

## Remote Bulb Temperature Controllers

Models T654, T667, T954

## Specification

### Function

Models T654, T667, and T954 Remote Bulb Temperature Controllers monitor industrial heating and cooling equipment such as heat-treating baths, ovens, cooling chambers, and similar industrial units.

Models T654 and T667 Temperature Controllers can be used to operate a Model M6184 ModIV, Actuator Motor, a Model M640 Actionator Motor, a contactor, or a solenoid valve for precise temperature control.

Model T954 is used typically to operate a M9184 ModIV Actuator, or a combination of a Model M940 Actionator Motor and a Model R7195B Proportioning Relay for proportioning temperature control on a heat/cooling cycle.

### Description

#### Enclosure

Remote bulb temperature controllers (Table 1) are fully enclosed in a steel case with a zinc die-cast cover providing excellent resistance to environmental effects. The plate glass window in the front of the case permits easy viewing of the set point and indicated temperature.

Ambient compensation is built into the Model T654 to neutralize the temperature effect on the case and capillary.

The set point on Models T667A and B, T654A and C, and T954A can be adjusted by a front accessible knob.

Model T954 has a precious metal 140-ohm potentiometer for proportioning temperature control from a single set point. The wiper is positioned by the remote temperature sensing bulb.

On Models T667 and T654, the remote temperature sensing bulb actuates a SPDT *MICRO SWITCH* to heat and/or cool from the same set point.

Wells for the sealing bulbs can be supplied separately. (Refer to Table 3.)

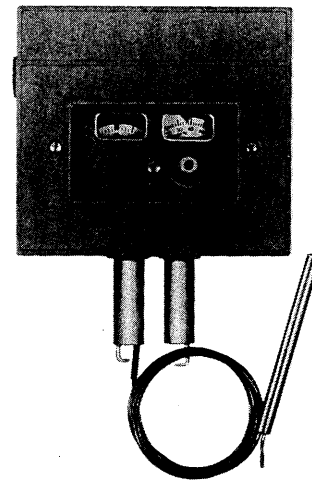


Figure 1 — Models T654, T954

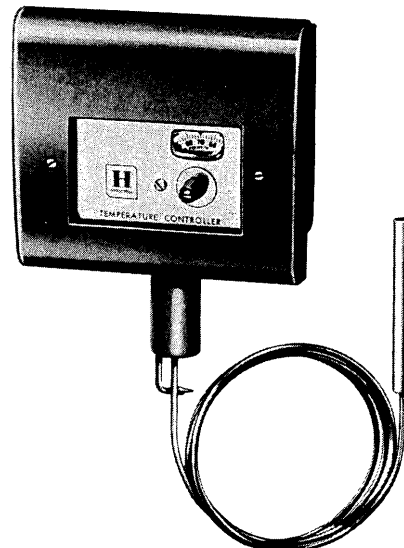


Figure 2 – Model T667

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**Specifications****Operating Conditions**

Ambient Temperature Compensation Range	30 to 130°F
Voltage (T954)	24 Volts, maximum (1 40-ohm potentiometer).
Switch Action (T654, T667)	Make R to W and breaks R to B on temperature rise. Breaks R to W and makes R to B on temperature fall.

**Performance**

Accuracy	Typically within 1%
Differential	T654A, T667A and C: Fixed approximately 1% of span. T654C: Adjustable from 1 to 3.5% of span, additive to set point.
Ranges	Refer to Table 2.
Proportional Band (T954)	Adjustable from 5 to 10% of span.
Switch Electrical Capacity	62.5 Va at 120/240 Vac, pilot duty.

**Design**

Mounting	Surface or flush, brackets furnished.
Scale Length	4 to 5 inches (102 mm to 127 mm) depending upon range.
Capillary Length	6 or 20 foot (182 or 610 cm) lengths available.
Dimensions	Refer to Figure 3.
Approval Body	<i>Underwriters' Laboratories Inc.</i> : T654A and T667A.

**TABLE 1- Model Selection**

Model	Model No.	Type
Indicating	T654A	Spdt MICRO SWITCH with a fixed differential
	T654C	Spdt MICRO SWITCH with an adjustable differential
	T954A	140-ohm potentiometer and an adjustable proportional band
Non-indicating	T667A	Spdt MICRO SWITCH with a fixed differential

**TABLE 2- Range and Bulb Information**

Scale Range (Degrees)	Scale Divisions	Bulb Size (Inches) Dia. x Length	Bulb Material	Fill Material
0 to 150F	2F	3/8 x 5-13/16	Copper	Toluene
50 to 250F	2F	3/8 x 4-5/16		Toluene
50 to 400F	5F	3/8 x 3-1/8		Silicone oil
50 to 400F	5F	3/8 x 3-1/8	Stainless steel	Silicone oil
10 to 120C	2C	3/8 x 4-5/16	Stainless steel	Toluene
10 to 200C	2C	3/8 x 3-1/8		Silicone oil

**TABLE 3- Well and Clip Assemblies**

Controller Ranges		Bulb Length (inches, 3/8 Dia.)	Copper		Stainless Steel		Monel
°F	°C		1/2 NPT	3/4 NPT	1/2 NPT	3/4 NPT	1/2 NPT
0 to 150	-150 to +65	5-13/16	104488N	104488P	104488U	104488R	104488S
50 to 250	10 to 120	4-5/16	104488N	104488P	104488U	104488R	104488S
50 to 400	10 to 200	3-1/8	104488M	104488P	104488U	104488R	104488S

Dimensions:  $\frac{\text{millimetres}}{\text{inches}}$

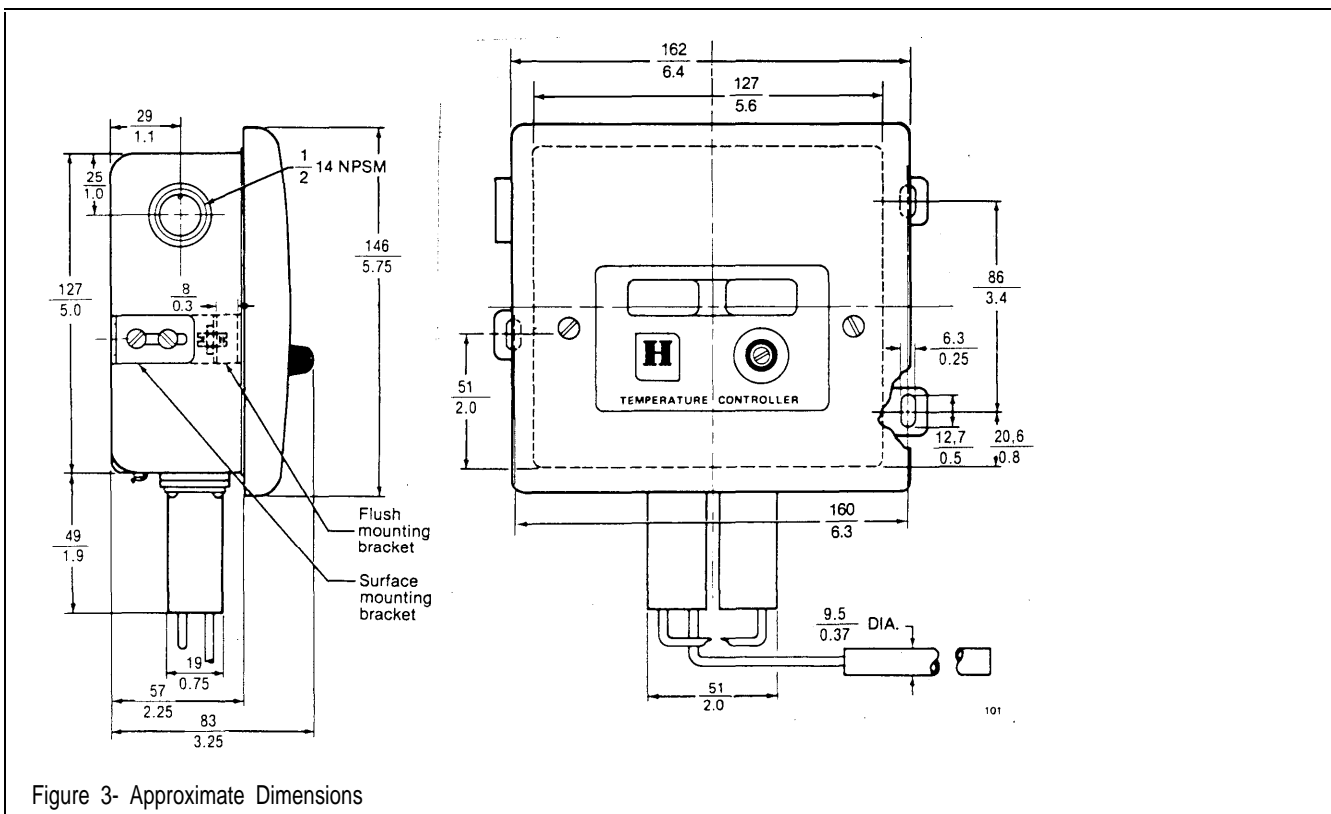


Figure 3- Approximate Dimensions

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**Accessories Available**

1. 311266D bulb holder; for use when sensing air temperature.
2. Compression fittings:

Spud Thread	Part Numbers	
	Brass	Stainless Steel
1/2 NPT	7617 ACT	7617 ACS
3/4 NPT	7617 ACP	7617 ACQ

3. Replacement element assemblies. See Form 95-8119.
4. Explosion-proof case, Crouse-Hinds GUB 1523-4-0002.  
Order directly from Crouse-Hinds Company, Syracuse, New York.
5. Separable wells of Monel, copper, mild or stainless steel. Refer to Table 3.

**REFERENCES**

For more detailed information, order Form 95-2498 for the T654, Form 95-2875 for the T667, or Form 95-5114 for the T954.

**Ordering Information**

**Specify**

- Model Number
- Range
- Capillary length and material
- Accessories