English

User Manual

PCE-IT 120 Insulation Tester

User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский, 中文) can be found by using our product search on: www.pce-instruments.com

Last change: 15 August 2019
v1.0

© PCE Instruments

Contents

© PCE Instruments

1 Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage (crack in the case, damaged OLED, etc.) is visible or an insulation damage at the test leads (bare wires) is apparent, do not use the device and the test leads.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.
- Measurements with the insulation tester may only be made by qualified staff and in line with the requirements described in the manual. Damage caused by improper use of the meter, non-observance of general safety regulations or of the instructions in the manual are not covered by the warranty.
- Only replace defective fuses by an equal equivalent.
- The insulation tester fulfils the general safety regulations. However, these do not protect the user from improper use of the meter and the resulting hazards. When measuring voltages above 24 V, there is a risk of electric shock. Therefore, high-voltage measurements should be made very carefully and not without observing the applicable safety regulations. Non-observance of the safety notes can be life-threatening!
- The parts of the manual that contain information and warnings about possible hazards related with certain measuring operations must be observed.
- When connecting the meter to a live circuit or line, a pulsating alarm tone will sound. Immediately disconnect the insulation tester from the circuit or line when you hear the alarm sound. Additionally, a warning indicator will be displayed on the OLED.
- Operating conditions
  Indoor use only (not suitable for outdoor use)
  Pollution degree 2
  Max. elevation: 2000 m
  Max. air humidity: 80 % RH
  Operating temperature range: 0 ... 40 °C

- Meaning of the imprinted icons

Attention! Electric shock hazard

Caution! Read the user manual before first use

Double insulated

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

2 Delivery contents

1 x insulation tester PCE-IT 120,
1 x test leads with crocodile clips,
1 x test leads with measuring tips,
8 x 1.5 V AA batteries,
1 x bag,
1 x carrying strap,
1 x user manual

3 Specifications

Measurement range	2 GΩ / 250 V 4 GΩ / 500 V 8 GΩ / 1000 V ACV: 0 … 700 V DCV: 0 … 950 V Resistance / continuity: 0.01 … 1999 Ω
Resolution	Insulation: 1 / 10 / 100 MΩ ACV: 1 V DCV: 1 V Resistance / continuity: 0.01 / 0.1 / 1 Ω
Accuracy	Insulation: 0.1 MΩ … 4 GΩ: ±3 % 4 GΩ … 8 GΩ: ±5 % ACV: ±1.5 % DCV: ±1.5 % Resistance / continuity: ±2.0 %
DC test voltage	250 / 500 / 1000 V
Test current for insulation measurement	1 mA
Display	2-line 16-digit OLED
Power supply	8 x 1.5 V AA battery
Dimensions	175 x 85 x 75 mm
Weight	approx. 655 g
Environmental conditions	0 ... 40 °C
Storage conditions	-10 ... 50 °C
Protection / standards	600 V CAT III EN 61010-1 EN 61010-2-030 EN 61326-1

4 Short product description

This insulation tester has all functions needed to check and verify electrical insulation. The battery voltage is checked whenever the meter is powered on.
The meter complies with all usual standards.
The **[ON/TEST] key** is used to turn on the meter and to start and stop a measurement. It is also used to disable the EnerSave function. To do so, press and hold the key for at least 3 seconds when starting a measurement until you hear a short sound. Measurements will no longer be interrupted after 10 seconds. You can now make measurements of up to 10 minutes. If you wish to measure in the modes PI and DAR, the EnerSave function must be disabled.
A measurement can be stopped at any time by pressing the [ON/TEST] key.
The **[LOWΩ] key** is a multifunctional key. You can make a continuity test by pressing this key but also initiate automatic zero setting of the test leads and the fuse. The meter's standard mode after startup is insulation test mode.

Before making a measurement (Make sure that the included test leads are connected properly and that the fuse is in sound condition!), the meter will go through a voltage test to make sure no voltage is present in the meter or circuit. If a voltage is present which could cause a problem for the meter, the meter will switch directly to voltage measurement and shows the reading in the display. If there is a **voltage on the line**, the measurement will be terminated automatically and the keypad is locked to avoid unintended operation. This makes this insulation tester one of the safest currently available on the market.
You can start the measurement when no voltage is present anymore.
If you wish to measure insulation resistances, you can choose a test voltage of 250, 500 or 1000 V. If you wish to make a continuity test, use the [LOWΩ] function to measure low resistances of up to 0.01 Ω. The acoustic signal will be on automatically. You can zero the fuses and the test leads by using the „Auto Zero" function.
The **Auto Hold function** enables you to concentrate on the test leads during the measurement as you can conveniently view the reading on the display after the measurement. This function is always enabled so that you can first measure the voltage and then read out the last valid measured value on the display.
When dangerous voltages are present on the line to be measured, an acoustic signal will sound.

5 Functions

5.1 [ON/TEST] key (on/off function)

When the [ON/TEST] key is pressed, the meter will power on, carry out an automatic battery test under load and display the result.
The applied voltage will then automatically be measured and displayed. All functions of the meter will be automatically disabled until no applied voltage is measured.

5.2 Battery test

The battery test is carried out automatically when the meter is turned on. For this test, a load will be applied to the inserted batteries for a short time and the result will be shown in the display. The battery level will be displayed at any time. The battery icon will flash if the battery level is too low.

5.3 Voltmeter

There is no key for this measuring function as this is the meter's standard mode. Before each test and before the test leads are connected, the meter will measure the applied voltage (AC/DC).

5.4 Auto Hold

The Auto Hold function is always enabled (visible on the display).
This function holds the last valid measured value so that it is displayed even after disconnecting the test leads. This allows you to concentrate on the test leads during the measurement and view the value on the display when the measurement is finished.

5.5 250 V, 500 V, 1 kV insulation resistance measurement

If you want to make an insulation resistance measurement, the test leads must be connected to the circuit to be measured. If a voltage is present in the circuit, this voltage will be shown in the display and the resistance measurement will be cancelled. An insulation resistance measurement is only possible if no voltage is present.
If no voltage is present, press the key for the insulation resistance measurement and then start the measurement by pressing the [ON/TEST] key. The measurement can be interrupted at any time or is interrupted automatically, depending on the selected measuring mode (see EnerSave).

5.6 [ON/TEST] key (measuring function)

The [ON/TEST] key can be used to start and stop a measurement (see EnerSave).

5.7 EnerSave function

If you press the [ON/TEST] key to start a measurement, it will be terminated automatically after 10 seconds. If you wish to measure for a longer time, press and hold the [ON/TEST] key until you hear a short sound, which means that the EnerSave function is disabled.

The EnerSave function must be disabled everytime you wish to make a longer measurement.

5.8 [LOW Ω] key for continuity tests

Press the [LOW Ω] key to make a continuity test. A short circuit current of 200 mA will be used. The meter can display very small resistances of up to 0.01 ohms.

5.9 [LOW Ω] key for Auto Zero

Press the [LOW Ω] key to zero the resistance, the test leads and the fuse. This function is useful if you use longer test leads.
Do not forget to short-circuit the test leads when making a zero setting.

5.10 [1000V] key for power off (Auto Power Off)

Press and hold the [1000V] key for 5 seconds to switch off the meter.
After 5 minutes without pressing any key, the meter will turn off automatically.

5.11 Automatic discharge after an insulation measurement

After each insulation measurement, the meter will be discharged automatically. The status of the discharge will be displayed in the meantime. The discharge is finished when no voltage is present any longer. Before that, the test leads must not be removed.

6 Safety checks before the measurement

Check the cables for damage and cracks and replace them, if required. Also inspect the fuse before each measurement by holding the test leads against each other in [LOW Ω] mode. At the same time, the measurement resistance will be set to zero. Always connect the test leads to the circuit to be measured safely and correctly. Never interrupt the connection during a measurement and do not touch the test tips or the sample as the safety mechanisms are not fully effective during the measurement. Always follow the instructions on the display. Do not start a measurement before the test leads have been properly connected to the sample.

7 Changing the fuse

In order to change the fuse, follow these steps:
First remove all test leads. Now open the battery compartment and remove all batteries. Now open the case by loosening both screws in the battery compartment. Now you can change the fuse. Close the meter and re-insert the batteries. The meter can be used again when the battery compartment has been closed.

8 Further information

PI = Polarisation Index	The ratio between the insulation resistance value measured after the application of the test voltage continuously for 10 minutes to the insulation resistance value measured after 1 minute of application
DAR = Dielectric Absoprtion Ratio	The ratio of the insulation resistance value typically measured at 30 sec and 1 min
AUTO-ZERO	Zero the test leads and the fuse so that only the resistance of the measurement range is shown when making a measurement.
	The audible signal is always enabled. If the resistance is low, you will hear a sound.

9 Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

10 Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.

PCE Instruments contact information

Germany
PCE Deutschland GmbH
Im Langel 4
D-59872 Meschede
Deutschland
Tel.: +49 (0) 2903 976 99 0
Fax: +49 (0) 2903 976 99 29
info@pce-instruments.com
www.pce-instruments.com/deutsch

France
PCE Instruments France EURL
23, rue de Strasbourg
67250 Soultz-Sous-Forets
France
Téléphone: +33 (0) 972 3537 17
Numéro de fax: +33 (0) 972 3537 18
info@pce-france.fr
www.pce-instruments.com/french

Spain
PCE Ibérica S.L.
Calle Mayor, 53
02500 Tobarra (Albacete)
España
Tel. : +34 967 543 548
Fax: +34 967 543 542
info@pce-iberica.es
www.pce-instruments.com/espanol

Germany
PCE Produktions- und
Entwicklungsgesellschaft mbH
Im Langel 26
D-59872 Meschede
Deutschland
Tel.: +49 (0) 2903 976 99 471
Fax: +49 (0) 2903 976 99 9971
info@pce-instruments.com
www.pce-instruments.com/deutsch

United Kingdom
PCE Instruments UK Ltd
Unit 11 Southpoint Business Park
Ensign Way, Southampton
Hampshire
United Kingdom, SO31 4RF
Tel: +44 (0) 2380 98703 0
Fax: +44 (0) 2380 98703 9
info@industrial-needs.com
www.pce-instruments.com/english

Italy
PCE Italia s.r.l.
Via Pesciatina 878 / B-Interno 6
55010 Loc. Gragnano
Capannori (Lucca)
Italia
Telefono: +39 0583 975 114
Fax: +39 0583 974 824
info@pce-italia.it
www.pce-instruments.com/italiano

The Netherlands
PCE Brookhuis B.V.
Institutenweg 15
7521 PH Enschede
Nederland
Telefoon: +31 (0)53 737 01 92
info@pcebenelux.nl
www.pce-instruments.com/dutch

China
PCE (Beijing) Technology Co., Limited
1519 Room, 6 Building
Zhong Ang Times Plaza
No. 9 Mentougou Road, Tou Gou District
102300 Beijing, China
Tel: +86 (10) 8893 9660
info@pce-instruments.cn
www.pce-instruments.cn

Hong Kong
PCE Instruments HK Ltd.
Unit J, 21/F., COS Centre
56 Tsun Yip Street
Kwun Tong
Kowloon, Hong Kong
Tel: +852-301-84912
jyi@pce-instruments.com
www.pce-instruments.cn

United States of America
PCE Americas Inc.
711 Commerce Way suite 8
Jupiter / Palm Beach
33458 FL
USA
Tel: +1 (561) 320-9162
Fax: +1 (561) 320-9176
info@pce-americas.com
www.pce-instruments.com/us

Turkey
PCE Teknik Cihazları Ltd.Şti.
Halkalı Merkez Mah.
Pehlivan Sok. No.6/C
34303 Küçükçekmece - İstanbul
Türkiye
Tel: 0212 471 11 47
Faks: 0212 705 53 93
info@pce-cihazlari.com.tr
www.pce-instruments.com/turkish

© PCE Instruments