



PeakTech 3690 5 In 1 Digital Multitester Instruction Manual

[Home](#) » [PeakTech](#) » PeakTech 3690 5 In 1 Digital Multitester Instruction Manual 



Unser wert ist messbar...
3690 5 In 1 Digital Multitester
Instruction Manual



PeakTech® 3690
Operation manual
„5 in 1“ Digital-Multitester

Contents

- 1 Safety precautions
- 2 Features
- 3 Front Panel Description
- 4 Specifications
- 5 General Characteristics
- 6 Operation
- 7 Maintenance
- 8 Documents / Resources
- 8.1 References

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 600V; pollution degree 2.

CAT I: For signal level, telecommunication, electronic with small transient over voltage

CAT II: For local level, appliances, main wall outlets, portable equipment

CAT III: Supplied from a cable under earth; fixed installed switches, automatic cut-off or main plugs

CAT IV: Units and installations, which are supplied overhead lines, which are stand in a risk of persuade of a lightning, i.e. main-switches on current input, overvoltage-diverter, current use counter.

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.

General:

- Read these operating instructions carefully and make them available to subsequent users.
- It is essential to observe the warning notices on the device, do not cover or remove them.
- Pay attention to the use of the multimeter and only use it in the suitable overvoltage category.
- Familiarize yourself with the functions of the measuring device and its accessories before you carry out the first measurement.
- Do not operate the measuring device unsupervised or only protected against unauthorized access.
- Use the multimeter only for the purpose of its determination and pay particular attention to warning notices on the device and information on the maximum input values.

Electric safety:

- Voltages over 25 VAC or 60 VDC are generally considered dangerous voltages.
- Only work on dangerous voltages by or under the supervision of qualified personnel.
- When working on dangerous voltages, wear suitable protective equipment and observe the relevant safety rules.
- Do not exceed the maximum permissible input values under any circumstances (risk of serious injury and / or destruction of the device)
- Pay special attention to the correct connection of the test leads depending on the measuring function in order to avoid a short circuit in the device. Never apply a voltage in parallel to the current sockets (A, mA, μ A).
- Current measurements are always carried out in series with the consumer, i.e. with the supply line disconnected.

- Remove the test probes from the measurement object before changing the measuring function.
- Never touch the bare test probes during the measurement, only hold the test leads by the handle behind the finger guard. If applicable, discharge any capacitors before measuring the circuit to be measured.
- The thermocouple for temperature measurements is made of conductive material. To avoid electric shock, never connect it with a live conductor.

Measurement environment:

- Avoid any proximity to explosive and flammable substances, gases and dust. An electric spark could lead to an explosion or deflagration – danger to life!
- Do not carry out measurements in corrosive environments, the device could be damaged or contact points inside and outside the device could corrode.
- Avoid working in environments with high interference frequencies, high-energy circuits or strong magnetic fields, as these can negatively affect the multimeter.
- Avoid storage and use in extremely cold, humid or hot environments, as well as long-term exposure to direct sunlight.
- Only use devices in damp or dusty environments in accordance with their IP protection class.
- If no IP protection class is specified, only use the device in dust-free and dry indoor rooms only.
- When working in damp or outside areas, pay particular attention to completely dry handles on the test leads and test probes.
- Before starting the measuring operation, the device should be stabilized at the ambient temperature (important when transporting from cold to warm rooms and vice versa)

Maintenance and Care:

- Never use the device if it is not completely closed.
- Before each use, check the device and its accessories for damage to the insulation, cracks, kinks and breaks. If in doubt, do not take any measurements.
- Change the battery when a battery symbol is displayed to avoid incorrect rdg.s.
- Switch off the multimeter before changing batteries or fuses and also remove all test leads and temperature probes.
- Replace defective fuses only with a fuse that corresponds to the original value. Never short-circuit a fuse or fuse holder.
- Charge the battery or change the battery as soon as the battery symbol lights up. Insufficient battery power can lead to inaccurate measurement results. Electric shocks and physical damage can result.
- If you are not going to use the device for a longer period of time, remove the battery from the compartment.
- Have maintenance and repair work on the multimeter carried out only by qualified specialists.
- Do not lay the device upside down on the workbench or work surface to avoid damaging the control elements.
- Clean the housing regularly with a damp cloth and a mild cleaning agent. Do not use any caustic abrasives.
- Do not make any technical changes to the device.

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








1.1. Input limits

DCV	600V DC/AC rms
ACV	600V DC/AC rms
μ A/mA DC/AC	500mA/600V
10 A DC/AC	10A/ 600V
Resistance	600V DC/AC rms
Capacity	600V DC/AC rms
Frequency	600V DC/AC rms
Duty Cycle	600V DC/AC rms
Temperature	600V DC/ACrms
Diode – and Continuity-Test	600V DC/AC rms

1.2. Multimeter Safety

Be sure to follow the WARNINGS in this manual. Erroneous use may put human bodies in danger.

The following legend applied to this manual:

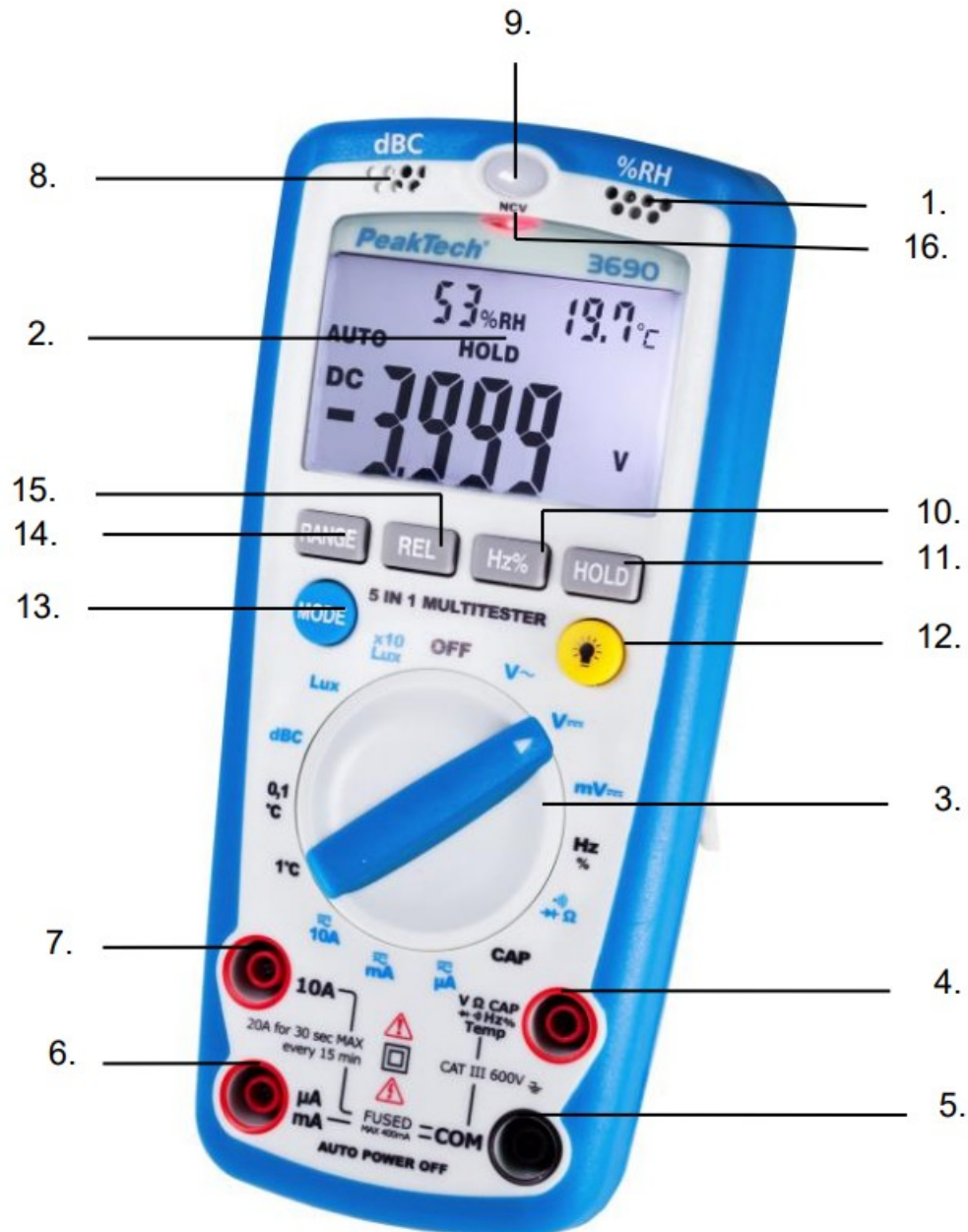
	Dangerous voltage (take care not to get an electric shock in voltage measurement)
	Ground (allowable applied voltage range between the input terminal and earth)
	Refer to the instruction manual (very important description for safe use)
	Direct current (DC)
	Alternating current (AC)
	Replace fuses with amp/voltrating shown
	Double insulation (Protection class II)

Features

- 14 positions “easy to use” rotary switch for function and range selection
- 15 mm high contrast multiline LCD with backlight
- Automatic overrange indication with the “OL” displayed
- Automatic polarity indication on DC ranges
- All ranges fully protected
- Diode testing & Audible continuity test
- Sound-Level Meter in dBC weighting
- Lux-Meter up to 40.000 Lux

- Humidity Meter with integrated sensor
- Temperature Meter for air temperature
- Temperature measurement with supplied wire probe
- High precision multimeter functions
- Complies with latest safety standards

Front Panel Description



1. Humidity & Temperature: Humidity Sensor and Semiconductor Sensor
2. LCD display: 3 4/5 digits LCD display
3. Function switch
4. V/Hz%/Ω/Cap/°C input jack
5. COM input jack
6. uA/mA input jack
7. 10A input jack
8. Microphone: Electric condenser microphone inside.

9. Photo Detector: Long life silicon photo diode inside.
10. Hz/% button
11. Hold button
12. Backlight button
13. MODE button
14. Range button

The button to select AC or DC measurement when in Voltage, Ω ranges.

15. REL button

The relative measurement feature allows you to make Measurements relative to a stored reference value. A reference voltage, current, Capacitor, etc. can be stored and measurements made in comparison to that value. The displayed value is the difference between the reference value and the measured value.

- * Perform the measurement as described in the operating instructions.
- * Press the REL button to store the reading in the display and the "REL" indicator will appear on the display.
- * The display will now indicate the difference between the stored value and the measured value.
- * Press the REL button to exit the relative mode.

16. NCV indication lamp

Specifications

Accuracies are: (% of reading + no. of digits) guaranteed for 1 year, 23°C +/- 5°, less than 75% RH

4.1. DC Voltage

Range	Resolution	Accuracy
400 mV	0,1 mV	+/-1,2% rdg. + 5 dgt.
4 V	1 mV	
40 V	10 mV	
400 V	100 mV	+/-1,8% rdg. + 4 dgt.
600 V	1 V	

Overload protection: 600V DC / ACrms

Input Impedance: 10M Ω

4.2. AC Voltage

Range	Resolution	Accuracy
400 mV	0,1 mV	+/-1,8% rdg. + 20 dgt.
4 V	1 mV	+/-1,2% rdg. + 5 dgt.
40 V	10 mV	
400 V	100 mV	+/-1,8% rdg. + 4 dgt.
600 V	1 V	+/-2,2% rdg. + 5 dgt.

Overload protection: 600V DC / ACrms

Frequency Range: 50 – 400Hz

Input Impedance: 10M Ω

4.3. DC Current

Range	Resolution	Accuracy
400 μ A	0,1 μ A	+/-1,2% rdg. + 2 dgt.
4000 μ A	1 μ A	
40 mA	10 μ A	
400 mA	100 μ A	+/-1,5% rdg. + 2 dgt.
10 A	10 mA	+/-2,2% rdg. + 5 dgt.

Overload protection: μ A/mA

Ranges: 500mA/600V 10A

Range: 10A/ 600V

4.4. AC Current

Range	Resolution	Accuracy
400 μ A	0,1 μ A	+/-1,5% rdg. + 3 dgt.
4000 μ A	1 μ A	
40 mA	10 μ A	
400 mA	100 μ A	+/-1,8% rdg. + 3 dgt.
10 A	10 mA	+/-2,2% rdg. + 6 dgt.

Overload protection: μ A/mA Ranges: 500mA/600V

10A Range: 10A/ 600V fuse (quick acting)

Frequency Range: 50 – 400 Hz

4.5. Resistance

Range	Resolution	Accuracy
400 Ω	0,1 Ω	+/-1,8% rdg. + 5 dgt.
4 k Ω	1 Ω	+/-1,5% rdg. + 2 dgt.
40 k Ω	10 Ω	
400 k Ω	100 Ω	
4 M Ω	1 k Ω	+/-2,0% rdg. + 2 dgt.
40 M Ω	10 k Ω	+/-2,5% rdg. + 2 dgt.

Test voltage: ca. 0,28V

Overload protection: 600V DC/ACrms

4.6. Capacitance

Range	Resolution	Accuracy
50 nF	10 pF	+/-5,5% rdg. + 25 dgt.
500 nF	0,1 nF	+/-3,5% rdg. + 7 dgt.
5 µF	1 nF	
50 µF	10 nF	
100 µF	100 nF	+/-5,0% rdg. + 7 dgt.

Overload protection: 600V DC/ACrms

4.7. Frequency

Range	Resolution	Accuracy
5.000 Hz	1 mHz	+/-1,5% rdg. + 3 dgt.
50.00 Hz	10 mHz	
500.0 Hz	0,1 Hz	
5.000 kHz	1 Hz	
50.00 kHz	10 Hz	
500.0 kHz	100 Hz	+/-1,5% rdg. + 4 dgt.
10.00 MHz	1 kHz	

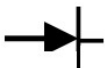

Sensitivity:

> 0,5Vrms ≤ 1MHz

> 3Vrms >1MHz

Overload Protection: 600V DC/ACrms

4.8. Diode and Continuity Test

Range	Description	Test condition
	Displaying approximate forward voltage of diode	Forward DC current: 1mA Forward DC voltage: 1,5V
	Built-in buzzer will sound if resistance is lower than 50Ω	Open circuit voltage: ~ 2,8V DC

Overload protection: 600V DC/ACrms

4.9 Duty

Range	Resolution	Accuracy
0,1 ... 99,9 %	0,1 %	+/-3,0%

4.10. Relative Humidity (on RH and humidity display)

Range	Resolution	Accuracy
33 ... 99 %	1 % RH	+/-3% + 5,5% RH

Operating temperature: 0°C ... 50°C Sampling Period: ~20s.

4.11. Temperature (room temperature)

Range	Resolution	Accuracy
0°C ... 50°C	0,1°C	+/-3% rdg + 3°C

Sampling Period: ~20s.

4.12. Temperature (thermocouple at main display)

Range	Resolution	Accuracy	
°C	0,1°C	-20°C... 400°C	+/-3% rdg. + 3°C
	1°C	-20°C...1300°C	+/-3% rdg. + 3°C

Overload protection: 600V DC/ACrms

4.13. Sound Level (dB)

Range	Resolution	Accuracy
35 – 100 dB	0,1 dB	+/-5,5 dB at 94dB, 1kHz sine wave

Typical instrument frequency range: 30Hz ~ 10kHz

Weighting: C

Time response: Fast

4.14. Luminance (LUX)


Range	Resolution	Accuracy
4000 Lux	1 Lux	+/-5,0% rdg. + 10 dgt.
40000 Lux (x10Lux)	10 Lux	

Repeatability : +/- 2%

Calibrated to standard lamp with 2856 K


Sensor: Silicon Photo-Diode

General Characteristics

Display	15mm LCD display, 3999 counts (3 3/4 digits) with automatic polarity indication
Overrange indication	“OL” Figure only in the display
Common mode voltage	max. 600V DC / 600V ACrms
Reading rate time	2,5 readings per sec. (approx.)
Temperature for guaranteed accuracy	23° C ± 5° C
Operating Temperature	0° C...40° C, 32° F... 104° F; <70% RH
Storage Temperature	-10° C...50° C, 14° F...122° F; <80% RH
Power Supply	9V-battery (NEDA 1604)
Low Battery Indication	Batterysymbol  appears on the left of display
Size (WxHxD)	78 (B) x 170 (H) x 48 (T) mm
Weight	335 g incl. Holster
Accessories	test leads, holster, battery, operation manual and temperature probe

Operation

6.1. Preliminary Note

1. Check the batteries by turning to any position. If the batteries are weak, a  sign will appear on the left of display. If this does not appear on the display proceed as below. See “Maintenance” if the batteries have to be replaced. Please use only 4mm-safety test leads to ensure immaculate functions.
2. The warning sign next to the test leads jack is for warning that the input voltage or current should not exceed the indicated values. This is to prevent damage to the internal circuitry.
3. The function switch should be set to the range which you want to test before operation.

6.2. DC Voltage Measurement

1. Connect the black test lead to the COM jack and the red test lead to the V/Ω – jack.
2. Set the Function switch to mV or V
3. Select DC by pressing the “SELECT” button.
4. Connect the test leads across the source or load under measurement.

Note:

1. If the voltage range is not known beforehand set the function switch to the highest range and work down.
2. When only the figure “OL” is displayed, overrange is being indicated and you must be set to a higher range.
3. CAUTION: Do not apply more than 600V to the input. Indication is possible at higher voltages but there is danger of damaging the internal circuitry.
4. Use extreme caution to avoid contact with high tension circuits when measuring high voltage.

6.3. AC Voltage Measurement

1. Connect the black test lead to the COM jack and the red test lead to the V/ Ω - jack.
2. Set Function Switch to V ~.
3. Connect the test leads across the source of load under measurement.

Note:

1. If the voltage range is not known beforehand set the function switch to the highest range and work down.
2. Caution: Do not apply more than 600Vrms to the input. Indication is possible at higher voltages but there is danger of damaging the internal circuitry.
3. Use extreme caution to avoid contact with high tension circuits when measuring high voltage.

6.4. DC Current Measurement

1. Connect the black test lead to the COM jack and the red test lead to the μ A/mA- jack for a max. of 400mA. For a maximum of 10A, move the red test lead to the 10A jack.
2. Set the Function switch to the μ A/mA or 10A range to be used and connect the test leads in series with the load under measurement
3. Select DC by pressing the "MODE" button.

Note:

1. If the current range is not known beforehand, set the FUNCTION switch to the highest range and work down.
2. When only the figure "OL" is displayed overrange is being indicated and the FUNCTION switch must be set at higher range.
3. **Caution:** The maximum input current is 400mA, or 10A depending upon the jack used. Excessive current will blow the fuse which must be replaced.

6.5. AC Current measurement


1. Connect the black test lead to the COM jack and the red test lead to the μ A/mA jack for a max. of 400mA. For a maximum of 10A, move the red test lead to the 10 A jack.
2. Set the function switch to the μ A/mA or 10A range to be used and connect the test leads in series with the load under measurement.
3. Select DC by pressing "MODE"-button.

Note:

1. If the current range is not known beforehand, set the FUNCTION switch to the highest range and work down.
2. When only the figure "OL" is displayed overrange is being indicated and the FUNCTION switch must be set at higher range.
3. Caution: The maximum input current is 400mA, or 10A depending upon the jack used. Excessive current will

blow the fuse which must be replaced.

6.6. Resistance Measurement

1. Connect the black test lead to the COM jack and the red test lead to the V/ Ω – jack. (Note: The polarity of the red test lead is “+”)
2. Set the Function switch to the “ Ω /  / \cdot)))” -function.
3. Select Ω -function by pressing “MODE”-button.
4. Connect the test leads across the resistance under measurement.

Note:

1. If the resistance value being measured exceeds the maximum voltage of the range selected, an overrange indication will be displayed (“OL”). Select a higher range. For resistance approx. 1 M Ω and above, the meter may take a few seconds to stabilise. This is normal for high resistance readings.
2. When the input is not connected, i. e. at open circuit, the figure “OL” will be displayed for the overrange condition.
3. When checking in-circuit resistance, be sure the circuit under test has all power removed and that all capacitors are fully discharged.


6.7. Capacitance measurements

Caution!

Turn off power and discharge the capacitor before attempting a capacitance measurement. Use the DCV function to confirm that the capacitor is discharged.

1. Set the Function switch to “CAP”-position.
2. Connect the red test lead to the V/ Ω -input jack and the black test lead to the COM-input jack.
3. Connect the test leads to the capacitor. Observe polarity when measuring polarized capacitors.
4. Read the capacitance directly from the display. A shorted capacitor will indicate an overrange. An open capacitor will indicate near zero on all ranges.

6.8. Diode Measurement


1. Connect the black test lead to the COM jack and the red test lead to the V/ Ω – jack. (Note: the polarity of the red test lead is “+”)
2. Set the function switch to the “ Ω /  / \cdot)))”- range.
3. Select Diode-function by pressing “MODE”-button.
4. Connect the test leads across the diode under measurement.

Note:

1. When the input is not connected, i. e. at open circuit, the figure “OL” will be displayed for the overrange condition.
2. There is 1mA Current flow through the device under test.

3. The meter displays the forward voltage drop in millivolts, and overload when the diode is reversed.

6.9. Audible Continuity Test

1. Connect the black test lead to the COM jack and the red test lead to the V/ Ω - jack.
2. Set the Function switch to " Ω /  / \cdot))) " range and connect the test leads across the resistance under measurement.
3. Select continuity-function by pressing "MODE"-button.
4. Buzzer sounds if the resistance between two prods is less than approx. 50 Ω .

Note:

1. When the input is not connected, i. e. at open circuit, the Figure "OL" will be displayed for the overrange indication.
2. The circuit to be tested must be in power off status during the continuity check.

6.10 frequency measurements:

ATTENTION!

Do not perform measurements on circuits with voltages above 250V DC / AC rms. Exceeding this voltage value, the risk of serious injury exists due to electric shock and / or the risk of damage to the device.

1. Turn the Function / Range switch (2) in the required frequency measuring position.
2. Connect red test lead to the V/ /CAP/Hz/Temp. – input, black lead to the COM input.
3. Connect test leads across the circuit to be measured or the component to be measured and read the frequency in the LCD display.
4. For accurate frequency measurements a measuring line is recommended with BNC connectors.

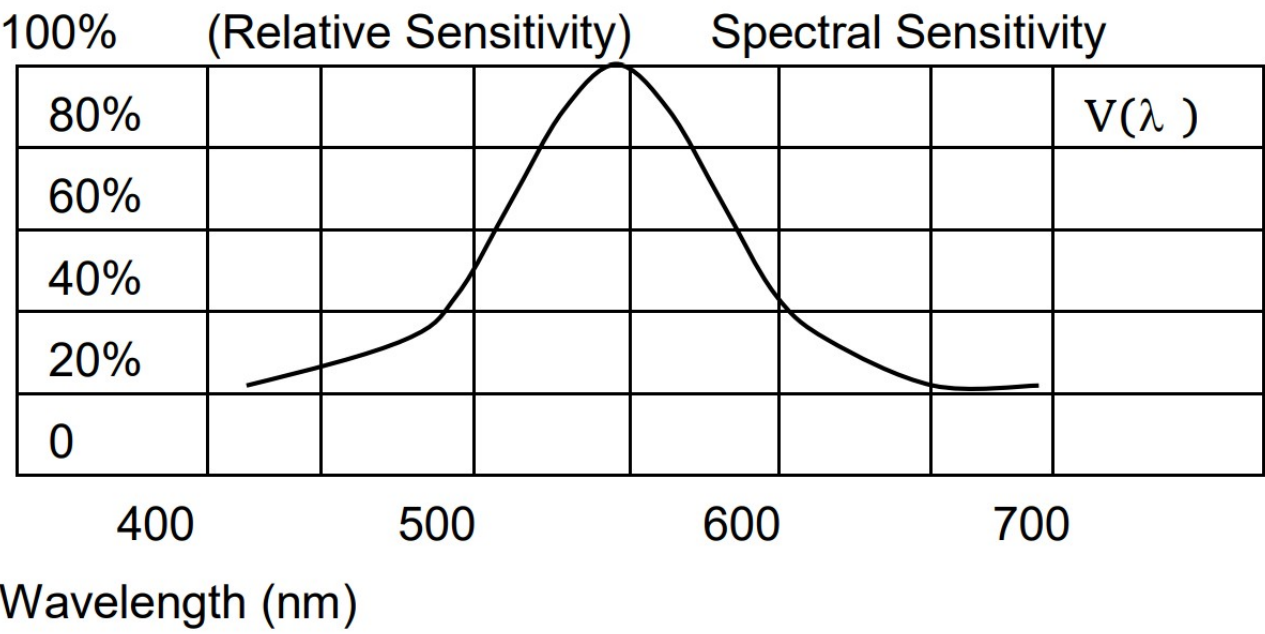
6.11. Measuring Sound Level

1. Set the function to „dBc“ Position.
2. Face the microphone to sound source in a horizontal position.
3. The C-weighting curve is nearly uniform over the frequency range from 30Hz to 10.000kHz, thus giving an indication of overall Sound Level.
4. The fast response is suitable to measure shout bursts and peak values from sound source.
5. The sound level will be displayed.
6. Note: Strong wind (over 10m/sec.) striking the microphone can cause misreading for measurement in windy locations.

6.12. Measuring Light

1. Set the function switch to „Lux“-position and set the range to desired („lux“ or „10 x lux“) range.
2. Face the photo detector to light source in a horizontal position.
3. Read the illuminance nominal from the LCD-display.
4. Overrange: If the instrument only display one „OL“ in the LCD the input signal is too strong, and a higher range

should be selected.



Locations	LUX
Office	
Conference, Reception room	200 – 700
Clerical work	700 – 1500
Typing drafting	1000 – 2000
Factory	
Packing work, Entrance passage	150 – 300
Visual work at production line	300 – 750
Inspection work	750 – 1500
Electronic parts assembly line	1500 – 3000
Hotel	
Public room, Cloakroom	150 – 200
Reception, Cashier	200 – 1000
Store	
Indoors Stairs Corridor	150 – 200
Show window, Packing table	750 – 1500
Forefront of show window	1500 – 3000
Hospital	
Sickroom, Warehouse	100 – 200
Medical Examination room	300 – 750
Operating room, Emergency Treatment	750 – 1500
School	
Auditorium, Indoor Gymnasium	100 – 300
Class room	200 – 750
Laboratory Library Drafting room	500 – 1500

6.13. Measuring Humidity

1. Turn on the meter
2. The display will show the humidity reading value (%RH) directly.
3. When the tested environment humidity value changed, it needs a few minutes to get the stable „%RH“ reading.

Warning!

Don't expose the humidity sensor to direct sunlight.
Don't touch or manipulate the humidity sensor.

6.14. Measuring Temperature

1. Set the function switch to “1°C or 0,1°C” position.
2. Connect the black plug of temperature probe the COM-jack and red plug to the “V/ Ω ” jack”.
3. Touch the end of the temperature sensor to the area or surface of the object to be measured. The display will show the temperature reading value (°C) directly.

Warning!

When function switch on temperature range, never attempt a voltage measurement.

6.15. Non-Contact AC voltage test (NCV):

- Set the function switch to the ON position
- Remove the meter and face the NCV detector to ACV source.
- If source voltage in 50-600V the NCV indicate lamp will light.

Maintenance

7.1. Installing the battery

Your meter requires a 9V-battery for power. The battery-symbol appears when the battery voltage drops to certain limits. For correct operation, replace the battery as soon as possible. Continued use with a low battery will lead to errors in readings.

WARNING!

To avoid electric shock, disconnect all leads from any equipment before you remove or install the battery. Follow these steps to install the battery.

1. Turn off the power and disconnect all test leads.
2. Remove the back cover by unscrewing the two screws of the battery compartment and pull it off.
3. Remove the used battery.
4. Place the new battery inside the insulation capsule and snap it onto place.

WARNING!

Do not discard the provided battery insulation capsule. If you do not use this insulation capsule properly, it might cause damage or injury.

WARNING!

Do not operate the meter until you replace the batteries and close the battery compartment cover.

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 pollutant:



1. “Cd” means cadmium.

2. "Hg" means mercury.
3. "Pb" stands for lead.

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).

7.2. Replacing the fuse

WARNING!

To avoid electric shock, disconnect all the test probes before removing the fuse. Replace only with the same type of fuse. Service should be performed only by qualified personnel.

CAUTION!

For continued protection against fire or other hazard, replace only with fuse of the specified voltage and current ratings.

Follow these steps to replace the fuse:

1. Turn ON/OFF button to turn the meter off and disconnect the test probes.
2. Remove the back cover by unscrewing the 6 screws and pulling off the back cover.
3. Remove the blown fuse.
4. Install the new fuse in the fuse compartment.
FF 500mA/600V; 5 x 20mm
F 10A/600V; 6,3 x 32mm
5. Replace the battery compartment and secure it with the screws.

WARNING!

Do not operate your meter until the back cover is in place and fully closed.

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

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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. ® © PeakTech 03/2023/Po/Th/Lie/Ehr

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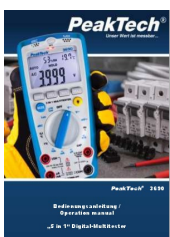


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Documents / Resources



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3690, 3690 5 In 1 Digital Multitester, 5 In 1 Digital Multitester, Digital Multitester, Multitester

References

- [P Home](#)
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Manuals+.