

WBGT CONTINUOUS MEASUREMENT

Heat Stress Permanent Monitoring System

RELIABLE PERFORMANCE IN
HEAT STRESS MONITORING



What is WBGT?

The Wet Bulb Globe Temperature (WBGT) index is a critical measure of heat stress in various environments, combining temperature, humidity, wind speed, sun angle, and cloud cover. Unlike standard temperature readings, WBGT provides a more accurate assessment of heat-related risks, helping to prevent heat exhaustion and heatstroke. Widely used in workplaces, sports, and outdoor industries, WBGT monitoring ensures safe conditions for workers, athletes, and the general public. Stay protected by understanding and managing heat stress with our solution for WBGT measurements!

A bit of history

The Wet Bulb Globe Temperature (WBGT) index was developed in the 1950s by the United States military to assess heat stress among soldiers training in extreme conditions. The U.S. Marine Corps at Parris Island, South Carolina, first implemented the index after experiencing high rates of heat-related illnesses among recruits.

The studies led to the development of the **Wet Bulb Globe Temperature (WBGT)** index, which became the standard measurement for assessing heat stress due to its ease of use. Since 1989, WBGT has been recognized as an international standard under **ISO 7243**.

It is widely used to identify potentially dangerous conditions for humans, especially in environments with high heat and humidity.

How to measure

A common method for calculating WBGT involves determining the wet bulb temperature using temperature and relative humidity measurements.

While this approach is simple and widely used by many suppliers, it does not comply with official ISO 7243 regulations for WBGT.

At Senseca, we offer two options:

- A **setup fully compliant with ISO 7243** regulations.
- A setup that uses calculated wet bulb temperature values.

Both options are available in indoor and outdoor versions.

Your needs

The correct way to determine which WBGT system is the best for your application, is to answer these questions before starting:

- Does your application require **full compliance** with ISO 7243 regulations?
- Is your application located **outdoors or indoors**?
- Does your application require **continuous monitoring**?
- Do you need to **record and store** measurement data?
- Should the **data be accessible** on PC, smartphone, or tablet for everyone?
- Do you need **notifications** (text or email) when the WBGT status changes (normal, alert, danger)?

Our solutions

Ensure safety with continuous WBGT measurement, fully compliant with ISO 7243.

Data is instantly uploaded to the Cloud or securely stored in a local database for easy access.

Designed for simplicity, efficiency, and seamless integration, this system is ideal for environments where high physical activity poses heat-related risks, from industrial workplaces to sports events like marathons.

Enjoy quick setup and real-time monitoring on your laptop, tablet, or PC. Plus, with a direct link, you can display live data on-site, keeping everyone informed and protected.

WBGT - Measuring according to ISO 7243

Globe-thermometer

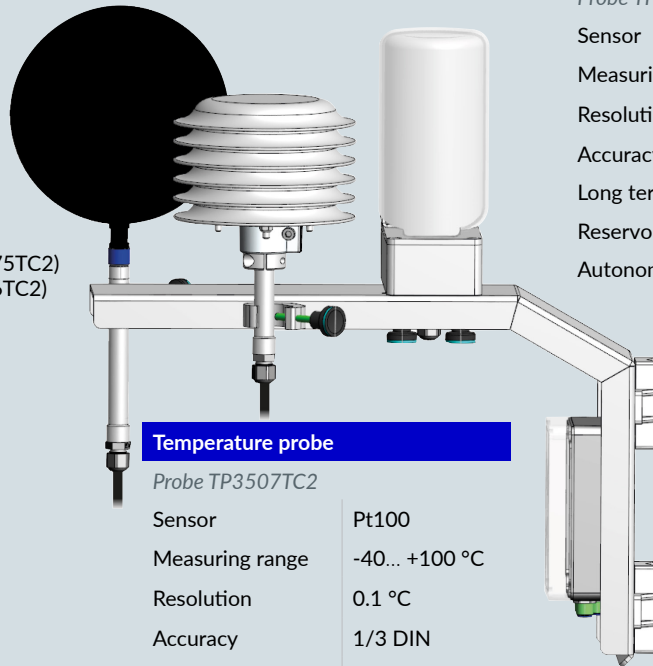
Probes TP3575TC2 or TP3576TC2

Sensor	Pt100
Measuring range	-30...+120 °C
Resolution	0.1 °C
Accuracy	1/3 DIN
Long term stability	0.1 °C / year
Globe diameter	150 mm (TP3575TC2) 50 mm (TP3576TC2)

Natural ventilation wet bulb probe

Probe TP3204

Sensor	Pt100
Measuring range	+4...+80 °C
Resolution	0.1 °C
Accuracy	Class A
Long term stability	0.1 °C / year
Reservoir capacity	500 cc distilled water
Autonomy	15 days @ 40 °C



Temperature probe

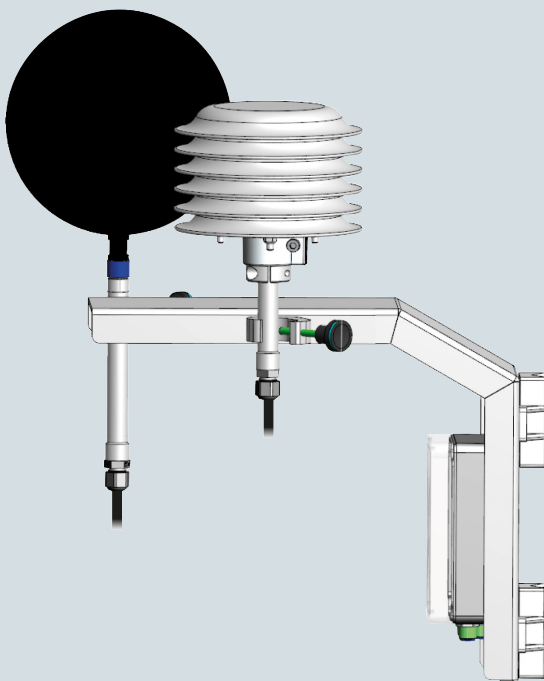
Probe TP3507TC2

Sensor	Pt100
Measuring range	-40... +100 °C
Resolution	0.1 °C
Accuracy	1/3 DIN
Long term stability	0.1 °C / year

The outdoor installation of the temperature probe requires a protection against solar radiations

- Wireless data logger
- Indoor and outdoor environments
- Waterproof housing
- Continuous monitoring
- Alarming when conditions are unsafe
- Data uploaded on cloud or stored in local FTP
- WBGT measured directly with wet bulb temperature probe or calculated with combined T/RH probe
- Quick setup and direct visibility on laptop/tablet

WBGT - Simplified system



Combined probe T / RH

Probe TP3517ETC2...

	Temperature	Humidity
Sensor	Pt100	Capacitive
Measuring range	-40...+150 °C	0...100 %RH
Resolution	0.1 °C	0.1 %RH
Accuracy	1/3 DIN	± 1.8 %RH @ (RH=0...85%, T=15...35 °C) ± 2.5 %RH @ (RH=85...100%, T=15...35 °C) ± (2 + 1.5% meas.)% @ T=remaining range
Long term stability	0.1 °C / year	1%/year
Sensor operating temperature	-	-40...+150 °C

The perfect solution for flexible and quick 'on the spot' measurements.

This portable instrument is measuring fully according to the ISO 7243 and has a built-in datalogger.

Long battery life, directly visible calculated WBGT results.

Designed for inside use but of course suitable for dry weather outside conditions.

WBGT - Handheld measurements

Wet bulb probe with natural ventilation

Probe HP3201.2

Sensor	Pt100
Measuring range	+4...+80 °C
Accuracy	Class A
Tank capacity	15 cc
Tank autonomy	96 hours with RH=50 %, t = 23 °C
Response time T ₉₅	15 min

Globe-thermometer

Probe TP3276.2

Sensor	Pt100
Measuring range	-30...+120 °C
Resolution	0.1
Accuracy	1/3 DIN
Response time T ₉₅	15 min



Thermometer

Probe TP3207.2

Sensor	Pt100
Measuring range	-40...+100 °C
Accuracy	1/3 DIN
Response time T ₉₅	15 min

WBGT Calculation Formula:

- Inside and outside the buildings in absence of solar irradiation: $WBGT_{close\ environments} = 0.7 t_{nw} + 0.3 t_g$
- Outside buildings in presence of solar irradiation: $WBGT_{external\ environments} = 0.7 t_{nw} + 0.2 t_g + 0.1 t_a$

where:

t_{nw} = natural ventilation wet bulb temperature
 t_g = globe thermometer temperature;
 t_a = air temperature.



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