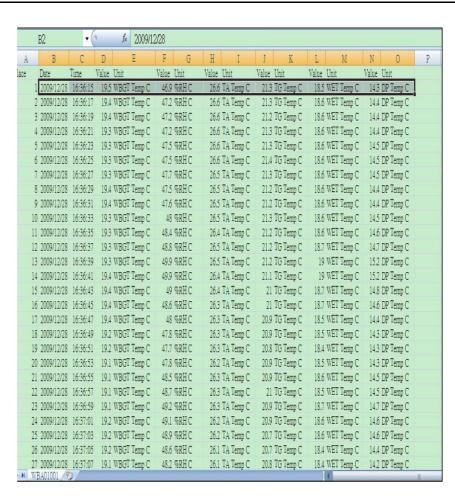
WBGT (in/out door), TG Temp., Humidity/ Air Temp. Dew point Temp. Wet bulb Temp. SD Card, real time data logger, Patent

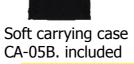
HEAT INDEX WBGT METER













The Art of Measurement

HEAT INDEX WBGT METER

Data error no 0.1% of total saved data may

Model: WBGT-2010SD

FEATURES

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.
- Real time SD memory card Datalogger, it Built-in Clock and Calendar, real time data recorder , sampling time set from 1 second to 3600 seconds.
- Manual datalogger is available (set the sampling time to 0), during execute the manual datalogger function, it can set the different position (location) No. (position 1 to position 99).
- Innovation and easy operation, computer is not need to setup extra software, after execute datalogger, just take away the SD card from the meter and plug in the SD card into the computer, it can down load the all the measured value with the time information (year/month/date/ hour/minute/second) to the Excel directly, then user can make the further data or graphic analysis by themselves.
- SD card capacity: 1 GB to 16 GB
- LCD with green light backlight, easy reading. Can default auto power off or manual power off.
- Data hold, record max. and min. reading. Microcomputer circuit, high accuracy.
- Power by UM3/AA (1.5 V) x 6 batteries or DC 9V
- * RS232/USB PC COMPUTER interface

GENERAL SPE	NERAL SPECIFICATIONS			
Circuit	Custom one-chip of microprocessor LSI			
	circuit.			
Display	LCD size	: 52 mm x 38 mm		
	LCD with	green backlight (ON/OFF).		
Measurement	* Wet bu	ulb globe temperature (WBGT)		
	@ Inc	door/Outdoor		
	* Black of	globe temperature (TG)		
	* Air ten	nperature (TA)		
	* Wet bu	ulb temperature (WB)		
	* Humid	ity		
	* Dew p	oint temperature		
WBGT formula	Indoor/O	utdoor and no sun :		
* Wet bulb	WBGT = (0.7 x WB) + (0.3 x TG)		
globe Temp.	Outdoor and full sun :			
	WBGT = (0.7 x WB) + (0.2 x TG) + (0.1 x TA)			
WBGT alarm	Adjustable WBGT alarm setting, if the			
setting	WBGT va	llue over the alarm threshold, the		
		ill sound along with the flashing		
	Display.			
Datalogger	Auto	1 second to 3600 seconds		
Sampling Time		@ Sampling time can set to 1 second,		
Setting range		but memory data may loss.		
	Manual	Push the data logger button		
		once will save data one time.		
		@ Set the sampling time to		
		0 second.		
		@ Manual mode, can also select the		
		1 to 99 position (Location) no.		

Data error no.	0.1% of total saved data max.		
Memory Card	SD memory card. 1 GB to 16 GB		
Advanced	* Set clock time (Year/Month/Date,		
setting	Hour/Minute/	Second)	
	* Set WBGT ala	arm value	
	* Decimal point	t of SD card setting	
	* Auto power 0	OFF management	
	* Set beep Sou	nd ON/OFF	
	* Select the ter	mperature unit to °C or °F.	
	* Set sampling	time	
	* SD memory of	ard Format	
Data Hold	Freeze the dis	splay reading.	
Memory Recall	Maximum & N	linimum value.	
Sampling Time of Display	Approx. 1 sec	ond.	
Data Output	RS 232/USB F	C computer interface.	
	* Connect the	optional RS232 cable	
	UPCB-02 wil	ll get the RS232 plug.	
	* Connect the	optional USB cable	
	USB-01 will	get the USB plug.	
Operating	0 to 50 ℃.		
Temperature			
Operating	Less than 85%	% R.H.	
Humidity			
Power Supply	*.Alkaline or	heavy duty DC 1.5 V battery	
	(UM3, AA)) x 6 PCs, or equivalent.	
	*.DC 9V adapter input. (AC/DC power		
	adapter is o	pptional).	
Power Current	Normal operation (w/o SD card save		
	data and LCD Backlight is OFF):		
	Approx. DC		
	1	d save the data but and	
	LCD Backlight	is OFF) :	
	Approx. DC	C 25 mA.	
	* . If LCD back	klight on, the power	
	consumption	on will increase approx.	
	11 mA.		
Weight	489 g/1.08 LE		
Dimension		177 x 68 x 45 mm	
	1	(7.0 x 2.7x 1.9 inch)	
		Round, 75 mm dia	
Standard	* Instruction manual1 PC		
Accessories	* Black brass ball (with sensor) 1 PC		
Included	* Soft carrying case, CA-05B1 PC		
Optional	* SD Card (2 GB)		
Accessories	* AC to DC 9V		
	* USB cable, l		
	* RS232 cable		
		ition software,SW-U801-WIN.	
	* Hard carrying case, CA-08,		
1	I Size : 370 x	310 x 115 mm.	

ELECTRICAL SPECIFICATIONS (23±5 C)					
Wet bulb glob	Wet bulb globe temperature (WBGT)				
Range	°C	Indoor	0 ℃ to 59 ℃		
		Outdoor	0 ℃ to 56 ℃		
	°F	Indoor	32 to 138 °F		
		Outdoor	32 to 132 °F		
Accuracy	°C	± 1 °C (15 to 59 °C)			
* Indoor		± 1.5 °C (Others)			
	°F	± 1.8 °F (59 to 138 °F)			
		± 2.7 °F	(Others)		
Accuracy	°C	± 1.5 ℃ (15 to 56 ℃)			
* Outdoor		± 2 °C (Others) ± 2.7 °F (59 to 132 °F)			
	°F				
		± 3.6 °F	(Others)		

WBGT Formula:

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

Air temperature (TA)		
Range	$^{\circ}$ C	0 to 50 ℃
	°F	32 to 122 °F.
Resolution	°C	0.1 ℃
	°F	0.1 °F
Accuracy	$^{\circ}$ C	± 0.8 ℃
@ 15 to 40 °C	°F	± 1.5 °F

Black globe to	Black globe temperature (TG)			
Range	$^{\circ}$ C	0 to 80 ℃		
	°F	32 to 176 °F.		
Resolution	°C	0.1 ℃		
	°F	0.1 °F		
Accuracy	°C	± 0.6 ℃		
@ 15 to 40 °C	°F	± 1.1 °F		

Humidity		
Range	5 % to 95 % R.H.	
Resolution	0.1 % R.H.	
Accuracy	≥70% RH :	
	± (3% reading + 1% RH).	
	< 70% RH :	
1	± 3% RH.	

Dew Point Temp.				
°C	Range	-25.3 °C to 48.9 °C		
	Resolution	0.1 ℃		
°F	Range	-13.5 °F to 120.1 °F.		
	Resolution	0.1 °F.		
Remark: * Dew Point Temp. value is calculated from the				
Humidity/Air Temp. measurement automatically.				
* The Dew Point Temp. accuracy is sum accuracy value				

of Humidity & Air Temperature measurement.

Wet bulb Temp.				
°C	Range	-21.6 °C to 50.0 °C		
	Resolution	0.1 ℃		
°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

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

Humidity & Air temperature measurement

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

Governmental Industrial Hygienists)

WBGT INDEX and PHYSICAL EXERCISE

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

PATENT CHINA: ZL 2008 2 0189918.5 ZL 2008 2 0189917.0 TAIWAN: M 358970 M 359043 Germany: Nr. 20 2008 016 337.4 JAPAN: 3151214 U.S.A. : Pending