

Electronic Room Temperature Sensor General Instructions

APPLICATION

Electronic sensing of room temperature at wall locations for use with Energy Management Systems (EMS) using Balco inputs.

SPECIFICATIONS

Sensing Element: Temperature sensitive Balco element. 1000 ohms $\pm 0.1\%$ at 70°F (21°C); changes 2.2 ohms per 1°F (0.5°C) at 70°F (21°C).

Remote Setpoint Dial Range: 55 to 85°F or 13 to 29°C, with resistance change equal to sensor resistance change.

Environment:

Ambient Temperature Limits,

Shipping and Storage -40 to 160°F (-40 to 71°C).

Operating 40 to 140°F (4 to 60°C).

Humidity, 5 to 95% RH, non-condensing.

Locations, NEMA Type 1 indoor only.

Connections: Coded screw terminals.

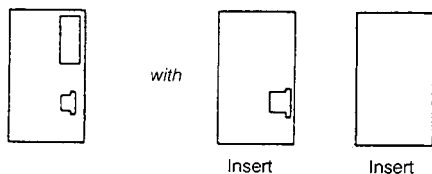
Cover: Beige plastic.

Mounting: Wall.

Dimensions: 4-3/8" high x 2-3/4" wide x 1-5/8" deep (111 mm x 70 mm x 43 mm).

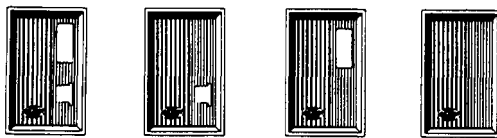
Standard

TS-8811	°F
TS-8811-116	°C



OPTIONS (For quantities of 24 or more of each part number)

Add "dash number" (-XXX) suffix to bas part number for desired option.



°F	-399	-400	-403††	-404††
°C	-398	-410	-413††	-414††

††5/64" Allen screw used to secure cover.

ACCESSORIES

AT-61	Ser. Brushed bronze cover plates
AT-101	Lock cover kit
AT-104	Dial stop pins
AT-504	Plaster hole cover kit (small)
AT-505	Surface mounting base
AT-546	Auxiliary mounting plate
AT-602	Selector switch sub-base DP4T
AT-1103	Wire guard
AT-1104	Cast aluminum guard
AT-1105	Plastic guard
AT-1155	Plastic guard
AT-1165	Plastic guard

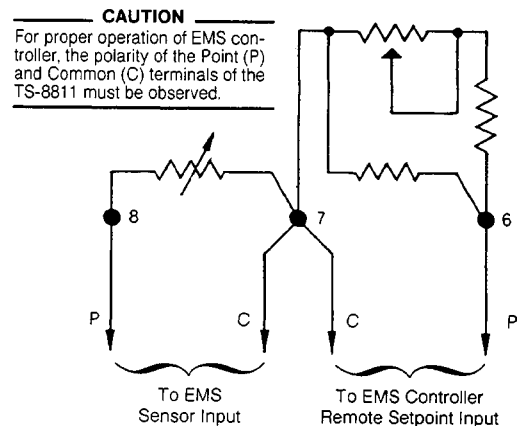
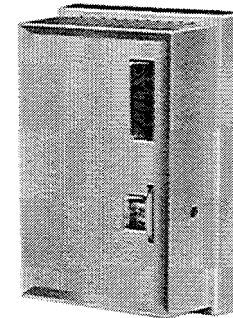


Figure-1 Sensor Wiring.

PRE-INSTALLATION

Inspection

Inspect the carton for damage. If damaged, notify the appropriate carrier immediately. Inspect the device for obvious damage due to shipping. Return damaged products.

Required Installation Items

- Wiring diagrams
- Tools (not provided):
DVM (digital volt-ohm meter)
Appropriate screwdriver for mounting screws and terminal connections
- Appropriate accessories
- Mounting screws, two (2) provided for securing to a 2 x 4 conduit box

INSTALLATION

Caution:

- Installer must be a qualified, experienced technician.
- Make all connections in accordance with the wiring diagram, and in accordance with national and local electrical codes. Use copper conductors only.
- Do not exceed ratings of the device.

Mounting

LOCATION

Locate the sensor on a wall where it will be exposed to unrestricted air circulation, at a minimum of 15 ft./min., which represents the average temperature of the sensed space. Normally, the sensor is located 5-1/2 to 6-1/2 ft. (1.7 to 2.0 m) from floor level.

Caution: Do not locate the sensor near sources of heat or cold, such as lamps, motors, sunlight or concealed ducts or pipes. Avoid location where excessive vibration, moisture, corrosive fumes or vapors are present. NEMA Type 1 covers are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment.

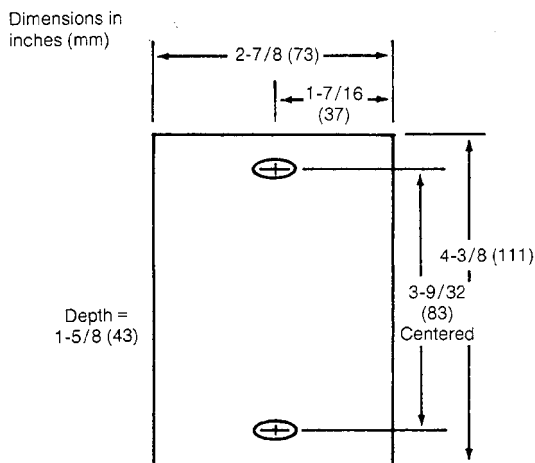


Figure-2 Mounting Dimensions.

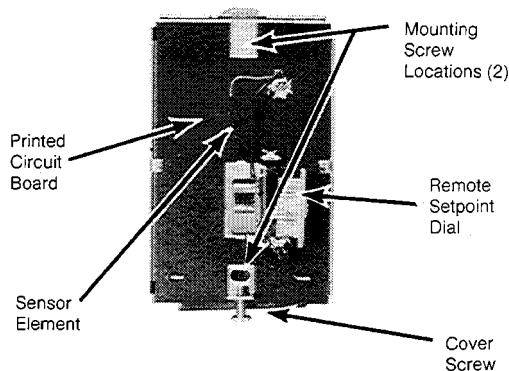


Figure-3 Mounting (Cover Removed) and Part Identification.

Wiring

Two conductor twisted pair wires (six turns per foot), Class II, low voltage, are suitable for the sensor leads except as stated below.

Caution: Shielded cable must be used when it is necessary to install the sensor lead in the same conduit with power wiring, or when it is known that high RFI/EMI generating devices are near.

For application to an EMS system, follow the specified wiring requirements provided in the EMS documentation.

Do not use inside of the cover as a junction box for other control circuits.

Restrict element lead to shortest length practical (see Table 2).

Table-1 MAXIMUM SENSOR WIRING RUN.

Wire Gauge	Length of Run in ft. (m)
	TS-8811 Sensor to Controller
22	150 (46)
18	1000 (305)
16	2250 (686)
14	4000 (1219)

ADJUSTMENTS

Turn the remote setpoint dial to required setting.

CHECKOUT

Sensing Element: Measure the resistance between terminals 7 and 8 (see Fig. 1): 1000 ohms $\pm 0.1\%$ at 70°F (21°C); resistance change is 2.2 ohms per 1°F (0.5°C) at 70°F (21°C).

Remote Setpoint: Measure the resistance between terminals 6 and 7 (see Fig. 1): 1000 ohms (approx.) when control dial is set to 70°F (21°C); resistance change is 2.2 ohms per 1°F (0.5°C).

CONCEALED CONTROL DIAL ADJUSTMENT

Knurled Dial Removal

See Figure 4.

Required if non-adjustable control dial, concealed control dial or blank cover plates are to be field installed.

1. Remove sensor cover.
2. Secure the control dial with hand so that the dial will not rotate.
3. Place needle nose pliers at knurled ring of the control dial at the points where the knurled ring is attached to the control dial.
4. Twist the pliers at each knurled ring attachment point until the entire knurled ring of the control dial is removed.

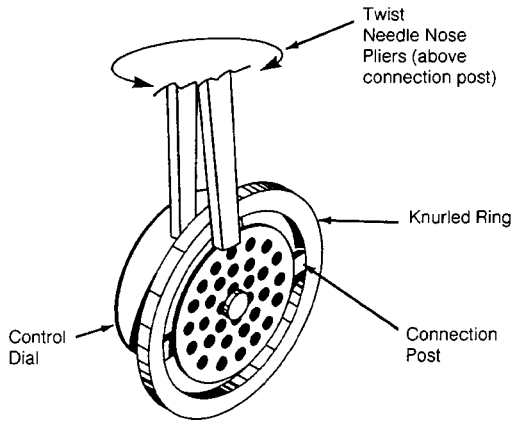


Figure-4 Knurled Dial Removal.

Limit Setpoint Dial Range

Dial Stop Pin Insertion Included with Mounting Plate

See Figure 5.

1. Remove thermostat cover.
2. Secure the setpoint dial with hand so that the dial will not rotate.
3. Place a dial stop pin in the jaws of a needle nose pliers.
4. Insert the dial stop pin in the appropriate hole on either (or both) side(s) of the setpoint dial to restrict dial rotation.

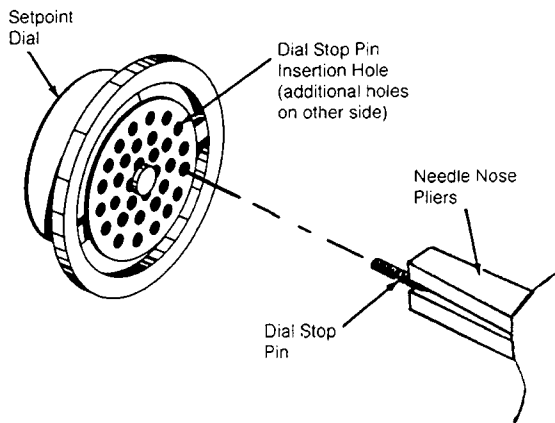


Figure-5 Dial Stop Pin Insertion.

Cover Insert Installation

See Figure 6.

1. Select appropriate cover insert.

Note: If blank insert is used, the knurled ring must be removed from the setpoint dial. See knurled Dial Removal above. Also, remove dial window by sliding and/or pressing window from front of cover.

2. Remove protective backing and protective skin on face of cover insert.
3. Press insert uniformly on thermostat with logo in lower left-hand corner.

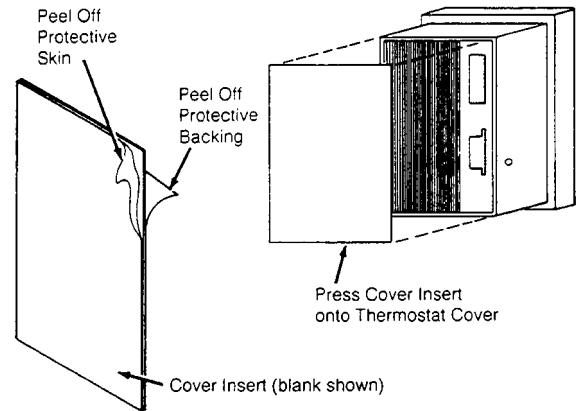


Figure-6 Cover Insert Installation.

MAINTENANCE

Regular maintenance of the total system is needed to assure sustained optimum performance. Sensors should be periodically inspected for dirt or blockage of air flow over the elements.

FIELD REPAIR

These sensors are not field repairable. Replace a defective sensor with a functional unit.

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