![TRIPLETT]

HS10
Heat Stress Meter /Wet Bulb Global Temperature (WBGT) and Heat Index (HI) Monitor

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Introduction

Congratulations on your purchase of the Triplett HS10 Heat Stress Wet Bulb Global Temperature (WBGT) and Heat Index (HI) Monitor

. This compact checker measures air temperature, globe temperature, and humidity to give heat stress index for using in control of physical activity in hot environment to limit the danger of heat-related injuries.

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 situations.
It is suggested in an international standard ISO 7243 and many governments such as OSHA (US Occupational Safety & Health Administration), SMA(Sports Medicine Australia)and Japan Society for Occupational Health in establishing the permissible heat exposure limits in occupational health, sports or other physical activities.
The applications of the heat index can be in construction, iron and steel foundries, bricks-firing plants, glass facilities, boiler rooms, mining sites, army training, marathon, beach activities and so on.

The heat index was developed by the US National Weather Service to help people avoid heat illness. Prolonged exposure and/or physical activity at a high heat index is likely to lead to sun stroke, heat cramps, heat exhaustion and even death. However, please be aware that heat index is not an exact science. The values reached are approximations. Ultimately, the final decision of whether or not to exercise or work belongs to the individual, athletic trainer or employer.
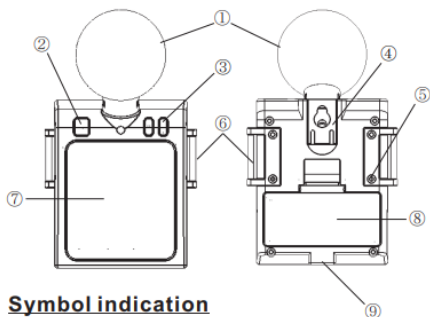
Features

- Simultaneously display WBGT/HI ,Temperature & RH
- For outdoor & indoor heat stress measuring
- Programmable buzzer & red LED danger zone warning
- Audible alarm volume adjustable (75dB / 60dB / mute)
- 4 level dangerous level indicator on LCD
- Wearable design with arm strap included
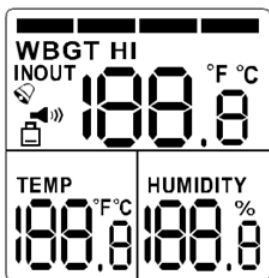- Display updates every 20 seconds

Description

METER DESCRIPTION (Front and Rear View)

Symbol indication
① ABS Black Ball
② Power Key〔SET〕
③ up/down adjust (2 Keys)
④ Hanger
⑤ Screw to change the strap holder
⑥ Strap holder
⑦ LCD Display
⑧ Battery Cover
⑨ Screw hold for tripod

LCD DISPLAY DESCRIPTION

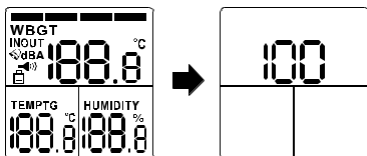| WBGT Wet Bulb Globe	
	Temperature
TEMP	Air Temperature
RH%	Relative Humidity
°C/°F	Celsius/Fahrenheit
IN	Indoor (no sun)
OUT	Outdoor (full sun)
🔕	Alarm indicator
🔋	Battery Indicator
◀»)	Sound Level
HI	Heat Index

FUNCTION BUTTONS

- Press the **POWER/SET** button to turn **ON**.
- Press and hold the **POWER/SET** button for 2 seconds to turn **OFF.**
- In **NORMAL MEASUREMENT MODE** press **[SET]** button **[▲]** and **[▼]** button simultaneously for 3 seconds to enter**SETTING** Mode.
- In power off status, press **[SET]** button**,** **[▲]** and **[▼]** simultaneously for 5 seconds till entering **RESET** Mode.
- In **NORMAL MEASURMENT MODE**, press **[▲]** or **[▼]** button to adjust the sound level.
- In **SETTING MODE** press **[▲]** or **[▼]** button to adjust the value of thresholds or ON / OFF the alarm.
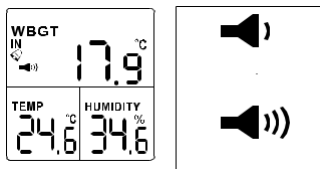
Operation

POWER

Press 🔘 to turn **ON** (**press1 second**) and turn **OFF** (**press 2 seconds**) the meter. All indicators are shown on the LCD when powered ON and the meter enters measurement mode. The firmware revision is displayed on the LCD for 1 second when powered ON.

MEASUREMENT

When in measurement mode, the WBGT value, temperature and humidity values are displayed on the LCD.

SOUND LEVEL

The user can press the [▲] or [▼] key to adjust the volume of the alarm. In measuring mode, press [▲] or [▼] key to adjust the volume in 0dB > 60dB >75dB respectively. The buzzer icon will be displayed.

Note: No Buzzer icon is displayed on the LCD when the sound is 0dB.

DANGER ZONE INDICATOR

For both WBGT and HI there are 4 levels of heat stress danger zone indications at the top of the LCD.

	Caution	Extreme Caution	Danger	Extreme

Hazardous	WBGT	HI
Caution	26.7~29.4C (80~84.9F)	27~31.9C (80.6~89.4F)
Extreme caution	29.4~31C (85~87.9F)	32~40.9C (89~105.6F)
Danger	31~32.2 (88~89.9F)	41~53.9 (105.7~129F)
Extreme danger	>32.2C (>90F)	>54C (>129F)

ALARM

When the measured heat stress value is over alarm threshold, the red LED, buzzer and measured value will all blink every second as a reminder. After 30 seconds, it beeps 1 time per minute. The user can disable beep sound at any time when pressing [▼] key. The alarm threshold value can be re-programmed. Check "SETUP" Mode in the following section in this manual for further instruction.
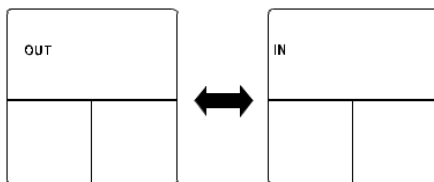
SETUP MODE

This function allow users to customize their own default settings. Press the [⏻/SET] button + [▲]+ [▼] buttons simultaneously for 3 seconds to enter **SETUP Mode**. The meter will return to normal display while keys are inactive for 30 sec in setup mode. Display for either WBGT & HI (Heat Index) is switchable by the user.

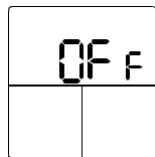## IN/OUT SWITCH (ONLY for WBGT mode)

This function serves to calculate WBGT without [IN] or with [OUT] direct sun exposure.
Under IN/OUT modes, press [▲] or [▼] to switch
[IN / OUT] then press [⏻/SET] to confirm
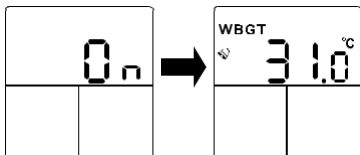

ALARM THRESHOLD SETTING

This function allows users to customize alarm threshold or stay at factory default alarm threshold. While choosing to stay at factory default alarm threshold, please select [OFF]. [OFF] means to turn off customization function.

The default alarm-threshold is defined in below and each range has different buzzer frequence to distinguish.

If user decides to customize their own alarm threshold, select [ON], [ON] means the alarm threshold setting is turned ON by user.
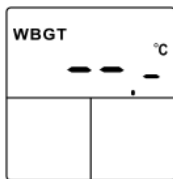
The adjustment range is listed below.

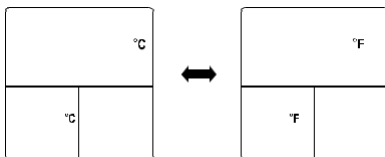| Hazardous	WBGT	HI	Alarm Customize OFF	Alarm Customize ON
Caution	26.7~29.4C (80~84.9F)	27~31.9C (80.6~89.4F)	Silent	Urgent beep upon the measured reading is over the threshold
Extreme caution	29.4~31C (85~87.9F)	32~40.9C (89~105.6F)	Beep	
Danger	31~32.2 (88~89.9F)	41~53.9 (105.7~129F)	Urgent Beep	
Extreme danger	>32.2C (>90F)	>54C (>129F)	Urgent Beep	

Press the [▲] or [▼] button to adjust alarm value. Press the ⊙/SET button to save the value. The adjustment is 0.1 per step. The adjustment range is 68°F to 122°F (20 to 50°C) for WBGT and 50°F to 140°F(10~60°C) for HI

Note: If user prefers to monitor the heat stress in a complete silent mode the following procedure can disable the alarm function so LED, buzzer and alarm related icons are all OFF. While adjusting alarm threshold value, pressing [▲] and [▼] key simultaneously. The alarm threshold will show [--.-] on the LCD Press [▲] and [▼] again to revert the status.
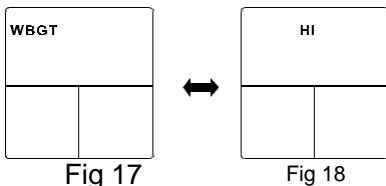
TEMPERATURE UNIT ^{O}C /^{O}F

Press [▲] and [▼] key to switch ^{O}C (degrees Celcius)
or ^{U} F (degrees Farhenheit). Press ⓘSET key to save
the selection.)

WBGT / HI SWITCHING

For HS10, the main displayed heat stress index can be WBGT or HI.
While the temp unit setting completed, pressing [▲] or [▼] key to switch
WBGT/HI and then press SET key to confirm
Then, the checker will return to measurement mode after upon all setting are
completed.

Fig 17   Fig 18

RESET FUNCTION

This allows user RESET the meter to default setting. In **POWER OFF** status,
press [SET], [▲] and [▼] key simultaneously for 5 seconds till [rSt] symbol
show on the LCD in 5 seconds. Then full display will be turned on and go to
measurement mode automatically.

The Default settings for the meter are:

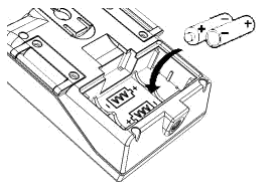| Description	Default Value
IN/OUT	OUT
ALARM THRESHOLD SETTING	OFF
^{O}C / ^{O} F	^{O}C
WBGT/HI	WBGT
SOUND LEVEL	🔊

Battery Installation and Replacement

The meter is powered by (2)1.5V AAA batteries. First, check the batteries when:

3. First time using the meter
4. The battery symbol appears on LCD
5. The meter does not power ON.

To install the batteries

1. Turn off the meter.
2. Remove the battery cover
3. Replace the old batteries with two new batteies
4. Make sure the batteries are in the place and the polarity is correct.
5. Replace the battery cover.

Low Battery Indication

⊟ appears on the LCD when battery voltage gets low. Please replace battery by opening the compartment on the rear of the meter.

Specifications

Temp. range	32 to 122°F(0~50°C)
Temp. resolution	0.1°C/°F
Temp. accuracy	+/-1.8°F(+/-0.6°C)
Humidity. range	0.1%~99.9%RH
Humidity resolution	0.1%RH
Humidity accuracy	10.0%~90.0% @ 25°C: Typical 5%. Others 7%
Globe Temp.(inside black ball)	32 to 158°F(0~70°C)
WBGT temp. range	32 to 122°F(0~50°C)
HI temp. range	32 to 140°F(0~60°C)
WBGT Alarm Range	68°F to 122°F(20~50°C)
HI Alarm Range	68°F to 122°F (20~60°C)
Black ball size(mm)	Dia. 40
Stabilization time	15 ~25 minutes typical
Battery life	~300hour
LCD size (mm)	40(H)x39(W) (1.6x1.5")
Operation temp.	32 to 122°F(0~50°C)
Operation RH%	Humidity < 80%
Storage temp.	-4°F 122°F(-20~50°C)
Storage RH%	Humidity < 90%
Dimension(mm)	2.8" x 2.4"x0.8" (70(H)x60(W)x22(D))
Weight	3.17 oz (~90g)
Standard Package	AAA x2pcs
Battery	Meter/Battery/Manual/Paper box

WBGT & Physical exercise

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

Source: Manual of Naval Preventive Medicine (NAVMED P-5010)

Heat Index Chart

Category	Heat Index	Possible heat disorders for people in high risk groups Extreme
Danger	54°C or higher	Heat stroke or sunstroke likely
Danger	41-54°C	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme	32-41°C	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity
Caution	27-32°C	Fatigue possible with prolonged exposure and/or physical activity.

WARRANTY STATEMENT

Triplett Test Equipment offers a one-year warranty to the original purchaser of its products. We guarantee that our products will be free from defects in workmanship and materials for one (1) year from the purchase date.

This warranty does not cover:

- Products purchased from unauthorized distributors.
- Items that have been repaired or altered by unauthorized individuals.
- Damage from misuse, abuse, misapplication, negligence, or accidents.
- Products with altered, defaced, or removed serial numbers.
- Accessories, including batteries.