

USER MANUAL

WBGT-METER

PCE-WBGT 10

ENGLISH



User manuals in various languages (français, italiano, español, português, nederlands, türk, polski) can be found via our product search on: www.pce-instruments.com

INTRODUCTION

PCE-WBGT 10 is an intelligent meter that reads wet bulb globe temperature, wet bulb temperature, dew point temperature, humidity and air temperature, and black globe temperature. You can use the meter almost anywhere to determine appropriate exposure levels and meet OSHA or other safety standards for high temperatures to avoid heat exhaustion and heat-related injuries during athletic events, military exercises, and industrial activities.

This meter features a datalogger. 8 Mega bite EEPROM provides 260,000 readings storage and can be downloaded to PC/notebook via type C to USB cable.

Each data set includes the temperature measurement (wet bulb globe temperature, wet bulb temperature, dew point temperature, humidity and air temperature or black globe temperature) and the time and date.

FEATURES

- » Reads indoor/outdoor wet bulb globe temperature, wet bulb temperature, dew point temperature, humidity and air temperature, and black globe temperature
- » 8 Mega bite EEPROM datalogger
- » Highly accurate microcomputer circuit
- » Highly accurate sensor for globe temperature measurement
- » Fast response time for humidity measurement
- » Direct measurement of the radiation effect with a 46 mm blackball
- » Sensor protecting mechanism
- » Internal clock and calendar
- » WBGT alarm
- » Built-in table top stand
- » Maximum and minimum
- » Hold function
- » Auto-power-off
- » Low battery indicator
- » Backlight

POWER SUPPLY

The unit is powered by either one 3.7V Rechargeable Li-ion Battery or an optional type C AC adapter (5.0V/1A output).

Battery Installation

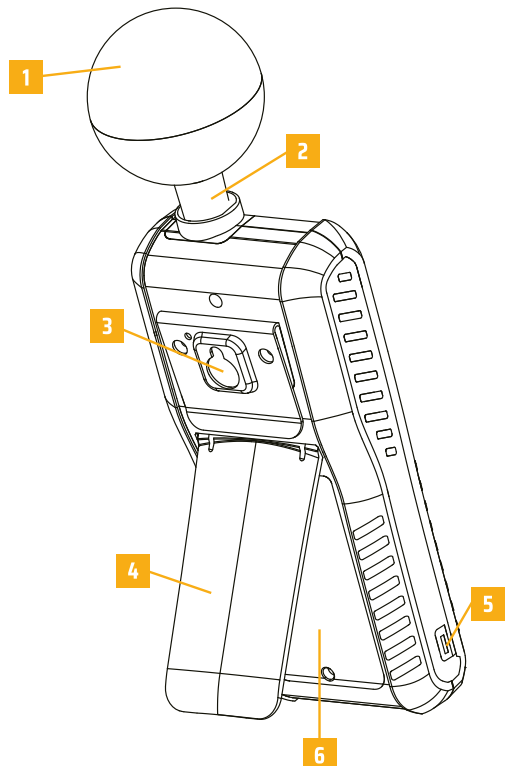
- » Take off screw by a screw driver and remove battery cover, located at the bottom - rear of the unit.
- » Install one 3.7V Rechargeable Li-ion Battery ensuring the polarity is correct and the battery are firmly seated.
- » Re-install the cover.

Note:

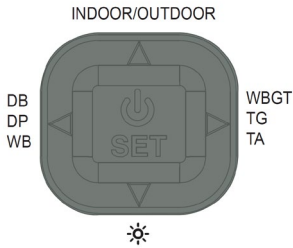
When the battery voltage is low  appears on LCD and an alarm sound. Plug Type C cable on to charge battery till the full power sign  is shown.






SYSTEM DESCRIPTION

- 1 - Black Ball
(Black Glodbe Temperature Sensor)
- 2 - Humidity Sensor /
Air Temperature (TA) Sensor
- 3 - Hanging Hole
- 4 - Stand
- 5 - Type C Charging Socket
- 6 - Battery Cover

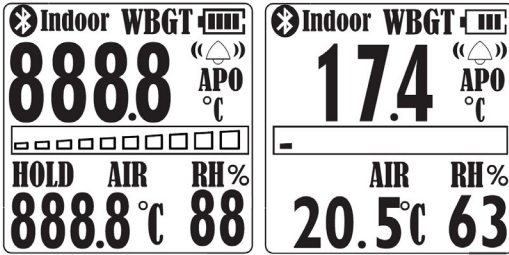




KEYPAD



	<p>Press 3 seconds: Turns meter On and Off. Press 1 second to SET/Confirm setting</p>
	<p>Press 1 second to change Indoor / Outdoor</p>
	<p>Press 3 seconds: CLEAN the MAX and MIN records Press 1 second to HOLD > MAX > MIN</p>
	<p>Press 1 second DB > DP > WB > TG</p>
	<p>Press 3 seconds to get into setting menu Press 1 second to Light on backlight</p>

LCD DISPLAY



Indoor / Outdoor	Measurement Mode
Hold/MAX/MIN	Frozen/Minimum/Maximum
WBGT	Wet Bulb Globe Temperature
AIR	Air temperature
DP	Dew point temperature
WB	Wet bulb temperature
TG	Globe ball temperature
RH%	Relative humidity
°C (C/F)	Wet bulb temperature
APO	Auto Power Off
Battery Level	
Charging Battery	

MEASUREMENT PROCEDURE

SET Key

Press 3 seconds to turn the meter on and off. The meter emits a short beep and then displays current Wet Bulb Globe temperatures and humidity readings.

The meter starts acquiring measurements and updates its readings every 2 seconds or the selected sampling time.

Note:

Do not hold the meter close to your face while taking measurements because exhaling affects CO2 levels.

UP Key

Press 1 second to select Indoor or Outdoor mode

RIGHT Key

» Press 1 second to Data Hold or Change to MAX or MIN

» Press to **HOLD** to freeze readings. The "HOLD" icon will appear in the left-top corner of the LCD. All current readings are frozen, except STEL and TWA.

» Press again to cancel the "HOLD" function and resume measurement.

» Press to **MN/MX/AV** to view minimum, to view minimum, maximum of CO2, temperatures and humidity readings.

» Press 3 seconds to CLEAN minimum and maximum records and start to a measurement run.

LEFT Key

Air, Dew Point and Wet Bulb Temperature

Press **DP/WBT** to switch temperature modes. The lower left of the LCD display cycles from air temperature to dew point temperature to wet bulb temperature.

DOWN Key

Press 1 seconds to Light on/off the LCD backlight.

SETTING PROCEDURE

- » Press UP/DOWN key to select item or change number and then press SET to confirm it.
- » Press Down key 3 seconds to get into setting menu.
- » Power Bluetooth ON or OFF.
- » Roll to the preferred Auto Power Off time and confirm it.
- » Roll to the preferred Auto Screen Off time and confirm it.
- » Preset value is 2 seconds. Roll to minute and second to adjust it. Longest sampling time is 9 minutes 59 seconds.
- » Roll to year, month, date, hour and minute to adjust it one by one.
- » Roll to the preferred scale.
- » The preset volume is 30°C, can roll to it and adjust the value. If over setting volume, audio Beep will alarm every 2 seconds

PC CONNECTION

- » Connect device with PC/notebook via type C to USB cable.
- » Run Windows FormsApp1.exe
- » Select COM PORT
- » Click CONNECT
- » Click START, Logged data will be shown on screen.

APPENDICES

Recommended heat exposure levels for working and physical activity (permissible heat exposure threshold):

Work/rest regimen	Light	Moderate	Heavy
Continuous work	30°C (86°F)	26.7°C (80°F)	25°C (77°F)
75% work, 25% rest	30.6°C (87°F)	28°C (82°F)	25.9°C (78°F)
50% work, 50% rest	31.4°C (89°F)	29.4°C (85°F)	27.9°C (82°F)
25% work, 75% rest	32.2°C (90°F)	31.1°C (88°F)	30°C (86°F)

Wet Bulb Globe Temperature Formula

Indoor/outdoor with no sun:

$$\text{WBGT} = (0.7 \times \text{WB}) + (0.3 \times \text{TG})$$

Outdoor with full sun:

$$\text{WBGT} = (0.7 \times \text{WB}) + (0.2 \times \text{TG}) + (0.1 \times \text{TA})$$

WBGT INDEX AND PHYSICAL EXERCISE

WBGT	Flag	Activity Intensity
< 26.7°C (< 80°F)	White	Normal activity. Take caution.
26.7 ... 29.4°C (80 ... 84.9°F)	Green	Discretion is required in planning intense physical activity.
29.5 ... 31°C (85 ... 87.9°F)	Yellow	Intense activity for new and non-acclimated persons should be curtailed.
31.1 ... 32.2°C (88 ... 89.9°F)	Red	Intense exercise must be curtailed for those with less than 12 weeks training in hot weather. Be on high alert
≥ 32.2°C (≥ 90°F)	Black	Cancel all outdoor exercise.

SPECIFICATIONS

Wet Bulb Globe Temperature	
Range	0 ... 50°C / 32 ... 122°F
Resolution	0.1°C / 0.1°F
Accuracy	0 ... 60°C: +/-0.3°C, others: +/- 1.0°C or 32 ... 140°F: +/-0.6, others +/- 2.0°F
Air/Dry Bulb and Globe Temperature	
Range	-20 ... 125°C / -40 ... 257°F;
Resolution	0.1°C / 0.1°F
Accuracy	0 ... 60°C: +/-0.3°C, others: +/- 1.0°C or 32 ... 140°F: +/-0.6, others +/- 2.0°F;
Dew Point	
Range	-20 ... 60°C / - 40 ... 140°F
Resolution	0.1°C / 0.1°F
Accuracy	0 ... 50°C: +/- 1.5°C, others: +/- 3.0°C or 32 ... 122°F: +/-3F°, others +/- 6.0°F

Wet Bulb	
Range	-20 ... 60°C / -40 ... 140°F
Resolution	0.1°C / 0.1°F
Accuracy	0 ... 50°C: +/-1.5°C, others: +/- 3.0°C or 32 ... 122°F: +/-3°F, others +/- 6.0°F
Humidity	
Range	0 ... 100%
Resolution	1.0%
Accuracy	20 ... 80%: +/- 3.0%, others +/- 5% @ 25°C/ 77°F
Warm Up	
	30 seconds
Operating	
	0 ... 50 °C, 0 ... 95%RH (avoid condensation)
Storage	
	-20 ... 60 ° C, 0 ... 99%RH (avoid condensation)
Power	
	1x BL-10C 2.500mAh, 3.7V 8.9Wh, Rechargeable Li- ion Battery, AC Adapter
Battery Life	
	72 hours per charge, basing on 2" sampling time
Dimensions	
	158 x 62 x 36 mm (6½" x 3½" x 1½")
Weight	
	184g (6.5oz)

DISPOSAL

For the disposal of batteries in the EU, the (EU) 2023/1542 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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