

1NT | SERIES

FIXED TEMPERATURE THERMOSTATS

Introduction

Single throw, snap-action, fixed temperature thermostat suitable for a variety of Industrial and commercial applications. 1NT is recognized by agencies around the world and depending on its configuration and application, is widely used as a regulating thermal switch, over-temperature control or pilot duty control switch.



Features

- ISO9001: 2000 certification
- Ambient temperature rating from -40°C to 240°C (-40°F to 464°F)
- 1NT base provides:
 - Low cost
 - High temperature capability
 - Clean processing
 - High impact strength
 - Low static generation
- Many termination and mounting configurations available
- Switch actions:
 - Automatic reset: Available with both normally open and normally closed switch logic
 - Manual reset: Mechanical reset device
 - Trip free manual reset: UL M2 class rating that resists consumer tampering
 - One shot: meets agency requirements for single operation device

Applications

- | | |
|---|---|
| <ul style="list-style-type: none"> • Power Distribution • Automation • Power Supplies • Heating Systems • HVAC • Gas and Electric Furnace • Boilers • Espresso Machines | <ul style="list-style-type: none"> • Refrigeration • Electric motors • Heating Elements • Laboratory Equipment • Medical Equipment • Automotive & HVOR • Panel Heaters |
|---|---|



STANDARD CONSTRUCTIONS

All dimensions mm (in.)

High Profile Construction

Options shown: 90° – 1/4" Q.C. terminals with Surface mount flange



Low Profile Construction

4 Post Options shown: 45° – 1/4" Q.C. terminals with 4 post and flat Al cup



Manual Reset Construction

Options shown: Flat 1/4" Q.C. terminals with Airstream mount cup



Part Types by Construction

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

- 1NT02 Auto Reset / Silver Contacts
- 1NT02TL Low Profile / One Shot
- 1NT20 Auto Reset / Gold Contacts

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



STANDARD TEMPERATURES, TOLERANCES AND DIFFERENTIAL

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 |



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 | 20 to 29 | ±3.0 | ±5.5 | ±4.0 | ±7.5 |
| | | | | 17 to 21 | 30 to 38 | ±3.0 | ±5.5 | ±4.5 | ±8.5 |
| | | | | 22 to 33 | 39 to 59 | ±3.0 | ±5.5 | ±5.5 | ±10.0 |
| 28 to 80 and 81 to 93 ⁽¹⁾ | 81 to 176 and 177 to 199 | -33 50 | -26 122 | 11 to 13 | 20 to 23 | ±3.0 | ±5.5 | ±4.0 | ±7.5 |
| | | | | 14 to 16 | 24 to 29 | ±3.0 | ±5.5 | ±4.5 | ±8.5 |
| | | | | 17 to 33 | 30 to 59 | ±3.0 | ±5.5 | ±5.0 | ±9.0 |
| 94 to 121 ⁽¹⁾ | 200 to 249 ⁽¹⁾ | 50 | 122 | 11 to 16 | 20 to 29 | ±3.5 | ±6.5 | ±4.5 | ±8.5 |
| | | | | 17 to 21 | 30 to 38 | ±3.5 | ±6.5 | ±5.5 | ±10.0 |
| | | | | 22 to 33 | 39 to 59 | ±3.5 | ±6.5 | ±6.5 | ±12.0 |
| | | | | 34 to 55 | 60 to 99 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |
| 122 to 149 | 250 to 300 | 50 | 122 | 14 to 21 | 24 to 38 | ±4.0 | ±7.5 | ±5.5 | ±10.0 |
| | | | | 21 to 33 | 39 to 59 | ±4.0 | ±7.5 | ±8.0 | ±14.5 |
| | | | | 34 to 55 | 60 to 99 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |
| 150 to 177 | 301 to 350 | 50 | 122 | 22 to 33 | 39 to 59 | ±5.0 | ±9.0 | ±9.0 | ±16.5 |
| | | | | 34 to 44 | 60 to 79 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |
| | | | | 45 to 55 | 80 to 99 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |
| 178-204 ⁽²⁾ | 351 to 399 | 50 | 122 | 22 to 33* | 39 to 59 | ±5.0 | ±9.0 | ±9.0 | ±16.5 |
| | | | | 34 to 44 | 60 to 79 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |
| | | | | 45 to 55 | 80 to 99 | ±5.5 | ±10.0 | ±11.0 | ±20.0 |

⁽¹⁾ Not valid for Fan Devices

⁽²⁾ Top Temp for Fan Devices cannot exceed 380°F (193°C)

ACCESSORIES AND OPTIONS

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



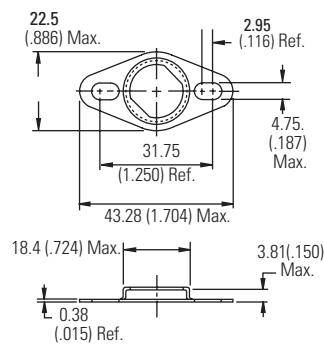
Loose Ear Surface Mount Flange 27183

Material: Aluminum



Wide Eared – Fixed Rotation Mounting Flange 57337

Material: Nickel Plated Steel
Available mounting rotation relative to terminals - 45° CCW



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: | English: | 6 x 32 - 1/2" Long |
| | | 8 x 32 - 1/4" Long |
| Material: | Stud: | Zinc Plated Steel |
| | Cap: | Aluminum |



Cup Styles

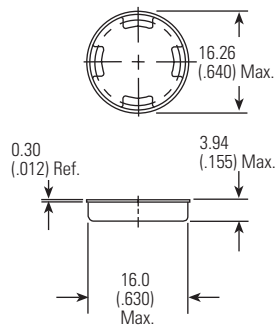
Airstream Mount Integral Cup 57611

Material: Aluminum
Available mounting rotation relative to terminals – 0 or 90 Closed Bottom Only



Flat Cup 73926

Materials: Aluminum, Stainless Steel or Copper



3NT Flange Cup 57366

Material: Aluminum or Copper
Closed Bottom Only



Airstream Mount Integral Cup 27185

Material: Stainless Steel
Available mounting rotation relative to terminals
0°, 45° or 90° with Closed Bottom
0° or 90° with Open Bottom



Airstream Mount Integral Cup (slotted mounting holes) 57367

Material: Aluminum
Available mounting rotation relative to terminals - 0° or 90° Closed Bottom Only



Wide-Eared Integral Cup 57608

Material: Stainless Steel
Available mounting rotation relative to terminals - 0° or 90° Closed Bottom Only



“Tear-Drop” Integral Cup 57609

Material: Stainless Steel
Available mounting rotation relative to terminals - 0° or 90° Closed Bottom Only



Large Oval Integral Cup 59122

Material: Aluminum
Available mounting rotation relative to terminals
0°, 45° or 90° with Closed Bottom
0° or 90° with Open Bottom



Standard Terminal

Solder Terminal 27182*

Material: Tin Plated Brass



Crimp Terminal 27184*

Material: Tin Plated Brass



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



Screw Terminal 57200

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



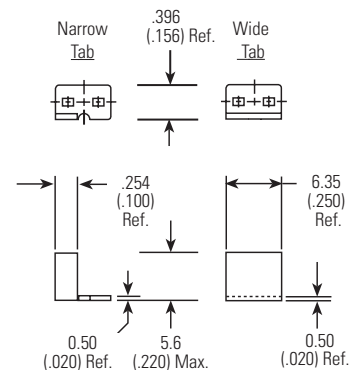
Weld Terminal 57201

Material: Nickel Plated Steel



Weld Terminal 57312*

Material: Nickel Plated Steel



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



ORDERING OPTIONS

EXAMPLE

Family

See Standard Construction Table

Special Processing

A - Wire Lead Assy

E - Exposed Disc

Switch Type

L - Limit⁽³⁾ switch opens on temperature rise

F - Fan⁽⁴⁾ switch closes on temperature rise

ID Number

Unique Number Designated by the factory to indicate all other attributes including Temperatures, Terminals or connectors, Mounting Options, Special Markings, and other special customer requested requirements.

⁽³⁾ Limit switch opens on temperature rise

⁽⁴⁾ Fan switch closes on temperature rise

The Temperature Code is required to set up or choose the unique part number for your application requirements.

Temperature Code

EXAMPLE

Operating Temperature

L - Limit

F - Fan

Operating Temperature

Nominal Open

Temperature

Temp. Code

C - Celsius

F - Fahrenheit

Differential

Nom. Open to Nom. Close

MR Manual Reset



UL and C-UL

| Type | Max. Temp. | | Cycles (X 1000) | Electrical Rating | |
|------------------|------------|-----|-----------------|--------------------|-----------------------------|
| | °C | °F | | | |
| 1NT01, 02 | 204 | 400 | 100 | 120 Vac | 0 - 9 amps 10 - 17 amps* |
| | | | | 240 Vac | 0 - 5 amps 6 - 17 amps* |
| | | | | 277 Vac | 7.2 amps |
| 1NT08, 15, 08E** | 204 | 400 | 1 + 5 | 240 Vac | 25 amps |
| 1NT09, 10 | 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 |

* UL rated at these current levels at specific open/close temperatures. When applying to these electrical levels, nominal open/close temperatures must be considered to determine if the thermostat selected will operate as intended in the user's application. Please consult a Sensata Engineer for additional clarification.

** "E" means exposed disc.

ENEC (DEKRA)

| Type | Max Temp (°C) | Cycles | Electrical Rating |
|----------|---------------|---------|--------------------|
| 1NT01/02 | 204 | 100.000 | 240Vac 13.5(1.66)A |
| | | 30.000 | 240Vac 16(5)A |
| | | 30.000 | 400Vac 4(1)A |
| 1NT02T | 204 | 1 | 240Vac 16(5)A |
| 1NT08 | 204 | 10.000 | 240Vac 16(5)A |
| | | 10.000 | 400Vac 4(1)A |
| 1NT09 | 204 | 1 | 240Vac 16(5)A |
| 1NT11 | 204 | 100.000 | 30Vdc 1A |
| 1NT12 | 204 | 10.000 | 30Vdc 1A |
| 1NT15 | 204 | 10.000 | 240Vac 16(5)A |
| 1NT20 | 204 | 100.000 | 30Vdc 1A |
| 1NT30 | 204 | 10.000 | 30Vdc 1A |
| 1NT31 | 204 | 10.000 | 30Vdc 1A |

* Parenthesis indicate inductive load ratings.

** ENEC rated at these current levels at specific open/close temperatures. When applying to these electrical levels, nominal open/close temperatures must be considered to determine if the thermostat selected will operate as intended in the user's application. Please consult a Sensata Engineer for additional clarification.



THERMOSTAT HANDLING TIPS

1. Exposed disc devices should be kept free of dust and particulates, liquid and condensation. 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.).

IMPORTANT NOTICE

These devices are not intended for use as service or repair components, strictly for use by Original Equipment Manufacturer. This product is not rated as explosion proof and should not be applied in any application where flammable vapors or dust is present. End of life failure of this device may result in either open or closed circuit condition, and as such, OEMs must apply end of life protection in series, per agency requirements.

Users are solely responsible for proper design, application and function of this product in the end product or system. Users must evaluate the suitability of these devices in their application with respect to Temperature Settings, Mechanical and Electrical Life Cycles, Electrical loads and Environmental conditions.

These products are not environmentally sealed and have exposed electrical components. They are not intended to be used in applications where exposure to condensing or dripping liquids, Immersion in liquids, or exposure to other environment contaminants may occur.

Excessive mechanical cycling, high electrical loading or exposure to liquids or other environmental contaminants, as noted above, may compromise the electrical insulating properties of these devices. Such conditions may result in electric insulation breakdown accompanied by localized heating. The device may remain permanently closed or open as a result of these conditions as well as at normal end of life.



WARNINGS



RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

Failure to follow these instructions can result in serious injury, or equipment damage.



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARCH FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

Failure to follow these instructions will result in death or serious injury

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