

WBGT ( in/out door ), TG Temp., Humidity/ Air Temp. Dew point Temp. Wet bulb Temp.

## HEAT INDEX WBGT METER

Model : WBGT-2009

ISO-9001, CE, IEC1010

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02-2389-0101



Soft carrying case  
CA-20  
included



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*The Art of Measurement*

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## FEATURE

\* Introduction :

WBGT ( wet-bulb globe temperature ) was developed as a monitoring basis at US military training camps and became widespread for the use in workplaces and sports situation It is suggested in the international standard ISO 7243, OSHA ( US Occupation Safety ), Japan Society for Occupational Health and the SMA ( Sports Medicine Australia ) in establishing the permissible heat exposure limits in health , sports or other physical activities.

\* Measurement : WBGT value ( Indoor/Outdoor Wet bulb globe temperature ), Black globe temperature, Humidity, Air temperature, Wet bulb temperature, Dew point Temp..

\* Adjustable WBGT alarm setting, if the WBGT value over the alarm threshold, the buzzer will sound along with the flashing Display.

\* Using to control and monitor of physical activity in hot environment to limit the danger of heat related injuries.

\* Globe temperature measurement use the Pt sensor, high accuracy.

\* Fast humidity measuring response time.

\* Direct measurement of the radiation effect with a brass black ball in 75 mm dia.

\* Sensor protecting mechanism.

## GENERAL SPECIFICATION

Advanced setting	<ul style="list-style-type: none"> <li>*Set WBGT alarm value</li> <li>*Auto power OFF management</li> <li>*Set beep Sound ON/OFF</li> <li>*Select the temperature unit to °C or °F.</li> </ul>	
Data Hold	Freeze the display reading.	
Memory Recall	Maximum & Minimum value.	
Sampling Time of Display	Approx. 1 second.	
Data Output	RS 232/USB PC computer interface. <ul style="list-style-type: none"> <li>* Connect the optional RS232 cable UPCB-02 will get the RS232 plug.</li> <li>* Connect the optional USB cable USB-01 will get the USB plug.</li> </ul>	
Operating Temperature	0 to 50 °C .	
Operating Humidity	Less than 85% R.H.	
Power Supply	<ul style="list-style-type: none"> <li>* Alkaline or heavy duty DC 1.5 V battery ( UM3, AA ) x 6 PCs, or equivalent.</li> <li>* DC 9V adapter input. ( AC/DC power adapter is optional ).</li> </ul>	
Power Current	<ul style="list-style-type: none"> <li>* If LCD Backlight is off, the power consumption will be approx. 5 mA.</li> <li>* If LCD backlight on, the power consumption will be approx. 11 mA.</li> </ul>	
Weight	489 g/1.08 LB.	
Dimension	Meter	177 x 68 x 45 mm
	Black brass	(7.0 x 2.7x 1.9 inch)
	ball	Round, 75 mm dia
Standard Accessories Included	<ul style="list-style-type: none"> <li>* Instruction manual..... 1 PC</li> <li>* Black brass ball ( with sensor )..... 1 PC</li> <li>* Soft carrying case, CA-20.....1 PC</li> </ul>	
Optional Accessories	<ul style="list-style-type: none"> <li>* AC to DC 9V adapter.</li> <li>* USB cable, USB-01.</li> <li>* Data acquisition software,SW-U801-WIN.</li> <li>* Excel data acquisition software, SW-E802.</li> <li>* Hard carrying case, CA-08, Size : 370 x 310 x 115 mm.</li> </ul>	

## ELECTRICAL SPECIFICATIONS (23± 5 °C)

### Wet bulb globe temperature ( WBGT )

Range	°C	Indoor	0 °C to 59 °C
		Outdoor	0 °C to 56 °C
	°F	Indoor	32 to 138 °F
		Outdoor	32 to 132 °F
Accuracy * Indoor	°C	± 1 °C ( 15 to 59 °C ) ± 1.5 °C ( Others )	
	°F	± 1.8 °F ( 59 to 138 °F ) ± 2.7 °F ( Others )	
Accuracy * Outdoor	°C	± 1.5 °C ( 15 to 56 °C ) ± 2 °C ( Others )	
	°F	± 2.7 °F ( 59 to 132 °F ) ± 3.6 °F ( Others )	

### WBGT Formula

Indoor ( Outdoor and no sun )	WBGT= 0.7WB + 0.3TG
Outdoor ( Outdoor and full sun )	WBGT= 0.7WB + 0.2TG + 0.1TA

### Air temperature ( TA )

Range	°C	0 to 50 °C
	°F	32 to 122 °F.
Resolution	°C	0.1 °C
	°F	0.1 °F
Accuracy @ 15 to 40 °C	°C	± 0.8 °C
	°F	± 1.5 °F

### Black globe temperature ( TG )

Range	°C	0 to 80 °C
	°F	32 to 176 °F.
Resolution	°C	0.1 °C
	°F	0.1 °F
Accuracy @ 15 to 40 °C	°C	± 0.6 °C
	°F	± 1.1 °F

### Wet bulb Temp.

°C	Range	-21.6 °C to 50.0 °C
	Resolution	0.1 °C
°F	Range	-6.9 °F to 122.0 °F.
	Resolution	0.1 °F.

Remark : \* Wet bulb display value is calculated from the Humidity/Air Temp. measurement automatically.  
\* The Dew Point accuracy is sum accuracy value of Humidity & Air temperature measurement..

**Recommendations to heat exposure level for working and physical activity.  
( Permissible heat exposure threshold limit )**

Work/rest regimen ( Each hour )	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 )

Source : AGGIH 1992 ( The American Conference of Governmental Industrial Hygienists )

**WBGT INDEX and PHYSICAL EXERCISE**

WBGT	Flag	Activity Intensity
< 26.7 °C ( < 80 °F )	White	Normal activity. Caution should be taken.
26.7 to 29.4 °C ( 80 to 84.9 °F )	Green	Descretion is required in planning intense physical activity.
29.5 to 31 °C ( 85 to 87.9 °F )	Yellow	Intense activity for new and unacclimatized persons should be curtailed.
31.1 to 32.2 °C ( 88 to 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.

\* Appearance and specifications listed in this brochure are subject to change without notice.

WBGT-2009+1311

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