

TE-637DP-1 Surface-mount Duct Temperature Sensor

The TE-637DP-1 provides temperature sensing in a compact surface-mounted unit for use inside economizer rooftop systems. The unit housing is a durable plastic enclosure that installs easily to the duct surface. A protective membrane prevents sensor contamination due to dust, dirt, and insects.

The TE-637DP-1 has a thermistor temperature sensor with a negative temperature coefficient, and a reference resistance of 2.2k ohms at 77°F (25°C).



Figure 1: TE-637DP-1 Surface-mount Duct Temperature Sensor

Features and Benefits	
<input type="checkbox"/> Protective Membrane	Prevents sensor contamination
<input type="checkbox"/> Quick-mount, 2-screw Installation	Reduces installation time
<input type="checkbox"/> Compact Enclosure for Mounting Inside Ducts	Designed for rooftop unit applications and retrofits; enables surface-mount installation

Product Overview

The TE-637DP-1 outputs temperature signals for use in rooftop economizer applications. The TE-637DP-1 is suitable for use with a Johnson Controls Direct Mount Economizer (DME) Controller.

The TE-637DP-1 is a durable, yet cost-effective solution for sensing temperature. It is housed in an easy-to-install plastic enclosure, which speeds commissioning time and reduces cost.

IMPORTANT: The TE-637DP-1 is intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the TE-637DP-1 could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the TE-637DP-1.

IMPORTANT: Le TE-637DP-1 est destiné à transmettre des données entrantes à un équipement dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du TE-637DP-1 risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du TE-637DP-1.

Theory of Operation

The TE-637DP-1 has a thermistor temperature sensor with a negative temperature coefficient, and a reference resistance of 2.2k ohms at 77°F (25°C). (See Figure 3.)

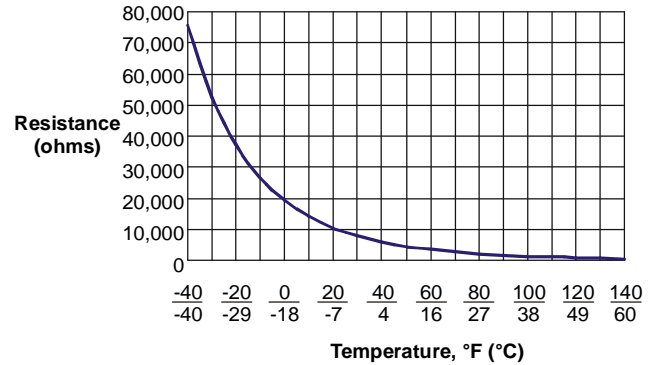


Figure 3: Temperature vs. Resistance Relationship for the TE-637DP-1

Dimensions

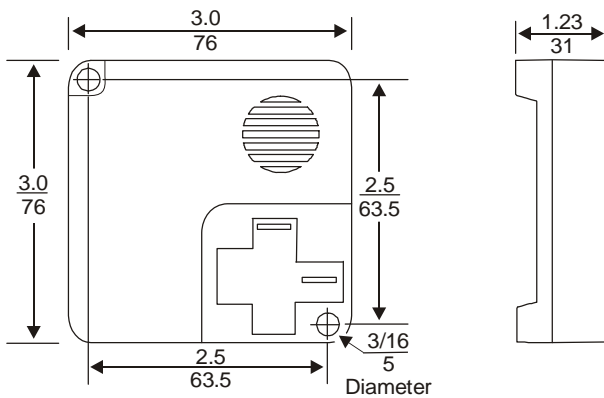


Figure 2: TE-637DP-1 Dimensions, in. (mm)

Table 1: Temperature vs. Resistance

Temperature		Resistance (ohms)
°F	°C	
-40	-40	75466
-30	-34	52571
-20	-29	37116
-10	-23	26539
0	-18	19208
10	-12	14062
20	-7	10408
30	-1	7784
40	4	5880
50	10	4484
60	16	3450
70	21	2678
80	27	2095
90	32	1652
100	38	1313
110	43	1051
120	49	847
130	54	687
140	60	561

/Installation

Tools Needed

- drill with 1/8 in. drill bit
- 1/4 in. nut driver

Location Considerations

- The sensor must be mounted inside a duct or economizer rooftop system.
- **Orientation:** The sensor must be mounted on a flat surface in a vertical, upright position. (See Figure 4.)
- **Placement:** Mount the unit at least eight feet downstream from sources of heat or humidity and away from areas with no air flow.

IMPORTANT: Do not install this TE-637DP-1 in condensing, wet, or damp environments. Moisture may cause damage to the TE-637DP-1.

Mounting

To mount the TE-637DP-1:

1. Using the sensor as a template, mark the location of the two self-tapping screws.
2. Use a drill with an 1/8 in. bit to drill two holes in the duct.
3. Attach the sensor to the duct using a 1/4 in. nut driver and the two included No. 6 sheet metal screws. (See Figure 4.)

Note: The sensor must be mounted in an upright position.

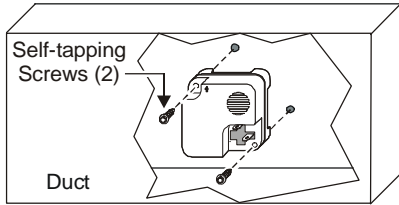


Figure 4: TE-637DP-1 Mounting

Wiring



WARNING: Electrical Shock Hazard.
Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

AVERTISSEMENT: Risque de décharge électrique.
Débrancher l'alimentation avant de réaliser tout branchement électrique. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

IMPORTANT: Make all wiring connections in accordance with the National Electrical Code and local regulations.

To wire the TE-637DP-1:

1. Route the wires from the controller to the TE-637DP-1. Use of No. 18 AWG wire is recommended.
2. Connect the wires to the appropriate terminals of the wiring block. (See Figure 5 and refer to the appropriate controller documentation.)

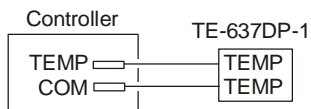


Figure 5: Typical TE-637DP-1 Wiring

Checkout

After installation and wiring are complete, apply power and make an operational check as shown in the appropriate controller documentation.

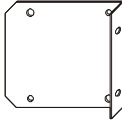
Repair and Replacement

Field repairs must not be made. To obtain a replacement, contact the nearest Johnson Controls representative.

Ordering Information

To order a duct-mount temperature sensor, contact your local Johnson Controls representative and specify product code number TE-637DP-1.

Table 2: Accessories

Product Code Number	Description
ACC-BRKT-100	Mounting Bracket for mounting the sensor perpendicular to the duct; 3.25 H x 3.62 W x 0.75 in. D (83 x 92 x 19 mm) 
ACC-CBL-100	Wiring Harness, 53 in. (1.3 m)

Specifications

Product	TE-637DP-1 Surface-mount Duct Temperature Sensor
Reference Resistance	2.2k ohms at 77°F (25°C)
Resistance Change	Nonlinear, negative temperature coefficient
Accuracy	±0.9°F (0.5°C) in the range of 32 to 158°F (0 to 70°C)
Ambient Operating Conditions	32 to 131°F (0 to 55°C) 0-100% RH, 85°F (29.4°C) maximum dew point
Survival Operating Conditions	-22 to 140°F (-30 to 60°C) 0 to 100% RH, 85°F (29.4°C) maximum dew point
Ambient Storage Conditions	-40 to 140°F (-40 to 60°C) 0-100% RH, 85°F (29.4°C) maximum dew point
Terminal Connections	1/4 in. (6.35 mm) male spade
Acceptable Wire Gauge	16 to 24 AWG wire (18 AWG wire recommended)
Dimensions (H x W x L)	3.00 x 3.00 x 1.23 in. (76 x 76 x 31 mm)
Shipping Weight	0.50 lb (0.23 kg)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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