Operating Instructions

GOSSEN METRAWATT

PROFITEST | PRCD

Adapter for Standards Compliant Testing of PRCDs by Simulating Faults

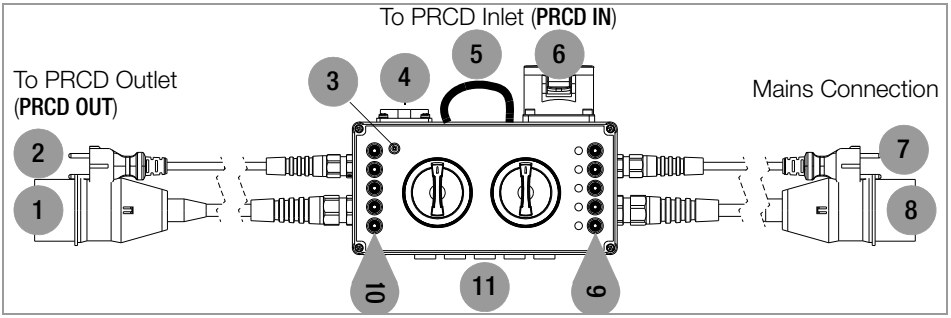
3-349-797-15
7/4.19

Important

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

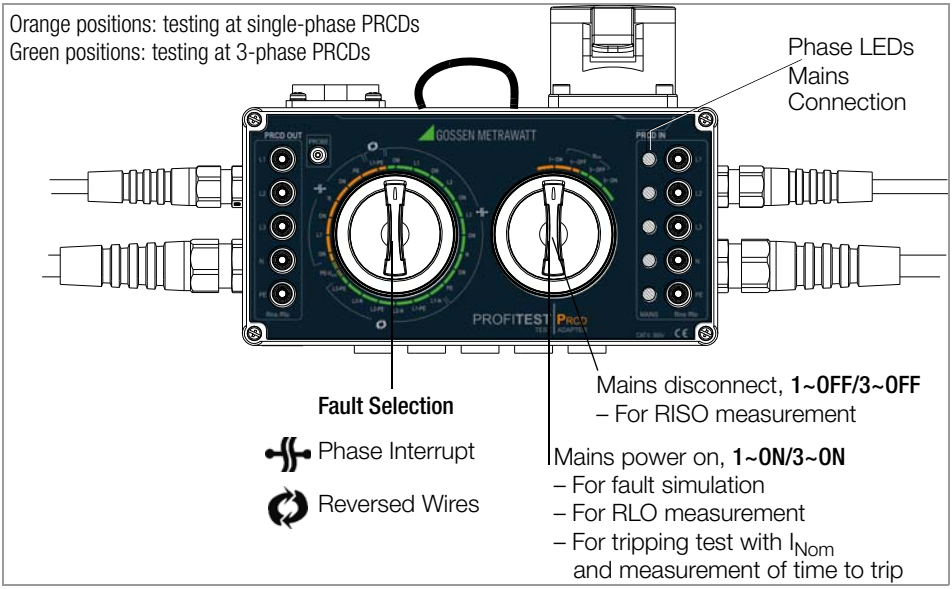
Please observe the manufacturer's details on the devices under test!

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 key 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!)


Indicates European 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.gossenmetrawatt.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

Table of Contents

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 PRCD, 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 PRCDs.
- 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.
- Touch current at the probe socket is limited by the internal protective circuit to less than the maximum permissible value of 0.5 mA in accordance with DIN EN 61010-1.
- 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!
- Please observe the manufacturer's details on the devices under test!

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 PRCDs with the Test Adapter by Simulating Faults

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

- 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_{EXT}** switch setting) or
  b) by touching the "on" key of the single-phase PRCDs with the probe

The evaluation of the PRCD's reaction to each respective fault is strictly visual:

- PRCD active or inactive (indicator lamp on the PRCD)
- 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 PRCDs 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 PRCDs:
  – PRCD-S: 11 test steps
  – PRCD-K: 4 test steps
  3-phase PRCDs:
  – PRCD-S: 18 test steps
- The test instrument runs through all test steps semi-automatically:
  Single-phase PRCDs: 10 test steps
  3-phase PRCDs: 17 test steps
- Each test step is evaluated and assessed by the user (go/no-go) for later documentation.
- Measurement of the PRCD'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 PRCDs, which is only available with the **PROFITEST MXTRA** test instrument.
- Measurement of the PRCD'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 PRCD-K:
  Measurement via ISO ramp

Simulation of "Interference Voltage in the Protective Conductor" with Probe

In the case of type S PRCDs (PRCD-S), the on/off key is made of a conductive material or coated with conductive plastic so that the sensor inside the device is capable of detecting dangerous contact voltage at the protective conductor terminal of the electrical power connection in the form of a difference in potential relative to the user's contacting finger.

During simulation of the "interference voltage in the protective conductor" fault (tripping test / potential fault as extended function test for PRCD-S) by touching the on/off key of the single-phase PRCD (PRCD-S) with the probe, a difference in potential between the contactable sensor surface and the protective conductor terminal is generated which causes tripping of the PRCD-S.

The probe socket on the PRCD adapter is connected to the phase conductor (L) of the power supply network via a series resistor (safety impedance) with a value of 1 MΩ using the test adapter's earthing contact plug to this end.

Touch current at the probe socket is limited by the internal protective circuit to less than the maximum permissible value of 0.5 mA in accordance with DIN EN 61010-1.

Execution of this test results in maximum touch current of:

$$I_T\,[A] = \frac{U_{Mains\ (L-PE)}\,[V]}{1\ M\Omega}$$

Measuring Protective Conductor Current

Protective conductor current or bias current may result in premature tripping of PRCDs. 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 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 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.

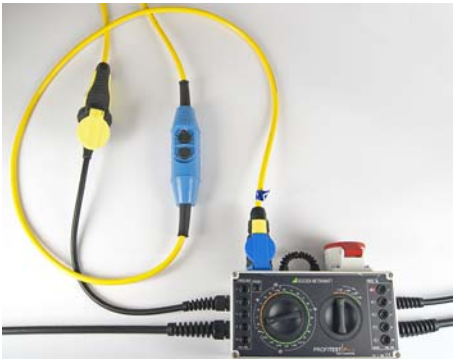
3.3 Connecting the PRCD

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 (Rlo) 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 (Rins) 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 PRCD, 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 PRCD and switch the protective conductor through.

Example of a Single-Phase PRCD

- 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 PRCD 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 PRCD.
- ➪ 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 PRCD OUT Sockets

- ➪ Connect the PRCD as described in section 3.3.
- ➪ **Single-phase PRCD:** Connect the **PROFITEST MXTRA** test instrument, via the 2-pole measuring adapter, to the **PRCD 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-selevtive 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 (except for PRCD-K):

- ➪ 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!

Exception type K PRCDs

- ➪ Connect the **PROFITEST MXTRA** test instrument via the 2-pole measuring adapter with pole (L1) to L1 (PRCD-OUT) and with pole (PE) to PE (PRCD-OUT).
  Observe the correct polarity between earthing contact plug and PRCD!
  Optionally you can connect the **PROFITEST MXTRA** test instrument with the output of the type K PRCD via the PRO-SCHUKO adapter.
- ➪ 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 In = 30 mA → R = 220 Ω/1 W.
   For PRCD-K
   with In = 10 mA → R = 620 Ω/0.5 W.
3.) Switch on PRCD-K by pressing the ON button.
4.) Press key <T> → device must trip → PE circuit is functioning properly.

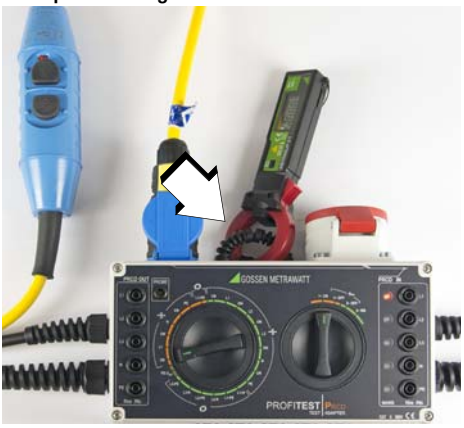
The shutdown test of the PRCD-K stipulated by KOPP at this point is performed in connection with the testing of the RCD protection device with a continuously rising residual current until the device is tripped.

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 L1 LED	Test Adapter PE LED	PRCD LED	Action
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 L1 LED	Test Adapter PE LED	PRCD LED	Action
7	L1-PE	○	☀	○	It must not be possible to activate the PRCD.

6.1.3 Simulation of PE to Phase – PE-U_{EXT}

➪ Set the left-hand rotary selector switch to the **PE-U_{EXT}** 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 L1 LED	Test Adapter PE LED	PRCD LED	Action
8	PE-U_{EXT}	☀	☀	○	It must not be possible to activate the PRCD.

6.1.4 Contacting the “ON” Key at the PRCD with the Probe (PRCD-S)

➪ 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.

➪ Observe the notes in chapter 2 „Applications“ and in the subsection entitled **Simulation of “Interference Voltage in the Protective Conductor” with 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.

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

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

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 L1 LED	Test Adapter PE LED	PRCD LED	Action
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.

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

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 L1 LED	L2 LED	L3 LED	N LED	PE LED	PRCD LED	Action
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 L1 LED	L2 LED	L3 LED	N LED	PE LED	PRCD LED	Action
11	L1-N	○	✳	✳	✳	○	○	It must not be possible to activate the PRCD.
12	L1-PE	○	✳	✳	○	✳	○	It must not be possible to activate the PRCD.
13	L2-N	✳	○	✳	✳	○	○	It must not be possible to activate the PRCD.
14	L2-PE	✳	○	✳	○	✳	○	It must not be possible to activate the PRCD.
15	L3-N	✳	✳	○	✳	○	○	It must not be possible to activate the PRCD.
16	L3-PE	✳	✳	○	○	✳	○	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_{EXT}** position.

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

Step	Rotary Switch	Test Adapter L1 LED	L2 LED	L3 LED	N LED	PE LED	PRCD LED	Action
17	PE-U_{EXT}	✳	✳	✳	○	✳	○	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_{LO} function of the **PROFITEST MXTRA**
Insulation measurement	Measuring range: 50 kΩ ... 500 MΩ, see technical data on R_{ISO} 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

Probe Connection

2 mm connector socket with 1 MΩ safety impedance (laid out and as 5 x 200 kΩ in series) as series resistor to conductor L at the connection for the earthing contact plug

Touch current limited to 0.5 mA in accordance with **DIN EN 61010-1** if the device is used for its intended purpose

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
Dimensions	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 DGUV 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 PRCD 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 PRCD 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 PRCD 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 PRCD 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 MΩ
- Reversed conductors: L1-PE (orange), L1-PE (green), L2-PE (green), L3-PE (green) → > 30 MΩ
- Voltage on protective conductor: PE-Uext (green/orange) approx.1.5 MΩ

Connection and/or Contacting of PRCD 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 PRCD 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 PRCD 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 PRCD 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 MΩ
- Reversed conductors: L1-PE (orange), L1-PE (green), L2-PE (green), L3-PE (green) → > 30 MΩ
- Voltage on protective conductor: PE-Uext (green/orange) approx.1.5 MΩ

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)
- PRCD OUT connection cables (2) and/or (1)
- PRCD IN sockets (4) and/or (6)

against PE in each case.

The usual limit values apply in these cases.

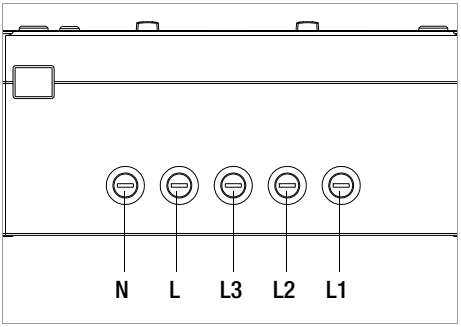
8.2.3 Contact Current Measurement

The measurement of contact current is performed on the screw connections of the PRCD IN sockets with standard limit values (I_B < 0.5 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 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
Beuthener Straße 41
90471 Nürnberg • Germany
Phone: +49-911-817718-0
Fax: +49-911-817718-253
e-mail service@gossenmetrawatt.com
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

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