

# PROFITEST | PRCD

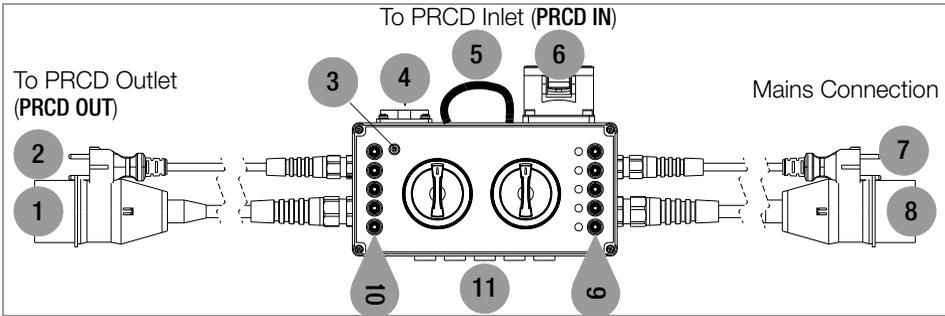
Adapter for Standards Compliant Testing of PRCDs  
by Simulating Faults

3-349-797-15  
4/5.15

Important  
Read carefully before use.  
Keep on file for future reference!

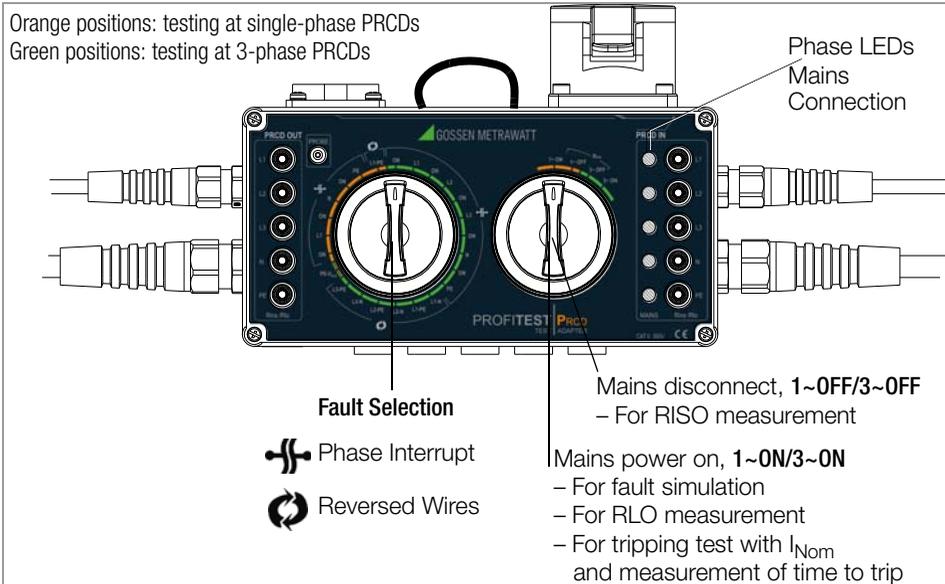


Connections Overview



- 1 Coupling plug to the outlet of a 3-phase PRCD
- 2 Earthing contact plug to the outlet of a single-phase PRCD
- 3 Probe socket for contacting the on/off switch on the PRCD
- 4 Earthing contact socket to the inlet of a single-phase PRCD
- 5 Loop for measuring protective conductor current with a current clamp transformer
- 6 CEE socket to the inlet of a 3-phase PRCD
- 7 Mains power cable with earthing contact plug
- 8 3-phase mains power cable with CEE outlet (1P+N+PE 16 A-6h)
- 9 PRCD inlet sockets connected in parallel to sockets 4 and 6 – for connecting the **PROFITEST MXTRA** during protective conductor and insulation measurements
- 10 PRCD outlet sockets connected in parallel to plugs 1 and 2 for connecting the **PROFITEST MXTRA** during protective conductor and insulation measurements
- 11 Five replaceable fuses

Instrument Overview



**Meanings of Symbols on the Instrument**

**300 V CAT II** Maximum permissible voltage and measuring category between connections and ground



Warning concerning a point of danger (attention: observe documentation!)  
EC mark of conformity



This device may not be disposed of with the trash. Further information regarding the WEEE mark can be accessed on the Internet at [www.gossen-metrawatt.com](http://www.gossen-metrawatt.com) by entering the search term “WEEE”.

**Meanings of Symbols in the Operating Instructions**

LED L1, L2, L3, N or PE at test adapter



LED on



LED off

PRCD LED at the device under test



LED on



LED off

**Scope of Delivery**

- 1 Test adapter
- 1 Probe cable with plug-in test probe
- 1 Set of operating instructions

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## 1 Safety Precautions

The test adapter has been manufactured and tested in accordance with the following safety regulations:

IEC/EN 61010-1 / VDE 0411-1, DIN VDE 0404, IEC/EN 61577 / VDE 0413-2,-4 / DIN EN 61557-16 / VDE 0413-16 (draft)

Safety of the operator, as well as that of the test adapter and the PRC, is only assured when it is used for its intended purpose.

**Read the operating instructions carefully and completely before placing your test instrument into service. Follow all instructions contained therein. Make sure that the operating instructions are available to all users of the instrument.**

**Read the operating instructions for the PROFITEST MXTRA as well, in particular the sections concerning the  $R_{LO}$ ,  $R_{ISO}$  and time-to-trip measurements, as well as the tripping test.**

Tests may only be performed by a qualified electrician, or under the supervision and direction of a qualified electrician. The user must be instructed by a qualified electrician concerning performance and evaluation of the test.

**Observe the following safety precautions:**

- The instrument may only be connected to electrical systems with a maximum of 230/400 V which comply with applicable safety regulations (e.g. IEC 60346, VDE 0100) and are protected with a fuse or circuit breaker with a maximum rating of 16 A.
- The test adapter may only be used for testing PRCs.
- No power consuming devices may be connected to the earthing contact and CEE sockets.
- The test adapter may not be used as an extension cord.
- Measurements within electrical systems are prohibited.
- Make certain that the measurement cables are in flawless condition, e.g. no damage to insulation, no cracks in cables or plugs etc.

- When using a test probe with coil cord (**PROFITEST MXTRA**): Grip the tip of the test probe firmly, for example during insertion into a jack socket. Tensioning at the coil cord may otherwise cause the test probe to snap back resulting in possible injury.
- Insulation resistance can only be measured at voltage-free objects.
- Do not touch the insulation measuring instrument's test probes (**PROFITEST MXTRA**) during insulation resistance measurements!

### Fuse Replacement

All fuses for neutral and phase conductors are accessible from the outside (see section 8.3). The fuses may only be replaced when the instrument is voltage-free, i.e. the instrument must be disconnected from mains supply power and may not be connected to a measuring circuit. The fuse type must comply with the specifications in the technical data or the labeling on the instrument (see section 7).

### Opening the Instrument / Repairs

The test adapter may only be opened by authorized, trained personnel in order to ensure flawless operation and to assure that the guarantee is not rendered null and void. Even original replacement parts may only be installed by authorized, trained personnel. If it can be ascertained that the test adapter has been opened by unauthorized personnel, no guarantee claims can be honored by the manufacturer with regard to personal safety, measuring accuracy, compliance with applicable safety measures or any consequential damages.

**The test adapter may not be used:**

- If external damage is apparent, for example if parts which conduct dangerous touch voltage are freely accessible, if its LEDs are defective (voltage at the **PRCD IN** would no longer be indicated in this case)
- If the seal or sealing lacquer has been removed as the result of repairs or manipulation carried out by a non-authorized/certified service provider
- With damaged connection and/or measurement cables, e.g. interrupted insulation or kinked cable
- If it no longer functions flawlessly
- After extraordinary stressing due to transport

In such cases, the test adapter must be removed from operation and secured against unintentional use.

## 2 Applications

### Testing of PRCs with the Test Adapter by Simulating Faults

The following faults can be simulated with regard to mains supply power to the PRC:

- Wire reversals
- Failure of individual conductors (undervoltage detection)
- Interference voltage on the protective conductor
  - a) by connecting the phase conductor to the protective conductor (**PE-U<sub>EXT</sub>** switch setting) or
  - b) by touching the “on” key of the single-phase PRCs with the probe

The evaluation of the PRC’s reaction to each respective fault is strictly visual:

- PRC active or inactive (indicator lamp on the PRC)
- Fault indication by means of LEDs on the test adapter



#### Attention!

In any case, comply with the manufacturer’s recommendations concerning tests to be conducted in accordance with DGUV Provision 3.

### Testing of PRCs with the Test Adapter by Simulating Faults and Measuring Protective Conductor and Insulation Resistance, as well as Tripping Current and Time to Trip, using the PROFITEST MXTRA Test Instrument

The following functions are possible after connecting the **PROFITEST MXTRA** test instrument to the test adapter:

- There are three preset test sequences:
  - Single-phase PRCs:
    - PRC-S: 11 test steps
    - PRC-K: 4 test steps
  - 3-phase PRCs:
    - PRC-S: 18 test steps
- The test instrument runs through all test steps semi-automatically:
  - Single-phase PRCs: 10 test steps
  - 3-phase PRCs: 17 test steps
- Each test step is evaluated and assessed by the user (go/no-go) for later documentation.
- Measurement of the PRC’s protective conductor resistance using the test instrument’s  $R_{LO}$  function. Please note that the protective conductor measurement is a modified RLO measurement with ramp sequence for PRCs, which is only available with the **PROFITEST MXTRA** test instrument.
- Measurement of the PRC’s insulation resistance using the test instrument’s  $R_{ISO}$  function.
- Tripping test with nominal residual current using the test instrument’s  $I_F$  function.
- Measurement of time to trip using the test instrument’s  $I_{\Delta N}$  function.
- Varistor test for PRC-K:
  - Measurement via ISO ramp

### Measuring Protective Conductor Current

Protective conductor current or bias current may result in premature tripping of PRCs. For this reason, the protective conductor is led out of the housing as a loop between surface mount sockets 4 and 6. This makes it possible to measure any protective conductor current with the help of a current clamp transformer.

## 3 Initial Start-Up

See the connections overview on page 2 for all connection variants.

### 3.1 Testing the LEDs

Before performing any measurements, the LEDs should be tested for correct functioning.

#### Single-Phase Mains Connection

- ⇨ Insert the earthing contact plug into the earthing contact mains outlet, remove it, rotate it 180° and insert it again.

When connected with correct polarity, the **PRCD IN L1** LED must light up, and when rotated 180° the **PRCD IN L1** and **PRCD IN PE** LEDs must light up simultaneously.

#### 3-Phase Mains Connection

- ⇨ Insert the CEE plug into the CEE outlet. The **PRCD IN L1**, **L2** and **L3** LEDs must light up. If any of the phase conductors are connected to the neutral conductor, i.e. L1-N, L2-N or L3-N, N lights up instead of Lx. If any of the phase conductors are connected to protective earth, i.e. L1-PE, L2-PE or L3-PE, PE lights up instead of Lx.

### 3.2 Mains Connection

The test adapter must be connected to the mains for fault simulation, as well as for indication by means of the phase LEDs.

- ⇨ Connect the test adapter to the mains via the single or 3-phase mains power cable. Refer to the characteristic values on page 14 for nominal mains values.



#### Attention!

##### Single-Phase Mains Connection

For correct phase connection, the earthing contact plug must be inserted into the mains outlet such that only the **PRCD IN L1** LED lights up. The **PRCD IN PE** LED lights up as well in the case of polarity reversal.

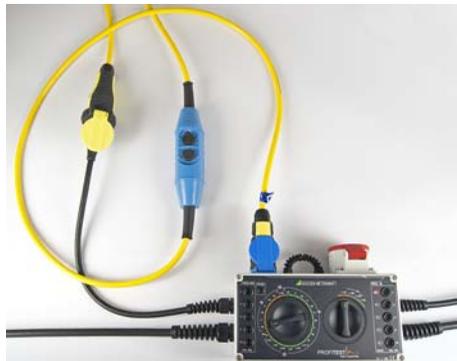
### 3.3 Connecting the PRCD

The respective PRCD must be connected to the test adapter for all tests.

#### Connecting a Single-Phase PRCD

- ⇨ Insert the earthing contact inlet plug from the PRCD into the earthing contact outlet (4) at the test adapter.
- ⇨ Insert the earthing contact plug (2) from the test adapter into the outlet coupling socket at the PRCD.

#### Example of a Single-Phase PRCD



#### Connecting a 3-Phase PRCD

- ⇨ Insert the CEE inlet plug from the PRCD into the CEE outlet (6) at the test adapter.
- ⇨ Insert the CEE plug (1) from the test adapter into the CEE outlet coupling socket at the PRCD.

## 4 Measurements with the PROFITEST MXTRA

In order to perform protective conductor measurements (R<sub>lo</sub>) at **type S PRCDs** with the **PROFITEST MXTRA**, the test adapter must remain connected to the mains.

The test adapter can remain connected to the mains for protective conductor measurements conducted at PRCDs whose protective conductor is not switched, as well as for insulation measurements (R<sub>in</sub>) with the **PROFITEST MXTRA**.

### 4.1 Measuring Protective Conductor Resistance (Rlo)

As opposed to the usual default setting for low-resistance measurements, the device under test does not have to be disconnected from all sources of voltage in this case. Depending on the PRCO, the rotary selector switches have to be set to the **ON** and the **1~ ON** or **3~ ON** positions, in order to be able to activate the PRCO and switch the protective conductor through.

#### Example of a Single-Phase PRCO



- Before performing protective conductor measurements, execute an offset measurement to assure that the test adapter's connector contacts are not included in the measurement results.
- Insert the respective test plug into the appropriate socket at the test adapter to this end: 2 to 4 or 1 to 6.
- Start the offset measurement at the **PROFITEST MXTRA**.
- Connect the PRCO as described in section 3.3.
- Connect the **PROFITEST MXTRA** test instrument to sockets 9 and 10 via the 2-pole measuring adapter.

- Activate the PRCO.
- Perform the measurement as described in the operating instructions for the **PROFITEST MXTRA** (section 12.2 as of V10).

### 4.2 Measuring Insulation Resistance (Riso)



#### Attention!

The right-hand rotary selector switch must be set to the mains disconnect position: **1~ OFF** or **3~ OFF**.

- In order to perform the insulation measurement (Rins), connect the **PROFITEST MXTRA** test instrument, via the measuring adapter, to socket 9 for the cable at the mains side and to socket 10 for the cable at the test object's outlet side.

#### Example, Single-Phase PRCO OUT Sockets



- Connect the PRCO as described in section 3.3.
- **Single-phase PRCO:** Connect the **PROFITEST MXTRA** test instrument, via the 2-pole measuring adapter, to the **PRCO IN / OUT L1, N and PE** sockets, one after the other.

- ⇒ Perform the measurement as described in section 11 of the operating instructions for the **PROFITEST MXTRA**.
- ⇒ **3-phase PRCD:** Connect the **PROFITEST MXTRA** test instrument, via the 2-pole measuring adapter, to the **PRCD IN / OUT** L1, L2, L3, N and PE sockets, one after the other.

### 4.3 Tripping Test with Nominal Residual Current and Measurement of Time to Trip



**Note!**

If you operate your test adapter at an electrical system with a 30 mA breaker, the mains RCCB may be tripped during the tripping test (tripping current and time to trip) instead of the PRCD. In this case the **MAINS L1** LED goes out.

In order to prevent an upstream RCD (also non-selective RCD) from being tripped and to ensure that the actual tripping current and/or the correct time-to-trip are determined, we recommend the following procedure:

- ⇒ Connect the **PROFITEST MXTRA** test instrument via the 2-pole measuring adapter with pole (L1) to L1 (PRCD-OUT) and with pole (PE) to N (PRCD-IN). Observe the correct polarity between earthing contact plug and PRCD!
- ⇒ Refer to the operating instructions for the **PROFITEST MXTRA** regarding performance of the measurement:  
 Type K PRCD, section 7.3.2  
 Type S PRCD, section 7.3.3

### 4.4 Varistor Test (PRCD-K)

During this measurement, the voltage is ascertained at which the varistor becomes conductive, thus checking the varistor for correct functioning as well. Measurement can be performed by means of an ISO ramp, or with a fixed test voltage of 50 V.

As a prerequisite for this measurement, the device under test must be switched on.

- ⇒ Connect the **PROFITEST MXTRA** test instrument to the **PE IN** and **PE OUT** sockets via the 2-pole measuring adapter.
- ⇒ Perform the measurement as described in the operating instructions for the **PROFITEST MXTRA** (section 11).
- ⇒ The evaluation of the measured varistor resistance depends on the manufacturer's specifications (PRCD-K from Kopp: e.g. 12 to 22 V according to Kopp).

#### Note on Kopp Test Specification: PRCD-K (Varistor in Protective Earth Circuit)

##### Test Sequence by Kopp:

- 1.) Connect operating voltage (e. g. 230 V/ 50 Hz) and 24 V AC voltage source.
- 2.) Select resistance (R) depending on the residual current of the PRCD-K:
  - For PRCD-K  
with  $I_n = 30 \text{ mA} \rightarrow R = 220 \Omega/1 \text{ W}$ .
  - For PRCD-K  
with  $I_n = 10 \text{ mA} \rightarrow R = 620 \Omega/0.5 \text{ W}$ .
- 3.) Switch on PRCD-K by pressing the ON button.
- 4.) Press key <T> → device must trip → PE circuit is functioning properly.

The shutdown test of the PRCD-K stipulated by KOPP at this point is performed in connection with the testing of the RCD protection device with a continuously rising residual current until the device is tripped.

## 5 Protective Conductor Current Measurement

- ↪ Connect the PRCD as described in section 3.3.
- ↪ Switch mains power on by turning the **right-hand** rotary selector switch to the **1~ ON** or **3~ ON** position depending on the number of phases.
- ↪ **Single-phase PRCD:** Turn the **left-hand** rotary selector switch to the first **ON** position in the orange area for single-phase interruption.
- ↪ **3-phase PRCD:** Turn the **left-hand** rotary selector switch to the first **ON** position in the green area for 3-phase interruption.
- ↪ Enclose the external protective conductor loop (5) with the jaws of the current clamp transformer.
- ↪ Read the measured value for protective conductor current at the current clamp transformer.

Protective conductor current should not exceed 3.5 mA.

### Example of a Single-Phase PRCD



## 6 Fault Simulation



### Note!

If you operate your test adapter at an electrical system with a 30 mA breaker, the mains RCCB may be tripped during the tripping test (tripping current and time to trip) instead of the PRCD. In this case the **MAINS L1** LED goes out.

### 6.1 PRCD-S (single-phase)



- Switch mains power on by turning the right-hand rotary selector switch to the **1~ ON** position.

#### 6.1.1 Simulated Interruption



- Start with the left-hand rotary selector switch in the first **ON** position in the orange area for single-phase interruption.
- Switch through the positions, one after the other, in the clockwise direction (table from top to bottom).

Step	Rotary Switch	Test Adapter		PRCD LED	Action
		L1 LED	PE LED		
1	ON				Activate the PRCD.
2	L1				The PRCD is tripped. It must not be possible to reactivate it.
3	ON				Activate the PRCD.
4	N				The PRCD is tripped. It must not be possible to reactivate it.
5	ON				Activate the PRCD.
6	PE				The PRCD is tripped. It must not be possible to reactivate it.

### 6.1.2 Simulated Wire Reversal



- Turn the left-hand rotary selector switch to the **L1-PE** position in the orange area for single-phase wire reversal. Instead of the **L1** LED, the **PE** LED must light up. It must not be possible to activate the PRCD when this fault is simulated.

Step	Rotary Switch	Test Adapter		PRCD LED	Action
		L1 LED	PE LED		
7	L1-PE				It must not be possible to activate the PRCD.

### 6.1.3 Simulation of PE to Phase – PE-U<sub>EXT</sub>

- Set the left-hand rotary selector switch to the **PE-U<sub>EXT</sub>** position. The **L1** LED and the **PE** LED PE light up. It must not be possible to activate the PRCD when this fault is simulated.

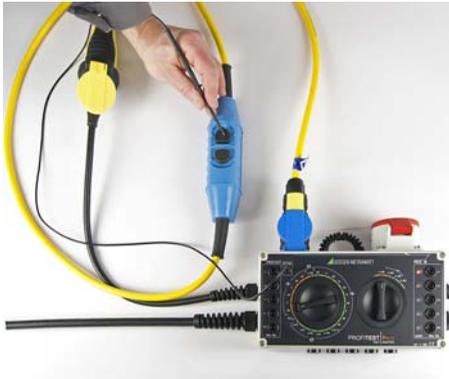
Step	Rotary Switch	Test Adapter		PRCD LED	Action
		L1 LED	PE LED		
8	PE-U <sub>EXT</sub>				It must not be possible to activate the PRCD.

### 6.1.4 Contacting the “ON” Key at the PRCD with the Probe

- Turn the left-hand rotary selector switch to the first **ON** position in the orange area for single-phase interruption.

The **L1 LED** must light up.

- Activate the PRCD.
- Plug the probe into the **PROBE** socket and contact the **ON** key at the PRCD with the test probe.



The PRCD is tripped. It must not be possible to activate the PRCD as long as the probe is in contact with the **ON** key at the PRCD.

### 6.2 PRCD-K (single-phase)



- Switch mains power on by turning the right-hand rotary selector switch to the **1~ ON** position.

#### 6.2.1 Simulated Interruption



- Start with the left-hand rotary selector switch in the first **ON** position in the orange area for single-phase interruption.
- Switch through the positions, one after the other, in the clockwise direction (table from top to bottom).

Step	Rotary Switch	Test Adapter		PRCD	Action
		L1 LED	PE LED	LED	
1					Activate the PRCD.
2					The PRCD is tripped. It must not be possible to reactivate it.
3					Activate the PRCD.
4					The PRCD is tripped. It must not be possible to reactivate it.

Step	Rotary Switch	Test Adapter		PRCD	Action
		L1 LED	PE LED	LED	
9					Activate the PRCD.
<b>Contact “ON” key at PRCD with test probe.</b>					
10					The PRCD is tripped. It must not be possible to reactivate it.

Due to its design, the following tests are omitted for the PRCD-K:

- PE interruption
- Simulated wire reversal
- Simulation of PE to phase
- Contacting the “ON” key at PRCD with the test probe

- Step 11: see section entitled “Protective Conductor Current Measurement” on page 9.

### 6.3 PRCD-S (3-phase)



- Switch mains power on by turning the right-hand rotary selector switch to the **3~ ON** position.

### 6.3.1 Simulated Interruption



- Start with the left-hand rotary selector switch in the first **ON** position in the green area for single-phase interruption.
- Switch through the positions, one after the other, in the clockwise direction (table from top to bottom).

#### Conductor Interruption Using a 3-Phase PRCD from Kopp as an Example

Step	Rotary Switch	Test Adapter					PRCD LED	Action
		L1 LED	L2 LED	L3 LED	N LED	PE LED		
1	ON							Activate the PRCD.
2	L1							The PRCD is tripped. It must not be possible to reactivate it.
3	ON							Activate the PRCD.
4	L2							The PRCD is tripped. It must not be possible to reactivate it.
5	ON							Activate the PRCD.
6	L3							The PRCD is tripped. It must not be possible to reactivate it.
7	ON							Activate the PRCD.
8	N							The PRCD is tripped. It must not be possible to reactivate it.
9	ON							Activate the PRCD.
10	PE							The PRCD is tripped. It must not be possible to reactivate it.

Regarding step 8: The N LED also lights up due to star connection, although N is interrupted!



**Note!**

Tripping performance may deviate from this example in the case of PRCDs from other manufacturers – adhere to the manufacturer’s test instructions!

### 6.3.2 Simulated Wire Reversal



- ⇨ Turn the left-hand rotary selector switch to the **L1-N** position in the green area for 3-phase wire reversal.
- ⇨ Switch through the positions, one after the other, in the clockwise direction (table from top to bottom).

It must not be possible to activate the PRCD when any of these faults is simulated.

Step	Rotary Switch	Test Adapter					PRCD LED	Action
		L1 LED	L2 LED	L3 LED	N LED	PE LED		
11								It must not be possible to activate the PRCD.
12								It must not be possible to activate the PRCD.
13								It must not be possible to activate the PRCD.
14								It must not be possible to activate the PRCD.
15								It must not be possible to activate the PRCD.
16								It must not be possible to activate the PRCD.

### 6.3.3 Simulation of PE to Phase

- ⇨ Set the left-hand rotary selector switch to the **PE-U<sub>EXT</sub>** position.

It must not be possible to activate the PRCD when this fault is simulated.

Step	Rotary Switch	Test Adapter					PRCD LED	Action
		L1 LED	L2 LED	L3 LED	N LED	PE LED		
17								It must not be possible to activate the PRCD.

- ⇨ Step 18: see section entitled “Protective Conductor Current Measurement” on page 9.

## 7 Characteristic Values

Measurements with **METRACLIP 61** as accessory:  
 Protective conductor current measurement Measuring range:  
 0 ... 30 mA AC

Measurements with **PROFITEST MXTRA** as accessory:  
 Protective conductor measurement Measuring range:  
 0.1 Ω ... 6 Ω,  
 see technical data on R<sub>LO</sub> function of the **PROFITEST MXTRA**

Insulation measurement Measuring range:  
 50 kΩ ... 500 MΩ,  
 see technical data on R<sub>ISO</sub> function of the **PROFITEST MXTRA**

### Connections

#### Test Outlets

Earth contact 1P+N+PE, 16 A, 230 V  
 CEE 3P+N+PE 16 A 400 V

#### Test Plug

Earth contact 1P+N+PE, 16 A, 230 V  
 CEE 3P+N+PE 16 A 400 V

### Power Supply

Nominal line voltage 230/400 V 50 Hz  
 Mains connection Earthing contact plug:  
 230 V 1P+N+PE 16 A  
 or  
 CEE plug:  
 230/400 V 3P+N+PE  
 16 A

Throughput rating Earth contact: 10 VA  
 CEE: 30 VA  
 Power consumption Earth contact: < 2 VA  
 CEE: < 4 VA

### Electrical Safety

Measurement category 300 V CAT II  
 Pollution degree 2  
 Fuse links 5 ea. FF315mA/500V

### Ambient Conditions

Operating temperature -5 ... + 50 °C  
 Storage temperature -20 ... + 60 °C  
 Relative humidity Max. 75%,  
 no condensation allowed

### Mechanical Design

Test adapter protection IP 40 per DIN VDE 0470, part 1,  
 connections: IP 20  
 Housing (WxHxD): approx. 24 x 17.5 x 11 cm (without connector cable, with surface mount sockets)  
 Mains connector cable length with plug:  
 earthing contact/CEE: approx. 97/100 cm  
 Connector cable length with test plug:  
 earthing contact/CEE to PRCD: approx. 57/60 cm  
 Weight Approx. 2.4 kg (with connector cable)

## 8 Maintenance

### 8.1 Housing Maintenance

No special maintenance is required. Keep outside surfaces clean and dry. Use a slightly dampened cloth for cleaning. Avoid the use of solvents, cleansers and abrasives.



#### Note!

If the test adapter has not been used for a long period of time, the switches may demonstrate increased contact resistance depending upon storage conditions. If this is the case, actuate the switches several times.

The fuses may only be replaced when the instrument is voltage-free, i.e. the instrument must be disconnected from mains supply power and may not be connected to a measuring circuit. The fuse type must comply with the specifications in the technical data or the labeling on the device.

## 8.2 Safety Checks Testing in Compliance with DGVV Provision 3

Subject your test adapter to regular safety checks.

The test adapter has been designed in conformity with standards IEC 61010 and VDE 0404 as a safety class I and II test instrument.

The testing of protective conductor, insulation resistance as well as contact current is described in the following subchapters.

### 8.2.1 Testing of Protective Conductor Resistance $R_{PE}$

#### Connection and/or Contacting of PRC D Adapter Single-phase (230 V)

The protective conductor resistance test is performed between the PE contact of the mains socket (earthing contact plug (7)) and the PE contact PRC D IN (both earthing contact outlet (4) and 4 mm parallel PE jack (9)).

#### Testing of Single-phase Connection

- ⇨ Turn the right rotary selector switch of the PRC D adapter to position 1~ON.
- ⇨ Turn the left rotary selector switch to any position\*.

Apart from the exceptional positions indicated below, a protective conductor resistance of  $R_{PE} < 2 \Omega$  is admissible. This is due to the design of the PRC D adapter.

- \* The following positions in which errors are simulated for measuring purposes must be exempt from this test:
  - Conductor interruption:  
PE (orange), PE (green=3P) → > 30 M $\Omega$

- Reversed conductors:  
L1-PE (orange), L1-PE (green), L2-PE (green), L3-PE (green) → > 30 M $\Omega$
- Voltage on protective conductor:  
PE-Uext (green/orange) approx. 1.5 M $\Omega$

#### Connection and/or Contacting of PRC D Adapter 3-phase (400 V)

The protective conductor resistance test is performed between the PE contact of the mains plug (CEE plug (8)) and the PE contact PRC D IN (both CEE socket (6) and 4 mm parallel PE jack (9)).

#### Testing of 3-phase Connection

- ⇨ Turn the right rotary selector switch of the PRC D adapter to position 3~ON.
- ⇨ Turn the left rotary selector switch to any position\*.

Apart from the exceptional positions indicated below, a protective conductor resistance of  $R_{PE} < 2 \Omega$  is admissible. This is due to the design of the PRC D adapter.

- \* The following positions in which errors are simulated for measuring purposes must be exempt from this test:
  - Conductor interruption:  
PE (orange), PE (green=3P) → > 30 M $\Omega$
  - Reversed conductors:  
L1-PE (orange), L1-PE (green), L2-PE (green), L3-PE (green) → > 30 M $\Omega$
  - Voltage on protective conductor:  
PE-Uext (green/orange) approx. 1.5 M $\Omega$

### 8.2.2 Testing of Insulation Resistance:

The test is performed in the respective selector switch position 1~ON and/or 3~ON on short-circuited contacts L-N and/or  $L_{123}$ -N (for earthing contact and/or CEE plugs) of

- mains power cables (7) and/or (8)
  - PRC D OUT connection cables (2) and/or (1)
  - PRC D IN sockets (4) and/or (6)
- against PE in each case.

The usual limit values apply in these cases.

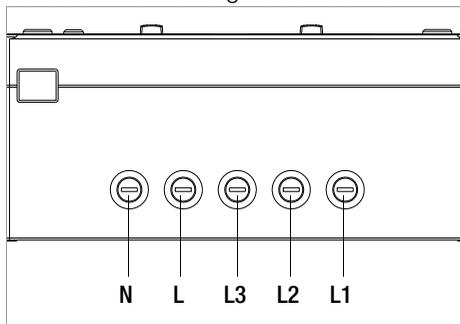
### 8.2.3 Contact Current Measurement

The measurement of contact current is performed on the screw connections of the PRCD IN sockets with standard limit values ( $I_B < 0.5 \text{ mA}$ ).

### 8.3 Fuse Replacement

All fuses for neutral and phase conductors are accessible from the outside.

The fuses may only be replaced when the instrument is voltage-free, i.e. the instrument must be disconnected from mains supply power and may not be connected to a measuring circuit. The respective fuse type must comply with the specifications in the technical data or the labeling on the device.



### 8.4 Return and Environmentally Sound Disposal

The device is a category 9 product (monitoring and control instrument) in accordance with ElektroG (German electrical and electronic device law).

This device is subject to the RoHS directive. Furthermore, we make reference to the fact that the current status in this regard can be accessed on the Internet at

[www.gossenmetrawatt.com](http://www.gossenmetrawatt.com) by entering the search term WEEE.

In accordance with WEEE 2012/19/EU and ElektroG, we identify our electrical and electronic devices with the symbol in accordance with DIN EN 50419 which is shown at the right. Devices identified with this symbol may not be disposed of with the trash. Please contact our service department regarding the return of old devices (see address next page).



## 9 Repair and Replacement Parts Service, Calibration Center and Rental Instrument Service

If required lease contact:

GMC-I Service GmbH

### Service Center

Thomas-Mann-Strasse 16-20

90471 Nürnberg • Germany

Phone: +49-911-817718-0

Fax: +49-911-817718-253

e-mail: [service@gossenmetrawatt.com](mailto:service@gossenmetrawatt.com)

[www.gmci-service.com](http://www.gmci-service.com)

This address is only valid in Germany.

Please contact our representatives or subsidiaries for service in other countries.

## 10 Product Support

If required please contact:

GMC-I Messtechnik GmbH

### Product Support Hotline

Phone: +49-911-8602-0

Fax: +49 911 8602-709

e-mail: [support@gossenmetrawatt.com](mailto:support@gossenmetrawatt.com)