

# PROFITEST | P<sub>PRCD</sub>

## Adapter for Standards Compliant Testing of PRCDS by Simulating Faults

3-349-796-03  
1/4.14

- Testing of type S and K PRCDS per DIN VDE 0701-0702, BGI / GUV-I 608 and manufacturer specifications using a guided test sequence with the PROFITEST MXTRA
- Testing of portable safety switches of the following types:
  - P<sub>PRCD</sub>-S (single-phase / 3-pole and 3-phase / 5-pole)<sup>1</sup>
  - P<sub>PRCD</sub>-K (single-phase / 3-pole)
  - P<sub>PRCD</sub> (2-pole / 3-pole)<sup>2</sup>
- Function test, i.e. tripping test by means of simulating the following faults: interruption, reversed wires and PE to phase
- Measurement of protective conductor current with current clamp transformer as accessory
- Measurement of protective conductor and insulation resistance per DIN VDE 0701-0702 with the PROFITEST MXTRA
- Tripping test with nominal residual current and measurement of time to trip with the PROFITEST MXTRA
- Evaluation and documentation of the individual test steps with the PROFITEST MXTRA
- For testing portable safety switches used on constructions sites, by fire department and in the field of disaster control



<sup>1</sup> Kopp and elektron BERLIN

<sup>2</sup> All PRCDS without protective conductor detection and monitoring

### Applications

According to DIN VDE 0661, portable protective devices are circuit breakers which can be connected between power consuming devices and permanently installed electrical outlets by means of standardized plug-and-socket devices. They offer the increased levels of protection provided by protective measures utilized in electrical systems for the prevention of dangerous shock current as defined in DIN VDE 0100-410. These portable protective devices serve to protect persons from electrical accidents in the low-voltage range from 130 to 1000 V, and consequently have to be suitable for commercial use.

The following faults can be simulated with regard to mains supply power to the P<sub>PRCD</sub>:

- 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 P<sub>PRCD</sub> with the probe

The evaluation of the P<sub>PRCD</sub>'s reaction to each respective fault is strictly visual:

- P<sub>PRCD</sub> active or inactive (indicator lamp on the P<sub>PRCD</sub>)
- Fault indication by means of LEDs on the test adapter

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

- There are three preset test sequences:
  - P<sub>PRCD</sub>-S (single-phase)
  - P<sub>PRCD</sub>-K (single-phase)
  - P<sub>PRCD</sub>-S (3-phase)
- The test instrument runs through all test steps semi-automatically:
  - Single-phase P<sub>PRCD</sub>s: P<sub>PRCD</sub>-S: 11 test steps  
P<sub>PRCD</sub>-K: 4 test steps
  - 3-phase P<sub>PRCD</sub>s: P<sub>PRCD</sub>-S: 18 test steps
- Each test step is evaluated and assessed by the user (go / no-go) for later documentation.
- Measurement of the P<sub>PRCD</sub>'s protective conductor resistance using the test instrument's  $R_{LO}$  function
- Measurement of the P<sub>PRCD</sub>'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
- Time to trip measurement using the test instrument's  $I_{\Delta N}$  function
- Varistor test for P<sub>PRCD</sub>-K: measurement via ISO ramp

### Measurement of Protective Conductor Resistance

Protective conductor current or bias current may result in premature tripping of P<sub>PRCD</sub>s.

For this reason, the protective conductor is led out of the housing as a loop between the surface mount sockets. This makes it possible to measure any protective conductor current with the help of the METRACLIP 61 current clamp transformer as an accessory.

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### Applicable Regulations and Standards

IEC 61010-1/EN 61010-1/ VDE 0411-1	Safety requirements for electrical equipment for measurement, control and laboratory use – General requirements
EN 60529 VDE 0470, part 1	Test instruments and test procedures Degrees of protection provided by enclosures (IP code)

### Ambient Conditions

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

### Characteristic Values

Measurement 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**

### 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: Earth contact/CEE: approx. 97/100 cm Connector cable length with test plug: earth contact/CEE to PRCD: approx. 57/60 cm
Weight	Approx. 2.4 kg (with connector cable)

### 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

### Scope of Delivery

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



### 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

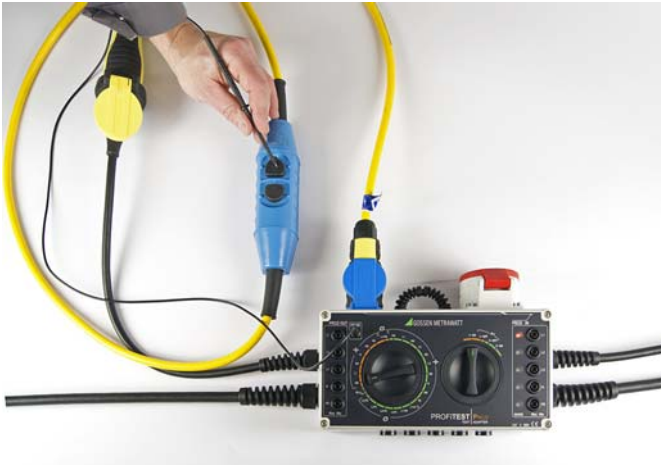
### Electrical Safety

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

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## Application Examples

Tripping test for a connected single-phase PRCD with the help of the included probe



Measurement of protective conductor current for a connected PRCD using the METRACLIP 61 current transformer clamp as an accessory



Documentation of protective conductor resistance and insulation resistance measurements with the help of the PROFITEST MXTRA as an accessory



## Order Information

Description	Type	Article number
Test adapter for testing portable safety switches (types PRCD-K and PRCD-S) with the help of the PROFITEST MXTRA test instrument (not included)	PROFITEST PRCD	M512R
Carrying case	Upon request	Upon request
Digital clamp meter (leakage-current clamp), 1 mA ... 300 A AC, including 2 installed button-cell batteries, operating instructions and pouch	METRACLIP 61	M311D
<b>Accessories (see data sheet 3-349-646-01)</b>		
Universal protective measure test instrument for DIN VDE 0100 per EN 61557, parts 1, 2, 3, 4, 5, 6, 7 and 10 with integrated memory, insulation measurement up to 1000 V, mains powered earth resistance measurements, with numerous special functions: <ul style="list-style-type: none"> <li>- Tripping test for AC/DC sensitive RCDs and loop impedance measurement without tripping the RCD</li> <li>- Testing of IMDs</li> <li>- Testing of RCMs per EN 61557, part 11</li> <li>- Battery powered measurements in the "battery mode":                             <ul style="list-style-type: none"> <li>Earthing resistance (3/4-wire)</li> <li>Soil resistivity</li> <li>Selective earthing resistance</li> <li>Earth loop resistance</li> </ul> </li> <li>- Leakage current measurement</li> <li>- Residual voltage test</li> <li>- Intelligent ramp</li> <li>- Automatic test sequence function</li> <li>- Bluetooth® interface</li> </ul>	PROFITEST MXTRA	M520P

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 **GOSSEN METRAWATT**

GMC-I Messtechnik GmbH  
Südwestpark 15  
90449 Nürnberg • Germany

Phone: +49 911 8602-111  
Fax: +49 911 8602-777  
e-mail: [info@gossenmetrawatt.com](mailto:info@gossenmetrawatt.com)  
[www.gossenmetrawatt.com](http://www.gossenmetrawatt.com)