PeakTech
2680 A Insulation Tester

PeakTech 2680 A Insulation Tester Instruction Manual

Contents

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Safety precautions

This product complies with the requirements of the following directives of the European Union for CE conformity: 2014/30/EU (electromagnetic compatibility), 2014/35/EU (low voltage), 2011/65/EU (RoHS). Overvoltage category III 1000 V / IV 600 V; pollution degree 2.

- **CAT I**: For signal level, telecommunication, electronic with small transient overvoltage
- **CAT II**: For local level, appliances, main wall outlets, portable equipment
- **CAT III**: Distribution level, fixed installation, with smaller transient overvoltages than CAT IV.
- **CAT IV**: Units and installations, which are supplied overhead lines, which are stand in a risk of persuade of lightning, i.e. main switches on current input, overvoltage-diverter, current use counter.

To ensure the safe operation of the equipment and eliminate the danger of serious injury due to short circuits (arcing), the following safety precautions must be observed. Damages resulting from failure to observe these safety precautions are exempt from any legal claims whatever.

- Do not subject the equipment to direct sunlight, extreme temperatures, extreme humidity or dampness
- Do not operate the equipment near strong magnetic fields (motors, transformers, etc.)
- Do not subject the equipment to shocks or strong vibrations
- Keep hot soldering iron or guns away from the equipment
- Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurement)
- Do not modify the equipment in any way
- Opening the equipment and service- and repair work must only be performed by qualified service personnel
- Measuring instruments don’t belong to children’s hands!

Cleaning the cabinet
Clean only with a damp soft cloth and a commercially available mild household cleanser. Ensure that no water gets inside the equipment to prevent possible shorts and damage to the equipment.By connecting the device to a live circuit or a live conductor, a pulsating alarm signal sounds. When you hear this signal, immediately disconnect the insulation measuring device from the circuit or the conductor. In addition to the alarm signal, a warning message appears on the LCD display.

Meaning of the symbols


Double isolated


Caution! High voltage, risk of electric


Attention! Read the operating instructions before using the device

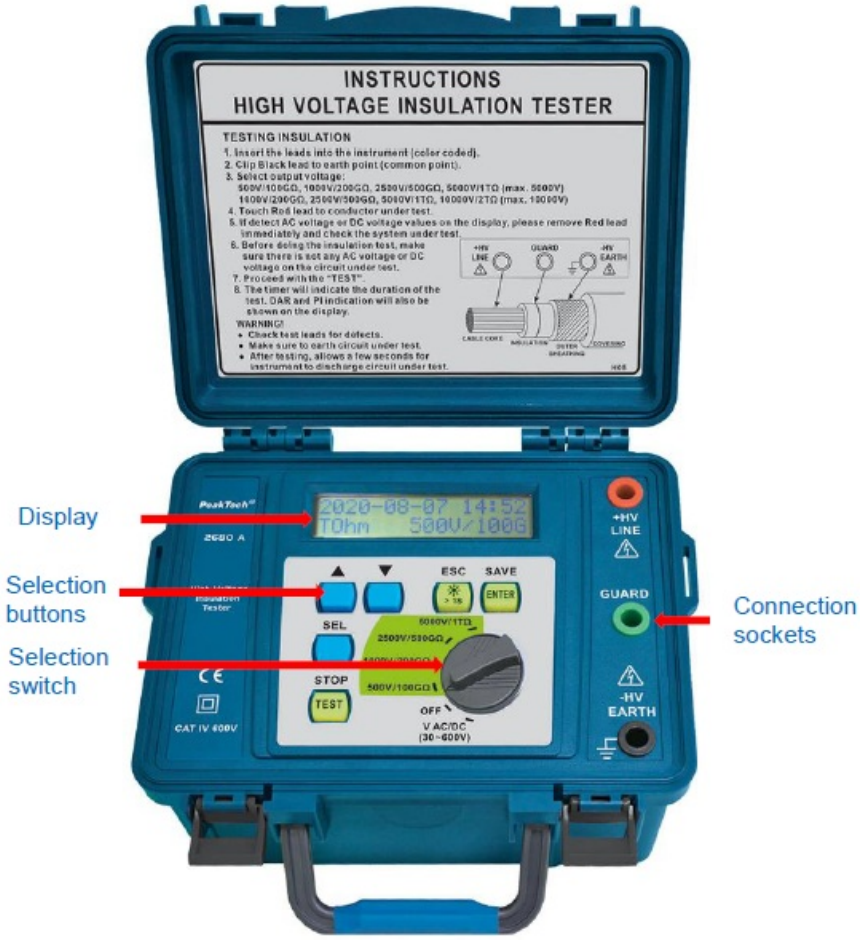

Earth Connention

Introduction

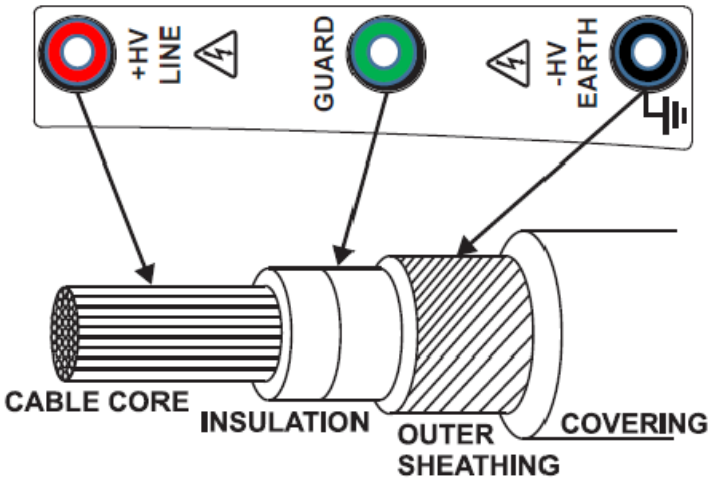
The P 2680 A and the P 2685 A are insulation measuring devices which are used to test the insulation of various devices and components. The many features of the insulation measuring devices such as The AC / DC voltmeter, the alarm tone and warning display when voltage is applied, the possibility of setting the polarization index and the dielectric absorption ratio and much more, make the insulation measuring devices the ideal companion for every technician.

- Voltage measurement up to 600 Volt
- Short circuit current up to 5 mA
- Insulation measurement up to 1 TΩ (P 2680 A) / 2 TΩ (P 2685 A)
- Insulation measurement voltage: 5 kV (P 2680 A) 10 kV (P 2685 A)
- PI (polarization index)
- DAR (dielectric absorption)
- Automatic range selection
- Auto Hold Function
- Adjustable test duration
- Internal memory up to 200 measurements

Controls

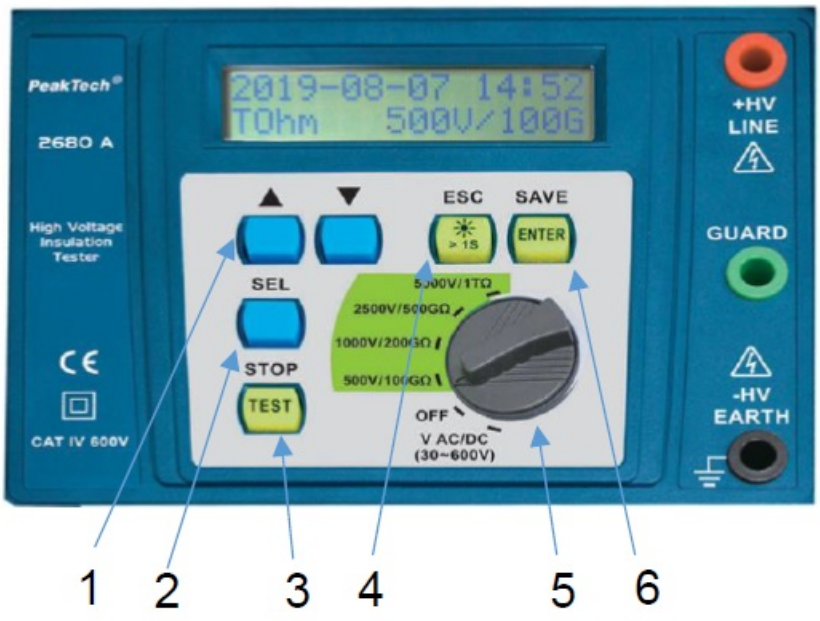


Connections



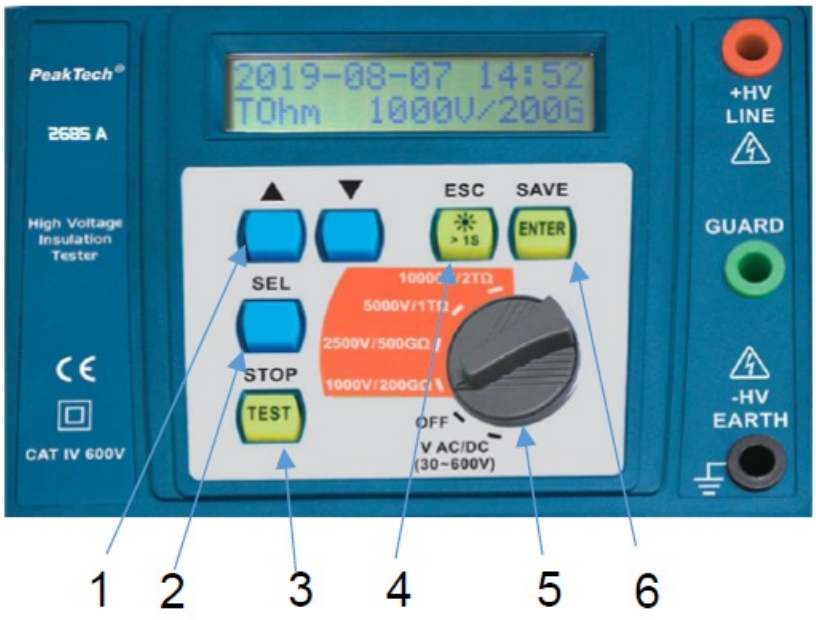
Cable core +HV	= Innenleiter +HV LINE
0 V Guard (Insualtion)	= 0 Volt Schutz GUARD (Isolierung)
Line (outer sheating) -HV	= Außenleiter/Schirmung –HV EARTH
Covering	= Äußerer Kabelmantel

PeakTech 2680 A



1. Buttons for menu selection
2. Button to open the menu items
3. Test button (to start and end the test)
4. Esc button and button for backlight
5. Rotary switch for the measurement functions
6. Enter key and save key for saving measured values

PeakTech 2685 A



1. Buttons for menu selection
2. Button to open the menu items
3. Test button (to start and end the test)
4. Esc button and button for backlight
5. Rotary switch for the measurement functions
6. Enter key and save key for saving measured values

- Do not use on live system

Measurement method

Each of the insulation testers PeakTech 2680 A and 2685 A, offer five main functions and four auxiliary functions.

Main function PeakTech 2680 A

1. 500 V / 100 GΩ Test
2. 1000V / 200 GΩ Test
3. 2500V / 500 GΩ Test
4. 5000V / 1 TΩ Test
5. AC/DC Voltage measurement

Auxiliary function:

- Date / time setting
- Setting of the measurement time
- Saving of the measured values
- Clearing the memory

Main function PeakTech 2685 A:

1. 1000V / 200 GΩ Test
2. 2500V / 500 GΩ Test
3. 5000V / 1 TΩ Test
4. 10000V / 2 TΩ Test
5. AC/DC Voltage measurement

Auxiliary function

- Date/time setting
- Setting of the measurement time
- Saving of the measured values
- Clearing the memory

Preparation for the measurement

Attention
Carry out insulation measurements on voltage-free circuits only. Before connecting the test leads, always make sure that the circuit to be measured is voltage-free. Always carry out the following checks before measuring:

- After turning on the device, check the LCD display (the „Replace Battery“ Warning must not light up in the display)
- Check the device and the test leads for visible damage. Do not connect kinked or damaged test leads to the

device.

- Check the continuity and resistance of the test leads with an ohmmeter.

Insulation measurement
The insulation measuring device is switched on by turning the main selector switch to a measuring function. The start screen shows the battery voltage, the current version and the maximum test voltage of the measuring device. After the start up screen the preset measurement function is shown on the LCD screen. If the test leads are applied to the object to be measured and a voltage is detected by the device, the warning “HV Warning” lights up on the display. To measure the insulation resistance, select the desired measuring function using the rotary selector switch. Connect the test leads to the object to be measured and ensure that the connections have been made correctly. To start this measurement, press the test button. The device reminds you to ensure that the test leads have been attached to the device under test. To start the measurement, press the test button again. The test is now carried out continuously, depending on the previously settled test time (see 6.2 Test time setting). After the measurement has been taken, the insulation measuring device discharges itself and the measured values are shown on the display. These can be saved by pressing the Enter / Save button (see 6.3 Saving measured values). You reach the main screen by pressing the ESC key. The measurement can be stopped or canceled at any time by pressing the Test / Stop button.

AC / DC voltage measurement
With the insulation measuring devices PeakTech 2680 A and PeakTech 2685 A you are able to measure AC / DC voltage in the range of 30 – 600 volts. Set the selector switch to the measurement function V AC / DC (30 ~ 600V). Connect the test leads to the +HV and –HV sockets. Depending on the measurement, the display shows the DC voltage value and for AC voltage measurements, the measured frequency is shown at the same time.

Secondary functions of the insulation measuring devices

In addition to the two main functions, the insulation measuring devices also have other setting options that can be made at any time.

Date / time settings
Switch on the device by setting the selector switch to a measurement function. Now press the SEL key to open the submenu of the measuring device. To set the date / time, use the arrow buttons to coordinate through the menu. You can find the date and time setting in menu 1. Press the Enter key to access the setting function. There you can change the date and time by pressing the arrow keys. By pressing the SEL button again, you select the next setting value of the Date / Time setting menu function. After the data has been adjusted, press the Enter key to confirm the setting.

Test time setting
Switch on the device by setting the selector switch to a measurement function. Now press the SEL key to open the submenu of the measuring device. Select menu 2 for setting the test time. With the arrow buttons you can set the time between 1 and 30 minutes. To confirm the selected value, press the Enter key.

Saving measured values
To save the measured values, press the Enter / Save button after the measured values have been determined. The data is stored and saved in the internal memory. These measured values can be displayed at any time using the Display measured value function.

Display of saved values
The saved measured values can be called up at any time in the submenu. Open menu 3. (Log Display). The saved measured values are now displayed. By pressing the Enter key you are able to scroll through the saved values of a memory set. The following values are displayed here:

- Measuring function (e.g. 1kV)
- Determined insulation resistance

- DAR (Dielectric absorption ratio)
- PI (Polarization index)
- Output voltage
- Date and time

The Esc key takes you back to the submenu.

Clearing the memory
You can use the Log clearing function to delete all measured values that have been saved. To do this, select the submenu item 4. After the sub-item has been selected by pressing the Enter key. After pressing the Enter key, the display shows whether you really want to delete all stored measured values. You can confirm this by pressing the Enter key again and all saved values will be deleted.

Display backlight
With the Esc / Backlight key, it is possible to switch the display lighting on and off. To do this, press the button for approx. 2 seconds and the display will light up. To switch off the backlight, press the button again for approx. 2 seconds.

Automatic switch – off
The insulation measuring device has an automatic switch-off. This turns off the device after approx. 3 minutes without using the measuring device or taking a measurement.

Declaration DAR and PI

DAR: Dielectric absorption ratio
The dielectric discharge test makes statements about self-discharge and is also used for capacitors. In electrical systems and devices with insulating materials, it can happen that the dielectric absorption current decreases rapidly. Using this measurement, it is possible to determine the insulation resistance of the test object by two measurements, which are carried out using the DAR principle. A measurement is made after 30 and 60 seconds.

The calculation of the DAR is as follows:

DAR = Insulation resistance after 60 seconds / Insulation resistance after 30 seconds

DAR value	**Insulation quality**
<1,25	poor
<1,6	OK
>1,6	Very good

The value of the DAR has no unit.

Polarization index
The polarization index is a measurement method that considers the measurement over time. The measurements for calculating the PI are recorded after 1 minute and the second measurement is taken after 10 minutes. This long measurement time makes it possible to determine the quality of the isolator. For the polarization index, the general rule is that a PI of 4 or higher indicates very good insulation of the measurement object. A PI of 2 or lower indicates poor insulation of the measurement object. A PI between 4 and 2 can indicate possible damage to the isolator.

Important: The measurement of the polarization index is only suitable for solid insulation materials! The

calculation of the PI is as follows: PI = Insulation resistance after 10 minutes / Insulation resistance after 1 minute
The value of the PI has no unit.

Specification

Test voltage	**P 2680A:** 500V, 1000V, 2500V, 5000V **P 2685A:** 1000V, 2500V, 5000V, 10000V
Insulation resistance	**P 2680A:** 100 GΩ, 500 GΩ, 200 GΩ, 1 TΩ **P 2685A:** 200 GΩ, 500 GΩ, 1 TΩ, 2 TΩ
Accuracy	±(5.0%rdg + 5dgt)
Resolution	**P 2680A:** 1000 MΩ:1 MΩ, 10 GΩ:0,01 GΩ, 100 GΩ:0,1 GΩ, 1 TΩ:1 GΩ **P 2685A:** 1000 MΩ:1 MΩ, 10 GΩ:0,01 GΩ, 100 GΩ:0,1 GΩ, 1 TΩ:1 GΩ, 2 TΩ: 10GΩ
Short circuit current	Up to 5 mA
PI (Polarization index)	Function available
DAR (Dielectric absorption ratio)	Function available
Voltage measurement	ACV: 30…600V (50/60Hz) DCV: 30…600V Accuracy: ± (2.0%rdg + 3dgt) Resolution: 1V
Current measurement	0,5 nA…0,55 mA (Depending on the insulation resistance)
Power supply	8 x 1,5V „C“ Alkaline batteries 1 x 3V Button Cell (CR2032)
Dimensions (WxHxD)	250 x 127 x 190 mm

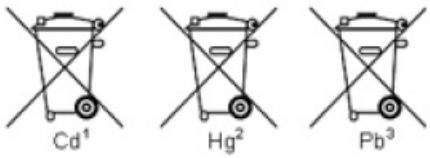
Weight	Approx. 2120 Gramm
Safety standards	IEC/EN 61010-1 CAT IV 600V IEC/EN 61010-2-030 EN 61326-1
IP protection class	IP 65 (with closed housing)
Accessories	Manual Test leads Alligator clips Batteries Shoulder strap Carrying case

Replacing the batteries

The battery compartment is on the right side of the device. When the “Batt. Low “is shown, it is advisable to replace the empty batteries. To do this, proceed as follows:

- Remove test leads from the device
- Switch the device off
- Remove the battery compartment
- Remove empty batteries
- Insert 8 new 1,5 V Alkaline – C Batteries
- Pay attention to the polarity of the batteries
- Close the battery compartment

Notification about the Battery Regulation
The delivery of many devices includes batteries, which for example serve to operate the remote control. There also could be batteries or accumulators built into the device itself. In connection with the sale of these batteries or accumulators, we are obliged under the Battery Regulations to notify our customers of the following: Please dispose of old batteries at a council collection point or return them to a local shop at no cost. The disposal in domestic refuse is strictly forbidden according to the Battery Regulations. You can return used batteries obtained from us at no charge at the address on the last side in this manual or by posting with sufficient stamps. Contaminated batteries shall be marked with a symbol consisting of a crossed-out refuse bin and the chemical symbol (Cd, Hg or Pb) of the heavy metal which is responsible for the classification as a pollutant:



1. “Cd” means cadmium.
2. “Hg” means mercury.
3. “Pb” stands for lead.

recommend calibrating the unit again, after 1 year. © PeakTech® 06/2021/Lie./PL

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Documents / Resources

	PeakTech 2680 A Insulation Tester [pdf] Instruction Manual 2680 A, 2685 A, 2680 A Insulation Tester, 2680 A, Insulation Tester, Tester

References

- User Manual