Texas Electronics

"Relied on Worldwide in the Most Extreme Conditions"

TT-101-QR
TT-101-QR-A
Temperature Sensor
User's Manual

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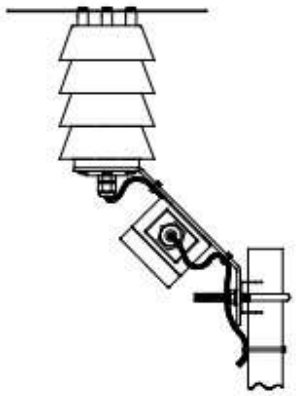


Model TT-101-QR Temperature Sensor

DESCRIPTION

The Texas Electronics, Inc. TT-101-QR Air Temperature Sensor with the proper signal processor provides a DC signal proportional to ambient temperature. A highly sensitive linear thermistor-resistor network is utilized as the sensing element. Sensors feature direct interchangeability with one another without system recalibration. (See "Calibration/Cleaning Frequency" below.) Air temperature variations create a resistance bridge imbalance, the subsequent output signal varying linearly with temperature. A naturally aspirated sensor shelter is provided which permits temperature measurement substantially free of solar radiation. Exposed shelter components are constructed of aluminum with a white powder-coat finish for maximum environmental protection. The signal conditioner output voltage may be interfaced with various types of recorders, indicators, dataloggers, etc. as required by the user.

Two or more sensors may be mounted on a tower to obtain vertical temperature profile studies for the measurement of inversion conditions. This differential air temperature may be displayed or programmed, in the same formats as the single sensor. The TT-101-QR now features a quick-release mounting bracket for easy installation and maintenance.

Specifications	TT-101-QR	TT-101QR-A
Range:	-40° to +120°F	-40° to +120°F
Response (Nominal):	Time to reach 90% of DT 0.8 sec./F	Time to reach 90% of DT 0.8 sec./F
Signal:	Resistive	4-20 mA
Accuracy:	+/- 1° within the range of	+/- 1° within the range of
	-30° to +110°F	-30° to +110°F
	(-34.4° to +43.3°C)	(-34.4° to +43.3°C)
	+/- 3° from -30° to -40°F	+/- 3° from -30° to -40°F
	(-34.4° to -40°C);	(-34.4° to -40°C);
	+/- 3° from +110° to +120°F	+/- 3° from +110° to +120°F
	(+43.3° to +48.8°C)	(+43.3° to +48.8°C)
Environmental Limits:		
Temperature:	-55° to +180°F	-55° to +180°F
	(operating range: -40° to +120°F)	(operating range: -40° to +120°F)
Humidity:	0 to 100%	0 to 100%
Dimensions:	6.75"H x 7.25"W (17.1cm x 18.4cm)	6.75"H x 7.25"W (17.1 cm x 18.4cm)
Cable:	60', 22 Gauge 3 conductor	60', 22 Gauge 3 conductor
Warranty:	3 years	3 years

FEATURES & BENEFITS

- Available in four different temperature ranges
- Signal conditioner output can be interfaced with indicators or dataloggers
- Quick-release mounting bracket provides ease in installation and maintenance
- Sensing element utilizes a highly sensitive linear thermistor-resistor network
- Optional Yellow Springs sensing element available
- Over 25 years in production
- Lightweight and rugged white powder-coat finished aluminum exterior

INSTALLATION & MAINTENANCE

The radiation shield with sensing element can be pole or mast mounted. Whenever possible, sensors should be installed at a height of 4 ft. (1.2 meters) or greater over earth or sod at least 100 ft. (30.48 meters) away from any concrete or other hard-surfaced area and not closer to any other object than four times the height of the object above the instrument shelter or remote sensors. Avoid roof installations if possible. If it is necessary to roof-mount shelters and sensors, they should not be closer than 30 ft. (9.14 meters) to any large, vertical reflecting surface (walls, etc.), exhaust fans, or cooling towers. Electronic remote sensors, when roof-mounted, should be installed at least 9 ft. (2.74 meters) or greater above the roof surface. To minimize radiation effects from the roof, they can also be mounted on a horizontal boom so they extend from the side of the building roof or tower assembly.

Installation:

The system consist of two principle parts: (1) the radiation shield containing the sensor with 60 feet (18.28 meters) of cable attached; and (2) an electronics package. The radiation shield may be installed with provided clamps in whatever area that it is desired to sense the temperature. The electronic package may be installed within 60 ft. (18.28 meters) of the sensor. Longer cable is available upon request.

Calibration / Cleaning Frequency:

The temperature system should not require calibration, however, the system may be checked for accuracy each six months, if desired. In the event that it is required, field calibration (zeroing and spanning) can be readily accomplished by substituting fixed standard resistor values for the sensor output. No cleaning program should be required with normal use.

TEMPERATURE SENSOR CHARACTERISTICS

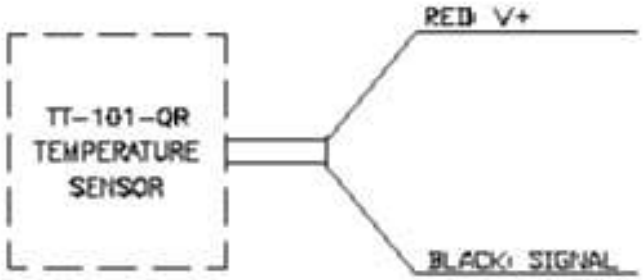
Degrees F	Degrees C	Resistance	Degress F	Degrees C	Resistance
Null	Null	34,274	+40°	+4.44°	5,942
-40°	-40°	33,336	+50°	+10°	5,051
-30°	-34.44°	24,904	+60°	+15.55°	4,282
-20°	-28.88°	18,985	+70°	+21.11°	3,642
-10°	-23.33°	14,824	+80° span	+26.66°	3,087
0° Null	-17.77°	12,002	+90°	+32.22°	2,602
+10°	-12.22°	9,844	+100° span	+37.77°	2,186
+20°	-6.66°	8,252	+110°	+43.33°	1,839
+30°	-1.11°	7,002	+120°	+48.88°	1,543

ORDERING INFORMATION

Model #	Description
TT-101-QR-A	Temperature Sensor
TT-101-QR-A	Temperature Sensor 4-20 Ma

Optional Parts / Accessories

WIRING DIAGRAM



TYPICAL RANGE

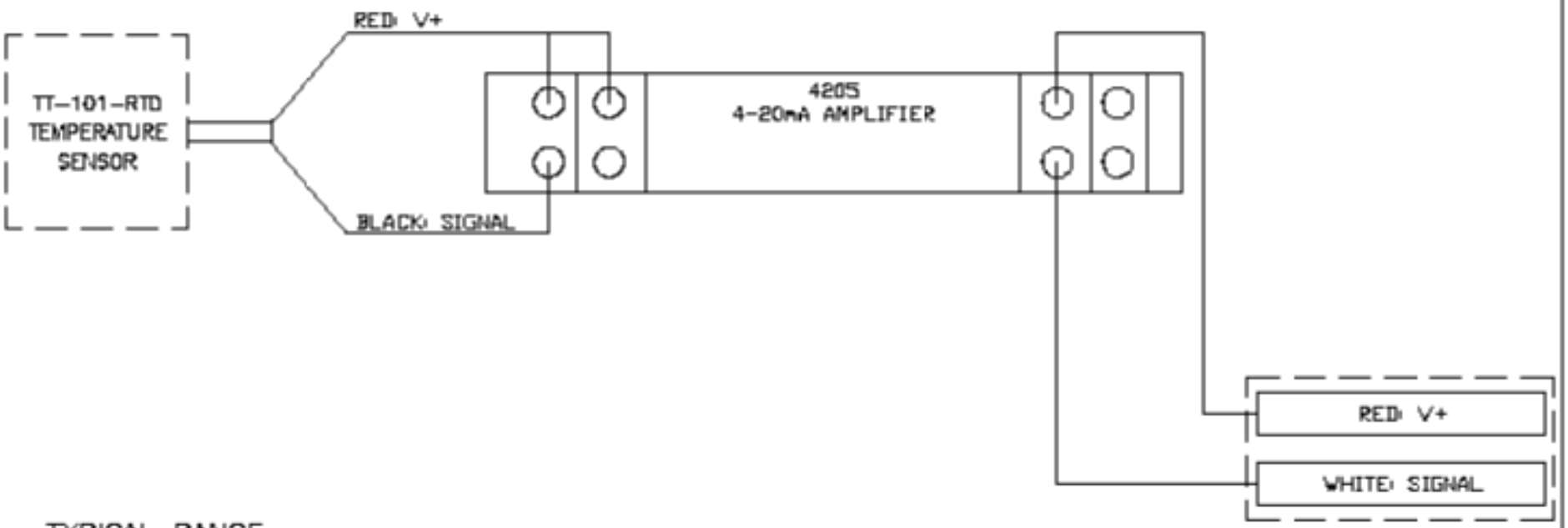
-40° to +60°C
-40° to 120°F

OUTPUT

33,336 Ohms at -40°, 1,543 Ohms at 120°F/48.8°C

Texas Electronics, Inc. — The Gold Standard in Weather Instrumentation Since 1957			
TITLE: TT-101-QR TEMPERATURE SENSOR WIRING DIAGRAM			
SIZE: A	FSCM NO.	DWG NO. 3012	REV: A
SCALE		SHEET 1-1	

WIRING DIAGRAM



TYPICAL RANGE
-40° to +60°C
-40° to 120°F

OUTPUT
4 to 20mA

Texas Electronics, Inc.
The Gold Standard in Weather Instrumentation Since 1957

TITLE: TT-101A TEMPERATURE SENSOR			
SIZE: A	FSCM NO.	DWG NO. 3010	REV A
SCALE		SHEET 1-1	

Warranty

Texas Electronics, Inc. (hereafter TEI) warrants the equipment manufactured by it to be free from defects in material and workmanship. Upon return, transportation charges prepaid to TEI, within three (3) years of original shipment of sensors and one (1) year of original shipment of electronics, recorders and indicators, TEI will repair or replace, at its option, any equipment which it determines to contain defective material or workmanship, and will return said equipment to purchaser, F.O.B., TEI. Texas Electronics shall not be obligated however to repair or replace equipment which has been repaired by others, abused, improperly installed, altered or otherwise misused or damaged in any way. TEI will not be responsible for any dismantling, re-assembly, or reinstallation charges.

This warranty is in lieu of all other warranties, expressed or implied. TEI shall not be liable for any special, indirect, incidental or consequential damages claimed in connection with any rescission of this agreement by purchaser.