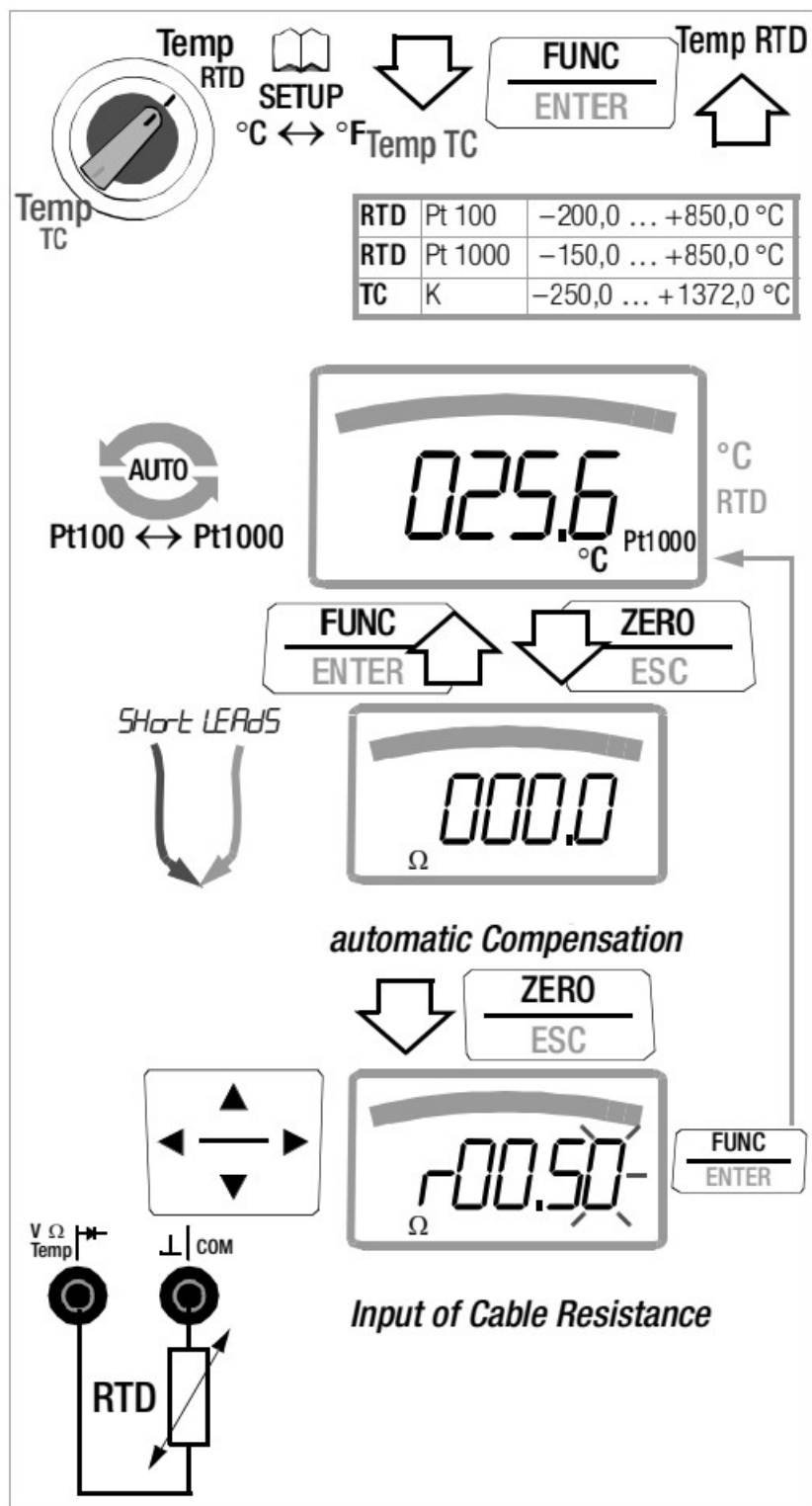
 Continuity Testing



➡ Diode Testing



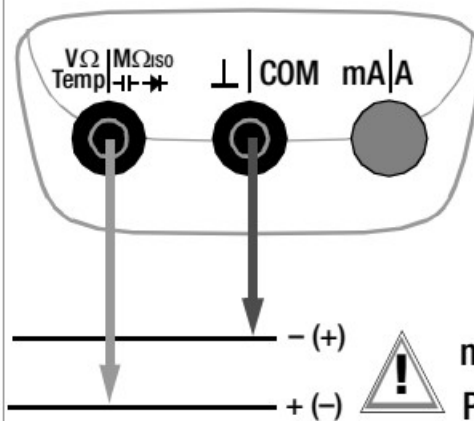
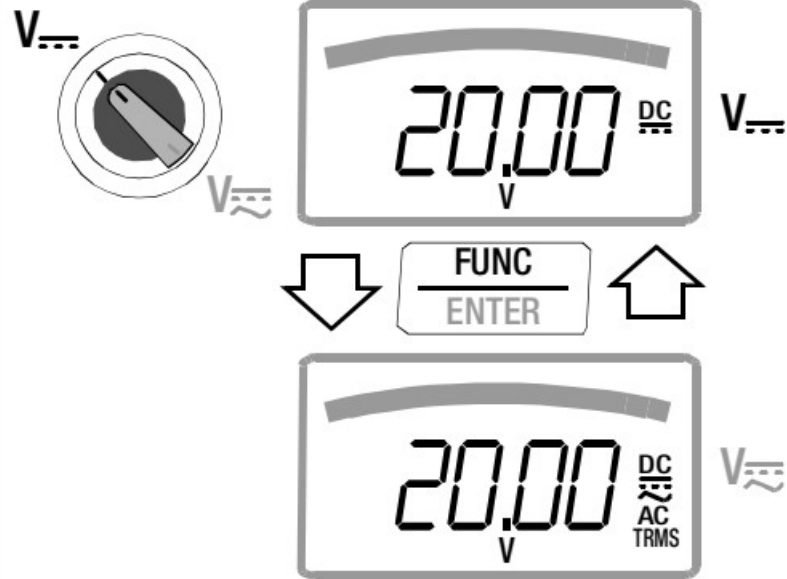
Temp RTD
Temp TC
Temperature Measurement



V === / V ~

Direct Voltage / Pulsating Voltage Measurement

CLIP = OFF ! → SETUP 



Measuring Ranges:

V_⎓ : 100 μV...1000 V

V_~ : 10 mV...1000 V

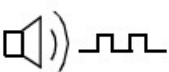
max. 1000 V (< 3 kHz)

$P_{\max} = 3 \times 10^6 \text{ V} \times \text{Hz}$

Caution! Dangerous Voltages:

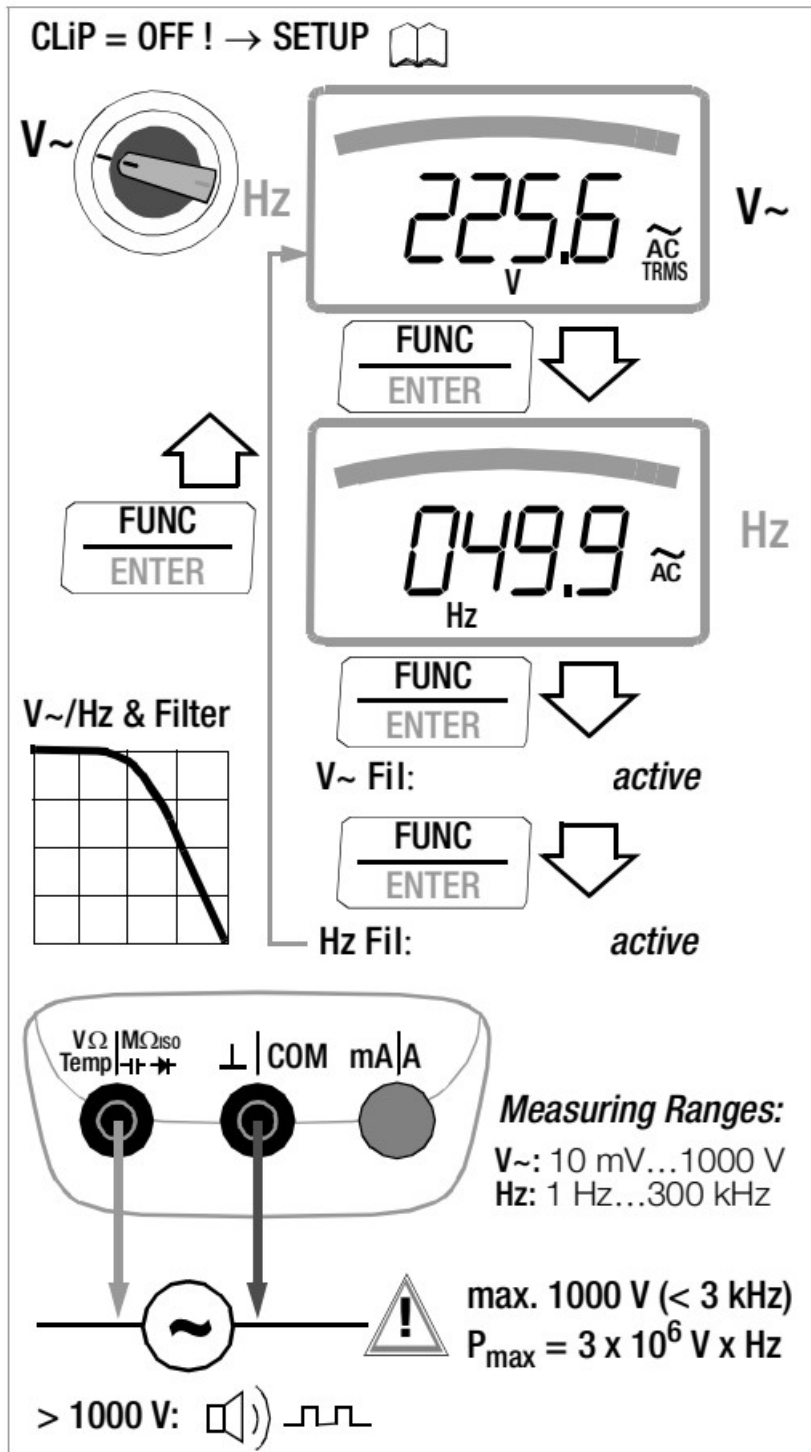
> 15 V AC oder/or > 25 V DC:



> 1000 V: 

V~/ Hz

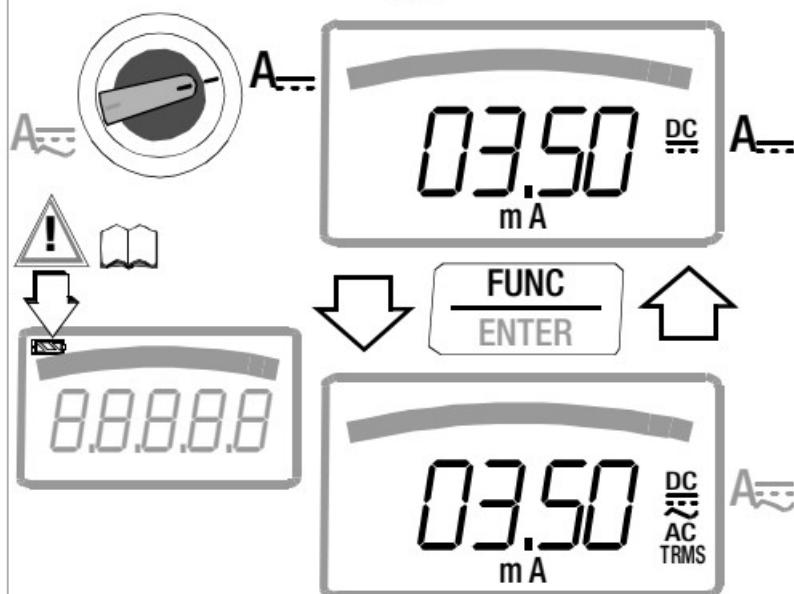
AC Voltage – Frequency, without/with Low-pass Filter



A  / A 

DC / Pulsating Current Measurement

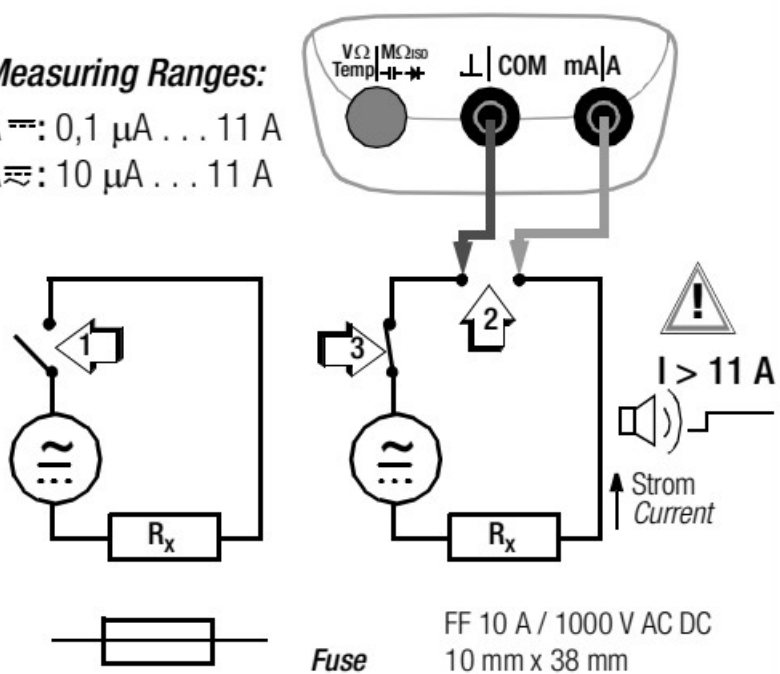
CLiP = OFF ! → SETUP 



Measuring Ranges:

$A\sim$: $0,1 \mu A \dots 11 A$

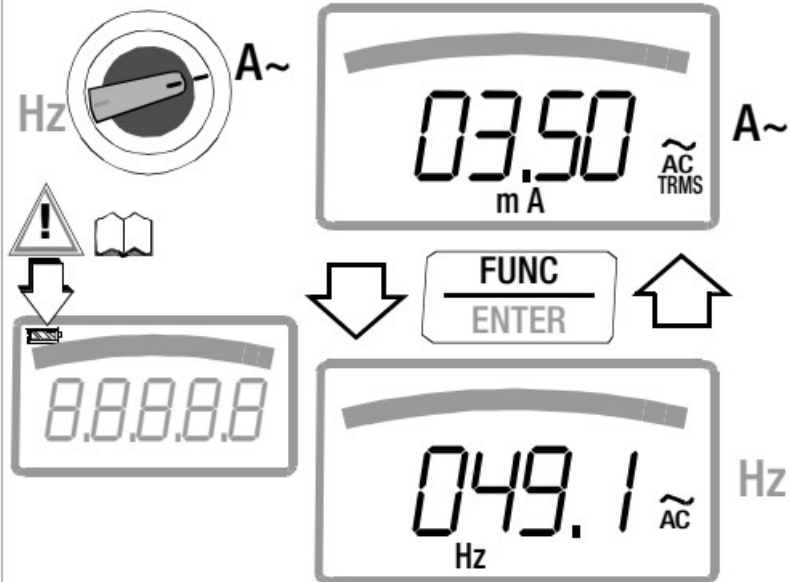
$A\sim$: $10 \mu A \dots 11 A$



$A\sim$ / Hz

Alternating Current / Frequency Measurement

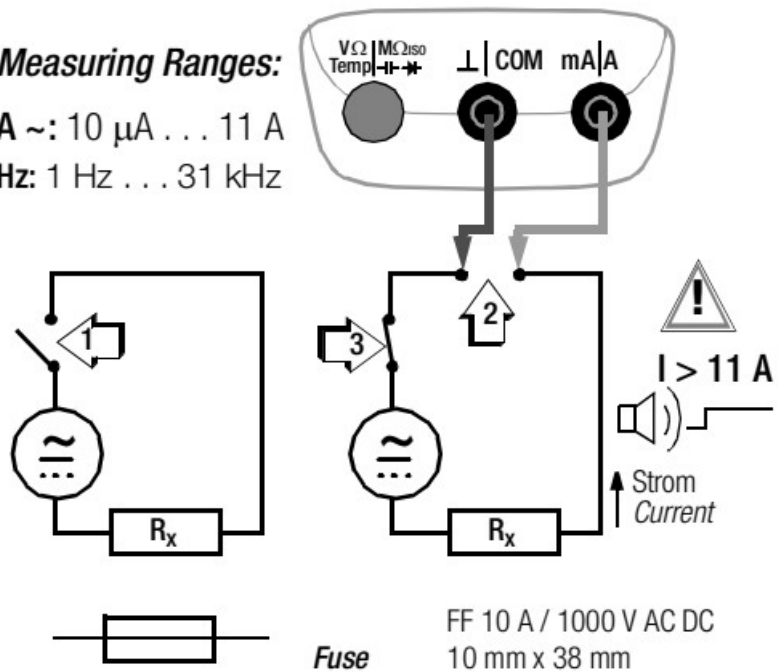
CLiP = OFF ! → SETUP 



Measuring Ranges:

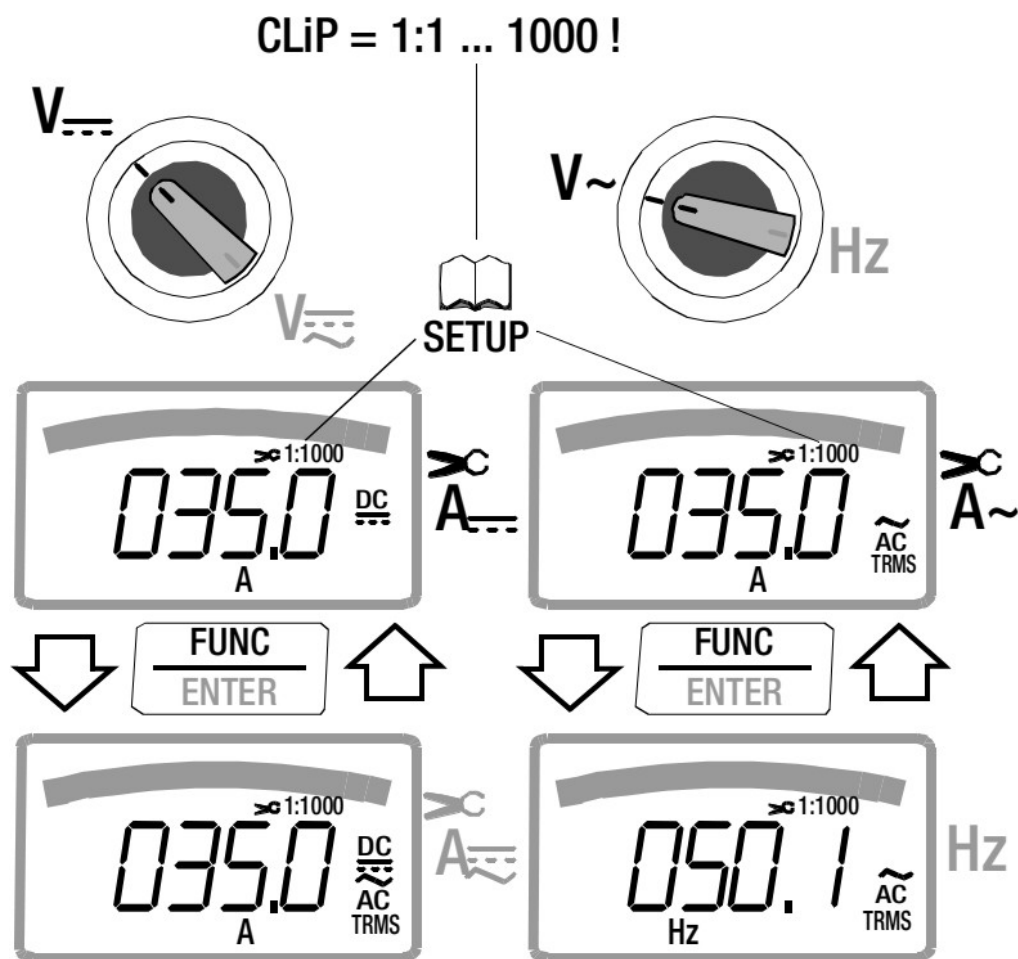
A ~: 10 μ A ... 11 A

Hz: 1 Hz ... 31 kHz

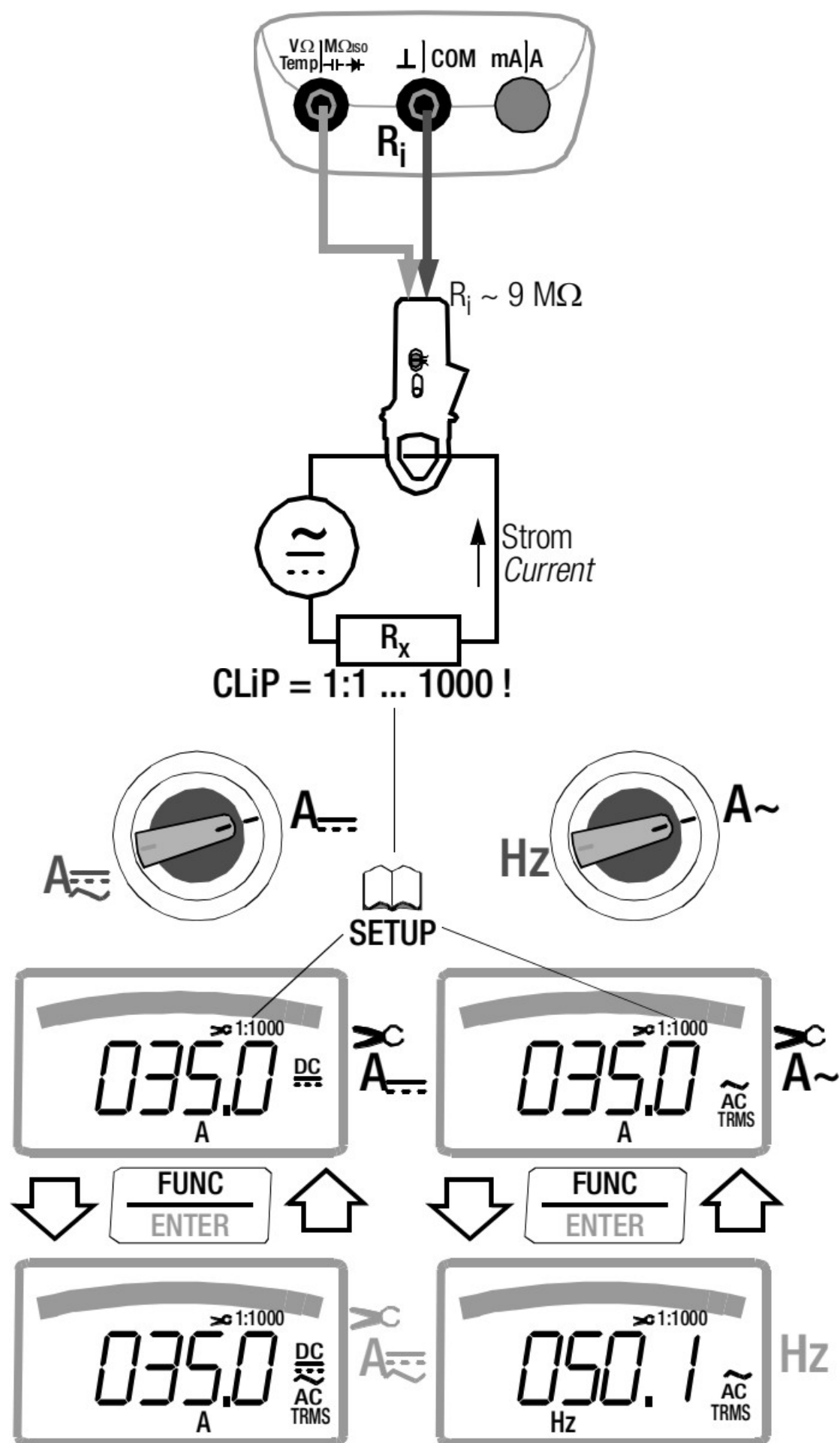


 V / Hz

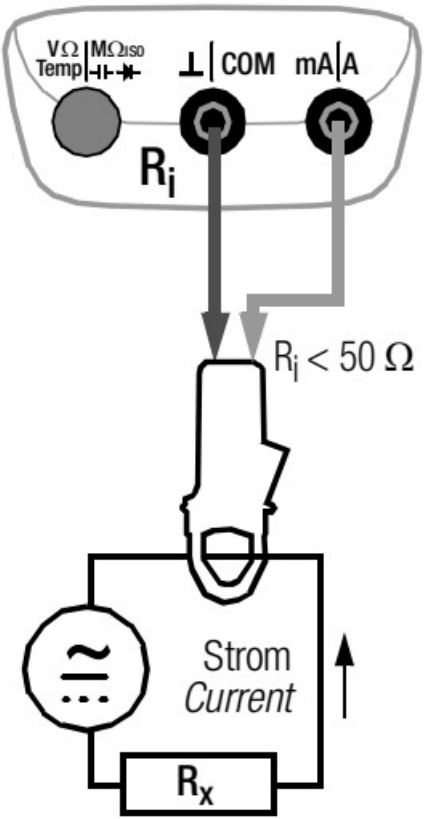
Measurement with Clip-on Current Sensor



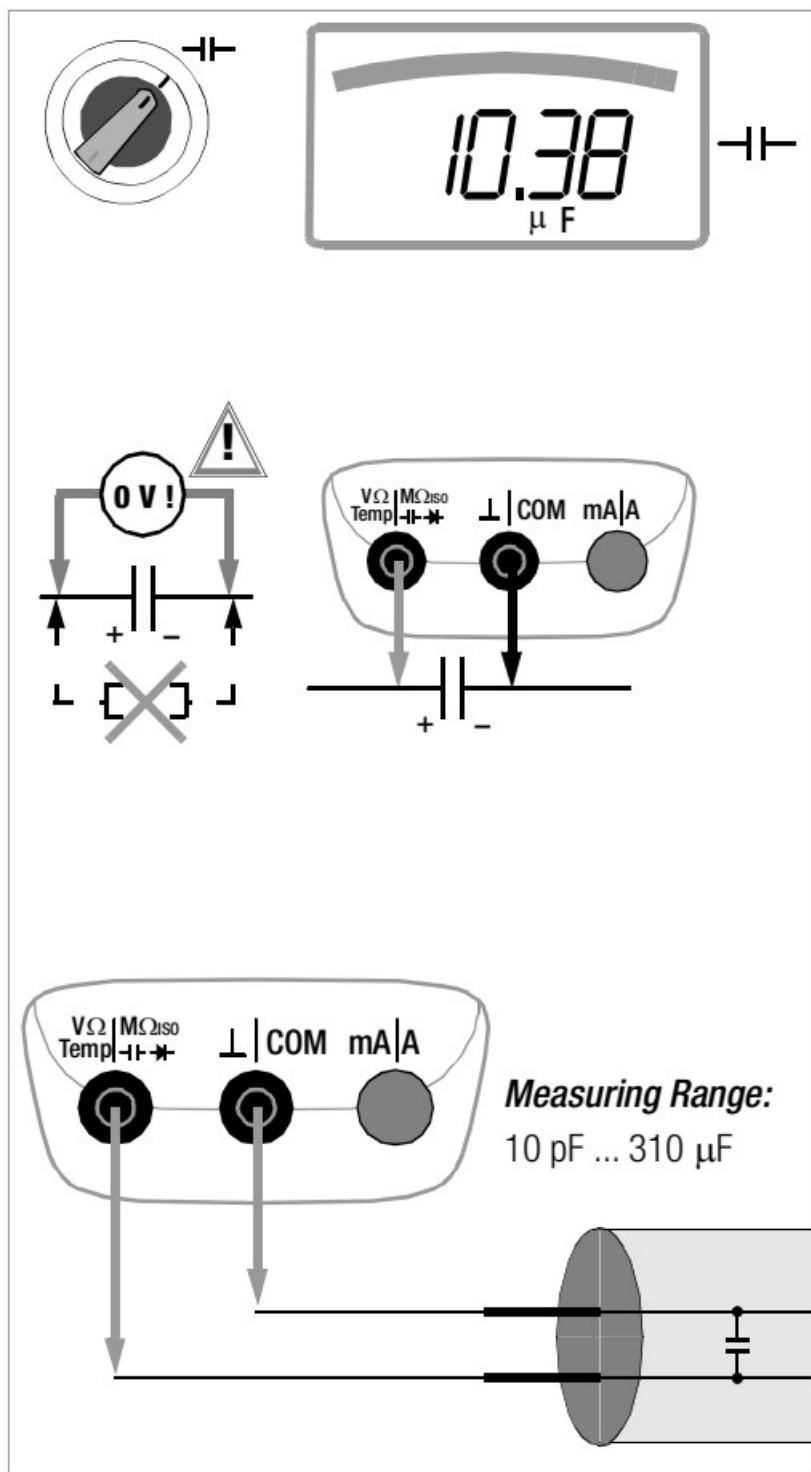
Transformation ratio CLiP	Measuring Ranges			Current sensor
	300 mV	3 V	30 V	
1:1 1mV/1mA	0,3 A	3 A	30 A	WZ12C
1:10 1mV/10mA	3 A	30 A	300 A	WZ12B Z201A/B VETRAFLEX
1:100 1mV/100mA	30 A	300 A	3000 A	Z202A/B VETRAFLEX
1:1000 1 mV/1 A	300 A	3000 A	(30kA)	WZ12C Z202A/B Z203A/B VETRAFLEX



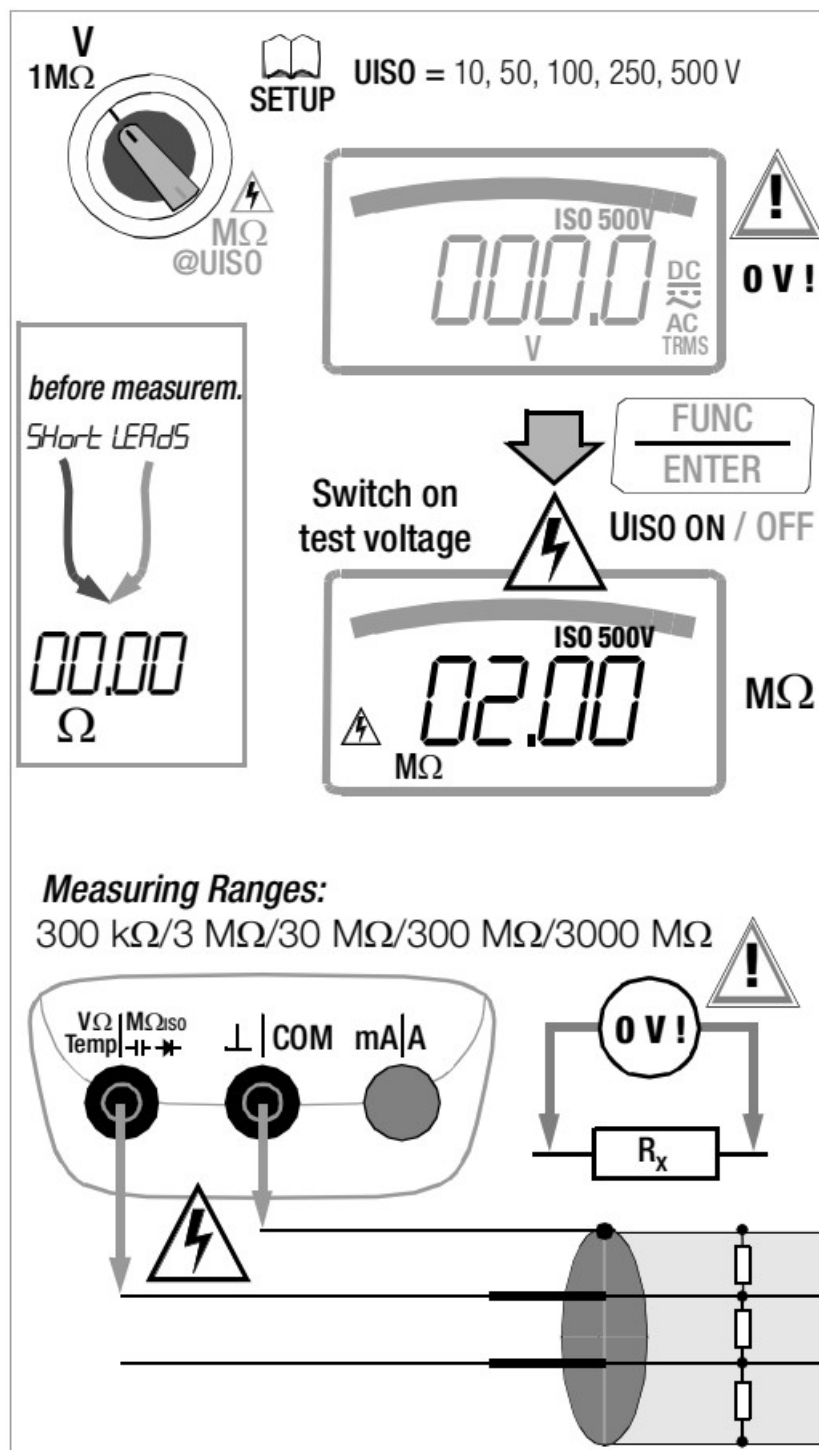
Transformation ratio CLIP	Measuring Ranges			Zange Current tra nsformer
	30 mA	300 mA	3 A	
1:1 1mA/1mA	30 mA	300 mA	3 A	
1:10 1mA/10mA	300 mA	3 A	30 A	
1:100 1mA/1 00mA	3A	30A	300A	
1:1000 1 mA/1 A	30 A	300 A	3000 A	WZ12A WZ12D WZ11A 73511 73512 73514



Capacitance

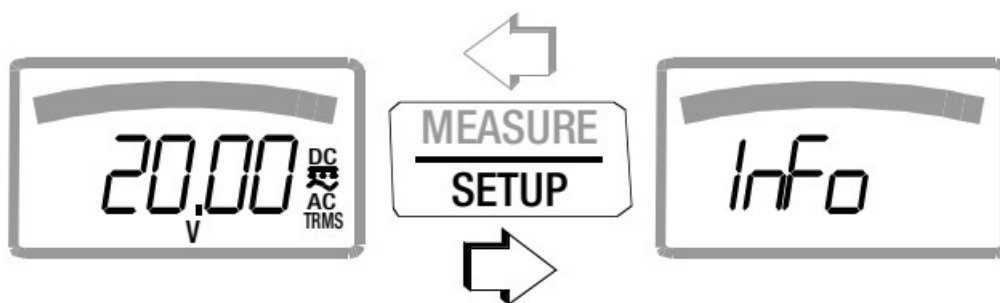


V 1M Ω ($R_i = 1 M\Omega$)
 Interference Voltage
 M Ω @UIISO

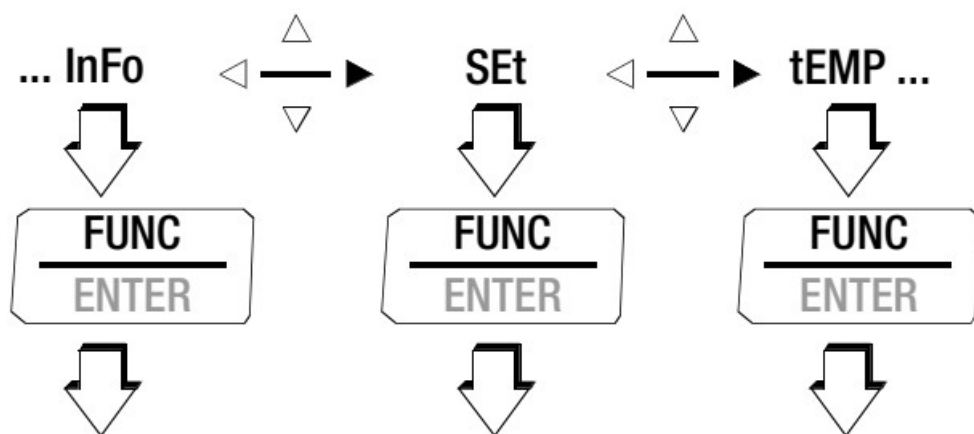


Device and Measuring Parameters

SETUP



Main Menus → ... SEnd ... StorE ...



Sub-menus / Parameters ↓

read

bAtt: 2.92 V
 verSion: 1.00
 ItEMP: 23 °C
 dAtE: 13.09.06
 tiME: 11:15:19
 OCCUP: 100.0%

set

rAtE 0:05:00
 rESoL 30000
 0.diSP 0000.0/0.0
 CLiP OFF/1:1...1000
 APoFF 10...59min/on
 U_Iso 10...500 V
 bEEP 01... 90Ω
 irStb ir on/oFF
 Addr 01...15
 dAtE 13.09.
 tiME 11:15

set

°C
 °F

confirm

FUNC
ENTER

confirm

FUNC
ENTER

Technical Data



Measuring Range	Measuring Uncertainty		Overload capacity	
	$\equiv$	$\sim / \approx$		
300 mV	$\pm(0,2\% + 3 D)$ 2)	$\pm 1/1,5\% + 3 D (> 100 D)$	1000 V DC AC <i>sine</i>	continuous
3 V	$\pm(0,15\% + 2 D)$	$\pm 1/1,5\% + 3 D (> 100 D)$		
30 V	$\pm(0,15\% + 2 D)$			
300 V	$\pm(0,15\% + 2 D)$			
1000 V	$\pm(0,2\% + 2 D)$			
1 Hz ... 300,0 kHz	—	$\pm(0,1\% + 2 D)$	1000 V 3)	max. 10 s
	$\equiv$	$\sim / \approx$		
300 μ A	$\pm(0,5\% + 5 D)$	$\pm 1,5\% + 5 D (> 100 D)$	0,3 A	continuous
3 mA	$\pm(0,2\% + 3 D)$			
30 mA	$\pm(0,5\% + 3 D)$			
300 mA	$\pm(0,2\% + 3 D)$		10 A	5 min
3 A	$\pm(1\% + 5 D)$			
10 A	$\pm(1\% + 5 D)$			
1 Hz ... 30,00 kHz	—	$\pm(0,1\% + 2 D)$	4)	
	$\pm(\dots \% \text{ v. MW/rdg.} + \dots D)$			
300 Ω	0,5 + 3 2)		1000 V DC AC <i>sine</i>	max. 10 s
3 k Ω	0,5 + 2			
30 k Ω				
300 k Ω				
3 M Ω				
30 M Ω	2 + 5			
 300 Ω	3 + 5			
 5,100 V	2 + 5			
	$\pm(\dots \% \text{ v. MW/rdg.} + \dots D)$			
30 nF	$\pm(1\% + 6 D)^2)$		1000 V DC AC <i>sine</i>	max. 10 s
300 nF	$\pm(1\% + 6 D)$			
3 μ F				
30 μ F				
300 μ F				

1. bei / at 0 °C ... + 40 °C
2. bei / with function ZERO active
3. Power limiting: $3 \cdot 10^6 \text{ V} \cdot \text{Hz} @ U > 100 \text{ V}$
4. max. current values see current measuring range

Insulation Measurement 1)

Measuring Range	nominal voltage UIISO [V]	Measuring Uncertainty $\pm(\dots \% \text{ v. MW/rdg.} + \dots \text{ D})$
0,3 V ... 1000 V $\sim / \approx ^2)$	Ri=1MΩ	3 + 30 > 100 Digit
5 ... 310,0 kΩ	10//50/100/250/500 V	5 + 30 // 3 + 5
0,280 ... 3,100 MΩ	10//50/100/250/500 V	5 + 30 // 3 + 5
02,80 ... 31,00 MΩ	10//50/100/250/500 V	5 + 30 // 5 + 5
028,0 ... 310,0 MΩ	10//50/100/250/500 V	5 + 30 // 5 + 5
0280 ... 3100 MΩ	500	5 + 5

1. During insulation resistance measurement (MΩ@UIISO): If „Error“ is displayed >> limits: Uinterference > 10 ... 20 V and Uinterference ≠ Uiso,
 $R_i < 10 \text{ k}\Omega @ \text{Uiso } 10 \text{ V}$, $R_i < 50 \text{ k}\Omega @ \text{Uiso } 50 \text{ V}$,
 $R_i < 100 \text{ k}\Omega @ \text{Uiso } 100 \text{ V}$, $R_i < 250 \text{ k}\Omega @ \text{Uiso } 250 \text{ V}$,
 $R_i < 500 \text{ k}\Omega @ \text{Uiso } 500 \text{ V}$
2. Interference voltage measurement TRMS (V AC + DC) with 1 MΩ input resistance, Bandwidth 15 Hz ... 500 Hz, measuring error 3% + 30 Digit

Electrical Safety

Protection class II

– nach / per IEC 61010-1:2010/DIN EN 61010-1:2011/VDE 0411-1:2011

Measuring Category CAT II / CAT III

Nominal Voltage 1000 V / 600 V

Pollution degree 2

Test Voltage (nach/per IEC 61010-1) 5,2 kV~

Protection Housing: IP54 (pressure equalization by means of the housing)

Electromagnetic Compatibility EMC

Interference Emission

EN 61326-1:2013 class B

Interference Immunity

EN 61326-1:2013, EN 61326-2-1:2013

Ambient Conditions

Accuracy range 0°C ... + 40°C

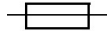
Operating temperature –10 °C ... + 50°C

Storage temperature without battery – 25 °C ... + 70°C

relative humidity 40 ... 75 %

no condensation allowed

Elevation up to 2000 m maximum



Fuse

FF(ultrarapid) 10 A / 1000 V AC DC

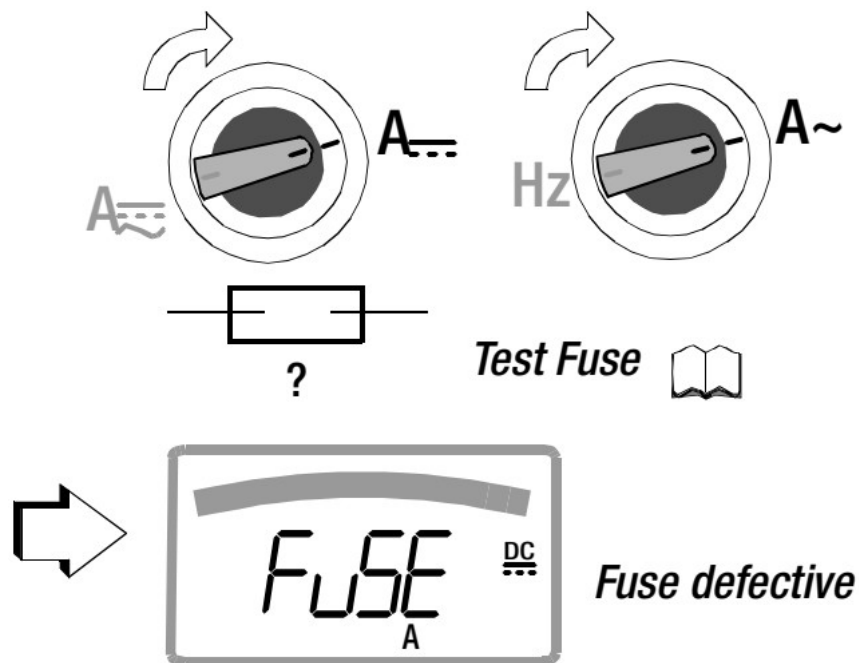
10 mm x 38 mm



breaking capacity: 30 kA (Min 10 kA)

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

Internal Fuse Test



Fuse Replacement



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.

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

Repair and Replacement Parts Service

Calibration Lab and Rental Instrument Service

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

When you need support, please contact:

Gossen Metrawatt GmbH

Product Support Hotline

Telefon D 0900 1 8602-00

A/CH +49 911 8602-0

Phone +49 911 8602-0

Fax +49 911 8602-709

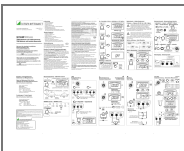
E-Mail support@gossenmetrawatt.com

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Documents / Resources



[GOSSEN METRAWATT Metrahit ISO Aero TRMS Multimeter](#) [pdf] Instruction Manual
Metrahit ISO Aero TRMS Multimeter, Metrahit ISO Aero, TRMS Multimeter, Multimeter

References

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