



# User Manual

PCE-HDM 5 Digital Multimeter



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski, русский, 中文) can be found by using our product search on: [www.pce-instruments.com](http://www.pce-instruments.com)

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## 1 Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, ...) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- Do not expose the device to shocks or strong vibrations.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances. Try not to use the full measurement range.
- Remove the batteries if the device is not used for more than 60 days.
- Switch off the meter when not in use.
- The measured object must have no voltage when resistance is measured.
- Make all selections / settings first before connecting the test leads.
- When measuring voltages, do not switch the meter to resistance or current measurement.
- Do not measure current when the object to be measured has more than 600 V.
- Remove all test leads from the meter before changing the measurement range.
- Remove all test leads from the meter before changing the batteries or the fuse.
- Exercise special caution when measuring above 25 VAC RMS or 35 VDC. Electric shocks are possible.
- Capacitors must be discharged before each measurement.
- When making resistance or diode tests, make sure the tested object does not have voltage.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.




We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

## 1.1 Safety symbols

Several symbols are on the meter. These have the following meanings:

	This symbol can appear next to another symbol or connection and indicates the user must refer to the manual for important safety information.
	Indicates hazardous voltages may be present.
	Equipment is protected by double or reinforced insulation.

## 2 Introduction

The digital multimeter PCE-HDM 5 is a universal meter for lots of applications. Users can easily measure current, voltage, capacitance, frequency and resistance. Additionally, the meter can measure the duty cycle, make diode tests and continuity tests.

### 2.1 Delivery contents

- 1 x multimeter PCE-HDM 5
- 2 x test lead
- 1 x K-type thermocouple
- 1 x thermocouple adaptor
- 1 x user manual
- 2 x 1.5 V AAA batteries

### 3 Specifications

#### 3.1 Measuring functions

Measuring function	Measurement range	Accuracy (of measurement range)
AC current	600.0 $\mu$ A AC	$\pm$ (2.0% + 5 digits)
	6000 $\mu$ A AC	$\pm$ (2.5% + 5 digits)
	60.00 $\mu$ A AC	
	600.0 mA AC	
DC current	10 A AC	$\pm$ (3.0% + 7 digits)
	600.0 $\mu$ A DC	$\pm$ (1.0% + 3 digits)
	6000 $\mu$ A DC	$\pm$ (1.5% + 3 digits)
	60.00 $\mu$ A DC	
	600.0 mA DC	
AC voltage	10 A DC	$\pm$ (2.5% + 5 digits)
	6.000 V AC	$\pm$ (1.0% + 5 digits)
	60.00 V AC	
DC voltage	600.0 V AC	$\pm$ (1.2% + 5 digits)
	600.0 mV DC	$\pm$ (1.0% + 8 digits)
	6.000 V DC	$\pm$ (1.0% + 3 digits)
	60.00 mA DC	
Resistance	600.0 V DC	$\pm$ (1.2% + 3 digits)
	600.0 $\Omega$	$\pm$ (1.0% + 4 digits)
	6.000 k $\Omega$	$\pm$ (1.5% + 5 digits)
	60.00 k $\Omega$	
Capacitance	600.0 k $\Omega$	
	6.000 M $\Omega$	
	60.00 nF	
	600.0 nF	$\pm$ (3.0% + 5 digits)
	6.000 $\mu$ F	
Frequency	60.00 $\mu$ F	
	600.0 $\mu$ F	$\pm$ (4.0% + 5 digits)
	6000 $\mu$ F	$\pm$ (5.0% + 5 digits)
	9.999 Hz	$\pm$ (1.0% + 5 digits)
Temperature (K-type)	99.99 Hz	
	999.9 Hz	
	9.999 kHz	
	-20.0 ... 760.0 $^{\circ}$ C	$\pm$ (3% + 5 $^{\circ}$ C)
(without sensor)	-4.0 ... 1400.0 $^{\circ}$ F	$\pm$ (3% + 9 $^{\circ}$ F)

The accuracies are given at an environmental temperature of 23  $^{\circ}$ C  $\pm$ 5 $^{\circ}$ C and an ambient humidity of max. 80 % RH. For the waveforms, sine waves have been measured.

### 3.2 Further specifications

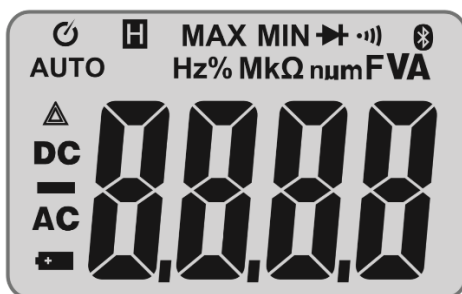
Display	6000-digit LCD
Interface	Bluetooth (via app)
Continuity test	Limit 50 $\Omega$ Test current <0.5 mA
Diode test	Test current 0.3 mA Off-load voltage <3.3 V
Display refresh rate	2 Hz
Input impedance	10 M $\Omega$ (AC voltage / DC voltage)
AC coupling	TRMS (50 / 60 Hz)
Operating conditions	5 ... 40 °C / max. 80 % RH
Storage conditions	-20 ... 60 °C / max. 80 % RH
Operating altitude	max. 2000 m
Power supply	2 x 1.5 V AAA battery
Auto Power Off	>15 minutes
Safety	IEC1010-1(2001), EN61010-1(2001) CAT III 600 V Pollution degree 2
Weight	200 g
Dimensions	125 x 68 x 48 mm

## 4 Device description

1. LCD
2. MIN / MAX / Range key
3. Bluetooth / flashlight
4. MODE key
5. HOLD / backlight
6. Rotary function switch
7. GND input jack (COM)
8. Current input jack (10 A)
9. Input jack for V,  $\Omega$ , Farad, temperature, Hz,  $\mu$ A and mA measurement (V  $\Omega$  CAP TEMP Hz mA)



<b>H</b>	Reading held
-	Negative reading
0 ... 3999	Reading
AUTO	Automatic measurement range
DC/AC	Direct current / alternating current
<b>+</b>	Battery level indicator
mV / V	Voltage
$\Omega$	Resistance
A	Current
F	Capacitance
Hz	Frequency
%	Duty cycle
$^{\circ}$ C / $^{\circ}$ F	Temperature
N, m, $\mu$ , M, k	Unit of size
<b>•• </b>	Continuity test
<b>▶ </b>	Diode test
<b>Ⓚ</b>	Bluetooth is deactivated





## 5 On / Off

To switch on the device, turn the rotary switch to the desired measuring function. The meter will power on immediately. To turn off the meter, turn the rotary function switch to "OFF". The meter will switch off automatically.

## 6 Measuring functions

### 6.1 $\mu$ A measurement

To make a  $\mu$ A measurement, turn the rotary switch to " $\mu$ A". Use the input jacks "COM" and "V,  $\Omega$ , HZ, %, mA, ...". With the "MODE" key, you can switch between alternating and direct current.

### 6.2 mA measurement

To make a mA measurement, turn the rotary switch to "mA". Use the input jacks "COM" and "V,  $\Omega$ , HZ, %, mA, ...". With the "MODE" key, you can switch between alternating and direct current.

### 6.3 10 A measurement

To make a measurement up to 10 A, turn the rotary switch to "10 A". With the "MODE" key, you can switch between alternating and direct current.

### 6.4 Alternating voltage, frequency and duty cycle measurement

To measure voltage, frequency or the duty cycle in an alternating voltage, turn the rotary switch to "V, Hz, %". Now connect the test leads to the input jacks „COM" and „V,  $\Omega$ , HZ, %, mA, ...". With the "MODE" key, you can now switch between voltage, frequency and duty cycle measurement.

### 6.5 Direct voltage measurement

To make a DC voltage measurement, turn the rotary switch to "V". Use the input jacks „COM" and „V,  $\Omega$ , HZ, %, mA, ...". With the "MODE" key, you can switch between alternating and direct current.

### 6.6 Resistance measurement / diode test / continuity test / capacity measurement

To make a resistance measurement / diode test / continuity test / capacity measurement, turn the rotary switch to „ $\Omega$ , CAP, ...". Then select the desired measuring function with the "MODE" key. Now connect your test object to "COM" and „V,  $\Omega$ , HZ, %, mA, ...". The reading will be displayed directly.

**NOTE:** To determine the capacitance of a capacitor, you must make sure it is discharged before making the measurement. The capacitor will be charged during the measurement.



### 6.6.1 Diode test

To test diodes, touch the diode with the test leads and write down the reading that is displayed. Now change the polarity and compare the new reading with the first reading. If "OL" is displayed during both measurements, the diode is defective. If the reading for the first measurement is "OL" and the value for the second measurement is a typical value between, e. g. 0.400 and 1,800 V, this means that the diode works. If voltage values are displayed for both measurements, this means that the diode is defective. In this case, the diode will cause a short circuit.

### 6.7 Temperature measurement

To make a temperature measurement, turn the rotary switch to "TEMP". Then connect the thermocouple adaptor to the meter as follows:


Black – into "COM" jack

Red + into "V" jack

Then connect the thermocouple via the adaptor. Make sure the polarity is correct. The reading will be displayed directly and will stabilise after approx. 30 seconds.

You can switch between °C and °F by using the "MODE" key.

## 7 Hold readings

To hold / freeze the currently displayed reading, press the "HOLD / backlight" key. The icon  will appear in the display. If you press the "HOLD / backlight" key again, the held reading will be released and the current measurement will be continued.

## 8 Backlight

To activate the backlight, press and hold the "HOLD / backlight" for three seconds. The backlight will turn on immediately. To deactivate the backlight, press and hold the same button for three seconds again.

**NOTE:** The backlight will turn off automatically after 5 minutes.

## 9 MAX/MIN recording

Recording is started by pressing the „MAX/MIN/Range“ key. This will be indicated by the „MAX/MIN“ icon in the display. During this type of recording, only the highest and the lowest value will be saved and displayed. All other readings will be lost. Now press the „MAX/MIN/Range“ key to switch between MIN and MAX. To re-enter normal measurement mode, press and hold the „MAX/MIN/Range“ key for three seconds. The saved data will be lost when you do this.

**NOTE:** This function is only available if Auto Range is activated.


## 10 Select measurement range

To select the measurement range, press and hold the "MAX/MIN/Range" key for three seconds to deactivate Auto Range. Press the "MAX/MIN/Range" again several times until you have reached your desired measurement range. To re-activate Auto Range, press and hold the "MAX/MIN/Range" key again for three seconds.



## 11 Bluetooth and flashlight

To switch on the flashlight, press and release the “Bluetooth / flashlight“ key. Press the same button again to switch it off again.


To activate Bluetooth, press and hold the “Bluetooth / flashlight“ key for several seconds. The  icon will appear in the display. To turn off Bluetooth, press and hold the “Bluetooth / flashlight“ key again for several seconds

Use the “Meterbox Pro“ app from your Android or iOS store to connect the device to your mobile phone.

## 12 Auto Power Off

To increase the battery life, the meter will switch off automatically after 15 minutes of inactivity. To switch on the device after this, turn the rotary switch to “OFF“ and then turn it to your desired measurement mode. To deactivate Auto Power Off, press and hold the “MODE“ key and switch on the device. Then release the “MODE“ key. Auto Power Off is now deactivated.

## 13 Batteries

When the battery is no longer sufficiently charged, the following icon will appear on the display: . In this case, replace both 1.5 V AAA batteries. If you do not replace the batteries, measurement errors and even failure of the device can occur.

To replace the batteries, open the battery compartment on the rear side of the meter by loosening the screw of the cover with a screwdriver. Observe correct polarity when replacing the batteries and screw the battery compartment cover back on.

## 14 Fuse replacement

To replace the fuse, open the fuse compartment which is located below the foldable stand on the rear side of the meter. Pull out the fuse and replace it by a new one. Only use the following fuses: F10 A/600 V and F600 mA/600 V.

Follow the instructions in the fuse compartment for the correct arrangement of the fuses.

**NOTE:** Disconnect all test leads and turn off the meter before replacing the fuses.

## 15 Warranty

You can read our warranty terms in our General Business Terms which you can find here: <https://www.pce-instruments.com/english/terms>.

## 16 Disposal

For the disposal of batteries in the EU, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

For countries outside the EU, batteries and devices should be disposed of in accordance with your local waste regulations.

If you have any questions, please contact PCE Instruments.





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