GOSSEN METRAWATT

# METRALINE Z^CHECK
# Loop Resistance Measuring Instrument

3-349-696-03
3/4.13

The following measurements can be performed with the **METRALINE Z^CHECK**:

- Fault loop impedance with short-circuit current
- Fault loop impedance with short-circuit current without tripping the RCCB
- Line impedance with short-circuit current
- Line voltage
- Phase detection

### Features

- Table of common protective devices can be displayed
- Digital display, backlit color OLED display, switching between brief and detailed representation
- LED for measurement point illumination
- Patented means of securing test probes
- **Compact and rugged** – for service calls and laboratory use

Measurement Results

Phase Detection (L)

Table Display


## Applications

The **METRALINE Z^CHECK** allows for the evaluation of measured impedance in consideration of type, nominal current and disconnection time. A table with the parameters of various protective devices is included in device memory.

## Applicable Regulations and Standards

| | |
|---|---|
| **IEC 61010-1/-031**<br>**DIN EN 61010-1/-031**<br>**VDE 0411-1/-031** | Safety requirements for electrical equipment for measurement, control and laboratory use<br>Part 1: General requirements<br>Part 31: Safety requirements for hand-held probe assemblies for electrical measurement and test |
| **IEC 61557-1/-3**<br>**DIN EN 61557-1/-3**<br>**VDE 0413-1/-3** | Electrical safety in low voltage distribution systems up to 1000 V AC and 1500 V DC – Equipment for testing, measuring or monitoring of protective measures<br>Part 1: General requirements<br>**Part 3: Loop resistance** |
| **IEC 61326-1**<br>**DIN EN 61326-1** | Electrical equipment for measurement, control and laboratory use<br>– EMC requirements<br>Part 1: General requirements |
| **DIN EN 60529**<br>**VDE 0470-1** | Degrees of protection provided by enclosures (IP code) |

## Characteristic Values

### Fault Loop Impedance / Line Impedance

Nominal Range per EN 61557-3: 0.27 Ω to 200 Ω

| Range (Ω) | Resolution (Ω) | Intrinsic Uncertainty | Measuring Uncertainty |
|---|---|---|---|
| 0.00 to 4.99 | 0.01 | ±(3% rdg. + 5 d) | ±(4 % rdg. + 7 d) |
| 5.0 to 49.9 | 0.1 | ±(3% rdg. + 3 d) | ±(4 % rdg. + 4 d) |
| 50 to 200 | 1 | ±3% rdg. | ±4 % rdg. |

Voltage range: 190 to 260 V / 48 to 52 Hz
Load resistance: 50 Ω (variable number of pulses at 10 ms)

### Fault Loop Impedance Without Tripping the RCCB for measurements of RCCBs with a nominal current of 100 mA or 300 mA

Nominal Range per EN 61557-3: 0.8 Ω to 200 Ω

| Range (Ω) | Resolution | Intrinsic Uncertainty | Measuring Uncertainty |
|---|---|---|---|
| 0.0 to 4.9 | 0.1 Ω | ±(5% rdg. + 2 d) | ±(6% rdg. + 2 d) |
| 50 to 200 | 1 Ω | ± 7% rdg. | ± 8% rdg. |

Voltage range: 190 to 260 V / 48 to 52 Hz
Load resistance: 50 Ω (variable number of pulses and pulse width)

### Short-Circuit Current

| Range | Resolution | Intrinsic Uncertainty | Measuring Uncertainty |
|---|---|---|---|
| 0 to 999 A | 1 A | Depending on measuring error for loop impedance ±1 d | Depending on measuring error for loop impedance ±1 d |
| 1.0 to 9.9 kA | 0.1 kA | | |
| 10 to 23 kA | 1 kA | | |

# METRALINE ZCHECK
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**Alternating Voltage (TRMS)**

| Range | Resolution | Intrinsic Uncertainty | Measuring Uncertainty |
|---|---|---|---|
| 24 to 260 V | 1 V<br>0.1 V | ±(2 % rdg. + 2 d) | ±(3% rdg. + 3 d) |

Frequency range: 48 to 52 Hz
[1] Display for brief representation
[2] Display for detailed representation

**Key:**

a) The measuring uncertainties specified here for fault loop impedance, line impedance and short-circuit current are only valid if line voltage is stable during measurement and if no other electrical circuits parallel to the measured circuit are in use.
c) rdg. means reading, i.e. measured value, d = digits (i.e. number of the decimal place with the least significance)

## Reference Conditions

| | |
|---|---|
| Temperature | 23 ±2 °C |
| Relative humidity | 40 to 60% |
| Line voltage | 230 V ±2% / 50 Hz ±1% |
| Device position | any |

## Ambient Conditions

**Operating Conditions**

| | |
|---|---|
| Operating temperature | 0 to 40 °C |
| Relative humidity | max. 85%, no condensation allowed |
| Line voltage | 190 to 260 V / 48 to 52 Hz |
| Device position | any |

**Storage Conditions**

| | |
|---|---|
| Temperature | –10 to +70 °C |
| Relative Humidity | max. 90% at –10 to +40 °C<br>max. 80% at +40 to +70 °C |
| Device position | any |

## Power Supply

| | |
|---|---|
| Batteries | 4 ea. AAA (LR03), 1.5 V alkaline or 1.2 V NIMH (with at least 750 mAh) |
| Number of measurements | with batteries at 800 mAh: approx. 3,000 measurements |

## Electrical Safety

| | |
|---|---|
| Measuring category | with safety cap applied to test probe: CAT III 300 V<br>without safety cap applied to test probe: CAT II 300 V |
| Pollution degree | 2 |
| Protection class | II |
| Fuse | SIBA ceramic fuse<br>6.3 mm x 32 mm, F1 A/600 V<br>switching capacity 50 kA at 600 V |

## Electromagnetic Compatibility (EMC)

| | |
|---|---|
| Interference emission | EN 61326-1:2006 class B |
| Interference immunity | EN 61326-1:2006 |

## Mechanical Design

| | |
|---|---|
| Display | OLED, multicolored, graphic |
| Protection | Housing: IP 43<br>per DIN VDE 0470 part 1/EN 60529 |
| Dimensions | approx. 260 x 70 x 40 mm |
| Weight | approx. 0.36 kg with batteries |

## Scope of delivery

1 Test instrument with mobile test probe
4 Batteries (AAA)
1 Pouch
1 Condensed operating instructions
1 CD ROM with operating instructions in available languages
1 Factory calibration certificate

## Order Information

| Description | Type | Article number |
|---|---|---|
| Loop Resistance Measuring Instrument | METRALINE ZCHECK | M507A |
| Broad-range charger for charging optionally available batteries, e.g. Z507B, inserted in the METRALINE ISO-RCD-Z CHECK<br>Input*: 100 to 240 V AC ±10%;<br>Output: 9 V DC, 180 mA | Charger METRALINE CHECK Series | Z507A |
| 4 rechargeable batteries (AAA) for METRALINE ISO-RCD-Z/CHECK | Akku-Set METRALINE CHECK Series | Z507B |

* with plug adapter for the following countries: EU, UK, US, AU

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