



COOLING TOWER CONTROL PANELS FOR ELECTRIC BASIN HEATERS



INDEECO offers a pre-engineered, UL Listed / CSA Approved package for winterizing Cooling Towers.

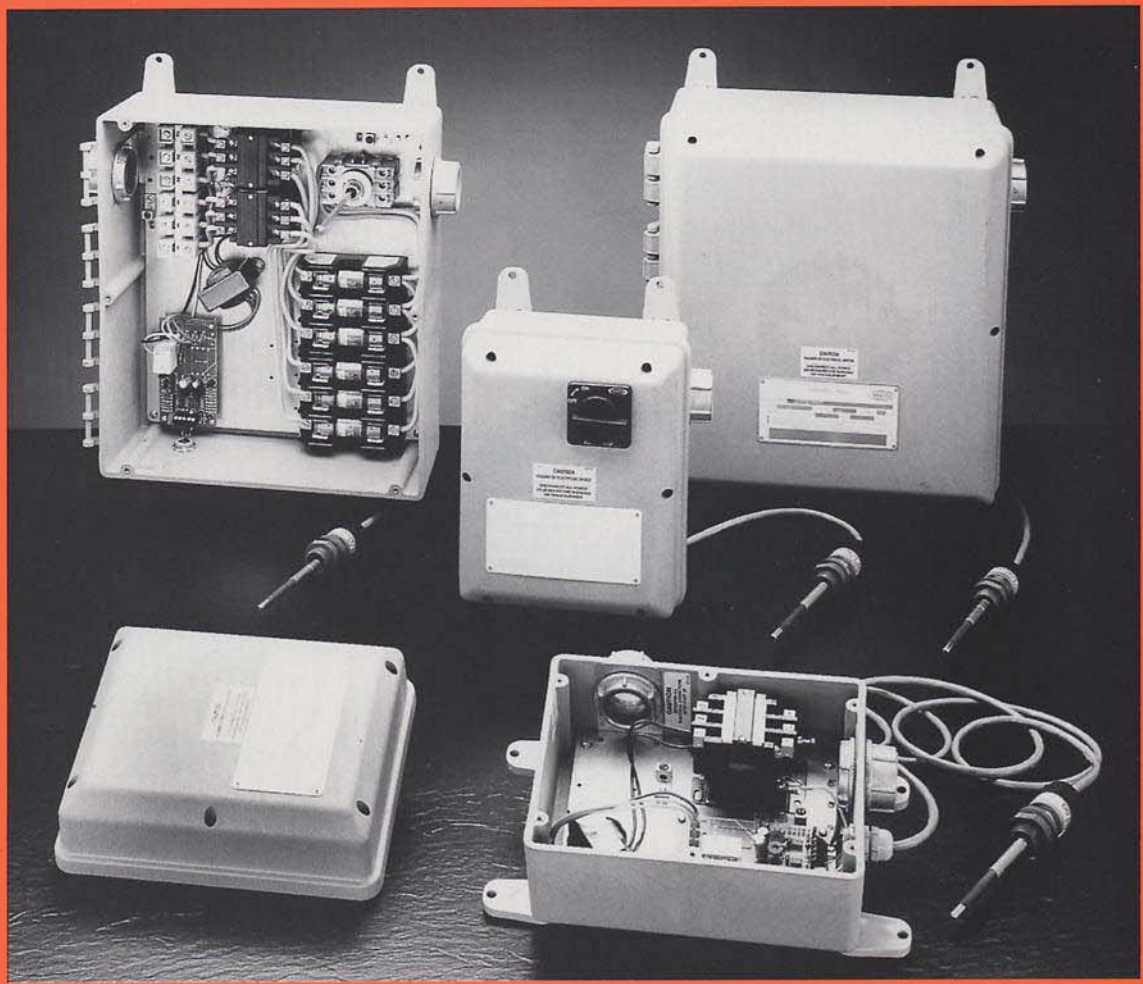


INDEECO heaters and control panels provide maximum cooling tower freeze protection. The complete package includes:

- Electric Immersion Heater(s)
- Control Panel
- Sensor Probe
- Wiring Diagram
- Installation and Operating Instructions

INDEECO offers the following components in their Control Panels:

- SOLITECH Combination Temperature Controller / Low Water Cutoff
- Contactor(s)
- Transformer
- Disconnect Switch
- Fuses
- Circuit Breaker



A Complete Package

INDEECO Heater Control Panels offer these 3 advantages.

1 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.

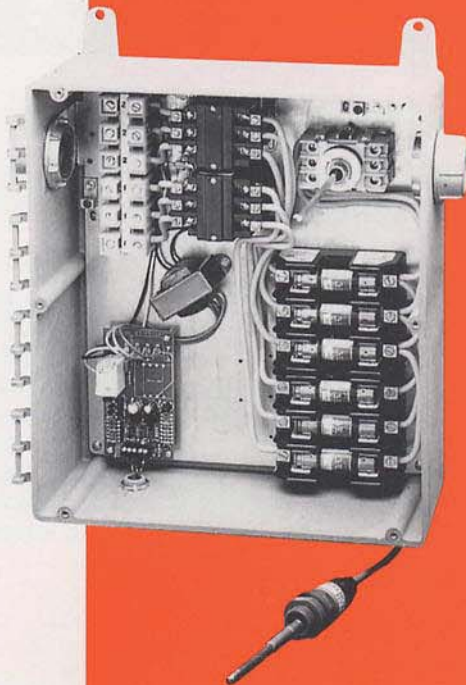
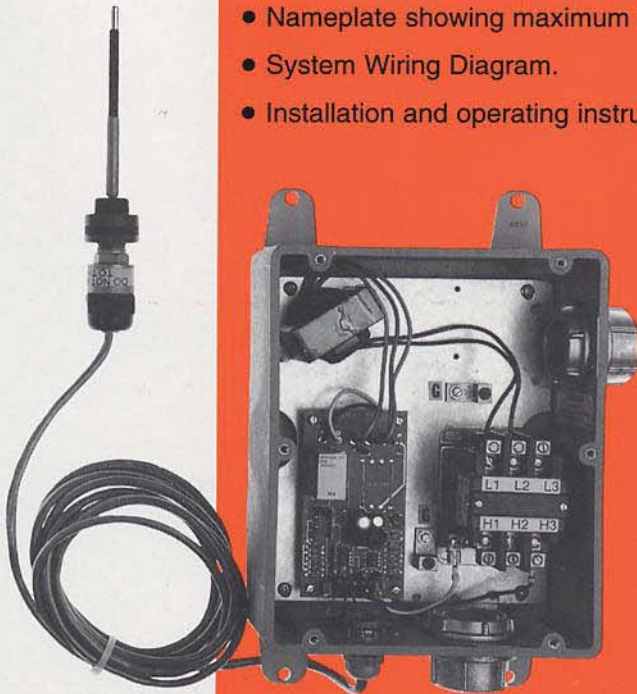
2 NEMA 4 Enclosure
All controls are factory wired inside a rugged NEMA 4 enclosure designed for wet, outdoor use. Pre-engineered designs up to 96 amps are available with stock and Built-to-Order listings.

3 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.

Heater Control Panels

All Heater Control Panels Have:

- NEMA 4 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.
- Standard built-in controls include SOLITECH Series TL Combination Controller preset at 45°F, Disconnecting contactor(s), and 24 volt Class 2 control circuit transformer. Panels rated above 50 amps are provided with two circuits with each circuit either fused or with circuit breaker. All panels are UL Listed/CSA Approved and are in accordance with NEC/CEC requirements.
- Nameplate showing maximum KW and amp ratings at system volts/phase.
- System Wiring Diagram.
- Installation and operating instructions.



Stock Control Panels

Rated for Max of 40 amps or 50 amps with disconnect switch when specified.

- Standard built-in controls
- 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"x10"x6" for 40 amp size
10"x12"x7" for 50 amp size

See Table 1, for stock listings.

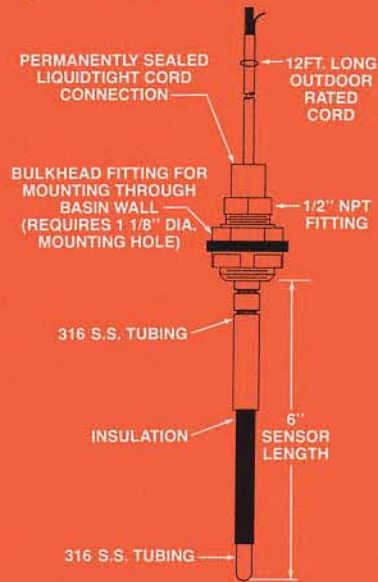
Built to Order Control Panels

- Standard built-in controls.
- Control Panels rated greater than 50 amps are supplied with 2 circuits and offered either with built-in fusing or a circuit breaker for each circuit.
- Disconnect Switch with door interlock and operator handle which can be padlocked in the "off" position.

See Table 2 for the listing of the following combinations of built-in controls:

- Fusing for each circuit.
- Fusing for each circuit plus a disconnect switch with door interlock and operator handle which can be padlocked in the "off" position.
- Circuit breaker for each circuit.
- Circuit breaker for each circuit plus a disconnect switch with door interlock and operator handle which can be padlocked in the "off" position.

Figure 1 - Sensor Probe



SOLITECH Series TL Combination Controller and Sensor Probe 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 LEDs 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.

Sensor Probe: (See Figure #1) SOLITECH 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 Heaters



Pipe Thread

2" NPT Immersion heater, 50 w/in² construction, available with copper elements / brass fitting or stainless steel element / stainless steel fitting, cast NEMA 4 terminal box. Commonly used in sump area when full length heat distribution is not required. Over 500 stock and 1500 assembly stock sizes are available for quick delivery.

Series 761 (3/4" NPT, single phase voltage only)
Series 762 (1 1/4" NPT, single or three phase voltage)

3/4" or 1 1/4" NPT Immersion heaters, low watt density construction, stainless steel sheath and fitting, up to 240" length, cast NEMA 4 terminal box, and sludge legs. Used when heat distribution is required across bottom of entire basin.

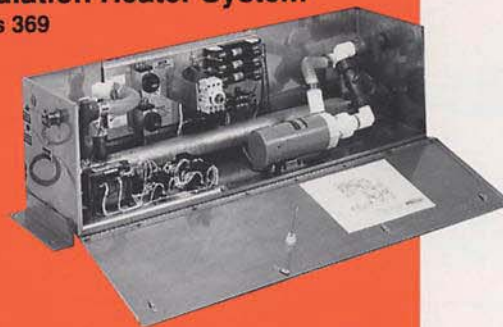


Over-the-Side Series 743

Over-the-Side heaters are used in brick, concrete or fiberglass basins that cannot be penetrated. Available in a variety of sheath and riser materials with Nema 4 terminal box.



Circulation Heater System Series 369



A compact circulation heater system, including pumps and controls, in a single skid mounted assembly which pumps and continually circulates heated water through both the basin and pipelines.

For listings and availability on above heaters, contact the factory or your nearest representative.
Request Immersion Heater Catalog C70 and Circulation Heater Catalog C35.

Sample Immersion Heater and Control Panel Specifications for Cooling Tower Basin Freeze Protection.

A job specification can be prepared by copying the sections below,
and marking or filling in the applicable blanks or check boxes:

Total () KW required to be supplied
in quantity of () Immersion heaters (equal KW / heater),
at () volts/() phase.

All heaters to be INDEECO:

- Series 713 UL Listed Water Immersion Heater - 2" NPT Pipe Thread heater, 50 w/in² with:
 - Copper elements & Brass fittings
or
 - Stainless steel elements & fitting
- Series 743 - Over-the-Side heater w/sludge legs, 50 w/in² with:
 - Copper elements & brass riser
or
 - Stainless steel elements & riser
- Series 761 UL Listed Water Immersion Heater - 3/4" NPT Pipe Thread heater,
low watt density stainless steel element and fitting with sludge legs
- Series 762 UL Listed Water Immersion Heater - 1 1/4" NPT Pipe Thread heater, low watt
density stainless steel element and fitting with sludge legs.

Pipe Thread style heaters to be supplied with Scru-Tite Hubs for field mounting through basin wall.
All pipe thread heaters to have rugged, cast metal, NEMA 4 terminal boxes.

NEMA 4 Control Panel to be INDEECO catalog number (874Z-XXXXXX)

Max Panel rating to be ()KW, at()volts/()phase.
Control Panel to be UL Listed/CSA Approved and shall include:

- SOLITECH Series TL Combination Controller, preset at 45°F, with single
probe to sense both water temperature and water level.
- Disconnecting Contactor(s) and 24V control circuit transformer.
- Disconnect Switch with door interlock and operator handle which can be
padlocked in the "off" position.
- Fusing / Circuit.
- Circuit Breaker / Circuit.
- Auxiliary Contact for remote "Heater On" indication.
- Interlock connection for interface with remote pump, fan, or hi-limit.
- Optional () foot sensor cord (standard is 12 feet).
- Immersion rated sensor cord for use with over-the-side immersion heater.
- Optional 0 - 100°F adjustable temperature range (standard is 45°F
preset) with adjustable time delay and resistivity.

Table 1 - Stock Control Panel Listing

Max. Panel Amps	Number of Circuits	Maximum Panel KW Rating							Catalog Number 874Z (plus 6 digits below)		Dimensions of Enclosure
		Voltage / 1 Phase				Voltage / 3 Phase			Standard Controls	With Disconnect Switch	
		120	208	240	480	208	240	480			
40	1	4.8	8.3	9.6	19.2	14.4	16.6	33.2	100000	103100	8"x10"x6"
50	1	6.0	10.4	12.0	24.0	18.0	20.7	41.5	101000	104100	10"x12"x7"

Table 2 - Built-To-Order Control Panel Listing

Max. Panel Amps	Number of Circuits	Maximum Panel KW Rating							Catalog Number 874Z (plus 6 digits below)			With Circuit Breaker & Disconnect	Max. Dimensions of Enclosure Based on 480 Volt Rating
		Voltage / 1 Phase				Voltage / 3 Phase			With Fusing	With Fusing & Disconnect	With Circuit Breaker		
		120	208	240	480	208	240	480					
24	1	2.8	4.9	5.7	11.5	8.6	9.9	19.9	106200	120400	113300	128500	14"x16"x8"
32	1	3.8	6.6	7.6	15.3	11.5	13.2	26.5	107200	121400	114300	129500	14"x16"x8"
40	1	4.8	8.3	9.6	19.2	14.4	16.6	33.2	108200	123400	115300	131500	14"x16"x8"
48	1	5.7	9.9	11.5	23.0	17.2	19.9	39.8	109200	124400	116300	132500	14"x16"x8"
64	2	7.6	13.3	15.3	30.7	23.0	26.5	53.0	110200	125400	117300	133500	20"x30"x8"
80	2	9.6	16.6	19.2	38.4	28.7	33.2	66.4	111200	126400	118300	134500	20"x30"x8"
96	2	11.5	19.9	23.0	46.0	34.5	39.8	79.7	112200	127400	119300	135500	20"x30"x8"

Control Panel Selection

- 1. DETERMINE TOTAL TOWER KW** and quantity of immersion heaters required (equal KW per heater) based on Cooling Tower manufacturer's recommendations, or contact INDEECO.
- 2. SELECT CONTROL PANEL CATALOG NUMBER** from Table 1 or Table 2 based on Control Panel type and Max Panel KW rating which must equal or exceed Total Tower KW (from step 1) at system voltage/phase.
- 3. CONTROL PANELS** rated over 50 amps are supplied with two equally rated circuits. Quantity and KW of heaters used must be compatible with these two circuits
- 4. OPTIONS** Available for any listed item (Catalog Number and Control Panel Dimensions may be revised)
 - Longer Sensor Cord* – Available up to 99 feet. Standard cord is 12 feet long.
 - Immersion Rated Sensor Cord* – for use when probe is mounted on an Over-the-Side heater. Standard cord is rated for "outdoor" use.
 - Adjustable 0 to 100° F Temperature Range* – Includes adjustable time delay and resistivity.
 - Auxiliary Contact* – For remote "Heater On" indication.
 - Interlock Connection* – For interface with remote pump, fan or hi-limit.

WHEN ORDERING, PLEASE SPECIFY:

- Catalog Number (Defines built-in components)
- Voltage / Phase
- Total Toner KW and quantity of heaters (max panel KW rating will be shown on panel nameplate).
- Options

Figure 2

WIRING DIAGRAM FOR STANDARD CONTROL PANEL WITH ONE HEATER CIRCUIT AND NO OPTIONS

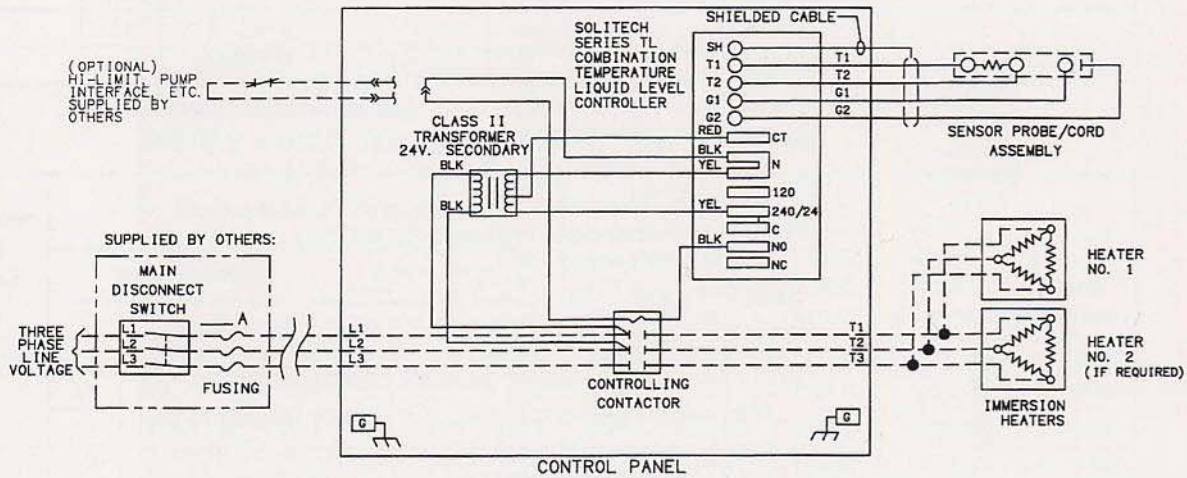


Figure 3

WIRING DIAGRAM FOR STANDARD CONTROL PANEL WITH TWO HEATER CIRCUITS, FUSING, AND OPTIONAL BUILT-IN DOOR DISCONNECT SWITCH

