# PeakTech 3385 Analog Multimeter User Manual



**PeakTech 3385 Analog Multimeter User Manual**

Contents



## 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.

- Do not use this instrument for high-energy industrial installation measurement.
- Do not operate the equipment near strong magnetic fields (motors, transformers etc.).
- Do not place the equipment on damp or wet surfaces.
- Do not exceed the maximum permissible input ratings (danger of serious injury and/or destruction of the equipment).
- The meter is designed to withstand the stated max voltages.
  If it is not possible to exclude without that impulses, transients, disturbance or for other reasons, these voltages are exceeded a suitable presale (10:1) must be used.
- Replace a defective fuse only with a fuse of the original rating.

Never short-circuit fuse or fuse holding.

- Disconnect test leads or probe from the measuring circuit before switching modes or functions.
- Do not conduct voltage measurements with the test leads connected to the mA/A- and COM-terminal of the equipment.
- The 10A-range is protected. To avoid damage or injury, use the meter only in circuits limited by fuse or circuit breaker to 10A or 2000VA.
- To avoid electric shock, disconnect power to the unit under test and discharge all capacitors before taking any resistance measurements.
- Do not conduct current measurements with the leads connected to the V-terminal of the equipment.
- Check test leads and probes for faulty insulation or bare wires before connection to the equipment.
- Please use only 4mm-safety test leads to ensure immaculate function.
- 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.
- The measurement instrument is not to be to operated unattended.
- Always start with the highest measuring range when measuring unknown values.
- Do not subject the equipment to direct sunlight or extreme temperatures, humidity or dampness.
- Do not subject the equipment to shocks or strong vibrations.
- 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).
- Do not input values over the maximum range of each measurement to avoid damages of the meter.
- Do not turn the rotary function switch during voltage or current measurement, otherwise the meter could be damaged.
- Use caution when working with voltages above 35V DC or 25V AC. These Voltages pose shock hazard.
- 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
- Do not place the equipment face-down on any table or work bench to prevent damaging the controls at the front.
- Opening the equipment and service- and repair work must only be performed by qualified service personnel
- Measuring instruments don’t belong to children 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.

#### Safety Rules

**Warning**
This 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 lack of caution or poor safety practices are used.

**Read the manual**

Read this instruction manual carefully and completely. Voltages and currents within the capability of this test equipment can be hazardous. Follow the instructions in this manual for every measurement. Read and understand the general instructions before attempting to use this tester. Do not exceed the limits of the tester.

**Safety Check**
Double Check the switch setting, and lead connections before making measurements. Are you following all of the instructions?
Disconnect the tester or turn off power before changing switch positions.

Do not connect to circuits with voltage present when switch is in any ohms or current positions.

When replacing fuses, use only specified type fuses and insert in correct fuse holder.

Don’t touch
Don’t touch exposed wiring, connections or other “live” parts of an electrical circuit. If in doubt, check the circuit first for voltage before touching it.

Turn off the power to a circuit before connecting test probes to it.
Be sure there is no voltage present before you touch the circuit.

Do not use cracked or broken test leads.

**High Voltage is dangerous**
Always start with the power off. Be sure there is no voltage present before making connections to the circuit. Don’t touch the tester, its test leads, or any part of the circuit while it is on.

In high energy circuits such as distribution transformers and bus bars, dangerous arcs of explosive nature can occur if the circuit is shorted. If the tester is connected across a high energy circuit when set to a low resistance range, a current range, or any other low impedance range, the circuit is virtually shorted.

Special equipment designed for use with these circuits is available. Contact a specified person for assistance before attempting to make measurements on any high energy circuit.

## Introduction & Specification


1. Pointer
2. Meter Mechanical Zero ADJ: If the meter pointer does not indicate zero after the instrument's power has been off, rotate zero adjustment screw until pointer is exactly on zero on the left side of dial.
3. Range Selector Knob: The single knob range switch has 20 positions. It may be turned in either direction to obtain any desired range and circuit position.
4. 0 **Ω** ADJ: Every time, adjust the "0" **Ω** SDJ to see that the pointer indicates zero when the meter is in each **Ω** range.
5. "mA/**Ω**" input terminal
6. "COM" input terminal
7. "V" input terminal
8. "10A" input terminal

## General Specifications

- **Batterie:** 3 x 1,5 V UM4 (AAA)
- **Operation**
  Temperature: 0°C ~ 40°C, <85% RH
- **Storage**
  Temperature: -5°C ~ 50°C, <85% RH
- **Size:** 115 (W) x 175 (H) x 45 (D) mm
- **Weight:** 380 g

## Technical Specifications

**DC Voltage**

- **Ranges:** 3 – 15 – 60 – 150 – 600 V
- **Accuracy** at FSD: 3 %
- **Sensitivity:** 20 k**Ω**/V

**AC Voltage**

- **Ranges:** 15 – 60 – 150 – 600 V
- **Accuracy** at FSD: 3 %
- **Sensitivity:** 9 k**Ω**/V
- **Frequency:** 50 ~ 400 Hz

**DC Current**

- **Ranges:** 100 µA – 10 mA – 500 mA – 10 A
- **Accuracy at FSD:** 3 % (100 µA – 10 mA – 500 mA) 5 % (10 A)

**AC Current**

- **Range:** 10 mA – 500 mA – 10 A
- **Accuracy at FSD:** 5 %
- **Frequency Response:** 50 Hz – 400 Hz

**Resistance**

- **Range:** x10 range — 2**Ω** to 20k**Ω** scale center at 200**Ω**
  x100 range – 20**Ω** to 200 k**Ω** scale center at 2k**Ω**
  x1k range — 200**Ω** to 2 M**Ω** scale center at 20k**Ω**
- **Accuracy** at FSD: 3%

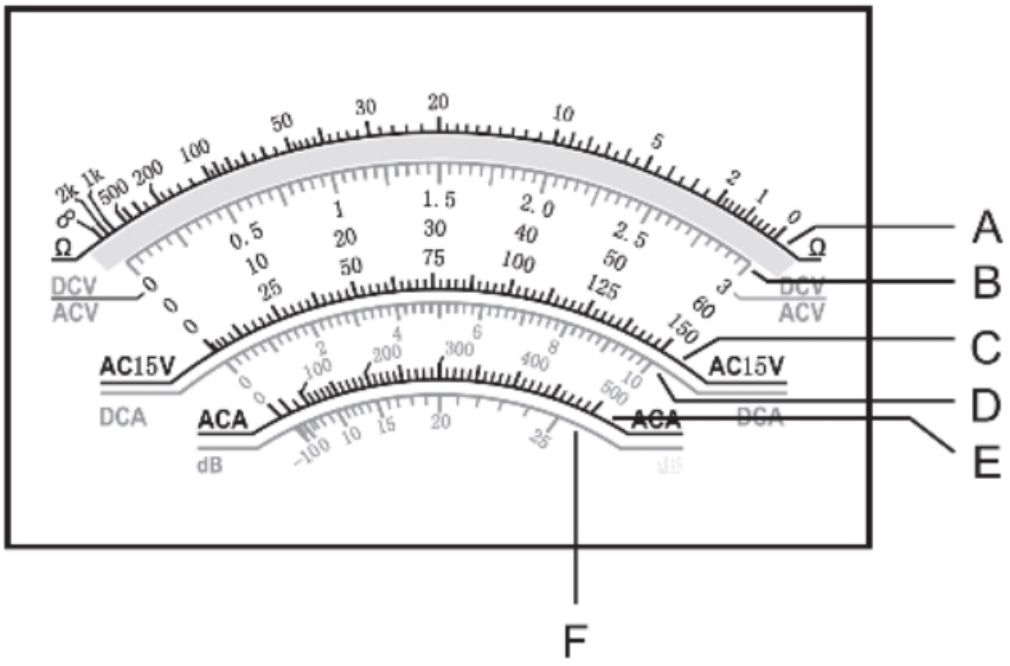
**Continuity**

- -10 ~ +25 dB (~ 25+12 ~ 25+20 ~ 25+32 dB)

**Continuity**

If the resistance is less than about 30 **Ω**, the built-in buzzer will sound.

Reference Table for Reading




| Function | Range Position | Scale to read | Multiplier |
|---|---|---|---|
| DC Voltage | 3 V | B 3 | x 1 |
| | 15 V | B 150 | x 0,1 |
| | 60 V | B 60 | x 1 |
| | 150 V | B 150 | x 1 |
| | 600 V | B 60 | x 10 |
| AC Voltage | 15 V | C 150 | x 0,1 |
| | 60 V | B 60 | x 1 |
| | 150 V | B 150 | x 1 |
| | 600 V | B 60 | x 10 |
| | 100 µA | D 10 | x 10 |

| | | | |
|---|---|---|---|
| DC Current | 10 mA | D 10 | x 1 |
| | 500 mA | D 50 | x 1 |
| | 10 A | D 10 | x 1 |
| AC Current | 10 mA | E 10 | x 1 |
| | 500 mA | E 10 | x 1 |
| | 10 A | E 10 | x 1 |
| Resistance | x 10 | A | x 10 |
| | x 100 | A | x 100 |
| | x 1K | A | x 1000 |
| Dezibel | 15 V | F | x 1 |
| | 60 V | F | + 12 |
| | 150 V | F | + 20 |
| | 600 V | F | + 32 |

**Explanation for multiplier in the table**

If you use “X10” range in resistance measurement, you should multiply the reading on scale A by 10, the result is the resistance value of the load under test.

## Operation instructions

Be extremely careful when working in high voltage circuits. Even though meter and test leads are well insulated, it is not advisable to handle the instrument or leads while power is on in the circuit being measured.

**Note:**

1. If the value of the voltage or current to be measured is unknown, always start with the highest range to avoid overloading the tester. The range selector switch should not be rotated while under load.
2. The life and reliability of the tester will be greatly increased if test leads are removed from the circuit before changing ranges.
3. Before making any measurements, check to see that the pointer indicates zero. If the pointer is off zero, make the required correction by turning the screw of the mechanical zero ADJ.

#### Measuring DC Voltages

1. Connect the black test lead into the COM-jack and the red test lead into the V jack.
2. Set the range switch for any of the DC volts range positions desired. When in doubt as to which range to use, always start with the highest voltage range as a protection to the instrument.
3. Connect the black test lead to the negative side of the circuit to be measured and the red test lead to the positive side of the circuit.
4. Turn the power on in the circuit to be tested. If the pointer deflects to the left of zero, the actual circuit polarity is the reverse of that anticipated.
5. Read the voltage on the black arc marked DC which is second from the top of the dial. If the voltage is within a lower range, the switch may be set for a lower range to obtain a more accurate reading.

#### Measuring AC voltages

1. Connect the black test lead into the COM-jack and the red test leads into the V jack.
2. Set the range switch for any of the AC V range positions desired. When in doubt as to which range to use, always start with the highest voltage range as a protection to the instrument.
3. Turn power on in the circuit to be tested. Read the voltage on the arc.

#### Measuring Resistances

When DC resistances are measured, the internal batteries furnish power for the measuring circuit. Correction for battery deterioration over long periods of time is provided by means of the Zero Adjust control which is part of the ohmmeter circuit.

1. Set the range switch at the desired resistance range position
2. Connect the black test lead in the COM-jack, and the red test lead in the mA/ **Ω** jack.
3. Connect the contact ends of the test leads together.
4. Observe the instrument indication. It should read “0” on the OHMS arc, which is at the top of the dial.
5. If the pointer does not read “0”, rotate the ZERO OHMS knob at the right on the front panel until it does. If the pointer cannot be brought up to the “0” mark, the appropriate battery should be replaced.

   **Note:**

   Disconnect power from any resistor or circuit to be measured before measuring resistance. Do not apply any power before the measurements are completed and the test leads are disconnected.
6. Connect the test leads across the resistance which is to be measured.
7. Read the indication on the OHMS arc at the top of the dial.

**Note** that the arc reads from right to left for increasing values.

8. Multiply the reading by the multiplier factor indicated at the switch position: the result is the resistance value in ohms. “K”on the dial  stands for “thousand”.

**Caution**
Never connect the test leads directly across any source of voltage when used for current measurements. This will damage the instrument.

#### Measuring DC Current

**Caution**
Never connect the test leads directly across any source of voltage when the instrument is used for current measurements. This will damage the instrument.

1. Connect the black test lead in the COM – jack, and the red test lead in the mA/ **Ω** jack for measurement up to 500 mA. For measurements from 500 mA up to 10 A please connect to the 10A jack.
2. Set the range switch for the appropriate milliampere range.
3. With the circuit power turned off, open the circuit at the point where its current is to be measured. Connect the instrument in series with the circuit, observing proper polarities when making connection.
4. Turn on power to the circuit being measured. If the pointer is deflected to the left of zero, the polarity is opposite to that which was anticipated. Please change polarity at the test leads.

#### Measuring AC Current

**Caution!**
Never connect the test leads directly across any source of voltage when the instrument is used for current measurements. This will damage the instrument.

1. Connect the black test lead in the COM jack and the red test lead in the mA/ **Ω** jack for measurement up to 500 mA.  For measurement from 500 mA up to 10 A please connect to the 10A jack.
2. Set the range switch at appropriate range of AC current.
3. With the circuit power turned off, open the circuit at the point where current is to be measured. Connect the instrument in series with the circuit.
4. Turn on power to the circuit being measured.
5. Read the AC current on the arc.

#### Continuity test

1. Connect the black test lead to the COM jack and the red test lead to the mA/ **Ω** jack.
2. Turn the rotary switch to the  position.
3. Insert the test leads to the system under test.
4. When the resistance of the measurement object is less than about 50 Ω, an acoustic signal is heard.

**Note:** Never measure continuity on a live wire and discharge all capacitors in a circuit before making any continuity test.

#### Decibel measurement

The decibel measurement works as the AC voltage measurement, but the decibel scale must be read.

For measurements in the AC 15V range of the dB value can be read directly. If the value is higher than 25dB, use the 60V, 150V or 600V range and add a fixed sum to the measurement of the dB value, as indicated below:

- **ACV 60V range:** Add 12dB to the Value
- **ACV 150V range:** Add 20dB to the Value
- **ACV 600V range:** Add 32dB to the Value

## Maintenance

#### Battery replacement

1. For replacement of the batteries, remove the screw of the battery cover at the rear side of the unit.
2. Replace the exhausted batteries (3×1,5V AAA batteries).
3. Please take care to observe the correct polarity of the batteries.
4. Replace the battery cover and secure it with the screw safely.

#### Fuse replacement

To avoid electric shock, do not operate your meter until the back case is in place and fastened securely.

1. Disconnect the test leads from the meter and any item under test.
2. Open the back case by loosening 4 screws on the back case using a screw-driver.
3. Remove the old fuse from its holder by gently pulling it out.
4. Install the new fuse into the holder.
5. Always use a fuse of the proper size and value mA-range: 500mA/690V (10,3 x 38mm) fast blow 10A-range: 10 A/690V (10,3 x 38mm) fast blow
6. Put the back case back in place. Insert the screws and tighten it securely.

**Warning:**
To avoid electric shock, do not operate your meter until the back cover and the back case is in place and fastened securely.

#### Care

- Get in the habit of double checking the position of the switch before making a measurement. The meter can be burned out by applying voltage when the switch is set on the current or ohms range.
- If the unit has not been in use for a long period of time, rotating the switch in both direction several times will wipe the contacts for a good and clean connection.

## 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 (Federal Ministry of Environment, Nature Conservation and Reactor Safety).



This manual is according the latest technical knowing. Technical changings which are in the interest of progress, 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.

## Customer Support

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## Documents / Resources

| | |
|---|---|
|  | PeakTech 3385 Analog Multimeter [pdf] User Manual<br>3385 Analog Multimeter, 3385, Analog Multimeter, Multimeter, 3385 Multimeter |

## References

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