



The Environmental Company



Microtherm

The Microtherm Heat Stress WBGT

Microtherm

Heat Stress

WBGT

The Microtherm WBGT from Casella CEL is an ergonomically designed, compact and rugged instrument designed to monitor heat stress potential of personnel in hot working environments in accordance with ISO 7243.

It is the first heat stress meter that offers real-time graphical display of data and also features an audible/visual alarm, which allows the operator to make rapid decisions if required. PC software for retrospective data analysis is included.

WHAT IS HEAT STRESS?

Workers exposed to hot working environments can be susceptible to heat stress, when the core body temperature rises to dangerous or hazardous levels. This can result in physiological symptoms like heat cramps, nausea, palpitations, stroke and possibly death.

An overall estimation of heat stress levels on the body can be measured by utilizing the Wet Bulb Globe Temperature Index (WBGT). This combines the measurement of three parameters; natural wet bulb temperature (tnw), globe temperature (tg) and air temperature (ta), applied to the following formula for both indoor and outdoor environments:

$$\text{WBGT (Indoor)} = 0.7\text{tnw} + 0.3\text{tg}$$
$$\text{WBGT (outdoor)} = 0.7\text{tnw} + 0.2\text{tg} + 0.1\text{ta}$$

The data collected for these values are compared to reference values as defined by the standard and appropriate "work rest" regimes can then be adopted in the work place or more detailed medical analysis undertaken.

FEATURES

- Large LCD graphics display
- Real time display
- Full data-logging facilities as standard
- Low water level warning
- Audible / visual alarm for WBGT levels
- RH% and dewpoint calculation
- Automatic calc of work rest regimes via PC software
- Tripod mounting for meter and remote sensor array
- Ergonomic design
- Long battery life
- 10M extension cables available
- PC software included
- Meets requirements of ISO 7243

APPLICATIONS

- Power Stations
- Foundries
- Steel works
- Bakeries
- Glass manufacturing
- Routine monitoring
- Medical Surveillance testing

OPERATION

The WBGT meter measures simultaneously from three PRTD sensors for Wet Bulb, Dry Bulb and Globe Temperatures. Sensors are manufactured to high accuracy standards: BS 1904 and DIN 43760.

Processed data values include:

- WBGT (indoor and outdoor)**
- 1 Hour (TWA) WBGT values**
- Relative Humidity (%)**
- Dewpoint**

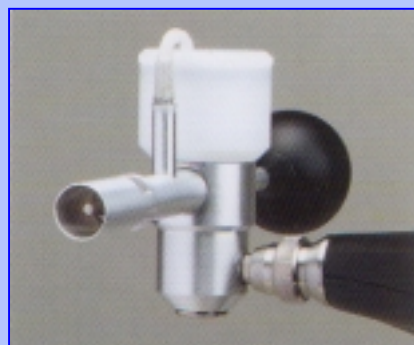
Sensors can be used either attached directly on the body of the unit (figure 1) or remotely via 10M extension cables (figure 2). Both the electronic unit and sensor array can be tripod mounted (tripod not included).



Figure 1



Figure 2



Sensor array

DISPLAY

The Microtherm WBGT incorporates a large 128 x 64 pixel graphics LCD with backlight, capable of displaying data in two modes;

- **Graphical Representation** - The Microtherm WBGT is the first area heat stress instrument to offer a real-time scrolling graph of the temperature parameters being measured.

This display can be shown over variable time bases of 15,30,60 & 120 minutes. This allows the user to assess how the environment is changing over time, without having to download to a PC.

- **Numerical values** - Instantaneous values for all parameters are displayed, combined with the hourly rolling average values.

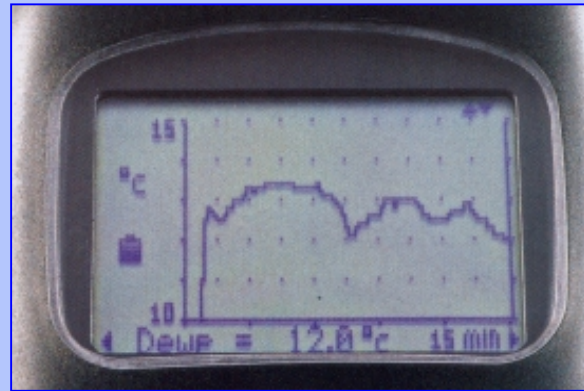


ALARM

An adjustable alarm threshold may be defined for one selected data channel: WBGT_{twa}, WBGT, T_a or OFF. An audible alarm and flashing visual message on the display screen provides warning of exceedence of the threshold.

SIMPLE KEYPAD OPERATION

The Microtherm WBGT has been designed with a simple, easy to use menu structure for the displaying of information, instrument configuration and retrieval of data. The access of this menu via the touch keypad and screen prompts, insure ease of use for the operator.

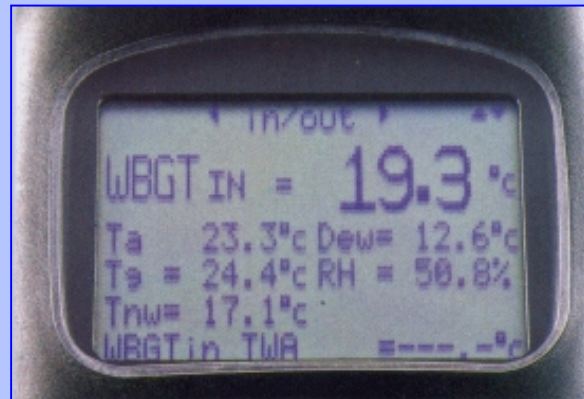


SOFTWARE

Windows 32 bit PC software package (Win HSM) provides an interface for data collection to PC for retrospective analysis. It produces graphical and tabular reports which can easily be imported into other applications. Summary and WBGT Heat Stress Index reports also generated.

Work rest regimes are calculated, Clothing (Clo) correction factors, and metabolic rates can be entered in accordance with OSHA and ISO7243.

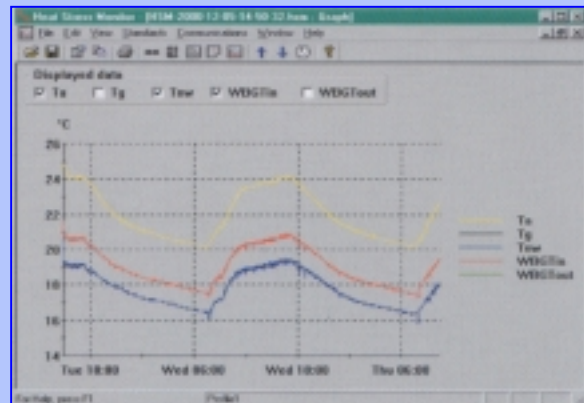
Data can also be viewed "live" by selection of the real-time option whilst connected to the PC.



CALIBRATION

Calibration of the Microtherm WBGT is performed against an internal reference prior to every single measurement. This ensures a high accuracy for each of the temperature sensors and eliminates the need for annual recalibration.

Sensor arrays are also interchangeable without need for recalibration.





ORDERING INFORMATION

Part no.	Description
180000A	Microtherm Heat Stress WBGT meter with kit case
180042A	Microtherm Heat Stress WBGT meter with kit case and calibration certificate
180043B	10M extension lead for sensor array
Cel 90330	Small Tripod (max height 215mm)
Cel 6718	Standard Tripod (max height 1,160mm)

Microtherm kit includes:

Microtherm Heat Stress WBGT meter
 Sensor array
 Pack of spare wicks and screwdriver
 Rechargeable batteries (x4)
 Universal mains PSU (110/240vAC) with UK, Europe and USA plug adaptors.
 Distilled water container
 RS232 communication cable
 Windows Win HSM software
 Hard carrying case

INSTRUMENT SPECIFICATIONS

Measurement:

Sensing technique:	Platinum Resistance Temperature Detectors, 100 elements 0.1% using 4-wire cable up to 30 m
Ta, Dry Bulb (Air):	Measuring Range: 10 – 60°C, Accuracy: ±1.0°C
Tg, Globe:	Measuring Range: 20 – 120°C, Accuracy 20 – 50°C: ±0.5°C, 50 – 120°C: ±1.0°C
Tnw, Natural Wet:	Measuring Range: 5 – 40°C, Accuracy: ±0.5°C
Resolution:	0.1% for temperature and RH.

Power Supply:

Power Consumption:	Approx. 30 mA
Battery:	4 x AA / MN1500 cells Alkaline or rechargeable NiCd
Battery life:	20 hrs NiCd / 85 hrs alkaline
External supply:	100 - 240 V AC Universal with Internal NiCd fast charger circuitry

Physical:

Display:	128 x 64 pixel LCD Graphics panel with backlight
Keypad:	7 key tactile membrane
Weight:	Sensor / carry case: 0.97 kg Instrument only: 0.75kg
Dimensions:	Instrument: 245 x 95 x 50 mm Array: 90 high x 225 x 65 mm Carrying case: 135 x 490 x 370 mm

Displayed and Stored Values:

Wet Bulb Globe Temperature Indoor & Outdoor
 Wet Bulb Globe Temperature, Indoor & Outdoor TWA
 Ta, Dry Bulb (Air)
 Tg, Globe
 Tnw, Natural Wet
 Dewpoint (calculated)
 Relative Humidity Percent
 (All temperatures levels may be selected for display in °C or °F)

Additional Stored Values:

Wet Bulb Globe Temperature Indoor & Outdoor - Max, Min and Average values
 Wet Bulb Globe Temperature Indoor & Outdoor TWA - Max and Min values
 Ta, Dry Bulb (Air - Max, Min and Average values)
 Tg, Globe - Max, Min and Average values
 Tnw, Natural Wet - Max, Min and Average values

Data Logger:

Internal memory:	512k memory providing up to 49,100 data records
Logging Interval:	30 seconds to 1 hour
Analogue output:	0 - 2.5 V DC FSD, 500 W output impedance.

Software

Operating system	MS Windows 95/98, NT compatible RS232 serial port, 8MB RAM, FDD & HDD, VGA Graphics
------------------	--