

METRAFLEX | 3000, 3001, 3001XBL, 3003, 3003XBL

Flexible AC Current Sensors

for Multimeters and Energy and Power Disturbance Analyzers

3-349-536-03
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- Wide range of applications, 3 measuring ranges 30 A/300 A/3000 A AC and large bandwidth 10 Hz ... 20 kHz for harmonic analysis
- Simultaneous measurement in all 3 phases (METRAFLEX 3003(XBL))
- 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 9.9 mm and slim end cap of 13.6 mm
- Safe handling even with protection gloves; opening of sensor and measuring range setting in one-hand operation
- Extremely long battery life of up to 2,000 hours, (METRAFLEX 3003 and 3003XBL up to 1,000 hours)
- External power supply for long-term measurements METRAFLEX 3001XBL/3003XBL:
 - MAVOWATT 230/240/270/270-400: power supply via MAVOWATT, no further accessory required
 - MAVOWATT 20/30/40/70 incl. DC/DC-Transformer ISOFLEX-MHXL METRAFLEX 3001/3: via MAVOWATT 50, connector cable included
- Current sensor with protection type IP65, 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



Application

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	MAVOWATT 230, 240, 270 MAVOSYS 10	MAVOWATT 20, 30, 40, 70 MAVOSYS 10
METRAFLEX 3000	•	•		
METRAFLEX 3001		•		
METRAFLEX 3001XBL			•	•
METRAFLEX 3003		•		
METRAFLEX 3003XBL			•	•

METRAFLEX 3001, 3001XBL, 3003 and 3003XBL

The flexible current sensors METRAFLEX 3001(XBL) and 3003(XBL) can be used for long-term measurements by means of external power supply.

For MAVOWATT 230/240/270/270-400 instruments, the current sensors are supplied with voltage directly from the instrument. No external power supply is required.

METRAFLEX 3003 and 3003XBL

The 3 current sensors of the METRAFLEX 3003(XBL) are designed for AC measurements in any desired 3-phase system.

Technical Data

Feature	METRAFLEX 3000 METRAFLEX 3001 METRAFLEX 3003		
	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. ±0.1 A ¹⁾		±1% of rdg. ±1 A ¹⁾
Noise	8 mV eff.	2 mV eff.	
Output Connector	1 pair 4 mm safety plugs		

¹⁾ under reference conditions

Feature	METRAFLEX 3001XBL METRAFLEX 3003XBL		
	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. ±0.1 A ¹⁾		±1% of rdg. ±1 A ¹⁾
Noise	8 mV eff.	2 mV eff.	
Output Connector	4 pin Hypertronics plug		

¹⁾ under reference conditions

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Flexible AC Current Sensors

Influencing Quantities

Output load	≥ 100 kΩ for specified accuracy
Frequency range	10 Hz bis 20 kHz (–10% attenuation)
Phase angle error	< ± 1° (45 ... 65 Hz)
Position sensitivity	±2% of reading
External fields	±0.2% of measuring range at a distance of > 200 mm from sensor
Temperature coefficient	±0.1% 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 3001 and 3003: external supply (3.5...12 V DC/max.100 mA) for METRAFLEX 3001XBL and 3003XBL external supply (2...3 V DC/max.100 mA)
Battery life	METRAFLEX 3000, 3001 and 3001XBL: approx. 2,000 hrs. METRAFLEX 3003 and 3003XBL: approx. 1,000 hours
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 3000, 3001 and 3003: 0.5 m coaxial cable connected with 4 mm safety plug METRAFLEX 3001XBL and 3003XBL: 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	61 cm, double insulation (on request: 91 cm (36 inches), 122 cm (48 inches))
Sensor cross-section	9.9 mm, slim end cap of 13.6 mm
Connector cable	between probe and housing, length 2 m
Material	Sensor: Alcryn 2070 NC Lock: LATI LATENE 7H2W V0
Protection	IP65 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 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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Flexible AC Current Sensors

METRAFLEX 3000



METRAFLEX 3003



METRAFLEX 3001



METRAFLEX 3003XBL



METRAFLEX 3001XBL



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Flexible AC Current Sensors

Order Information

Type	Description	Article Number
METRAFLEX 3000	Flexible AC Current Probe 30/300/3000 A sensor length 61 cm (24"), battery supply, 3 V output on 4 mm safety plugs, Operating Instructions	Z207E
METRAFLEX 3001	Flexible AC Current Probe 30/300/3000 A sensor length 61 cm (24"), battery/external supply, 3 V output on 4 mm safety plugs, incl. supply cable for MAVOWATT 50, Operating Instructions	Z207F
METRAFLEX 3003	Flexible AC Current Probe 30/300/3000 A sensor length 61 cm (24"), battery/external supply, 3 V output on 4 mm safety plugs, incl. supply cable for MAVOWATT 50, Operating Instructions	Z207G
METRAFLEX 3001XBL/24	Flexible AC Current Probe 30/300/3000 A sensor length 61 cm (24"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207O
METRAFLEX 3001XBL/36	Flexible AC Current Probe 30/300/3000 A sensor length 91 cm (36"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207R
METRAFLEX 3001XBL/48	Flexible AC Current Probe 30/300/3000 A sensor length 122 cm (48"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207S
METRAFLEX 3003XBL/24	Flexible AC Current Probe 30/300/3000 A sensor length 61 cm (24"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207P
METRAFLEX 3003XBL/36	Flexible AC Current Probe 30/300/3000 A sensor length 91 cm (36"), battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207W

Type	Description	Article Number
METRAFLEX 3003XBL/48	Flexible AC Current Probe 30/300/3000 A sensor length 122 cm (48") battery/external supply, 1.5 V output on Hypertronics plug, Operating Instructions	Z207X

All METRAFLEX are supplied with batteries.

Edited in Germany • Subject to change without notice • A pdf version is available on the internet

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