

# Globe Temperature Sensor GT-1<sup>TM</sup>

Globe Temperature

Modbus RS-485 Interface or Thermistor

DATA SHEET

\*\*\* Preliminary \*\*\*

## FEATURE SUMMARY

- Globe temperature
- Modbus RS-485 interface or thermistor
- Low power: 60 microAmp
- Easy mounting on 1" pipe
- Made in USA.

## DESCRIPTION

**Globe Temperature Sensor GT-1<sup>TM</sup>** is a high-quality temperature sensor designed for permanent and semi-permanent installations. The instrument is used to take measurements in environments of worker heat stress.

**GT-1** uses a low-power digital-output module with a Modbus interface. It is compatible with Modbus host devices, such as programmable logic controllers (PLCs) and data loggers.

User-accessible registers for sensor calibration allow the instrument to be calibrated using Modbus messages.

## INSTRUMENT APPLICATION

The globe aggregates radiant energy sources, ambient air temperature, and air movement that can be used to approximate a human body exposure.

Combined with humidity and ambient air temperature, globe temperature can be used to calculate wet-bulb globe temperature (WBGT). This value is used to monitor environments for worker comfort, stress, and safety.

Refer to ISO 7726, ISO7243, ACGIH, and OSHA Technical Manual Section III: Chapter 4 for further information.



## KEY FEATURES

**Construction:** 6 inch (0.15 m) copper globe with polyester coating for long life in outdoor environments.

**Data Connection:** Power and data are provided through a 4-wire connection. **GT-1** uses an RS-485 (Modbus slave) data connection. Drawing a 3 mA average, **GT-1** is suitable for solar powered instrumentation systems.

**Mounting:** The **GT-1** mounts directly to 3/4" pipe or to 1" pipe using standard structural pipe fittings.

*Dyacon globe temperature sensor is also available with a 10 kOhm thermistor.*

## TEMPERATURE MEASUREMENT

Range	-40°C to 80°C
Resolution	0.05°C
Accuracy (0°C to 60°C)	+/- 0.2 K*
Reproducibility	+/- 0.1 K
Time Constant	5.6 min
Long Term Drift	<0.05 K/yr
Sensor Type	PTAT

\*Sensing element specs. Full response range information available upon request.

## ELECTRICAL

Power Input	5 VDC to 24 VDC
Current	1.4 mA <sub>avg</sub> at 12 VDC full run mode† 60 uA <sub>avg</sub> in sleep mode‡

## MECHANICAL

Material	Copper globe with polyester coating. Aluminum and bronze fittings.
Overall (WxDxH)	15 cm x 15 cm x 25.9 cm (6" x 6" x 10.2")
Cable	4 conductor, 24 AWG, stranded Foil shield w/ drain wire Outdoor rated cable
Total Weight	0.78 kg (1.76 lb)

## DATA

Protocols	Modbus RTU slave , RS485, half-duplex User configurable baud rate, parity, and stop bits. 19200, N, 8,1 default.
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## ENVIRONMENTAL

Operating Temperature	-40°C to 60°C
Storage Temperature	-40°C to 80°C
Water	Direct rain and snow exposure.

† Continuous full run mode, reading 200 range registers once per second.

‡ Timeout set to 50 or greater. No Modbus activity.



Image 1: GT-1 as a component of Heat Stress Monitor System



Image 2: Mounts to standard 1" NPT pipe.