



User Manual

Handheld Tachometer PCE-T 240



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

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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.
- 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.

2 Specifications

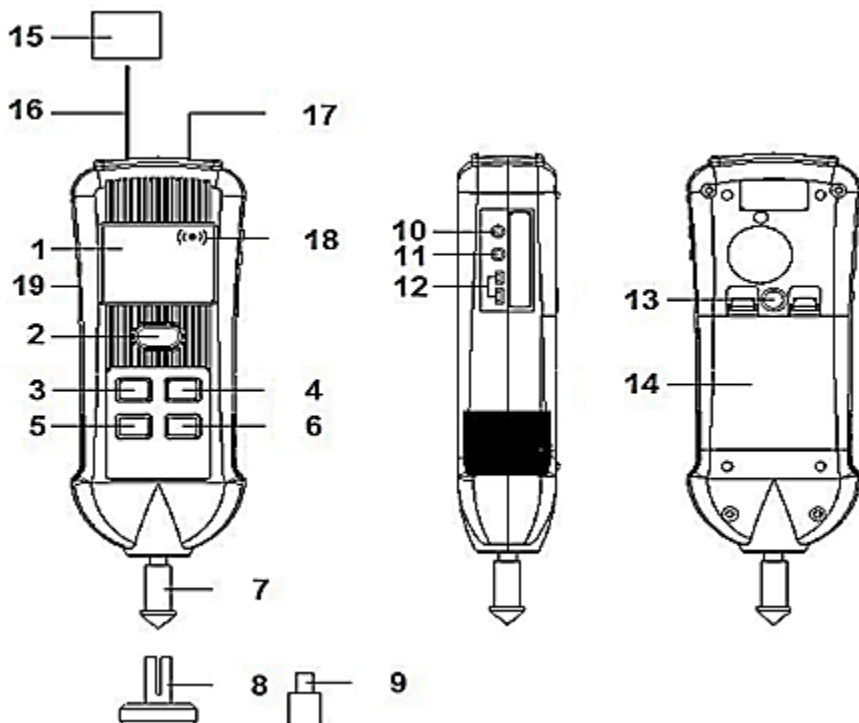
Optical measurement	
Measurement range	5 ... 99,999 RPM
Resolution	0.5 RPM (<1,000 RPM) 1 RPM (>1,000 RPM)
Accuracy	$\pm(0.05\% \text{ of rdg.} + 1 \text{ digit})$
Detection distance	50 ... 150 mm, 2 ... 6 inch (typical) maximum 300 mm, 12 inch (depending on the ambient lighting)
Contact measurement	
Measurement range	0.5 ... 19,999 RPM
Resolution	0.5 RPM (<1,000 RPM) 1 RPM ($\geq 1,000$ RPM)
Accuracy	$\pm(0.05\% \text{ of rdg.} + 1 \text{ digit})$
Measurement range	0.05 ... 1,999.9 m/min
Resolution	0.05 m/min (<100 m/min) 0.1 m/min (≥ 100 m/min)
Accuracy	$\pm(0.5\% \text{ of rdg.} + 1 \text{ digit})$
Measurement range	0.2 ... 6,561.4 ft/min
Resolution	0.1 ft/min (<1,000 ft/min) 1 ft/min ($\geq 1,000$ ft/min)
Accuracy	$\pm(0.5\% \text{ of rdg.} + 1 \text{ digit})$
Measurement range	2.0 ... 78736.2 inch/min
Resolution	0.1 inch/min (<1,000 inch/min) 1 inch/min ($\geq 1,000$ inch/min)
Accuracy	$\pm(0.5\% \text{ of rdg.} + 1 \text{ digit})$
Stroboscope	
Measurement range	100 ... 99,990 RPM/FPM
Resolution	0.1 RPM (<1,000 PRM) 1 RPM (1,000 ... 30,000 RPM) 5 RPM (30,000 ... 50,000 RPM) 10 RPM (50,000 ... 99,999 RPM)
Accuracy	$\pm(0.1\% \text{ of rdg.} + 2 \text{ digits})$
LED	three red LEDs
Temperature (type K)	
Measurement range	-50.0 ... 1300.0 °C
Resolution	0.1 °C
Accuracy	$\pm(0.4\% \text{ of rdg.} + 0.5\text{ °C})$
Measurement range	-100.0 ... -50.1 °C
Resolution	0.1 °C
Accuracy	$\pm(0.4\% \text{ of rdg.} + 0.5\text{ °C})$
Measurement range	-58.0 ... 2372.0 °F
Resolution	0.1 °F
Accuracy	$\pm(0.4\% \text{ of rdg.} + 1\text{ °F})$
Measurement range	-148.0 ... -58.1 ... °F
Resolution	0.1 °F
Accuracy	$\pm(0.4\% \text{ of rdg.} + 1.8\text{ °F})$
Temperature (PT1000)	
Measurement range	-10.0 ... 70.0 °C, 414.0 ... 158.0 °F
Resolution	0.1 °C, 0.1 °F
Accuracy	$\pm 1.2\text{ °C}, \pm 2.2\text{ °F}$

Further specifications	
Display	LC display, 43 x 33 mm, 5 digits
Memory	highest and lowest measured value
Power supply (mains adaptor)	9 V DC, 100 mA
Power supply (battery)	4 x 1.5 V AA batteries
Power consumption	Ø42 mA
Automatic power off	after 10 minutes of inactivity
Interface	RS232
Environmental conditions	0 ... 50 °C, 32 ... 122 °F, <80 % RH, (non-condensing); magnetic field <3 V/M, <30 MHz
Dimensions	207 x 67 x 39 mm, 8.15 x 2.63 x 1.53 in
Weight	230 g, 0.5 lb (without batteries)

3 Delivery scope

- 1 x PCE-T 240 handheld tachometer
- 1 x measuring tip (outer cone)
- 1 x hollow measuring tip (inner cone)
- 1 x measuring wheel
- 1 x reflective tape
- 1 x carrying case
- 4 x 1.5 V AA battery
- 1 x user manual

4 Device description



No.	Description
1	Display
2	On and off key
3	Hold key, arrow up key
4	REC key, double key
5	UNIT key, arrow down key
6	Function key
7	Measuring tip (outer cone)
8	Surface speed adaptor
9	Hollow measuring tip (inner cone)
10	RS232 interface
11	PT1000 temperature sensor connection
12	Thermocouple connection K-type
13	Photo tripod connection
14	Battery compartment cover
15	Reflective tape
16	White LED for optical speed measurement
17	Strobe light with red LEDs
18	Indicator for one revolution
19	Power supply connection

5 Making a measurement

First switch on the meter by pressing and holding the on/off key. To switch off the meter, you must also keep this key pressed. As soon as the meter is switched on, the measurement starts directly with the last measurement function used.

To select between the individual measuring functions, press the function key repeatedly.

The following functions are available:

Display when switching	Function
Scope	Stroboscope
type	Temperature measurement with K-type thermocouple
Pt	Temperature measurement with a PT 1000 temperature sensor
Photo	Optical speed measurement
touch	Contact speed and velocity measurement

5.1 Stroboscope

To make a measurement with the stroboscope function, select the "Scope" function. Align the LEDs in the direction of the test object. Now set the speed using the arrow keys. To double or halve the rotation speed, hold down the double button and then use the arrow keys.

5.2 Optical speed measurement

To make an optical speed measurement, select the "Photo" function. Stick a 1 x 1 cm piece of reflective tape onto the test object. Now switch on the test object and direct the light cone so that it shines on the reflective tape. The speed of rotation is measured. Next to the measured value, an indicator flashes once briefly as soon as the reflective tape has been recognised.

5.3 Contact revolution measurement

To make a contact revolution measurement, select the "touch" function. Plug the desired adaptor onto the meter. Select the unit "RPM" with the UNIT key. Now carry out the measurement on the test object.

Note:

The wheel attachment is only intended for speed measurement.

5.4 Contacting speed measurement

To make a contact speed measurement, select the "touch" function. Place the wheel attachment on the meter. Press the UNIT key repeatedly until the desired unit is displayed. You can then carry out the speed measurement.

5.5 Temperature measurement with a thermocouple

To perform a temperature measurement, select the "type" function. Insert a K-type thermocouple into the meter. The measured value appears on the display.

5.6 Temperature measurement with a PT 1000 temperature sensor

To carry out a temperature measurement, select the "pt" function. Insert a PT 1000 resistance temperature probe into the meter. The measured value is displayed directly.



5.7 Freezing measured value (HOLD)

To freeze the displayed reading, press the Hold key. "HOLD" appears on the display. To resume the measurement, press the Hold key again.

5.8 Highest and lowest measured value (REC)

Press the REC key. "REC" is displayed on the screen. To view the highest and lowest readings, press the REC key repeatedly. Press and hold the REC key to disable this function.

As soon as this function has been switched off, the values are reset.

6 Settings

6.1 Automatic power-off

To enable or disable the automatic power off function, press and hold the function key for at least 5 seconds. The arrow keys can now be used to enable or disable automatic power off. Press the REC key to accept the setting. Use the on/off key to return to measurement mode.

Note: The "HOLD" and "REC" functions must be switched off.

6.2 Changing the temperature unit

Press and hold the function key for about 5 seconds. Then press the function key again to change the temperature unit. The temperature unit can now be changed with the arrow keys. Press the REC key to accept the setting. Press the ON/OFF key to return to measurement mode.

Note:

The "HOLD" and "REC" functions must be switched off.

When the function is switched off, the values are reset.

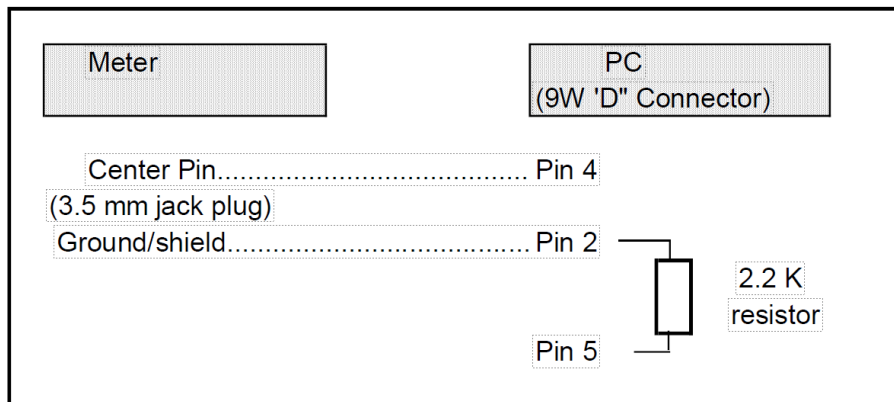
7 Replacing the batteries

To insert or replace the batteries, first switch off the meter. Then open the battery compartment and replace the batteries. Ensure correct polarity of the batteries. Use four 1.5 V AA batteries.

8 RS232 interface

The unit has a serial RS232 interface with a 3.5 mm output. The data output is via a 16-digit stream which can be used for your specific applications.

An RS232 guide with the following connection is required to connect the meter to a serial PC output.



The 16-digit streams are displayed as follows:

D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

Each digit indicates the following status:

D15	Start Word		
D14	4		
D13	1		
D12, D11	Annunciator for Display		
	ft/min = 11	inch/min = 28	m/min = 60
	RPM = 27	°C = 01	°F = 02
D10	Polarity 0 = Positive 1 = Negative		

D9	Decimal Point(DP), position from right to the left 0 = No DP, 1= 1 DP, 2 = 2 DP, 3 = 3 DP
D8 to D1	Display reading, D1 = LSD, D8 = MSD For example : If the display reading is 1234, then D8 to D1 is : 00001234
D0	End Word

RS232 format: 9600, N, 8, 1



9 Contact

If you have any questions, suggestions or technical problems, please do not hesitate to contact us. You will find the relevant contact information at the end of this user manual.

10 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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