

METRAFLEX 3000
METRAFLEX 3001 / 3001XL
METRAFLEX 3003 / 3003XL (3-Phase Set)

3-349-530-37
2/12.09

Flexible AC Current Probe



Order Reference

Order No.

- METRAFLEX 3000** Flexible AC Current Probe 30/300/3000A **Z207E**
61 cm (24"), battery supply,
3V output on 4mm safety plugs
- METRAFLEX 3001** Flexible AC Current Probe 30/300/3000A **Z207F**
61 cm (24"), battery/external supply,
3V output on 4mm safety plugs;
incl. supply cable for MAVOWATT|50
- METRAFLEX 3001XL** Flexible AC Current Probe 30/300/3000A **Z207H**
61 cm (24"), battery/external supply,
1.5V output on Hypertronics plug



- METRAFLEX 3003** Flexible AC Current Probe 30/300/3000A **Z207G**
61 cm (24"), battery/external supply,
3V output on 4mm safety plugs;
incl. supply cable for MAVOWATT|50
- METRAFLEX 3003XL** Flexible AC Current Probe 30/300/3000A **Z207I**
61 cm (24"), battery/external supply,
1.5V output on Hypertronics plug



Other head lengths available on request.

Thank you for buying this product.
For safety reasons and optimum use of this instrument
read through the operating instructions very carefully.

Table of Contents

1.	SAFETY	20
2.	INTRODUCTION	22
3.	SPECIFICATIONS	23
4.	OPERATION	26
4.1	BATTERY INSTALLATION AND BATTERY STATUS	26
4.2	EXTERNAL POWER SUPPLY	27
4.3	CONNECTING TO MEASURING DEVICE	28
4.4	CONNECTING TO THE CIRCUIT TO BE MEASURED	29
4.5	MEASUREMENT	30
5.	MAINTENANCE	31
6.	WARRANTY	31
7.	PRODUCT SUPPORT	32
8.	REPAIR AND REPLACEMENT PARTS SERVICE DKD CALIBRATION CENTRE AND RENTAL INSTRUMENT SERVICE	32

1. SAFETY

The following symbols appear on the products:



Attention! Refer to Manual



Double/Reinforced Insulation



Do not apply around or remove from HAZARDOUS LIVE conductors without additional protective means.

“Additional protective means” can be:

- de-energizing the circuit
- wearing protective clothing suitable for high voltage work.



Do not dispose of this product as unsorted municipal waste. Contact a qualified recycler for disposal.



Indicates EC conformity

The flexible current transformer is manufactured and tested in accordance with safety regulations IEC/EN 61010-1 / -031 /-2-032. If used for its intended purpose, safety is assured for the user, the device and the DUT.

Read the operating instructions carefully and thoroughly before placing the device into operation. Observe and follow all points included therein. Make the operating instructions accessible to all users.



In particular, observe the following safety instructions.

- Always inspect the electronics unit, connecting cable, and flexible probe for damage before using this product. Do not use product if damaged.
- This product must be used only by qualified personnel practising applicable safety precautions.
- Never apply the probe around bare conductors with hazardous voltages without having the appropriate permission to perform such work and without wearing protective clothing and gloves as required.
- Never apply the probe around bare conductors with voltage levels over 1000V to ground.
- Always connect electronics unit to measuring device before installing the flexible measuring head.
- Never change batteries while measurement head is installed on conductor.
- Never connect or disconnect the external power supply while the measurement head is installed on a conductor.
- Never connect the output to any equipment with a common mode voltage to earth greater than 30 Volts.
- If the probe is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired.

2. INTRODUCTION

The METRAFLEX are AC current probes utilising Rogowski principle. They can be used to measure AC current up to 3000A by being connected to an appropriate measuring device (multimeter, data logger, power analyser etc.). The flexible probe allows current measurements on conductors that are hard to reach.

The probes provide an AC output voltage of 0...3V (METRAFLEX 3000/3001/3003) or 0...1.5V (METRAFLEX 3001XL/3003XL), proportional to the current being measured with three selectable ranges.

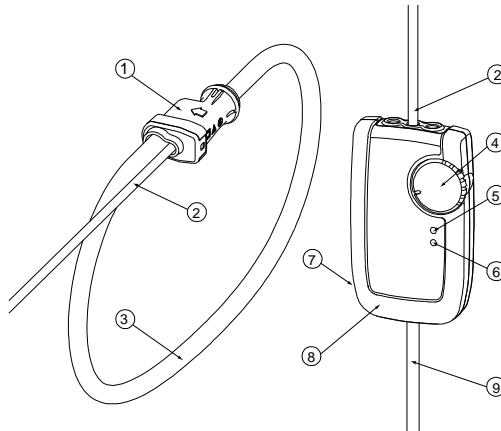


Fig 1

1. Probe Coupling
 2. Probe Output Cable
 3. Flexible Current Probe
 4. Power On / Range Switch
 5. RED LED – Overload
 6. ORANGE LED – Low Battery
 7. External Power Supply Input
 8. Integrator Housing
 9. Output Cable
-

3. SPECIFICATIONS

	METRAFLEX 3000 METRAFLEX 3001 METRAFLEX 3003			METRAFLEX 3001XL METRAFLEX 3003XL		
Measuring ranges	30A	300A	3000A	30A	300A	3000A
Scaling factor	10	100	1000	20	200	2000
Output sensitivity	100mV/A	10mV/A	1mV/A	50mV/A	5mV/A	0,5mV/A
Accuracy (45-65Hz)	±1% of rdg. ±0,1A		±1% of rdg. ±1A	±1% of rdg. ±0,1A		±1% of rdg. ±1A
Noise	8 mVrms	2 mVrms		8 mVrms	2 mVrms	
Output Connector	1 pair 4mm safety plugs			4 pin Hypertronics plug		
Power Supply						
Battery	2x AA MN1500 LR6 Alkaline			2x AA MN1500 LR6 Alkaline		
Battery Life (typ.)	2000 hrs (M'FLEX 3000/3001) 1000 hrs (M'FLEX 3003)			2000 hrs (M'FLEX 3001XL) 1000 hrs (M'FLEX 3003XL)		
external*)	3,5...12VDC/max. 100mA			2...3VDC/max. 100mA		
Connector*)	Barrel plug socket 5,5/2,1mm minus at center pin			Barrel plug socket 5,5/2,1mm minus at center pin		

*) not available for METRAFLEX 3000

Output load	≥100 kΩ for specified accuracy
Frequency range	10 Hz to 20 kHz (-10% attenuation)
Phase angle error	<±1° (45-65Hz)
Position sensitivity	±2% of reading
External field	±0.2% of range with cable >200mm (8") from the probe
Temperature coeff.	±0.1% / K
Low battery	Indicated by an orange LED
Overload	Indicated by a red LED

Enclosure

Material	ARNITE T06-200 SNF, UL94 V0
Degree of Protection	IP40
Dimensions	110 (l) x 65 (w) x 23 (d) mm
Output connection	0.5m coax cable terminated with 4 mm safety plugs

Probe

Probe length	61 cm (24 inches), double insulated on request: 91 cm (36 inches), 122 cm (48 inches)
Probe diameter	9.9mm (0.39 inches)
Output cable	2m long (78.7 inches), probe to integrator
Material	Alcryn 2070 NC, LATI LATENE 7H2W V0
Degree of Protection	IP65

General Characteristics

Operating temp.	-20°C to +65°C (-4°F to +149°F)
Storage temp.	-40°C to +75°C (-40 °F to +167°F)
Operating humidity	15% to 85% (non-condensing)

Safety standards	EN 61010-1:2001 EN 61010-031:2002 EN 61010-2-032:2002
------------------	---

EMC standards	
Emmission	EN 61326-2:2006 Class B
Immunity	EN 61326-2:2006

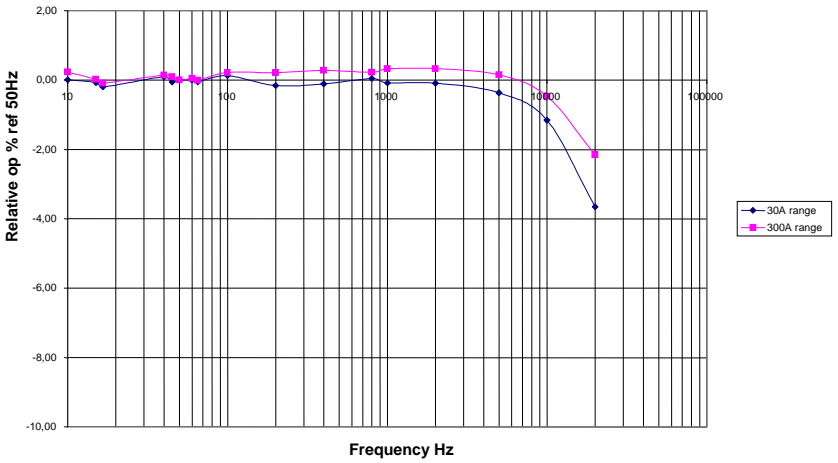
1000 V_{RMS}, Category III, 600 V_{RMS}, Category IV, Pollution Degree 2
(Probe and Integrator)

30V maximum between output and earth

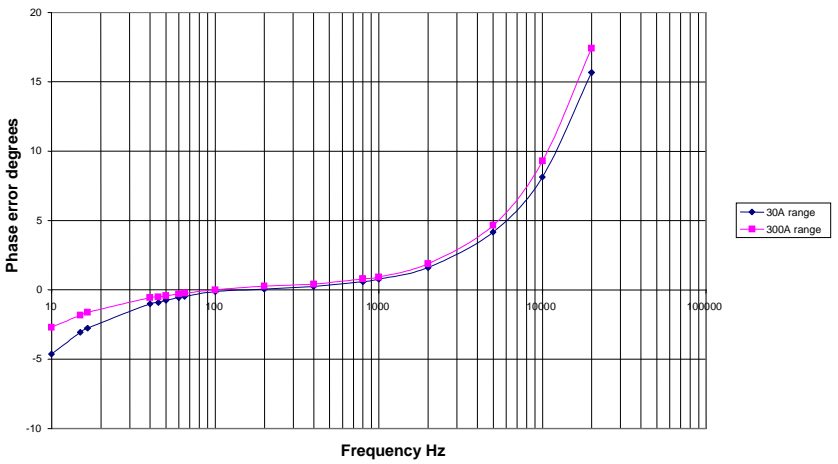
ROHS and WEEE compliant

Rated for continuous use

METRAFLEX Frequency Response



METRAFLEX Phase Response



4. OPERATION

4.1 BATTERY INSTALLATION AND BATTERY STATUS



Never replace batteries with flexible measuring head installed on conductor to be tested or output connected to a measuring device.

Never operate the unit without the battery cover fitted.

The METRAFLEX require two AA MN1500 LR6 alkaline batteries for operation. The battery compartment is accessed from the rear of the electronics enclosure.

Battery status is indicated by an orange LED on the front of the integrator module. This LED will flash one time when the unit is switched ON. The length of time the LED is lit will increase as battery life decreases. Continuous lighting of LED indicates low battery and requires batteries to be replaced.

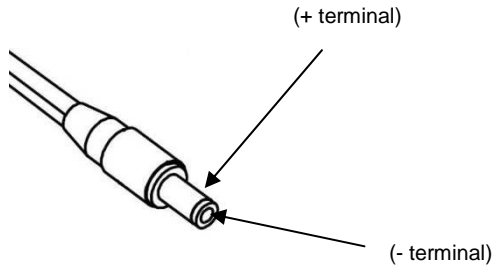
Should you suspect a depleted battery or the low battery LED blinking, proceed as follows.

1. Turn "OFF" all power to the unit and measurement circuits.
 2. Set the probe selector switch to the "OFF" position.
 3. Remove the flexible current probe from around the conductor of your measurement circuit. Disconnect the output from the measuring unit. Remove the external power supply cable.
 4. Rotate the battery lock screw (1/4 turn) until it aligns with the unlock symbol. The battery cover can now be removed.
 5. Install the replacement batteries into the battery holder. Observe correct polarity.
 6. Replace the battery cover and turn the battery lock until it aligns with the lock symbol.
-

4.2 EXTERNAL POWER SUPPLY

Alternatively, the METRAFLEX can also be supplied by an external DC voltage source (except METRAFLEX 3000). The connection is made at the connector on the side of the electronics housing. Supply voltage range, see Technical Data.

Polarity:



For safety reasons and to ensure the specified accuracy, the current sensors should be supplied exclusively by using the external power supply modules offered from us as an option.

Our Power Analysers MAVOWATT|50 und MAVOSYS 10 have a power supply output for active current sensors.

MAVOWATT|50: Up to 4 pcs. METRAFLEX 3001 or 1 pc. METRAFLEX 3003 and 1 pc. METRAFLEX 3001 can be supplied by the 9V output named „Aux Supply“. The required connection cable is supplied with these current sensors. Take care when connecting the plugs to the Aux. Supply jacks on the correct polarity (color coding)!

MAVOSYS 10: Up to 3 pcs. METRAFLEX 3003XL and 3 pcs. METRAFLEX 3001XL can be supplied by the 3V output on the 10 pin socket being located on the rear panel over the mains switch. The required connection cables are available as accessories: DC3VFLEX (117067-G1) for up to 4 pcs. METRAFLEX; RR/PS/4A for expanding to another 3 pcs. METRAFLEX.

4.3 CONNECTING TO MEASURING DEVICE



Read safety section of instructions before operating this product.

METRAFLEX 3000: Plug the output cable of the current sensor into the voltage measuring input terminals of the multimeter (black to GND, red to V) and switch it to V AC.

METRAFLEX 3001/3003: Plug each output cable of the current sensor to the current measuring input terminals "I" on the MAVOWATT|50. Observe the polarity (color) and with **METRAFLEX 3003** also the phase labeling L1, L2, L3.

METRAFLEX 3001XL/3003XL: Plug each output cable of the current sensor to the current measuring input terminals on the MAVOWATT 20/30/40/70 or MAVOSYS 10. With **METRAFLEX 3003XL** observe the phase labeling.

4.4 CONNECTING TO THE CIRCUIT TO BE MEASURED



It is strongly recommended to de-energize the circuits to be measured when making connections to the installation. If it is necessary to make connections on energized circuits they must be made by qualified and authorized personnel only observing the required safety precautions..



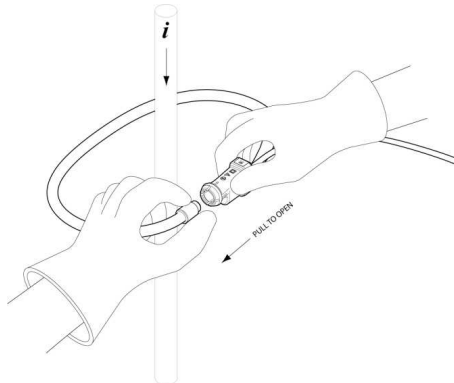
Never apply the probe around bare conductors with voltage levels over 1000V (CAT III) or 600V (CAT IV) to ground.



Always connect electronics unit to measuring device before installing the flexible measuring head.

Open the probe coupling and slip the measuring head over the conductor carrying the current to be measured.

Close the probe coupling such that it visibly and audibly snaps into place.



An accurate measurement is assured under the following conditions:

- The conductor is centered within the measuring head.
- The measuring head forms a perfect circle.
- The probe coupling is not located close to other conductors carrying high current.

4.5 MEASUREMENT

To activate unit, move the rotary switch from the “off” position to the required measuring range. If the value of current being measured is unknown, first select the highest range and then reduce accordingly.

The red and the orange LED might flash when the unit is switched on or when the measuring range is changed.

To obtain correct results set the scaling factor on the meter or analyser for each measurement channel corresponding to the selected measuring range; see table under SPECIFICATIONS.

When measuring active power you also must observe the direction of the current flowing through the measuring head. Check the correct polarity at the power analyzers based on the vector representation of voltage and current, or by the polarity of the values for active power. These have to be positive for consumer measurements.

5. MAINTENANCE



Do not use METRAFLEX if damaged.

Always inspect the integrator unit, connecting cable, and flexible probes for damage before use.

To avoid electric shock, keep the **METRAFLEX** clean and free of surface contamination.

Use Isopropyl alcohol to clean the electronics unit and the probe.

Make sure the flexible probe, connecting cable, and electronics enclosure are dry before further use.

6. WARRANTY

Your **METRAFLEX** is guaranteed for two years from the date of purchase against defective material or workmanship. If the unit fails during the warranty period, we shall at our discretion, repair or replace it with a new or reconditioned unit provided we are satisfied that the failure is due to defective material or workmanship. To make a claim under warranty, the probe should be returned to us, postage prepaid, with a description of the defect. The use of a battery or external power supply, other than that specified invalidates this warranty.

Goods alleged by the buyer to be defective shall not form the subject of any claim for injury, loss, damage, or any expense howsoever incurred whether arising directly or indirectly from such alleged defects other than death or personal injury resulting from the seller's negligence.

No condition is made or to be implied nor is any warranty given or to be implied as to the life or wear of goods supplied or that they will be suitable for any particular purpose or for use under specific conditions, notwithstanding that such purpose or conditions may be made known to the seller.

7. PRODUCT SUPPORT

If required please contact:

GMC-I Messtechnik GmbH

Product Support Hotline

Phone: +49 911 86 02-0

Fax: +49 911 86 02-7 09

E-mail: support@gossenmetrawatt.com

8. REPAIR AND REPLACEMENT PARTS SERVICE DKD CALIBRATION CENTRE AND RENTAL INSTRUMENT SERVICE

If required please contact:

GMC-I Service GmbH

Service Center

Thomas-Mann-Strasse 20

90471 Nürnberg, Germany

Phone: +49 911 817718-0

Fax: +49 911 817718-2 53

E-mail: service@gossenmetrawatt.com

This address is only valid in Germany. Please contact our representatives or subsidiaries for service in other countries.

**GMC-I Messtechnik GmbH
Südwestpark 15
D-90449 Nürnberg
DEUTSCHLAND**

Tel. +49 (0)911 8602-111
Fax +49 (0)911 8602-777
e-mail: info@gossenmetrawatt.com
www.gossenmetrawatt.com

METRAFLEX MM Rev 3