



SCARLET | TECH

Innovative Handheld Heat Stress Monitor

# TWL-1S



Distributed by:  
Air-Met Scientific Pty Ltd

Air-Met Sales/Service  
P: 1800 000 744  
F: 1800 000 774  
E: sales@airmet.com.au

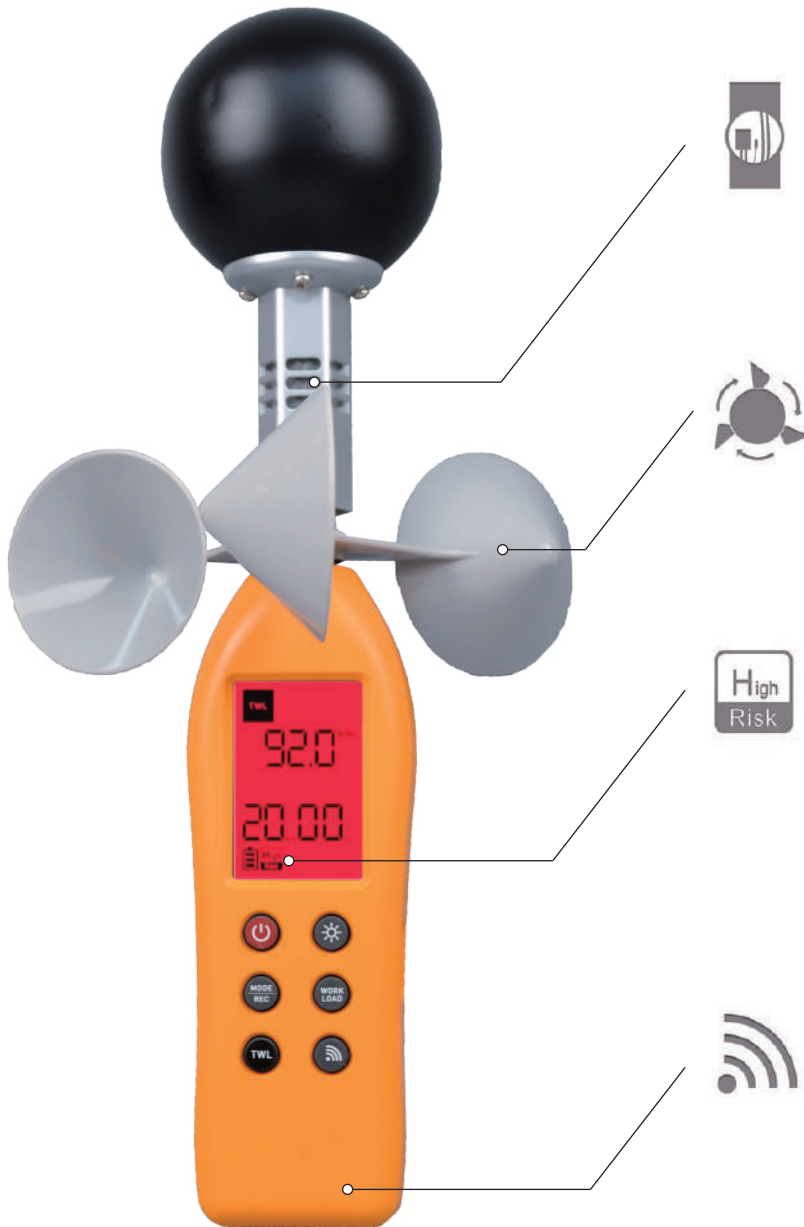
Air-Met Rental  
P: 1300 137 067  
E: hire@airmet.com.au  
W: www.airmet.com.au



DESIGNED FOR EASY HEAT RISK ASSESMENT

- 4 essential sensors for thermal comfort measurement
- Shipped with tool box and tripod for easy carriage and use
- Built-in WBGT and TWL algorithm
- Scarlet software TWLIT for quick setup and data download
- Intuitive user interface wireless remote notification

# Features



## Sensor Protection

- Humidity sensor is well protected by a replaceable polypropylene filter in a solid shield
- A silicone pad keeps the anemometer from dust



## Wind Cup

- Cup anemometer captures wind from any direction. You do not have manually decide the wind direction before measuring wind speed
- Compared to impeller, wind cup is not restricted to wind direction



## Risk Indication

- Backlights color indicates the risk level based on TWL
- Recommended schedule for work, rest and rehydration is integrated
- Configurable timers to schedule the work time



## Remote Warning

When work timer expires or thermal risk is high, pager carriers will be notified with wireless technology. The coverage is 200 meters in an open space

## TWL-1S Monitor



### Low risk

Unrestricted zone

*TWL : >140*



### Medium risk

Cautionary zone

*TWL : 115 - 140*



### High risk

*TWL : < 115*



# Technical Specification

## Sensor

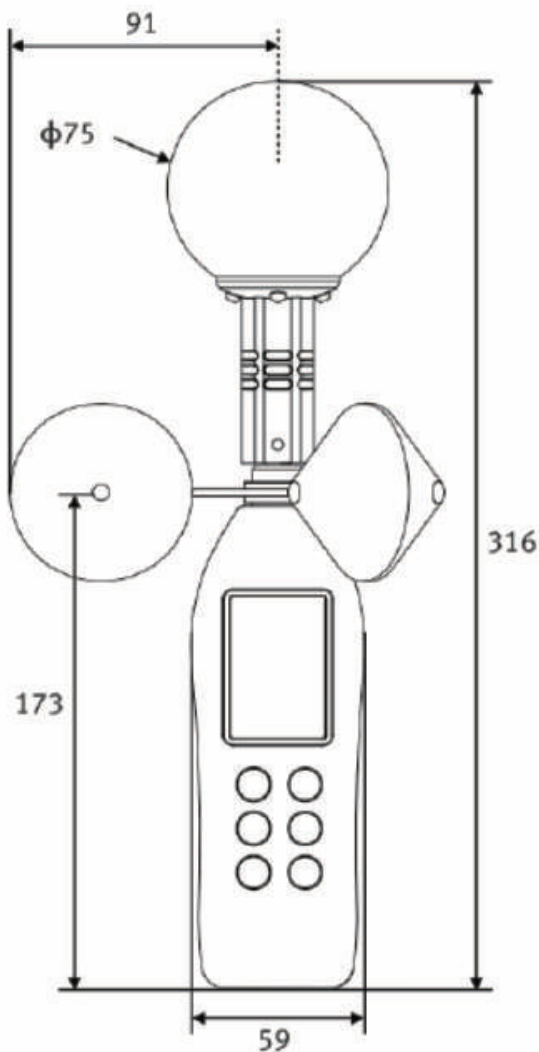
TWL-1S Heat Stress Monitor measures air temperature ( $T_a$ ), relative humidity (%RH), globe bulb temperature ( $T_g$ ) and wind speed (WS), whereas wet bulb temperature ( $T_w$ ) is derived from  $T_a$  %RH at sea level atmosphere pressure.

## Heat Indices

WBGT (Wet Bulb Globe Temperature) and TWL (Thermal Work Limit) can be calculated on the device. WBGT is derived from  $T_w$ ,  $T_g$  or/and  $T_a$  whether indoor or outdoor. TWL is derived from  $T_w$ ,  $T_g$ ,  $T_a$  WS with the assumption of safe maximum core temperature for human  $< 38.2^\circ\text{C}$

## Calibration

Annual recalibration is recommended for the humidity sensor with built-in calibration program and optional calibration kit.



Temperature sensor	Range 0...60 °C Accuracy $\pm 0.6^\circ\text{C}$
Humidity sensor	Range 5...95 %RH Accuracy $\pm 3\%$ (at 25 °C; 10...90 %RH); $\pm 5\%$ (others)
Globe bulb indoor	Range 0...80 °C Accuracy $\pm 1.0^\circ\text{C}$ (15...40 °C); $\pm 1.5^\circ\text{C}$ (others)
Globe bulb outdoor	Range 0...80 °C Accuracy $\pm 1.5^\circ\text{C}$ (15...40 °C); $\pm 2.0^\circ\text{C}$ (others)
Wind speed	Range 0.5...10 m/s Accuracy $\pm (2\% \text{ of reading} + 0.2)$ m/s
WBGT formula	Indoor WBGT = $0.7 \times T_w + 0.3 \times T_g$ Outdoor WBGT = $0.7 \times T_w + 0.2 \times T_g + 0.1 \times T_a$
WBGT indoor	Range 0..66 °C
WBGT outdoor	Range 0..64 °C
TWL calculation	Dynamic calculation based on $T_w$ , $T_g$ , $T_a$ and WS. Safe max. $T_{\text{core}} < 38.2^\circ\text{C}$
Display	32(W) x 50(H) mm LCD screen
Backlight	Yes. Color depends on TWL measurement
Power supply	4x AAA batteries supply 6V
Power consumption	6 mA with backlight off
Battery indicator	Yes
Battery life	120 hr with alkaline batteries
Dimension	59(W) x 37(D) x 316(H) mm Globe bulb 75 mm diameter Wind cup 91 mm rotation radius
Weight	330g
Enclosure	ABS
Standard	CE-compliant
Sensor protection	Polypropylene filter
Operating range	-10...60 °C
Pager frequency	433 MHz
Pager dimension	51(L) x 74(W) x 28(H) mm
Pager weight	76g
Alarm loudness	85db @ 10 cm
Logger memory	2,000 readings
Standard accessory	Tripod x 1, pager x 1, AA battery x 1, AAA battery x 4 USB cable x 1, toolbox x 1, conformity certificate, user manual ( <b>Noted: Pager only in TWL-1SR version</b> )
Calibration kit	Optional. MgCl <sub>2</sub> and NaCl O-ring sealed bottles
Storage condition	25 °C indoor



Scarlet Tech Co., Ltd.  
© 2021 Scarlet Tech Co., Ltd. All rights reserved.  
4F-3, No. 347 , HePing E Rd, 2nd Sec, DaAn District, Taipei City 106, Taiwan  
info@scarlet.com.tw  
www.scarlet-tech.com

version 220222