

METRAFLEX | 3000M, 3000MXL

Flexible AC Current Sensors

for Multimeters and Energy and Power Disturbance Analyzers

3-349-628-03
1/4.11

- Wide range of applications, 3 measuring ranges 30 A/300 A/3000 A AC and large bandwidth 20 Hz ... 100 kHz for harmonic analysis
- Precise measurements even with low currents, due to wide dynamic range and high sensor sensitivity
- Low conductor position influence and minimum stray field influence
- Easy to operate in restricted space thanks to small sensor cross-section of 6 mm
- Safe handling even with protection gloves; opening of sensor and measuring range setting in one-hand operation
- External power supply for long-term measurements with MAVOWATT 50 or POWER 1000, connector cable included (METRAFLEX 3000M)
- Current sensor with protection type IP50, measuring amplifier with IP40
- High level of safety for the user, measurement category 1000 V@CAT III, 600 V @ CAT IV and unlimited overload capacity, rated for continuous use



METRAFLEX 3000M

Application

METRAFLEX 3000M or METRAFLEX 3000MXL are designed for the safe, precise and flexible measuring on busbars and in distribution cabinets. The coil is ideally suited for areas with restricted access and space.

The METRAFLEX are AC current probes utilising Rogowski principle. They can be used to measure AC current up to 3000 A 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. To this end, the flexible current transformers can be placed around one or several conductors of any type and design (insulated cable, busbars, pipes).

Internal batteries allow for an independent operation of the measuring amplifier.

Current sensor / Application	Multimeter	MAVOWATT 50 POWER 1000	MAVOWATT 20, 30, 40, 70 MAVOSYS 10
METRAFLEX 3000M	•	•	
METRAFLEX 3000MXL			•

METRAFLEX 3000M/MXL

The flexible current sensors METRAFLEX 3000M/MXL can be used for long-term measurements by means of external power supply.

Technical Data

Feature	METRAFLEX 3000M		
	30 A	300 A	3000 A
Measuring ranges	30 A	300 A	3000 A
Scaling factor	10	100	1000
Output sensitivity	100 mV/A	10 mV/A	1 mV/A
Accuracy (45 ... 65 Hz)	±1% of rdg. ±0.2 A ¹⁾		±1% of rdg. ±1 A ¹⁾
Noise	3 mV eff.	1 mV eff.	0,1 mV eff.
Output Connector	1 pair 4 mm safety plugs		

¹⁾ under reference conditions

Feature	METRAFLEX 3000MXL		
	30 A	300 A	3000 A
Measuring ranges	30 A	300 A	3000 A
Scaling factor	20	200	2000
Output sensitivity	50 mV/A	5 mV/A	0,5 mV/A
Accuracy (45 ... 65 Hz)	±1% of rdg. ±0.2 A ¹⁾		±1% of rdg. ±1 A ¹⁾
Noise	1,5 mV eff.	0,5 mV eff.	0,05 mV eff.
Output Connector	4 pin Hypertronics plug		

¹⁾ under reference conditions

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Influencing Quantities

Output load	≥ 100 kΩ for specified accuracy
Frequency range	20 Hz bis 100 kHz (–20% attenuation)
Phase angle error	< ± 1° (45 ... 65 Hz)
Position sensitivity	±2.5% of reading
External fields	±0.25% of measuring range at a distance of > 100 mm from sensor
Temperature coefficient	±0.15% of reading/°K

Reference Conditions

Ambient temperature	+15 °C ... +25 °C
Relative humidity	20% ... 75%
Operating voltage	3 V ±0.5 V
Frequency of measured quantity	45 Hz ... 65 Hz
Waveshape of measured quantity	Sine
Power-frequency magnetic field	< 30 A/m
Conductor position	Conductor vertical in relation to sensor level and at the geometrical center
Measuring loop shape	circular
Output load	100 kΩ

Power Supply of Measuring Amplifier

Power supply	two AA MN1500 LR6 alkaline batteries or for METRAFLEX 3000M: external supply (3.5...12 V DC/max.100 mA) for METRAFLEX 3000MXL external supply (2...3 V DC/max.100 mA)
Battery life	approx. 150 hrs.
External power supply*	with connector cable, length 0.5 m with 2 mm safety plug
Connector*	Barrel plug socket 5.5/2.1 mm minus at center pin

* not available for METRAFLEX 3000

Display Functions

Battery status	LED (orange) „ LOW BATTERY “ lights up: – battery voltage too low, or – external power supply
Overcurrent	LED (red) „ OVERLOAD “ lights up

Mechanical Design

Measuring Amplifier

Dimensions	110 (H) x 65 (W) x 23 (D) mm
Output measuring signal	METRAFLEX 3000M: 0.5 m coaxial cable connected with 4 mm safety plug METRAFLEX 3000MXL: 0.5 m coaxial cable connected with 4 pin Hypertronics plug
Material	ARNITE T06-200SNF double insulation, UL94 V-0
Protection	IP40 per DIN VDE 0470 Part 1/EN 60529

Flexible Rogowski Current Sensor

Sensor length	16 cm, double insulation (on request: 22 cm or 31,5 cm)
Sensor cross-section	6 mm
Connector cable	between probe and housing, length 2 m
Material	Sensor: Alcryn 2070 NC Lock: LATI LATENE 7H2W V0
Protection	IP50 per DIN VDE 0470 Part 1/EN 60529

Ambient Conditions

Operating temperature	–20 °C to +65 °C (–4 °F to +149 °F)
Storage temperature	–40 °C to +75 °C (–40 °F to +167 °F)
Humidity	15% to 85%, no condensation allowed

Electrical Safety

Safety class	II, double insulation
Safety standards	EN 61010-1:2001 EN 61010-031:2002 +A1:2008 EN 61010-2-032:2002
Measuring category	1000 V _{RMS} CAT III, 600 V _{RMS} CAT IV
Voltage between output and ground	max. 30 V
Pollution degree	2 (sensor and measuring amplifier)

Electromagnetic Compatibility EMC

Interference emission	EN 61326-2:2006 class B
Interference immunity	EN 61326-2:2006

Applicable Regulations and Standards

DIN EN 61010-2-032 (VDE 0411-2-032)	Safety requirements for electrical equipment for measurement, control and laboratory use – Particular requirements for hand-held and hand-operated current sensors
EN 60529 VDE 0470 Part 1	Test instruments and test procedures – degrees of protection provided by enclosures (IP code)

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METRAFLEX 3000MXL



METRAFLEX 3000M/MXL – opened Sensor



Supply

The following accessory is part of the standard equipment of METRAFLEX 3000M: Supply cable for MAVOWATT 50



ISOFLEX 3V



The ISOFLEX 3V unit serves for the power supply of up to 4 flexible current measuring sensors.

ISOFLEX 3V is fed directly by the MAVOWATT 20/30/40/70 equipment power supply and takes on with its 2 outputs the supply for the MAVOWATT 20/30/40/70 and the supply of up to 4 flexible current sensors.

Input: 12 V DC – from the power supply of the MAVOWATT
Output 1: 12 V DC – for the supply of the MAVOWATT
Output 2: 3 V DC – for the supply of up to 4 flexible current sensors
The 4-fold distributor cable RR/PS/4A is not in the scope of supply of the ISOFLEX 3V.

Advantages

- long-term monitoring (no batteries necessary)
- no separate power supply necessary

ISOFLEX 3V is delivered with every Flex-Set as of now and replaces the previous power adapters: RR/PS/EU, RR/PS/4EU, RR/PS/US und RR/PS/4PUS.

4-fold distributor cable RR/PS/4A



The distributor cable consists of a connector socket for the power supply output of ISOFLEX 3V and 4 plugs for the power supply inputs of a maximum of 4 AC current sensors.

The splitter cable is in the scope of delivery of the MAVOWATT 20, 30, 40, 70 Sets since February 2011.

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Flexible AC Current Sensors

Order Information

Type	Description	Article Number
METRAFLEX 3000M	Flexible AC Current Probe 30/300/3000 A sensor length 16 cm (6"), battery supply, 3 V output on 4 mm safety plugs, supply cable for MAVOWATT 50, Operating Instructions	Z207J
METRAFLEX 3000MXL	Flexible AC Current Probe 30/300/3000 A sensor length 16 cm (6"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207K
ISOFLEX 3V	Adpater for the power supply of METRAFLEX 3000MXL flexible AC current sensors via the power supply units of MAVOWATT 20/30/40/70 devices	Z817M
RR/PS/4A	4-fold distributor cable	RR/PS/4A

Other head lengths available on request

All METRAFLEX 3000MXL AC current sensors are supplied with batteries and an ISOFLEX 3V adapter.

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