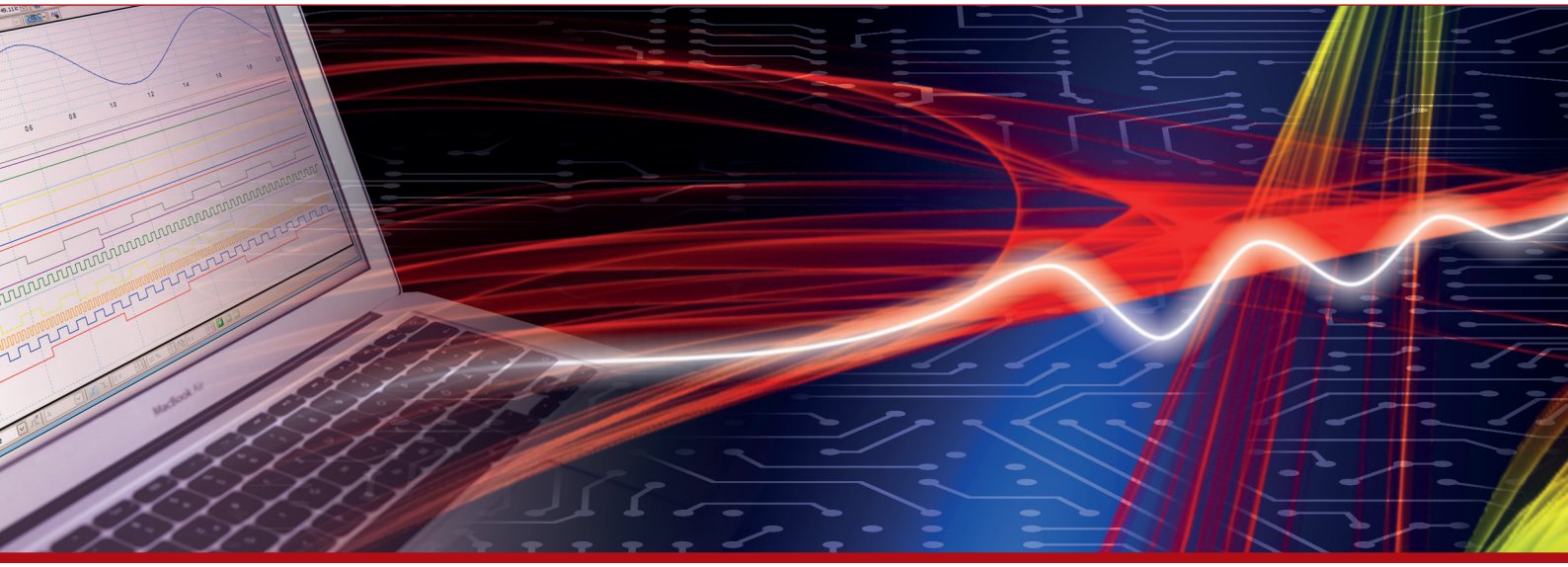
# Product Datasheet - Technical Specifications



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PeakTech®

Prüf- und Messtechnik

Spitzentechnologie, die überzeugt


# PeakTech® 2680 / 2685

## Bedienungsanleitung/
## Operation Manual

## Isolationstester/
## Insulation Tester

# 1. Safety Precautions

This product complies with the requirements of the following European Community Directives: 2004/108/EC (Electromagnetic Compatibility) and 2006/95/EC (Low Voltage) as amended by 2004/22/EC (CE-Marking). Overvoltage category III; pollution degree 2.

To ensure 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 exceed the maximum permissible input ratings (danger of serious injury and/or destruction of the equipment).
* This instrument must not be used on live circuits. Ensure all circuits are de-energized before testing.
* 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.
* To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.
* Check test leads and probes for faulty insulation or bare wires before connection to the equipment.

* To avoid electric shock, do not operate this product in wet or damp conditions. Conduct measuring works only in dry clothing and rubber shoes, i. e. on isolating mats.
* Never touch the tips of the test leads or probe.
* Comply with the warning labels and other info on the equipment.
* Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
* Do not subject the equipment to shocks or strong vibrations.
* Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
* Keep hot soldering irons or guns away from the equipment.
* Allow the equipment to stabilize at room temperature before taking up measurement (important for exact measurements).
* Replace the battery as soon as the battery indicator “BAT” appears. With a low battery, the meter might produce false reading that can lead to electric shock and personal injury.
* Fetch out the battery when the meter will not be used for long period.
* Periodically wipe the cabinet with a damp cloth and mid detergent. Do not use abrasives or solvents.
* The meter is suitable for indoor use only
* Do not operate the meter before the cabinet has been closed and screwed safely as terminal can carry voltage.
* Do not store the meter in a place of explosive, inflammable substances.
* 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 hands.**

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.

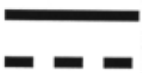
### 1.1. Safety Symbols

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 *PeakTech*® 2680 and 2685

### 2.1. Four voltages

- 500 V, 1 kV, 2,5 kV, 5 kV (***PeakTech***® 2680)
- 1 kV, 2,5 kV, 5 kV, 10 kV (***PeakTech***® 2685)

* 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.
* These models *PeakTech*® 2680/2685 are designed for measuring insulation in applications as follows: switch board insulation, Insulation between bus bars, Insulation an vacuum relays, insulation on HV contactors, insulation of insulators, insulation HV fuses holders and insulation resistance of chemical and paint material.

## 3. Features

* 2 lines x 16 characters large L.C.D.
* Four insulation test voltage
* Operating temperature: 0-40°C < 80%

***PeakTech***® 2680:

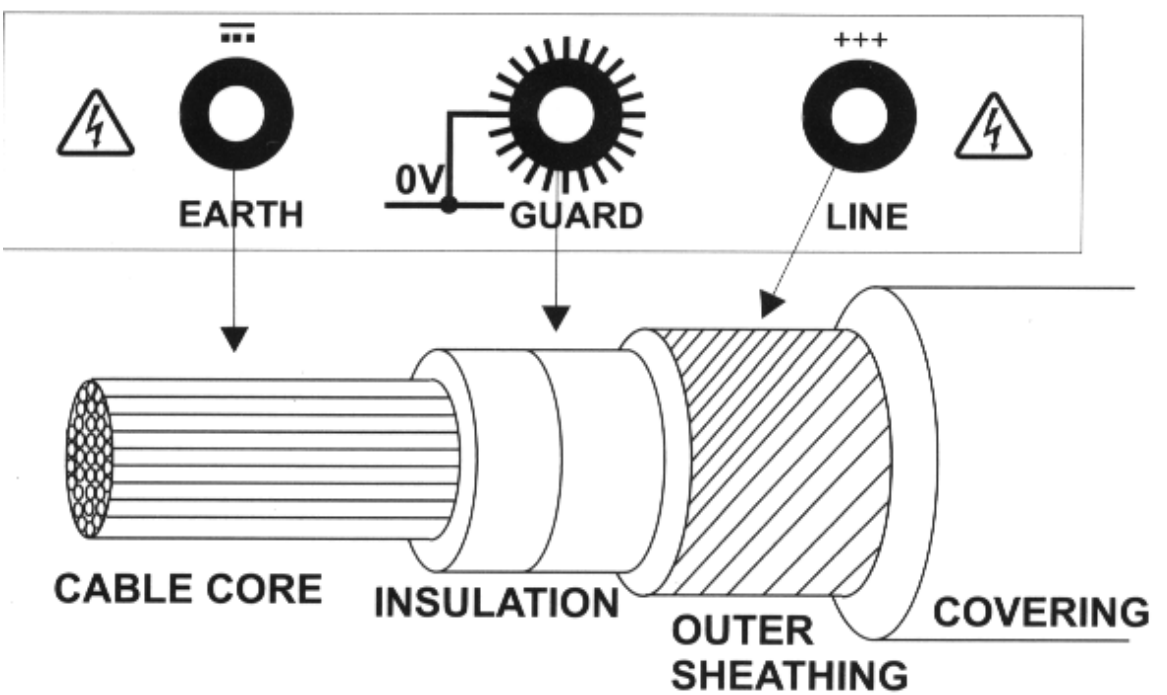
1. 500 V DC - 30.000 MΩ
2. 1000 V DC - 60.000 MΩ
3. 2500 V DC - 150.000 MΩ
4. 5000 V DC - 300.000 MΩ

***PeakTech***® 2685:

1. 1.000 V DC - 60.000 MΩ
2. 2.500 V DC - 150.000 MΩ
3. 5.000 V DC - 300.000 MΩ
4. 10.000 V DC - 600.000 MΩ

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

# 4. Connections



# 5. Specifications

***PeakTech***® 2680:

| | | | | |
|---|---|---|---|---|
| Test voltage | 500 V DC (+/- 10%) | 1 kV DC (+/-10%) | | |
| | 2,5 kV DC (+/- 5%) | 5 kV DC (+/- 5%) | | |
| Measuring | 30 GΩ | 60 GΩ | 150 GΩ | 300 GΩ |

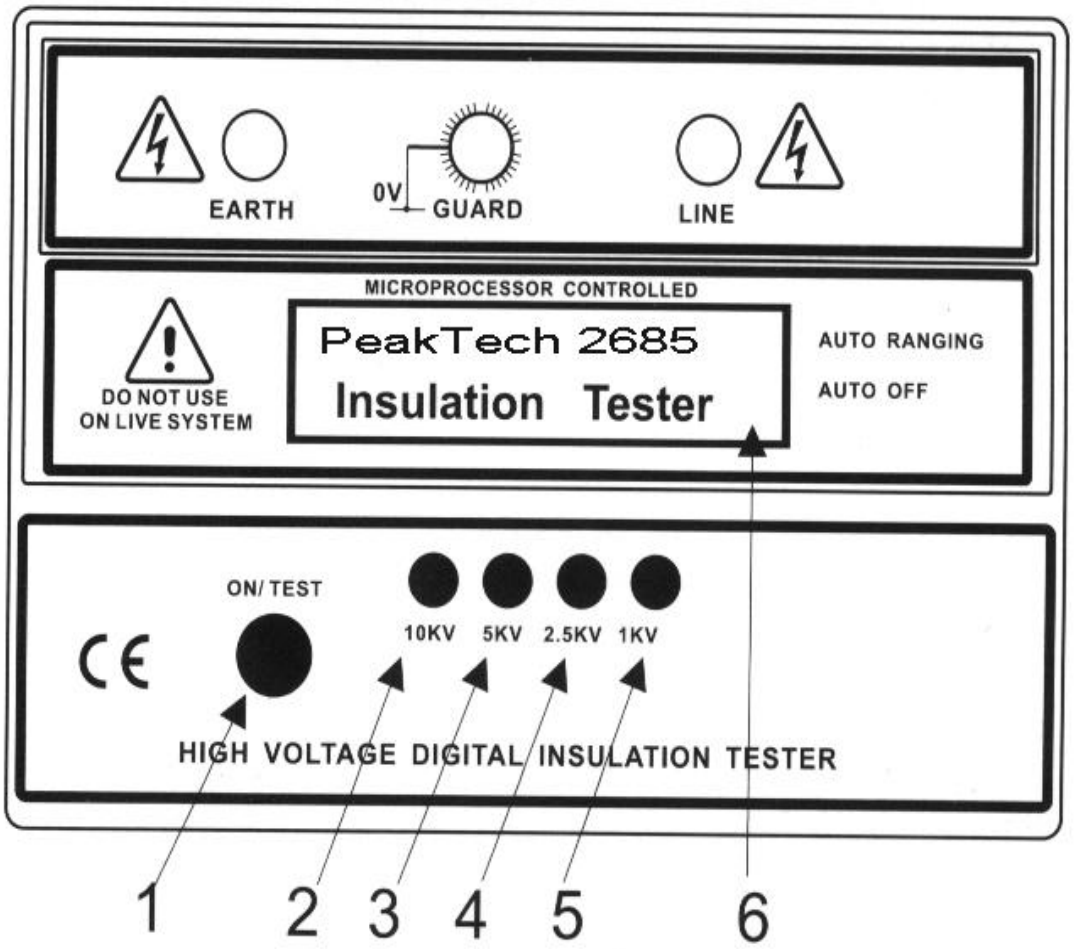
***PeakTech***® 2685:

| | | | | |
|---|---|---|---|---|
| Test voltage | 1 kV DC (+/-10%) | 2,5 kV DC (+/- 5%) | | |
| | 5 kV DC (+/- 5%) | 10 kV DC (+/-5%) | | |
| Measuring | 60 GΩ | 150 GΩ | 300 GΩ | 600 GΩ |

***PeakTech***® 2680 + 2685:

| | |
|---|---|
| Range | Auto ranging |
| Accuracy | 5% +/- 2 digits |
| Power | 8 x 1,5 V Alkaline batteries |

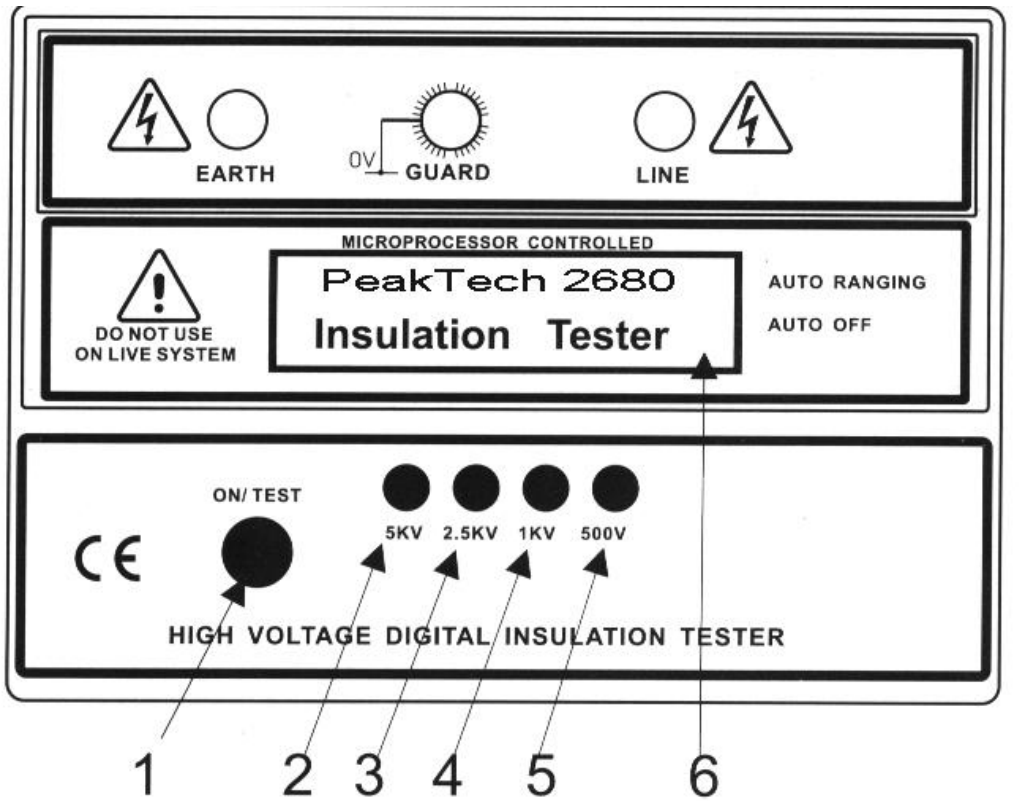
# 6. Instrument Layout




***PeakTech***® 2680:

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

***PeakTech***® 2685:




1. On-switch. Test button switch. ENER SAVE™ function switch.
2. 10000 V test selection button.
3. 5000 V test selection button.
4. 2500 V test selection button.
5. 1000 V 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 model. The following inter-active instructions on L.C.D.

## 7.2. Insulation resistance measurement @ 10 kV DC

To select 10 kV DC test voltage, press 10 kV button (2) (only available on ***PeakTech***® 2685)

## 7.3. Insulation resistance measurement @ 5 kV DC

To select 5 kV DC test voltage, press 5 kV button (2) on ***PeakTech***® 2680 and (3) on ***PeakTech***® 2685.

## 7.4. Insulation resistance measurement @ 2,5 kV DC

To select 2,5 kV DC test voltage, press 2,5 kV button (3) on ***PeakTech***® 2680 and (4) on ***PeakTech***® 2685.

## 7.5. Insulation resistance measurement @ 1 kV DC

To select 1 kV DC test voltage, press 1 kV button (4) on ***PeakTech***® 2680 and (5) on ***PeakTech***® 2685.

## 7.6. Insulation resistance measurement @ 500 V DC

To select 500 V DC test voltage, press 500 V button (5) on ***PeakTech***® 2680 (only available on ***PeakTech***® 2680).

## 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. Immediately disconnect the instrument from the circuit and discharge the circuit (in the case of capacitive system) or 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 complete. 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 shutdown. 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.**

* ENERSAVE™-Funktion zur Verlängerung der Batterie-lebensdauer.
* Balkengrafik zur Anzeige der Testspannung (Anstieg und Abfall) der Batterielebensdauer während der Messung.

# 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. Insulation resistance testing with *PeakTech*® 2680

**Warning!** Insulation test should be conducted on circuits that are de-engergized. Ensure circuits are not live before commencing testing.

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

**Select Test → 5 kV**
**2,5 kV, 1 kV, 500 V**

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

**500 V 30 GΩ**
**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 = 1253,0 MΩ 85,2s**
**0 → IIIIIIIII ← 500 V**

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 = 1253,0 MΩ 85,2s**
**0 → HOLD ← 500 V**

# 10. Insulation resistance testing with *PeakTech*® 2685

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

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

| |
|---|
| **Select Test → 10 kV**<br>**5 kV, 2,5 kV, 1 kV** |

Selected insulation test voltage, for example 10.000 V. The following screen will confirm your selection:

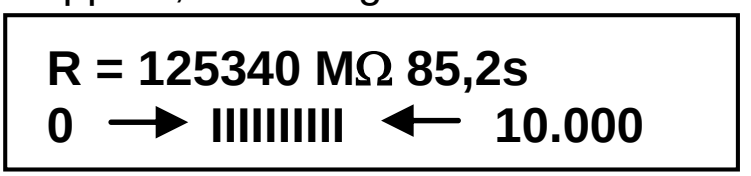
| |
|---|
| **10 kV 600 GΩ**<br>**Selected** |

Follow the interactive screen.

| |
|---|
| **Connect leads, .....**<br>**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.


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




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.


## 11. Battery replacement

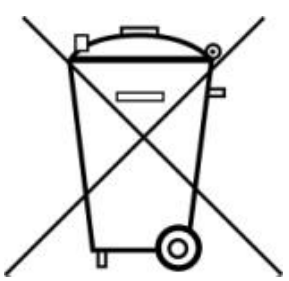
* The digital insulation tester´s battery is situated under the tester.
* The ENER-SAFE™ display will indicate when the batteries need to be replaced.
* Disconnect the test leads from the instrument, remove the battery cover and the batteries.
* Replace with eight Alkaline 1,5 V R6 or L6 batteries, taking care to observe correct polarity

* Replace battery holder and the battery cover.

Batteries, which are used up dispose duly. Used up batteries are hazardous and must be given in the for this being supposed collective container.

**Statutory Notification about the Battery Regulations**

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.



Batteries, which contain harmful substances, are marked with the symbol of a crossed-out waste bin, similar to the illustration shown left. Under the waste bin symbol is the chemical symbol for the harmful substance, e.g. „Cd“ for cadmium, „Pb“ stands for lead and „Hg“ for mercury.

You can obtain further information about the Battery Regulations from the Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit *(Federal Ministry of Environment, Nature Conservation and Reactor Safety)*.

## 12. Calibration & Serving

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.

## 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.

*This manual is according the latest technical knowing. Technical alterations reserved.*

*We herewith confirm that the units are calibrated by the factory according to the specifications as per the technical specifications.*

*We recommend to calibrate the unit again, after 1 year.*