

## KLIXON

### 20413, 20600, 20650 SERIES Snap-Action Automatic and Manual reset Fixed Temperature Thermostats

#### Key Features

- Klixon snap-action bimetal disc assures positive make/break action.
- Available with surface, thru-wall, well or cavity-type mountings
- Temperature setting factory calibrated to your specifications
- High capacity – up to 30 amps at 120, 240, and 277 VAC resistive.
- Extra high capacity – up to 40 amps at 120 and 240 VAC resistive

#### Automatic reset Standard Constructions



#### Manual Reset Standard Constructions



## Description

Klixon® thermostats have been in production for over 50 years. The 20413, 20600, and 20650 series thermostats are especially designed for applications where space, capacity and ease of assembly are important production factors. They are fixed-setting, snap-acting, automatic or manual reset temperature controls that are ideal for such applications as: air conditioners, heating and ventilating equipment, vending machines, dryers, unit heaters, tabletop appliances, etc.

All automatic series are available as limit switches (open on temperature rise) or fan switches (close on temperature rise). Switch action is SPST, SPDT, or DPST with automatic reset types. Manual reset is available as a limit switch in SPST construction only.

The switch mechanism is actuated by the Klixon snap-action, bimetal disc which may be enclosed or exposed. Enclosed disc devices are particularly recommended for applications in which dust and lint are prevalent in the environment. Exposed disc types are used in applications where a faster thermal response to radiant heat is needed. Contact parts are enclosed for both disc types for protection against contamination.

## Mountings and Terminals

A variety of terminals and mounting flanges are available to meet installation requirements of most applications.

Flanges can be used for surface or thru-wall mountings; or, thermostats can be supplied without flanges for well or cavity-type mountings. Flange rotations are specified by looking down on the terminals and rotating the flange 30°, 45°, or 90° CW or CCW.

## Flanges Available

- Small oval bottom flange
- Integral surface flange
- No flange cup
- 3/4" deep cup
- Special oval bottom flange

Electrical connections to the thermostat must be tight; otherwise, resistance in a loose connection may cause sufficient temperature rise to affect the performance of the thermostat or damage the terminals or the lead wire insulation.

## Terminals Available

Quick connects are available in silver flash or plain brass.

- 1/4" Quick connects 0°, 30°, 45°, 90° terminals are male spade type .250" x .032" thick.

- Strap terminals for electric heating

- Brass screw terminals 0°, 45°

When screw terminals are specified, washer head screws are supplied unassembled. Assembled washer head screws are available at extra cost. Standard screw terminals have 8-32 NC-2 threads.

## Temperature Settings, Tolerances and Nominal Differentials

The ranges of temperature settings, tolerances, and nominal differentials shown below are available. Differential is the difference between opening and closing temperature in °F. For example, a thermostat which opens at 180°F and closes at 140°F has a 40° differential. (Lowest unit prices are achieved by selecting differentials in the 30°F to 59°F range). For temperature settings and differentials other than those shown, please consult Marketing.

## Standard Tolerances

| Highest Temperature Setting °F | Nominal Differential °F | Standard Tolerances |          |
|--------------------------------|-------------------------|---------------------|----------|
|                                |                         | Open °F             | Close °F |
| -10 to 80                      | 10 to 14*               | ±5                  | ±5       |
|                                | 15 to 29                | ±6                  | ±6       |
|                                | 30 to 59                | ±6                  | ±7       |
|                                | 60 to 150               | ±7                  | ±8       |
| 81 to 200                      | 10 to 29*               | ±5                  | ±5       |
|                                | 30 to 39                | ±5                  | ±6       |
|                                | 40 to 59                | ±5                  | ±7       |
|                                | 60 to 150               | ±6                  | ±8       |
| 201 to 250                     | 20 to 29                | ±5                  | ±6       |
|                                | 30 to 39                | ±5                  | ±7       |
|                                | 40 to 59                | ±6                  | ±8       |
|                                | 60 to 150               | ±7                  | ±9       |
| 251 to 300                     | 30 to 39                | ±6                  | ±8       |
|                                | 40 to 59                | ±7                  | ±10      |
|                                | 60 to 150               | ±8                  | ±11      |
| 301 to 350<br>**               | 30 to 39                | ±7                  | ±10      |
|                                | 40 to 59                | ±8                  | ±12      |
|                                | 60 to 150               | ±9                  | ±13      |

- Available in SPST construction only. SPDT thermostats must have 15° minimum differentials.

\*\*20413 series – up to 300°

20600 series – up to 350°

20650 / 54 series – up to 300°; minimum differential 30°.

## Manual Reset Construction

There are two basic manual reset constructions:

- 1) Manual Override – contacts can be closed at any time after device has actuated by depressing reset button.
- 2) Trip-Free – contacts will remain open after device has actuated until bimetal disc resets, even if reset button is depressed.

## Agency Recognition

Klixon 206 Series Thermostats are recognized by UL and CSA. Please consult Marketing for international approvals.

UL Electrical Group  
File No. E9977  
U.S. Guide No. XAPX2  
Canada Guide NO. XAPX8  
HC&R Group  
File NO. MP986  
U.S. Guide No. MBPR2  
Canada Guide No. MBRR8

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## Ambient Temperature

-40°F to +350°F  
-40°C to +177°C

## Underwriters' Laboratories Electrical Current Ratings

| Device                | Contacts | Number Cycles | 120 V    |      |      |            | 240 V    |     |      |            | 277 V    |     |      |            | 480 V    |     |     |            | 800 mV DC |
|-----------------------|----------|---------------|----------|------|------|------------|----------|-----|------|------------|----------|-----|------|------------|----------|-----|-----|------------|-----------|
|                       |          |               | Amps Res | FLA  | LRA  | Pilot Duty | Amps Res | FLA | LRA  | Pilot Duty | Amps Res | FLA | LRA  | Pilot Duty | Amps Res | FLA | LRA | Pilot Duty |           |
| 20413 MR              | 1-3      | 6,000         | 48       | 16   | 96   | 480        | 48       | 8   | 48   | 690        |          |     |      |            | 48       |     |     | 690        |           |
| 20613                 | 1-3      | 6,000         | 48       | 16   | 96   | 480        | 48       | 8   | 48   | 690        |          |     |      |            | 48       |     |     | 690        |           |
| 20600D                | 1-2      | 100,000       | 10       | 5.8  | 34.8 | 125        | 5        | 2.9 | 17.4 | 125        |          |     |      |            |          |     |     |            |           |
|                       | 1-3      | 30,000        | 25       | 16   | 84   | 672        | 25       | 12  | 60   | 960        | 22       | 8   | 42   | 775        |          |     |     |            |           |
|                       | 1-2      | 30,000        | 10       | 5.8  | 34.8 | 270        | 5        | 4.2 | 17.4 | 270        | 5        |     |      | 125        |          |     |     |            |           |
| 20601F, L (appliance) | 1-3      | 100,000       | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 480        |          |     |      |            |          |     |     |            |           |
|                       | 1-3      | 30,000        | 25       | 16   | 84   | 672        | 25       | 12  | 60   | 960        | 22       | 8   | 42   | 775        | 13       | 5   | 30  |            |           |
| 20601 (HVAC)          | 1-3      | 100,000       | 16.6     | 16.6 | 88   | 480        | 8.3      | 8.3 | 49.8 | 690        | 7.2      | 7.2 | 43.2 | 1630       |          |     |     |            |           |
| 20602F or L           | 1-3      | 100,000       |          |      |      | 125        |          |     |      |            |          |     |      |            |          |     |     |            | X         |
| 20603/5               | 1-3      | 100,000       | 40       | 35   | 110  | 880        | 40       | 35  | 110  | 1760       | 35       | 30  | 95   | 1760       | 20       | 9   | 30  | 960        |           |
| 20604F, L             | 1-3      | 100,000       | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 380        | 22       | 8   | 42   | 775        | 13       | 5   | 10  | 320        |           |
| 20606F, L             | 1-3      | 100,000       |          |      |      | 125        |          |     |      |            |          |     |      |            |          |     |     |            |           |
| 20611L MR             | 1-3      | 6,000         | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 480        |          |     |      |            |          |     |     |            |           |
| 20612 MTR             | 1-3      | 6,000         |          |      |      |            |          |     |      |            |          |     |      |            |          |     |     |            | X         |
| 20616 MR              | 1-3      | 6,000         |          |      |      | 125        |          |     |      |            |          |     |      |            |          |     |     |            |           |
| 20615L MRTF           | 1-3      | 6,000         | 16.6     | 10   | 60   | 480        | 8.3      | 5   | 30   | 480        | 7.2      |     |      | 690        |          |     |     |            |           |
| 20619L MRTF           | 1-3      | 6,000         | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 480        | 25       |     |      | 690        |          |     |     |            |           |
| 20650F, L             | 1-3, 4-5 | 100,000       | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 480        | 22       | 8   | 42   | 775        |          |     |     |            |           |
| 20650F, L, H          | 1-3      | 30,000        | 25       | 10   | 60   | 480        | 25       | 5   | 30   | 480        | 23       | 23  | 100  | 1855       | 13       | 5   | 30  | 400        |           |
|                       | 4-5      | 30,000        | 25       | 16   | 84   | 672        | 25       | 12  | 60   | 960        | 23       | 23  | 88   | 1633       |          |     |     |            |           |
| 20650H                | 1-3      | 6,000         |          |      |      |            | 25       | 7   | 42   | 670        |          |     |      |            |          |     |     |            |           |
|                       | 4-5      | 6,000         |          |      |      |            | 23       | 7   | 42   | 670        |          |     |      |            |          |     |     |            |           |
|                       | 5-2      | 6,000         |          |      |      |            | 5        | 5.8 | 39.8 | 556        |          |     |      |            |          |     |     |            |           |

## Standard Configurations

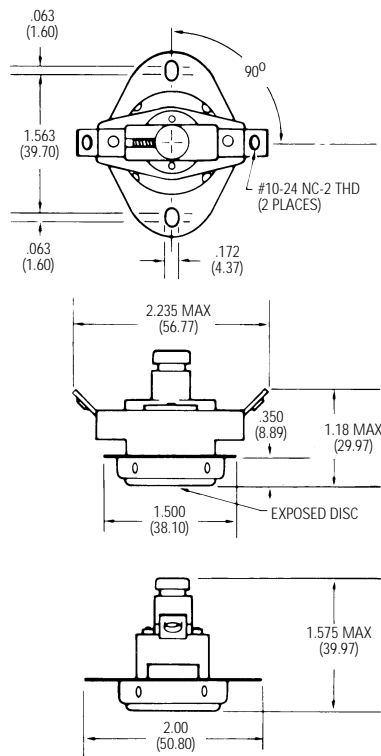
| Model     | Switch Type | Capacity   | Contacts  | Clearance |              |
|-----------|-------------|------------|-----------|-----------|--------------|
|           |             |            |           | Thru Air  | Over Surface |
| 20413L    | MR-TF       | High       | Ag        | 3/8"      | 1/2"         |
| 20600D    | SPDT        | High       | Ag        | 1/8"      | 1/4"         |
| 20601L, F | SPST        | High       | Ag        | 1/8"      | 1/4"         |
| 20602L, F | SPST        | mVdc       | Au        | 1/8"      | 1/4"         |
| 20603L, F | SPST        | Extra High | AgCdO     | 1/8"      | 1/4"         |
| 20604L, F | SPST        | High       | Ag        | 1/4"      | 3/8"         |
| 20605L, F | SPST        | Extra High | AgCdO     | 1/4"      | 3/8"         |
| 20606L, F | SPST        | Pilot Duty | Ag Ribbed | 1/8"      | 1/4"         |
| 20611L    | MR          | High       | Ag        | 1/8"      | 1/4"         |
| 20612L    | MR          | mVdc       | Au        | 1/8"      | 1/4"         |
| 20615L    | MR-TF       | High       | Ag        | 1/8"      | 1/4"         |
| 20616L    | MR          | Pilot Duty | Ag Ribbed | 1/8"      | 1/4"         |
| 20619L    | MR-TF       | High       | Ag        | 1/4"      | 3/8"         |
| 20650L, F | DPST        | High       | Ag        | 1/8"      | 1/4"         |

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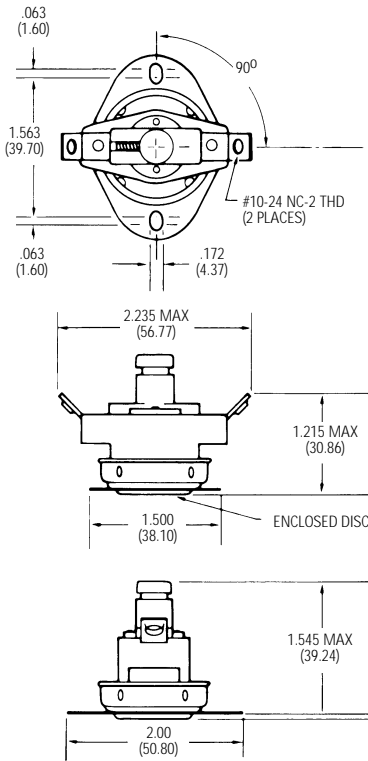
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## 20413 Series Standard Constructions

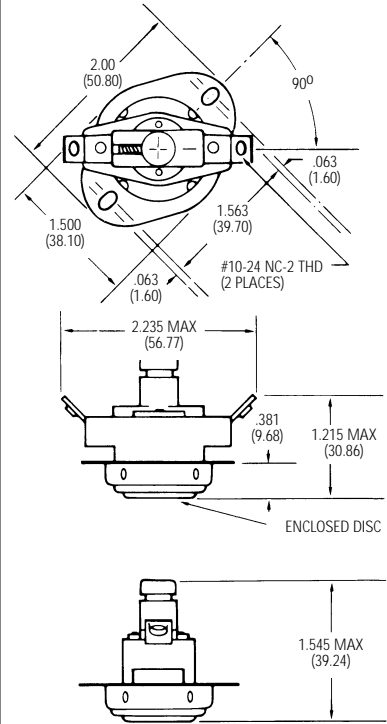
### Small Oval Top Flange @ 90° Exposed Disc 45° Screw terminals



### Small Oval Bottom Flange @ 90° Enclosed Disc 45° Screw Terminals

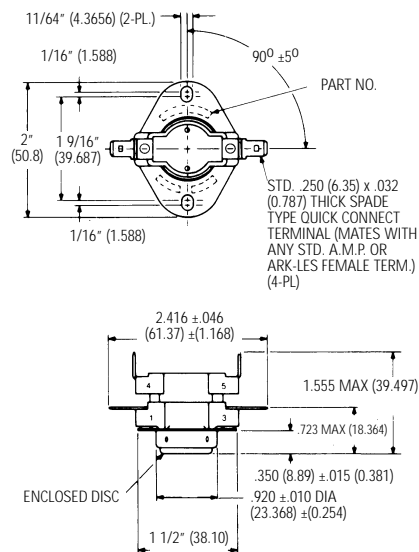


### Small Oval Top Flange @ 45° CCW Enclosed Disc 45° Screw Terminals

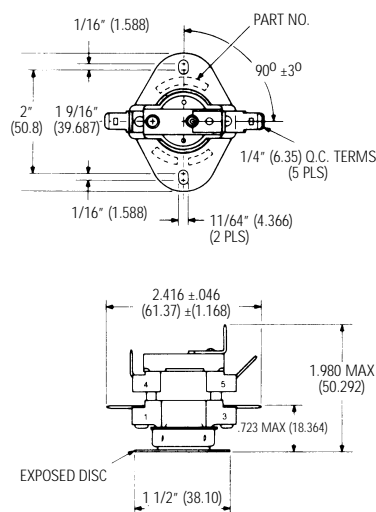


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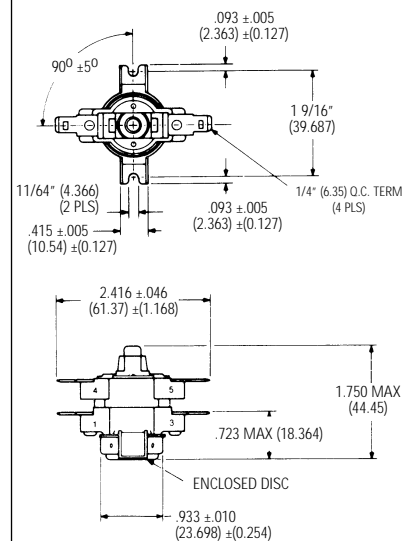
### DPST Automatic Reset



### SPST Plus SPDT Automatic Reset

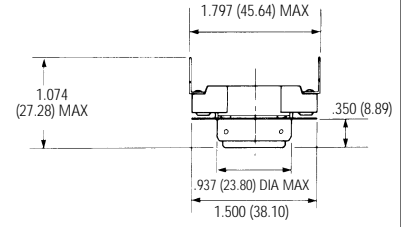
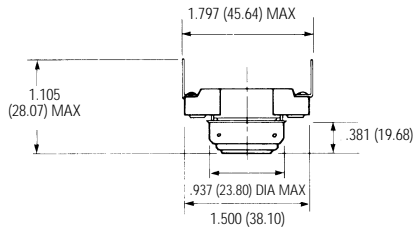
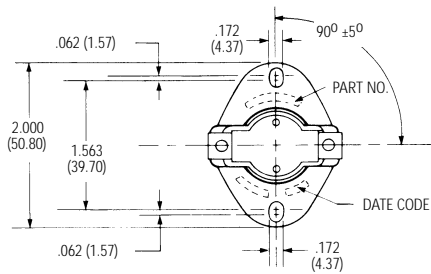


### DPST Manual Reset



## 20600 Series Preferred Physical Construction

### 20601 / 04 / 08 F or L Small Oval Top Flange at 90° 1/4" Quick Connect Terminals

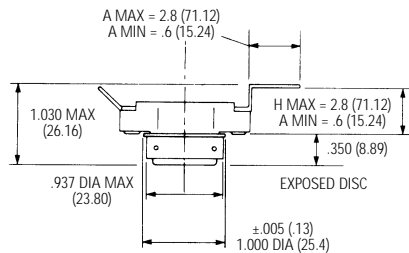
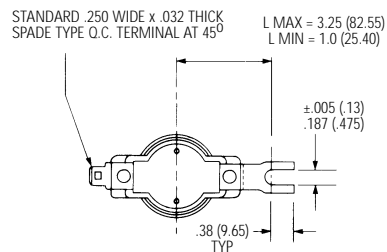


Exposed Disc

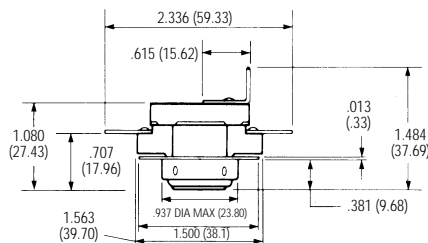
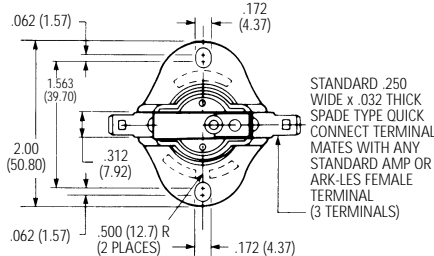
Enclosed Disc

## Other Physical Constructions

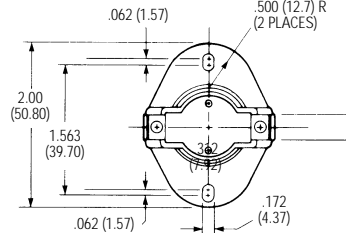
### 20601 / 04 No Flange Cup Thru-Wall Mounting Forked Terminals



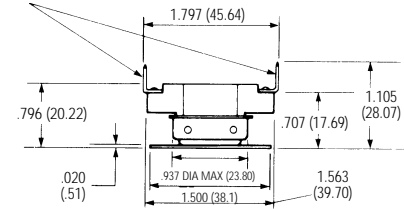
### 20600D Single-Pole, Double-Throw Small Oval Top Flange at 90° Rotation Quick-Connect Terminals



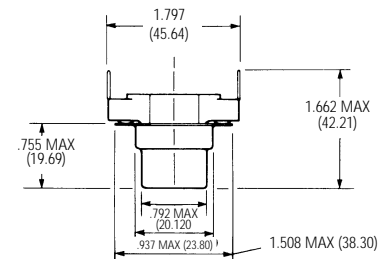
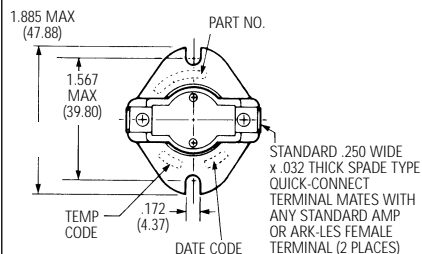
### 20601 / 04 / 06 / 08 Small Oval Bottom Flange at 90° Rotation Quick-Connect Terminals



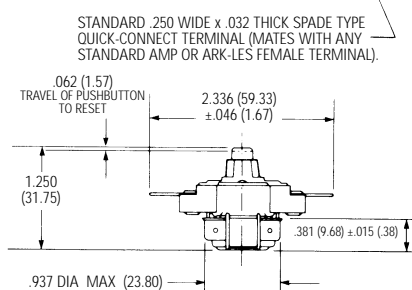
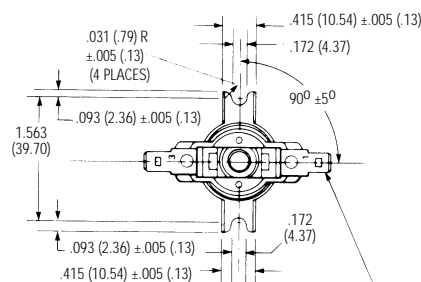
STANDARD .250 WIDE x .032 THICK SPADE TYPE QUICK-CONNECT TERMINAL (MATES WITH ANY STANDARD AMP OR ARK-LES FEMALE TERMINAL).



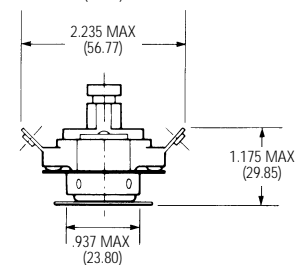
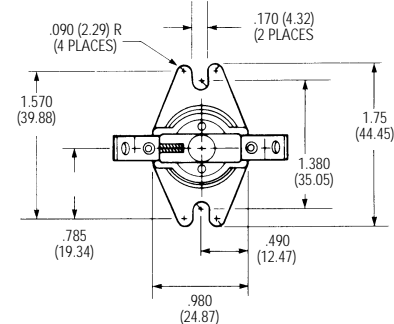
### 20601 / 04 Small Oval Flange 3/4" Depth Cup Quick-Connect Terminals



### 20611 / 20616 / L Manual Reset, Manual Override Integral Flange, Surface Mounting Quick-Connect Terminals



### 20615L / 206619L Special Oval Bottom Flange Manual reset, Trip Free, Surface Mounting 45° Screw Terminals



To facilitate processing your request, please fax this page to our Product Specialists.

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From \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_  
Phone \_\_\_\_\_  
Fax \_\_\_\_\_

The following information will help us determine the correct thermostat design for your application. You may refer to the charts on pages 2 and 3 for assistance.

Request: Pricing \_\_\_\_\_ Application Assistance \_\_\_\_\_

Description of Application \_\_\_\_\_

Estimated Annual Usage \_\_\_\_\_

Automatic Reset \_\_\_\_\_ MR \_\_\_\_\_ MR-TF \_\_\_\_\_ SPST \_\_\_\_\_ SPDT \_\_\_\_\_ DPST \_\_\_\_\_

Open Temperature \_\_\_\_\_ Maximum Tolerance \_\_\_\_\_

Close Temperature \_\_\_\_\_ Maximum Tolerance \_\_\_\_\_

Temperature Exposures: Maximum \_\_\_\_\_ Minimum \_\_\_\_\_

Location With Respect to Heat Source \_\_\_\_\_

Temperature Transfer Medium (air, metal surface, etc.) \_\_\_\_\_

Type of Heat Source: Convection \_\_\_\_\_ Conduction \_\_\_\_\_ Radiation \_\_\_\_\_

Electrical Requirements: \_\_\_\_\_ Amps @ \_\_\_\_\_ Volts; AC or DC \_\_\_\_\_

Resistive \_\_\_\_\_ Inductive \_\_\_\_\_\* Capacitive \_\_\_\_\_\*

Tungsten Filament \_\_\_\_\_ Milliamp \_\_\_\_\_ Pilot Duty \_\_\_\_\_

\*If inductive or capacitive, indicate power factor \_\_\_\_\_

(If available, please send copy of electrical / plumbing diagram).

Switch Termination (type and angle) \_\_\_\_\_

Flange (type and angle of rotation) \_\_\_\_\_

Enclosed or Exposed Disc \_\_\_\_\_

Environment (dust, lint, chemical fumes, etc.) \_\_\_\_\_

Agency Approvals \_\_\_\_\_

