

37T Series

Moisture Resistant Temperature Controls



Moisture Resistant Temperature Control

The 37T series of 3/4" (19mm) bimetal disc temperature controls from Therm-O-Disc offers proven reliability in a moisture resistant sealed design. The snap-action of the bimetal disc provides high-speed contact separation resulting in excellent life cycle characteristics at electrical loads up to 10 amps at 120VAC and 5 amps at 250VAC. The sealed design provides moisture resistance for moisture prone environments. A wide variety of terminal, lead wire and mounting configurations are available to provide maximum design flexibility. The 37T is the most popular and widely applied temperature control in refrigeration applications such as defrost termination and ice cube maker control. It is also applied in a range of heat pump and air conditioning applications.

Features and Benefits

The 37T features include:

- Sealed construction provides moisture resistance for moisture prone environments.
- High-speed contact separation ensures long contact life.
- A wide variety of mounting configurations, lead wires and terminations provide maximum design flexibility.
- All materials have been selected to pass the refrigeration industry's odor and taste tests.
- Controls are 100% operation checked and dielectric tested.

Switch Actions and Typical Applications

The 37T is available in two switch actions:

Automatic Reset SPST – In this design, the switch can be built to either open or close its electrical contacts on temperature rise. Once the temperature in the application has returned to the specified reset temperature, the contacts automatically return to their original state. Open on rise contact design is typically used for refrigeration defrost termination and ice cube maker control. Type 37TF includes an internal resistor wired in parallel with the contacts which serves as an aid to factory circuit testing where the contacts are open at room temperature.

Automatic Reset SPDT – This design is the same as the SPST with the addition of an auxiliary contact which makes a circuit upon the opening of the main contacts and breaks the circuit when the main contacts reset. In this design, any combination of electrical ratings shown in the rating table may be switched from one circuit to the other.

Mounting Configurations

The 37T is available in several mounting configurations:

No Mounting Bracket – The 37T may be specified without a mounting bracket. The 37T (see figure 1) is available with a polyethylene cap or a phenolic centerpost which may be used for a customer's bracket. The phenolic centerpost may be customized to meet unique requirements.

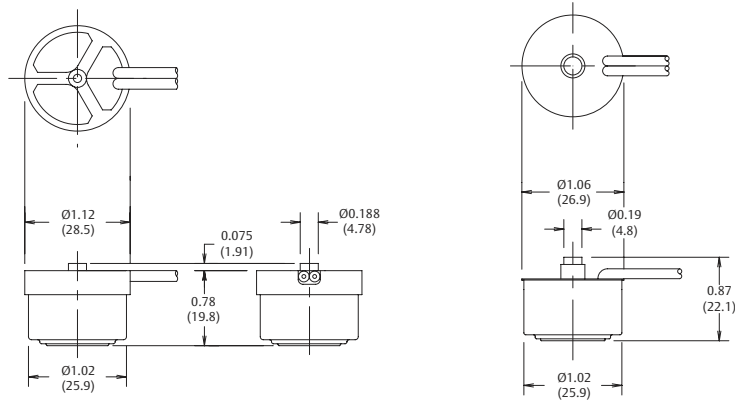


Figure 1

Dimensions are shown in inches and (millimeters).

Surface Mounting – The surface mounting configuration (see figure 2) positions the sensing element firmly against the surface to be monitored.

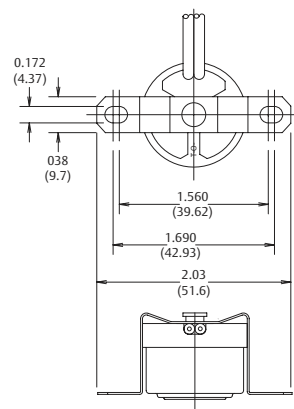


Figure 2

Dimensions are shown in inches and (millimeters).

Clip-in Mounting – Clip-in mounting brackets (see figure 3) hold the sensing element firmly against the surface where the thickness of the surface is from .03” (0.8mm) to .06” (1.5mm).

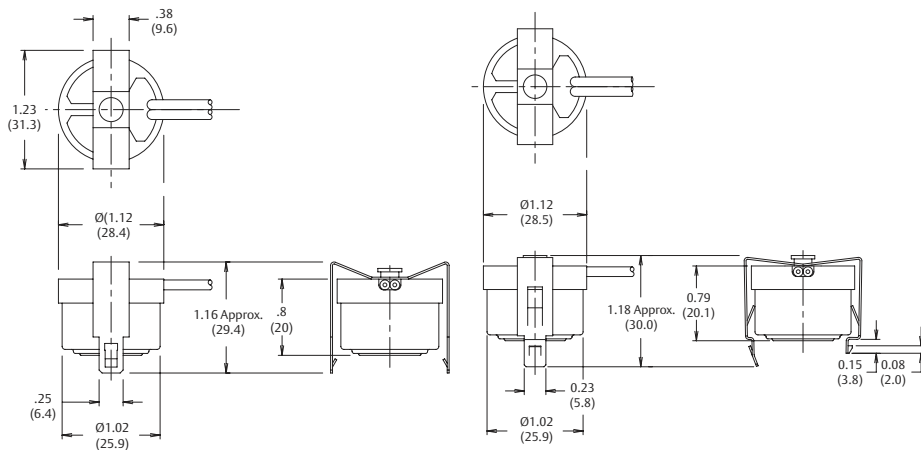


Figure 3

Dimensions are shown in inches and (millimeters).

Tube Mounting – Several different tube mountings are available (see figures 4-7). These brackets firmly attach the 37T to tubes ranging from 1/4” (6.4mm) to 7/8” (22.2mm) in diameter.

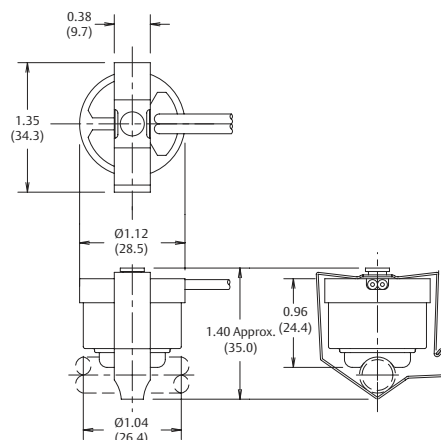


Figure 4

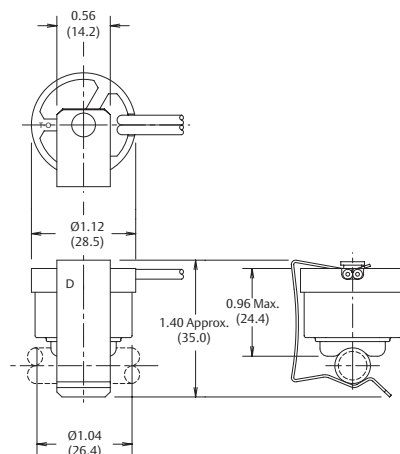


Figure 5

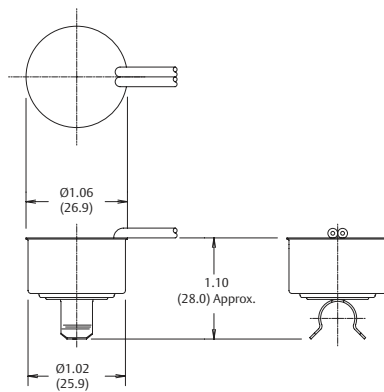


Figure 6

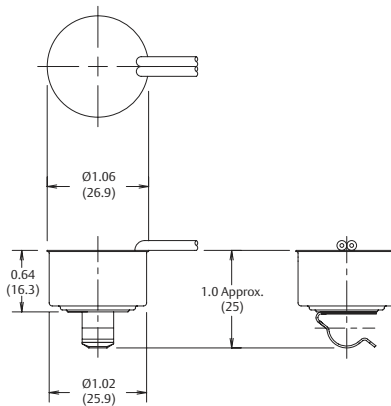


Figure 7

Dimensions are shown in inches and (millimeters).

Please contact our Sales Engineering Department for samples or further information on the mounting options available.



Lead Wire and Terminal Configurations

Standard Lead Wire – The standard leads for the 37T controls are 12" (305mm) #18 AWG, 16/30 stranded copper wire with 1/32" (0.8mm) thick 105°C PVC odorless insulation stripped 1/2" (13mm).

Non-Standard Lead Wire – Leads longer than 12" (305mm) are available for all 37T controls at added cost. The standard lead wire can also be supplied with tracer or with 1/16" (1.6mm) insulation. In addition, #16 AWG wire can be supplied with either 1/32" (0.8mm) or 1/16" (1.6mm) thick insulation. The maximum wire size available is #14 AWG with 1/32" (0.8mm) insulation.

Terminals – A wide variety of terminals can be attached to the 37T lead wires. Options include 1/4" (6.4mm) tin-plated brass male or female quick connect terminals and male or female bullet connectors. Please consult a Therm-O-Disc sales engineer for further information about terminals available.

Pin Terminals – The 37TB construction provides pin terminals in place of lead wires coming from the thermostat (see figure 8).

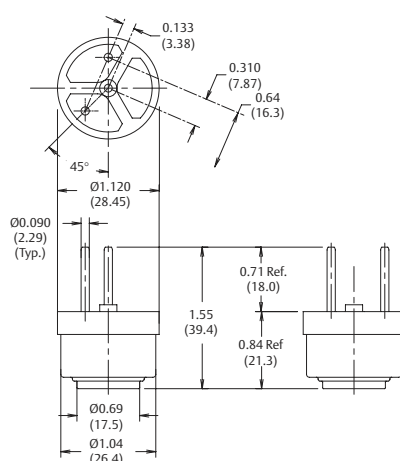


Figure 8

Dimensions are shown in inches and (millimeters).



Thermal Response

The temperature sensitive bimetal disc is located at the bottom of the disc cup adjacent to the surface to be monitored. Aluminum, tin-plated copper and stainless steel cups are available for calibrations not exceeding 172°F (78°C) and temperature overrides not exceeding 200°F (93°C). Stainless steel disc cups may also be used for higher temperature applications.

Calibration Temperatures, Differentials and Tolerances

To use the calibration chart, locate the range in the left hand column, in which the highest calibration set point (open or close) falls. Then locate, across the top, the range in which the nominal differential falls. The standard open and close set point tolerances are shown where the two columns converge. The chart also indicates what differentials are available in each of the calibration set point ranges. Closer tolerances and special differentials are available at extra cost. Please consult a sales engineer for further information.

Calibration Temperatures, Differentials and Standard Tolerance of the 37T Series

Highest Calibration Set Point Range (Open or Close)	Nominal Differentials (temperature difference between nominal open and close set point)											
	10-14°F* 5.5-8°C		15-19°F 8.5-10.5°C		20-29°F 11-16°C		30-39°F 16.5-21.5°C		40-50°F 22-27.5°C		51-80°F 28-44.5°C	
	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close
10°-80°F** -12°-27°C	±5 ±3	±6 ±3.5	±5 ±3	±6 ±3.5	±5 ±3	±6 ±3.5	±5 ±3	±7 ±4	±5 ±3	±7 ±4	- -	- -
81°-200°F*** 28°-93°C	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±5 ±3	±7 ±4	±5 ±3	±7 ±4	- -	- -
201°-221°F*** 94°-105°C	- -	- -	±5 ±3	±6 ±3.5	±5 ±3	±7 ±4	±6 ±3.5	±8 ±4.5	±7 ±4	±9 ±5	- -	- -
222°-300°F**** 106°-149°C (37TJ only)	- -	- -	- -	- -	±6 ±3.5	±8 ±4.5	±7 ±4	±9 ±5	±8 ±4.5	±11 ±6	±9 ±5	±13 ±7

* SPDT – Minimum differential is 15°F (8°C).

** The minimum bottom temperature is -10°F (-23°C).

*** Type 37T maximum ambient temperature for the polyethylene cap is 172°F (78°C).

**** Type 37TJ maximum ambient temperature for the epoxy and lead wires is 257°F (125°C).



High Temperature 37TJ Construction

The 37TJ construction incorporates a stainless steel disc cup, as well as high temperature sealant and lead wires. The 37TJ, available in SPST construction only, may be calibrated up to 300°F (149°) with maximum ambient temperatures up to 257°F (125°C).

Product Numbering System

37T

A – Increased inductive load ratings	B – Pin terminals	0 – No mounting bracket	1 – SPST, open on temperature rise
J – High temperature construction	C – Conduit connector	2 – Surface mounting bracket	2 – SPST, close on temperature rise
V – Low load resistive applications, using conical contacts	E – Eyelet construction (Required for European agency approval.)	3 – Tube mounting	3 – SPDT, with auxiliary contact
VG – Low load resistive applications, using gold conical contacts	F – Internal resistor added to facilitate OEM factory continuity testing		
	G – Low load resistive and inductive applications, using gold contacts		

General Electrical Ratings

The 37T series of controls has been rated by major agencies throughout the world. The agency ratings can be used as a guide when evaluating specific applications. However, the mechanical, electrical, thermal and environmental conditions to which a control may be exposed in an application may differ significantly from agency test conditions. Therefore, the user must not rely solely on agency ratings, but must perform adequate testing of the product to confirm that the control selected will operate as intended in the user's application.

Thermostat Type	Max Temp.	Contact Arrangement	Cycles	Inductive Amperes		Pilot duty VA	Resistive Amperes	Watts	Volts AC	Agency Recognition
				FLA	LRA					
37T, 37TB, 37TJ	221°F* 105°C	SPST or SPDT****	100,000	5.8	34.8	125	10.0	1200	120	UL File E29653
			100,000	2.9	17.4	125	5.0	1200	240	
			100,000	—	—	—	1.0	—	277	
			30,000	3.6	21.6	125	—	—	277	
37TV, 37TVF	221°F* 105°C	low load application	30,000	—	—	—	10.0	—	120	
			100,000	—	—	—	7.0	—	120	
			100,000	—	—	—	2.5	—	240	
			100,000	—	—	—	1.0	—	24VDC	
37TG, 37TVG	221°F* 105°C	low load application	100,000	—	—	125	1.0	—	120	
			100,000	—	—	—	1.0	—	24VDC	
37TA	221°F* 105°C	high inductive load	30,000	7.5	40.0	—	—	—	120	
37TF	***	SPST only	100,000	5.8	34.8	125	10.0	1200	120	
37TJ	300°F** 149°C	high temperature SPST only	30,000	—	—	125	—	—	120	
			30,000	2.9	17.4	—	5.0	—	240	
37T, 37TJ	221°F* 105°C	SPST or SPDT****	30,000	5.8	34.8	125	10.0	1200	120	CSA File LR19988 File LR62082
			30,000	2.9	17.4	125	5.0	1200	240	
			30,000	3.6	21.6	—	—	—	277	
			100,000	—	—	125	—	—	277	
			100,000	—	—	—	8.3	—	120	
			100,000	—	—	—	—	—	120	
37TJ	300°F** 149°C	high temperature SPST only	100,000	—	—	125	2.0	—	120	
37TG 37TVG	221°F* 105°C	low load application	100,000	—	—	—	1.0	—	120	
			100,000	—	—	—	1.0	—	24VDC	
37TA	221°F* 105°C	high inductive load	30,000	7.8	46.8	—	—	—	120	
37TV, 37TVF	221°F* 105°C	low load application	30,000	—	—	—	10.0	—	120	
			100,000	—	—	—	5.0	—	120	
			100,000	—	—	—	2.5	—	240	
37TF	***	SPST only	100,000	5.8	34.8	125	10.0	1200	120	
37TE 37TFE	105°C ***	SPST only	100,000	2.9	—	—	5.0	—	250	BEAB File CO662
			10,000	2.9	—	—	8.5	—	250	
37TVE 37TVFE	105°C ***	SPST only	30,000	—	—	—	5.0	—	250	
			100,000	—	—	—	2.5	—	250	

For complete and current ratings information, please contact our Sales Engineering Department. At thermostat end-of-life, the contacts may remain permanently closed or open.

* (a) The 37T maximum ambient temperature for the polyethylene cap is 172°F (78°C).

(b) Aluminum and tin-plated copper disc cups are limited to calibrations not exceeding 172°F (78°C) and temperature over-rides not exceeding 200°F (93°C).

** The maximum ambient temperature for the epoxy and lead wires is 257°F (125°C).

*** For resistor ratings and maximum temperature ratings please contact our Sales Engineering Department.

**** For SPDT, any combination of ratings in the table may be used. The 37TJ is SPST only.



Important Notice

Users must determine the suitability of the control for their application, including the level of reliability required, and are solely responsible for the function of the end-use product.

These controls contain exposed electrical components and are not intended to withstand exposure to water or other environmental contaminants which can compromise insulating components. Such exposure may result in insulation breakdown and accompanying localized electrical heating.

A control may remain permanently closed or open as a result of exposure to excessive mechanical, electrical, thermal or environmental conditions or at normal end-of-life. If failure of the control to operate could result in personal injury or property damage, the user should incorporate supplemental system control features to achieve the desired level of reliability and safety. For example, backup controls have been incorporated in a number of applications for this reason.