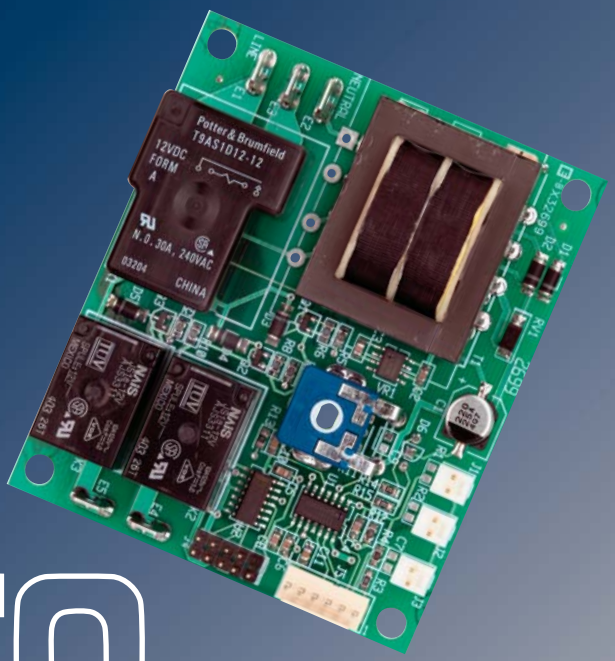
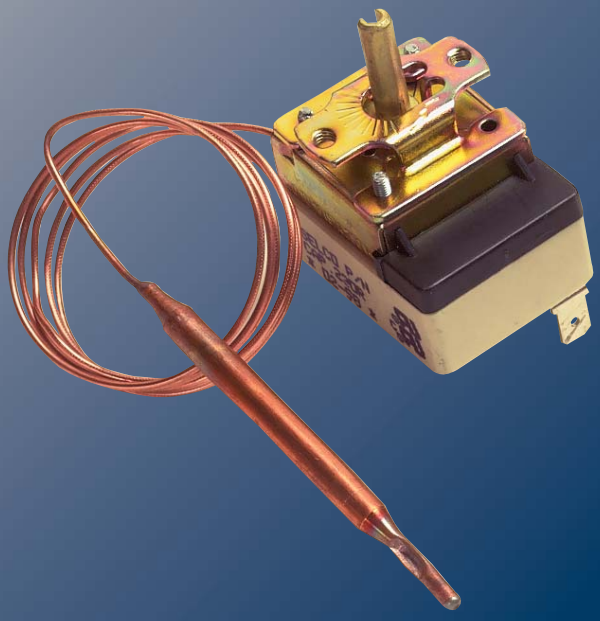



# selco

SELCO PRODUCTS COMPANY

**THERMOSTATS • ELECTRONIC CONTROLS**

**ISO 9001/AS 9100 Certified Quality System**



*Our Service Makes The Difference*

1/2" Disc Thermostats • 1/2" Disc Hermetically Sealed Thermostats • 3/4" Disc Thermostats • Encapsulated Thermostats • Thermal Protectors • Printed Circuit Board Thermostats • One-Shot Thermal Cut-offs • Probe Thermostats • Cold Capillary Thermostats • Adjustable Thermostats • Hot Bulb & Capillary Thermostats • Value Added Services • NTC Thermistors • PPTC Thermistors • CdS Photocells • Electronic Controls • Digital Panel Meters • Control Knobs

**w w w . s e l c o p r o d u c t s . c o m**

**Founded in 1958 by Bill Wilkinson, Selco Products' corporate headquarters is in Anaheim, California. Our sales force consists of direct and manufacture representatives throughout North America and Mexico. Every member of our customer support team is dedicated to - providing you with knowledgeable assistance, timely response to special requirements, and prompt delivery of your order.**

**Selco has manufacturing facilities in Anaheim, San Diego, China, Japan, Italy, and Brazil. While we manufacture our own line of electronic controls, we have exclusive agreements with select off-shore manufacturers to supply us with high quality electro-mechanical thermal components. Selco handles all marketing and distribution of their products in North America and we also assist with engineering, quality assurance, and UL approvals. This allows us to offer a very broad range of products at very competitive prices.**

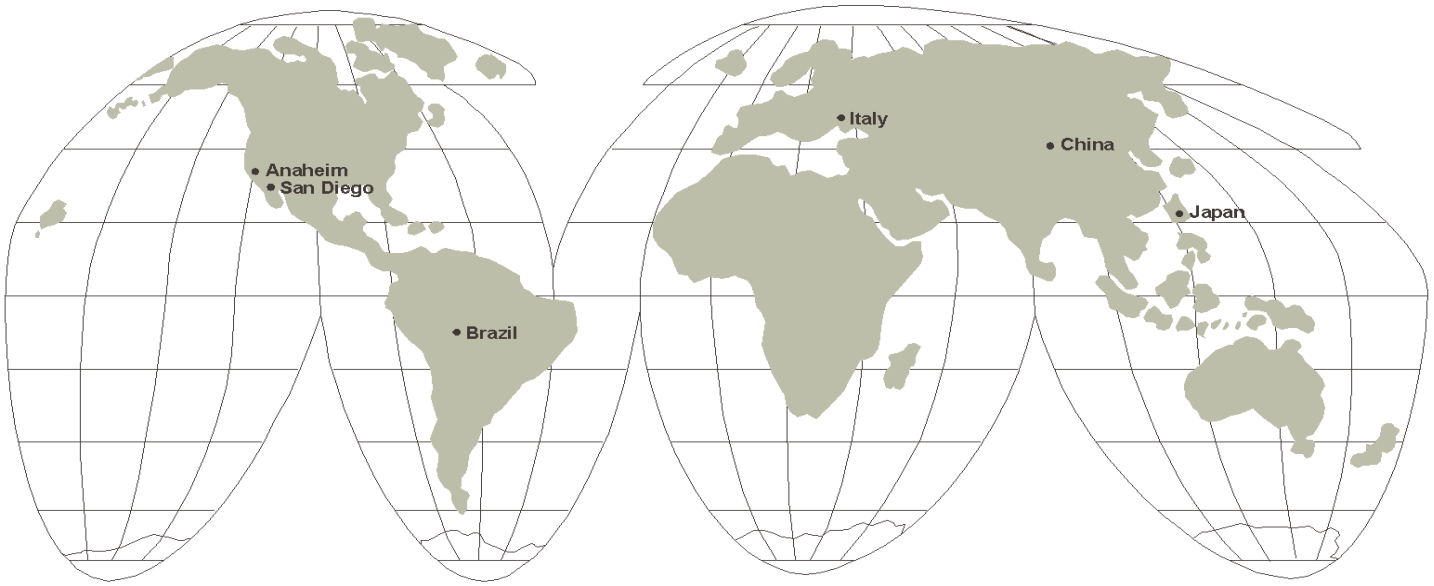
**A full range of product lines are offered by Selco including thermal products, thermistors, control knobs, electronic controls, and digital panel meters. The thermal products line is comprised of automatic/manual reset bulb and capillary thermostats, cold capillary controls, hermetically sealed thermostats, high temperature thermostats, 1/2" and 3/4" disc thermostats, thermal cut-offs, thermal protectors, NTC (negative temperature coefficient) and PPTC (polymer positive temperature coefficient) thermistors. Control knobs include collet, push-on, slider, and accessories. Selco's line of electronic controls consist of digital temperature and time controllers, configurable controllers, digital timer modules, and relays. DC and AC voltmeters and ammeters, process monitors, setpoint comparators, thermometers, counters, tachometers, are offered in the digital panel meter line.**

**Selco services both OEM and end-user companies in the following industries:**

- **HVAC**
- **Medical**
- **Appliances**
- **Electronics**
- **Food Service**
- **Process Controls**
- **Professional Audio**
- **Telecommunications**
- **Industrial Instrumentation**

**Selco Strengths**

- **JIT program**
- **FREE samples**
- **On-time delivery**
- **Kanban program**
- **One-year warranty**
- **Engineering support**
- **Value Added services**
- **Lead time - six weeks (approx.)**
- **Cost reduction over present source**
- **Same day shipping from Anaheim, CA**
- **Special packaging/labeling/bar coding**
- **Complete thermal component source**
- **Prompt, friendly, and courteous customer service**




## ISO 9001/AS 9100 Certified Quality System

**SELCO PRODUCTS COMPANY**
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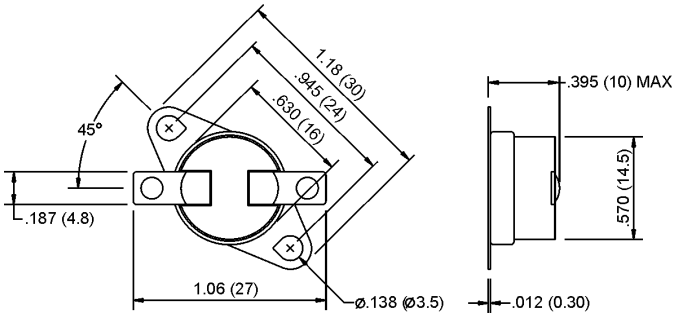
# 1/2” Disc Thermostats - Automatic Reset

## CA/OA (602S) Series, Gold Contacts (602K)




| SPECIFICATIONS | |
|---|---|
| **Electrical ratings - Type S** | 125VAC, 15 Amps, Resistive, 100,000 Cycles<br>250VAC, 10 Amps, Resistive, 100,000 Cycles |
| **Inductive load ratings** | 120VAC, 5.8FLA, 34.8LRA, 6,000 Cycles<br>240VAC, 2.9FLA, 17.4LRA, 6,000 Cycles |
| **Electrical ratings - Type K** | 30VDC, 1 Amp, Resistive, 100,000 Cycles<br>120VAC, 125VA (pilot duty), 1 Amp |
| **Temperature range**<br>*UL approved models* | 50ºF to 302ºF (10ºC to 150ºC) |
| *Non-UL approved models* | 302ºF to 320ºF (575ºC to 608ºC) |
| **Differential** | 15ºF to 100ºF (8ºC to 56ºC) |
| **Environmental temperature** | 32ºF to 350ºF (0ºC to 177ºC) |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Circuit resistance** | 50m Ω or less (initial value) |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>CSA File No. LR63201<br>VDE File No. 69046<br>Demko File No. DK-451, CE<br>RoHS Compliant |

This line of highly reliable switches utilize a temperature sensitive disc, electrically isolated from the switch. Contacts will open or close on rise when surface or ambient temperature increase to the snap point of the calibrated bimetal disc. The entire switch is enclosed in a phenolic dust-free housing. The bimetal disc is retained by a metal heat-conducting end cap.

The CA and OA Series thermostats are used in a variety of applications. They are produced in an ISO 9000 certified factory to insure safe and reliable operation. All models are 100% factory inspected for temperature, continuity and function.

Value Added options available including over-mold and seal. For details regarding Value Added options, see page 51.

**Models available from stock - subject to availability • CA - Close On-Rise (normally open) • OA - Open On-Rise (normally closed)**

| Close/Open On-Rise | Model Number | Open ºF | Close ºF | Mounting | Terminals | Orientation from Mounting Holes |
|---|---|---|---|---|---|---|
| Close | CA-50 | 32 ± 10 | 50 ± 7 | surface | solder tabs | 45º |
| Close | CA-60 | 40 ± 9 | 60 ± 7 | surface | solder tabs | 45º |
| Close | CA-60-QCV | 40 ± 10 | 60 ± 7 | surface | .250 quick connects, vertical | 90º |
| Close | CA-85 | 67 ± 9 | 85 ± 7 | surface | solder tabs | 45º |
| Close | CA-85-PCB | 55 ± 10 | 85 ± 7 | air | printed circuit board | ● |
| Close | CA-85-QC | 67 ± 10 | 85 ± 7 | surface | .187 quick connects, horizontal | 45º |
| Close | CA-100 | 70 ± 10 | 100 ± 7 | surface | solder tabs | 45º |
| Close | CA-104-ST-18 | 86 ± 10 | 104 ± 8 | 6-32 stud | .250 quick connects, vertical | ● |
| Close | CA-107-QCV | 90 ± 10 | 107 ± 7 | surface | .187 quick connects, vertical | 90º |
| Close | CA-110 | 80 ± 10 | 110 ± 7 | surface | solder tabs | 45º |
| Close | CA-110-PCB | 80 ± 10 | 110 ± 7 | air | printed circuit board | ● |
| Close | CA-110-QC45 | 80 ± 10 | 110 ± 7 | surface | .187 quick connects, horizontal | 45º |
| Close | CA-115-QC | 100 ± 10 | 115 ± 7 | rotating bracket | .250 quick connects, horizontal | ● |
| Close | CA-120 | 90 ± 10 | 120 ± 7 | surface | solder tabs | 45º |
| Close | CA-120-QC | 90 ± 10 | 120 ±7 | surface | .250 quick connects, horizontal | 90º |
| Close | CA-120-QCH | 90 ± 10 | 120 ± 7 | surface | .187 quick connects, horizontal | 45º |
| Close | CA-120-QCV | 90 ± 7 | 120 ± 10 | surface | .250 quick connects, vertical | 90º |
| Close | CA-130-QC | 110 ± 10 | 130 ± 7 | surface | .250 quick connects, vertical | 45º |
| Close | CA-130-QCH | 100 ± 10 | 130 ± 7 | surface | .250 quick connects, horizontal | 90º |
| Close | CA-130-ST | 112 ± 10 | 130 ± 7 | 8-32 stud | .250 quick connects, vertical | ● |
| Close | CA-130-WOB | 100 ± 10 | 130 ± 7 | no bracket | solder tabs | 45º |
| Close | CA-140 | 110 ± 10 | 140 ± 7 | surface | solder tabs | 45º |
| Close | CA-140-QC | 110 ± 10 | 140 ± 7 | surface | .250 quick connects, vertical | 90º |
| Close | CA-140-QC18 | 122 ± 10 | 140 ± 7 | rotating | .250 quick connects, vertical | ● |
| Close | CA-150 | 120 ± 10 | 150 ± 7 | surface | solder tabs | 45º |
| Close | CA-160 | 130 ± 10 | 160 ± 7 | surface | solder tabs | 45º |
| Close | CA-160-QC | 130 ± 10 | 160 ± 7 | surface | .250 quick connects, horizontal | 90º |
| Close | CA-160-QC15 | 145 ± 7 | 160 ± 10 | surface | .250 quick connects, horizontal | 90º |
| Close | CA-170 | 140 ± 10 | 170 ± 7 | surface | solder tabs | 45º |

**It is the customer’s sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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# 1/2” Disc Thermostats - Automatic Reset

## CA/OA (602S) Series, Gold Contacts (602K)

**Models available from stock - subject to availability • CA - Close On-Rise (normally open) • OA - Open On-Rise (normally closed)**

| Close/Open On-Rise | Model Number | Open ºF | Close ºF | Mounting | Terminals | Orientation from Mounting Holes |
|---|---|---|---|---|---|---|
| Close | CA-170-QC | 140 ± 10 | 170 ± 7 | surface | .250 quick connects, vertical | 90º |
| Close | CA-170-WOB | 140 ± 10 | 170 ± 7 | no bracket | solder tabs | ● |
| Close | CA-175-QC | 145 ± 10 | 175 ± 7 | surface | .250 quick connects, horizontal | 90º |
| Close | CA-180 | 150 ± 10 | 180 ± 7 | surface | solder tabs | 45º |
| Close | CA-180-QCV | 150 ± 10 | 180 ± 7 | rotating | .250 quick connects, vertical | ● |
| Close | CA-185-ST | 145 ± 10 | 185 ± 7 | 6-32 stud | .250 quick connects | ● |
| Close | CA-190 | 169 ± 10 | 190 ± 7 | surface | solder tabs | 45º |
| Close | CA-190-QC | 172 ± 10 | 190 ± 7 | surface | .250 quick connects, vertical | 90º |
| Close | CA-200 | 170 ± 10 | 200 ± 7 | surface | solder tabs | 45º |
| Close | CA-205 | 175 ± 10 | 205 ± 7 | surface | solder tabs | 45º |
| Close | CA-205-ST | 175 ± 10 | 205 ± 7 | 6-32 stud | .250 quick connects @ 30º | ● |
| Close | CA-210-QC | 180 ± 10 | 210 ± 7 | surface | .187 quick connects, vertical | 90º |
| Close | CA-225 | 195 ± 10 | 225 ± 7 | surface | solder tabs | 45º |
| Close | CA-230-QC | 203 ± 7 | 230 ± 10 | rotating bracket | .187 quick connects, horizontal | ● |
| Close | CA-230-STG | 185 ± 10 | 230 ± 7 | 6-32 stud | .187 quick connects, vertical | ● |
| Close | CA-240 | 210 ± 10 | 240 ± 7 | surface | solder tabs | 45º |
| Close | CA-270 | 240 ± 10 | 270 ± 7 | surface | solder tabs | 45º |
| Close | CA-270-QCV | 240 ± 7 | 270 ± 10 | surface | .187 quick connects, vertical | 45º |
| Close | CA-300 | 270 ± 10 | 300 ± 7 | surface | solder tabs | 45º |
| Open | OA-50 | 50 ± 5 | 32 ± 10 | surface | solder tabs | 45º |
| Open | OA-60 | 60 ± 5 | 40 ± 7 | surface | solder tabs | 45º |
| Open | OA-60-PCB | 60 ± 5 | 40 ± 7 | air | printed circuit board | ● |
| Open | OA-60-QCR | 60 ± 5 | 40 ± 10 | rotating | .250 quick connects, vertical | ● |
| Open | OA-60-QCV | 60 ± 5 | 40 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-60-WOB | 60 ± 5 | 40 ± 9 | no bracket | solder tabs | ● |
| Open | OA-70 | 70 ± 5 | 50 ± 10 | surface | solder tabs | 45º |
| Open | OA-80 | 80 ± 5 | 50 ± 9 | surface | solder tabs | 45º |
| Open | OA-80-PCB | 80 ± 5 | 50 ± 10 | air | printed circuit board | ● |
| Open | OA-80-QCV | 80 ± 5 | 50 ± 9 | surface | .250 quick connects, vertical | 90º |
| Open | OA-85 | 85 ± 5 | 67 ± 9 | surface | solder tabs | 45º |
| Open | OA-95-QC | 95 ± 5 | 77 ± 9 | surface | .250 quick connects, horizontal | 90º |
| Open | OA-100 | 100 ± 5 | 70 ± 10 | surface | solder tabs | 45º |
| Open | OA-100-QC | 100 ± 5 | 85 ± 10 | surface | .250 quick connects, horizontal | 90º |
| Open | OA-110 | 110 ± 5 | 80 ± 10 | surface | solder tabs | 45º |
| Open | OA-110-QC | 110 ± 5 | 80 ± 10 | rotating bracket | .250 quick connects, horizontal | ● |
| Open | OA-120 | 120 ± 5 | 90 ± 10 | surface | solder tabs | 45º |
| Open | OA-120-15-45 | 120 ± 5 | 105 ± 10 | surface | solder tabs | 45º |
| Open | OA-120-QC | 120 ± 5 | 90 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-120-QCH | 120 ± 5 | 90 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OA-130 | 130 ± 5 | 100 ± 10 | surface | solder tabs | 45º |
| Open | OA-130-ST | 130 ± 5 | 100 ± 10 | 10-32 stud | .250 quick connects, horizontal | ● |
| Open | OA-140 | 140 ± 5 | 110 ± 10 | surface | solder tabs | 45º |
| Open | OA-140-QCV | 140 ± 5 | 110 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-150 | 150 ± 5 | 120 ± 10 | surface | solder tabs | 45º |
| Open | OA-150-PCB | 150 ± 5 | 120 ± 10 | air | printed circuit board | 90º |
| Open | OA-150-QCC | 150 ± 5 | 120 ± 10 | surface | .250 quick connects, vertical | ● |
| Open | OA-158-ST | 158 ± 5 | 118 ± 10 | 6-32 stud | .250 quick connects | ● |
| Open | OA-160 | 160 ± 5 | 130 ± 10 | surface | solder tabs | 45º |
| Open | OA-160-QC20 | 160 ± 5 | 140 ± 10 | surface | .250 quick connects, horizontal | 90º |
| Open | OA-160-QCH | 160 ± 5 | 130 ± 10 | surface | .187 quick connects, horizontal | 45º |
| Open | OA-160-QCV20 | 160 ± 5 | 140 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-165-145 | 165 ± 5 | 145 ± 9 | surface | .250 quick connects, vertical | 90º |
| Open | OA-170 | 170 ± 5 | 140 ± 10 | surface | solder tabs | 45º |
| Open | OA-170-PCB | 170 ± 5 | 140 ± 10 | air | printed circuit board | ● |
| Open | OA-170-WOB | 170 ± 5 | 140 ± 10 | no bracket | .187 quick connects, horizontal | ● |
| Open | OA-175 | 175 ± 5 | 157 ± 10 | surface | solder tabs | 45º |
| Open | OA-175-QC | 175 ± 5 | 145 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-175-QCH | 175 ± 5 | 157 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OA-175-S2 | 175 ± 6 | 145 ± 10 | 10-32 stud | .250 quick connects, horizontal | ● |
| Open | OA-180 | 180 ± 5 | 150 ± 10 | surface | solder tabs | 45º |

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# 1/2” Disc Thermostats - Automatic Reset

## CA/OA (602S) Series, Gold Contacts (602K)

**Models available from stock - subject to availability • CA - Close On-Rise (normally open) • OA - Open On-Rise (normally closed)**

| Close/Open On-Rise | Model Number | Open ºF | Close ºF | Mounting | Terminals | Orientation from Mounting Holes |
|---|---|---|---|---|---|---|
| Open | OA-180-QC | 180 ± 5 | 150 ± 10 | surface | .187 quick connects, horizontal | 45º |
| Open | OA-180-QCV | 180 ± 5 | 150 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-180-QCVR | 180 ± 5 | 150 ± 10 | rotating bracket | .250 quick connects, vertical | ● |
| Open | OA-185-QC18 | 185 ± 10 | 167 ± 10 | rotating bracket | .250 quick connects, vertical | ● |
| Open | OA-185-QCP | 185 ± 5 | 154 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-185-ST10 | 185 ± 5 | 131 ± 10 | 10-32 stud | .250 quick connects, horizontal | ● |
| Open | OA-190 | 190 ± 5 | 160 ± 10 | surface | solder | 45º |
| Open | OA-190-QC | 190 ± 7 | 172 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-194-QC | 194 ± 5 | 164 ± 10 | surface | .187 quick connects, vertical | 45º |
| Open | OA-194-QC18 | 194 ± 5 | 176 ± 10 | surface | .250 quick connects, horizontal | 90º |
| Open | OA-194-QCC | 194 ± 5 | 153 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-200 | 200 ± 5 | 170 ± 10 | surface | solder | 45º |
| Open | OA-200-QC | 200 ± 5 | 181 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-200-QCV | 200 ± 5 | 170 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-200-QCV-90 | 200 ± 5 | 170 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-200-ST | 200 ± 5 | 170 ± 8 | 10-32 stud | .250 quick connects | ● |
| Open | OA-203-QCP | 203 ± 5 | 163 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-203-QCV | 203 ± 5 | 167 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-203-ST | 203 ± 5 | 163 ± 10 | 6-32 stud | .250 quick connects | ● |
| Open | OA-210 | 210 ± 5 | 180 ± 10 | surface | solder | 45º |
| Open | OA-210-QC | 210 ± 5 | 180 ± 10 | surface | .187 quick connects, horizontal | 45º |
| Open | OA-210-QCR | 210 ± 5 | 195 ± 10 | rotating bracket | .250 quick connects, horizontal | ● |
| Open | OA-210-QCV | 210 ± 5 | 180 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-212-QCP | 212 ± 5 | 167 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-220 | 220 ± 5 | 190 ± 10 | surface | solder | 45º |
| Open | OA-220-PCB | 220 ± 5 | 190 ± 10 | air | printed circuit board | ● |
| Open | OA-220-QC | 220 ± 5 | 190 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OA-225-205 | 225 ± 5 | 205 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-230 | 230 ± 5 | 200 ± 10 | surface | solder | 45º |
| Open | OA-230-QCV | 230 ± 7 | 200 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-239-ST | 239 ± 7 | 189 ± 10 | 6-32 stud | .250 quick connects | ● |
| Open | OA-240-QCV | 240 ± 7 | 200 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OA-250 | 250 ± 7 | 220 ± 10 | surface | solder | 45º |
| Open | OA-250-PCB | 250 ± 5 | 220 ± 10 | air | printed circuit board | ● |
| Open | OA-250-QC | 250 ± 5 | 220 ± 10 | surface | .187 quick connects, horizontal | 45º |
| Open | OA-250-QCA | 250 ± 7 | 220 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OA-265-QCA | 265 ± 7 | 235 ± 10 | air | .250 quick connects, vertical | 90º |
| Open | OA-270-90 | 270 ± 7 | 240 ± 10 | surface | solder | 90º |
| Open | OA-275-QCH | 275 ± 7 | 245 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OA-280 | 280 ± 7 | 250 ± 10 | surface | solder | 45º |
| Open | OA-280-QC | 280 ± 7 | 250 ± 10 | surface | .250 quick connects, vertical | 45º |
| Open | OA-300 | 300 ± 7 | 270 ± 10 | surface | solder | 45º |
| Open | OA-300-QC | 300 ± 7 | 220 ± 14 | rotating bracket | .250 quick connects, vertical | ● |
| Open | OA-300-QCVR | 300 ± 7 | 270 ± 10 | rotating bracket | .250 quick connects, vertical | ● |

**It is the customer’s sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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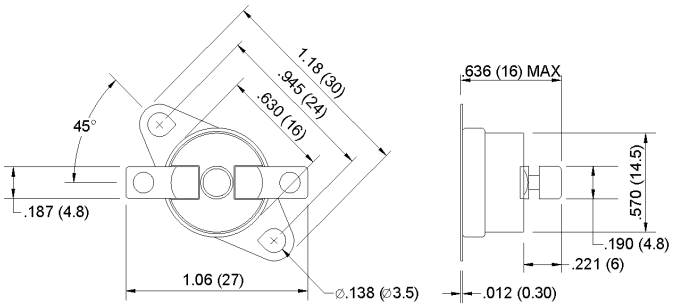
# 1/2” Disc Thermostats - Manual Reset

## OM (603U-H) Series, Gold Contacts (603K)




| SPECIFICATIONS | |
|---|---|
| **Electrical ratings - Type U-H** | 125VAC, 15 Amps, Resistive, 6,000 Cycles<br>250VAC, 10 Amps, Resistive, 6,000 Cycles |
| **Inductive load ratings** | 120VAC, 5.8FLA, 34.8LRA, 12 Amps, 6,000 Cycles<br>250VAC, 2.9FLA, 17.4LRA, 6,000 Cycles |
| **Electrical ratings - Type K**<br>*(Type K not VDE approved)* | 30VDC, 1 Amp, Resistive, 6,000 Cycles<br>120VAC, 125VA (pilot duty), 6,000 Cycles |
| **Temperature range**<br>*UL approved models* | 120ºF to 302ºF (50ºC to 150ºC) |
| *Non-UL approved models* | 302ºF to 320ºF (150ºC to 160ºC) |
| **Manual reset** | 30% below operating temperature |
| **Automatic reset** | -40ºF |
| **Environmental temperature** | 32ºF to 350ºF (0ºC to 177ºC) |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Circuit resistance** | 50m Ω or less (initial value) |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478(S), XAPX8<br>CSA File No. LR63201<br>VDE File No. 135151 (Type U-H only)<br>RoHS Compliant |

**APPLICATIONS**

- Fireplaces
- Vacuum cleaners
- Food service equipment

This line of highly reliable switches utilize a snap-action bimetal disc, electrically and thermally isolated from the switch. The contacts are normally closed and open on rise when surface or ambient temperature set point is reached. The circuit will remain open until the manual reset button is depressed at approximately 30% below operating temperature. All models are 100% temperature tested which can be calibrated to your specification at the factory.

Value Added options available including over-mold and seal. For details regarding Value Added options, see page 51.

**Models available from stock - subject to availability • OM Series - Open On-Rise (normally closed)**

| Open On-Rise | Model Number | Open ºF | Mounting | Terminals | Orientation from Mounting Holes |
|---|---|---|---|---|---|
| Open | OM-140-QC | 140 ± 10 | surface | .250 quick connects, horizontal | 90º |
| Open | OM-150-QCV | 150 ± 10 | rotating bracket | .250 quick connects, vertical | ● |
| Open | OM-160 | 160 ± 10 | surface | solder | 45º |
| Open | OM-180-QC | 180 ± 10 | surface | .187 quick connects, horizontal | 45º |
| Open | OM-194 | 194 ± 10 | surface | solder | 90º |
| Open | OM-195-QC | 195 ± 10 | rotating bracket | .250 quick connects, horizontal | ● |
| Open | OM-200-QCV | 200 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OM-212-QC | 212 ± 10 | rotating bracket | .250 quick connects, horizontal | ● |
| Open | OM-225-QC | 225 ± 10 | rotating bracket | .250 quick connects, horizontal | ● |
| Open | OM-250 | 250 ± 10 | surface | solder | 45º |
| Open | OM-250-QC | 250 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OM-260-SO | 260 ± 7 | 6-32 stud | .250 quick connects, horizontal | ● |
| Open | OM-265-A | 265 ± 10 | air | solder | 45º |
| Open | OM-285-QC | 285 ± 10 | surface | .250 quick connects, horizontal | 45º |
| Open | OM-302-QCV | 302 ± 10 | surface | .250 quick connects, vertical | 90º |
| Open | OM-320 | 320 ± 10 | surface | solder | 45º |
| Open | OM-320-QC | 320 ± 10 | surface | .250 quick connects, horizontal | 45º |

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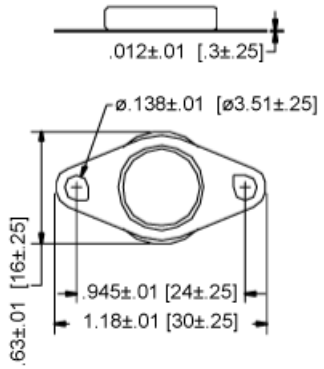
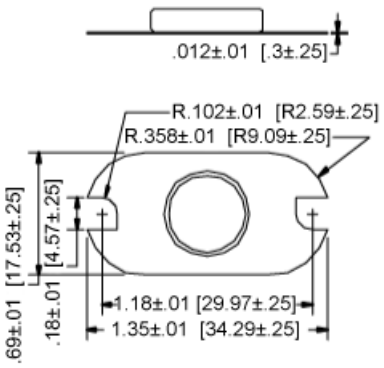
# Special Order Brackets

## For CA/OA (602S & 602K) and OM (603U-H & 603K) Series

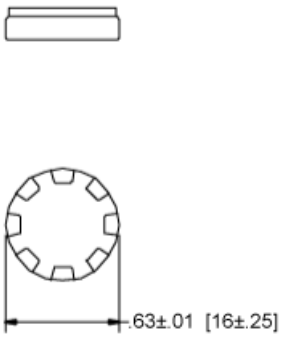
**Code AS**
Stainless • Fixed • Surface



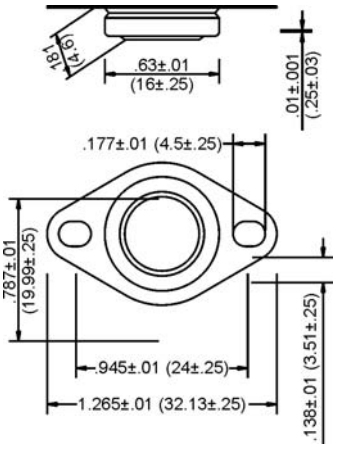

**Code AU**
Stainless • Fixed • Surface



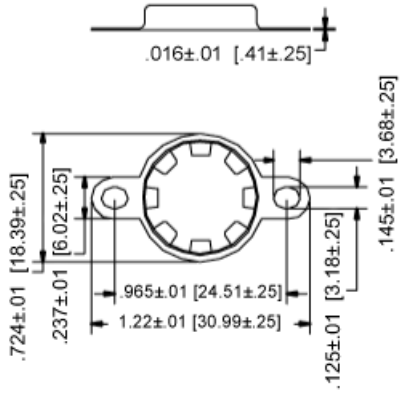

**Code BO**
Aluminum • No Bracket



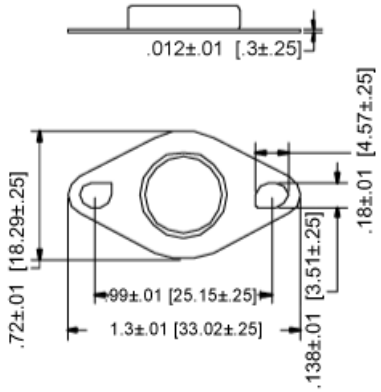

**Code IO**
Stainless • Fixed • Air



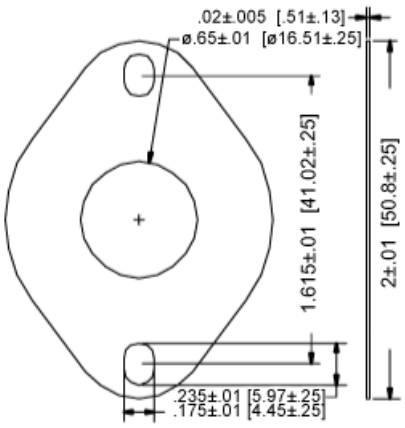

**Code QL**
Stainless • Rotating • Surface • Aluminum Cap



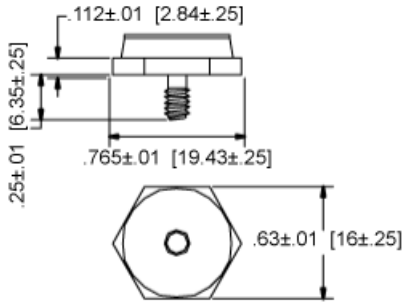

**Code QF**
Stainless • Fixed • Surface




**Code B**



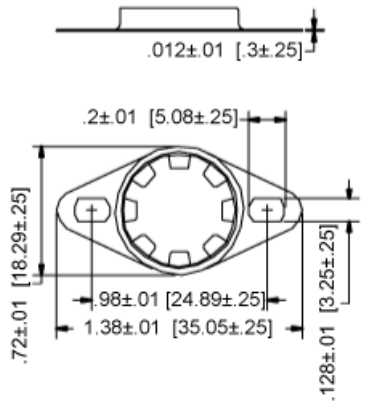

**Stud Mount - Brass**




**Stud Mount Available In**

| | |
|---|---|
| **Code SO (6-32)** | **Code SM3 (M3)** |
| **Code ST (8-32)** | **Code SM4 (M4)** |
| **Code S2 (10-32)** | |

**Code FF**
Stainless • Moveable

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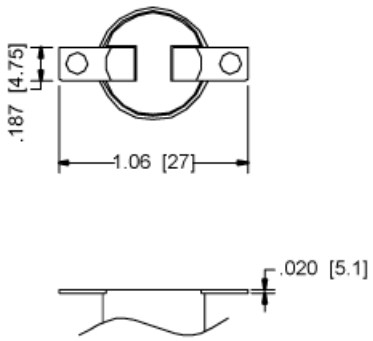
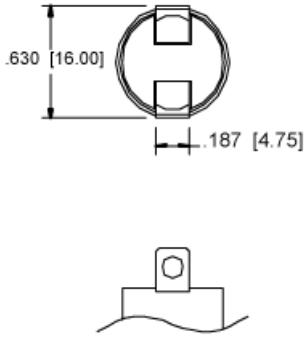
# Special Order Terminals

## For CA/OA (602S & 602K) and OM (603U-H & 603K) Series

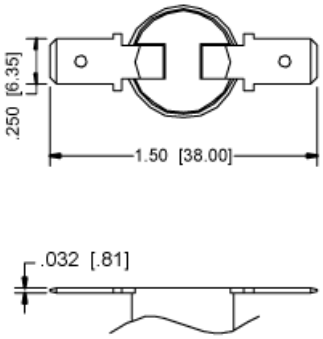
**Code SH**
Solder • Horizontal



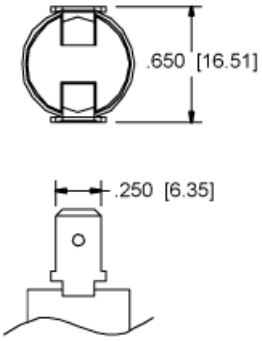

**Code SV**
Solder • Vertical



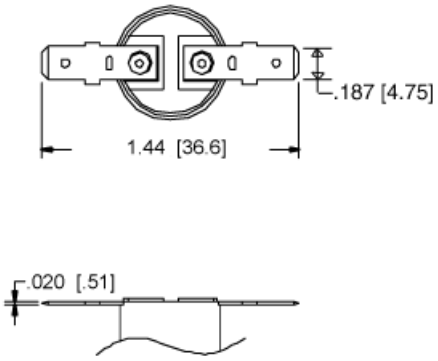

**Code BH**
.250 Quick Connects • Horizontal



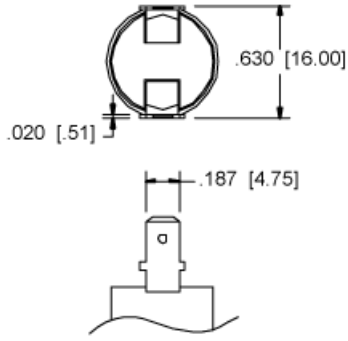

**Code BV**
.250 Quick Connects • Vertical



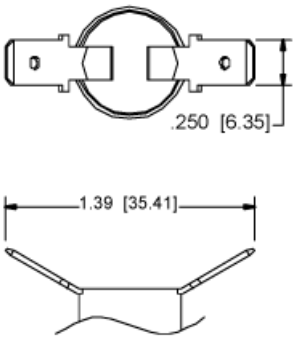

**Code TH**
.187 Quick Connects • Horizontal



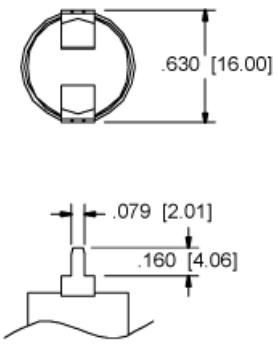

**Code TV**
.187 Quick Connects • Vertical



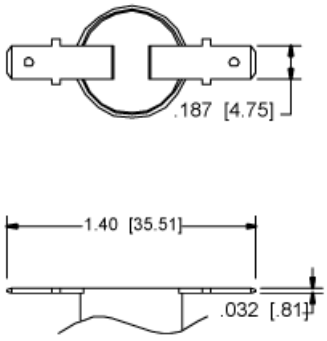

**Code BQF**
.250 Quick Connects @ 30°




**Code PCB**
Printed Circuit Board




**Code T3H**
.187 Quick Connects • Horizontal

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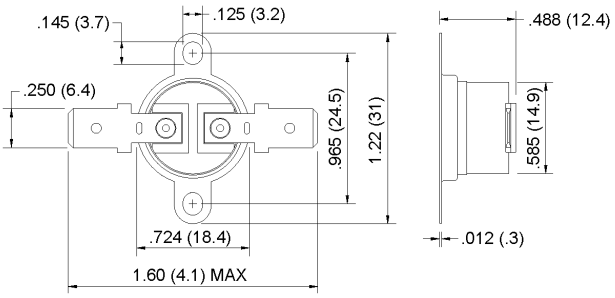
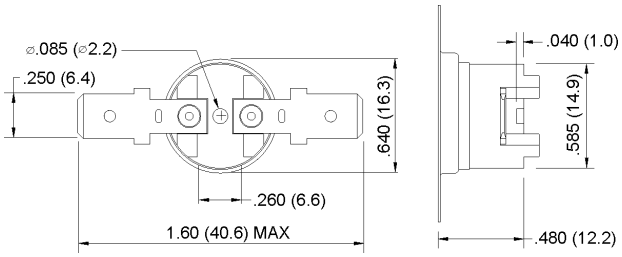
# 1/2” Disc Thermostats - Automatic Reset

## CR/OR (622A and 622P) Series

**CR/OR (622A) Series - Standard Case**




**622P Series - 4 Post Design (pictured above)**




**FEATURES**

- 4-post design
- High temperature polyester
- Approval by UL, CSA, VDE, CE

**APPLICATIONS**

- Coffee makers
- Microwave ovens
- Sandwich makers

These SPST, snap-action disc thermostats are suitable for a drip-type coffee maker temperature limiting/regulating control. They are preset and tamper proof.

Each device is 100% tested and inspected before leaving the factory.

Gold contacts available upon request. Value Added options available including over-mold and seal. For details regarding Value Added options, see page 51.

**SPECIFICATIONS**

| | |
|---|---|
| **Electrical ratings** | 125VAC, 15 Amps, Resistive, 100,000 Cycles<br>250VAC, 10 Amps, Resistive, 100,000 Cycles |
| **Temperature range** | 50ºF to 365ºF (10ºC to 185ºC) |
| **Differential** | 18ºF to 45ºF (10ºC to 25ºC) |
| **Environmental temperature** | -4ºF to 392ºF (-20ºC to 200ºC) |
| **Coffee maker, normal & dry override/over shoot** | 455ºF (235ºC) |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Circuit resistance** | 50m Ω or less (initial value) |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>CSA File No. LR63201<br>VDE File. F-14713, CE<br>RoHS Compliant |

**Models available from stock - subject to availability • CR - Close On-Rise (normally open) • OR - Open On-Rise (normally closed)**

| Open On-Rise | Model Number | Open ºF | Close ºF | Mounting | Terminals |
|---|---|---|---|---|---|
| Open | OR-222* | 222 ± 5 | 168 ± 10 | no bracket | .250 quick connects, horizontal |
| Open | OR-285* | 285 ± 7 | 245 ± 11 | no bracket | .250 quick connects, horizontal |
| Open | OR-325** | 325 ± 7 | 275 ± 11 | rotating bracket | solder, horizontal |
| Open | OR-350-QC** | 350 ± 9 | 320 ± 12 | rotating bracket | .250 quick connects, horizontal |
| Open | OR-350-QCV** | 350 ± 9 | 320 ± 12 | rotating bracket | .250 quick connects, vertical |
| Open | OR-365-QC** | 365 ± 9 | 335 ± 12 | rotating bracket | .250 quick connects, horizontal |

* 4-Post design
** Standard case

**Note: Single operation (one-shot) feature is available. Once the contacts have opened, the contacts will not reclose until ambient temperature drops below -31ºF (-35ºC).**

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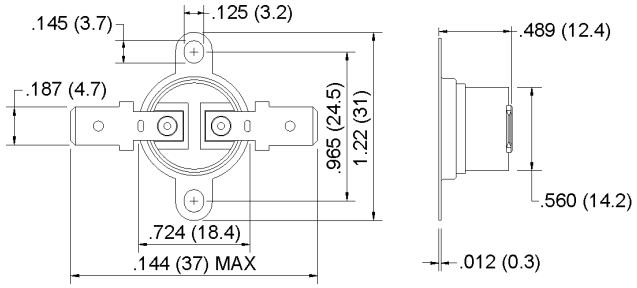
# 1/2” Disc Thermostats - Automatic Reset

## CRA/ORA (625A) Series




**FEATURES**

- ISO 9000 certification
- High temperature case
- Quick and easy installation

**APPLICATIONS**

- Heaters
- Gas furnaces
- Commercial food equipment

**SPECIFICATIONS**

| | |
|---|---|
| **Electrical ratings** | 125VAC, 15 Amps, Resistive, 100,000 Cycles<br>250VAC, 10 Amps, Resistive, 100,000 Cycles |
| **Temperature range** | 50ºF to 500ºF (10ºC to 260ºC) |
| **Differential** | 27ºF to 100ºF (15ºC to 55ºC) |
| **Environmental temperature** | -40ºF to 554ºF (-40ºC to 290ºC) |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Circuit resistance** | 50m Ω or less (initial value) |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478, XAPX8,<br>VDE, CE<br>RoHS Compliant |

These snap-action bimetal discs are housed in a ceramic case to handle extremely high temperatures. The increased factory calibrated set points are available up to 500ºF (260ºC). The contacts can either open or close on temperature rise.

All models are 100% temperature tested before leaving the factory.

Gold contacts available upon request. Value Added options available including over-mold and seal. For details regarding Value Added options, see page 51.

**Models available from stock - subject to availability • CRA - Close On-Rise (normally open) • ORA - Open On-Rise (normally closed)**

| Open On-Rise | Model Number | Open ºF | Close ºF | Mounting | Terminals |
|---|---|---|---|---|---|
| Open | ORA-257-QCV | 257 ± 9 | 230 ± 9 | rotating bracket | .250 quick connects, vertical |
| Open | ORA-347-QCV | 347 ± 16 | 284 ± 16 | rotating bracket | .250 quick connects, vertical |
| Open | ORA-350-QC | 350 ± 14 | 290 ± 20 | rotating bracket | .187 quick connects, horizontal |
| Open | ORA-375-QC | 375 ± 14 | 315 ± 20 | rotating bracket | .250 quick connects, horizontal |
| Open | ORA-400-QC | 400 ± 14 | 340 ± 20 | rotating bracket | .250 quick connects, horizontal |
| Open | ORA-425-QC | 425 ± 15 | 375 ± 20 | rotating bracket | .250 quick connects, horizontal |
| Open | ORA-450-QC | 450 ± 15 | 370 ± 20 | rotating bracket | .250 quick connects, horizontal |
| Open | ORA-500-QC | 500 ± 20 | 420 ± 20 | rotating bracket | .250 quick connects, horizontal |
| Open | ORA-500-QCV50 | 500 ± 20 | 450 ± 20 | rotating bracket | .250 quick connects, vertical |

**Note: Single operation (one-shot) feature is available. Once the contacts have opened, the contacts will not reclose until ambient temperature drops below -31ºF (-35ºC).**

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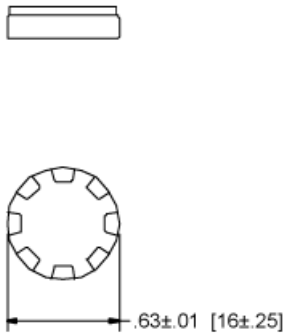
# Special Order Brackets

## For CR/OR (622A and 622P) and CRA/ORA (625A) Series

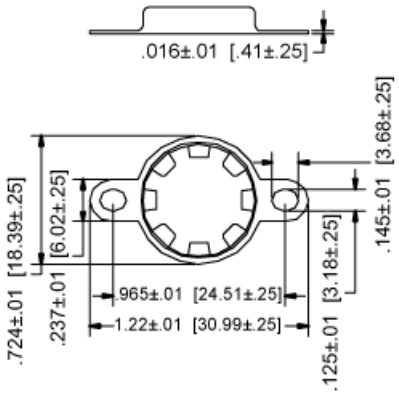
**Code BO**

Aluminum • No Bracket



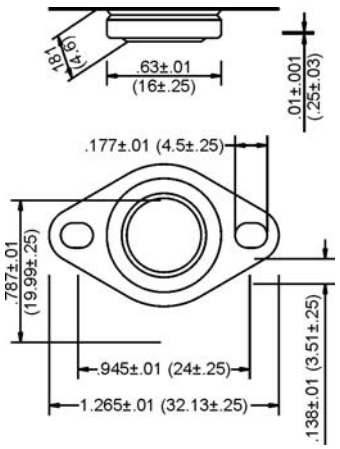

**Code QL**

Stainless • Rotating • Surface • Aluminum Cap




**Code IO**

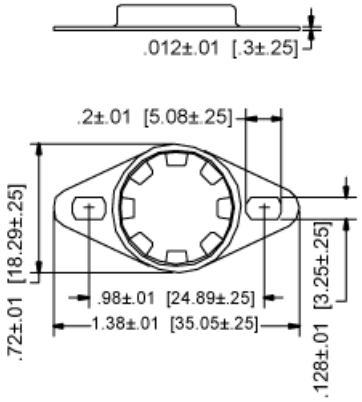
Stainless • Fixed • Air




**Code FF**

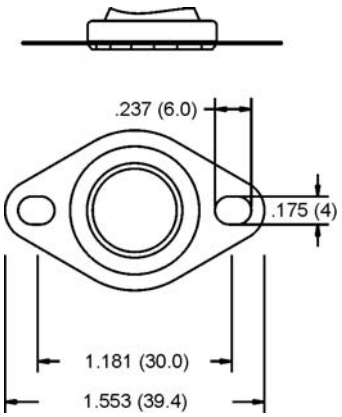
Stainless • Moveable • Surface

***Available for 622 Series only***



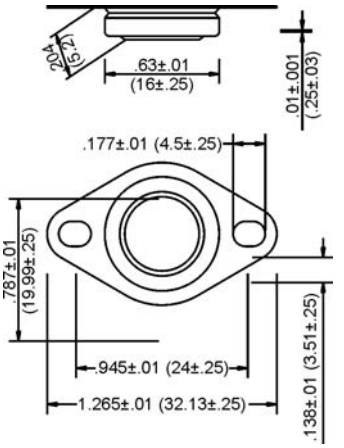

**Code QD**

Stainless • Moveable • Surface




**Code JO**

Stainless • Fixed • Air

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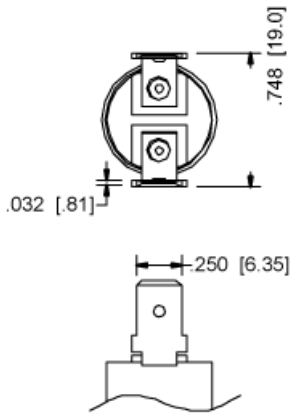
# Special Order Terminals

## For CR/OR (622A and 622P) and CRA/ORA (625A) Series

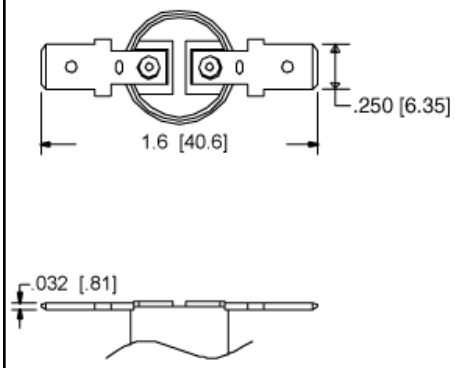
**Code BV**

.250 Quick Connects • Vertical



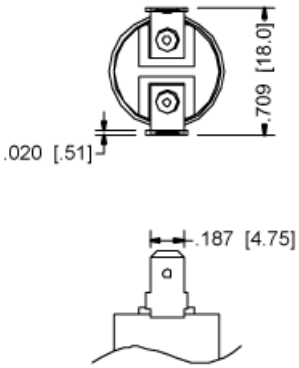

**Code BH**

.250 Quick Connects • Horizontal



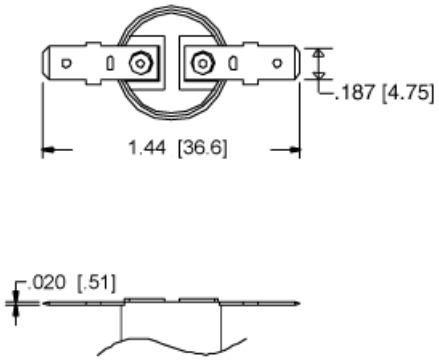

**Code TV**

.187 Quick Connects • Vertical



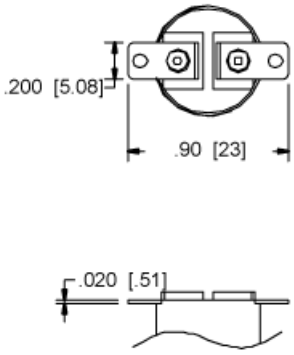

**Code TH**

.187 Quick Connects • Horizontal




**Code SH**

Solder Tabs • Horizontal




**It is the customer's sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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# Special Order Map
## For CA/OA , OM, CR/OR, and CRA/ORA Series

**Build Your Own Part**

| Model | Contacts | Function | Terminal Type | Bracket Type | Terminal Orientation | Set Point | ºF/ºC | Differential |
|---|---|---|---|---|---|---|---|---|

**Model**

| | | |
|---|---|---|
| 602S | CA/OA Series - 1/2” Automatic Reset | refer to pages 5-7 |
| 603U-H | OM Series - 1/2” Manual Reset | refer to page 8 |
| 622A | CR/OR Series - Standard Case - 1/2” Automatic Reset | refer to page 11 |
| 622P | CR/OR - 4-Post Case - 1/2” Automatic Reset | refer to page 11 |
| 625A | CRA/ORA - High Temperature - 1/2” Automatic Reset | refer to page 12 |

**Contacts**

| | |
|---|---|
| S | Silver contacts |
| K | Gold contacts |

**Function**

| | |
|---|---|
| X | Open on-rise (normally closed) |
| Y | Close on-rise (normally open) |

**Terminal Type**

| | |
|---|---|
| Models CA/OA (602S) and OM (603U-H) | refer to page 10 |
| Models CR/OR (622A and 622P) and CRA/ORA (625A) | refer to page 14 |

**Bracket Type**

| | |
|---|---|
| Models CA/OA (602S) and OM (603U-H) | refer to page 9 |
| Models CR/OR (622A and 622P) and CRA/ORA (625A) | refer to page 13 |

**Terminal Orientation**

0º
45º
90º

**Example Part Number**

| 602 | S | X | BV | AS | 90 | 145 | ºF | 30 |
|---|---|---|---|---|---|---|---|---|
| Model | Contacts | Function | Terminal Type | Bracket Type | Terminal Orientation | Set Point | ºF/ºC | Differential |

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# Hermetically Sealed 1/2” Disc Thermostats

## KC/KO (4344) Series

**FEATURES**
- Compact size
- Hermetically sealed
- Extreme low & high temps.

**APPLICATIONS**
- Military
- Aerospace
- Water temperature control

The Selco hermetically sealed thermostat is a snap-action disc control. Its welded, hermetically sealed construction was designed for applications where maximum shock and vibration resistance is required. The steel case provides protection from dust and moisture. Terminals are a solder type or weld and lead wires are available.

Gold contacts are available upon request.

**Models available from stock - subject to availability**
**KO - Open On-Rise (normally closed)**

| Model Number | Open ºF | Close ºF |
|---|---|---|
| KO-450 | 450 ± 12 | 370 ± 12 |
| KO-550 | 550 ± 25 | 470 ± 25 |

**Temperature Settings - Special Order**

| Operating Temp. Range (ºF) | Available Differential Range ºF | | | Opening Temp. Tol (±ºF) | Closing Temp. Tol (±ºF) |
|---|---|---|---|---|---|
| | Min. | Std. | Max. | | |
| -65 to -1 | 25 | 30 | 80 | 10 | 8 |
| 0 to 200 | 9 | 20 | 80 | 5 | 5 |
| 201 to 300 | 20 | 30 | 80 | 8 | 6 |
| 301 to 450 | 30 | 40 | 80 | 12 | 12 |
| 451 to 550 | 60 | 70 | 80 | 25 | 25 |

## SPECIFICATIONS

| | |
|---|---|
| **Dielectric strength** | 1250VAC, rms, 60 cycles for 1 minute, terminal to case; per MIL-STD-202, Method 301 |
| **Switch action** | SPST (snap-action) |
| **Ambient temperature** | -80ºF to +550Fº (-62ºC to 288ºC) |
| **Contact resistance** | 0.050 Ω per max. per MIL-STD-202, Method 307 |
| **Shock resistance** | 100G, 6 milliseconds, per MIL-STD-202, Method 213 |
| **Vibration resistance** | 5-2000 cps, 20G per MIL-STD-202, Method 204, Condition D |
| **Moisture resistance** | MIL-STD-202, Method 106 |
| **Salt spray** | MIL-STD-202, Method 101, Condition B, 5% solution |
| **Leakage** | 1 x $10^{-5}$ ATM cc/sec. max., per MIL-STD-202, Method 112, Condition C |
| **Approvals** | UL File No. E34618<br>***UL File Number found under Texas Instr. 4344***<br>C-UL File No. E34618, XAPX8<br>RoHS Compliant |

**Contact Ratings (Resistive)**

| 30VAC/DC | 125VAC | 250VAC | Life Cycles |
|---|---|---|---|
| Amperes | | | |
| 5.0 | 2.5 | 1.0 | 100,000 |
| 5.5 | 3.0 | 1.5 | 50,000 |
| 6.0 | 4.0 | 2.0 | 25,000 |
| 6.5 | 5.0 | 2.5 | 10,000 |
| 7.0 | 6.0 | 3.0 | 5,000 |

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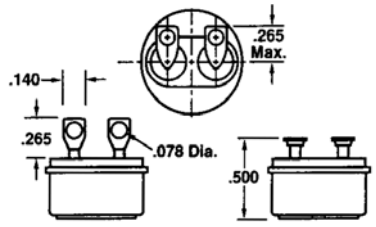
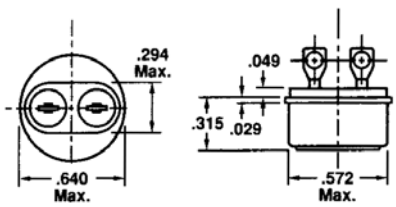
**Special Mounting Configurations**
* Drawings are subject to change, consult Selco for current dimensions.

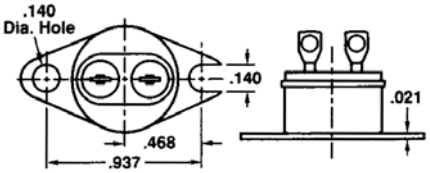
**Terminal Dimensions**



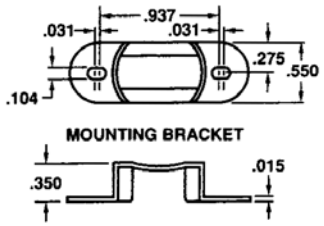

**4344-7**




**4344-184**




**Loose Bracket**

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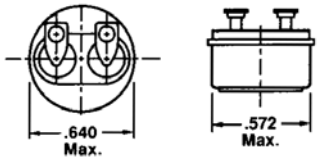
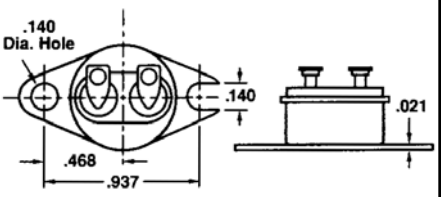



**4344-144**

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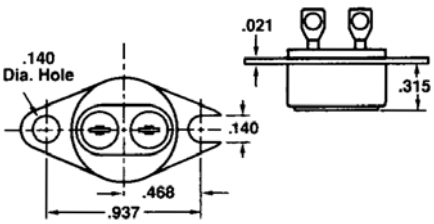
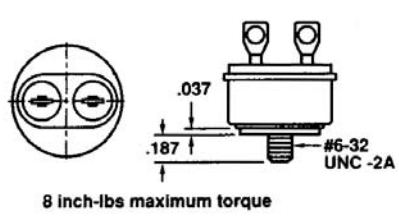
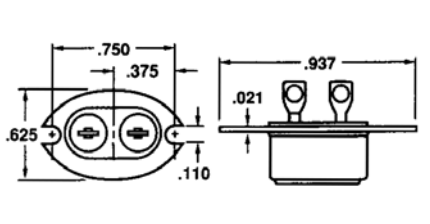


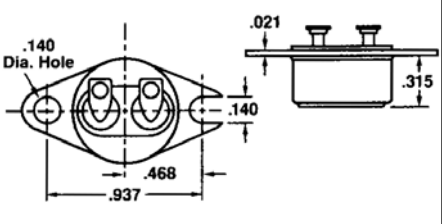

**4344-13**



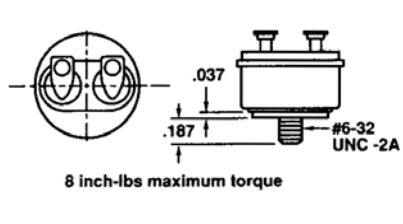

**4344-14**



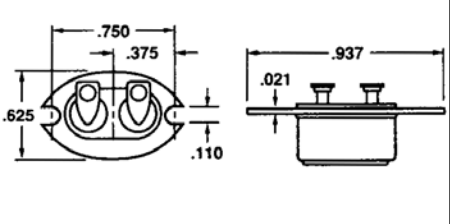

**4344-221**




**4344-135**




**4344-63**

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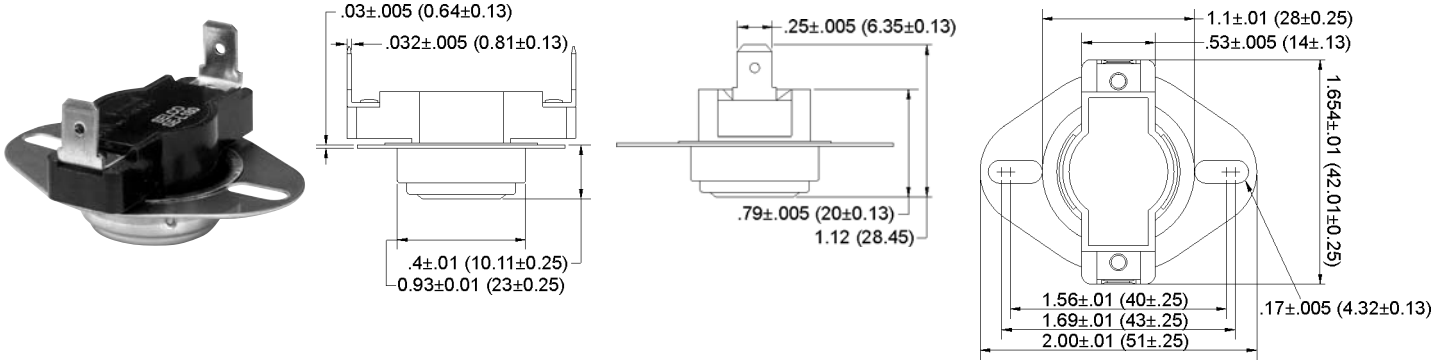
# 3/4” Disc Thermostats - Automatic Reset

## SE (T10) Series - Airstream Mount




### FEATURES

- 25 Amp capacity
- UL and CUL approved
- Factory calibrated to your specifications

### APPLICATIONS

- H.V.A.C.
- Major appliances
- Medical/Lab equipment
- Commercial food eqpt.

Selco’s direct sensing thermostats are larger than our standard thermostats, giving them an even more powerful bimetallic disc and a higher electrical rating. They are ideal for use with heating and air conditioning systems as well as with industrial equipment. These models are designed for maximum airflow around the thermostat to give quick and accurate response.

These units feature a bimetallic, temperature-sensitive disc for snap-action in opening and closing the switch contacts. The bimetallic disc is thermally and electrically insulated from the electrical circuit, eliminating self-heating effects. Only the temperature of the controlled equipment causes the switch to actuate. Switch operation is rapid and positive due to the characteristics of the bimetallic disc and the wiping action of the current-carrying contacts. Contact chattering is virtually eliminated, as is false cycling and sparking. Exposed disc and single operation models available.

**Models available from stock - subject to availability**
**Fan Controls • SE-F - Close On-Rise (normally open)**

| Model Number | Temperature Ranges | |
|---|---|---|
| | Open ºF | Close ºF |
| SE-F060 | 40 ± 9 | 60 ± 5 |
| SE-F090 | 70 ± 9 | 90 ± 5 |
| SE-F100 | 100 ± 9 | 80 ± 5 |
| SE-F110 | 90 ± 9 | 110 ± 5 |
| SE-F120 | 100 ± 9 | 120 ± 5 |
| SE-F130 | 110 ± 9 | 130 ± 5 |
| SE-F140 | 120 ± 9 | 140 ± 5 |
| SE-F219H* | 180 ± 9 | 219 ± 5 |

* Horizontal terminals

### SPECIFICATIONS

| | |
|---|---|
| **Electrical ratings** | 120VAC, 240VAC, 25 Amps, Resistive, 60Hz<br>120VAC, 10FLA, 60LRA, 60Hz, Inductive<br>240VAC, 5FLA, 30LRA, 60Hz, Inductive<br>100,000 Cycles |
| **Temperature range** *(UL Models)* | 33ºF to 302ºF (1ºC to 150ºC) |
| **Temperature range** *(Non-UL Models)* | 302ºF to 350ºF (150ºC to 177ºC) |
| **Differential** | 14ºF to 100ºF (8ºC to 56ºC) - SPST Models<br>27ºF to 100ºF (15ºC to 56ºC) - SPDT Models |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478, XAPX8 |

**Models available from stock - subject to availability**
**Limit Controls • SE-L - Open On-Rise (normally closed)**

| Model Number | Temperature Ranges | |
|---|---|---|
| | Open ºF | Close ºF |
| SE-L120 | 120 ± 7 | 106 ± 9 |
| SE-L130 | 130 ± 7 | 115 ± 9 |
| SE-L135 | 135 ± 7 | 110 ± 9 |
| SE-L140 | 140 ± 7 | 100 ± 9 |
| SE-L145 | 145 ± 7 | 120 ± 9 |
| SE-L150 | 150 ± 7 | 110 ± 9 |
| SE-L150-A | 150 ± 7 | 125 ± 9 |
| SE-L150-D | 150 ± 7 | 130 ± 9 |
| SE-L160 | 160 ± 7 | 120 ± 9 |
| SE-L170 | 170 ± 7 | 130 ± 9 |
| SE-L175 | 175 ± 7 | 155 ± 9 |
| SE-L180 | 180 ± 7 | 150 ± 9 |
| SE-L180A | 180 ± 7 | 140 ± 9 |
| SE-L190 | 190 ± 7 | 150 ± 9 |
| SE-L194H* | 194 ± 7 | 180 ± 9 |
| SE-L200 | 200 ± 7 | 160 ± 9 |
| SE-L210 | 210 ± 7 | 170 ± 9 |
| SE-L230 | 230 ± 7 | 190 ± 9 |
| SE-L240 | 240 ± 7 | 215 ± 9 |
| SE-L250 | 250 ± 7 | 210 ± 9 |
| SE-L255 | 255 ± 7 | 230 ± 9 |
| SE-L300 | 300 ± 7 | 250 ± 9 |
| SE-L325 | 325 ± 7 | 275 ± 9 |
| SE-L350 | 350 ± 7 | 310 ± 9 |

* Horizontal terminals

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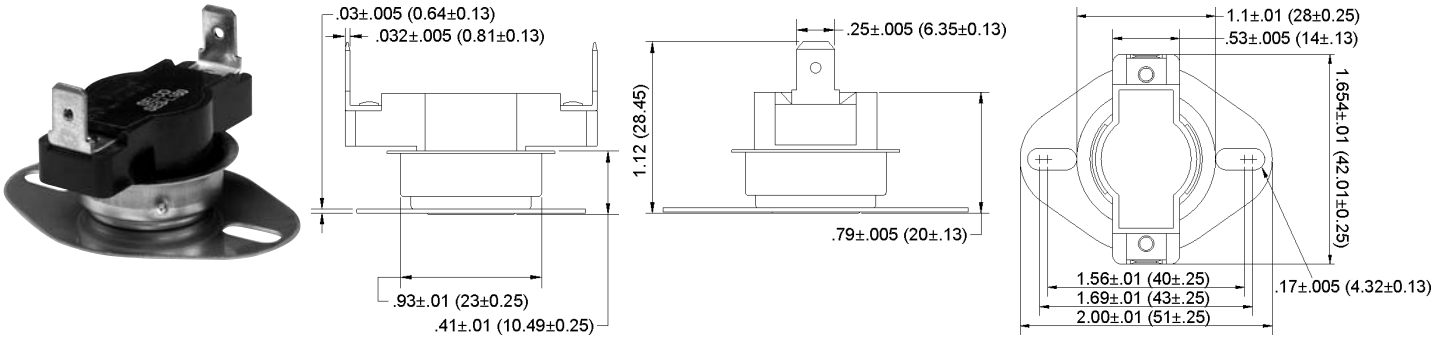
# 3/4” Disc Thermostats - Automatic Reset

## SES (T11) Series - Surface Mount




**FEATURES**

- 25 Amp capacity
- UL and CUL approved
- Factory calibrated to your specifications

**APPLICATIONS**

- Pumps
- H.V.A.C.
- Automotive
- Medical/Lab Equipment

The T11 model is designed to attach directly to equipment to provide instantaneous temperature measurement and reliable protection. The units feature a bimetallic, temperature sensitive disc for snap-action in opening and closing switch contacts. The bimetallic disc is thermally and electrically insulated from the electrical circuit, eliminating self-heating effects. Only the temperature of the controlled equipment or its adjacent environment causes the switch to actuate.

Switch operation is rapid and positive due to the characteristics of the bimetallic disc and wiping action of the current carrying contacts. Contact chattering is virtually eliminated, as is false cycling and sparking. The thermostats are enclosed in compact, rugged, tamper-proof cases designed for quick and easy installation in the controlled equipment. Exposed disc and single operation models available.

**Models available from stock - subject to availability**
**Fan Controls • SES-F - Close On-Rise (normally open)**

| Model Number | Temperature Ranges | |
|---|---|---|
| | Open ºF | Close ºF |
| SES-F058 | 44 ± 9 | 58 ± 5 |
| SES-F120H* | 100 ± 9 | 120 ± 5 |
| SES-F130 | 115 ± 9 | 130 ± 5 |
| SES-F140 | 140 ± 9 | 120 ± 5 |
| SES-F200H* | 160 ± 9 | 200 ± 5 |

* Horizontal terminals

**SPECIFICATIONS**

| | |
|---|---|
| **Electrical ratings** | 120VAC, 240VAC, 25 Amps, Resistive, 60Hz<br>120VAC, 10FLA, 60LRA, 60Hz, Inductive<br>240VAC, 5FLA, 30LRA, 60Hz, Inductive<br>100,000 Cycles |
| **Temperature range** *(UL Models)* | 33ºF to 302ºF (1ºC to 150ºC) |
| **Temperature range** *(Non-UL Models)* | 302ºF to 350ºF (150ºC to 177ºC) |
| **Differential** | 14ºF to 100ºF (8ºC to 56ºC) - SPST Models<br>27ºF to 100ºF (15ºC to 56ºC) - SPDT Models |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478(S), XAPX8 |

**Models available from stock - subject to availability**
**Limit Controls • SES-L - Open On-Rise (normally closed)**

| Model Number | Temperature Ranges | |
|---|---|---|
| | Open ºF | Close ºF |
| SES-L110 | 110 ± 7 | 96 ± 9 |
| SES-L120 | 120 ± 7 | 106 ± 9 |
| SES-L150 | 150 ± 7 | 130 ± 9 |
| SES-L180 | 180 ± 7 | 150 ± 9 |
| SES-L190 | 190 ± 7 | 160 ± 9 |
| SES-L213H* | 213 ± 7 | 155 ± 9 |
| SES-L250 | 250 ± 7 | 220 ± 9 |
| SES-L275H* | 275 ± 7 | 245 ± 9 |

* Horizontal terminals

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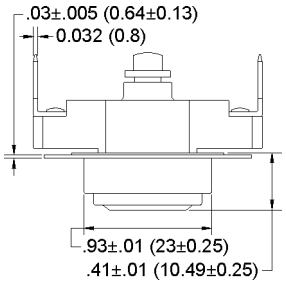
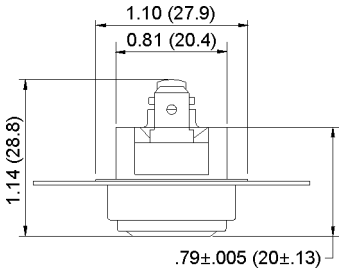
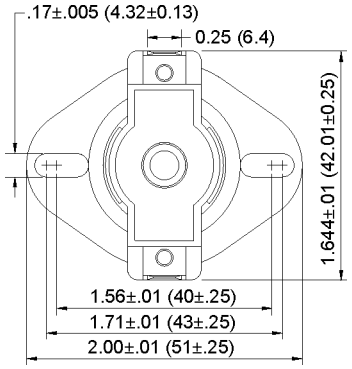
# 3/4” Disc Thermostats - Manual Reset

## SE and SES (T10/T11) Series - Airstream and Surface Mount




**FEATURES**

- 25 Amp capacity
- Operation up to 350ºF
- Factory calibrated to your specifications

**APPLICATIONS**

- H.V.A.C.
- Major appliances
- Vending machines

Selco thermostats are widely used to control or protect high-power home appliances like dryers, dishwashers, home water heaters, and solar heaters. The switch mechanism is actuated by a snap-action bimetal disc, which may be enclosed or exposed.

Made to open on temperature rise, these SPST devices are available in a variety of mounting configurations. Temperature calibrations are preset and typically built to order. These units are not considered as “M2” trip free devices. Consult Selco for additional models available from stock.

**Models available from stock - subject to availability**
**Limit Controls • SES-L - Open On-Rise (normally closed)**

| Model Number | Temperature Ranges |
|---|---|
| | Open ºF |
| SES-L200M* | 200 ± 11 |
| SES-L250HM* | 250 ± 14 |
| SES-L265HM* | 265 ± 14 |
| SES-L350M* | 350 ± 16 |

* Mounting Configuration: Surface

**SPECIFICATIONS**

| | |
|---|---|
| **Electrical ratings** | 120VAC, 240VAC, 25 Amps, Resistive, 60Hz<br>120VAC, 10FLA, 60LRA, 60Hz, Inductive<br>240VAC, 5FLA, 30LRA, 60Hz, Inductive<br>5,000 Cycles |
| **Temperature range** *(UL Models)* | 33ºF to 302ºF (1ºC to 150ºC) |
| **Temperature range** *(Non-UL Models)* | 302ºF to 350ºF (150ºC to 177ºC) |
| **Dielectric strength** | 1,500VAC/1 minute |
| **Approvals** | UL Recognzied File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478(S), XAPX8 |

**Models available from stock - subject to availability**
**Limit Controls • SE-L - Open On-Rise (normally closed)**

| Model Number | Temperature Ranges |
|---|---|
| | Open ºF |
| SE-L090M* | 90 ± 11 |
| SE-L120M* | 120 ± 11 |
| SE-L130M* | 130 ± 11 |
| SE-L160M* | 160 ± 11 |
| SE-L170HM* | 170 ± 11 |
| SE-L200M* | 200 ± 11 |
| SE-L250M* | 250 ± 14 |
| SE-L350M* | 350 ± 16 |

* Mounting Configuration: Airstream

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# Special Order Terminal Orientations

## For SE and SES (T10 and T11) Series

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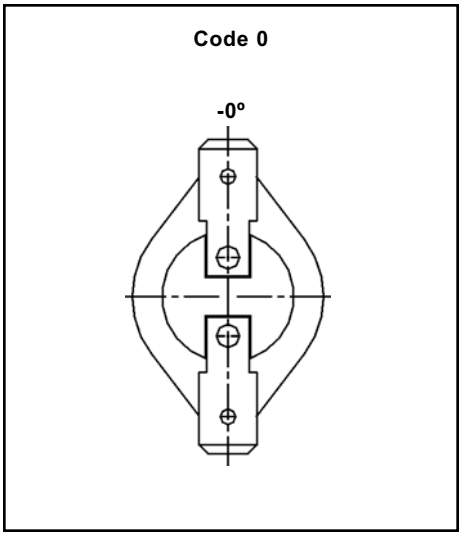


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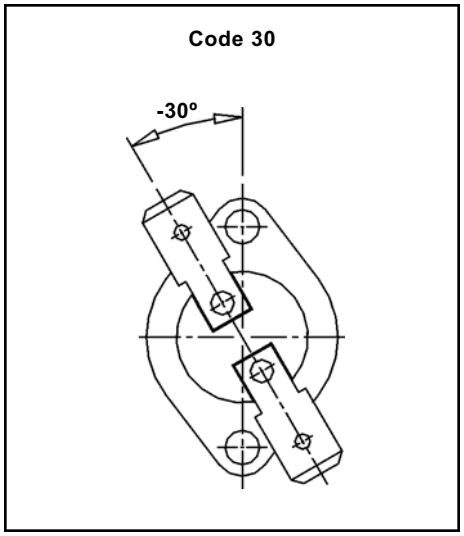


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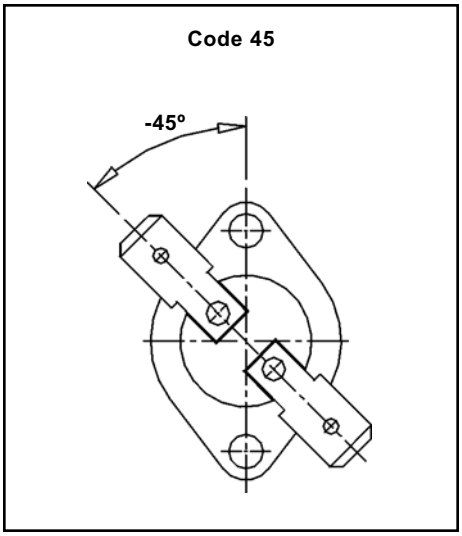


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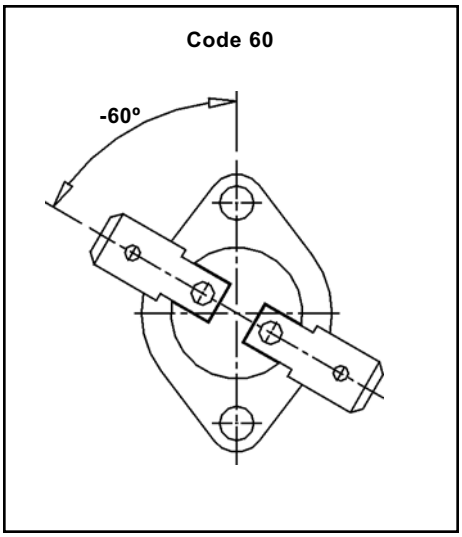


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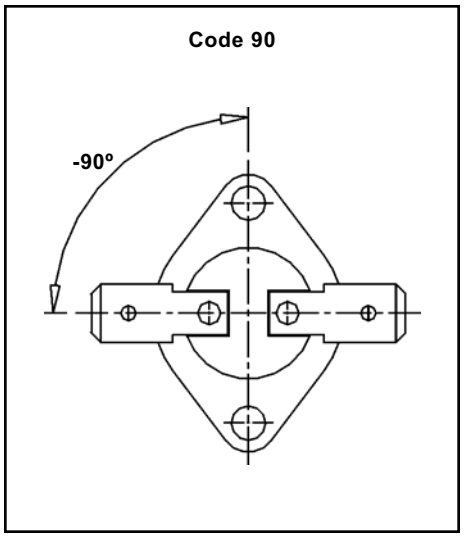
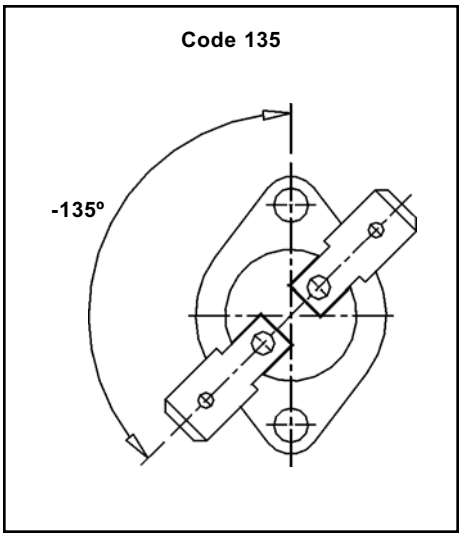



**Code 135**

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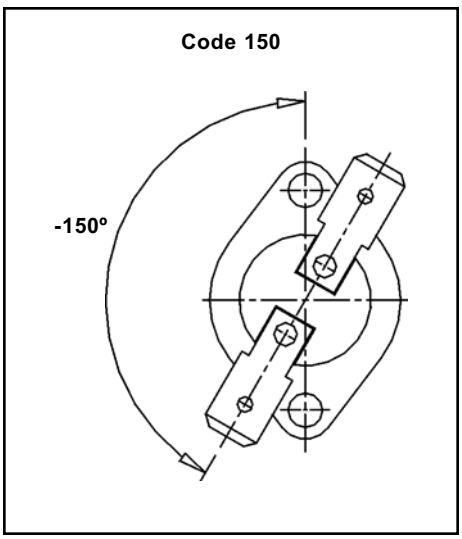


**It is the customer's sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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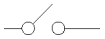
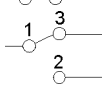
# Special Order Map
## For SE and SES (T10 and T11) Series

**Build Your Own Part**

| Model | Reset | Electrical Function | Terminal Type | Terminals | Terminal Orientation | Set Point ºF | Differential ºF |
|---|---|---|---|---|---|---|---|

**Model**
T10 SE Series - Airstream Mount - refer to pages 17-19
T11 SES Series - Surface Mount - refer to pages 17-19

**Reset**
1 Automatic
2 Manual (Open On-Rise Only)
3 Single operation

**Electrical Function**
1 Open on-rise (normally closed) (S.P.S.T.)
2 Close on-rise (normally open)  (S.P.S.T.)
3 Single pole - double throw  (S.P.D.T.)


**Terminal Type**
3 .250 quick connects - Faston (6.3mm - male)
4 M4 (4mm screw)
5 S.P.D.T.:
.250 quick connects - Faston 6.3mm - male
.250 quick connects - Faston 6.3mm - female
.187 quick connects - Faston 4.8mm - male
6 #8-32 screw

**Terminals**
1 Horizontal
3 Vertical

**Terminal Orientation (from mount holes) - refer to page 21**
Code 0 0º
Code 30 30º
Code 45 45º
Code 60 60º
Code 90 90º
Code 135 135º
Code 150 150º

**Set Point (specify in ºF)**

**Differential (specify in ºF)**

**Example Part Number**

| T10 | 1 | 1 | 3 | 3 | 90º | 170º | 30º |
|---|---|---|---|---|---|---|---|
| Model | Reset | Electrical Function | Terminal Type | Terminals | Terminal Orientation | Set Point ºF | Differential ºF |

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**FEATURES**
- 10 and 25 amp loads
- Dust and moisture proof
- Wide range of operating temperatures

**APPLICATIONS**
- Freezers
- Refrigerators
- Air conditioners

The SEO (T) Series automatic reset thermostat was designed for humid environments. A resin filled thermoplastic cap covers the thermostat. The fixed factory calibrated bimetal disc is located adjacent to the surface to be monitored. This will provide a rapid response to temperature changes. Each device is built to open or close on rise at any desired set point.

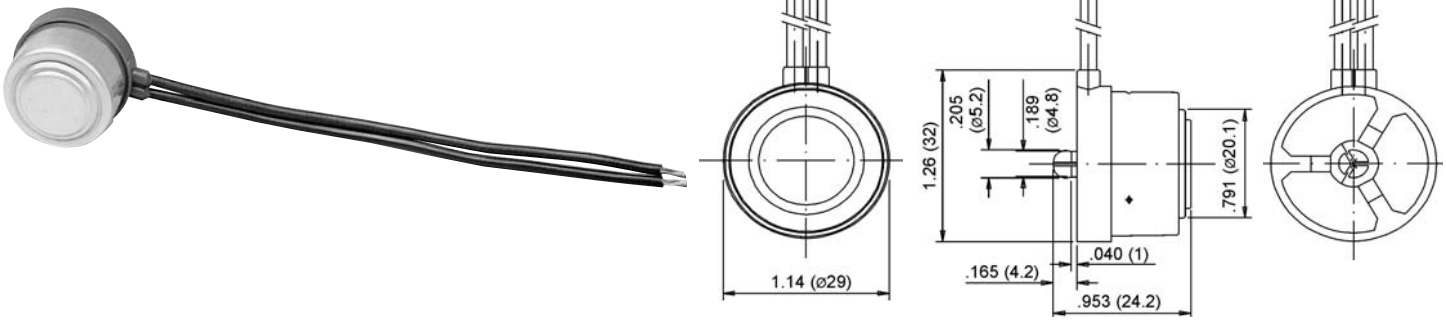
Lead wires are normally 6" in length. Custom lead lengths are available. The T16 an T17 models are available with #18 gauge wire. Models T21 and T22 are available with #14 gauge wire. Numerous types of terminals can be furnished at an extra cost.

For use in millivolt applications, the T Series carries a 12Vdc, 250mA rating.

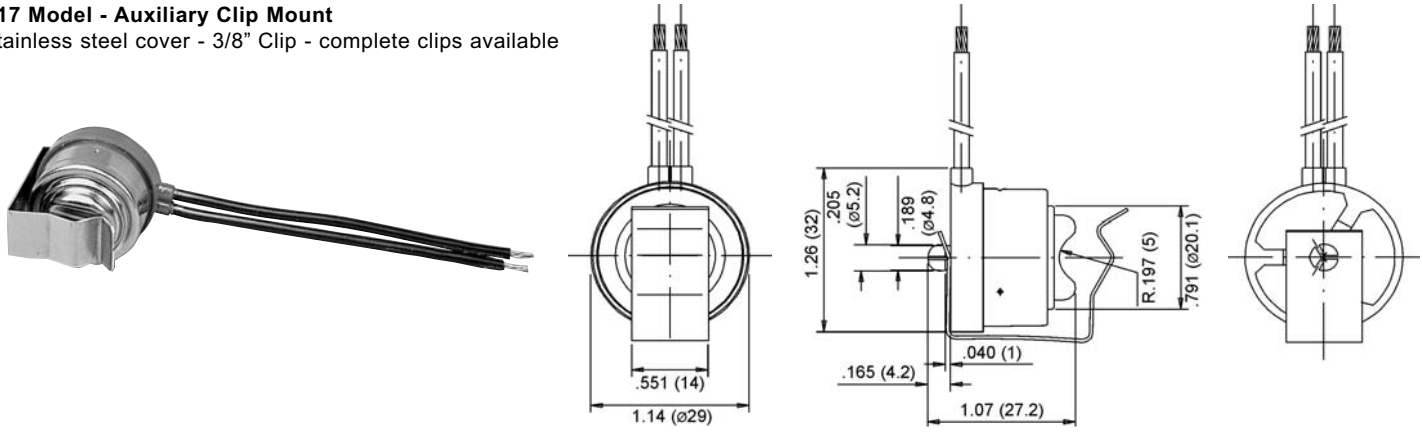
**SPECIFICATIONS**

| | |
|---|---|
| **Temperature range** | -4ºF to 212ºF (-20ºC to 100ºC) |
| **Differential (minimum)** | 20ºF (11ºC), S.P.S.T.<br>Temp range: -4ºF to 32ºF (-20ºC to 0ºC)<br>14ºF (8ºC), S.P.S.T.<br>Temp range: 32ºF to 212ºF (0ºC to 100ºC)<br>27ºF (15ºC) minimum, S.P.D.T. |
| **Environmental temperature** | -4ºF to 212ºF (-20ºC to 100ºC) |
| **Electrical ratings** | |
| T16 and T17 Models | 120VAC, 10 Amps, Resistive, S.P.S.T.<br>120VAC, 5.8 Amps, Inductive, S.P.S.T.<br>250VAC, 5 Amps, Resistive, S.P.S.T.<br>250VAC, 2.9 Amps, Inductive, S.P.S.T.<br>100,000 Cycles |
| T21 and T22 Models | 220VAC, 25 Amps, S.P.S.T. or S.P.D.T.<br>100,000 Cycles |
| T60 Model | 120/250VAC, 16 Amps, S.P.S.T. |
| **Dielectric strength** | |
| T16 and T17 Models | 1500VAC/1 minute |
| T21 and T22 Models | 1480VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478(S), XAPX8<br>VDE<br>RoHS Compliant |

**T16 Model - Without Bracket**
Stainless steel cover




**T17 Model - Auxiliary Clip Mount**
Stainless steel cover - 3/8" Clip - complete clips available





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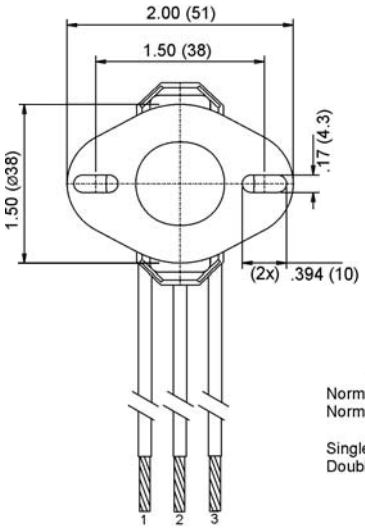
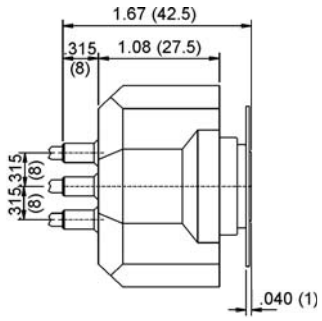
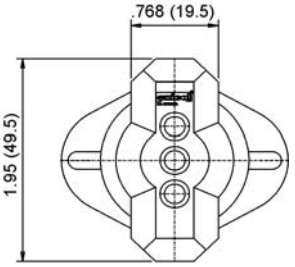
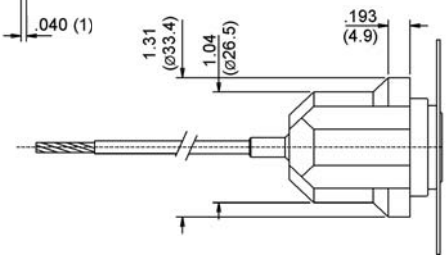
**T21 Model - With Bracket**
Stainless steel cover



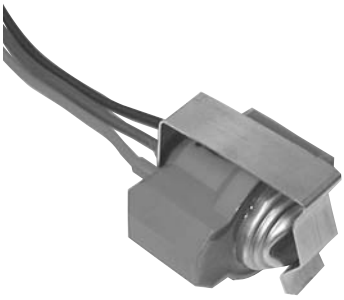



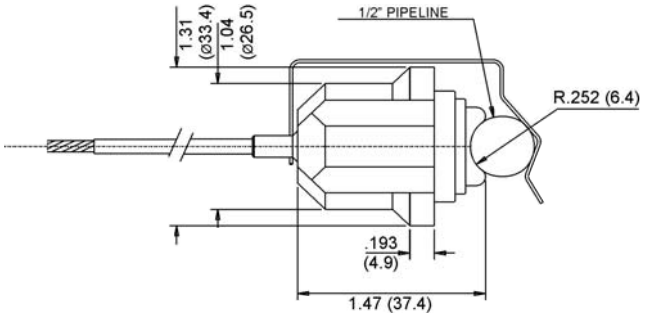



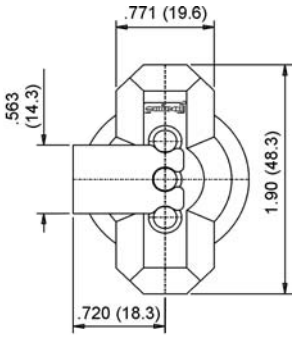

**Electrical Function**
Normally Closed (N.C.)
Normally Open (N.O.)
Single Pole - Double Throw 1 3 2

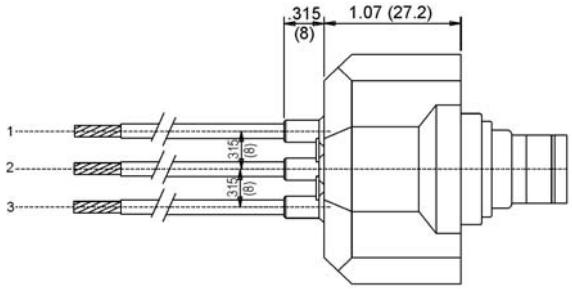



**T22 Model - Auxiliary Clip Mount**
Stainless steel cover - 3/8" and 1/2" clips



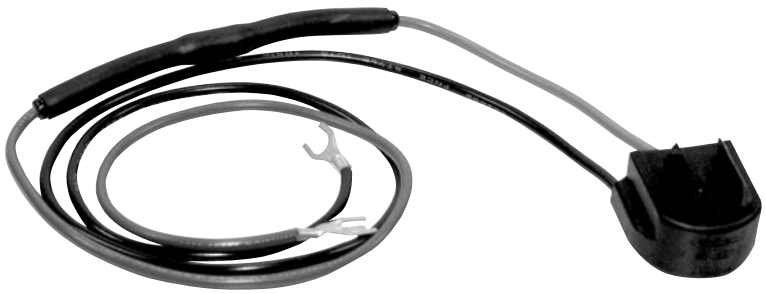


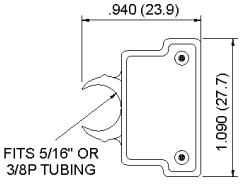



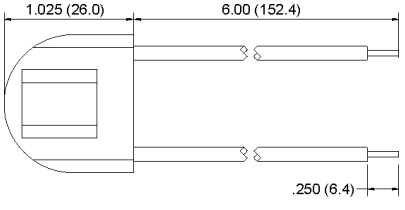




**Electrical Function**
Normally Closed (N.C.)
Normally Open (N.O.)
Single Pole - Double Throw 1 3 2

**T60 Model - Plastic Body**



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# Encapsulated Thermostats
## Special Order Map for SEO (T) Series

**Build Your Own Part**

| Model | Electrical Function | Set Point (ºF) | Differential (ºF) | Lead Lengths (inches) | Tube |
|---|---|---|---|---|---|

**Model**

| | |
|---|---|
| T16 | Without bracket - stainless steel cover (refer to page 23) |
| T17 | Auxiliary clip mount - stainless steel cover - 3/8” clip (refer to page 23) |
| T21 | With bracket - stainless steel cover (refer to page 24) |
| T22 | Auxiliary clip mount - stainless steel cover - 3/8” and 1/2” clips (refer to page 24) |
| T60 | Plastic body (refer to page 24) |

**Electrical Function**

| | |
|---|---|
| 1 | S.P.S.T. - Open on-rise (normally closed) |
| 2 | S.P.S.T. - Close on-rise (normally open) |
| 3 | S.P.D.T. (T21 and T22 models only) |

**Set Point (specify in ºF)**

**Differential (specify in ºF)**

**Lead Length (specify in inches) - standard lead length: 6”**

**Tube Size**

| | |
|---|---|
| 1 | 3/8” ( T17, T22 and T60 models only) |
| 2 | 1/2” (T22 model only) |
| 3 | 5/16” (T60 model only) |

**Example Part Number**

| T17 | 1 | 60 | 20 | 12 | 1 |
|---|---|---|---|---|---|
| Model | Electrical Function | Set Point (ºF) | Differential (ºF) | Lead Lengths (inches) | Tube Size |

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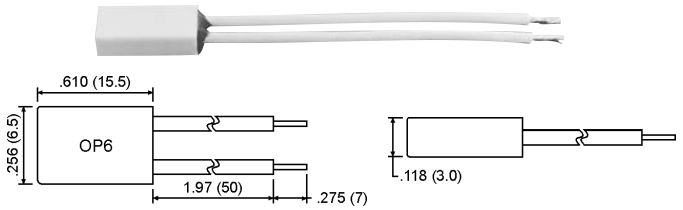
# Thermal Protector

## OP6 Series (Close On-Rise) and UP6 Series (Open On-Rise)




### FEATURES

- Low cost
- PBT enclosure
- Snap-action bimetal technology

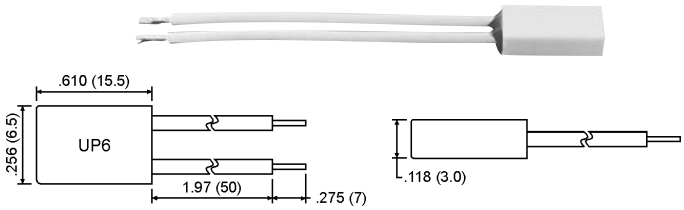
### APPLICATIONS

- Transformers
- Motor protection
- Timer applications
- Alarm signal controller

The OP6 Series (OP6, OP61, OP62) thermal protectors close an electrical circuit. They are a snap-action device with quick make/quick break, fast sensing and switching action. These self-resetting devices feature a reinforced PBT-enclosure which make additional sleeving unnecessary. Various leads and terminations are available.

### SPECIFICATIONS

| | |
|---|---|
| **Variations** | |
| OP6 | Without lead wires, 2 welding terminals |
| OP61 | Uninsulated solid wires, bare |
| OP62 | Stranded insulated wires, tin-coated - 24AWG<br>Standard lead length: 50mm + 7mm |
| **Temperature range** | 140ºF to 284ºF (60ºC to 140ºC) |
| **Temperature tolerance** | ±9ºF (±5ºC) Standard |
| **Standard differential** | 50ºF±25ºF (30ºC±15ºC) |
| **Electrical ratings** | 125VAC, 4 Amps, Resistive, 10,000 Cycles<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles |
| **Contact resistance** | 50m Ω or less (initial value) |
| **Approvals & contact ratings** | |
| UL873<br>*OP6, OP61 and OP62 Models* | Regulating<br>125VAC, 4 Amps, Resistive, 6,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124 |
| CSA<br>*OP6, OP61 and OP62 Models* | Std. C22.2, No. 24 - Regulating (c-UL)<br>125VAC, 4 Amps, Resistive, 6,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124) |
| EN60730-2-2<br>*OP6, OP61 and OP62 Models* | Thermal Motor Protector<br>250VAC, 284ºF maximum (140ºC maximum)<br>File No. 8921.00-4510-0026 |
| EN60730-2-9<br>*OP6, OP61 and OP62 Models* | Thermal Cut-Out<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles<br>250VAC, 1.6 Amps, Inductive, 10,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. 8921.00-4510-0027 |
| EN60730-2-9<br>*OP61G and OP62G Models* | Thermal Cut-Out<br>250VAC, 0.5 Amps, Resistive, 10,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. 8921.00-4510-0027 |
| | RoHS Compliant |
| **Contact system** | |
| OP6, OP61, and OP62 Models | Close on-rise (normally open)<br>Silver contacts |
| OP6#G | Close on-rise (normally open)<br>PGS (Platinum/Gold/Silver alloy) cross-bar contacts for micro electric load of electronic applications |




### FEATURES

- PBT enclosure
- Not current sensitive
- Suitable for PCB mounting

### APPLICATIONS

- Solenoids
- Motor protection
- Lighting ballasts

The UP6 Series (UP6, UP61 and UP62) PBT enclosed thermal protectors, the smallest thermal protector available, features an excellent performance in thermal response due to the compact miniature design and unique engineering techniques of bimetal disc mounting.

### SPECIFICATIONS

| | |
|---|---|
| **Variations** | |
| UP6 | Without lead wires |
| UP61 | Uninsulated solid wires |
| UP62 | Stranded insulated wires - 24AWG<br>Standard lead length: 50mm + 7mm |
| **Temperature range** | 140ºF to 284ºF (60ºC to 140ºC) |
| **Temperature tolerance** | ±9ºF (±5ºC) Standard |
| **Standard differential** | 50ºF±25ºF (30ºC±15ºC) |
| **Electrical ratings** | 125VAC, 4 Amps, Resistive, 10,000 Cycles<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles |
| **Contact resistance** | 50m Ω or less (initial value) |
| **Approvals & contact ratings** | |
| UL873<br>*UP6, UP61 and UP62 Models* | Regulating<br>125VAC, 4 Amps, Resistive, 6,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124 |
| CSA<br>*UP6, UP61 and UP62 Models* | C22.2, No. 24 (c-UL) - Regulating<br>125VAC, 4 Amps, Resistive, 6,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124 |
| EN60730-2-2<br>*UP6, UP61 and UP62 Models* | Thermal Motor Protector<br>250VAC, 284ºF maximum (140ºC maximum)<br>File No. 8921.00-4510-0026 |
| EN60730-2-9<br>*UP6, UP61 and UP62 Models* | Thermal Cut-Out<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles<br>250VAC, 1.6 Amps, Inductive, 10,000 Cycles<br>284ºF maximum (140ºC maximum) |
| EN60730-2-9<br>*UP61G and UP62G Models* | Thermal Cut-Out<br>250VAC, 0.5 Amps, Resistive, 10,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. 8921.00-4510-0027 |
| | RoHS Compliant |
| **Contact system** | |
| UP6, UP61, and UP62 Models | Open on-rise (normally closed)<br>Silver contacts |
| UP6#G Models | Open on-rise (normally closed)<br>PGS (Platinum/Gold/Silver alloy) cross-bar contacts for micro power applications |

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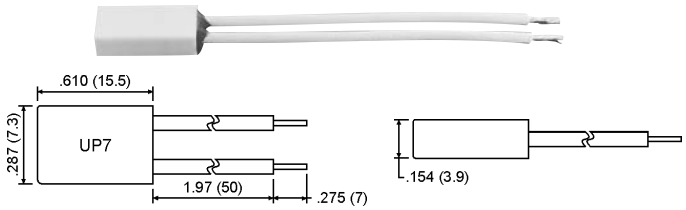
# Thermal Protector

## UP7 Series (Open On-Rise) and UI2 Series (Open On-Rise)



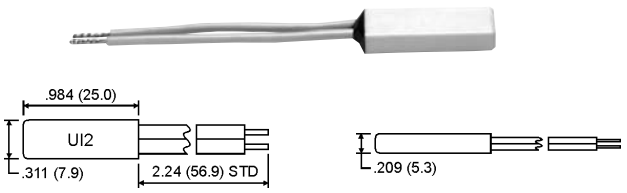

**FEATURES**
- Low cost
- Durable plastic case
- Smallest motor protector approved by UL

**APPLICATIONS**
- Solenoids
- Small motors
- Transformers
- Electronic appliances

The UP7 Series (UP7, UP71, UP72) PBT enclosed thermal protectors are compact 1/2HP (373W) motor protectors. The unique engineering techniques of holding the bimetal disc result in excellent performance in heat response.

### SPECIFICATIONS

| | |
|---|---|
| **Variations** | |
| UP7 | Without lead wires, 2 welding terminals |
| UP71 | Uninsulated solid wires, bare |
| UP72 | Stranded insulated wires, tin-coated - 22AWG<br>Standard lead length: 50mm + 7mm |
| **Temperature range** | 140ºF to 302ºF (60ºC to 150ºC) |
| **Temperature tolerance** | ±9ºF (±5ºC) Standard |
| **Standard differential** | 50ºF±25ºF (30ºC±15ºC) |
| **Electrical ratings** | 125VAC, 4 Amps, Resistive, 10,000 Cycles<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles |
| **Contact resistance** | 50m Ω or less (initial value) |
| **Approvals & contact ratings** | |
| EN60730-2-2<br>*UP7 Model* | Thermal Motor Protector<br>250VAC, 302ºF maximum (150ºC maximum)<br>File No. 8921.00-4510-0026 |
| EN60730-2-9<br>*UP7 Model* | Thermal Cut-Out<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles<br>250VAC, 1.6 Amps, Inductive, 10,000 Cycles<br>302ºF maximum (150ºC maximum)<br>File No. 8921.00-4510-0027 |
| UL2111<br>*UP71 and UP72 Models* | Motor Protector<br>125V/250VAC, 1/2HP maximum<br>302ºF maximum (150ºC maximum)<br>File No. E52703 |
| CSA<br>*UP71 and UP72 Models* | Std. C22.2, No. 77 - Motor Protector<br>125V/250VAC, 1/2HP maximum<br>302ºF maximum (150ºC maximum)<br>File No. E52073 |
| | Std. C22.2, No. 77 - Motor Protector<br>125V/250VAC, 3.75FLA<br>File No. LR35080 |
| EN60730-2-2<br>*UP71 and UP72 Models* | Thermal Motor Protector<br>250VAC, 302ºF maximum (150ºC maximum)<br>File No. 8921.00-4510-0026 |
| EN60730-2-9<br>*UP71 and UP72 Models* | Thermal Cut-Out<br>250VAC, 2.5 Amps, Resistive, 10,000 Cycles<br>250VAC, 1.6 Amps, Inductive, 10,000 Cycles<br>302ºF maximum (150ºC maximum)<br>File No. 8921.00-4510-0027 |
| | RoHS Compliant |
| **Contact system** | |
| UP7, UP71, and UP72 Models | Open on-rise (normally closed)<br>Silver contacts |




**FEATURES**
- PBT enclosure
- Designed for high rated motors
- Snap-action bimetal technology

**APPLICATIONS**
- Power supplies
- Motor protection
- Electronic appliances

The PBT enclosed UI2 Series offers both thermal conductivity and electrical insulation with no need for additional insulation sleeves. With its large current carrying capacity, the UI2 Series is ideal for more demanding applications and solutions.

### SPECIFICATIONS

| | |
|---|---|
| **Variation** | |
| UI2 | Stranded insulated wires - 20AWG |
| **Temperature range** | 140ºF to 302ºF (60ºC to 150ºC) |
| **Temperature tolerance** | ±9ºF (±5ºC) Standard |
| **Standard differential** | 50ºF±25ºF (30ºC±15ºC) |
| **Electrical ratings** | 125VAC, 12 Amps, Resistive, 6,000 Cycles<br>250VAC, 10 Amps, Resistive, 10,000 Cycles |
| **Contact resistance** | 50m Ω or less (initial value) |
| **Approvals & contact ratings** | |
| CMJ | Registration No. J-22<br>125VAC, 8 Amps, Resistive, 10,000 Cycles<br>266ºF maximum (130ºC maximum) |
| UL2111 | Motor Protector<br>125VAC, 1/2HP maximum<br>302ºF maximum (150ºC maximum)<br>File No. E52703 |
| UL873 | Limiting<br>125VAC, 6 Amps, Resistive, 100,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124 |
| | Regulating<br>125VAC, 12 Amps, Resistive, 6,000 Cycles<br>284ºF maximum (140ºC maximum)<br>File No. E50124 |
| CSA | Std. C22.2, No. 77 - Motor Protector<br>125VAC, 293ºF maximum (145ºC maximum)<br>File No. LR35080 |
| | Std. C22.2, No. 24 - Regulating<br>125VAC, 6 Amps, Resistive, 100,000 Cycles<br>293ºF maximum (145ºC maximum)<br>File No. LR35080 |
| EN60730-2-2 | Thermal Motor Protector<br>250VAC, 311ºF maximum (155ºC maximum)<br>File No. 8921.00-4510-7028 |
| E60730-2-9 | Thermal Cut-Out<br>250VAC, 10 Amps, Resistive, 1,000 Cycles<br>250VAC, 8 Amps, Inductive, 1,000 Cycles<br>250VAC, 10 Amps, Resistive, 10,000 Cycles<br>From 131ºF to 311ºF (55ºC to 155ºC)<br>File No. 8921.00-4510-7029 |
| | RoHS Compliant |
| **Contact system** | |
| UI2 | Open on-rise (normally closed) |

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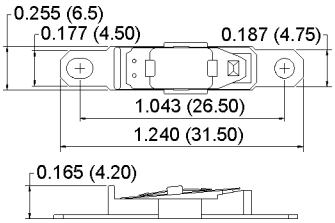
**UB8P Model**




### FEATURES

- Phenol resin base
- Built-in PTC heater for self-hold
- Quick thermal response due to exposure of the bimetallic element

### APPLICATIONS

- Mixers
- Blenders
- Grinders
- Dishwashers
- Space heaters

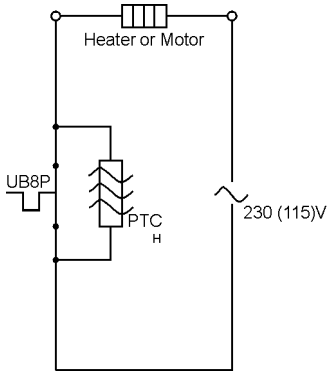
Models UB8P (exposed model - shown above) and UB81P (enclosed model) Self-Hold Thermal Cut-Out and Thermal Protectors are designed to provide overheat protection in high voltage applications. With a high 16 Amp capability, the new models are well suited for thermal overload protection in a broad range of applications.

The body of these surface mount devices are manufactured of phenolic resin and feature a new patent pending partition wall design that isolates the switch from the main body. This design effectively controls arcing that can cause a break in voltage contact (particularly in 250V applications), ensuring continuous operation to setpoint. The UB81P features a reinforced PBT enclosure for dust-proof applications; the UB8P has an exposed bi-metallic element for high accuracy and fast response to ambient air temperature.

Both models incorporate a “self-hold” non-self resetting function that provides a high level of operational safety, especially in appliances with moving parts. The “self-hold” function ensures that after the element reaches its pre-set open temperature, the internal heater activates to maintain a self-regulating temperature, preventing the switch from resetting until the user disconnects the power.

### SPECIFICATIONS

| | |
|---|---|
| **Temperature range** *(UL Approved models)* | 167ºF to 257ºF (75ºC to 125ºC) |
| **Environmental temperature** | ±9ºF (±5ºC) Standard |
| **Differential** | 50ºF±25ºF (30ºC±15ºC) |
| **Electrical ratings** | 125VAC, 16 Amps, Resistive, 6,000 Cycles |
| **Contact resistance** | 50m Ω or less (initial value) |
| **Approvals & contact ratings** | |
| UL-873 | Regulating (manual reset)<br>125VAC, 16 Amps, Resistive, 6,000 Cycles<br>257ºF Maximum (125ºC Maximum)<br>File No. E50124 |
| EN60730-2-9 | Temperature Limiter<br>250VAC, 10 Amps, Resistive, 6,000 Cycles<br>250VAC, 5 Amps, Inductive, 6,000 Cycles<br>257ºF Maximum (125ºC Maximum)<br>File No. 8921.00-4521-0039<br>RoHS Compliant |

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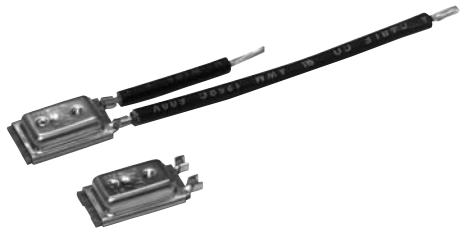
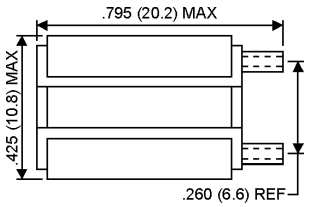
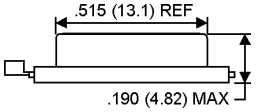
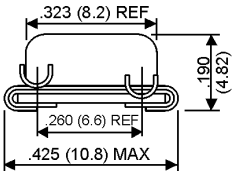




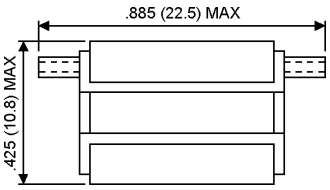

Type A (radial)




Type A (side view)




Type A (end view)



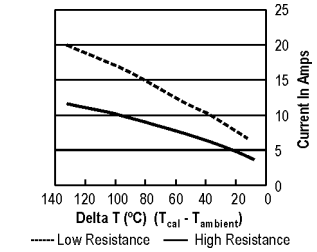

Type B (axial)

The S7AM Thermal Protector is a thermally operated snap-action device which delivers the maximum protection in the smallest package. The operating principle of the S7AM is both simple and effective. At the heart of the protector is a bimetal snap-action disc. When the temperature of this disc reaches its calibrated temperature it snaps open, resulting in an open circuit. This temperature is reached by either an increase in ambient temperature, an increase in current flowing through the disc, or a combination of both. After the S7AM breaks the circuit, the system cools and the S7AM automatically resets allowing power to be restored to the circuit.

Each S7AM rating has a bimetal disc designed and manufactured for that specific temperature rating. Each individual device is then calibrated and checked for opening temperature. This results in precise operating characteristics necessary to achieve consistent, reliable performance over the required life cycle.

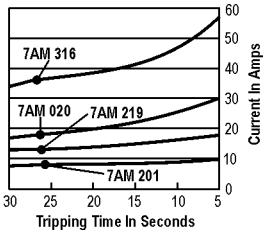
**Ultimate Trip Current vs. Delta Temperature**

Approximation, to be used only for selecting samples for verification tests.




**Note:** Delta T is the difference between the zero current calibrated opening temperature ($T_{cal}$) and ambient temperature ($T_{ambient}$) at the protector location.

**Average First Cycle Tripping Time vs. Current (25ºC Ambient)**




### FEATURES

- Miniature size
- Gasket steel case
- Individually temperature tested and calibrated
- Wide selection of leads and insulating sleeves
- Positive make and break with snap-action disc
- Repeatable temperature performance over life

### APPLICATIONS

- HID ballasts
- Transformers
- Battery packs
- Lighting ballasts
- Vacuum cleaners
- Split capacitor motors
- Automotive accessory, solenoids, PC boards and other applications

### SPECIFICATIONS

| | |
|---|---|
| **Electrical ratings** | 16VDC, 20 Amps, 10,000 Cycles<br>120VAC, 22 Amps, 10,000 Cycles<br>277VAC, 8 Amps, 10,000 Cycles<br>600VAC, 4 Amps, 10,000 Cycles |
| **Dielectric strength** | 900 Volts |
| **Approvals** | ***UL File Numbers found under Texas Instr. 7AM*** |
| UL2111 | Motor Protection - File E15962 |
| UL873 | Limit and Regulating Controls - File E34618 |
| CSA | Std. C22.2, No. 77 - Motor Protection<br>File No. 11372<br>Std. C22.2, No. 74<br>Limit and Regulating Controls - File No. 24458 |
| KEMA (ENEC) EN60730-2-2 | Motor Protection - File No. 2014531.03 |
| KEMA (ENEC) EN60730-2-3 | Ballast Protection - File No. 2014531.03 |
| KEMA (ENEC) EN60730-2-9 | Thermal Cut-Out - File No. 2014531.03 |
| | RoHS Compliant |

### PART NUMBER SYSTEM

**S7AM XXX X X - XXX - X**

| Standard Opening Temperature | | |
|---|---|---|
| Opening Temp ºC | * Low Resistance Bimetal Disc | ** High Resistance Bimetal Disc |
| | Code | |
| 65 | 020 | ● |
| 70 | 021 | 201 |
| 75 | 022 | 202 |
| 80 | 023 | 203 |
| 85 | 024 | 204 |
| 90 | 025 | 205 |
| 95 | 026 | 206 |
| 100 | 027 | 207 |
| 105 | 028 | 208 |
| 110 | 029 | 209 |
| 115 | 030 | 210 |
| 120 | 031 | 211 |
| 125 | 032 | 212 |
| 130 | 033 | 213 |
| 135 | 034 | 214 |
| 140 | 035 | 215 |
| 145 | 036 | 216 |
| 150 | 037 | 217 |
| 155 | 038 | 218 |
| 160 | 039 | 219 |
| 165 | 040 | ● |
| 170 | 336 | ● |
| 175 | 316 | ● |

| Terminal Configuration | |
|---|---|
| Code | Terminals |
| A | Same end |
| B | Opposite end |

| Temperature Tolerance | |
|---|---|
| Code | Tolerance |
| 5 | ±5ºC |

| Physical Characteristics |
|---|
| i.e. Wire leads, insulating sleeves<br>18AWG - largest wire option<br>22AWG - smallest wire option |

| Non-Standard Gasket Material (Option) | |
|---|---|
| Code | Gasket Type/Color |
| 5 | High Seal / White |

* Low Resistance - In applications where temperature rise is less than 2ºC per second

** High Resistance - In applications where temperature rise is 2ºC - 5ºC per second

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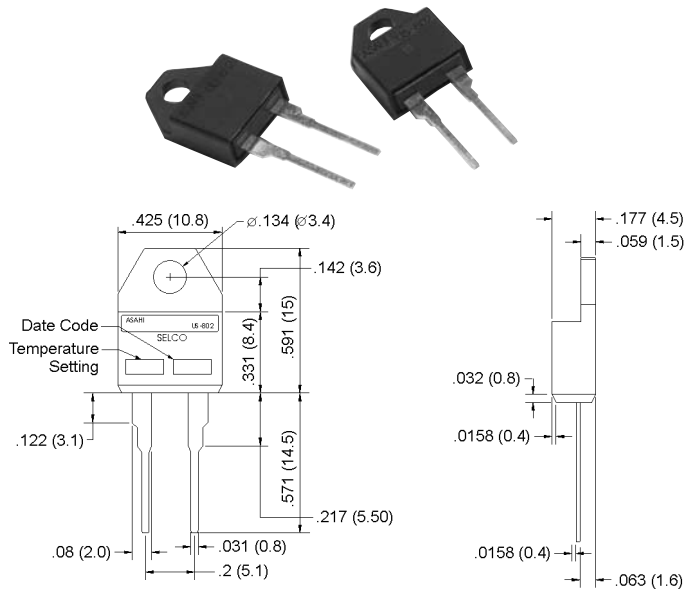


### FEATURES
- Conforms to Y220/TO220 package
- Ultra compact design
- Gold plated - silver contacts

### APPLICATIONS
- Computers
- Test equipment
- Power supplies

The Selco 802 Series is a miniature bimetal thermostat. This PCB unit conforms to the international Y220/TO220 package. The SPST snap-action contact is available normally open or normally closed at a factory set point range of 104ºF to 284ºF.

### SPECIFICATIONS

| | |
|---|---|
| **Electrical ratings** | 48VDC, 1 Amp, Resistive, 30,000 Cycles<br>120VAC, 1 Amp, Resistive, 30,000 Cycles<br>5VDC, 20mA, Resistive, 100,000 Cycles |
| **Temperature range** | One fixed set point<br>104ºF to 248ºF (40ºC to 120ºC) |
| **Differential** | 27ºF (15ºC) |
| **Environmental temperature** | 284ºF (140ºC) |
| **Dielectric strength** | 1,500VAC/1 minute<br>1,500VAC/1 minute between terminals and cover |
| **Circuit resistance** | 50m Ω or less |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Materials** | |
| Body housing | PBT (Polybutylene Terephtalate) UL-94 VO |
| Terminals | Tin plated brass |
| Contacts | Gold plated silver |
| **Approvals** | Temperature indicating and regulating<br>UL873, CUL (CSA), CE<br>UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognzied File No. E145478(S), XAPX8<br>VDE File No. E-14713<br>RoHS Compliant |

**Models available from stock - subject to availability**
**802-F - Close On-Rise (normally open)**

| Model Number | Temperature Ranges | | | |
|---|---|---|---|---|
| | Closing | | Reset | |
| | ±9ºF | ±5ºC | ±12ºF | ±7ºC |
| 802F-040 | 104 | 40 | 77 | 25 |
| 802F-045 | 113 | 45 | 86 | 30 |
| 802F-050 | 122 | 50 | 95 | 35 |
| 802F-055 | 131 | 55 | 104 | 40 |
| 802F-060 | 140 | 60 | 113 | 45 |
| 802F-065 | 149 | 65 | 122 | 50 |
| 802F-070 | 158 | 70 | 131 | 55 |
| 802F-075 | 167 | 75 | 140 | 60 |
| 802F-080 | 176 | 80 | 149 | 65 |
| 802F-085 | 185 | 85 | 158 | 70 |
| 802F-090 | 194 | 90 | 167 | 75 |
| 802F-095 | 203 | 95 | 176 | 80 |
| 802F-100 | 212 | 100 | 185 | 85 |
| 802F-105 | 221 | 105 | 194 | 90 |
| 802F-110 | 230 | 110 | 203 | 95 |
| 802F-115 | 239 | 115 | 212 | 100 |
| 802F-120 | 248 | 120 | 221 | 105 |

**Models available from stock - subject to availability**
**802-L - Open On-Rise (normally closed)**

| Model Number | Temperature Ranges | | | |
|---|---|---|---|---|
| | Opening | | Reset | |
| | ±9ºF | ±5ºC | ±12ºF | ±7ºC |
| 802L-040 | 104 | 40 | 77 | 25 |
| 802L-045 | 113 | 45 | 86 | 30 |
| 802L-050 | 122 | 50 | 95 | 35 |
| 802L-055 | 131 | 55 | 104 | 40 |
| 802L-060 | 140 | 60 | 113 | 45 |
| 802L-065 | 149 | 65 | 122 | 50 |
| 802L-070 | 158 | 70 | 131 | 55 |
| 802L-075 | 167 | 75 | 140 | 60 |
| 802L-080 | 176 | 80 | 149 | 65 |
| 802L-085 | 185 | 85 | 158 | 70 |
| 802L-090 | 194 | 90 | 167 | 75 |
| 802L-095 | 203 | 95 | 176 | 80 |
| 802L-100 | 212 | 100 | 185 | 85 |
| 802L-105 | 221 | 105 | 194 | 90 |
| 802L-110 | 230 | 110 | 203 | 95 |
| 802L-115 | 239 | 115 | 212 | 100 |
| 802L-120 | 248 | 120 | 221 | 105 |


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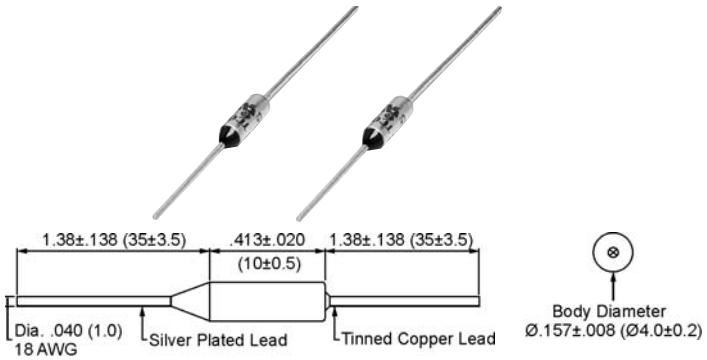
# One Shot Thermal Cutoffs
## SWTC Series




- Special lead lengths are available
- Color Band does not denote temperature group
- Stock models have 35mm ± 3.5mm lead lengths

**Models available from stock - subject to availability**

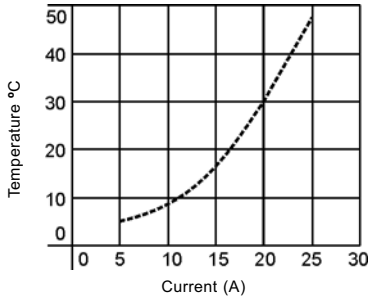
| Model Number | Functioning Temperature ($T_F$) | | Tolerance ($T_F$) | Holding Temperature ($T_H$) | | UL/ cUL | VDE |
|---|---|---|---|---|---|---|---|
| | ºC | ºF | | ºC | ºF | | |
| SWTC-162-3535 | 72 | 162 | A | 47 | 117 | ● | ● |
| SWTC-170-3535 | 77 | 171 | A | 52 | 126 | ● | ● |
| SWTC-183-3535* | 84 | 183 | B | 57 | 135 | ● | ● |
| SWTC-194-3535* | 90 | 194 | A | 65 | 149 | ● | ● |
| SWTC-196-3535* | 91 | 196 | B | 66 | 151 | ● | ● |
| SWTC-199-3535* | 93 | 199 | B | 68 | 154 | ● | ● |
| SWTC-208-3535 | 98 | 208 | A | 73 | 163 | ● | ● |
| SWTC-212-3535* | 100 | 212 | B | 75 | 167 | ● | ● |
| SWTC-228-3535* | 109 | 228 | B | 84 | 183 | ● | ● |
| SWTC-250-3535* | 121 | 250 | B | 94 | 201 | ● | ● |
| SWTC-259-3535 | 126 | 259 | A | 100 | 212 | ● | ● |
| SWTC-262-3535 | 128 | 262 | B | 103 | 217 | ● | ● |
| SWTC-282-3535* | 139 | 282 | A | 114 | 237 | ● | ● |
| SWTC-291-3535* | 144 | 291 | B | 119 | 246 | ● | ● |
| SWTC-306-3535 | 152 | 306 | A | 127 | 261 | ● | ● |
| SWTC-333-3535 | 167 | 333 | A | 144 | 291 | ● | ● |
| SWTC-336-3535 | 169 | 336 | A | 114 | 291 | | |
| SWTC-363-3535 | 184 | 363 | C | 159 | 318 | ● | ● |
| SWTC-378-3535 | 192 | 378 | C | 162 | 324 | | |
| SWTC-383-3535 | 195 | 383 | C | 165 | 329 | ● | ● |
| SWTC-421-3535 | 216 | 421 | C | 178 | 352 | -- | ● |
| SWTC-442-3535* | 228 | 442 | C | 187 | 369 | ● | ● |
| SWTC-464-3535* | 240 | 464 | C | 193 | 379 | ● | ● |

$T_F$ - Functioning Temperature: Temperature at which the thermal cutoff will open + A, B or C tolerances

$T_H$ - Hold Temperature: The maximum temperature at which a thermal cutoff can be maintained while conducting rated current for 168 hours which will not cause a change in state of the conductivity to open the circuit

-- Applied but not approved

**Temperature/Current Correlation Curve**




**FEATURES**
- Low cost
- Excellent contact rating
- Quick and easy installation

**APPLICATIONS**
- Motors
- Appliances
- Personal care

Thermal cutoffs are designed to provide upper limit temperature protection for many electronic products. Under normal operating temperature, the solid pellet compresses a spring which holds the star contact against the isolated lead. When a fault temperature is reached, the pellet melts and the circuit is opened permanently.

It is important to allow sufficient time to determine the proper and best location for a thermal cutoff. The location will affect the cutoff's ability to protect your product. Placing in the highest temperature area is usually best.

## SPECIFICATIONS

| | |
|---|---|
| **Electrical ratings** | 125/250VAC, 10 Amps, Continuous Duty<br>125/250VAC, 15 Amps, Interrupting Current |
| **Dual electrical ratings for continuous duty** *(models listed with a *)* | 125/250VAC, 10 Amps, Continuous Duty<br>125VAC, 15 Amps, Continuous Duty<br>125/250VAC, 15 Amps, Interrupting Current |
| **Temperature tolerance** | A = +0ºF/-7ºF (+0ºC/-4ºC) (refer to p/n chart)<br>B = +0ºF/-9ºF (+0ºC/-5ºC) (refer to p/n chart)<br>C = +0ºF/-11ºF (+0ºC/-6ºC) (refer to p/n chart) |
| **Approvals** | UL Recognized Component, CSA, VDE<br>RoHS Compliant |

*** Due to the TCO body being electrically live, Selco offers an insulation sleeve. Consult Selco for details.**

### Determining The Proper Series

- **$T_P$** The highest temperature of the product to which a cutoff is to be attached
- **$T_H$** The safe temperature range for use of the cutoff
- **$T_S$** $T_F - T_H = T_S$
  Where TF = the functioning temperature (24ºC less than or equal to TS less than or equal to 40ºC)
- **$T_D$** The heating temperature caused by electrical load
- **+a**
  1. Self heating of lead wire
  2. Structure of ventilation or air tightness
  3. Location of connecting terminal
  4. Thickness of insulated covering material
  5. Best condition value, electric voltage changes considered

**TP + TS + TD + a = Applicable Temperature**

### Installation Instructions

The performance of thermal cutoff requires proper handling during installation for it to operate in its intended manner. These instructions are intended to be used to reduce the risk of malfunction of the thermal cutoff which may result from improper installation during forming of leads, splicing, welding and soldering.

**1. Bending Leads**
Care should be taken when forming the Thermal Cutoff (TCO) leads. The TCO leads must be supported 1/8" from bend and epoxy. This will prevent the epoxy seal from cracking which may result in premature degradation of the pellet. A close visual inspection should be performed to make sure that the TCO leads have not been cut, nicked, folded sharply, fractured or burned.

**2. Mechanical Forces During Appliance Connection**
a. When installing the TCO, avoid unnecessary bending, twisting, pulling or pushing on the TCO leads. Care should be taken to avoid cracking or chipping of the epoxy, which may result from sharp twisting or bending of the lead.

b. The TCO body must maintain its cylindrical shape to function properly. Excessive clamping could cause denting or crushing of the TCO body, which may lead to failure. X-ray and visual inspection of the TCO will determine if the fuse body has been damaged.

c. Note that the TCO body is electrically live and must be insulated before applying a metal clamp over the TCO body.

d. Care should be used when pushing the epoxy end lead to avoid the lead being forced into the TCO body. This could result in a failure.

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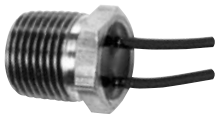
# Probe Thermostats
## BPO/BPC and CPO/CPC Series

**APPLICATIONS**

- HVAC
- Refrigeration
- Hydraulic systems
- Motors
- Heaters
- Cooking equipment
- Diesel/Automotive engines



**BPO/BPC Series**

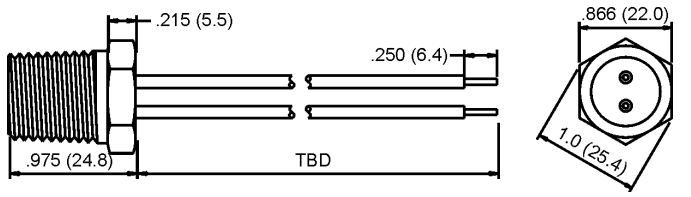
**CPO/CPC Series**

Selco probe thermostats are thermally sensitive bimetallic switches which when reaching a fixed factory set temperature, either opens or closes to break or make an electrical circuit. They reset automatically on cooling. Some devices can be used as controlling thermostats which cycle open and close more rapidly to maintain temperature level. Other devices can be used as over temperature protectors to limit a temperature from exceeding a predetermined value (safety device). The unit may be immersed safely in liquids under substantial pressure allowing thermostatic control to be achieved in the chemical, automotive, aerospace, HVAC, and environmental fields. Custom probe housings available, consult Selco for other models available from stock.

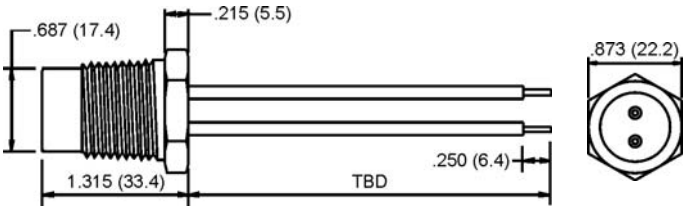
## BPO/BPC and CPO/CPC Series - SPECIFICATIONS

| | |
|---|---|
| **Snap Action Models** | |
| **Electrical ratings** | 125VAC, 15 Amps, Resistive, 10,000 Cycles |
| Silver contacts | 250VAC, 10 Amps, Resistive, 10,000 Cycles |
| | Gold contacts available |
| | Consult Selco for other electrical ratings |
| **Inductive load ratings** | 120VAC, 5.8FLA, 34.8LRA, 6,000 Cycles<br>240VAC, 2.9FLA, 17.4LRA, 6,000 Cycles |
| **Temperature range** | 50ºF to 200ºF (10ºC to 260ºC) |
| **Differential** | 15ºF-100ºF (8ºC ± 56ºC) |
| **Creep Action Models** | |
| **Electrical ratings** | |
| Silver contacts | 120/240VAC, 6 Amps, Resistive, 100,000 Cycles<br>120VAC, 5 Amps, Inductive, 100,000 Cycles |
| | Gold contacts available |
| | Consult Selco for DC applications |
| **Temperature range** | 41ºF to 400ºF (5ºC to 204ºC) |
| **Differential** | None - creep-action |
| **Tolerance** | ±9ºF (±5ºC) |
| **Insulation resistance** | 100M Ω or more (with a 500VDC megger) |
| **Circuit resistance** | 50m Ω or less (initial value) |
| **Dielectric strength** | 1500VAC/1 minute |
| **Pressure rating** | Consult Selco |
| **Materials** | |
| Body & tube | Brass or stainless steel |
| Headfill | Epoxy filled |
| Contacts | Silver or gold |
| Wire | 18AWG, UL3173, Black<br>18AWG, UL1015, Black<br>Other lead options available |

**BPO/BPC Series**




**CPO/CPC Series**




**Special Model Designations for BPO/BPC and CPO/CPC Series**

| Style No. | Thread NPT | 2-Pipe Thread NPT | Tube Length (inches) | Material |
|---|---|---|---|---|
| P11 | 1/2 | - | 0.35 | stainless |
| P12 | 1/2 | - | 0.625 | stainless |
| P13 | 1/2 | 1/4 | 0.5 | brass |
| P14 | 1/2 | - | 0.625 | brass |
| P17 | 1/2 | - | - | brass |
| P18 | 1/2 x 1/4 | - | 1.5 | stainless |

**It is the customer's sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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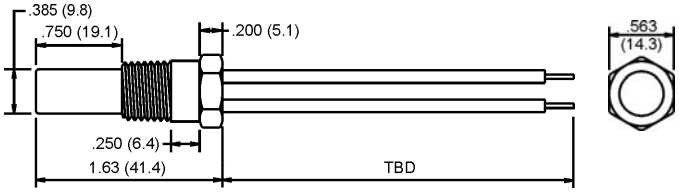
**SIC/SIO Series**

### SIC/SIO Series - SPECIFICATIONS

| | |
|---|---|
| **Creep Action** | |
| **Electrical ratings** | 120/240VAC, 6 Amps, Resistive, 100,000 Cycles |
| Silver contacts | 120VAC, 5 Amps, Inductive, 100,000 Cycles |
| | Gold contacts available |
| | Consult Selco for DC applications |
| **Temperature range** | 41ºF to 400ºF (5ºC to 204ºC) |
| **Differential** | None - creep-action |
| **Tolerance** | ±9ºF (±5ºC) |
| | Consult Selco for special tolerances |
| **Snap Action** | |
| **Electrical ratings** | 125VAC, 4 Amps, Resistive, 10,000 Cycles |
| Silver contacts | 250VAC, 2.5 Amps, Resistive, 10,000 Cycles |
| | Gold contacts available |
| | Consult Selco for other electrical ratings |
| **Temperature range** | 131ºF to 302ºF (55ºC to 150ºC) |
| **Differential** | 50ºF ± 25ºF (30ºC ± 15ºC) |
| **Tolerance** | ±9ºF (±5ºC) |
| **Pressure rating** | Consult Selco |
| **Materials** | |
| Body & tube | Brass or stainless steel - 1/4" NPT, 3/8" NPT |
| Headfill | Epoxy filled |
| Contacts | Silver or gold |
| Wire | 18AWG, UL3173, Black<br>18AWG, UL1015, Black<br>Other lead options available |

**SIC/SIO Series**




**Special Model Designations for SIC/SIO Series**

| Style No. | Thread NPT | 2-Pipe Thread NPT | Tube Length (inches) | Material |
|---|---|---|---|---|
| P01 | 1/4 | - | 0.75 | brass |
| P02 | 3/8 | - | 1 | brass |
| P04 | 1/4 | - | 2 | stainless |
| P05 | 1/2 x 1/4 | - | 1.25 | brass |
| P06 | 1/4 | - | 0.636 | stainless |
| P20 | 3/8 | - | 1 | stainless |
| P21 | 1/4 | - | 1 | stainless |

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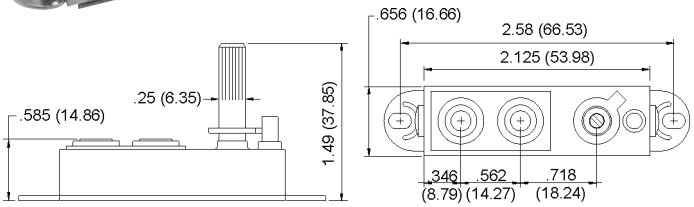
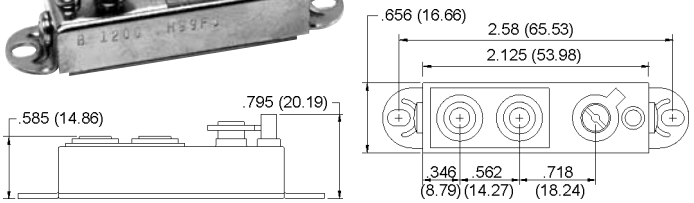
**Model S200-A**

Control knob sold separately
Knob part number:
S150-250 (no line)
S151-250 (with line)

Cap part number:
C150 (no line)
C151 (with line)



**Model S200-F-1**




**FEATURES**
- Rapid response
- Precision control
- Custom calibration
- Minimum overshoot
- Custom shaft lengths

**APPLICATIONS**
- Heaters
- Medical
- Hot plates
- Industrial melters
- Soldering equipment

The S200 Series thermostats have a base plate with a high coefficient of expansion. A spring of low-expansion alloy is welded at each end of the base plate. When the base plate is heated it expands and the alloy spring moves in a downward direction allowing the large silver contacts to open. Often referred to as “expanding-action thermostats,” they are mounted directly on a heated surface and are ideally suited to a number of commercial applications. Selco carries a line of durable, easy-grip control knobs for use with adjustable models. Model S200-F-1 is available with fixed set points.

**SPECIFICATIONS**

| | |
|---|---|
| **Electrical ratings** | 120/240VAC, 1600 watts maximum<br>100,000 Cycles |
| **Temperature range** | 75ºF to 600ºF (23ºC to 315ºC) |
| **Sensitivity** | Approximate 2ºF |
| **Case width** | 11/16” |
| **Overall length** | 2-7/8” |
| **Approvals** | UL Recognized File No. E79570(M)<br>CSA File. LR-50152-2 |

**Models available from stock - subject to availability**

| Model Number | Temperature Range Minimum - Maximum | Overall Height | ** Adjustment |
|---|---|---|---|
| S200-A | Room Temperature - 525ºF ± 20ºF | 1.50” | 2ºF for every 1º angular rotation |
| S200-A-1008 | Room Temperature - 550ºF ± 25ºF | 2.00” | 2ºF for every 1º angular rotation |
| S200-A-1325 | Room Temperature - 425ºF ± 20ºF | 1.75” | 2ºF for every 1º angular rotation |
| S200-A-4051 | Room Temperature - 205ºF ± 10ºF | 1.43” | 2ºF for every 1º angular rotation |
| S200-F-1 | Room Temperature - 575ºF ± 25ºF | .795” | 2ºF for every 1º angular rotation |

* Temperature calibration service is available - consult Selco for details
** Turn clockwise to increase temperature setting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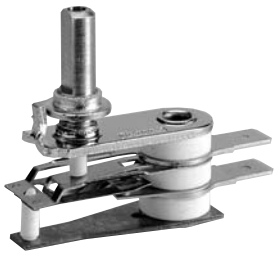
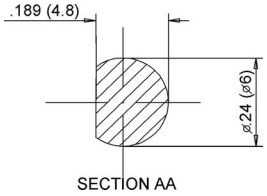
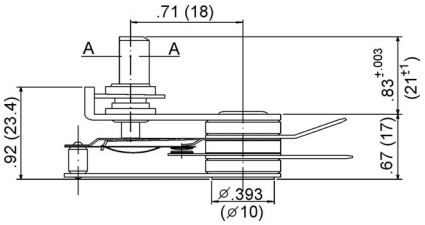
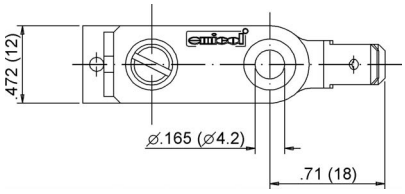
# Adjustable Thermostats
## TL Series



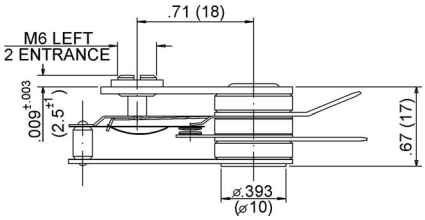
**TL 01 Model**
**Adjustable Thermostat**

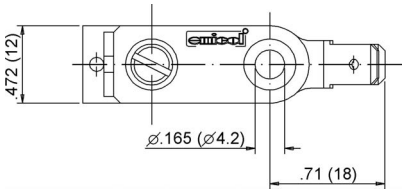


**TL 02 Model**
**Fixed Thermostat**




**FEATURES**
- Low cost
- Creep action
- Custom design

**APPLICATIONS**
- Grills
- Irons
- Fryers

These bimetal thermostats are available in adjustable or fixed settings. The position of the adjustment shaft determines the desired temperature. Contacts are “snap-action” which extends the electrical life or “creep-action” which carry no built in differential. They are primarily used in irons, grills, small electric ovens, as well as commercial and industrial heating devices.

## SPECIFICATIONS

| | |
|---|---|
| **Electrical ratings** | 250VAC, 10 Amps, Resistive, 60Hz<br>100,000 Cycles |
| **Temperature range** | 212ºF to 410ºF (100ºC to 210ºC)<br>410ºF to 518ºF (210ºC to 270ºC)<br>Tolerance 5% or 10ºF (whatever is greater) |
| **Dielectric strength** | 1500VAC/1 minute |
| **Approvals** | UL Recognized File No. E145478(S), XAPX2<br>C-UL Recognized File No. E145478, XAPX8<br>VDE<br>RoHS Compliant |

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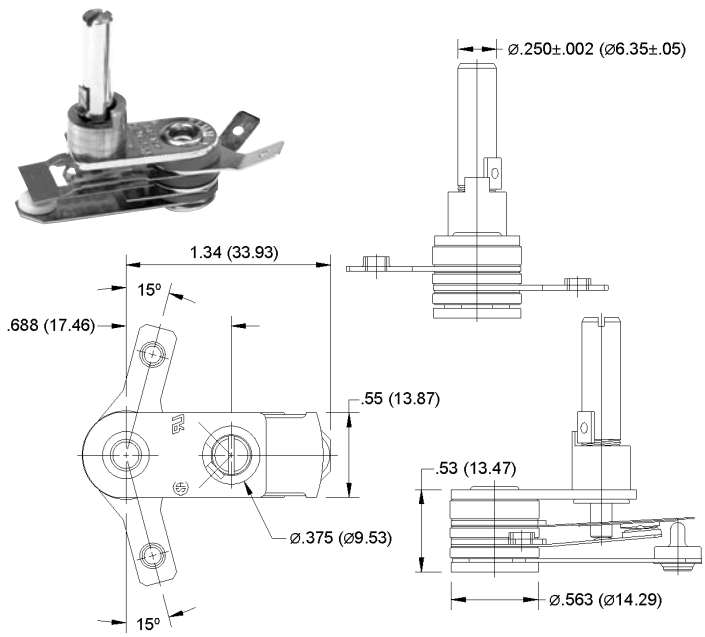
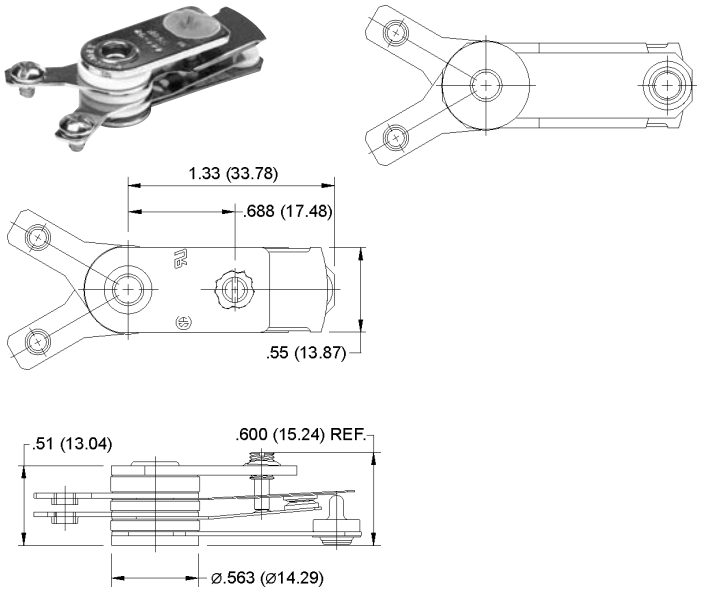
**TOR Model - Adjustable Thermostat**




**TOR Model - Fixed Thermostat**



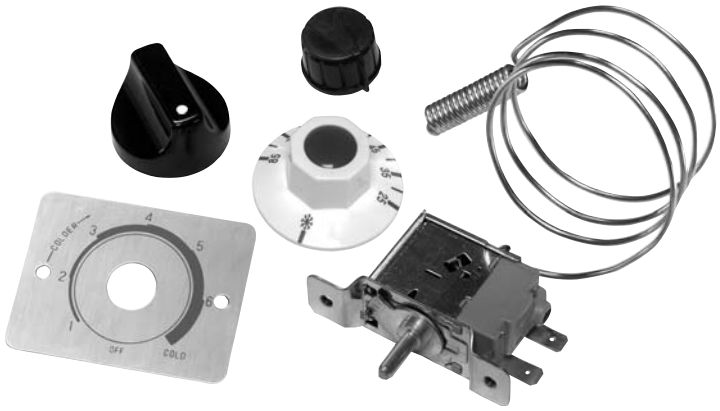

**FEATURES**
- Low cost
- Creep action
- Custom design

**APPLICATIONS**
- Grills
- Irons
- Fryers

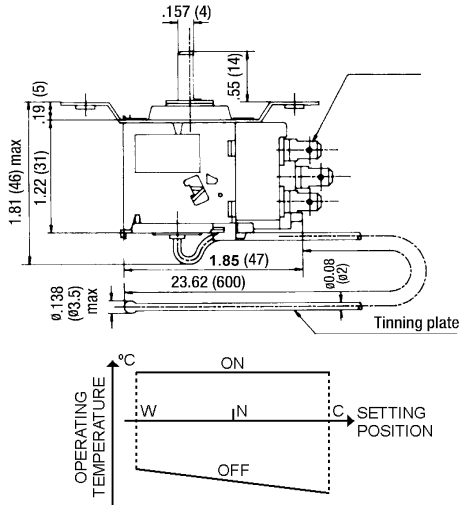
These bimetal thermostats are available in adjustable or fixed settings. The position of the adjustment shaft determines the desired temperature. Contacts are “snap-action” which extends the electrical life or “creep-action” which carry no built in differential. They are primarily used in irons, grills, small electric ovens, as well as commercial and industrial heating devices.

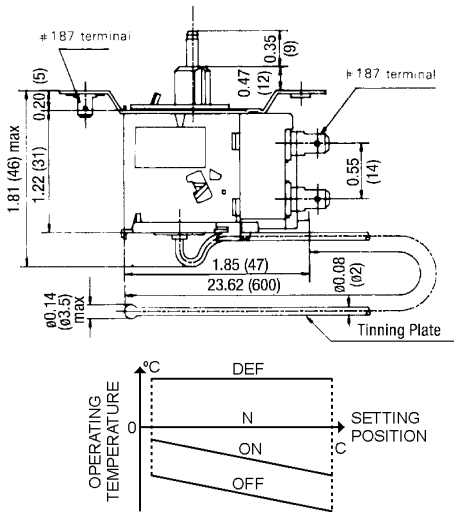
## SPECIFICATIONS

| TOR Models | |
|---|---|
| **Electrical ratings** | 120VAC, 15 Amps, Resistive, 2.6FLA, 15.6LRA<br>240VAC, 10 Amps, Resistive, 1.3FLA, 7.8LRA<br>100,000 Cycles |
| **Temperature range** | 0ºF to 550ºF (-17ºC to 287ºC)<br>450ºF maximum for snap action contacts<br>550ºF maximum for creep action contacts<br>Tolerance ±5% of the calibration temperature or 10ºF whatever is greater |
| **Dielectric strength** | 1800VAC/1 second |
| **Approvals** | UL Recognized File No. E170601, XAPX2<br>C-UL Recognized File No. E170601, XAPX8<br>RoHS Compliant |



**APPLICATIONS**
- Refrigerators




### WD Series - Constant Cut-in Thermostat

The WD Series provides Forced ON or Forced OFF and automatic cycle defrosting in refrigeration systems. Cut-in temperature varies at each cam position, but defrosting temperature remains the same. It is used as a component of controlling in 2-door and 2-temperature refrigerators and freezers. Mainly built to custom specifications, it comes complete with a variety of mounting hardware, including brackets, terminals, dial plates and knobs.

| SPECIFICATIONS | |
|---|---|
| **Temperature range** | ON: +37ºF to 43ºF (3ºC to 6ºC)<br>OFF: -22ºF to 24ºF (-30ºC to -4ºC) |
| **Maximum temperature range** | 66ºF (19ºC) |
| **Differential** | 14ºF to 64ºF (8ºC to 36ºC) |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100m Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **UL/CSA electrical ratings** | 125VAC, 8 Amps, Resistive<br>250VAC, 5 Amps, Resistive |
| **Inductive load ratings** | 125VAC, 6FLA, 36LRA<br>250VAC, 4FLA, 24LRA |
| **VDE electrical ratings** | 250VAC, 5 Amps |
| **Approvals** | UL Recognized File No. E195847, SDFY2<br>C-UL Recognized File No. E195847, SDFY8,<br>VDE, SEMKO<br>RoHS Compliant |

### WS Series - Push Button Defrost Thermostat

The WS Series has a combined function of refrigerator cycling control and manual defrosting with a push button shaft in the center of the adjusting shaft. Defrost starts when the push button is pressed, and it terminates automatically as temperature rises to a pre-set point. Then the unit continues its normal running cycle.

| SPECIFICATIONS | |
|---|---|
| **Temperature range** | -18ºF to 45ºF (-28ºC to 7ºC) |
| **Maximum temperature range** | 32ºF (18ºC) |
| **Differential** | 12ºF to 25ºF (6ºC to 14ºC) |
| **Defrost reset temperature** | 6ºF to 12ºF (3ºC to 7ºC) |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100M Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **VDE electrical ratings** | 250VAC, 5 Amps |
| **Shift of defrosting shaft** | 3.7 ± 5mm |
| Approvals | RoHS Compliant |

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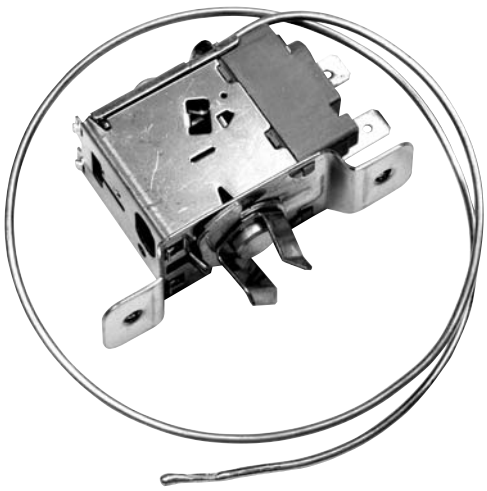

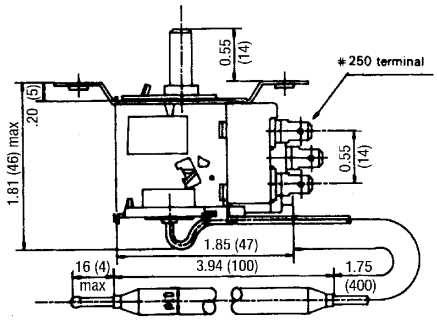


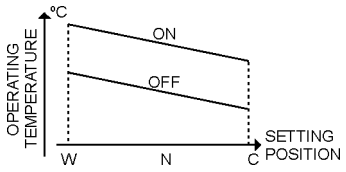


**Models available from stock - subject to availability**

| Part Number | Temperature Settings | | | |
|---|---|---|---|---|
| | Switch Action | Cold ºF | Normal ºF | Warm ºF |
| WK1V-115-020 | ON | ● | 42 | 45 |
| | OFF | 34 | 37 | ● |
| WKF29.4S-005-120 | ON | -5.8 | 5 | 12.2 |
| | OFF | -20.2 | -9.4 | -2.2 |
| WKF20.6E-007-020 | ON | 3 | 21 | 41 |
| | OFF | 4 | 16 | 33 |
| WKF11V-109-021T | ON | 35 | ● | 46 |
| | OFF | 13 | ● | ● |
| WKF1V-005-020-1 | ON | 38 | ● | 43 |
| | OFF | 30 | ● | ● |
| WKF11A-102-022 (Constant Cut-In) | ON | 39 | 39 | 39 |
| | OFF | 12 | 21 | 30 |
| WK15.6S-408-060 | ON | 64.4 | ● | 90 |
| | OFF | 60.08 | ● | ● |

**APPLICATIONS**

- Coolers
- Freezers
- Refrigerators
- Ice machines
- Air conditioners

The WK and WK-H Series general purpose thermostats provide the ideal temperature control solution for a wide variety of refrigeration and air-conditioner applications. This cold control provides accurate temperature control and high sensitivity for a wide range of refrigerators, freezers, beverage coolers, and display case applications. High current capability switch of SPST or SPDT. There is a narrow differential and a forced off function. THe WK and WK-H Series can be used in DC current with inductive loads. Fixed operating temperatures (without shaft) ar also available. With universal adaptability in mind, the WK and WK-H Series is designed to replace many OEM controls, offering the user additional options and convenience during equipment manufacturing or repair. Mainly built to custom specifications, it comes complete with a variety of mounting hardware including brackets, terminals, dial plates, and knobs.

## SPECIFICATIONS

| | |
|---|---|
| **Temperature range** | -31ºF to 104ºF (-35ºC to 40ºC) with bulb<br>-31ºF to 90ºF (-35ºC to 32ºC) no bulb |
| **Maximum temperature range** | 36ºF (20ºC) |
| **Differential** | 4ºF to 9ºF (2ºC to 5ºC) |
| **Tolerance** | 2.7ºF (1.5ºC) at calibration point<br>3.6ºF (2.0ºC) at non-calibration point |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100m Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **UL/CSA/VDE electrical ratings**<br>*Model WK* | 125/250VAC, 20 Amps, Resistive<br>100,000 Cycles |
| **Inductive load ratings** | 125/250VAC, 20FLA, 80LRA |
| **UL/CSA/VDE electrical ratings**<br>*Model WK-H* | 125/250VAC, 20 Amps, Resistive<br>100,000 Cycles |
| **Inductive load ratings** | 125/250VAC, 25FLA, 100LRA |
| **Approvals** | UL Recognized File No. E195847, SDFY2<br>C-UL Recognized File No. E195847, SDFY8<br>VDE<br>RoHS Compliant |

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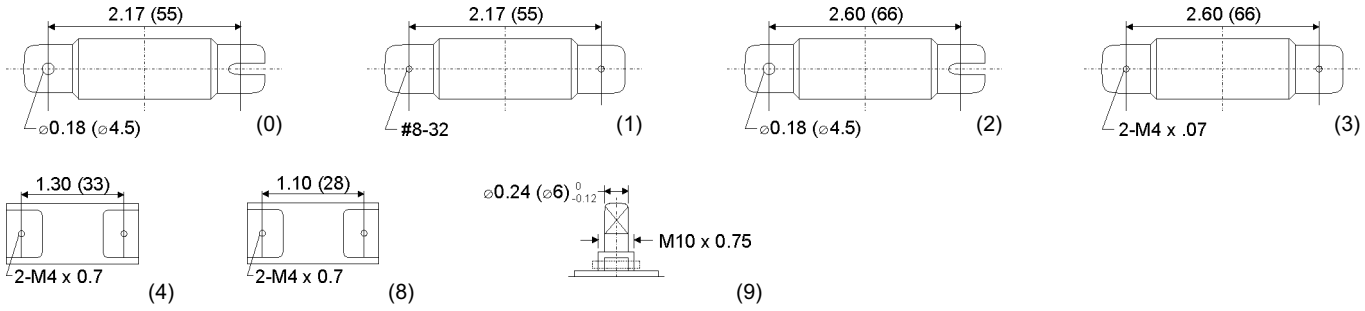
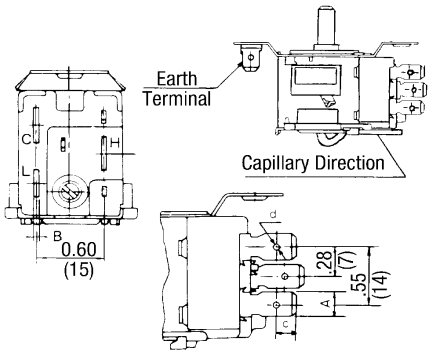
# Brackets, Terminals and Adjustment Shafts

## Options for WD, WS, WK and WK-H Series

### Bracket Options




### Terminal Options

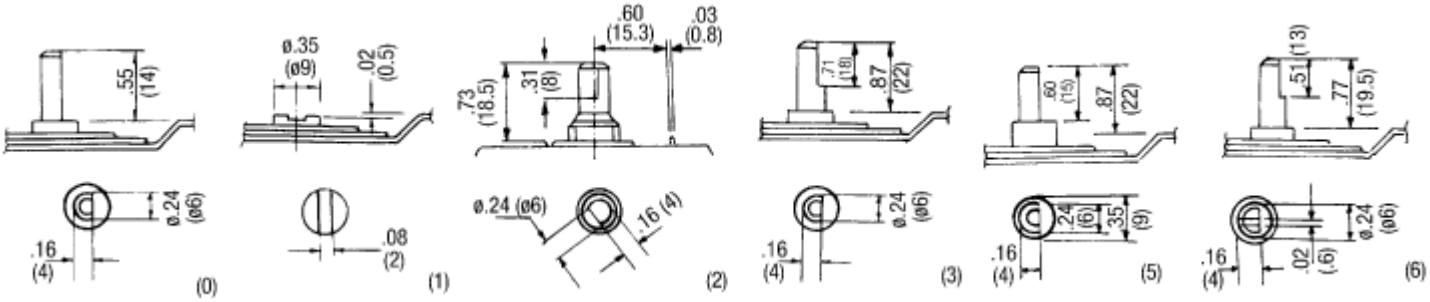



| Terminal Number | A x B (mm) | C (mm) | D (inches) | Code | |
|---|---|---|---|---|---|
| | | | | Terminal | Ground Terminal |
| #187 | 4.75 x 0.55 | 3.2 + 0.25 | 1.4 | 1 or 5 | 1 or 3 |
| #250 | 4.75 x 0.8 | 4.2 + 0.3 | 1.4 | 3 or 7 | 5 or 7 |
| #187 | 6.35 x 0.8 | 3.2 + 0.25 | 1.6 | 2 or 6 | 2 or 4 |

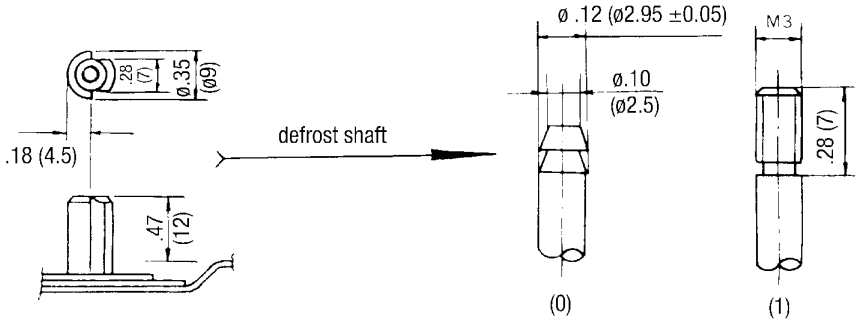
Terminal No. 1, 2, and 3 - are the same direction as capillary
Terminal No. 5, 6, and 7 - are the opposite direction

Ground Terminal No. 1, 2, and 5 - are in the front of the bracket
Ground Terminal No. 3, 4, and 7 - are in the rear of the bracket

### Adjustment Shaft Options




**For WS Series**

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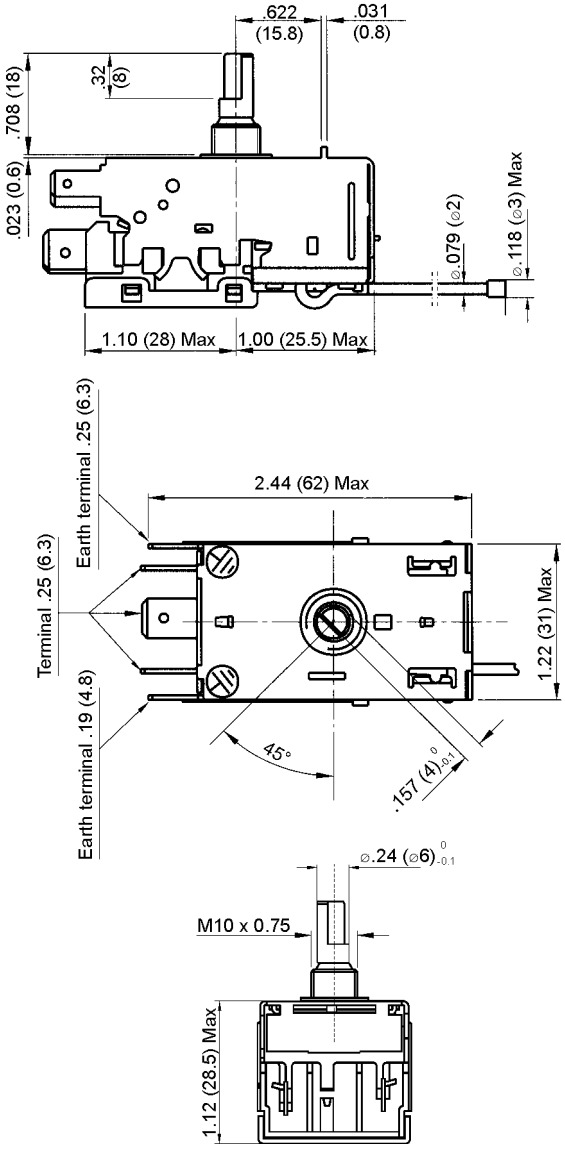



**APPLICATIONS**

- Refrigerators

Temperature control with S.P.S.T. switch and auxiliary switch for OFF position. Automatic defrost function by constant cut-in value.

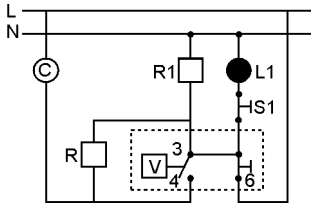
Terminal 3-4: Closes on temperature rise

Terminal 3-6: Opens in OFF position

**SPECIFICATIONS**

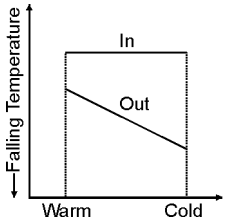
| | |
|---|---|
| **Electrical ratings** | 250V, 6 Amps, 50Hz |
| **Inductive load ratings** | 250V, 6FLA, 36LRA<br>120V, 10FLA, 40LRA |
| **Temperature range** | -25ºF to 42ºF (-32ºC to 6ºC) |
| **Adjustment range** | 4 to 18K |
| **Tolerance** | 2.7ºF (1.5ºC) at calibration point<br>3.6ºF (2.0ºC) at non-calibration point |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100M Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **Approvals** | UL and C-UL Recognized<br>VDE |

**Typical Electrical Wiring Diagram**




3-4 Main switch closes at temperature rise
3-6 Auxiliary switch opens in OFF position
C Compressor
R Defrost heater
R1 Frame heating
R2 Internal heating resistor (82k ohms)
L Lamp
S1 Door switch

**Typical Function Chart**

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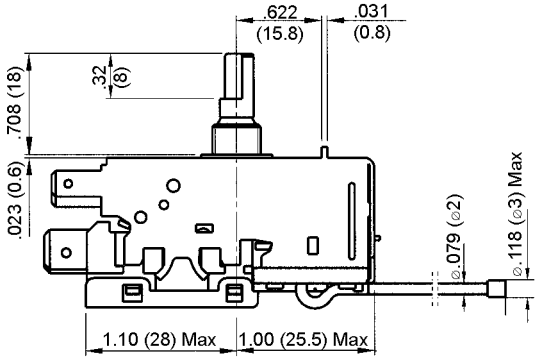
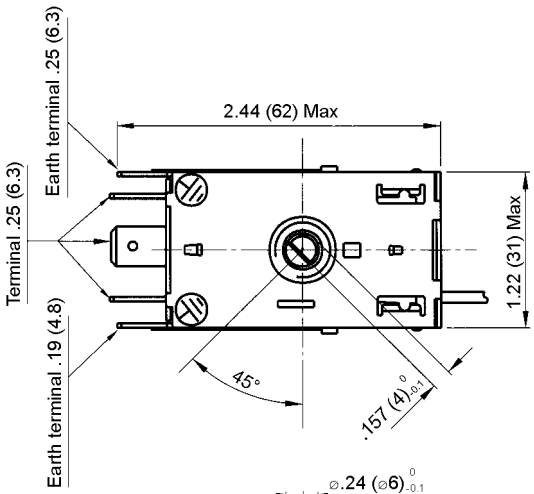
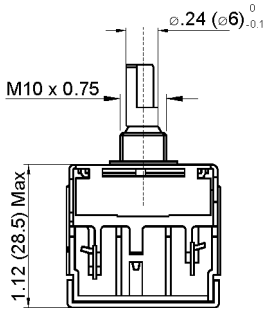



**APPLICATIONS**
- Automotive air conditioning
- Refrigerating/freezing devices

Temperature control with S.P.S.T. switch.

Terminal 3-4: Closes on temperature rise
In general, Type KP is classified into 2 basic versions:

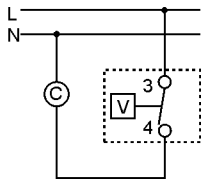
Version A: KP with standard switching differential

Version B: KP with wide switching differential

## SPECIFICATIONS

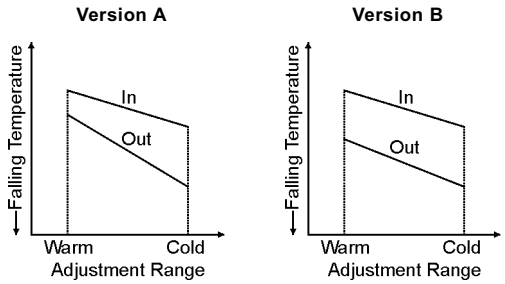
| | |
|---|---|
| **Electrical ratings** | 250V, 6 Amps, 50Hz |
| **Inductive load ratings** | 250V, 6FLA, 36LRA<br>120V, 10FLA, 40LRA |
| **Temperature range** | -40ºF to 104ºF (-40ºC to 40ºC) |
| **Adjustment range** | Version A: 4 to 30K<br>Version B: 5 to 15K |
| **Differential** | Version A: 3 to 14K<br>Version B: 10 to 25K |
| **Tolerance** | 2.7ºF (1.5ºC) at calibration point<br>3.6ºF (2.0ºC) at non-calibration point |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100M Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **Approvals** | UL and C-UL Recognized<br>VDE |

### Typical Electrical Wiring Diagram




3-4 Main switch closes at temperature rise
C Compressor

### Typical Function Chart

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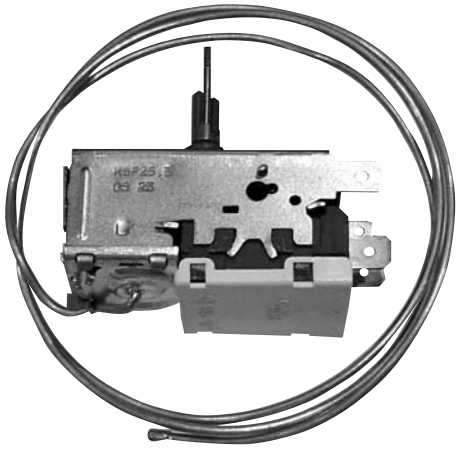
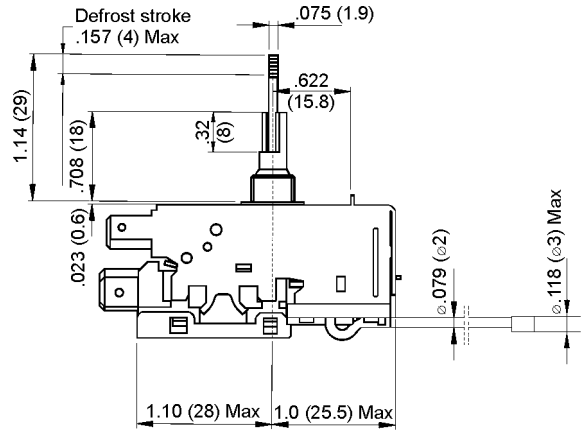
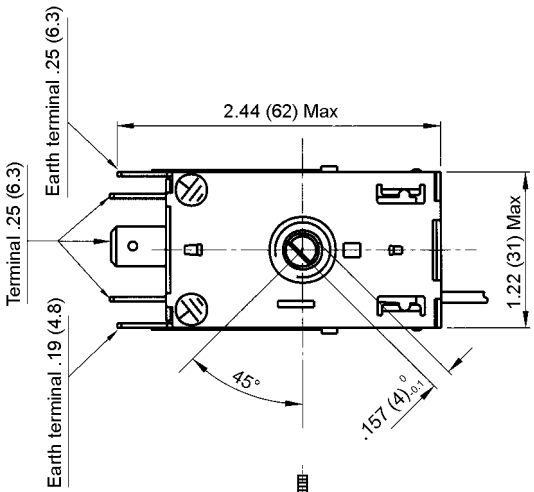
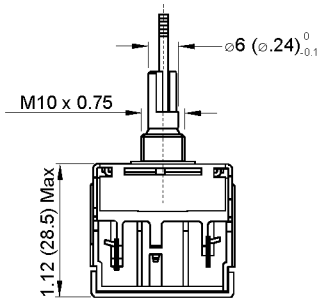





**APPLICATIONS**

- Automotive air conditioning
- Refrigerating/freezing devices

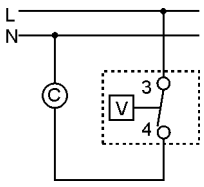
Closing with rising temperature and possibility to manually initiate a defrost function is achieved by pressing the defrost pin (stroke approximate .157 (4mm)) until latching. By doing this, the main switch is opened and locked until the defrost temperature is reached at the sensing point of the capillary which is normally fixed at the evaporator. After the defrost temperature has been reached, the pressure pin returns to its OFF position and the normal ON/OFF operation of the temperature control is reset. Defrost function can be initiated in any position of the dial shaft. If initiated in error, the defrost function can be cancelled by turning the dial shaft to the OFF position.

Terminal 3-4: Closes on temperature rise

## SPECIFICATIONS

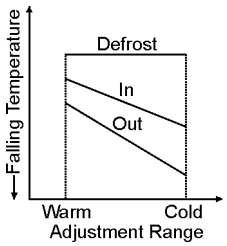
| | |
|---|---|
| **Electrical ratings** | 250V, 6 Amps, 50Hz |
| **Inductive load ratings** | 250V, 6FLA, 36LRA<br>120V, 10FLA, 40LRA |
| **Temperature range** | -40ºF to 104ºF (-40ºC to 40ºC) |
| **Adjustment range** | 4 to 14K |
| **Differential** | 4 to 14K |
| **Defrost temperature** | Possible between 2ºC and 10ºC<br>Differential of defrost temperature to WARM-IN minimum 4K |
| **Tolerance** | 2.7ºF (1.5ºC) at calibration point<br>3.6ºF (2.0ºC) at non-calibration point<br>4.5ºF (2.5ºC) at defrost |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100M Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **Approvals** | UL and C-UL Recognized<br>VDE |

**Typical Electrical Wiring Diagram**




3-4 Main switch closes at temperature rise
C Compressor

**Typical Function Chart**

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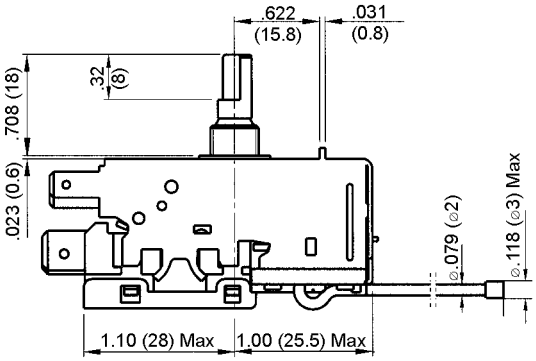
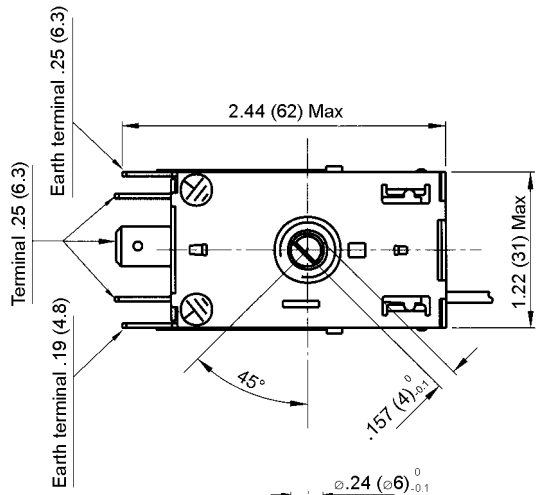
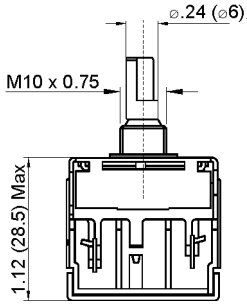



**APPLICATIONS**

- Freezers

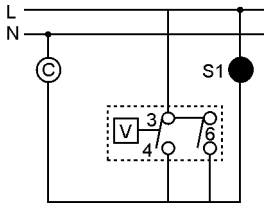
Terminal 3-4: Closes on temperature rise

Terminal 3-6: Closes when warning temperature has been reached

## SPECIFICATIONS

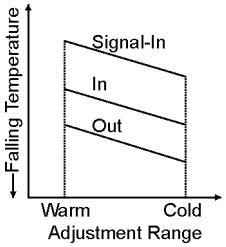
| | |
|---|---|
| **Electrical ratings** | 250V, 50Hz<br>Terminal 3-4: 6 Amps<br>Terminal 3-6: 0.1 Amps |
| **Temperature range** | -40ºF to 104ºF (-40ºC to 40ºC) |
| **Adjustment range** | 4 to 30K |
| **Differential** | 3 to 14K |
| **Signal differential** | 4 to 7K |
| **Tolerance** | 2.7ºF (1.5ºC) at calibration point<br>3.6ºF (2.0ºC) at non-calibration point |
| **Contact resistance** | <50m Ω |
| **Insulation resistance** | >100M Ω |
| **Dielectric strength** | AC 50/60Hz, 1500V/1 minute |
| **Approvals** | UL and C-UL Recognized<br>VDE |

**Typical Electrical Wiring Diagram**




3-4 Main switch closes at temperature rise
3-6 Signal switch closes at temperature rise
C Compressor
S1 Warning lamp indicates to high temperature

**Typical Function Chart**

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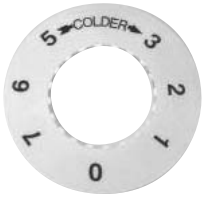
# Cold Capillary Controls - Accessories

## Brackets, Terminals, Dial Plates and Knobs

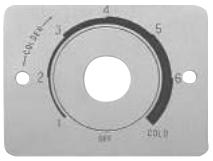
WXN005




WKP003

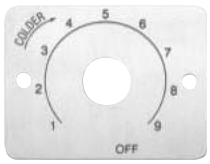
WKP004

WKP005

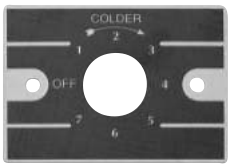


KP002

KP006




KP007



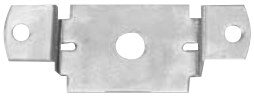

WKB001

XN001A

XN001

WAN002

WXN002B

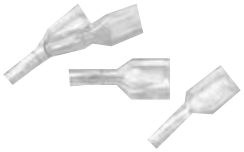


WZJ001

WWZ001

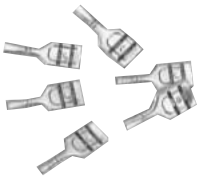
JD702

WLD001

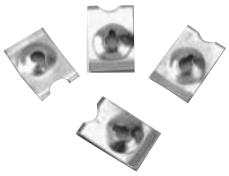


BT001

BT001 JT002



JT001



WDJ001

WLD007

WLD008

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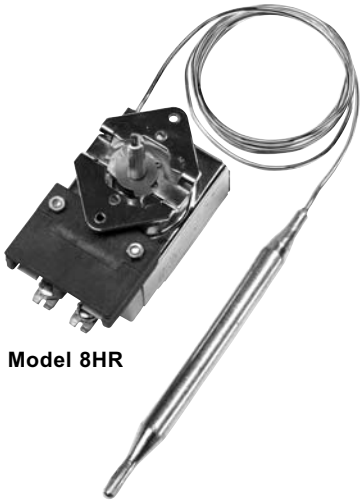
# Bulb & Capillary Thermostats
## 8HQ, 8HR and 8HW Series

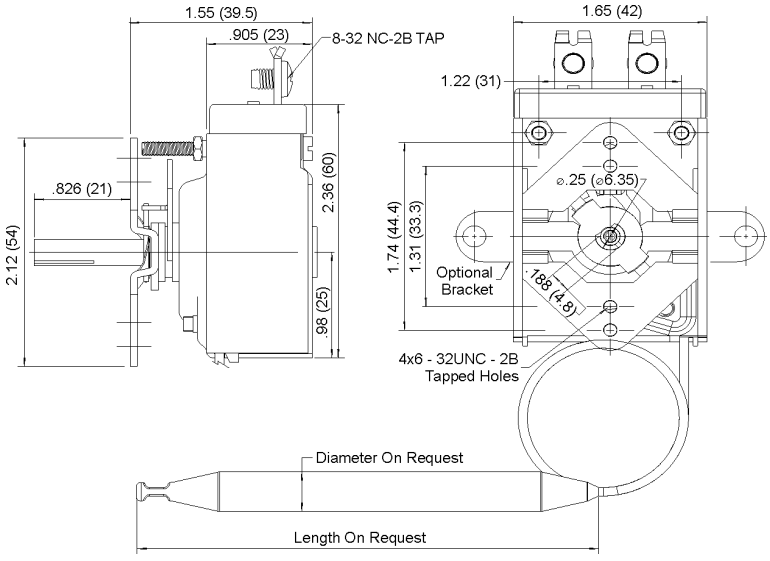
**Model 8HQ**



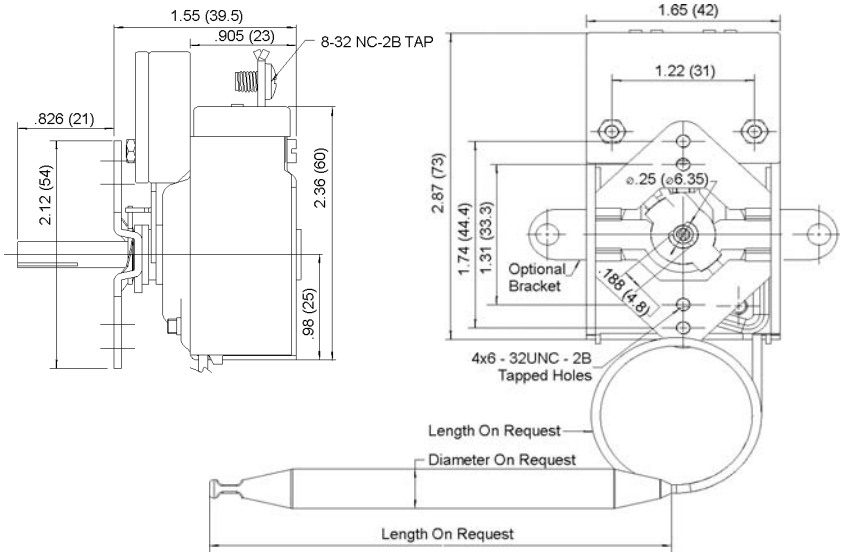
**Model 8HR**

**Model 8HQ -** S.P.S.T. - Normally closed (open on temp. rise)

**Model 8HW** - with positive off




**Model 8HR** (shown above) **-** Auxiliary contact - 30 Amps, 250 Volts




**FEATURES**
- 30 Amps capacity
- Drop in replacement
- Custom configurations

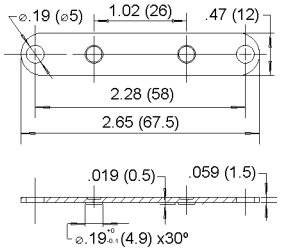
**APPLICATIONS**
- Electric heaters
- Cooking equipment
- Commercial food eqpt.

These 30-Amp Bulb and Capillary Thermostats are designed to be a direct replacement for many different controls. This series (8HQ, 8HR, 8JQ, and 8JW) are electro-mechanical on/off switches that are activated by temperature. They are commercial electric thermostats that are SPST or DPST. Fixed or adjustable temperatures with or without auxiliary switches and/or pilot-duty ratings are available on special order. The 8JW and 8HQ models include a mechanical "positive off" feature in the dial "off" position. A variety of control knobs and bezels are available upon request.

## SPECIFICATIONS

| | |
|---|---|
| **Temperature range** | -4ºF to 608ºF (-20ºC to 320ºC) |
| **Electrical ratings** | 120/240VAC, 30 Amps, Resistive<br>100,000 Cycles |
| **Material options** | Copper, stainless steel, nickel plated |
| **Options can include** | Compression fittings for mounting, gold contacts, .250 quick connects, customer markings, angular rotations, shaft lengths, back fixing plate bracket (2 holes .5mm dia., 58mm distance), plastic coating to prevent against moisture and dust |
| **Model variations** | |
| **8HQ** | S.P.S.T.<br>Normally closed (open on temperature rise) |
| **8HW** | S.P.S.T.<br>Normally closed (open on temperature rise)<br>Positive off |
| **8HR** | Auxiliary contact - 30 Amp, 250 Volt<br>Available on request with 10-32 screw terminals |
| **8JQ** | D.P.S.T. - Double pole<br>Normally closed (open on temperature rise)<br>2 x 30 Amp, 250 Volt |
| **8JW** | D.P.S.T. - Double pole<br>Normally closed (open on temperature rise)<br>2 x 30 Amp, 250 Volt<br>Positive off switch available on request |

**Optional bracket for all 30-Amp Models**

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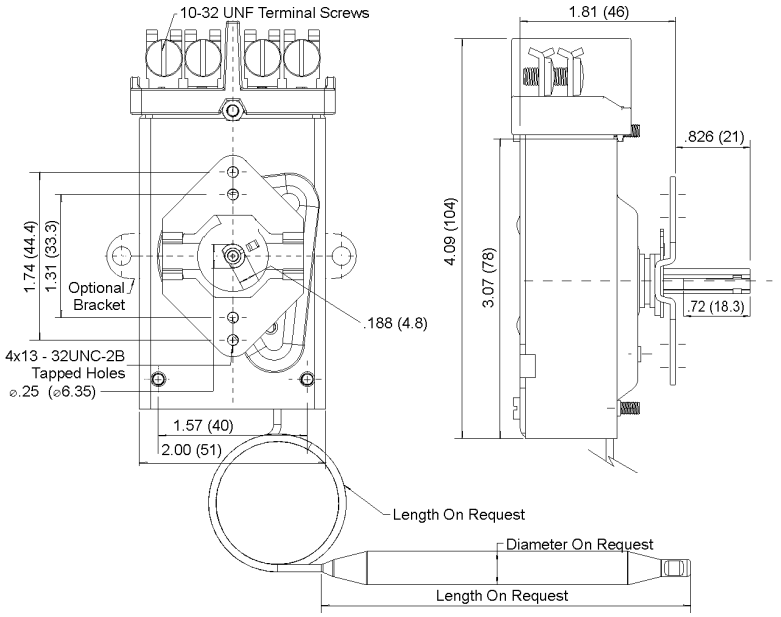
**Model 8JQ**

**Model 8JQ**

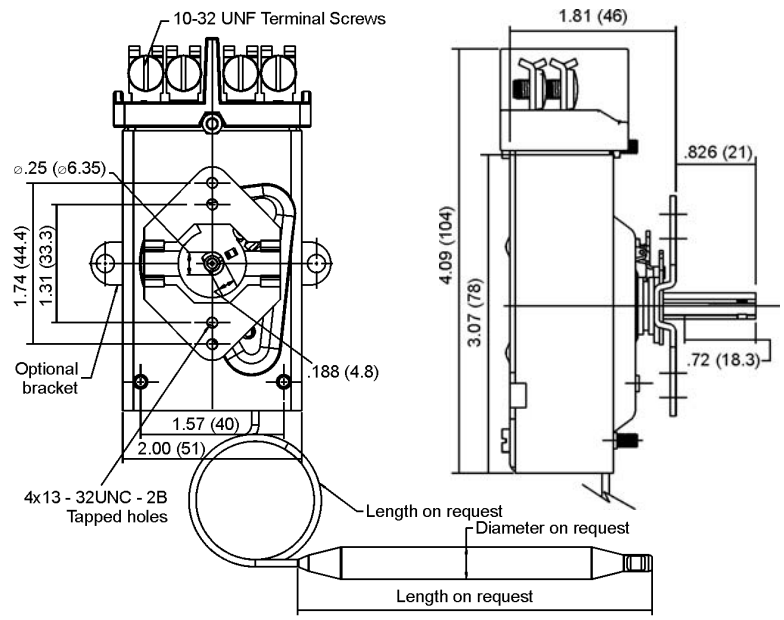
D.P.S.T. - Normally closed, open on temperature rise
2 x 30 Amps, 250 Volts




**Model 8JW**

**Model 8JW**

D.P.S.T. - Normally closed (open on temperature rise) with positive off
2 x 30 Amps, 250 Volts - Positive off switch available upon request

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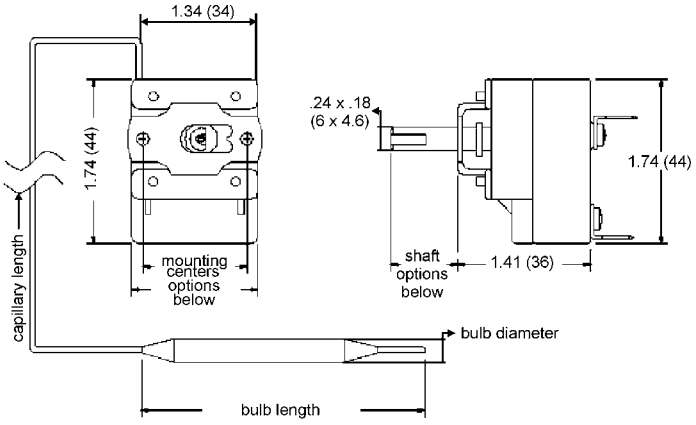
# Bulb & Capillary Thermostats

## CAP Series - Automatic Reset




| Shaft Length<br>Shaft diameter ⌀24 (⌀6) x .18 (4.6) | | Mounting Bracket<br>Center Holes | |
|---|---|---|---|
| **inches** | **mm** | **inches** | **mm** |
| 0.52 | 13 | 1.1 | 28/M4 thread |
| 0.71 | 18 | 1.3 | 33/6-32 thread |
| 0.87 | 22 | 1.7 | 44/6-32 thread |
| ● | ● | ● | ● |

**FEATURES**

- Stock models
- 20 Amps capacity
- All agency approvals

**APPLICATIONS**

- Heaters
- Test systems
- Food service equipment

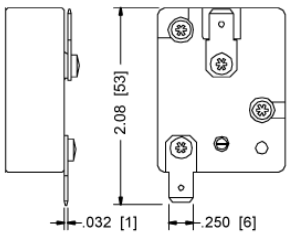
Selco's bulb and capillary thermostats have a fluid filled bulb. When temperature rises, the bulb fluid expands via a capillary tube to an expandable diaphragm within the remote thermostat set point. The thermostats are compact and have ceramic bodies. Accessories include knobs and dials that allow selection of the temperature set point.

## SPECIFICATIONS

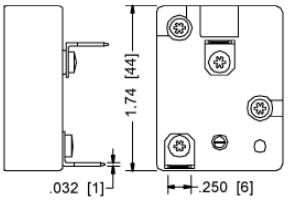
| | |
|---|---|
| **Temperature range** | 32ºF to 752ºF (0ºC to 400ºC) |
| **UL electrical ratings** | 120/240VAC, 20 Amps, Resistive, 100,000 Cycles<br>120VAC, 5 Amps, Inductive, 100,000 Cycles<br>240VAC, 2.9 Amps, Inductive, 100,000 Cycles<br>1/4 Horsepower, 100,000 Cycles<br>125VA (pilot duty), 100,000 Cycles |
| **VDE electrical ratings** | 250VAC, 5 Amps, Inductive<br>400VAC, 1 Amp, Inductive<br>10,000 Cycles |
| **Options can include** | Compression fittings for mounting, screw terminals, quick connects, gold contacts, SPDT, earth terminals, dial layouts, plastic coating to prevent moisture |
| **Approvals** | UL Recognized File No. E168164(S), XAPX2<br>C-UL Recognized File No. E168164(S), XAPX8<br>E.C. Declaration of Conformity<br>RoHS Compliant |
| European | VDE, SEMKO, KEMA |

**Terminal Options**

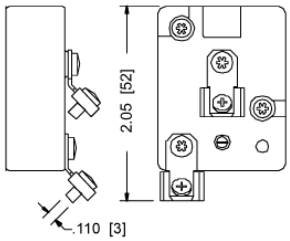
**Horizontal**




**Vertical**




**Screw (#8-32 or 4mm)**

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**Models available from stock - subject to availability**

| Model Number | Temperature Range (ºF) | Set Point | Switch | Material | Capillary Length (inches) | Bulb Length (inches) | Bulb Diameter (inches) |
|---|---|---|---|---|---|---|---|
| CAP-40-105-R | 40-105 | Adjustable | SPST | Copper | 60 | 6.0 | .24 |
| CAP-56-120-R | 56-120 | Adjustable | SPST | Stainless Steel | 60 | 7.0 | .20 |
| CAP-57-104 | 57-104 | Adjustable | SPST | Copper | 43 | 4.7 | .250 |
| CAP-60-150-SS | 60-150 | Adjustable | SPST | Stainless Steel | 16 | 4.5 | .19 |
| CAP-60-450 | 60-450 | Adjustable | SPST | Stainless Steel | 36 | 3.0 | .20 |
| CAP-75-140-R | 75-140 | Adjustable | SPST | Stainless Steel | 36 | 7 | .20 |
| CAP-85-195 | 85-195 | Adjustable | SPST | Copper | 36 | 3.6 | .24 |
| CAP-85-230-R | 85-230 | Adjustable | SPST | Copper | 36 | 3.3 | .24 |
| CAP-100-320 | 100-320 | Adjustable | SPST | Stainless Steel | 36 | 4.5 | .19 |
| CAP-120-392-1 | 120-392 | Adjustable | SPDT | Stainless Steel | 36 | 4.8 | .19 |
| CAP-120-428 | 120-428 | Adjustable | SPST | Copper | 36 | 5.1 | .20 |
| CAP-120-570 | 120-570 | Adjustable | SPST | Copper | 36 | 3.5 | .20 |
| CAP-122-482 | 122-482 | Adjustable | SPST | Copper | 36 | 3.6 | .20 |
| CAP-140-475 | 140-475 | Adjustable | SPST | Copper | 21 | 4.9 | .20 |
| CAP-140-752 | 140-752 | Adjustable | SPST | Stainless Steel | 17 | 6.2 | .118 |
| CAP-150-285 | 150-285 | Adjustable | SPST | Copper | 36 | 4.7 | .250 |
| CAP-176-400 | 176-400 | Adjustable | SPST | Copper | 47 | 4.6 | .24 |

| Standard Temperature Ranges | Tolerance | Differential |
|---|---|---|
| 4-40ºC (40-104ºF) | ±2ºC (±3.6ºF) | 1.5º±1C (2.7º±1.8ºF) |
| 30-90ºC (85-195ºF) | ±3ºC (±5.4ºF) | 4º±2ºC (7.2º±3.6ºF) |
| 30-110ºC (85-230ºF) | ±4ºC (±7.2ºF) | 4º±2ºC (7.2º±3.6ºF) |
| 50-200ºC (122-392ºF) | ±8ºC (±14.4ºF) | 7º±4ºC (12.6º±7.2ºF) |
| 50-220ºC (122-428ºF) | ±8ºC (±14.4ºF) | 7º±4ºC (12.6º±7.2ºF) |
| 50-250ºC (122-482ºF) | ±9ºC (±16.2ºF) | 7º±4ºC (12.6º±7.2ºF) |
| 50-300ºC (122-570ºF) | ±9ºC (±16.2ºF) | 7º±4ºC (12.6º±7.2ºF) |
| 60-400ºC (140-752ºF) | ±12ºC (±21.6ºF) | 9º±4ºC (16.2º±7.2ºF) |

| Shaft Length Shaft diameter ø24 (6) x .18 (4.6) | | Mounting Bracket Center Holes | |
|---|---|---|---|
| inches | mm | inches | mm |
| 0.52 | 13 | 1.1 | 28/M4 thread |
| 0.71 | 18 | 1.3 | 33/6-32 thread |
| 0.87 | 22 | 1.7 | 44/6-32 thread |
| - | - | ● | ● |

**Standard Mechanical Specifications**

| Temperature Ranges | | Max. Ambient Exposure of Thermostat Case | | Max. Working Temperature of the Bulb | | Diameter of Copper Bulb | | | | Diameter of Stainless Steel Bulb | | | | Capillary Length | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Length | | Diameter | | Length | | Diameter | | | |
| ºF | ºC | ºF | ºC | ºF | ºC | inches | mm | inches | mm | inches | mm | inches | mm | inches | mm |
| 140-752 | 60-400 | 302 | 150 | 752 | 400 | ● | ● | ● | ● | 6.3 | 160 | .12 | 3 | 35.4 | 900 |
| 120-570 | 50-300 | 302 | 150 | 600 | 315 | 9.6 | 245 | 0.12 | 3.1 | 7.6 | 195 | .12 | 3 | 35.4 | 900 |
| 120-570 | 50-300 | 302 | 150 | 600 | 315 | 6 | 152 | 0.15 | 4 | ● | ● | ● | ● | 35.4 | 900 |
| 120-570 | 50-300 | 302 | 150 | 600 | 315 | 3.4 | 87 | 0.19 | 5 | 3 | 76 | .19 | 5 | 35.4 | 900 |
| 120-428 | 50-220 | 302 | 150 | 448 | 231 | 5 | 127 | 0.19 | 5 | 4 | 100 | .19 | 5 | 35.4 | 900 |
| 120-392 | 50-200 | 302 | 150 | 410 | 210 | 3.7 | 96 | 0.24 | 6 | 4.3 | 109 | .19 | 5 | 35.4 | 900 |
| 40-105 | 4-40 | 176 | 80 | 111 | 44 | 6 | 153 | 0.24 | 6 | 7 | 180 | .19 | 5 | 35.4 | 900 |
| 85-195 | 30-90 | 212 | 100 | 210 | 99 | 3.6 | 92 | 0.24 | 6 | 4.3 | 109 | .19 | 5 | 35.4 | 900 |
| 85-230 | 30-110 | 212 | 100 | 249 | 121 | 3 | 76 | 0.24 | 6 | 3.5 | 90 | .19 | 5 | 35.4 | 900 |
| 85-248 | 30-120 | 212 | 100 | 270 | 132 | 3.6 | 92 | 0.24 | 6 | 2.9 | 75 | .19 | 5 | 35.4 | 900 |
| 85-302 | 30-150 | 212 | 100 | 316 | 158 | 4.1 | 106 | 0.24 | 6 | ● | ● | ● | ● | 35.4 | 900 |

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### APPLICATIONS
- Chillers
- Test systems
- Food service equipment

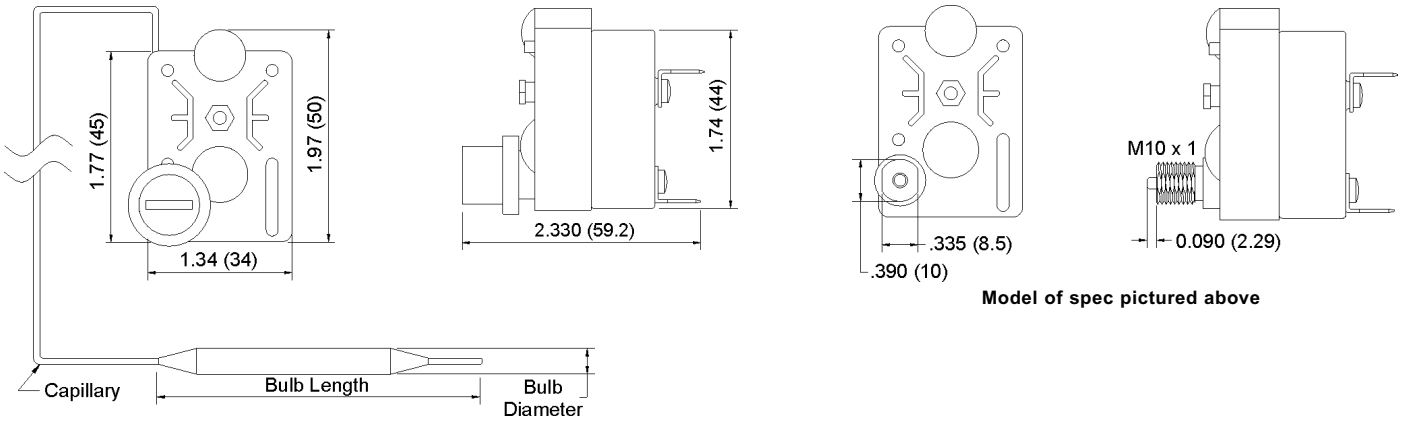
This non-recycling device trips at a predetermined, calibrated set point shutting down the thermal circuit until reactivated. The circuit will remain inactive until the thermostat is reactivated by manually depressing the reset button. Selco CAP-MR Series meets the requirement of U.L. trip-free device where the circuit remains open while the manual reset is held depressed.

### SPECIFICATIONS

| | |
|---|---|
| **Temperature range** | 32ºF to 752ºF (0ºC to 400ºC) |
| **UL electrical ratings** | 120/240VAC, 20 Amps, Resistive, 6,000 Cycles<br>120VAC, 5 Amps, Inductive, 6,000 Cycles<br>240VAC, 2.9 Amps, Inductive, 6,000 Cycles<br>125VA (pilot duty), 6,000 Cycles |
| **VDE electrical ratings** | 250VAC, 5 Amps, Inductive<br>400VAC, 1 Amp, Inductive<br>300 Cycles |
| **Options can include** | Compression fittings for mounting, screw terminals, quick connects, gold contacts, earth terminals, DIP seal |
| **Approvals** | UL Recognized File No. E168164(S), XAPX2<br>C-UL Recognized File No. E168164(S), XAPX8<br>E.C. Declaration of Conformity<br>RoHS Compliant |
| European | VDE, SEMKO, KEMA |

**Models available from stock - subject to availability**

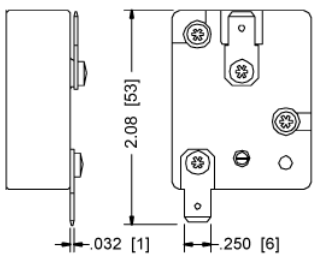
| Model Number | Set Point (ºF) | Capillary Length (inches) | Bulb Length (inches) | Bulb Dia. (inches) | Terminals |
|---|---|---|---|---|---|
| CAP-MR-140-SS | 140 ± 5.5 | 36 | 3.6 | .24 | .250 quick connects |
| CAP-MR-179 | 179 ± 5.5 | 36 | 3.3 | .24 | .250 quick connects |
| CAP-MR-200 | 200 ± 5.5 | 36 | 3.59 | .24 | .250 quick connects |
| CAP-MR-245 | 245 ± 7.2 | 12 | 3.3 | .24 | screw type |
| CAP-MR-284 | 284 ± 10.8 | 36 | 4.48 | .19 | .250 quick connects |
| CAP-MR-320 | 320 ± 10.8 | 36 | 3.0 | .24 | screw type |
| CAP-MR-392 | 392 ± 10.8 | 36 | 3.3 | .24 | .250 quick connects |
| CAP-MR-450 | 450 ± 16 | 36 | 4.7 | .19 | .250 quick connects |
| CAP-MR-500-1 | 500 ± 16 | 78 | 3.0 | .19 | .250 quick connects |
| CAP-MR-572-B | 572 ± 18 | 36 | 3.0 | .19 | .250 quick connects |
| CAP-MR-700 | 700 ± 18 | 36 | 6.0 | .12 | .250 quick connects |



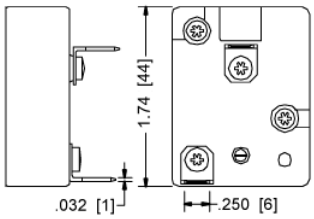

**Model of spec pictured above**

### Terminal Options

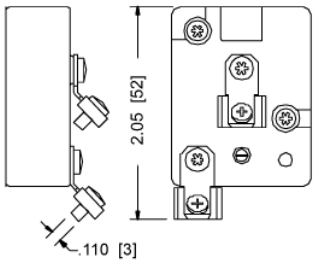
**Horizontal**




**Vertical**




**Screw (#8-32 or 4mm)**

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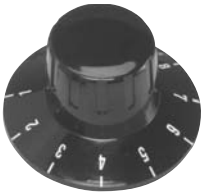
# Bulb & Capillary Thermostat Accessories

## Control Knobs and Dials

Selco's line of Bulb & Capillary thermostats come complete with a variety of brackets, terminals, dial plates, knobs and adjustment shaft options to accommodate a wide range of installation requirements. Custom printing available.



2266A/68-118

2302L

CAP-XXX-KNOB-1
(model shown with bezel)

A1010-3-250-SS2B

CAP-COMET-KNOB

CAP-XXX-KNOB
(model shown with bezel)

CAP-1-10-KNOB

DRD157006/109
DRD157006/110

**Models available from stock - subject to availability**

| Part Number | Diameter | | Height | | Material | Printing |
|---|---|---|---|---|---|---|
| | inches | mm | inches | mm | | |
| 2266A/68-118 | 2.62 | 66.5 | 1.00 | 25.5 | Thermoplastic | Numbers 1 thru 8, OFF |
| 2302L | 1.56 | 39.5 | 0.96 | 24.5 | Thermoplastic | White Dot |
| A1010-3-250-SS2B | 1.85 | 47 | 0.84 | 21.5 | ABS with Aluminum Top | Optional |
| CAP-1-10-KNOB | 1.65 | 42 | 0.63 | 16 | Thermoplastic | Number 1 thru 10 |
| CAP-ARROW-KNOB | 1.44 | 36.7 | 0.38 | 9.6 | Thermoplastic | White Swirl and Number 0 |
| CAP-COMET-KNOB | 1.65 | 42 | 0.63 | 16 | Thermoplastic | White Swirl and Number 0 |
| CAP-XXX-KNOB | 1.65 | 42 | 0.63 | 16 | Thermoplastic | Optional |
| CAP-XXX-KNOB-1 | 1.44 | 36.7 | 0.38 | 9.6 | Thermoplastic | Optional |
| DRD157006/109 | 1.14 | 29 | 0.69 | 17.5 | Nylon | White Arrow (same side as flat of 'D' shaft) |
| DRD157006/110 | 1.14 | 29 | 0.69 | 17.5 | Nylon | White Arrow (90º from flat) |
| CAP-BEZELS | 2.36 | 60 | 0.16 | 4.2 | Plated | ● |
| CAP-BEZELS-1 | 1.91 | 48 | 0.15 | 3.7 | Plated | ● |

* Shaft size: All knobs fit .24" x .18" (6mm x 4.6mm)

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## Custom Assembly Services Providing Cost and Time Savings As Easy As *1-2-3*

During the course of production, a product may have to go to several stations for soldering, crimping, or cutting. With Selco's value-added services, customers can order the product fully assembled, saving time in all areas - purchasing, receiving, labor, and production.

This valuable service offers a variety of custom assemblies and specialty product add-ons for Selco's line of thermal products. Selco's value added service provides custom brackets, specialty connectors and crimp terminals, solder or quick disconnect wire attachment, epoxy over-molding, application tooling, and lead wire and cable assembly. Also offered are special kits containing disc thermostats, thermal cut-offs, insulation sleeving, and molex connectors. Additionally, with Selco's volume purchasing of these small speciality items, customers eliminate paying premium prices.

Call to today to find out how Selco can eliminate the hassle of assembly and purchasing details that end up costing valuable time and money.

**1**

Call, fax or e-mail Selco's friendly and helpful customer support and select from Selco's large inventory of temperature sensors.

**2**

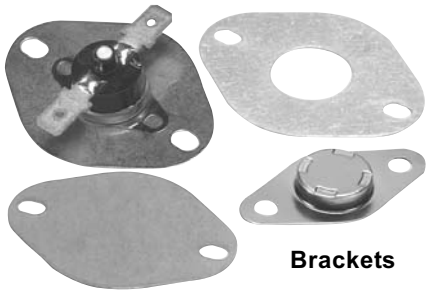
Choose from the various value added services provided by Selco (i.e., custom brackets, epoxy over-molding).

Consult with Selco customer support for further available value added services.

**3**

The fully assembled product is complete and ready to install in your application.

***It's as easy as 1-2-3 and saves time and money.***



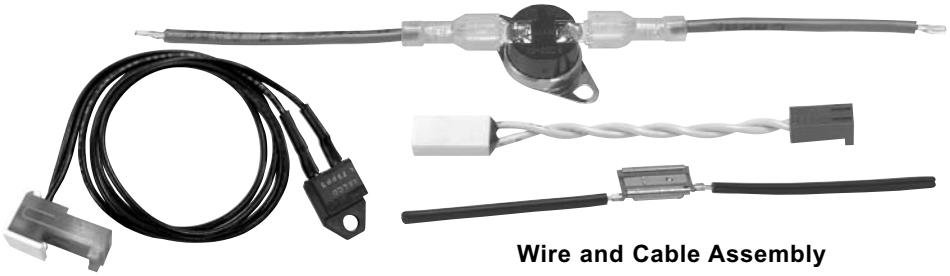
**Brackets**

**Lead Bending**

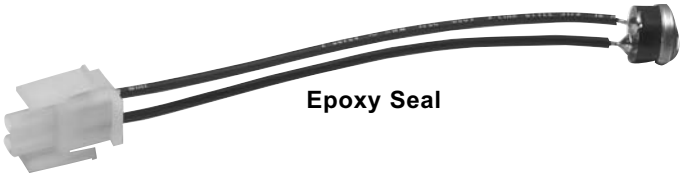
**Connectors**

**Mylar Sleeving**

**Probe Housings with Custom Termination**



**Wire and Cable Assembly**



**Epoxy Seal**

**Epoxy Overmold**

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# NTC Thermistors

Selco's line of high-quality, high-performance thermistors includes negative (NTC) temperature coefficients offering a complete selection from interchangeable, point matched, surface mount, and thin film models to life sciences probes as small as 0.019" in diameter. In addition, Selco can address custom applications with virtually unlimited options in materials, configurations, leads, and connections.

The complete selection of NTC thermistors offered by Selco includes:

**Interchangeable - IN Series**
- Choice of 1.0º to 0.1º tolerance
- -50ºC to 150ºC temperature range
- .095" Epoxy head with various wire leads

**Point Matched - PM Series**
- -50ºC to 150ºC temperature range
- Accuracy for a single target temperature
- .095" Epoxy head and choice of wire leads

**High Precision - HT Series**
- -50ºC to 110ºC temperature range
- .157" Epoxy head size is larger than IN and PM models
- Excellent thermal cycle endurance over -50ºC to 110ºC

**High Precision - HP Series**
- More robust leads than HT Series
- Leads are .02" diameter and they can be board mounted
- Similar to High Precision - HT Series but smaller .14" epoxy head

**Temperature Sensing - TS Series**
- 3.42" overall length
- Insulated copper alloy wire leads
- Epoxy head smaller than IN and PM models

**Thin Film - TF Series**
- Our thinnest product at .030"
- Four standard lengths available
- Thermistor is covered by Capton Polyimide

**Diode Type - DT Series**
- DO35 standard package size
- Glass encapsulated thermistor
- Largest temperature range available - from -50ºC to 250ºC

**Surface Mount - CT Series**
- Maximum power rating of 4-6 mW at 25ºC
- Low dissipation value of 0.9 mW/C in still air
- Standard chip package sizes: 0603, 0805 and 1206

**Surface Mount - SM Series**
- Dissipation value of 3.5 mW/C in still air
- Maximum power rating of 350-450 mW at 25ºC
- Standard chip package sizes: 0402, 0603 and 0805

**TR Series - White goods products - harsh environments**
- Used in appliances
- Maximum power rating of 250-500 mW at 25ºC
- Compact stainless steel case with integral plug

**Life Sciences - LS Series**
- Small size at .078" head diameter
- Thermal time constant of 1.25 seconds in stirred oil

**Life Sciences Mini - LSMN Series**
- Smaller size at .035" head diameter
- Thermal time constant of 0.4 seconds in stirred oil

**Life Sciences Micro - LSMC Series**
- Smallest size at .0185" head diameter
- Thermal time constant of .25 seconds in stirred oil

**Custom Thermistors and Probes**
- You choose the thermistor features, probe housing, wire and connectors to fit your application

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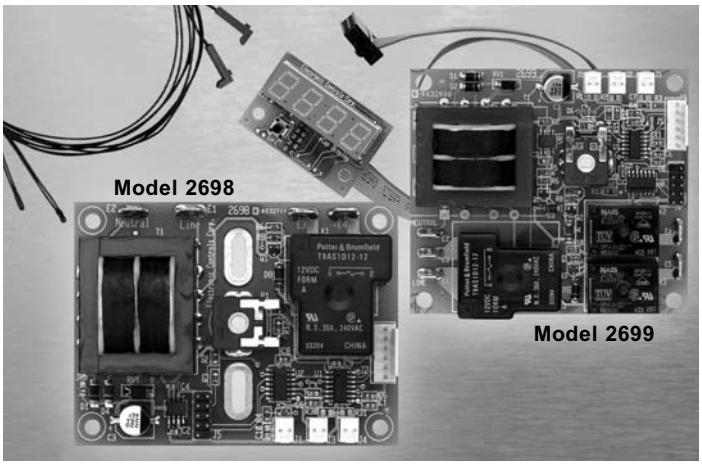
# Cold/Hot Temperature Controllers
## Models 2698/2699




**FEATURES**

- Class 2 Isolation
- Microprocessor control
- UL approved file #: E230832
- Optional external switch input
- Conformal coating for operation in moist environments
- Optional expansion connector to support a remote digital display/user panel

Selco/ECC Model 2698/2699 Cold/Hot Controllers offer high-end electronic features to provide extremely sophisticated sensing and control of heating, cooling, and humidity. Typical applications include cooling and heating controls for cooking equipment, freezers, refrigerators, and dehumidifiers.

The electronic controllers feature a number of enhanced control options including two or four-digit push-button display panels and bi-color LED indication. Incorporating microprocessor-based technology, the controllers provide excellent performance accuracy, repeatability, and stability.

For maximum versatility, users can select from power input options of 115 VAC or 230 VAC, with Class 2 Isolation Transformer. Further flexibility is provided via the onboard POT or connector that can optionally be used with input signals such as humidity, pressure, or other.

Model 2699 has all the same features as Model 2698, however, includes up to three outputs and onboard bi-color LED indicator. The additional outputs can be programmed to drive a fan, lights, damper, heater, or compressor.

Both models have been designed for ON/OFF cooling control for temperature between -40°F to +100°F (-40°C to +24°C), or heating control for temperatures between 0°F to 285°F (-170°C to 140°C). Our library of tested application software helps us respond quickly to your requests for testing samples. Please contact us with your control needs.

## SPECIFICATIONS

| | |
|---|---|
| **MODEL 2698** | |
| **Inputs** | |
| Power | Standard Transformer<br>115 or 230 VAC (factory settable)<br>Class 2 Isolation Transformer - 2.4VA |
| Signal | Two thermistors maximum<br>Optional external switch input<br>Onboard POT or connector for external POT |
| **Outputs** | |
| Power | One 30A SPST or SPDT Relay |
| Signal | Optional connector to support remote digital display or user panel |
| **Controls** | Onboard potentiometer used for setpoint adjustment or adjustment on user panel |
| **Environment** | Operational temperature range: 0ºF to 140ºF<br>Conformal coated |
| **Mechanical** | PCB size: 3.40” L x 2.55” W |
| **Compatible User/ Display Panels** | Four digits/one push-button display panel (ECC part number: 399-0643)<br>Four digits/five push-buttons, 6 LED user panel (ECC part number: 399-0644)<br>Two digits/four push-buttons, 4 LED user panel (ECC part number: 399-0646) |
| **MODEL 2699** | |
| **Inputs** | |
| Power | Standard Transformer<br>115 or 230 VAC (factory settable)<br>Class 2 Isolation Transformer - 2.4VA or 6VA |
| Signal | Two thermistors maximum<br>Optional external switch<br>Onboard POT or connector for external POT |
| **Outputs** | |
| Power | Output 1: 30A SPST relay<br>Output 2: 7A or 10A SPST relay<br>Output 3: 7A or 10A SPST relay |
| **Controls** | Onboard potentiometer used for setpoint adjustment or adjustment on user panel |
| **Indicators** | Optional onboard bi-color LED indicator |
| **Environment** | Operational temperature range: 0ºF to 140ºF<br>Conformal coated |
| **Mechanical** | PCB size: 3.40” L x 3.10” W |
| **Compatible User/ Display Panels** | Four digits/one push-button display panel (ECC part number: 399-0643)<br>Four digits/five push-buttons, 6 LED user panel (ECC part number: 399-0644)<br>Two digits/four push-buttons, 4 LED user panel (ECC part number: 399-0646) |

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# NEW - Available IQ2008

## Model 2699B - Electronic Control

### Electronic Control Designed With a Large Microprocessor for Complex Applications

(visit www.selcoproducts for current information on Model 2699B)

**FEATURES:**

- Multiple Input Capability
  - * Connection for thermocouple with range of 0ºC to 999ºC
  - * Connectiors for two thermistors with ranges of -40ºC to +150ºC
  - * Connections for up to two additional digital inputs, for humidity, pressure, etc.
- Support for standard or custom user-display panels
- 3 Onborad Relays
  - * One rated 30 Amps
  - * Two rated at 10 Amps
- Operate with 120VAC or 230VAC
- UL and CSA approvals pending

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# Digital Temperature & Time Controller
## Model 2901A

### FEATURES
- Microprocessor control
- UL approved file #: E230832
- LED display of time and temperature
- Temperature setpoint differential adjustable from 1 to 10 degrees
- All operating mode selections and parameter settings can be set from the front panel
- Multiple modes of operation for timer only or temperature and time controller

### BENEFITS
- Solid state relay output
- Easy-to-use and program
- A variety of input voltages

Model 2901A Digital Temperature and Time Controller features digital sensing and microprocessor-based solid-state technology for reliability and accuracy. Offering a broad temperature control range from 40ºF to 999ºF (4ºC to 530ºC), the controller can be used for a wide variety of commercial food equipment and industrial control applications.

Five operating modes provide the user with a great degree of flexibility from the time only control or simultaneous temperature and time control. Depending on the mode selected, users can program for simple on/off temperature/time control, cook/heat and setback temperatures, or hold and cooking/heating temperatures. All operating mode selections and parameters are easily set from the front panel for optimum user convenience.

The 2901A Controllers allows user selection of type “J” (±5ºF accuracy) or “K” (±1.8ºF accuracy) thermocouple sensors and user-selectable temperature readings in ºF or ºC. Temperature setpoint differential is adjustable from 1 to 10 degrees. Power options include choice of Selco/ECC’s Solid State Transformer that automatically adjusts to line inputs from 75 to 305 VAC; 50/60Hz, or Standard Transformer input of 115/230VAC, 50/60Hz.

The 2901A features a 0.56-inch, four-digit LED display for easy readability of temperature and time indication and measures 6.2” L x 2.1” W. UL approved file #: E230832.

### SPECIFICATIONS

| | |
|---|---|
| **Input** | |
| Power | Standard Transformer<br>115/230VAC; 50/60Hz<br>Uses 0 Ω jumpers (factory set) |
| Sensors | Thermocouple - one input maximum<br>Types “J” or “K” - connected by two screw terminal blocks<br>“J” Type temperature range:<br>200ºF to 450ºF; ±5ºF accuracy<br>“K” Type temperature range:<br>200ºF to 450ºF; ±1.8ºF accuracy<br>“K” Type temperature range:<br>40ºF to 999ºF; TBD accuracy |
| External | Two 1/4” quick connect terminals for START switch at E1 & E2 (closure to ground) |
| **Outputs** | Drive for off-board 12V SSR<br>Audible (onboard) beeper |
| **Controls** | Standard controls consist of three pushbutton switches (MODE/SET, DOWN, and UP). An optional fourth pushbutton can be implemented for various applications. |
| **Indicators** | 4 seven segment LED displays |
| **Environment** | Operational temperature range: 0º to 158ºF |
| **Factory Options** | Miniature iso-therm connector instead of two screw terminal blocks for thermocouple |

### ORDERING MAP

**2901A - X 0 0 0**

**Input Voltage Options**
1 = 115VAC; 50/60Hz
2 = 230VAC; 50/60Hz
3 = 208VAC; 50/60Hz
4 = User Selectable - Standard Transformer 115/230VAC; 50/60Hz
5 = 12-24VAC/VDC; 50/60Hz”

**Recommended SSR External Output Device**

| Description | Selco/ECC Part # |
|---|---|
| 10 Amps with .250 quick connects | 1310-0110 |
| 30 Amps with .250 quick connects | 1310-0130 |
| 10 Amps with screw terminals | 1310-0210 |
| 30 Amps with screw terminals | 1310-0230 |

**It is the customer’s sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements**

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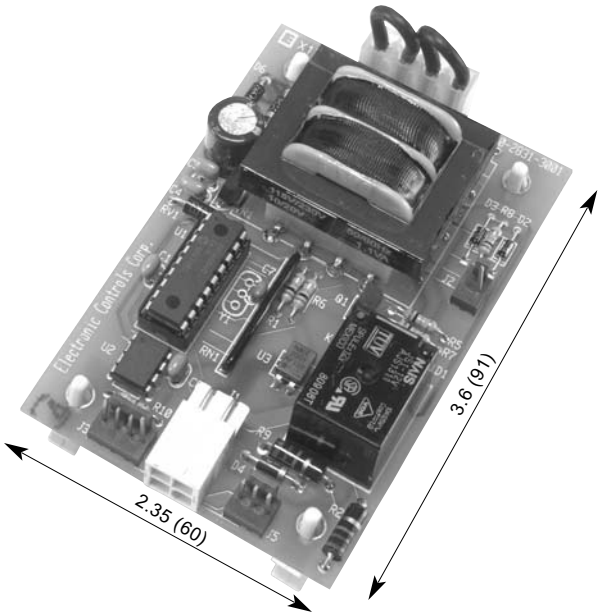
# Programmable Timer
## Model 2831




### BENEFITS
- Easy-to-use and program
- Dual range programmable timer
- Optional indicating panel mount LED
- A variety of power inputs and outputs
- Maintains memory (time is saved during power loss)

### FEATURES
- UL approved file #: E70766
- Dual teachable time settings
- Time setting is done by example
- Ideal for timed food or liquid dispensing
  *Application examples: coffee brewing, cheese and chemical dispensing*
- Optional flowmeter support for volume instead of time mode
- Two different start modes, (Isolated) AC activation or panel push button

Model 2831 is a dual range timer and is also designed to be a plug-in replacement for Model 2577 Teachme Timer. Both timing ranges are programmed by example. For instance, if you are filling a glass with liquid, just fill the glass once while in program mode, and the time will be remembered (even if power is removed) until it is reprogrammed. An optional panel mount LED indicates that dispensing is in progress. The start button can either be connected to the AC line for 110/220 VAC activation or if low voltage is desired, the button can be connected straight to the board.

### SPECIFICATIONS

| | |
|---|---|
| **Input Power** | Selection either by fixed factory setting or jumper selectable field setting |
| **Input/Output Power Connections** | Amp Part #: 770968-1, Type 4 pin PCB mount connector (Amp Mating Plug #: 172167-1, Pins #: 77098-1) |
| **Input Signals** | AC start, cycle select, program, alternate start |
| **Input Signal Connections** | 0.1" Molex IDC type 4 pin connector |
| **Outputs** | Connects up to 10A load to input power |
| **Control Logic** | Two separately teachable timers with one start switch and one timing select switch |
| **Timing Range** | 0.050 seconds to 54 minutes<br>Other timing ranges available |
| **Timing Resolution** | 0.050 seconds |
| **Timing Repeatability** | 1% |
| **Mechanical** | Overall dimensions: 2.35" W x 3.6" L x 1.5" D<br>Four standoffs are included to mount in 0.156" mounting holes. Mounting footprint is for 1.75" x 3.0" mounting dimensions. |
| **Maximum Operating Environmental Temperature** | +30ºF to 158ºF; 0 to 90%RH, non-condensing |
| **Options** | Conformal coating |

### ORDERING MAP

**2831 - X X X X**

**Input Voltage Options**
1 = 115VAC; 50/60Hz
2 = 230VAC; 50/60Hz
3 = 208VAC; 50/60Hz
4 = User Selectable - 115/230VAC; 50/60Hz
5 = 24VAC/VDC

**Output Connection**
0 = SSR output
1 = Relay output committed to input voltage connection

**Output Type**
1 = 10 Amps Electromechanical (SPDT)*
4 = 1 Amp onboard SSR**

**Control Type**
1 = Standard time
2 = Pulse - type flowmeter

* Maximum DC switching voltage 100VDC at 5 Amps
** 6 Amps maximum or 1 Amp average current

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# Glossary and Terms and Conditions

**Air mount:** Designed to sense the air temperature

**Ambient temperature:** The surrounding temperature or environmental temperature

**Automatic reset:** A type of thermostat that will reset itself at a specific temperature (set point - differential = reset temperature)

**Bimetal:** Two different metals that bond together to form the disc that actuates the thermostat when reaching a specified temperature

**Close on-rise:** Normally open contacts; when the temperature rises to the specified temperature the contacts close

**Contact resistance:** The resistance measured in ohms from across the circuit

**Dielectric strength:** The voltage that an insulating material can withstand before breakdown occurs

**Differential:** The difference between opening and closing temperatures - also known as the hysteresis

**Electrical contact rating:** The maximum volts and amps that the device has been tested to withstand

**Exposure temperature:** Thermal environment a device will see during application operation

**Epoxy seal:** A seal to protect against dust and moisture

**Insulation resistance:** Measures the resistance of the insulating member of the device to a direct voltage

**FLA (Full load amps):** The amount of current a motor will pull in a locked condition

**Life cycles:** The endurance rating of a device expressed in number of operations with stated electrical load applied

**LRA (Locked rotor amps):** The amount of current a motor will pull in a locked condition

**Manual reset:** The thermostat will remain open until it resets manually - also known as a high limit

**Open on-rise:** Normally closed contacts; when the temperature rises to the specified temperature the contacts open

**PBT:** Polybutylene Terphtalate

**Phenolic:** An insulating thermo-set plastic used for the body of specific thermostats

**Set point:** Operating temperature; temperature at which the disc changes its curvature (snaps) to open or close electrical contacts

**SPST (Single pole, single throw):** One set of terminals to activate or deactivate a circuit

**SPDT (Single pole, double throw):** An electrical switch capable of controlling two different circuits

**Snap-action:** Fast sudden change in temperature that will cause the bimetal to snap

**Surface mount:** Designed to sense temperature of the surface as opposed to the air temperature

**Tolerance:** An additional range above or below the nominal set point

**Warranty**
One year on most products. Seller extends the same warranties to buyer as the manufacturer extends to seller. All other warranties, whether expressed or implied, are hereby disclaimed except as set forth herein. It is the buyer's sole responsibility to specify and determine the suitability of a particular control or component based on their unique individual applications and requirements.

**Damages and Shortages**
Inspect immediately for damages and shortages upon receipt of merchandise. All claims for shortage, damage or shipment error must be made within 14 days of receipt.

**Payment Terms**
Selco accepts Visa, Mastercard, American Express, C.O.D., or Net 30 on approved credit.

**Returns**
No returns will be accepted without seller's prior authorization. Please contact a Selco sales representative for documentation authorizing each return and include a copy with the returned product. Returns should include P.O. number, invoice number and explanation for return. All returns must be freight prepaid unless authorized by Selco. All authorized returns are subject to a restocking charge. Credit will be issued only after receipt and examination of returned merchandise. Replacement merchandise will be sent out and invoiced as a new order. Any credit due will be issued against the old invoice.

**Minimum Orders**
Minimum order of $50.00 for single shipment orders and $100.00 on blanket (multiple shipments) orders.

**Contact Selco for distributors or representation in your area**

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# Notes