

# METRAFLEX 300M, METRAFLEX 300MXBL

## Flexible AC Current Sensors

### for Multimeters and Energy and Power Disturbance Analyzers

 3-349-628-03  
 8/3.16

- Wide range of applications, 3 measuring ranges 3 A/30 A/300 A AC and large bandwidth 20 Hz ... 100 kHz for Power and mains quality 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
- METRAFLEX 300MXBL: External power supply for long-term measurements:
  - 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
- 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



#### Application

METRAFLEX 300M or METRAFLEX 300MXBL 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 300 A by being connected to an appropriate measuring device (multimeter, data logger, power analyser, oscilloscope 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 230/240/270 | MAVOWATT 20, 30, 40, 70 MAVOSYS 10 |
|------------------------------|------------|----------------------|------------------------------------|
| METRAFLEX 300M               | •          |                      |                                    |
| METRAFLEX 300MXBL            |            | •                    | •                                  |

#### METRAFLEX 300MXBL

The flexible current sensors METRAFLEX 300MXBL can be used for long-term measurements by means of external power supply, see accessory ISOFLEX-MHXL.

For MAVOWATT 230/240/270/270-400 instruments, the current sensors METRAFLEX 300MXBL are supplied with voltage directly from the instrument. No external power supply is required.

#### Technical Data

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

| Feature                 | METRAFLEX 300MXBL                    |         |                                      |
|-------------------------|--------------------------------------|---------|--------------------------------------|
| Measuring ranges        | 3 A                                  | 30 A    | 300 A                                |
| Scaling factor          | 2                                    | 20      | 200                                  |
| Output sensitivity      | 500 mV/A                             | 50 mV/A | 5 mV/A                               |
| Accuracy (45 ... 65 Hz) | ±1 % of rdg.<br>±0.1 A <sup>1)</sup> |         | ±1 % of rdg.<br>±0,5 A <sup>1)</sup> |
| Noise                   | 1,5 mV eff.                          |         |                                      |
| Output Connector        | 4 pin Hypertronics plug              |         |                                      |

<sup>1)</sup> under reference conditions

# METRAFLEX 300M, METRAFLEX 300MXBL

## Flexible AC Current Sensors

### Influencing Quantities

|                         |  |
|-------------------------|--|
| Output load             | $\geq 100 \text{ k}\Omega$ for specified accuracy                                  |
| Frequency range         | 20 Hz bis 100 kHz ( $\pm 1 \text{ dB}$ / 50 Hz)                                    |
| Phase angle error       | $< \pm 1^\circ$ (45 ... 65 Hz)   |
| Position sensitivity    | $\pm 2.5\%$ of reading   |
| External fields         | $\pm 0.25\%$ of measuring range<br>at a distance of $> 100 \text{ mm}$ from sensor |
| Temperature coefficient | $\pm 0.15\%$ of reading/ $^\circ\text{K}$  |

### Reference Conditions

|                                |   |
|--------------------------------|---|
| Ambient temperature            | +15 °C ... +25 °C   |
| Relative humidity              | 20% ... 75%   |
| Operating voltage              | 3 V $\pm 0.5$ 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<br>and at the geometrical center |
| Measuring loop shape           | circular  |
| Output load                    | 100 $\text{k}\Omega$  |

### Power Supply of Measuring Amplifier

|   |  |
|---|--|
| Power supply                                | two AA MN1500 LR6 alkaline batteries<br>or<br>for METRAFLEX 300MXBL<br>external supply (2...3 V DC/max.100 mA) |
| Battery life                                | approx. 80 hrs.  |
| External power supply for METRAFLEX 300MXBL | Connection by barrel plug socket<br>5.5/2.1 mm, minus at center pin  |

### Display Functions

|                |  |
|----------------|--|
| Battery status | LED (orange) „LOW BATTERY“ lights up:<br>– battery voltage too low,<br>or<br>– 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 300M:<br>0.5 m coaxial cable connected<br>with 4 mm safety plug<br>METRAFLEX 300MXBL:<br>0.5 m coaxial cable connected<br>with 4 pin Hypertronics plug |
| Material                | ARNITE T06-200SNF double insulation,<br>UL94 V-0   |
| Protection              | IP40 per DIN VDE 0470 Part 1/EN 60529  |

#### Flexible Rogowski Current Sensor

|                      |  |
|----------------------|--|
| Sensor length        | 16 cm, double insulation<br>(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<br>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<br>EN 61010-031:2002 +A1:2008<br>EN 61010-2-032:2002 |
| Measuring category                | 1000 V <sub>RMS</sub> CAT III, 600 V <sub>RMS</sub> 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

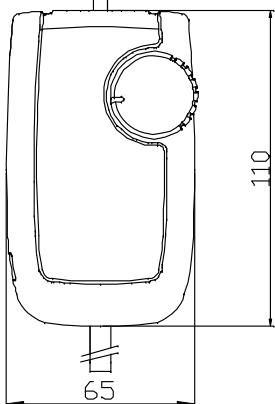
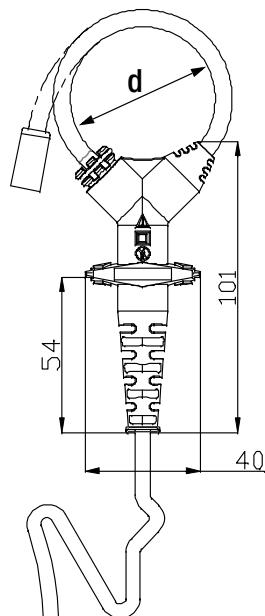
|  |  |
|--|--|
| DIN EN 61010-2-032<br>(VDE 0411-2-032) | Safety requirements for electrical equipment for measurement, control and laboratory use – Particular requirements for hand-held and hand-operated current sensors |
| EN 60529<br>VDE 0470 Part 1            | Test instruments and test procedures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

# METRAFLEX 300M, METRAFLEX 300MXBL

## Flexible AC Current Sensors

### Dimensions

METRAFLEX 300M / METRAFLEX 300MXBL – opened Sensor



METRAFLEX 300M



### Pin assignment METRAFLEX 300MXBL

Power Supply Connection  
by barrel plug socket

| Pin     | Function   |
|---------|------------|
| Center  | – Terminal |
| Outside | + Terminal |

Output connections by Hypertronics plug

| Pin | Function                               |
|-----|--|
| 1   | Signal Output (–) & DC Power Input (–) |
| 2   | Signal Output (+)                      |
| 3   | Screen                                 |
| 4   | DC Power Input (+)                     |



Plug seen from  
mating side

# METRAFLEX 300M, METRAFLEX 300MXBL

## Flexible AC Current Sensors

### Accessory

#### ISOFLEX-MHXL



The ISOFLEX-MHXL unit serves for the power supply of up to 4 flexible current measuring sensors of the series METRAFLEX 300MXBL.

ISOFLEX-MHXL 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-MHXL.

### Advantages

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

#### 4-fold distributor cable RR/PS/4A



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

### Order Information

| Type                | Description  | Article Number |
|---------------------|--|----------------|
| METRAFLEX 300M      | Flexible AC Current Probe<br>3/30/300 A<br>sensor length 16 cm (6"),<br>battery supply,<br>3 V output on 4 mm safety plugs,<br>Operating Instructions  | Z207M          |
| METRAFLEX 300MXBL/2 | Flexible AC Current Probe<br>3/30/300 A<br>sensor length 16 cm (6"),<br>sensor diameter 50 mm,<br>battery/external supply,<br>1.5 V output on Hypertronics plug,<br>Operating Instructions     | Z207Q          |
| METRAFLEX 300MXBL/3 | Flexible AC Current Probe<br>3/30/300 A<br>sensor length 22 cm (9"),<br>sensor diameter 70 mm,<br>battery/external supply,<br>1.5 V output on Hypertronics plug,<br>Operating Instructions     | Z207Y          |
| METRAFLEX 300MXBL/4 | Flexible AC Current Probe<br>3/30/300 A<br>sensor length 31,5 cm (12"),<br>sensor diameter 100 mm,<br>battery/external supply,<br>1.5 V output on Hypertronics plug,<br>Operating Instructions | Z207Z          |
| ISOFLEX-MHXL        | Adapter for the power supply of METRAFLEX 300MXBL flexible AC current sensors via the power supply units of MAVOWATT 20/30/40/70 devices   | Z817M          |
| RR/PS/4A            | 4-fold distributor cable   | Z818R          |

The METRAFLEX 300MXBL AC current sensors are supplied with batteries.

Mains adapter ISOFLEX-MHXL can be purchased separately.