KLIXON®

1NT SERIES

Fixed Temperature Thermostats

Key Features

- ISO9000 Certification
- Recognized by 9 worldwide agencies
- 100% factory inspected for continuity, function and contact resistance
- Global sales and technical support
- Ambient temperature rating from -40°C to 240°C (-40°F to 464°F)
- PPS* base provides
    - low cost
    - High temperature capability
    - Clean processing
    - High impact strength
    - Low static generation
- Factory pre-set bi-metal disc ensures:
    - Safe and reliable operation
    - Tamperproof settings
- Life-expanding innovations include:
    - Solid metal-to-metal terminal construction
    - Current free spring
    - One piece transfer mechanism
- Switch actions:
    - Automatic reset: Available with both normally open and normally closed switch logic
    - Manual reset: Mechanically resettable device
    - Trip free manual reset: UL M2 class rating that resists consumer tampering
    - One shot: meets agency require ments for single operation device
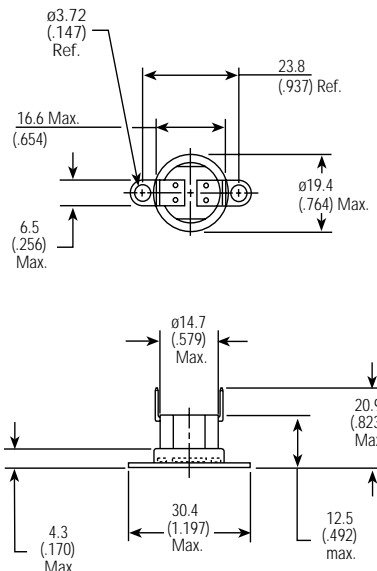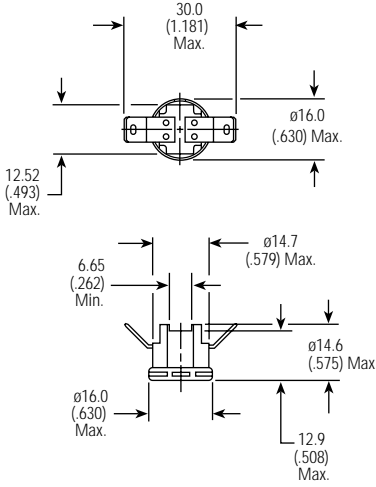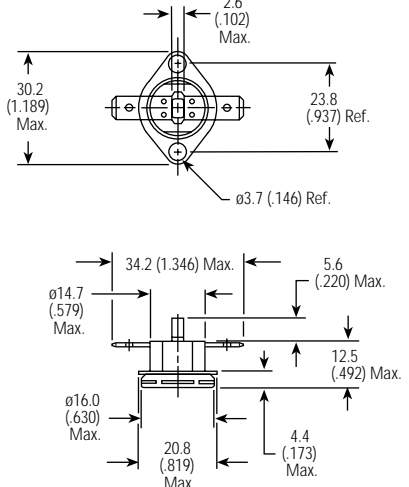
Applications

The 1NT thermostat is used in a variety of applications throughout the world. They help ensure the correct and safe function of many appliances and HVAC products that we, as consumers, use every day to make our lives better. Texas Instruments reputation is based on the proven quality and reliability of its products. Our cost-effective solutions protect the consumer as well as the manufacturers of these products. TI thermostats operate in numerous coffee and tea makers, microwave ovens, sandwich makers, rice cookers, hair setters, fan heaters, vacuum cleaners and gas furnaces - just to name a few. Decades of experience and the committment to continuous improvement have resulted in the best thermal protection devices available.

Applications shown: wafflemaker, fan heater, gas furnace

Available Constructions

High Profile Construction
Options shown: 90º– 1/4″ Q.C. terminals with Surface mount flange

ø3.72 (.147) Ref.

16.6 Max. (.654)

23.8 (.937) Ref.

ø19.4 (.764) Max.

6.5 (.256) Max.

ø14.7 (.579) Max.

20.9 (.823) Max.

4.3 (.170) Max.

30.4 (1.197) Max.

12.5 (.492) max.

Part Types by Construction

1NT01 Auto Reset / Silver Contacts
1NT11 Auto Reset / Gold Contacts
1NT09 One Shot: -35ºC (-31ºF) Reset
1NT10 One Shot: 0ºC (32ºF) Reset

Low Profile Construction
4 or 5 Post
Options shown: 45º– 1/4″ Q.C. terminals with 4 post & flat Al cup
Note: 5 post design includes a .093″ Dia. centerpost (Not shown)

30.0 (1.181) Max.

ø16.0 (.630) Max.

12.52 (.493) Max.

6.65 (.262) Min.

ø14.7 (.579) Max.

ø14.6 (.575) Max.

ø16.0 (.630) Max.

12.9 (.508) Max.

1NT02 Auto Reset / Silver Contacts
1NT20 Auto Reset / Gold Contacts

Manual Reset Construction
Options shown: Flat 1/4″ Q.C. terminals with Airstream mount cup

2.6 (.102) Max.

30.2 (1.189) Max.

23.8 (.937) Ref.

ø3.7 (.146) Ref.

34.2 (1.346) Max.

5.6 (.220) Max.

ø14.7 (.579) Max.

ø16.0 (.630) Max.

12.5 (.492) Max.

20.8 (.819) Max.

4.4 (.173) Max.

1NT08 Manual Reset / Silver Contacts
1NT12 Manual Reset / Gold Contacts
1NT15 Trip Free MR / Silver Contacts
1NT19 Trip Free MR / Gold Contacts

All dimensions mm (in.)

Numbering System

Part Number

1NTXX	E	L	–	XXXX
Part Type	**Special Processing**	**Switch Type**		**ID Number**
Consult Table Above	A Wire Lead Assy E Exposed Disc	L Limit* F Fan**		Unique, Customer Specific

Temperature Code

L	150	F	–	30
Switch Type	**Operating Temp.**	**Temp. Scale**		**Differential**
L Limit* F Fan**	Nominal Open Temperature	C Celcius F Farenheit		# Nom. Open to Nom. Close MR Manual Reset

* *Limit switch opens on temperature rise*
** *fan switch closes on temperature rise*

1NT Series Electrical Ratings[1]

UL and CSA

Type	Max. Temp.		Cycles (X 1000)	Electrical Rating	
	°C	°F			
NT01,02	204	400	100	120 Vac 240 Vac 277 Vac	15 amps 10 amps 7.2 amps
1NT08, 15, 08E	204	400	1 + 5	240 Vac	25 amps
1NT09, 10[3]	204	400	1-Shot	240 Vac 277 Vac	25 amps 7.2 amps
1NT11,20	204	400	100	125 VA 30 Vdc	1 amp
1NT12, 19	204	400	1 + 5	125 VA	
1NT01E, 02E	204	400	100	120 Vac	10 amps

VDE and BEAB[2]

Type	Max. Temp.[4]		Cycles (X 1000)	Electrical Rating	
	°C	°F			
1NT01, 02	175	347	30[5] 100 30[5]	250 Vac 250 Vac 380 Vac	16 amps 10 amps 4 amps
1NT08, 15[7]	175	347	6 6[6]	250 Vac 380 Vac	16 amps[8] 4 amps

Notes:

1. All the above ratings are for base material Phillips Ryton R-7 and R-10 7006A.
2. All European ratings are being updated to comply with the EN60730 Standard.
3. Specifications for 1NT09 and 1NT10 apply to UL only.
4. Maximum ambient temperature for VDE and BEAB is 200°C or 392°F.
5. BEAB rating is limited to 10k cycles
6. Specifications apply to VDE only.
7. VDE rating does not apply to 1NT15 Type.
8. BEAB rating is limited to 13 amps.

Standard Temperatures, Tolerances and Differential

Automatic Reset Thermostats

Nominal Top Temperature		Min. Bottom Temperature		Differential		Standard Tolerances			
						Open		Close	
°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
18 to 27	65 to 80	-33	-26	11 to 16 17 to 21 22 to 33	20 to 29 30 to 38 39 to 59	±3.0 ±3.0 ±3.0	±5.5 ±5.5 ±5.5	±4.0 ±4.5 ±5.5	±7.5 ±8.5 ±10.0
28 to 80 and *81 to 93	81 to 176 and *177 to 199	-33 50	-26 122	11 to 13 14 to 16 17 to 33	20 to 23 24 to 29 30 to 59	±3.0 ±3.0 ±3.0	±5.5 ±5.5 ±5.5	±4.0 ±4.5 ±5.0	±7.5 ±8.5 ±9.0
*94 to 121	*200 to 249	50	122	11 to 16 17 to 21 22 to 33 34 to 55	20 to 29 30 to 38 39 to 59 60 to 99	±3.5 ±3.5 ±3.5 ±5.5	±6.5 ±6.5 ±6.5 ±10.0	±4.5 ±5.5 ±6.5 ±11.0	±8.5 ±10.0 ±12.0 ±20.0
122 to 149	250 to 300	50	122	14 to 21 22 to 33 34 to 55	24 to 38 39 to 59 60 to 99	±4.0 ±4.0 ±5.5	±7.5 ±7.5 ±10.0	±5.5 ±8.0 ±11.0	±10.0 ±14.5 ±20.0
150 to 204	301 to 399	50	122	14 to 21 22 to 33 34 to 44 45 to 55	24 to 38 39 to 59 60 to 79 80 to 99	±5.0 ±5.0 ±5.5 ±5.5	±9.0 ±9.0 ±10.0 ±10.0	±7.0 ±9.0 ±11.0 ±11.0	±13.0 ±16.5 ±20.0 ±20.0

*minimum bottom temperature of 50oC (122°F)
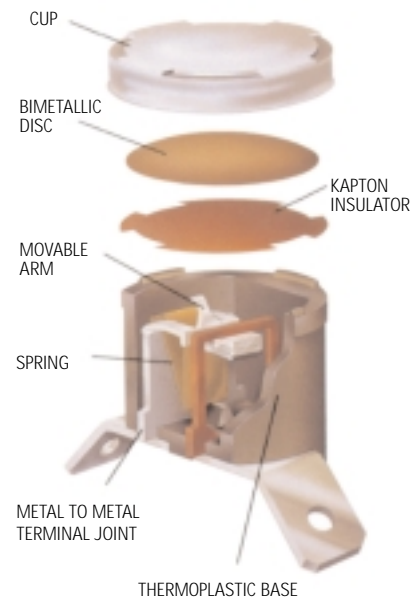
Manual Reset and One-Shot Thermostats

Nominal Top Temperature		Open Tolerances	
°C	°F	°C	°F
<60	<140	±4.0	±7.5
61 TO 160	141 to 320	±5.0	±9.0
161 TO 204	321 to 399	±6.0	±11.0

CUP

BIMETALLIC DISC

KAPTON INSULATOR

MOVABLE ARM
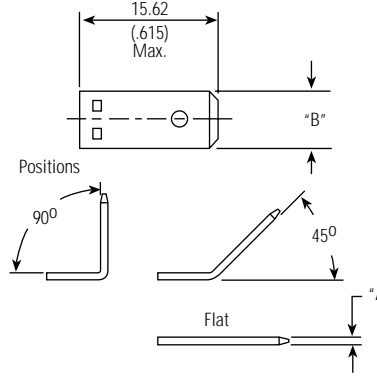
SPRING

METAL TO METAL TERMINAL JOINT
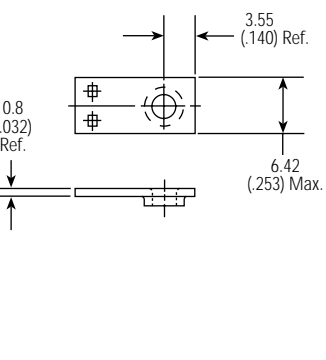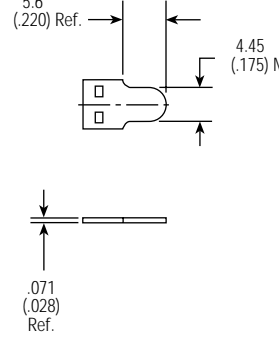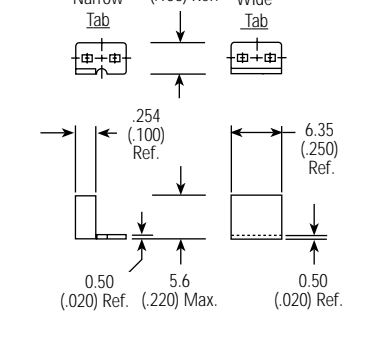
THERMOPLASTIC BASE
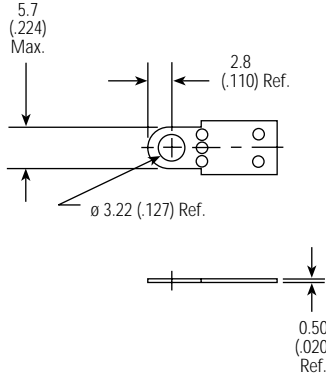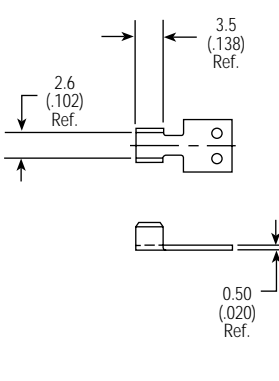
Accessories and Options

Cup Styles

Airstream Mount Integral Cup
57611
Material: Aluminum
Available mounting rotation relative to terminals – 0° or 90°
Closed Bottom Only

ø3.7 (.146) Ref.
23.8 (.937) Ref.
20.8 (.819) Max.
30.2 (1.189) Max.
0.34 (.013) Ref.
16.0 (.630) Max.
4.5 (.177) Max.

Flat Cup
73926
Materials: Aluminum, Stainless Steel, or Copper.
Closed Bottom only

16.26 (.640) Max.
0.30 (.012) Ref.
3.94 (.155) Max.
16.0 (.630) Max.

3NT Flange Cup
57366
Material: Aluminum or Copper
Closed Bottom Only

19.7 (.776) Max.
5.5 (.217) Max.
0.5 (.020) Ref.
16.5 (.650) Max.

Airstream Mount Integral Cup
27185
Material: Stainless Steel
Available mounting rotation relative to terminals-
0° or 90° with Open Bottom
0°, 45° or 90° with Closed Bottom

See Note:.
23.8 (.937) Ref.
20.8 (.819) Max.
Hole Optional
30.2 (1.189) Max.
0.25 (.010) Ref.
4.4 (.173) Max.
16.0 (.630) Max.

Note:
Available Diameter Mounting Holes
with open bottom: 3.7 (.146)
with closed bottom: 3.7(.146) / 4.2(.165) or none

Airstream Mount Integral Cup
(slotted mounting holes)
57367
Material: Aluminum
Available mounting rotation relative to terminals - 0° or 90°
Closed Bottom Only

4.5 (.177) Ref.
24.5 (.965) Ref.
20.15 (.793) Max.
3.4 (.134) Ref.
32.15 (1.266) Max.
0.5 (.020) Ref.
16.5 (.650) Max.
5.5 (.217) Max.

Wide-Eared Integral Cup
57608
Material: Stainless Steel
Available mounting rotation relative to terminals - 0° or 90°
Closed Bottom Only

43.28 (1.704) Max.
22.50 (.886) Max.
31.75 (1.250) Ref.
ø.475 (.187) Ref.
0.25 (.010) Ref.
16.0 (.630) Max.
4.6 (.181) Max.

"Tear-Drop" Integral Cup
57609
Material: Stainless Steel
Available mounting rotation relative to terminals - 0° or 90°
Closed Bottom Only

15.87 (.625) Ref.
22.50 (.886) Max.
.475 (.187) Ref.
21.72 (.855) Max.
11.3 (.445) Max.
0.25 (.010) Ref.
16.0 (.630) Max.
4.6 (.181) Max.

Note:
90° mounting option is also available with 57612 teardrop shaped stiffening flange upon customer request.

Large Oval Integral Cup
59122
Material: Aluminum
Available mounting rotation relative to terminals -
0° or 90° with Open Bottom
0°, 45° or 90° with Closed Bottom

1.57 (.062) Ref.
39.67 (1.562) Ref.
38.3 (1.508) Max.
HOLE OPT.
.438 (.173) Ref.
51.1 (2.010) Max.
0.33 (.013) Max.
.33 (.013) Ref.
16.0 (.630) Max.
5.3 (.209) Max.

Flanges

Fixed Rotation
Surface Mount Flange
57336
Available mounting rotation relative to terminals - 90° with Aluminum --
0°, 90° / or 57°, 127°, 135° CCW with Nickel Plated Steel

6.5 (.256) Max.
19.4 (.764) Max.
23.8 (.937) Ref.
ø3.72 (.147) Ref.
18.4 (.724) Max.
0.38 (.015) Ref.
3.51 (.139) Max.

Loose Ear
Surface Mount Flange
27183
Material: Aluminum

ø 14.9 Hole (.587) Ref.
6.5 (.256) Max.
19.4 (.764) Max.
23.8 (.937) Ref.
3.72 (.146) Ref.
18.4 (.724) Max.
0.38 (.015) Ref.
3.81 (.150) Max.

Wide Eared – Fixed Rotation
Mounting Flange
57337
Material: Nickel Plated Steel
Available mounting rotation relative to terminals - 45° CCW

22.5 (.886) Max.
2.95 (.116) Ref.
31.75 (1.250) Ref.
4.75. (.187) Max.
43.28 (1.704) Max.
18.4 (.724) Max.
3.81 (.150) Max.
0.38 (.015) Ref.

Bolt On Assembly
73972
Thread Specs:
  Metric: M4 x 0.7 - 6G
          M5 x 0.8 - 6G
Stud Length:
  Metric: 6.15, 7.00, 8.00, 9.00 (with M4)
          8.00 (with M5)
Material:
  Stud: Zinc Plated Steel
  Cap: Aluminum

13.74 (.541) Max.
15.90 (.626) Max.
Lgth. Varies

All dimensions mm (in.)

Accessories and Options (cont.)

Terminals

Solder Terminal
27182*
Material: Tin Plated Brass
)

5.7 (.224) Max.

2.8 (.110) Ref.

ø 3.22 (.127) Ref.

0.50 (.020) Ref.

Crimp Terminal
27184*
Material: Tin Plated Brass

3.5 (.138) Ref.

2.6 (.102) Ref.

0.50 (.020) Ref.

Quick Connects

	27132	27162*	27163
Thickness (A):	0.8(.031)	0.5(.020)	0.8(.031)
Width (B):	6.3(.250)	4.8(.187)	4.8(.187)

Materials: Brass - Solid, Ni, Ag, or Tin Plated
Steel - Nickel Plated

15.62 (.615) Max.

"B"

Positions

90° 45°

Flat

"A"

Screw Terminal
57200
Material: Nickel Plated Steel
M3 x 0.5 Class 6H Thread

3.55 (.140) Ref.

0.8 (.032) Ref.

6.42 (.253) Max.

Weld terminal
57201
Material: Nickel Plated Steel

5.6 (.220) Ref.

4.45 (.175) Max.

.071 (.028) Ref.

Weld terminal
57312*
Material: Nickel Plated Steel

Narrow Tab   Wide Tab

.396 (.156) Ref.

.254 (.100) Ref.

6.35 (.250) Ref.

0.50 (.020) Ref.   5.6 (.220) Max.   0.50 (.020) Ref.

*10A Max. on all terminals 0.51 (.020) thick
All dimensions mm (in.)

1NT Series Agency Listings

Agency: Type / Country:	UL USA	CSA CANADA	VDE Germany	BEAB Great Britain	MITI Japan	SEMKO Sweden	DEMKO Denmark	ETSA Australia	KEMA The Netherlands
1NT01, 02	•	•	•	•	•	•	•		
1NT08	•	•	•	•	•	•			
1NT09, 10	•	•							
1NT11, 12, 19, 20	•	•							
1NT15	•	•		•	•	•			
1NT01E, 02E	•	•	•						
Series								•	•
Reference Numbers	File: E9977 Category: XAPX2	Report: LR53590 Class: 4823-02	File: 4464.9- 4510-1105 No. 64679	No. Cat. 0166	J72 (01, 02) J37 (MR 125V) J71 (MR 250V)	43-7118 (01) 9129277 (02) 8140149 (08) 9015121 (15)	69550	NR. 744	LTI 2.9977.2324

** Consult Texas Instruments for additional details regarding specifications and agency listings.

Sample Order Placement

To enable Texas Instruments to serve you in a quicker, more efficient manner, please be prepared to provide the following information when requesting samples:

1. Detailed application description
2. Estimated yearly usage.
3. Opening and closing temperatures
4. Max. temperature tolerances allowable
5. Switch type
6. Mounting style desired
7. Terminal orientation and material
8. Electrical load

Other conditions which are likely to affect the 1NT operation should also be described. These include:

1. Maximum temperature exposure
2. Location with respect to heat source
3. Temperature transfer medium (air, metal surface, etc)
4. Possible contamination sources (lint, chemical fumes, etc.)

When ordering thermocouple samples, specify whether J, K, or T type and the lead length desired.
Standard wire size is 30 Ga..

Thermostat Handling Tips

1. Exposed disc devices should be kept free of dust and particles. The face of the disc should never be snapped.
2. Mounting screws and drivers for use with smaller integral cups and flanges should be sized to provide adequate clearance to the thermostat body.
3. The installation force applied to the cup face should not exceed 66.7N (15 lbs.)
4. The maximum reset force on the manual reset and trip free button is 22.2N (5 lbs.).

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