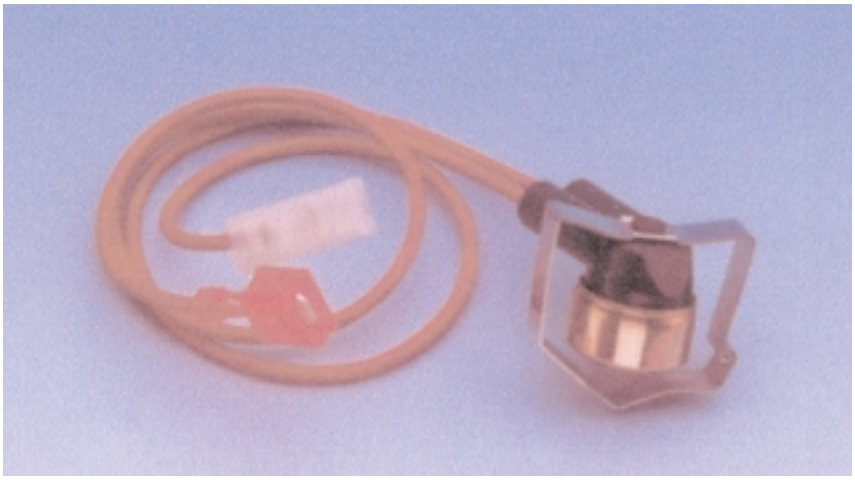
Product Bulletin

KLIXON®

3NT SERIES
Fixed Temperature Thermostats



General Description

The 3NT thermostat from Texas Instruments is a new, custom built, automatic reset thermostat designed to meet your specific application requirements. Its patented, tamperproof, Klixon® snap-acting bimetal disc provides reliable, repeatable switch actuation, for electrical loads ranging from dry circuits to 10A @ 240Vac.

The unique, dry seal 3NT design protects the switch from environmental hazards such as water, dust, oil, etc. without the use of epoxies or additives, reducing cycle times and environmental concerns. A choice of o-ring materials is available to assure a lasting seal between a metal cup and protective PBT housing over a wide range of temperatures and chemical exposures. Silicon rubber grommets which seal around each wire lead have been proven by years of automotive use.

The dry seal also allows direct integration of the thermostat into a wire harness, eliminating extra connections.

The core of the 3NT is the proven 1NT thermostat. Recognized by all major worldwide agencies, hundreds of millions are used daily in a wide variety of appliance, HVAC, automotive, and specialty applications. Manufactured since 1981, the 1NT thermostat is produced at ISO 9000 certified manufacturing sites.

Applications shown:
Residential heat pump

Key Features

- Automatic reset
- Small and easy to mount
- Fast thermal response
- Innovative dry seal design - protects from moisture and dust
- Reliable 100K cycle life
- High temperature - to 275^{0}F (135^{0}C)

Applications

Small size, a variety of mounting options, and outstanding thermal response, makes the 3NT an excellent temperature control for dehumidifiers, freezers, heat pumps, ice makers, refrigerators, or any place where a fixed temperature control is required in a wet or dirty environment.

Design Specifications

Operating Temperature:

With standard nitrile o-ring:
-20 to 75°C (-4 to 167°F)

With silicon rubber o-ring:
-20 to 135°C (-4 to 275°F)

Ambient Temperature:

-40°C to maximum wire lead insulation temperature rating:

PVC - 105°C
XLP - 125°C

(Allow 15°C de-rating below wire insulation rating at maximum 10A current)

Minimum Nominal Temperature Differential:

8°C (15°F)

Dielectric Strength:

750 Vrms
1500Vrms terminals to case

Switch Configurations:

3NT thermostats are SPST switches which typically reset automatically. Single operation function is available.

TI recommends standard silver contacts for most applications. Customers may prefer to specify gold contacts for low voltage (<12V) or low current (less than 100mA) applications.

Standard Wire Leads:

18 AWG (1/32" or 1/16" wall thickness 105°C PVC)

16 AWG (1/32" thick, 105°C, PVC insulation)

1/32" wall thickness 125°C XLP insulation available upon request

A wide variety of wire lead terminals are available from stock. Custom termination support is available.

Agency Approvals

	File Number	Category
UL (USA)[1]	SA995	Category SDFY2
UL (CANADA)[1]	SA995	Category SDFY8
DEMKO[2]	120371EH	
VDE[2]	4464.3 - 4510-0010	License No. 104219

1) Recognized to U.S. and Canadian requirements by Underwriters Laboratories (UL873 and C22.2 No. 24)

2) DEMKO and VDE approvals to EN60730-1 and EN60730-2-9
DEMKO CB Test cert. DK 96-00992, Thermostat / Temperature Limiter, Type 2.BL, IP67, for internal wiring.

Electrical ratings

Agency	Cycles x1000	Volts	FLA	LRA	Amps (resistive)	VA
UL (USA Canada)	100	120 Vac	5.8	34.8	10	125
	100	240 Vac	2.9	17.4	10	125
	30	120 Vac	10.0	40.0		
	30	240 Vac	10.0	40.0		
	100	30 Vdc			1	
VDE/ DEMKO	100	240 Vac	1.66	10	10	
	10	240 Vac	5	30	16	
	30	400 Vac	1	6	4	

Standard Temperatures and Tolerances

Nominal Top Temperature		Nominal Differential		Open Temperature Tolerance		Close Temperature Tolerance	
°F	°C	°F	°C	°F	°C	°F	°C
32 to 80	0 to 27	20 - 29	11- 16	±5.5	±3	±7.5	±4
		30 - 38	17 - 21	±5.5	±3	±8.5	±4.5
		50 - 60	22 - 33	±5.5	±3	±10	±5.5
81 to 167	28 to 75	20 - 23	11 - 13	±5.5	±3	±7.5	±4
		24 - 29	14 - 16	±5.5	±3	±8.5	±4.5
		30 - 59	17 - 33	±5.5	±3	±10	±5
*168 to 199	*76 to 93	20 - 23	11 - 13	±5.5	±3	±7.5	±4
		24 - 29	14 - 16	±5.5	±3	±8.5	±4.5
		30 - 59	17 - 33	±5.5	±3	±9	±5
*200 to 249	*94 to 121	20 - 29	11 - 16	±6.5	±3.5	±8.5	±4
		30 - 38	17 - 21	±6.5	±3.5	±10	±4.5
		39 - 59	22 - 33	±6.5	±3.5	±12	±6.5
		50 - 99	34 - 55	±10	±5.5	±20	±11
250 to 275	122 to 136	24 - 38	14 - 21	±7.5	±4	±10	±5.5
		39 - 59	22 - 33	±7.5	±4	±14.5	±8
		60 - 99	34 - 55	±10	±5.5	±20	±11

Minimum bottom temperature of 50°C (122°F)

Numbering System

Part Number

3NT	01	L	D	XXXX

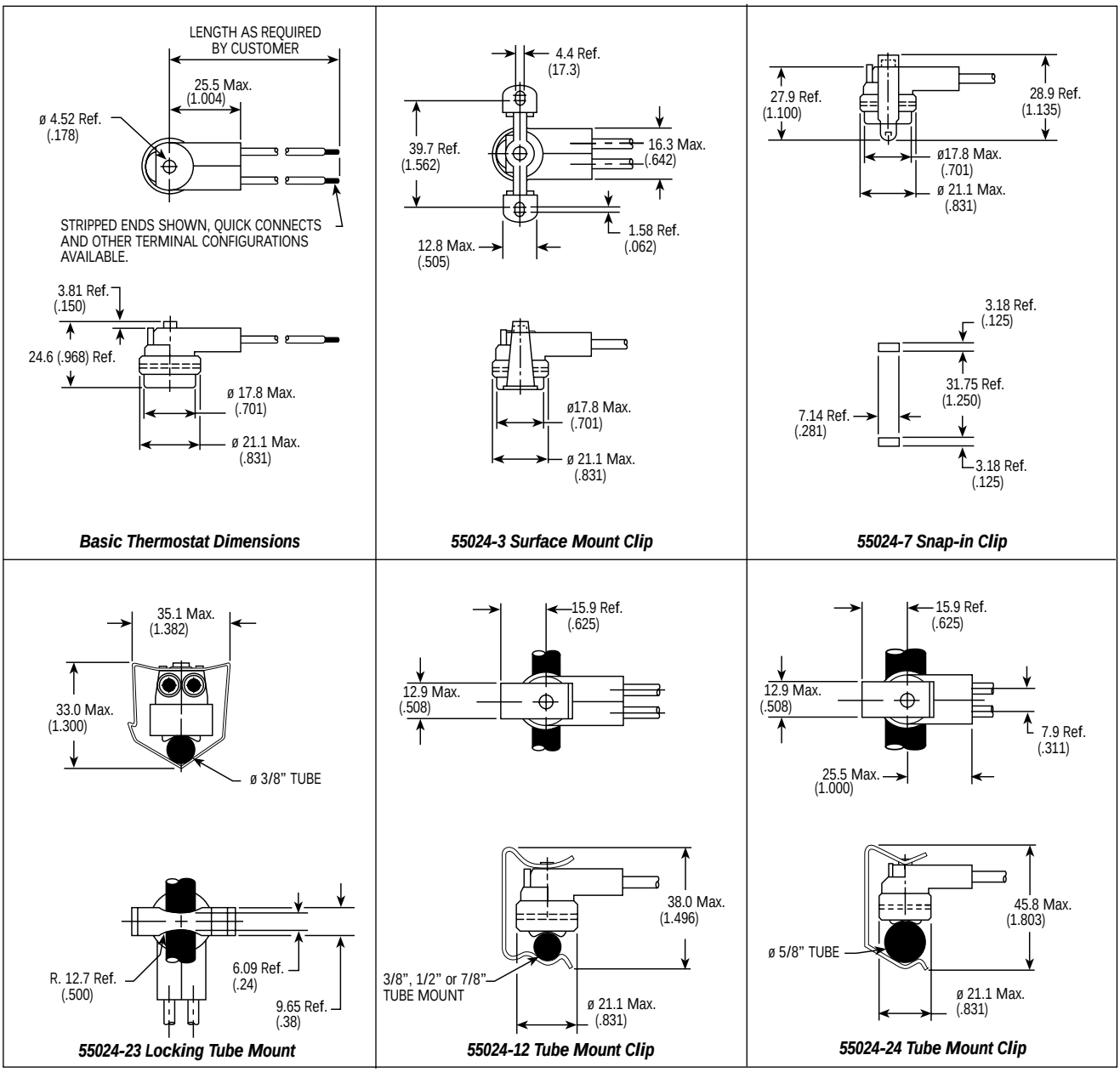
TI P/N Series	Contact Material	Switch Opening Logic	Dry Seal Construction	ID Number
	01 - Silver 11 - Gold	L - On Temp. Rise F - On Temp. Fall	D - Standard (Nitrile 0-ring) (0-166^{O}F) H - High Temp. (Silicon rubber) (166 and above) N -- No leads	Customer & Application Specific

Temperature Code

L	50	C	30

Switch Type	Operating Temp.	Temp. Code	Differential
L - Limit F - Fan	Nominal Opening Temperature	C - Celsius F - Fahrenheit	Differnece between Nominal Open and Nominal Close Temperature

Typical Physical Characteristics Dimensions in mm (inches)



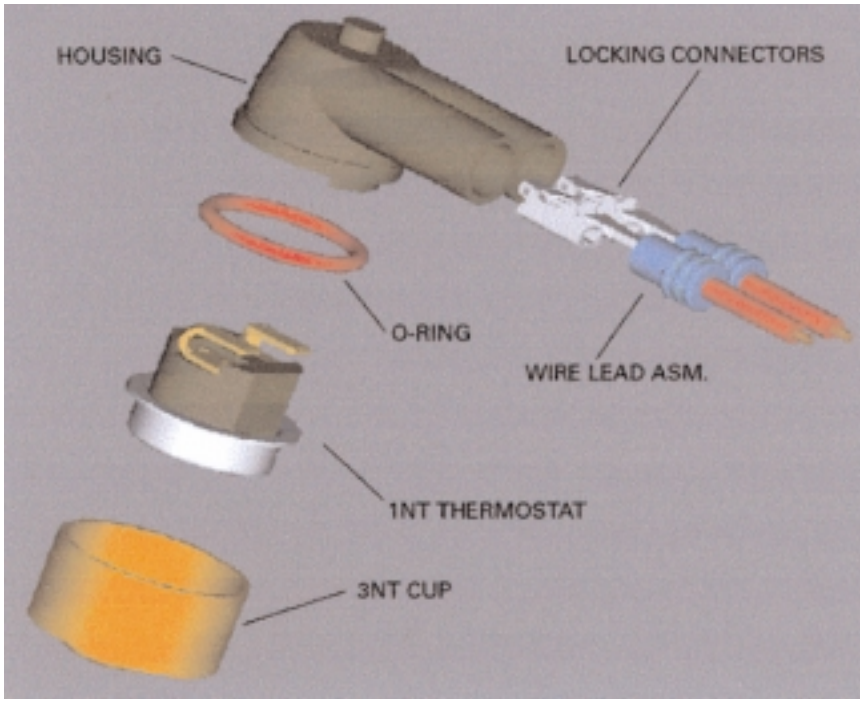
Ordering Samples

TI encourages the use of engineering test samples to assist in your thermostat specification process. Please call or FAX the following information for the fastest possible sampling lead times:

1. Customer product application
2. Electrical load requirements: voltage, current, power factor (inductive loads)
3. Nominal setpoint temperatures (opening and closing)
4. maximum allowable temperature setpoint tolerances (see table for standards)
5. Mounting style desired:
   - flat surface - screw hole or snap-in
   - tube - diameter and orientation
6. Cup material (aluminum or copper)
7. Lead wire specifications (length, wire gage, terminations, insulation type and thickness)
8. Estimated annual usage

Non-functional thermocouple samples are available to determine thermostat setpoints. Please specify thermocouple type (J,K,T) and length.

3NT Dry Seal Design



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