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Casella Microtherm Heat Stress Monitor

Introduction

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 the heat stress levels on a body can be measured using the Wet Bulb Globe Temperature (WBGT) Index. This combines the results from three temperature sensors into a single calculated value that may be compared with reference values depending upon the specific work regime.
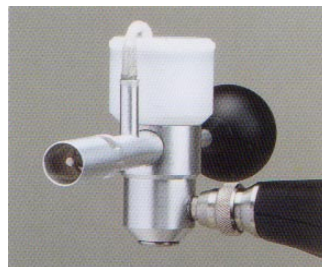
Applications

❑ Power stations
❑ Foundries
❑ Steel works
❑ Bakeries
❑ Glass manufacturing
❑ Routine monitoring
❑ Medical surveillance testing

Key benefits

❑ Large LCD screen
❑ Real time display of changing levels
❑ Data-logging as standard
❑ Low water level alarm
❑ Audible & visual warning of level excedances
❑ RH% and dewpoint calculation
❑ Windows PC software for setup and download of results from memory
❑ Automatic calculation of work/rest regimes with included PC software
❑ Tripod mounting for extended surveys
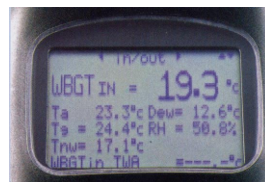❑ Meets the requirements of ISO 7243

WBGT values are calculated simultaneously according to the following formulae for indoors and outdoors.

$$WBGT_{(in)} = 0.7tnw + 0.3tg$$

$$WBGT_{(out)} = 0.7tnw + 0.2tg + 0.1ta$$

Operation and use

The WBGT meter measures simultaneously from three PRTD sensors for wet bulb (tnw), dry bulb (ta) and globe (tg) temperatures. Sensors are manufactured to high accuracy standards: BS 1904 and DIN 43760. The sensors can be mounted directly onto the body of the instrument or they can be remotely positioned via a 30 ft cable. Both meter and sensor unit have a tripod socket for ease of use.

digital display of values

scrolling real time display

Processed data values include:

WBGT(indoors)
WBGT(outdoors)
1 hour (TWA) WBGT values
Relative humidity (%)
Dew point temperature

Logged values include date and time plus all measured and computed values. Logging intervals from 30 seconds to 1 hour. Results stored in either °F or °C.

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Technical Information		
Measurement		
Sensing technique: Ta, Dry bulb, air: Tg, Globe: Tnw, Natural wet: Resolution:	Platinum resistance temperature detectors (PRTD) 100 elements 0.1% using 4 wire cable up to 30 ft (10m) Measuring range: 50 – 140 °F (10 – 60 °C), accuracy ± 2.0 °F (1.0 °C) Measuring range: 68 – 248 °F (20 – 120 °C), accuracy ± 2.0 °F (1.0 °C) Measuring range: 41 – 104 °F (5 – 40 °C), accuracy ± 1.0 °F (0.5 °C) 0.1% for temperature and relative humidity	
Power supply		
Battery pack: Battery life: External supply:	4 x AA MN1500 cells, Alkaline or rechargeable NiCad 20 hours NiCad cells, 85 hours Alkaline cells 100 – 240 VAC Universal transformer with intelligent internal NiCad fast charger circuitry	
Physical		
Display: Keypad: Weight: Dimensions:	128 x 64 pixel LCD graphics screen with backlight 7 key tactile membrane 26.5 oz (750 gm) instrument only 10.0 x 3.7 x 2.0 in (245 x 95 50 mm)	
Displayed and stored values		
	Wet Bulb Globe Temperature Indoors & Outdoors Wet Bulb Globe Temperature Indoors & Outdoors TWA Ta, dry bulb, air Tg, globe Tnw, natural wet Dew point Relative humidity %	
Additional stored values		
	WBGT Indoor & Outdoor maximum, minimum and average values WBGT Indoor & Outdoor TWA maximum, minimum values Ta, dry bulb, air maximum, minimum and average values Tg, globe maximum, minimum values Tnw, natural wet maximum, minimum and average values	
Data logger		
Internal memory: Logging interval: Recording method: Analog output:	512kb memory providing up to 49,100 data records 30, 60 sec, 1, 2, 3, 4, 5, 6, 10, 15, 20, 30, 60 minutes Record and stop when memory full or overwrite oldest results 0 – 2.5 V DC FSD, 500Ω output impedance	
PC Software		
Operating system:	MS Windows 95/98, NT, 2000 compatible 32 bit package RS232 serial port, 8 Mb RAM, FDD & HDD, VGA graphics card	
Ordering information		
180000A 180042A 180043B	Microtherm Heat Stress monitor with standard accessories in customized attaché case Microtherm Heat Stress monitor with standard accessories in customized attaché case plus individual calibration certificate 30 ft (10m) extension cable for sensor array	

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