1309007-044 ETC TEMPERATURE SENSOR

FORM NO. 1529037

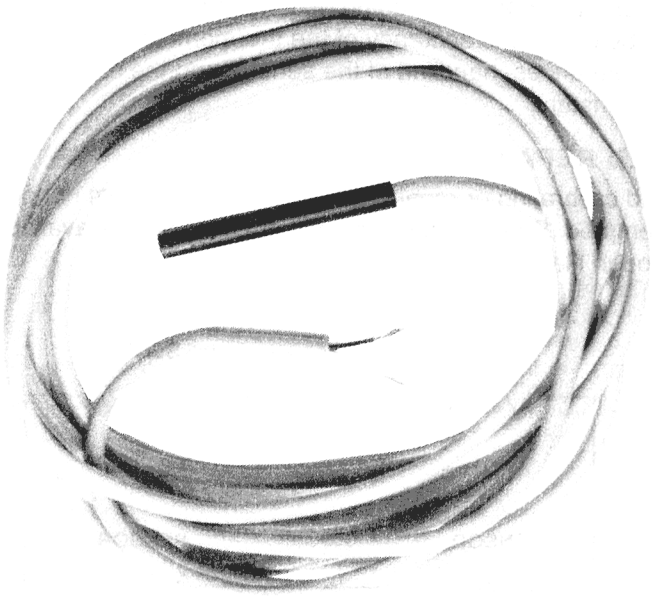

Fig. 1
1309007-044 Temperature Sensor

APPLICATION

The 1309007-044 thermistor sensor is used with the Ranco ETC family of electronic temperature controls and supports a temperature range of -30°F. to 220°F.

The sensor can be used for air, duct or spot sensing. It can also be used in bulb wells for immersion applications. Multiple sensors can be wired in a series/parallel arrangement for sensing average temperature. For each number of sensors wired in series, an equal number must be wired in parallel. (Wiring diagram for averaging is shown in Fig. 3.)

1309007-44 sensors are designed for use ONLY with Ranco Type ETC temperature regulating controls. Where a control or sensor failure could result in personal injury and/or loss or property, it is the responsibility of the installer to add devices (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of failure.

SPECIFICATIONS

The 1309007-044 sensor is a negative temperature coefficient (NTC) thermistor sensor. The sensor resistance decreases with temperature increase. It is .25 x 2.06 long with 8 ft. #22 AWG cable. The thermistor has a reference resistance of 30,000 ohms at 77°F. (25°C.).

SENSOR MOUNTING

For space sensing, mount the sensor where it will be unaffected by heat/cool discharge or radiated heat sources. Spot sensing requires the sensor to be in good contact with the surface being sensed. The sensor can be inserted in a bulb well for immersion sensing.

IMPORTANT

The schematic drawings and other information included in these instructions are for the purpose of illustration and general reference only. Ranco assumes no responsibility for any unconventional application of its control, unless such application has been approved in writing by Ranco.

Temperature		Resistance	Temperature		Resistance
F	C	Ohms	F	C	Ohms
-29.2	-34	682,800	100.4	38	17,325
-20.2	-29	498,900	109.4	43	14,178
-9.4	-23	347,400	120.2	49	11,226
-0.4	-18	259,470	129.2	54	9,297
10.4	-12	185,190	140.0	60	7,464
19.4	-7	141,180	150.8	66	6,033
30.2	-1	103,110	159.8	71	5,079
32.0	0	97,950	170.6	77	4,155
39.2	4	80,040	179.6	82	3,531
50.0	10	59,700	190.4	88	2,921
60.8	16	45,000	199.4	93	2,506
69.8	21	35,820	210.2	99	2,096
80.6	27	27,495	212.0	100	2,036
89.6	32	22,209	219.2	104	1,814

Fig. 2
Resistance vs Temperature of 1309007-044 Sensor including 8 ft. cable.

SENSOR WIRING

A damaged sensor can be replaced by splicing a new Ranco sensor to the cable. The sensor is not polarity sensitive.

CAUTION: Sensor wiring splices must be made external from the control. **DO NOT** attempt to unsolder the sensor at the control circuit board!

CAUTION: Disconnect power to control before wiring to avoid possible electrical shock or damage to the controller.

Additional cable can be spliced to the sensor cable to increase the length beyond the standard 8 feet. It can be extended up to 400 ft. The cable should be at least 22 AWG or larger to keep additional resistance to a minimum.

All splices and wire lengths added to the sensor cable should be made according to acceptable wiring practices and should conform to the National Electrical Code and local regulations. Use copper conductors only. Shielded cable is not required.

Checkout Procedure

1. Before applying power, make sure installation and wiring connections are correct.
2. Apply power to the control and observe one or more cycles of operation.
3. If performance indicates a problem, check sensor resistance to determine if sensor or control is at fault.
4. To check sensor resistance, disconnect sensor and measure the resistance across the leads while measuring temperature at the sensor.
5. Allow thermometer to stabilize before taking a reading. Several minutes may be required for the sensor to acclimate to the temperature being sensed. Body heat can effect the sensor.
6. Compare reading using the Resistance vs Temperature chart **Fig. 2**. The reading may not agree exactly. This can be due to the accuracy of the thermometer used, sensor tolerances, handling of the sensor, and the sensor's time constant.

FIELD REPAIRS

Field calibrating or repairs to the ETC control must not be attempted. Sensors and replacement controls are available through Ranco wholesalers.

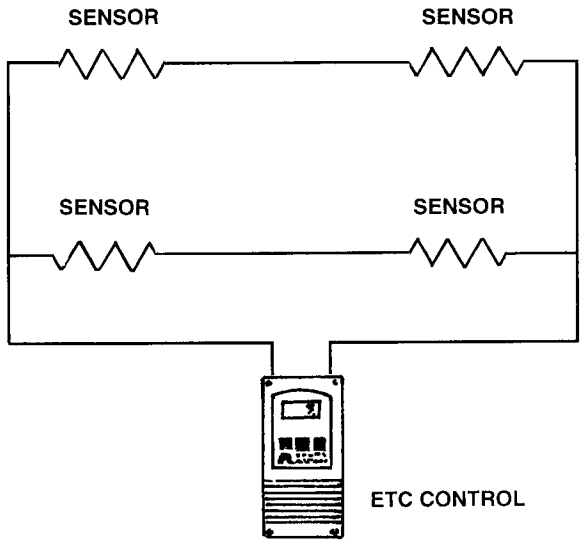

Fig. 3
Sensors wired in series/parallel for temperature averaging.

RANCO

Ranco North America
8115 U.S. Rt. 42 North
Plain City, Ohio 43064

SIEBE
A Siebe Group Company