

## 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**

<b>Features and Benefits</b>	
<input type="checkbox"/> <b>Protective Membrane</b>	Prevents sensor contamination
<input type="checkbox"/> <b>Quick-mount, 2-screw Installation</b>	Reduces installation time
<input type="checkbox"/> <b>Compact Enclosure for Mounting Inside Ducts</b>	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 control equipment under normal operating conditions. Where failure or malfunction of the TE-637DP-1 could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm supervisory systems) intended to warn of, or protect against, failure or malfunction of the TE-637DP-1 must be incorporated into and maintained as part of the control system.

## Dimensions

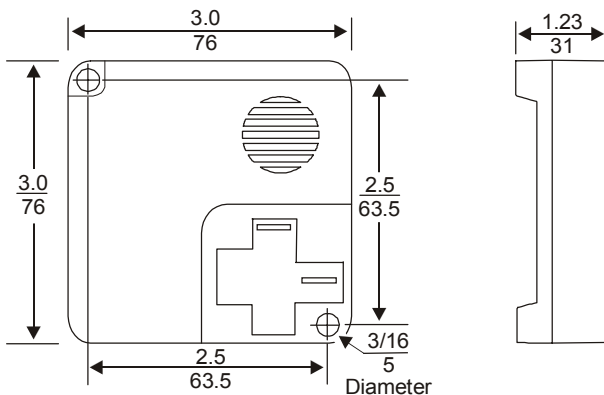


Figure 2: TE-637DP-1 Dimensions, in. (mm)

## 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.)

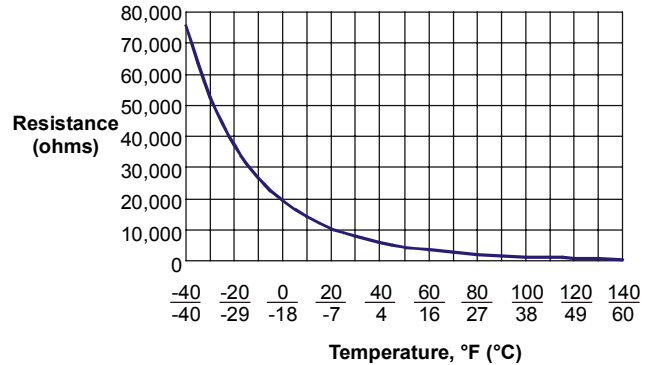


Figure 3: Temperature vs. Resistance Relationship for the TE-637DP-1

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.

**CAUTION: Equipment Damage Hazard.**  
The TE-637DP-1 must be mounted in a location that is not exposed to rain, snow, or direct sunlight.

Do not exceed the temperature range given in the *Specifications* section or the sensing element may be permanently damaged.

## 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.

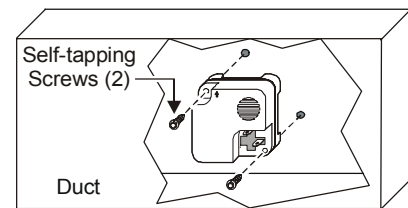


Figure 4: TE-637DP-1 Mounting

## Wiring

**WARNING: Electrical Shock Hazard.**  
Disconnect the power supply before wiring connections are made to prevent electrical shock or damage to the equipment.

**IMPORTANT:** All wiring connections must be made in accordance with the National Electrical Code and all 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.)

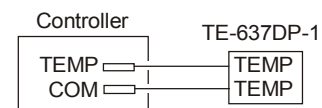


Figure 5: Typical TE-637DP-1 Wiring

## Checkout

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

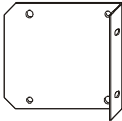
## Repair and Replacement

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
HE-6320-100	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) 
HE-6320-101	Wiring Harness

## Specifications

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



**Controls Group**  
507 E. Michigan Street  
P.O. Box 423  
Milwaukee, WI 53201

[www.johnsoncontrols.com](http://www.johnsoncontrols.com)  
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