Heat Shield

Heat Stress Monitor: A Wireless Wet Bulb
Globe Temperature (WBGT) Meter

Heat Stress
Monitoring and Managing Worker Heat Stress

Simplifying the Complex Measurements of Worker Heat Stress

Work involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or even strenuous physical activities have a high potential for inducing heat stress in workers. Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension all affect a person's sensitivity to heat.

Heat Shield

The LSI Heat Shield system is an advanced worker heat stress instrument for Health & Safety and Industrial Hygiene professionals. In a compact and rugged system, Heat Shield integrates globe/wet bulb/dry bulb temperatures and relative humidity sensors to display and store on-line WBGT indoor & outdoor index, Heat Index, and Humidex measurements. HeatShield is available with either a 2 inch (5cm) or 6 inch (15 cm) globe.

⦿ Precision Sensors

Meteorological grade dry bulb radiant screen
Wet bulb temperature accuracy ±0.3° 32-248°F
Globe temperature accuracy ±0.3° 32-248°F
Air velocity accuracy ±0.1 m/s (0,5÷1,5 m/s) <± 4% (1,5÷20 m/s)

⦿ Excellent Measurement Capability

Dry bulb, wet bulb and globe temperatures
Relative humidity
Air velocity measurement
WBGT (indoor&outdoor) Index
Head-Torso-Ankle Weighted Average WBGT
Heat index / HUMIDEX
PMV-PPD (Thermal comfort)

⦿ Advanced Calculations

Predicted Heat Strain (Heat stress)
Insulation Required (Cold stress)
Area and personal measurement
GIDAS TEA advanced software for Thermal Environment Analysis,

⦿ Easy to Use

Large memory for extended datalogging
Temperature reading in Celsius or Fahrenheit
Selectable data logging intervals
400-hour battery life (20-hours with wifi)
Automatic start/stop
Time & date stamping

SENSIDYNE®
Industrial Health & Safety Instrumentation

The Heat Shield Advantage
Personal and Area Wireless (WBGT) Meter

Calculations

Heat Shield calculates on-line and displays the following indexes:

- WBGT indoor & outdoor index (ISO7243).
- Head-Torso-Ankle Weighted Average WBGT (ISO7243)
- Heat index According to 1990 National Weather Service (NWS) Technical Attachment (SR 90-23)
- Humidex According to J.M. Masterton and F.A. Richardson of Canada's Atmospheric Environment Service equation

Wireless Remote Modules

Heat Shield can be supplied as a single base unit or with two additional wireless satellite modules. The satellite units are used to measure environmental conditions at three levels and calculate Head-Torso-Ankle Weighted Average WBGT as required by the ISO 7243. Alternatively, the satellite modules can be used in different locations, performing three simultaneous measurements saving the user precious working time. Heat Shield radio can cover up to 300 m (line-of-sight; actual range in indoors conditions may vary).
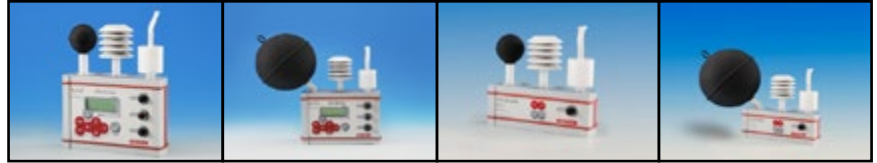
Easy to Operate

Heat Shield is very stable when placed on any horizontal surface but it can be also hand held or mounted on standard photographic tripod. With its on-and-play philosophy, measurements can be displayed in just a few instants from power on. No configuration is required by PC. Rechargeable batteries assure up to 400 hrs of measurement.

Heat Shield has a large on-board memory to store measurements and calculations performed during every survey. Included software makes it easy for users to generate custom or standard reports. and perform analysis of the measurement results to evaluate working limits.

	Base Modules		Satellite Modules	
Instrument Comparison	**ELR610M 2" Globe**	**ELR615M 6" Globe**	**ELR610S 2" Globe**	**ELR615S 6" Globe**
Wet bulb temperature sensor	Y	Y	Y	Y
Radiant temperature sensor	Y	Y	Y	Y
Dry temperature sensor (including radiant shield)	Y	Y	Y	Y
Anemometer. Indoor use (optional)	Y	Y	Y	Y
Air velocity / Air flow	O	O	-	-
Measurement Capabilities				
WBGT (indoor) index	Y	Y	Y	Y
WBGT (outdoor) index	Y	Y	Y	Y
Heat index / HUMIDEX	Y	Y	Y	Y
PMV-PPD	Y*	Y*	Y*	Y*
Predicted Heat Strain (PHS)	Y*	Y*	Y*	Y*
Insulation Required (IREQ)	Y*	Y*	Y*	Y*
Duration Limit of the Exposure (Dlim)	Y*	Y*	Y*	Y*
Temperature reading: Celsius or Fahrenheit	Y	Y	-	-
Data logging intervals	1-min	1-min	1-min	1-min
Languages: English, Spanish, Portuguese, Italian	Y	Y	-	-
Measures stay times viewable in computer software	Y	Y	Y	Y
Head-Torso-Ankle Weighted Average WBGT (Requires satellite modules)	Y	Y	-	-

Sensors

Wet bulb temperature sensor	Range: -20 – 60°C. Accuracy: ± 0.3°C
Radiant temperature sensor (Globe)	Range: -20 – 60°C. Accuracy: ± 0.3°C
Dry temperature sensor (including radiant shield)	Range: -20 – 60°C. Accuracy: ± 0.8°C, ±0.4 °C (10-40°C)
Anemometer. Indoor use (optional)	Range: 0.01 – 20 m/s. Accuracy: ±10 cm/s (0,5 – 1,5 m/s) 4% (>1,5 m/s)
Anemometer. Outdoor use (optional)	Range: 0 – 75 m/s. Accuracy: 2,5%
WBGT (indoor) index	According to ISO7243
WBGT (outdoor) index	For up to 3 locations simultaneously (Requires Satellite units)
Head-Torso-Ankle Weighted Average WBGT	According to ISO7243 (Requires Satellite units)
Heat index	According to 1990 National Weather Service (NWS) Technical Attachment (SR 90-23)
Humidex	According to J.M. Masterton and F.A. Richardson of Canada's Atmospheric Environment Service equation (1979)
PMV-PPD**	According to ISO7730
Predicted Heat Strain (PHS)**	According to ISO7933
Insulation Required (IREQ), Duration Limit of the exposure (Dlim)**	According to ISO11079 ** via post-processing GIDAS TEA software. Requires air speed measurement

Instrument

Acquisition rate	1 sec – 12hrs
Compatibility	HS Manager (included), Gidas TEA (optional)
Power supply	8 – 14 Vdc
Battery	2 A (4.2 V) Lithium rechargeable
Battery life	Standby: 9 months, Radio OFF: 400 hrs, Radio ON: 24 hrs
Environmental limits	-20 – 60 °C
Protection	IP 54
Standards / Approvals	CE Mark

* These measurements require an anemometer an/or additional Gidas TEA software