REED

Model 8778

Heat Stress Meter

Instruction Manual

www.reedinstruments.com

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Features

- Wet Bulb Globe Temperature (WBGT) considers the effects of temperature, humidity and direct or radiant sunlight
- Heat Stress Index measures how hot it feels when humidity is combined with temperature, air movement and radiant heat
- Black Globe Temperature (TG) monitors the effects of direct solar radiation on an exposed surface
- In/Out function displays the WBGT value with or without direct sun exposure
- View individual temperatures or indices in either °F or °C
- User adjustable WBGT threshold with audible alarm if threshold is exceeded
- Auto power off with override
- Built-in RS232 and USB interface
- Tripod mount design for long-term monitoring

Specifications

Air Temp. Range:	0.0 to 50.0°C (32 to 122°F)
Accuracy:	±0.6°C (±1.1°F)
Black Globe Temp. Range:	0.0 to 80.0°C (32 to 176°F)
Accuracy:	±1°C: 15 to 40°C, ±1.5°C: rest of range for indoor; ±1.5°C: 15 to 40°C, ±2°C: rest of range for outdoor
WBGT Temp. Range:	0.0 to 50.0°C (32 to 122°F)
Resolution:	0.1°C (0.1°F)
Humidity Range:	0 to 100% RH
Accuracy:	±3% RH: 10 to 90% RH, ±5% RH: rest of range
Resolution:	0.1% RH
Operating Conditions:	0 to 50°C, 0-95%RH
Storage Conditions:	-20 to 65°C, 0-95%RH

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Power Supply:	2 x AAA batteries (included)
Power Consumption:	1000 hours (Alkaline), 250 hours (General purpose)
Dimensions:	10 x 1.9 x 1.1” (254 x 49 x 30mm)
Black Ball Dimensions:	2.95 x 2.95” (75 x 75mm)
Optional Accessories:	Tripod (Model BS-6) 33% Humidity Calibration Standard (Model HR33) 75% Humidity Calibration Standard (Model HR75) USB Cable & Software (Model VZUSBAZM)

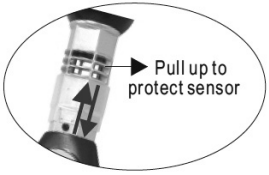
Instrument Description

LCD Display

WBGT	Wet Bulb Globe Temperature
TG	Black Globe Temperature
TA	Air Temperature
%	Relative Humidity
C/F	Celsius/Fahrenheit
IN	Indoor (no Sun)
OUT	Outdoor (full Sun)
	Low battery indicator
DP/RES1888	Unused icons in these models

Operating Instructions

Press the SET button to turn the meter ON or OFF.
All indicators on the LCD screen will flash when you power on.
Slide down the sensor-protecting sheath before taking a measurement.



Select display mode

The meter measures TA (Air Temp), TG (Globe Temp), RH (Relative Humidity), and calculates WBGT. Press the MODE button to select the measuring mode. An icon will appear on the top of the LCD screen to indicate the current operation mode (see Fig. A).

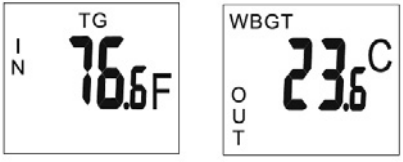


Fig. A

IN/OUT switch

To measure WBGT with or without direct Sun exposure, hold down the MODE for more than 1 second to switch. Either IN or OUT will then be displayed on the LCD screen indicating weather the unit is set for Indoor (no Sun) or Outdoor (full Sun) measuring.

Select Unit

Press the MODE and NEXT buttons simultaneously in measuring mode to select °C or °F.

Alarm Setting

This meter features an audible alarm to give warning for possible heat stress in the environment. When WBGT value reaches the alarm threshold, the value starts to blink and there is a continuous beep. The alarm stops when the measured value falls below the threshold or the meter is turned off. The alarm threshold is adjustable for different applications. When the meter is OFF, hold down the SET button for 2 seconds to turn on the meter and enter the alarm setting. The current setting will be displayed with a blinking digit. Press the MODE button to increment the value and the NEXT button for 2 seconds to return to measuring mode. The setting range is 20.0 – 37.2°C (68 - 99.0°F). OUT will display on the LCD screen if the setting is out of range (see Fig. B).

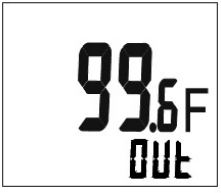


Fig. B

Auto Power Off (Sleep Function)

The meter will automatically power itself OFF after 20 minutes of inactivity. To override this function, when the meter is off, hold down the SET and MODE buttons for 2 seconds. When “n” appears in the LCD screen, the meter is now in Non-Sleep mode. When the meter is turned off, the default will revert back to the default (see Fig. C)

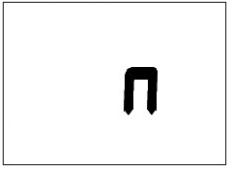


Fig. C

Calibration

This meter can be calibrated on the humidity by end users with the optional 33% and 75% salt solution. Them ambient condition is recommended to be at 23+/-2°C and a stable humidity. Users can terminate the calibration at any time by pressing the SET button.

33% Calibration

Be sure the meter is turned off. Unscrew the black globe with the sensor sheath (see Fig. 1).

Plug the sensor probe into the optional 33% Humidity Calibration Standard (Model HR33) (see Fig. 2). Hold down the SET, NEXT and the MODE buttons for 2 seconds until blinking "3X.X%" appears on the LCD screen. The meter is now calibrating and will finish in approximately 60 minutes. When the value stops blinking, the meter is done calibrating.

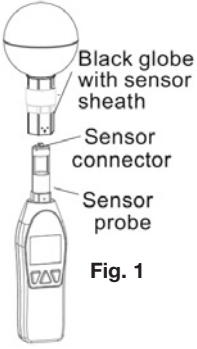


Fig. 1

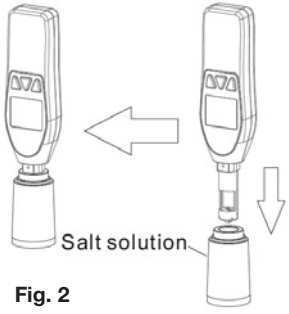


Fig. 2

75% Calibration

After the 33% calibration, plug the sensor probe into the optional 75% Humidity Calibration Standard (Model HR75) (see Fig. 2). Press the MODE button to begin the calibration, and a blinking "7X.X%" will appear on the LCD screen. The meter is now calibrating and will finish in approximately 60 minutes. When the value stops blinking, the meter is done calibrating and will return to measuring mode.

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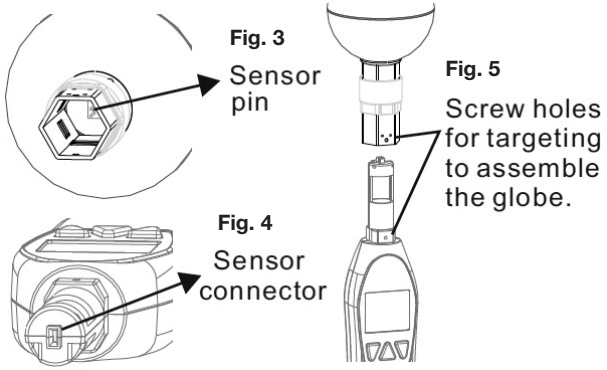
Reassembly

Reassemble the globe with caution by fitting the pin (see Fig. 3) into the connection (see Fig. 4). It helps to position by targeting the screw holes on the sheath and the meter (see Fig. 5). Incorrect installation may damage the sensor.



Note: The RH value difference between the meter display and calibration standard should be within +/-0.3% otherwise the calibration has failed.

Troubleshooting

Power on but no display

Check that the batteries are in properly and in the correct polarity. Take the batteries out for one minute, reinstall and retry.

Calibration failure

Check the battery voltage or replace them with new batteries. Check weather the senor is well plugged into the salt bottle and no air comes in. Check ambient condition.

Error message on the display

E2: The value is under range / Improper sensor installation

E3: The value is over range

E4: The value is in error because of the original data / Improper sensor installation

E11: RH calibrator error, do the calibration again

E32/E33: Circuit error, contact REED Instruments for repair or replacement

RS232 Interface

This meter can do PC link for on-line logging and data analysis via RS232 interface and software. The protocol is as follows:

A. 9600 bps, 8 data bids, no parity.

B. Format (Transmitting ASCII code every second while meter is on Wxxx.xC(F):Txxx.xC(F):Txxx.xC(F):Hxx.x%LRCCRLF

Note: the 1st value is **WBGT**, the 2nd **TA**, the 3rd **TG**, and the 4th is **RH**

Battery Replacement

The symbol will appear on the bottom left of the LCD screen when the battery power is low. If the batteries are not replaced the accuracy of the reading will be affected.

1. Open the battery cover at the back of the meter and remove the batteries.
2. Insert 2 new AAA batteries and make sure the batteries are in the correct polarity.
3. Reinstall the cover.

Notes