

## Control Option K – Proportional

Control Option K is designed for the most precise temperature control, using SCR proportional power controllers and a matching electronic thermostat. For heaters above the KW ratings in **Table III**, an electronic step controller is also provided. It works with the SCR to provide vernier proportional control. For more details on this system, see page 21.

**Table III**

Voltage		120	208	240	277	480	600
Maximum KW	1 Phase	23.0	39.9	46.0	53.1	91.1	115.2
	3 Phase	—	34.5	39.9	—	79.8	99.7

In addition to these electronic components, Control Option K includes the following:

- **Automatic and manual reset thermal cutouts** and a differential pressure **airflow switch**. The manual reset thermal cutouts always de-energize the heater load. The automatic cutout and airflow switch are normally wired in the control circuit. However, when single-phase KW ratings do not exceed the values in **Table IV**, the automatic reset cutout carries the heater load directly and the airflow switch either carries the load directly or is wired into the control circuit of the SCR, eliminating the need for magnetic contactors.
- **Safety magnetic contactors** controlled by the automatic reset cutout, for each heater circuit, when the KW exceeds the ratings in **Table IV**.

**Table IV**

Single-Phase Voltage	120	208	240	277
Maximum KW	3.0	5.2	6.0	6.0

- **De-energizing, magnetic contactors** for each heater circuit, other than the SCR circuit, when the system includes a step controller.
- **Fuses** to protect each circuit in any heater drawing more than 48 amps.
- A **transformer**, with any overcurrent protection required by UL or the NEC, to supply the internal control circuit of 120 volts per heater with a step controller for vernier control and 24 volts for all other heaters with SCR control. Wiring to remotely mounted thermostats can be Class II since thermostat circuits are low voltage limited power circuits.
- A built-in, snap-acting **disconnect switch** with door interlock to protect service personnel.
- A choice of room thermostat, page 12, Figure 13 or 14; duct thermostat, page 13, Figure 18 or 19; built-in PE transducer, page 12, Figure 15; or field inputs of 135 ohms, 2200 ohms, 0-10 VDC and 4-20mA are available.



# Standard Control Options

## Thermostats

### Room Thermostats

#### Single Stage, Catalog No. 1006998

- Built-in thermometer and adjustable heat anticipator
- Range: 50° to 90°F
- Differential: 1°F
- Inductive Rating: 1 amp at 30 volts max.



Figure 11.

#### Two Stage, Catalog No. 1007030

- Two mercury switches operated by a vapor-filled bellows
- Built-in thermometer
- Range: 46° to 84°F
- Differential: 1°F per stage  
Adjustable 1° to 5°F between stages
- Resistive Rating per Heater Stage:  
2.0 amps at 120 volts  
1.0 amp at 240 volts



Figure 12.

#### Electronic Proportional, Catalog No. 1007101

- Tamperproof construction
- Range: 40° to 90°F
- Type: Ohmic – 2200 ohms
- For use with INDEECO S95 step controllers



Figure 13.

#### Electronic Thermostat, Catalog No. 1016941

- C1025 Thermostat is microcomputer-based, PI Control
- Range: 50° to 90°F
- Type: Proportional 0-10 VDC
- For use with INDEECO SCR's and S208 step controllers



Figure 14.

### PE Transducer

#### Catalog No. 1020887

- Built into heater terminal box
- PSIG range: 0 to 15
- Throttling range: 1 – 12 psi
- Maximum pressure: 25 psi
- Type: Ohmic – 135 ohms
- For use with INDEECO SCR's and step controllers



Figure 15.

# Standard Control Options Thermostats

## Duct Thermostats

### Single Stage Heavy Duty, Catalog No. 1019682

- Hydraulic-action element actuates silver contacts
- Range: 20° to 120°F
- Differential: 4° to 30°F Adjustable
- Bulb Dimensions:  $\frac{3}{8}$ " x 6"
- Capillary Length: 8'
- Resistive Rating:  
25 amps at 120 volts  
22 amps at 240 volts  
18 amps at 277 volts



Figure 16.

### Two Stage Light Duty, Catalog No. 1007044

- Two single-pole, double throw switches
- Adjustable by screw on graduated cam dial
- Range: 55° to 85°F
- Differential: 2°F between stages
- Bulb Dimensions:  $\frac{5}{8}$ " x  $11\frac{1}{16}$ "
- Capillary Length: 5'6"
- Resistive Rating per Heater Stage:  
13.3 amps at 120 volts  
6.6 amps at 277 volts



Figure 17.

### Electronic Proportional

Catalog No.: Sensor, 1001083

Adjuster, 1001068

- Range: 60° to 120°F
- Type: Ohmic – 2200 ohms
- For use with INDEECO S95 step controllers



Figure 18.

### Electronic Thermostat

Catalog No.: Sensor, 1016942

Adjuster, 1016941

- Range: 50° to 90°F
- Type: PI Proportional 0-10 VDC
- For use with INDEECO SCR's and S208 step controller



Figure 19.



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