

INDEECO can provide a control system for any electric heating application. We have built thousands of heater control panels. In-house manufacture of control enclosures in our sheet metal department, and in-house manufacture of electronic controls by our Controls Division, gives INDEECO the flexibility to supply a wide range of remote or built-on control panels to complete the heater control system. Our experienced engineering staff can design control systems ranging from ON/OFF logic to fully proportional SCR, multiple channel and ramp/soak control with computer interface capability.

INDEECO offers two standard control panel designs: Fully proportional SCR control and ON/OFF contactor control. All components are factory mounted and wired in compliance with the National Electrical Code.



Contactor Control Panels

This contactor-based system with ON/OFF process temperature control is recommended for less demanding applications. Systems with two or more heating stages utilize an INDEECO Controls electronic sequencer (step controller), driven by a proportional output temperature controller to minimize the amount of load cycling while providing good outlet temperature control.

Standard Features:

- INDEECO microprocessor-based sequencer (for panels with two or more heating stages)
- Proportional indicating temperature controller (adjustable process temperature with thermocouple input)
- NEMA 12 painted steel enclosure, wall mount unless otherwise noted
- Overtemperature controller (adjustable temperature limit with thermocouple input)
- Manual reset pushbutton with built-in pilot light (red) for visual "OVERTEMPERATURE" alarm
- Door interlock disconnect switch
- Selector switch – ON/OFF with built-in pilot light (green) for "POWER ON" indication
- Control power transformer
- Disconnecting magnetic contactors
- Circuit fusing
- Installation and operation manual

Amps	Number Of Circuits	Amps Per Circuit	Maximum KW		Approximate Dimensions (Inches)			Estimated Weight (Lbs.)
			240V/3PH	480V/3PH	Height	Width	Depth	
48	1	48	19	39	24	24	8	95
96	2	48	39	79	30	24	8	100
144	3	48	59	119	36	30	8	125
192	4	48	79	159	42	30	8	130
240	5	48	99	199	48	36	8	165
288	6	48	119	239	48	36	8	190
336	7	48	139	279	60	36	8	195
384	8	48	159	319	60	36	8	200
432*	9	48	179	359	60	48	12	390
480*	10	48	199	399	60	48	12	400

*These panels have double doors and 12" high floor stands.

Control Panels

SCR Control Panels

This fully proportional SCR system with PID temperature control is recommended for industrial heating applications which must accommodate material flow changes and provide the highest degree of accuracy for outlet temperature control.

Standard Features:

- PID self-tuning temperature controller (adjustable process temperature, with thermocouple input)
- INDEECO three-phase, zero cross-fired, SCR power controllers
- NEMA 12 painted steel enclosure, wall mount unless otherwise noted
- Overtemperature controller (adjustable temperature limit with thermocouple input)
- Manual reset pushbutton with built-in pilot light (red) for visual "OVERTEMPERATURE" alarm
- Door interlock disconnect switch
- Selector switch – ON/OFF with built-in pilot light (green) for "POWER ON" indication
- Control power transformer
- Safety contactors
- Circuit fusing
- Ventilating fan and filter when required
- Installation and operation manual

Amps	Number Of Circuits	Amps Per Circuit	Maximum KW		Approximate Dimensions (Inches)			Estimated Weight (Lbs.)
			240V/3PH	480V/3PH	Height	Width	Depth	
SCR panels with externally mounted heat sinks								
48	1	48	19	39	24	24**	8	100
70	1	70	29	58	30	24**	8	110
96	2	48	39	79	30	24**	8	130
140	2	70	58	116	42	30**	8	140
144	3	48	59	119	36	30**	8	170
210	3	70	87	174	48	36**	8	220
192	4	48	79	159	42	30**	8	185
280	4	70	116	232	60	36**	8	250
240	5	48	99	199	48	36**	8	220
350	5	70	145	290	60	36**	8	270
SCR panels with internally mounted heat sinks, fans and filter								
180	4	45	74	148	42	30	8	180
225	5	45	93	186	48	36	8	220
350*	8	44	145	290	60	48	12	440
500*	11	45	207	415	72	60	12	500

*These panels have double doors and 12" high floor stands.

**Additional 5" clearance required for externally mounted heat sinks.

Cooling Tower Control Panels

INDEECO offers a pre-engineered, UL Listed/CSA Approved package for freeze protecting cooling tower basins.

The complete package includes:

- Electric Immersion Heater(s)
- Control Panel with Solid-State Printed Circuit Board
- Sensor Probe with Cord
- Wiring Diagram
- Installation and Operating Instructions

INDEECO offers the following options:

- Disconnect Switch
- Fuses
- Circuit Breaker



INDEECO Heater Control Panels offer these advantages:

Solid-State Control

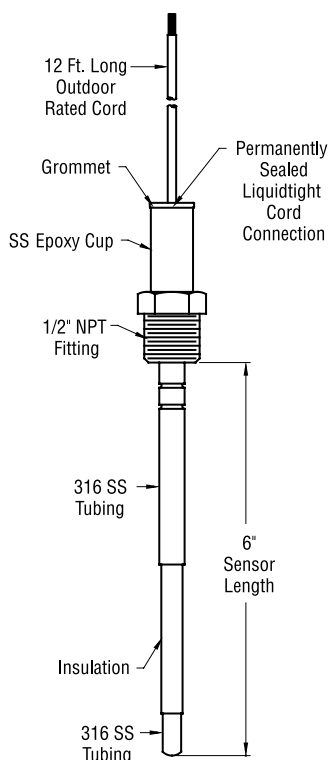
Outmoded bulb and capillary control has been replaced with new patented solid-state technology which combines temperature control with low water level protection in a single solid-state device.

NEMA 4X Enclosure

All controls are factory wired inside a rugged NEMA 4X enclosure designed for wet, outdoor use. Pre-engineered designs up to 96 amps are available with stock and built-to-order listings.

Lower Cost

Installation time and cost are reduced by replacing individually mounted temperature and liquid level control devices with one pre-engineered and assembled control package that requires only one probe to sense both water temperature and level.



Sensor Probe Specifications:

- Sensor Probe: INDEECO probe assembly incorporating both temperature and liquid level sensors. Probe is made out of 316 stainless steel to minimize corrosion. Probe can be installed vertically or horizontally.
- Maximum Pressure Rating for Sensor Probe: 15 psi
- Cord: 12-foot outdoor rated cord with PVC hub connector for installation through tower basin wall. Options include different cord lengths or cord suitable for total immersion.

Cooling Tower Control Panel Specifications:

- Solid-State Control: Pre-set 45° F ON/OFF temperature control with 5° F switching differential and built-in low water cutoff. Circuit board LED's provide visual indication of heater-on and liquid level status.
- Ambient Temperature Range: -40° F to 150° F
- Fail Safe: Output relay is de-energized if the input sensor is either open or short-circuited. This prevents heater burn-out problems.
- NEMA 4X enclosure with pre-mounted electrical hubs for conduit connections.
- Single probe to sense both water temperature and water level. Sensor probe supplied with 12-foot outdoor rated cord pre-connected to control panel. Probe also supplied with PVC hub connector for attachments through cooling tower basin wall.
- Nameplate showing maximum KW and amp ratings at system volts/phase.
- System Wiring Diagram.
- Installation and Operating Instructions.
- Rated for maximum of 40 amps or 50 amps with disconnect switch when specified.
- Suitable for multiple heaters per basin (maximum of 2 on 40 amp panel).
- Disconnect switch with door interlock and operator handle, which can be padlocked in the "OFF" position.
- Dimensions: 8" x 10" x 6" for 40 amp size
10" x 12" x 7" for 50 amp size
14" x 16" x 8" for two circuits
- Control panels rated greater than 50 amps are supplied with two circuits and offered either with built-in fusing or a circuit breaker for each circuit.