

Globe Temperature Sensor GT-1TM

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-1TM 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 _{avg} at 12 VDC full run mode† 60 uA _{avg} 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.