R151 Tethered Temperature Sensor

RFCODE Sensors

The R151 Tethered Temperature Sensor, with its tethered digital thermometer, is particularly well-suited for monitoring temperatures in harsh environments.

Features & Benefits

- Accurate temperature monitoring within 2° F from 14° F to 185° F
- Continues reporting temperature down to -67° F and up to 212° F (+/- 4° F typical)
- Can be installed inside a metal enclosure
- Removable and re-attachable sensor cable (tether)
- Industrial-strength adhesive mounting and flexible mounting options
- Tether (sensor and cable) design suitable for plenum spaces
- Monitor harsh environments (e.g., temperature/ humidity extremes, condensation)
- Encoded radio transmissions at 433 MHz
- Works with all RF Code fixed and mobile readers

The R151 Tethered Temperature Sensor is a battery-powered RF transmitter that monitors and reports the temperature observed by a digital thermometer that is embedded at the end of a 6-foot wire (tether). This modular design provides physical separation between the RF transmitter (sensor) and the sealed temperature thermometer itself; this allows the tethered sensor to be installed in harsh environments (particularly in applications where use of the R150 Temperature Sensor is not practical, such as potentially wet conditions or inside freezers).

The RF transmitter will periodically report its own unique ID, along with the ambient temperature observed by the sensor (updated every 20 seconds). The R151 sensor is designed for use in a variety of challenging environmental monitoring applications. This form factor is particularly well-suited for environments where the RF transmitter (sensor) module is mounted in open space while the thermometer is installed inside RF-blocking enclosures such as a metal ductwork or refrigerators. Mounting is easy and flexible; the tethered sensor can be routed into difficult to reach places, such as above a suspended ceiling or inside HVAC air ducts.

The RF transmitter (sensor) is housed in an ABS enclosure with a strong industrial adhesive on the back of the enclosure. It can be securely mounted using adhesive, mechanical fasteners (screws) or zip ties. The digital thermometer is sealed at the end of plenum-rate cable that can be detached from the RF transmitter (sensor) during the installation process and then re-attached via screw-terminal block.

The R151's modular design ensures clear RF signal transmissions in high density deployments, such as within racks and data centers. The RF sensor operates with a very low duty cycle that translates to long battery life (typically 5 years). Featuring a low-battery alert, the sensor will continue to monitor and report temperature for at least two months following the initial low battery condition. After that, the sensor will continue to broadcast its unique ID and a low battery indication with each beacon, but will not report temperature until the batteries are replaced.

The R151 Tethered Temperature Sensor's digital thermometer is embedded at the end of a 6-foot tether, which provides physical separation between the RF transmitter (sensor) and the sealed thermometer and permits the tethered sensor to be installed in harsh environments.

RF Code R151 Tethered Temperature Sensor Specifications

OPERATION	
Operating Frequency	433.92 MHz
Group Code & Sensor ID Codes	> 540,000 unique IDs per Group Code
Typical Transmission Range	> 30 ft in the data center; up to 300 ft open field
Radiated Emissions	71.8 dBuV/m at 3 meters (maximum)
Modulation	ASK
Stability	Saw stabilized

ENCLOSURE: RF TRANSMITTER (SENSOR)	
Width	2.53 in (64.3 mm); 3.50 in (88.9 mm) including mounting wings
Depth	2.53 in (64.3 mm)
Height	1.03 in (26.2 mm)
Case Weight (with sensor)	2.61 oz (74 g)
Construction	ABS
Durability	Tough, impact resistant and temperature stable
Mounting Options	Mechanical screws (2 places) or adhesive pads

DIGITAL THERMOMETER SENSOR TETHER	
Sensor Width	0.38 in (9.7 mm)
Depth	0.84 in (21.3 mm)
Height	0.30 in (7.6 mm)
Tether Construction	0.15 in (3.8 mm) diameter plenum-rated cable
Tether Length	72 in (1829 mm) = 6 ft (1.83 m)

ENVIRONMENTAL: RF TRANSMITTER (SENSOR)	
Operating Temperature*	-20° C to +70° C (-4° F to +158° F)
Storage Temperature	-40° C to +80° C (-40° F to +176° F)

ENVIRONMENTAL: DIGITAL TEMPERATURE TETHER	
Operating Temperature Range (+/- 4° F typical)	-55° C to +100° C (-67° F to +212° F)
Accurate Temperature Range (+/- 2° F)	-10° C to +85° C (14° F to +185° F)
Liquid Durability	Suitable for condensing environments

POWER	
Battery Type	Three (3) Lithium CR2032 replaceable coin cells
Smart Sensor Features	Low battery indication
Battery Life	5 years

* The R151 RF Transmitter (Sensor) will continue to operate over the Operating Temperature range and withstand periods of time subjected to the Storage Temperature limits, however the battery life is optimized at 5 years for normal use in temperature-controlled environments between 50° F and 130° F. If the RF Transmitter (Sensor) module is subject to prolonged exposure or use under extreme temperature conditions, this will decrease the useful life of the batteries. The RF Transmitter (Sensor) module should be protected from condensing environments; condensation can cause the mechanical wiring / connector to become unreliable. Exposing the RF Transmitter (Sensor) to liquids may cause the product to malfunction, or permanently damage the circuitry, and voids the product warranty. Based on the ratings and specifications from the battery manufacturers, RF Code develops usage models to calculate the life of the active RFID Sensors. Like all models, there are assumptions and approximations involved. The values are to be taken as engineering estimates – not guaranteed performance. Exposure to extreme temperatures will shorten the battery life. RF Code warrants all sensors to be free from defects in materials and workmanship for a period of 1 year.

RFCODE
9229 Waterford Centre Blvd. ♦ Suite 500
Austin, TX 78758
Tel: 512.439.2200 ♦ Fax: 512.439.2199
sales@rfcode.com ♦
http://www.rfcode.com

07/17/2017