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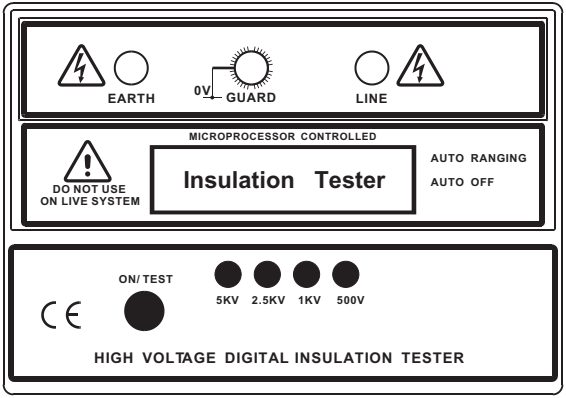
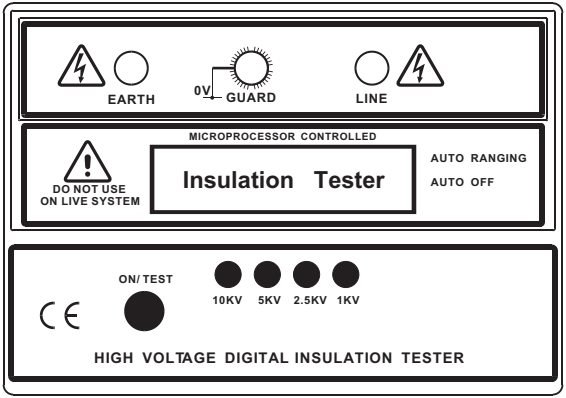
Manual
Insulation Tester
PCE-IT413
PCE-IT414

ADVANTAGE SERIES
Instruction Manual





INDEX PAGE

YOUR COMMENTS ARE IMPORTANT TO US WE

Have become a market leader in test and measurement in recent years, due to the company's ability to design and bring to the market innovative instruments and devices which offer real customer benefits. The cornerstone of this ability is the company's focus on customer requirements and the emphasis placed on end-user satisfaction. We appreciate customer information and requirement to improve or design new products.

1.Safety

Electricity can cause severe injuries even with low voltages or currents. Therefore it is extremely important that you read the following information before using your digital insulation tester.

1.1 This instrument must only be used and operated by a competent trained person and in strict accordance with the instructions. We will not accept liability for any damage or injury caused by misuse or non compliance with instructions and safety procedures.

1.2 This instrument must not be used on live circuits. Ensure all circuits are de-energized before testing. See paragraph 1.8 for details of built-in warning features should your digital insulation tester be connected to a live system.

1.3 Never open your digital insulation tester except for battery replacement. (See "Battery Replacement" section.)

1.4 Always inspect your digital insulation tester and test leads before use for any sign of abnormality or damage. If any abnormal conditions exist (i.e. broken test leads, cracked case, faulty display, etc .) do not attempt to take any measurement or use the tester. Return your digital insulation tester to us or your nearest distributor for service.

1.5 Never replace the protective fuse with anything other than the specified or approved equivalent.

1.6 Your digital insulation tester has been designed with your safety in mind. However, no design can completely protect against incorrect use.

Electrical circuits can be dangerous and/or lethal when a lack of caution or poor safety practice is used. Use caution in the presence of voltage above 24V as this poses a shock hazard.

1.7 Pay attention to cautions and warnings which will inform you of potentially dangerous procedures.

1.8 Your digital insulation tester has a live circuit warning beeper.
If it is connected to a live circuit, a rapid pulsating beep will be heard.
DO NOT proceed to test and immediately disconnect The instrument from the circuit. In addition your tester will display the warning message.

1.9 Rated environmental conditions :
- 1.9.1 Indoor use.
- 1.9.2 Pollution Degree 2.
- 1.9.3 Altitude up to 2000 meters.
- 1.9.4 Relative Humidity 80% Max.
- 1.9.5 Ambient Temperature 0~40°C.

1.10 Observe the international electrical symbols listed below.


Meter is protected throughout by double insulation or reinforced insulation.


Warning! Risk of electric shock.


Caution! Refer to this manual before using the meter.

Direct current.

2. Models

2.1 Model：Ⅰ(500V~5kV)

Four voltages （500V, 1KV, 2.5KV and 5KV）

Auto-ranging and menu-driven

A bar-graph which displays the voltage decay during the discharge of the tested circuit and the voltage stressing the insulation while the test is in progress.

A timer which shows the elapsed time when the test was "ON" and also shows the total time of the test.

Displays a voltage warning and sound when AC or DC is present before injecting the test voltage.

A buzz will intermittently sound when high voltage is generated and continues until the circuit is fully discharged.

2.2 Model：Ⅱ(1kV~10kV)

Four voltages （1KV, 2.5KV, 5KV and 10KV）

Auto-ranging and menu-driven.

A bar-graph which displays the voltage decay during the discharge of the tested circuit and the voltage stressing the insulation while the test is in progress.

A timer which shows the elapsed time when the test was "ON" and also shows the total time of the test.

Displays a voltage warning and sound when AC or DC is present before injecting the test voltage.

A buzz will intermittently sound when high voltage is generated and continues until the circuit is fully discharged.

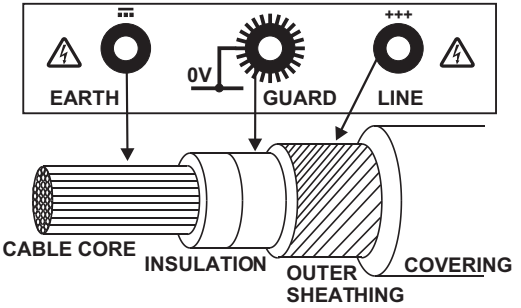
3.Features

2 Lines x 16 Characters large L.C.D.
Four insulation test voltage.

	Model : Ⅰ	**Model** : Ⅱ
(1)	500V DC - 25GΩ	1000V DC - 50GΩ
(2)	1000V DC - 50GΩ	2500V DC - 125GΩ
(3)	2500V DC - 125GΩ	5000V DC - 250GΩ
(4)	5000V DC - 250GΩ	10000V DC - 500GΩ

Insulation resistance auto-ranging on all ranges.
ENER-SAVE™ .
Bar-graph indicates test voltage-rise and decay can be observed during tests.
Warning and display of external voltage presence.
Over load protection.
Low battery indicator.
Measure insulation time test.
Very low battery consumption.
Smart microprocessor controlled.
Two years factory warranty.
Better than 5% accuracy.
Auto-off.
Compact and lightweight.

4.Connections



5.Specifications

Model：Ⅰ

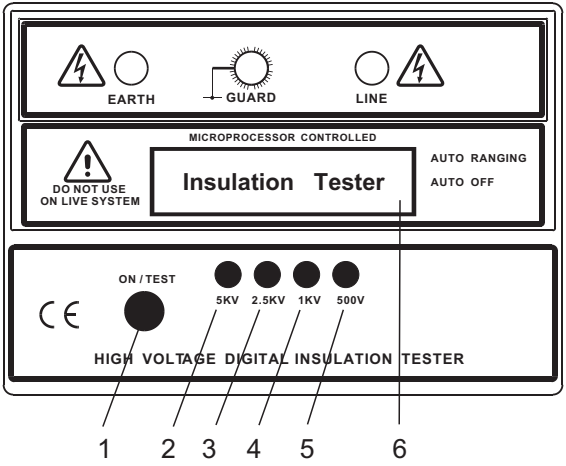
Test Voltage	500V DC	1kV DC	2.5kV DC	5kV DC
Measuring Range	25GΩ	50GΩ	125GΩ	250GΩ
	Auto Ranging			
Accuracy	5% ±2 Digits			
Power	8 x 1.5V Alkaline Battery			

Model：Ⅱ

Test Voltage	1kV DC	2.5kV DC	5kV DC	10kV DC
Measuring Range	50GΩ	125GΩ	250GΩ	500GΩ
	Auto Ranging			
Accuracy	5% ±2 Digits			
Power	8 x 1.5V Alkaline Battery			

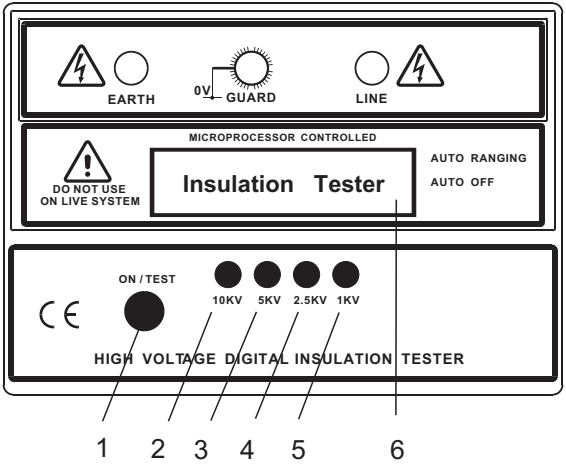
6.Instrument Layout

Model：I



1. On switch.
   Test button switch.
   ENER-SAVE ™ function switch.
2. 5000V test selection button.
3. 2500V test selection button.
4. 1000V test selection button.
5. 500V test selection button.
6. ENER-SAVE ™ Intelligent L.C.D.

Model：Ⅱ



1. On switch.
   Test button switch.
   ENER-SAVE ™ function switch.
2. 10000V test selection button.
3. 5000V test selection button.
4. 2500V test selection button.
5. 1000V test selection button..
6. ENER-SAVE ™ Intelligent L.C.D.

7.Functions

7.1 Power-On
To switch the instrument on, press the "ON" button (1). The L.C.D. will display the SEW Model. Then follow interactive instructions on L.C.D.

7.2 Insulation resistance measurement @ 10kV DC: To select 10kV DC test voltage, press 10kV button (2) (only available on Model：Ⅱ).

7.3 Insulation resistance measurement @ 5kV DC: To select 5kV DC test voltage, press 5kV button (2) on model Model：Ⅰ and (3) on model Model：Ⅱ.

7.4 Insulation resistance measurement @ 2.5kV DC: To select 2.5kV DC test voltage, press 2.5kV button (3) on model Model：Ⅰ and (4) on model Model：Ⅱ.

7.5 Insulation resistance measurement @ 1kV DC: To select 1kV DC test voltage, press 1kV button (4) on model Model：Ⅰ and (5) on model Model：Ⅱ.

7.6 Insulation resistance measurement @ 500V DC: To select 500V DC test voltage, press 500V button (5) on model Model：Ⅰ (only available on Model：Ⅰ).

7.7 ENER-SAVE™ Mode
Saves battery life by automatically turning the instrument to low consumption (reducing the test duration).
Default mode.
Enabled when pressing the TEST button (1) for less than 3 seconds.
Disabled when pressing the TEST button (1) for more than 3 seconds.
When disabled, the instrument operates in continuous mode.

7.8 Voltage Output Bar-Graph.
The bar-graph displays the voltage present on the

leads. It also displays the voltage charging a cable or capacitive system under test and displays the decay during the automatic capacitive discharge of the system under test.

7.9 Auto-Low Resistance Detect.
While in insulation test mode and if the L.C.D. displays "LOW MΩ", stop the test immediately. This could mean that the insulation has a breakdown, thus, you are now trying to inject a very high voltage on a short circuit.

7.10 Timer
The duration of the test is shown on the L.C.D. This is particularly useful to verify that insulation does not break down within a certain time.

7.11 STOP Test
To stop the test in progress, press the TEST button (1). The test will immediately stop and the instrument will enable the ENER- SAVE™ mode automatically.

7.12 Auto-Stop.
Should the operator leave the instrument in the test mode with the ENER-SAVE™ disabled, the instrument will automatically stop the test after a duration of 99.9 seconds. (Auto-off still applies.)

7.13 Auto Live / Voltage Warning.
Should the leads be placed onto a live system before starting the test, a warning beeper will be automatically activated and, the instrument will display "Live Warning ..... Circuit Live ....." message.
Allow the instrument to discharge the circuit (in the case of capacitive system) o r make sure that the circuit under test is not live.

7.14 Auto-Discharge.
At auto-stop or test completion, the instrument automatically discharges the system under insulation test so that the dangerous high voltage is discharged. The auto-discharge can be observed on the L.C.D. So that the operator only removes the leads when the discharge is completed. During discharge, a beep occurs so that the user waits for the complete discharge of the system under test.
This is indicated by a one-second long beep accompanied by the "HOLD" message on the display. DO NOT REMOVE LEADS UNTIL THE HOLD MESSAGE APPEARS ON THE DISPLAY.

7.15 "Replace Battery" Warning Indicator.
If the battery energy is detected to be too low, the instrument will display the "Replace Battery" warning and automatically shut-down.
The instrument cannot operate properly with a low battery.
Use only Alkaline batteries.

7.16 Auto-Off.
The Auto-off is annunciated by a one-second beep.
The Auto-off timer is automatically enabled.

LIVE WARNING MESSAGE / BEEPER

To clear Live Warning Message / Beeper
Remove leads from circuit under test and push "TEST" button until display clears.

8.Preparation for Measurement

Before testing always check the following:

At power "ON", read the display to make sure the "Replace Battery" message is not displayed.

There is no visual damage to the instrument or test leads.

Test Leads continuity:
Using an ohm-meter, check the resistance/continuity of the leads.

9.Battery & Fuse Replacement

The digital insulation tester's battery is situated under the tester.

The ENER-SAVE™ display will indicate when the batteries need to be Replaced.

Disconnect the test leads from the instrument, remove the battery cover and the batteries.

Replace with eight Alkaline 1.5V R6 or L6 batteries, taking care to observe correct polarity.

Replace battery holder and the battery cover.

10.Calibration & Servicing

Both calibration and servicing are performed at our facilities.
Contact our company or your nearest distributor about calibration certificate and servicing. Before returning the instrument, ensure that the leads have been checked for continuity and signs of damage and the batteries are in good condition.

11.Insulation Resistance Testing with Model：I

Warning : Insulation test should be conducted on circuits that are de-energized. Ensure circuits are not live before commencing testing.

Model：I

Turn instrument "ON" by pressing the "ON" button.
The L.C.D. display will advance to the following screen.

Select Test →5KV
2.5KV, 1KV, or 500V

Select insulation test voltage, for example, 500V.
The following screen will confirm your selection.

500V 25GΩ
Selected

Follow the interactive screen.

Connect Leads,.....
Testing for Live.

If the system you are trying to test is not voltage free, the beep will sound.
The following warning screen will appear. Remove your leads immediately.

LIVE WARNING ...
Circuit Live !!!

If the system is not live, the test will start and the following screen will appear, indicating the test duration and other factors.

R=1253.0MΩ 85.2s
0 →▮▮▮▮▮▮▮▮▮▮▮▮▮← 500V

If either the operator or the instrument stops the test, the latest result will remain on the L.C.D. The instrument switches off after 45 to 60 sec.

R=1253.0MΩ 85.2s
0 → HOLD ← 500V

12.Insulation Resistance Testing with Model：Ⅱ

Warning : Insulation test should be conducted on circuits that are de-energized. Ensure circuits are not live before commencing testing.

Model：Ⅱ

Turn instrument "ON" by pressing the "ON" button.
The L.C.D. display will advance to the following screen.

Select Test →10KV 5KV, 2.5KV, or 1KV

Select insulation test voltage, for example, 10000V.
The following screen will confirm your selection.

10KV 500GΩ Selected

Follow the interactive screen.

Connect Leads,..... Testing for Live.

If the system you are trying to test is not voltage free, the beep will sound.
The following warning screen will appear. Remove your leads immediately.

LIVE WARNING ... Circuit Live !!!

If the system is not live, the test will start and the following screen will appear, indicating the test duration and other factors.

R=125340MΩ 85.2s 0→▮▮▮▮▮▮▮▮▮▮▮▮▮←10KV

If either the operator or the instrument stops the test, the latest result will remain on the L.C.D. The instrument switches off after 45 to 60 sec.

R=125340MΩ 85.2s 0 → HOLD ← 10KV

13.Cleaning & Storage

WARNING

To avoid electrical shock or damage to the meter, do not get water inside the case.

Periodically wipe the case with a damp cloth and detergent. Do not use abrasives or solvents.