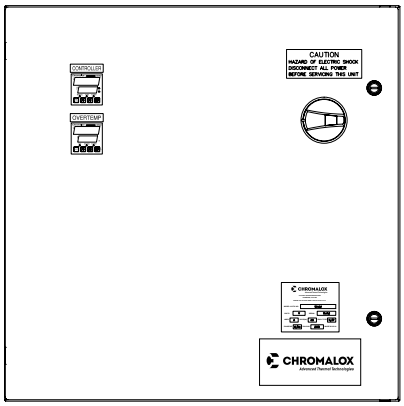
4214 & 4224
Mini SCR Control Panels

- **Model 4214 - One SCR, Single Phase Loads**
- **Model 4224 - Two SCRs, Three Phase Loads**
- **Digital Indicating Temperature and Overtemperature Controls**
- **Compact, Space Efficient NEMA 4 Enclosure**
- **40 Amp Shutdown Contactor**
- **LED Indication of Power On, Heater On, and Overtemperature Alarm**
- **208-600 VAC, Three Phase or 120 VAC Single Phase**
- **Universal Sensor Input Types**
- **Main Disconnect Switch Option**



Description

The Chromalox 4214 and 4224 SCR Control Panels combine full-featured 1/16 DIN, digital-indicating temperature and overtemperature controllers completely assembled, pre-tested and pre-wired in a NEMA 4 enclosure. Installation is easy, requiring only power supply, load and sensor wiring. Drawings for record and installation/operation manuals are also supplied.

Features

- Fused Control Power Transformer
- LED Indication of Power On, Heater On, and Overtemperature Alarm
- 40 Amp Shutdown Contactor
- Universal Sensor Input
- Options:
  - Main Disconnect
  - Ground Fault Monitor for Equipment Protection
  - Enclosure Heater for Anti-Condensation and Instrument Protection in Ambient Temperatures as low as 0˚F

In Stock:

Model	PCN
4224-35111	314771

Note: Additional control panel options available. See pages H-143 to H-145.

* See "Single Channel Controllers" for controller specifications.

Ordering Information

Complete the Model Number using the Matrix provided.

Model

4214 **Single Phase Zero Fired SCR Power Control Panel**

Panel Configuration

Single Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure for Indoor/Outdoor Applications, Three-Pole Shutdown Contactor, SSR for Power Switching with I^2t Fusing. Options Include: Process Controller, Hi-limit Controllers, Ground Fault Monitor, Disconnect Switch, and Cabinet Heater.

Code	Current @ 40˚C (104˚F) Ambient with no Solar Load	Enclosure Dimensions
3	30	(16"H x 16"W x 6"D)

Code	Voltage		
0	120 VAC	**4**	415 VAC
1	208 VAC	**5**	480 VAC
2	240 VAC	**6**	575/600 VAC
3	380 VAC		

Code	Process Controller Options
0	Customer Supplied Digital Signal (3-20 VDC)
1	6040-SR000 1/16 DIN SSR, Relay
6	LM-2 Module (4-20mA Input)

Code	Overtemperature Controller Options
0	None
1	6050-SR000 1/16 DIN Fixed Relay, Relay

Code	Options
0	None
1	Main Disconnect with Through Door Operator
2	Ground Fault Monitor includes Illuminated Reset Switch*
3	Thermostat Controlled Enclosure Heater
4	Ground Fault Monitor & Main Disconnect Switch*
5	Main Disconnect Switch & Enclosure Heater
6	Ground Fault Monitor, Main Disconnect Switch & Enclosure Heater*
7	Ground Fault Monitor & Enclosure Heater*

4214-	3	5	5	5	1	Typical Model Number

Ground Fault detection requires grounded supply.

4214 & 4224
Mini SCR Control Panels *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Model

4224 **Three Phase Two-Leg Zero Fired SCR Power Control Panel**

Panel Configuration
Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure for Indoor/Outdoor Applications, Three-Pole Shutdown Contactor, SSRs for Power Switching with I^2t Fusing. Options Include: Process Controller, Hi-limit Controllers, Ground Fault Monitor, Disconnect Switch, and Cabinet Heater.

Code	Current @ 40˚C (104˚F) Ambient (with no Solar Load)	Enclosure Dimensions
3	30	(24"H x 24"W x 10"D)

Code	Voltage
1	208 VAC
2	240 VAC
3	380 VAC
4	415 VAC
5	480 VAC
6	575/600 VAC

Code	Process Controller Options
0	Customer Supplied Digital Signal (3-20 VDC)
1	6040-SR0000 1/16 DIN SSR, Relay
6	LM-2 Module (4-20mA Input)

Code	Overtemperature Controller Options
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay

Code	Options
0	None
1	Main Disconnect Switch
2	Ground Fault Monitor includes Illuminated Reset Switch**
3	Thermostat Controlled Enclosure Heater
4	Ground Fault Monitor & Main Disconnect Switch**
5	Main Disconnect Switch & Enclosure Heater
6	Ground Fault Monitor, Main Disconnect Switch & Enclosure Heater**
7	Ground Fault Monitor & Enclosure Heater**

4224-	**3**	**5**	**5**	**5**	**1**	**Typical Model Number**

**Ground Fault detection requires grounded supply.

4168 & 4268

Mini-SCR Power Control Panel

- **NEMA 4 Steel Enclosure for Indoor/Outdoor Environments**
- **Shutdown Contactor**
- **Single or Three Phase 30 and 65 Rating Amp for Resistive Loads**
- **120/240/480 VAC Fused Control Power Transformer**

Description

The 4168/4268 Mini-SCR Power Control Panels are a convenient, economical solution designed to control most process heating applications that require precise temperature control, maximum operating efficiency and proven reliability.

Augmented process and high limit controllers as well as the optional design features provide the user with the flexibility to meet countless application needs. The temperature and process controllers are available in 1/16 or 1/4 DIN sizes and their base features include SSR driver and relay outputs. Remote management capabilities are facilitated via retransmitted or remote setpoint signals or customer supplied process analog input. Communication options include Modbus RTU/RS485 or Ethernet (1/4 DIN 4080 only).

The Limit controllers are also available in either 1/16 or 1/4 DIN sizes. They are equipped with two relay outputs/alarms and optional analog retransmit and Modbus RTU/RS485 communications.

Design feature options include: Ground fault monitoring with shutdown; integral main disconnect switch; and a thermostat-controlled enclosure heater.

Options

- Ground Fault Monitor for Equipment Protection
- Enclosure Heater for Anti-Condensation and Instrument Protection in Ambient Temperatures as low as 0˚F
- Disconnect Switch
- 1/16 or 1/4 DIN Process Controllers
- 1/16 or 1/4 DIN Hi-Limit Controllers
- Load Fusing

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4168 & 4268
Mini-SCR Power Control Panel *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Ordering Information

Model	Single Phase Zero Fired SCR Mini Power Control Panel
4168	cUL and UL Listed Single Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure (24"H x 20"W x 8"D), External Heat Sinks for Indoor/ Outdoor Applications, I^2t Fusing, and Shutdown Contactor. Options Include: Process and Hi-Limit Controllers, Ground Fault Monitoring, Main Disconnect Switch and Enclosure Heater.

Code	Current @ 40˚C (104˚F)
3	30 Amp
6	65 Amp

Code	Voltage
1	120 VAC
2	208 VAC
3	240 VAC
4	480 VAC
6	575/600 VAC

Code	Process Controller Options
0	None (6 - 12 VDC Control Signal Customer Supplied)
1	6040-SR0000 1/16 DIN SSR, Relay
2	6040-SRA100 1/16 DIN SSR, Relay, Retransmit , RS485
3	4040-SR0000 1/4 DIN SSR, Relay
4	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
5	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet
7	Customer Supplied Remote 4 - 20 mAdc, 0-10 VDC, 0-5 VDC

Code	Overtemperature Controller Options
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay, Relay
2	6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485
3	4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Options
0	None
1	Ground Fault Monitor & Shutdown incl. Illuminated Reset Switch**
2	Main Disconnect with Through Door Operator
3	Thermostat Controlled Enclosure Heater
4	Ground Fault Monitor & Main Disconnect Switch **
5	Main Disconnect Switch & Enclosure Heater
6	Ground Fault Monitor & Enclosure Heater **
7	Ground Fault Monitor, Main Disconnect Switch & Enclosure Heater **

Code	Load Fusing Option*
Blank	None
9010(*)	8 Amps/Circuit (10 Amp fuse)
9015(*)	12 Amps/Circuit (15 Amp fuse)
9020(*)	16 Amps/Circuit (20 Amp fuse)
9025(*)	20 Amps/Circuit (25 Amp fuse)
9030(*)	24 Amps/Circuit (30 Amp fuse)
9035(*)	28 Amps/Circuit (35 Amp fuse)
9040(*)	32 Amps/Circuit (40 Amp fuse)
9045(*)	36 Amps/Circuit (45 Amp fuse)
9050(*)	40 Amps/Circuit (50 Amp fuse)
9060(*)	48 Amps/Circuit (60 Amp fuse)
9070(*)	56 Amps/Circuit (70 Amp fuse)
9080(*)	64 Amps/Circuit (80 Amp fuse)

4168-	6	4	2	2	0-	9025(3)	Typical Model Number

*Specify Number of Circuits (Maximum Three Circuits of Load Fusing).

**Ground Fault detection requires grounded supply.

Note:

- Total Amperage not to exceed panel rating
- Maximum 3 Circuits
- Contact Factory for fuse option price and enclosure size requirement

4168 & 4268
Mini-SCR Power Control Panel *(cont'd.)*

In Stock:

Model	PCN
4268-34112	314739
4268-64112	314763

Note: Additional control panel options available. See pages H-143 to H-145.

Code	Load Fusing Option
9010(*)	8 Amps/Circuit (10 Amp Fuse)
9015(*)	12 Amps/Circuit (15 Amp Fuse)
9020(*)	16 Amps/Circuit (20 Amp Fuse)
9025(*)	20 Amps/Circuit (25 Amp Fuse)
9030(*)	24 Amps/Circuit (30 Amp Fuse)
9035(*)	28 Amps/Circuit (35 Amp Fuse)
9040(*)	32 Amps/Circuit (40 Amp Fuse)
9045(*)	36 Amps/Circuit (45 Amp Fuse)
9050(*)	40 Amps/Circuit (50 Amp Fuse)
9060(*)	48 Amps/Circuit (60 Amp Fuse)
9070(*)	56 Amps/Circuit (70 Amp Fuse)
9080(*)	64 Amps/Circuit (80 Amp Fuse)

* Add -90XX(*) at end of part number
XX = Fuse Code
(*) = Number of Circuits

Note:
- Total Amperage not to exceed panel rating
- Maximum 3 Circuits
- Contact Factory for fuse option price and enclosure size requirement

Ordering Information

Model 4268 — **Three Phase Two-Leg Zero Fired SCR Mini Power Control Panel**

cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure (24"H x 20"W x 8"D), External Heat Sinks for Indoor/Outdoor Applications, I^2t Fusing, and Shutdown Contactor. Options Include: Process and Hi-Limit Controllers, Ground Fault Monitoring, Main Disconnect Switch and Enclosure Heater.

Code — Current @ 40˚C (104˚F)

Code	
3	30 Amp
6	65 Amp

Code — Voltage

Code	
2	208 VAC
3	240 VAC
4	480 VAC
6	575/600 VAC

Code — Process Controller Options

Code	
0	None (6 - 12 VDC Control Signal Customer Supplied)
1	6040-SR0000 1/16 DIN SSR, Relay
2	6040-SRA100 1/16 DIN SSR, Relay, Retransmit , RS485
3	4040-SR0000 1/4 DIN SSR, Relay
4	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
5	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet
7	Customer Supplied Remote 4 - 20 mAdc, 0-10 VDC, 0-5 VDC

Code — Overtemperature Controller Options

Code	
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay, Relay
2	6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485
3	4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code — Options

Code	
0	None
1	Ground Fault Monitor & Shutdown incl. Illuminated Reset Switch**
2	Main Disconnect with Through Door Operator
3	Thermostat Controlled Enclosure Heater
4	Ground Fault Monitor & Main Disconnect Switch **
5	Main Disconnect Switch & Enclosure Heater
6	Ground Fault Monitor & Enclosure Heater **
7	Ground Fault Monitor, Main Disconnect Switch & Enclosure Heater **

Code — Load Fusing Option*

Code	
Blank	None
9010(*)	8 Amps/Circuit (10 Amp fuse)
9015(*)	12 Amps/Circuit (15 Amp fuse)
9020(*)	16 Amps/Circuit (20 Amp fuse)
9025(*)	20 Amps/Circuit (25 Amp fuse)
9030(*)	24 Amps/Circuit (30 Amp fuse)
9035(*)	28 Amps/Circuit (35 Amp fuse)
9040(*)	32 Amps/Circuit (40 Amp fuse)
9045(*)	36 Amps/Circuit (45 Amp fuse)
9050(*)	40 Amps/Circuit (50 Amp fuse)
9060(*)	48 Amps/Circuit (60 Amp fuse)
9070(*)	56 Amps/Circuit (70 Amp fuse)
9080(*)	64 Amps/Circuit (80 Amp fuse)

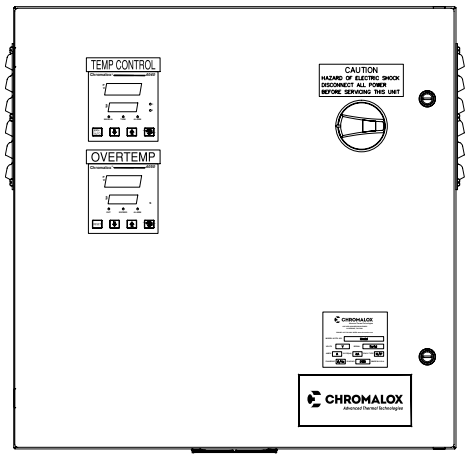
4268-	**6**	**4**	**2**	**1**	**0-**	**9025(3)**	**Typical Model Number**

*Specify Number of Circuits (Maximum Three Circuits of Load Fusing).
**Ground Fault detection requires grounded supply.

Note:
Stocked Panels may be used at 240 VAC by changing strapping of control power transformer.

4530 Series
SCR Temperature/ Power Control Panels

- **30 to 90 Amps**
- **Voltage Field Selectable**
- **Three Phase, Two Leg**
- **Zero Crossover Fired**
- **NEMA 12*, 4 and 7 Enclosures**
- **Cost Effective SCR Power Control**
- **Pre-Wired, Ready to Install**



Front View

Description

The 4530 SCR Panel Series is an economical, convenient solution to mid-range SCR power control requirements, and eliminates the need to select, collect and assemble separate components. The pre-configured panels are ready to install, requiring only power supply, load and sensor wiring. Compact packaging makes them easy to mount, even in limited spaces.

The control signal may be a customer supplied 4-20 mA signal or manually operated with remote or door mounted potentiometer, or a Chromalox digital indicating temperature controller.

An optional digital indicating overtemperature controller can be provided.

Model 4537
Explosion Proof Control Panel

Features

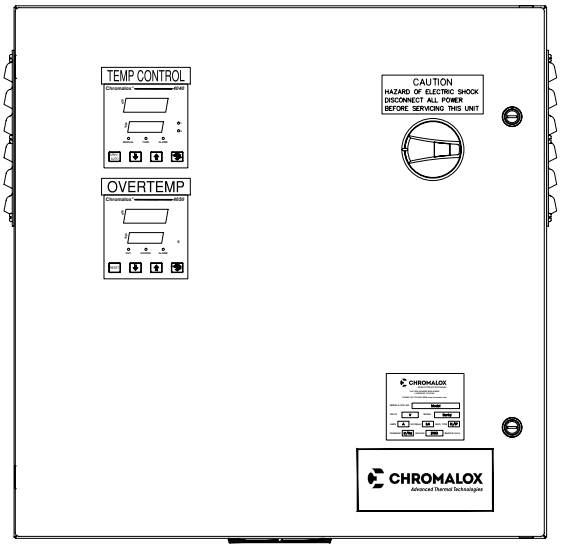
- Enclosure -

NEMA1	General Purpose, indoor
NEMA 12*	General Purpose, fan cooled and louvered
NEMA 4	Weatherproof
NEMA 7	Explosion-proof for Class I, Div. 1&2, Groups B,C&D Class II, Div. 1&2, Groups E,F & G

- Control Signal Input Device
- Zero-Crossover Fired SCR Power Controllers
- Manual Disconnect Switch
- I^2T Fusing for SCR Protection
- Overtemperature Shutdown Contactor
- Power “ON” Pilot Light
- Multi-Tap Control Power Transformer 480/240/120 Vac
- Optional Overtemperature Controller with Reset
- Drawings for Record
- Installation and Operation Manual
- Terminals Provided for remote shutdown
- Optional Ground Fault Monitor with Door Mounted Illuminated Reset
- Optional Enclosure Heater Anti-Condensation and Instrument Protection for Ambient Tempertures as low as 0˚F

* NEMA 12 available with additional venting measures. Consult Factory.

4532
SCR Temperature/ Power Control Panels *(cont'd.)*



In Stock:

Model	PCN
4532-40530	307070

Note: Additional control panel options available. See pages H-143 to H-145.

Ordering Information

Complete the Model Number using the Matrix provided.

Model

4532 **Three Phase Two-Leg Zero Fired SCR Power Control Panel**

Panel Configuration
cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 1/12** rated Enclosure for Indoor Applications, Forced Air Cooling, Main Disconnect Switch, Three-Pole Shutdown Contactor, and SCRs for Power Switching. Options Include: Process and Hi-Limit Controllers, Customer Supplied "Control Signal, Door Mounted Potentiometer and Ground Fault Monitor. **NOTE:** A Vari-Watt is supplied when either the Customer Supplied Control Signal or 10K Potentiometer Control Option is selected.

Code	Current @ 40˚C (104˚F) Ambient	SCR Component	Enclosure Dimensions
40	90 Amp	SCR Power Controller	(24"H x 24"W x 10"D)

Code	Process Controller Options
1	Terminal Block for Customer Supplied Control Signal (4-20 mA, 3-20 VDC, Contact Closure, or 10K Potentiometer)
2	Door Mounted 10K Potentiometer, 0 - 100% Power Ouput Scale
3	6040-SR0000 1/16 DIN SSR, Relay
4	6040-SRA100 1/16 DIN SSR, Relay, Retransmit, RS485
5	4040-SR0000 1/4 DIN SSR, Relay
6	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
7	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet

Code	Overtemperature Controller Options
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay, Relay
2	6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485
3	4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt Option
0	None
1	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch

4532-	**40**	**5**	**3**	**0**	**Typical Model Number**

Technical Notes:
*Ground Fault detection requires grounded supply
**NEMA 12 available with additional venting measures. Consult factory.

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4534
SCR Temperature/ Power Control Panels *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Model

4534 Three Phase Two-Leg Zero Fired SCR Power Control Panel

Panel Configuration

cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure for Indoor/Outdoor Applications, Main Disconnect Switch, Three-Pole Shutdown Contactor, and SSRs for Power Switching. Options Include: Process and Hi-Limit Controllers, Customer Supplied Control Signal, Door Mounted Potentiometer, Cabinet Heater and Ground Fault Monitor. NOTE: A Vari-Watt is supplied when either the Customer Supplied Control Signal or 10K Potentiometer Control Option is selected.

Code	Current @ 40°C (104°F) Ambient	SCR Component	Enclosure Dimensions
40	30 Amp	Solid State Relays	(24"H x 24"W x 10"D)

Code	Process Controller Options
1	Terminal Block for Customer Supplied Control Signal (4-20 mA, 3-20 VDC, Contact Closure, or 10K Potentiometer)
2	Door Mounted 10K Potentiometer, 0 - 100% Power Ouput Scale.
3	6040-SR0000 1/16 DIN SSR, Relay
4	6040-SRA100 1/16 DIN SSR, Relay, Retransmit , RS485
5	4040-SR0000 1/4 DIN SSR, Relay
6	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
7	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet

Code	Overtemperature Controller Options
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay, Relay
2	6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485
3	4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Options
0	None
1	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch *
2	Thermostat Controlled Enclosure Heater
3	Ground Fault Monitor & Enclosure Heater

4534-	**40**	**5**	**3**	**0**	**Typical Model Number**

4537
SCR Temperature/ Power Control Panels *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Ordering Information

Complete the Model Number using the Matrix provided.

4537 Three Phase Two-Leg Zero Fired SCR Power Control Panel - Class I, Div 1 & 2, Group B, C, D, Class 2, Div 1 & 2, Groups E, F, G

Panel Configuration
Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 7 rated Explosion-Proof Enclosure for Hazardous Areas, Main Disconnect Switch, Three-Pole Shutdown Contactor, SSR's for Power Switching, and Viewing Window. Options Include: Process and Hi-Limit Controllers, Customer Supplied Control Signal, Cabinet Heater, Weather Proof-Gasket, and Ground Fault Monitor. NOTE: A Vari-Watt is supplied when the Customer Supplied Control Signal Control Option is selected.

Code — Current @ 40°C (104°F) Ambient

Code	Current @ 40°C (104°F) Ambient	SCR Component	Enclosure Dimensions (250 lbs.)
40	45 Amp	Solid State Relays	(28.5"H x 21"W x 13"D)

Code — Process Controller Options

Code	Process Controller Options
0	Terminal Block for Customer Supplied Signal (4-20 mA, 3-20 VDC, Contact Closure or 10K Potentiometer)
1	6040-SR0000 1/16 DIN SSR, Relay
2	6040-SRA100 1/16 DIN SSR, Relay, Retransmit , RS485
3	4040-SR0000 1/4 DIN SSR, Relay
4	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
5	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet

Code — Overtemperature Controller Option

Code	Overtemperature Controller Option
0	None
1	6050-1R020 1/16 DIN Fixed 5A Relay, Relay, Digital Input
2	6050-1RA20 1/16 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input
3	4050-1R020 1/4 DIN Fixed 5A Relay, Relay, Digital Input
4	4050-1RA20 1/4 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input

Code — Options

Code	Options
0	None
1	NEMA 7/4 Weather Proof Gasket for Out Door Applications
2	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch*
3	Enclosure Heater
4	Weather Proof Gasket and Ground Fault Monitor
5	Weather Proof Gasket and Cabinet Heater
6	Ground Fault Monitor and Cabinet Heater

4537-	40	5	1	1	**Typical Model Number**

Note: A Vari-Watt is supplied when the Customer Supplied Control Signal Control Option is selected.

NEMA Enclosure Descriptions

NEMA 3R - Enclosures are intended for outdoor use primarily to provide protection against falling rain, sleet and external ice formation.

NEMA 4 - Enclosures are intended for indoor or outdoor use primarily to provide protection against windblown dust and rain, splashing water and hose-directed water.

NEMA 7 - Enclosures capable of withstanding the pressures resulting from an internal explosion of specified gas, and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat-generating devices will not cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the surrounding atmosphere.

NEMA 12 - Enclosures are intended for indoor use primarily to provide protection against dust, falling dirt, and dripping non-corrosive liquids. When ventilated a NEMA 12 enclosure rating is altered to Nema 1.

Note - These descriptions are not intended to be complete representations of National Electric Manufacturers Assoc. (NEMA) standards for enclosures.

4230 Series
SCR Control Panels

- **SCR-Zero Crossover Control**
- **100 to 1200 Amps**
- **Louvered, Fan Cooled Enclosures**
- **Main Disconnect Switch with Shunt Trip**
- **208-600 Volt**
- **Control Power Transformer**
- **4232 NEMA 1 or NEMA 12**
  - **2 Leg, 3 Phase**
  - **MaxPac II DOT Fired SCR**
  - **Shorted SCR Detection Option**
  - **SCR/Load Fusing**
- **4233 NEMA 1 or NEMA 12**
  - **3 Leg, 3 Phase**
  - **MaxPac III DOT Fired SCR**
  - **Shorted SCR Detection Option**
  - **SCR/Load Fusing**
- **4235/36 NEMA 4 or 4X**
  - **2 Leg, 3 Phase**
  - **Up to 6 Circuits**
  - **Load Management Option**
  - **Z Purge Option**

Description

The 4230 Series of SCR Power Control Panels offers convenient, economical control of resistive loads and capabilities beyond the smaller, more compact 4530 series. An additional 46 Standard Options increase the application flexibility of the 4230 Series. These pre-engineered, pre-wired panels require only sensor, load and power supply connections - and totally eliminate the need to design your panel, specify and purchase separate components, and assemble them into a functioning power control system.

SCR power control efficiently and accurately proportions power to the resistive heating load. Unlike traditional contactor control, SCR's deliver:

- Reduced Power Cost
- Extended Heater Life
- Less Maintenance
- Improved Process Products
- Stable Process Temperature

4232/4233 Features

- Zero-crossover Distributed Fired SCR (DOT) with I^2T fusing for SCR Protection
- Fan Cooling
- Load Fusing for Up to 16 Circuits
- Shunt Trip Disconnect

4235/4236 Features

- NEMA 4 and 4X Enclosures for Hosedown and Corrosive applications. (External Heatsinks Cool the SCRs)
- Up to 6 SCR Circuits
- Load Fusing Protects SCRs and Load
- Load Management Option: Distributes Firing of SCRs to Even Out the Demand. Great for Systems Using Generators.
- Z Purge Pressurization System for Class 1, Div. 2. Group C, D Environments

Common Features

- Ammeter and Voltmeter Combination
- Temperature Controller
- Overtemperature Controller with manual reset
- Ground Fault Monitor
- Fused Control Power Transformer
- Manual Disconnect Switch
- Power "ON" Pilot Lamp
- Automatic Shutdown Device for Overtemperature Protection
- Remote Shutdown Interlock Terminals
- Enclosure Heater with Anti-Condensation and Instrument Protection for Ambient Temperatures as low as 0˚F
- Drawings for Record
- Installation and Operation Manual

Custom Panel Capability

In addition to the pre-engineered and field-proven standard control panels presented in this catalog, Chromalox has over 60 years of *custom power control systems* expertise. Working with world-scale engineering firms, military shipboard systems and the most demanding research institutes, Chromalox has encountered and conquered the challenges of even the most specialized requirements. This experience translates to efficient, economical solutions for virtually any heating and power control application.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

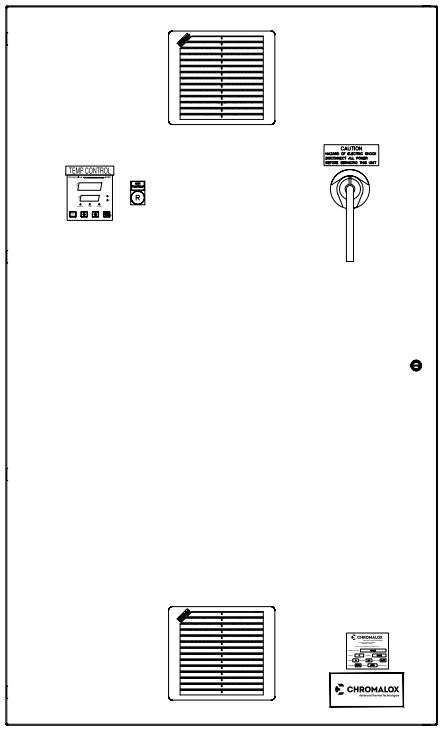
4232
3-Phase, 2 Leg
SCR Control Panels
(cont'd.)

c UL us

Ordering Information

Complete the Model Number using the Matrix provided.

Note: Additional control panel options available. See pages H-143 to H-145.



*Ground Fault detection requires grounded supply.

Technical Notes:

[1] Includes Chromalox Load Management Module

[2] Load Fuse Current Rating Reflects 125% of Actual Load Amps.

[3] Panel Codes 15, 16, and 17 (Maximum Sixteen Circuits of Load Fusing)

*Specify Number of Circuits (Maximum Eight Circuits of Load Fusing).

*NEMA 12 available with additional venting measures. Consult factory.

Model

4232 Three Phase Two-Leg Zero Fired SCR Power Control Panel

Panel Configuration

cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 1 or NEMA 12 rated Enclosure for Indoor Applications, Forced Air Cooling, Main Magnetic Disconnect Switch with Shunt Trip Feature, Heat-Sink Overtemperature Lamp. Options Include: Process and Hi-Limit Controllers, Ground Fault Monitor, Sub-Circuit Fusing for Heater Load, Shorted SCR Detection, Multimeter (Amps & Volts) with Phase Selector Switch and Floor Stand Kit.

Code	Current @ 40°C (104°F) Ambient	SCR Component	Enclosure Dim. (HxWxD)	
02	100 Amp	MXPCII-3-02-1-1-L0-F01-0	(60" x 36" x 12")	
03	150 Amp	MXPCII-3-04-1-1-L0-F01-0	(60" x 36" x 12")	
06	200 Amp	MXPCII-3-06-1-1-L0-F02-0	(60" x 36" x 12")	
08	300 Amp	MXPCII-3-08-1-1-L0-F03-0	(60" x 36" x 12")	
10	400 Amp	MXPCII-3-10-1-1-L0-F04-0	(72" x 36" x 12")	
12	550 Amp	MXPCII-3-12-1-1-L0-F05-0	(72" x 36" x 12")	
14	650 Amp	MXPCII-3-14-1-1-L0-F06-0	(72" x 36" x 12")	
15[1]	800 Amp	(2) MXPCII-3-10-1-1-L0-F04-0	(72" x 72" x 12")	Floor Mount
16[1]	1000 Amp	(2) MXPCII-3-12-1-1-L0-F05-0	(72" x 72" x 12")	Floor Mount
17[1]	1200 Amp	(2) MXPCII-3-14-1-1-L0-F06-0	(72" x 72" x 12")	Floor Mount

Code	Voltage		
1	208 VAC	**4**	415 VAC
2	240 VAC	**5**	480 VAC
3	380 VAC	**6**	575/600 VAC

Code	Process Controller Options
0	None
1	4040-AR0000 1/4 DIN SSR, Relay
2	4040-ARA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
3	4080-C0ARA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt & Shorted SCR Detection Option
0	None
1	Shorted SCR Detection
2	Ground Fault Monitor & Shutdown, Illuminated Reset Switch(code 02-14)*
3	Ground Fault Monitor & Shutdown, Illuminated Reset Switch(code 15,16,17)
4	Ground Fault Monitor & Shorted SCR Detection(code 02-14)
5	Ground Fault Monitor & Shorted SCR Detection(code 15,16,17)

Code	Options
0	None
4	Multimeter (Volts & Current)

Code	Load Fusing Option[2,3] (*) No. of Circuits
9000	None
9010(*)	8 Amps/ Circuit (10 Amp fuse)
9015(*)	12 Amps/ Circuit (15 Amp fuse)
9020(*)	16 Amps/ Circuit (20 Amp fuse)
9025(*)	20 Amps/ Circuit (25 Amp fuse)
9030(*)	24 Amps/ Circuit (30 Amp fuse)
9035(*)	28 Amps/ Circuit (35 Amp fuse)
9040(*)	32 Amps/ Circuit (40 Amp fuse)
9045(*)	36 Amps/ Circuit (45 Amp fuse)
9050(*)	40 Amps/ Circuit (50 Amp fuse)
9060(*)	48 Amps/ Circuit (60 Amp fuse)
9070(*)	56 Amps/ Circuit (70 Amp fuse)
9080(*)	64 Amps/ Circuit (80 Amp fuse)
9090(*)	72 Amps/ Circuit (90 Amp fuse)
9100(*)	80 Amps/ Circuit (100 Amp fuse)
9110(*)	88 Amps/ Circuit (110 Amp fuse)
9125(*)	100 Amps/ Circuit (125 Amp fuse)
9150(*)	120 Amps/ Circuit (150 Amp fuse)
9175(*)	140 Amps/ Circuit (175 Amp fuse)
9200(*)	160 Amps/ Circuit (200 Amp fuse)

4232-	**03**	**5**	**1**	**1**	**0**	**0**	**–**	**9025(5)**	**Typical Model Number**

4233
3-Phase, 3 Leg
SCR Control Panels *(cont'd.)*

c UL US

Ordering Information

Complete the Model Number using the Matrix provided.

Note: Additional control panel options available. See pages H-143 to H-145.

Model

4233 Three Phase, Three-Leg Zero Six SCR Fired SCR Power Control Panel

Panel Configuration: cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 1 or NEMA 12 rated Enclosure for Indoor Applications, Forced Air Cooling, Main Magnetic Disconnect Switch with Shunt Trip Feature, Heat-Sink Overtemperature Lamp. Options Include: Process and Hi-Limit Controllers, Ground Fault Monitor, Sub-Circuit Fusing for Heater Load, Shorted SCR Detection, Multimeter (Amps & Volts) with Phase Selector Switch and Floor Stand Kit.

Code	Current @ 40°C (104°F) Ambient		SCR Component	Enclosure Dim. (HxWxD)	
02	100 Amp		MXPCII-3-02-1-1-L0-F01-0	(60" x 36" x 12")	
03	150 Amp		MXPCII-3-04-1-1-L0-F01-0	(60" x 36" x 12")	
06	200 Amp		MXPCII-3-06-1-1-L0-F02-0	(60" x 36" x 12")	
08	300 Amp		MXPCII-3-08-1-1-L0-F03-0	(60" x 36" x 12")	
10	400 Amp		MXPCII-3-10-1-1-L0-F04-0	(72" x 36" x 12")	
12	550 Amp		MXPCII-3-12-1-1-L0-F05-0	(72" x 36" x 12")	
14	650 Amp		MXPCII-3-14-1-1-L0-F06-0	(72" x 36" x 12")	
15[1]	800 Amp	(2)	MXPCII-3-10-1-1-L0-F04-0	(72" x 72" x 12")	Floor Mount
16[1]	1000 Amp	(2)	MXPCII-3-12-1-1-L0-F05-0	(72" x 72" x 12")	Floor Mount
17[1]	1200 Amp	(2)	MXPCII-3-14-1-1-L0-F06-0	(72" x 72" x 12")	Floor Mount

Code	Voltage		
1	208 VAC	**4**	415 VAC
2	240 VAC	**5**	480 VAC
3	380 VAC	**6**	575/600 VAC

Code	Process Controller Options
0	None
1	4040-AR0000 1/4 DIN SSR, Relay
2	4040-ARA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
3	4080-C0ARA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt & Shorted SCR Detection Option
0	None
1	Shorted SCR Detection
2	Ground Fault Monitor & Shutdown, Illum. Reset Switch (Code 02-14)
3	Ground Fault Monitor & Shutdown, Illum. Reset Switch (Code 15, 16, 17)
4	Ground Fault Monitor & Shorted SCR Detection (Code 02-14)
5	Ground Fault Monitor & Shorted SCR Detection (Code 15, 16, 17)

Code	Options
0	None
4	Multimeter (Volts & Current)

Code	Load Fusing Option[3,4] (*Number of Circuits)
9000	None
9010(*)	8 Amps/Circuit (10 Amp Fuse)
9015(*)	12 Amps/Circuit (15 Amp Fuse)
9020(*)	16 Amps/Circuit (20 Amp Fuse)
9025(*)	20 Amps/Circuit (25 Amp Fuse)
9030(*)	24 Amps/Circuit (30 Amp Fuse)
9035(*)	28 Amps/Circuit (35 Amp Fuse)
9040(*)	32 Amps/Circuit (40 Amp Fuse)
9045(*)	36 Amps/Circuit (45 Amp Fuse)
9050(*)	40 Amps/Circuit (50 Amp Fuse)
9060(*)	48 Amps/Circuit (60 Amp Fuse)
9070(*)	56 Amps/Circuit (70 Amp Fuse)
9080(*)	64 Amps/Circuit (80 Amp Fuse)
9090(*)	72 Amps/Circuit (90 Amp Fuse)
9100(*)	80 Amps/Circuit (100 Amp Fuse)
9110(*)	88 Amps/Circuit (110 Amp Fuse)
9125(*)	100 Amps/Circuit (125 Amp Fuse)
9150(*)	120 Amps/Circuit (150 Amp Fuse)
9175(*)	140 Amps/Circuit (175 Amp Fuse)
9200(*)	160 Amps/Circuit (200 Amp Fuse)

4233- 03 5 1 1 0 0 – 9025(5) Typical Model Number

Technical Notes:

[1]Includes Chromalox Load Management Module.

[2] Panel Codes 15, 16 and 17 have Floor Stands Standard.

Ventilated NEMA 12 Enclosure Derates Enclosure to NEMA 1.

Louvres and Fans are available upon request to maintain NEMA 12 rating.

Load Fuse Current Rating Reflects 125% of Actual Load Amps.

*NEMA 12 available with additional venting measures. Consult factory

4235
SCR Control Panels *(cont'd.)*

Ordering Information
Complete the Model Number using the Matrix provided.

*Floor Mount

Technical Notes:

[1] Code 0: Up to Two Circuits Maximum.

[2] Load Fuse Current Rating Reflects 125% of Actual Load Amps.

[3] Ground Fault detection requires grounded supply.

c UL us

Note: Additional control panel options available. See pages H-143 to H-145.

Model

4235 Three Phase Two-Leg Zero Fired SCR Power Control Panel

Panel Configuration

cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure for Indoor/Outdoor Applications with External Heat Sinks, Main Magnetic Disconnect Switch with Shunt Trip Feature, and Sub-Circuit Fusing. Options Include: Process Controllers, Hi-Limit Controllers, Load Management Module, Ground Fault Monitor, Multimeter (Amps & Volts) with Phase Selector Switch, Enclosure Heater and Type "Z" Purge Pressurization System

Code	Current @ 40°C (104°F) Ambient with no Solar Load				
	Circuits	Max. Amps/Ckt	Total Amps	Fuse Amps/Ckt[2]	Enclosure Dimensions
124	1	24	24	30	(24"H x 24"W x 10"D)
148	1	48	48	60	(24"H x 24"W x 10"D)
172	1	72	72	90	(24"H x 24"W x 10"D)
224	2	24	48	30	(24"H x 24"W x 10"D)
248	2	48	96	60	(36"H x 30"W x 10"D)
272	2	72	144	90	(36"H x 30"W x 10"D)
324	3	24	72	30	(36"H x 30"W x 10"D)
348	3	48	144	60	(48"H x 36"W x 10"D)
372	3	72	216	90	(48"H x 36"W x 10"D)
424	4	24	96	30	(48"H x 36"W x 10"D)
448	4	48	192	60	(48"H x 36"W x 10"D)
472	4	72	288	90	(60"H x 36"W x 10"D)
524	5	24	120	30	(48"H x 36"W x 10"D)
548	5	48	240	60	(48"H x 36"W x 10"D)
572	5	72	360	90	(62"H x 60"W x 12"D)
624	6	24	144	30	(60"H x 36"W x 10"D)
648	6	48	288	60	(60"H x 36"W x 10"D)
672	6	72	432	90	(62"H x 60"W x 12"D)

Code	Voltage
1	208 VAC
2	240 VAC
3	380 VAC
4	415 VAC
5	480 VAC
6	575/600 VAC

Code	Process Controller Options
0	[1] Customer supplied SSR drive signal (12-24 VDC @ 120 mA)
1	4040-SR0000 1/4 DIN SSR, Relay
2	Customer supplied 4-20mA Input to Load Management Module
3	4040-SR0000 1/4 DIN SSR, Relay & Load Management Module
4	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
5	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint & Load Management Module
6	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet
7	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet & Load Management Module

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt, Enclosure Heater and "Z" Purge Pressurization Option
0	None
1	Ground Fault Monitor & Shutdown incl. Illum. Reset Switch[3]
2	Enclosure Heater
3	"Z" Purge Pressurization System
4	Ground Fault Monitor & Cabinet Heater
5	Ground Fault Monitor and "Z" Purge System
6	Ground Fault Monitor, Cabinet Heater and "Z" Purge System
7	Enclosure Heater and "Z" Purge System

Code	Options
0	None
4	Multimeter (Volts & Current)

4235-	**624**	**5**	**3**	**1**	**0**	**0**	**Typical Model Number**

CONTROL SYSTEMS

4236
SCR Control Panels *(cont'd.)*

Ordering Information
Complete the Model Number using the Matrix provided.

Note: Additional control panel options available. See pages H-143 to H-145.

*Floor Mount

Technical Notes:

[1] Code 0: Up to Two Circuits Maximum.
[2] Load Fuse Current Rating Reflects 125% of Actual Load Amps.
[3] Ambient rating based on all sides of enclosure dissipating heat
[4] Ground Fault detection requires grounded supply. Control Panel UL and cUL rated for NEMA 4.

Model

4236 Three Phase Two-Leg Zero Fired SCR Power Control Panel

Panel Configuration
cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4X rated Enclosure for Indoor/Outdoor Applications with External Heat Sinks, Main Magnetic Disconnect Switch with Shunt Trip Feature, and Sub-Circuit Fusing. Options Include: Process Controllers, Hi-Limit Controllers, Load Management Module, Ground Fault Monitor, Multimeter (Amps & Volts) with Phase Selector Switch, Enclosure Heater and Type "Z" Purge Pressurization System.

Current @ 35˚C (95˚F) Ambient with no Solar Load[3]

Code	Circuits	Max. Amps/Ckt	Total Amps	Fuse Amps/Ckt[2]	Enclosure Dimensions
124	1	24	24	30	(24"H x 24"W x 10"D)
148	1	48	48	60	(24"H x 24"W x 10"D)
172	1	72	72	90	(24"H x 24"W x 10"D)
224	2	24	48	30	(24"H x 24"W x 12"D)
248	2	48	96	60	(36"H x 30"W x 12"D)
272	2	72	144	90	(36"H x 30"W x 12"D)
324	3	24	72	30	(36"H x 30"W x 12"D)
348	3	48	144	60	(48"H x 36"W x 12"D)
372	3	72	216	90	(48"H x 36"W x 12"D)
424	4	24	96	30	(48"H x 36"W x 12"D)
448	4	48	192	60	(48"H x 36"W x 12"D)
472	4	72	288	90	(60"H x 36"W x 12"D)
524	5	24	120	30	(48"H x 36"W x 12"D)
548	5	48	240	60	(48"H x 36"W x 12"D)
572	5	72	360	90	(62"H x 60"W x 12"D)
624	6	24	144	30	(60"H x 36"W x 12"D)
648	6	48	288	60	(60"H x 36"W x 12"D)
672	6	72	432	90	(62"H x 60"W x 12"D)

Code	Voltage
1	208 VAC
2	240 VAC
3	380 VAC
4	415 VAC
5	480 VAC
6	575/600 VAC

Code	Process Controller Options
0	[1]Customer supplied SSR drive signal (12-24VDC @ 120 mA)
1	4040-SR0000 1/4 DIN SSR, Relay
2	Customer supplied 4-20mA Input to Load Management Module
3	4040-SR0000 1/4 DIN SSR, Relay & Load Management Module
4	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint
5	4040-SRA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint & Load Management Module
6	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet
7	4080-C0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet & Load Management Module

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt, Enclosure Heater and "Z" Purge Pressurization Option
0	None
1	Ground Fault Monitor & Shutdown incl. Illum. Reset Switch[4]
2	Cabinet Heater
3	"Z" Purge Pressurization System
4	Ground Fault Monitor & Cabinet Heater
5	Ground Fault Monitor and "Z" Purge System
6	Ground Fault Monitor, Cabinet Heater and "Z" Purge System
7	Cabinet Heater and "Z" Purge System

Code	Options
0	None
4	Multimeter (Volts & Current)

4236-	**624**	**5**	**3**	**1**	**0**	**0**	**Typical Model Number**

IntelliPanel

3-Phase SCR Power Control Panel

- **Color Touchscreen Operator Panel**
- **8 Points of Temperature Monitoring**
- **Temperature & Alarm Display for all 8 Temperature Sensor Inputs**
- **4 Control Modes: Single Loop, Temperature Differential, and 2 Cascade Modes**
- **Temperature Range Selection of 0-250˚F, 0-500˚F, 0-1000˚F, 0-1500˚F, 0-2000˚F**
- **Programmable Setpoint Ramping**
- **Adjustable Deadband and HI-HI, HI, LO, & LO-LO Setpoints for each point**
- **Input Sensor Type, Engineering Unit, & Open Sensor-Selection (in groups of 4)**
- **Ground Fault Alarm / Trip, adjustable from 30 - 300mA with Graphical Trending**
- **4 Alarm Outputs, Programmable as Normally Open or Normally Closed**
- **Temperature and Discrete Alarm Mapping to any of the 4 Alarm Outputs**

Description

While basic low cost temperature controllers may be appropriate for some process heat applications, most require more sophisticated control systems. With the Chromalox IntelliPANEL™ you'll have the benefit of advanced diagnostics, trending, and monitoring right at your fingertips. This revolutionary new concept in process/power control utilizes touch-screen programming technology.

With simplified configuration settings and local monitoring, set-up time is greatly reduced. Users have quick access to measurement instruments, alarm configurations, control algorithms, start-up, and trouble-shooting. IntelliPANEL comes loaded with standard features. It brings the power of several instruments to your application: voltmeters, ammeters, wattmeter, watt/hr meter, ground fault monitoring and trending, man-machine interface, six-pen chart trending, communications, resistance monitoring, temperature alarms, SCR Power Control, and four selectable process algorithms, including a remote 4-20 mA input for customer supplied command signals.

The advanced IntelliPANEL design provides standard panel ratings from 100-1200 amps with voltage ratings of 208, 240, 380, 400, and 480 VAC three-phase power. In addition to the IntelliPANEL Central Control Unit, Chromalox' patented MaxPac SCR power controllers feature built-in power distribution, selectable single/three-cycle resolution and an electronic heat sink temperature monitoring and warning system. Chromalox DOT variable time-base firing provides uniform heating which ensures increased heater life by reducing thermal shock.

Additional Features

- 4 User-Definable Discrete Interlocks including 1 with Time-Adjustable Delay
- 20 Character Text Entry Identification for all Temperature Inputs and 16 Character Text Entry Identification for all Interlocks
- 4 Levels of Security with User-Defined Numeric Passwords
- Programmable Setpoint Entry Range Limits
- Programmable Open Sensor Protection
- Virtual Six-Pen Trending Chart
- Alarm History Logging
- Time and Date Stamp on Alarms
- RS-485 / 422 Configurable Network Communications with option for MODBUS, Device Net, Profibus, and Ethernet
- Languages - Multiple Language Options
- NEMA 1 or 12 Enclosure Construction
- Operating Environment 32 - 104˚F

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliPanel

3-Phase SCR Power Control Panel *(cont'd.)*

Specifications

INPUTS:
4-channel RTD input module
Input Ranges
Type Pt100 .....-200.0/850.0˚C, -328/1562˚F
Type Pt1000 .....-200.0/595.0˚C, -328/1103˚F
Type jPt100 .....-38.0/450.0˚C, -36/842˚F

RTD Excitation Current ..... 200 µA
Notch Filter .....>50 db notches at 50/60 Hz
Maximum Setting Time ..... 100 ms (full-scale step input)
Common Mode Range ..... 0-5 VDC
Absolute Maximum Ratings ..... Fault protected inputs to ±50 VDC
Sampling Rate ..... 140 ms per channel

Notes:
1. The three wires connecting the RTD to the module must be the same type and length. Do not use the shield or drain wire for the third connection.
2. Unused channels require shorting wires (jumpers) installed from terminals CH+ to CH– to COM to prevent possible noise from influencing active channels.
3. If a RTD sensor has four wires, the plus sensor wire should be left unconnected.

4-Channel Thermocouple Input Module
Input Ranges
Type J .....-190 to 760˚C (-310 to 1400˚F)
Type E .....-210 to 1000˚C (-346 to 1832˚F)
Type K.....-150 to 1372˚C (-238 to 2502˚F)

General Specifications
Number of Channels .....4, differential
Common Mode Range ....-1.3 VDC to +3.8 VDC
Common Mode Rejection ..... 100dB min. @ VDC 50/60Hz.
Input Impedance 5M
Absolute Maximum Ratings .....Fault-protected inputs to ±50 VDC
Update Rate ..... 4 channels per scan
Open Circuit Protection .... Upscale or Downscale
Display Resolution ..... ±0.1˚C or ±0.1˚F
Cold Junction Compensation .....Automatic
Conversion Time ..... 270ms per channel
Warm-Up Time .....30 minutes typically ± 1˚C repeatability
Linearity Error (End to End) .... ±1˚C maximum, ±0.5˚C typical
Maximum Inaccuracy .....±3˚C (excluding thermocouple error)
Linearity Error (All Input Ranges) ..... 0.05% @ 0-60˚C; Typical: .....0.03% @ 25˚C

Notes:
1. Shields should be grounded at the power source only.
2. All CH- terminals must be connected together.
3. Unused channels should have a shorting wire (jumper) installed from CH+ to CH-.

Permissive Digital Inputs:
All..... Dry contact or triac rated for 120 VAC at 20 mA

Relay Output Specifications
Output Voltage Range ..... 6-240 VAC, 47-63Hz, 6-27 VDC
Maximum Voltage ..... 264 VAC, 30 VDC
Maximum Current ..... 2 A/point
Maximum Leakage Current ..... 0.1mA @ 246 VAC
Smallest Recommended Load .. 5mA @ 5 VDC

Relay Operating Cycles:

Voltage and Type of Load	Load 1A	Current 2A
24 VDC Resistive	600K	270K
24 VDC Solenoid	150K	60K
110 VAC Resistive	900K	350K
110 VAC Solenoid	350K	150K
220 VAC Resistive	600K	250K
220 VAC Solenoid	200K	100K

Touch Screen Display:
Screen Size .....5.7 in. dia.
Resolution .....320 x 240
Touch Grid .....8 x 6

Communications:
Protocol ..... ModBus Slave
Physical ..... RS-422 4 wire
RS-485 2 wire
Baud Rate .....2.4, 4.8, 9.6, 19.2, 38.4 Kbaud
Stop Bits ..... 1 or 2
Parity ..... odd, even, none
On Delay .....5, 10, 20 ms.
Address.....1 – 128
Max. network distance .....4000 feet
Max. number of devices .....32 per network
Max. baud rate .....38.4 Kbaud
Max. driver load .....62 ohms
Driver voltage..... ±1.5V minimum
No load current 80mA
Max. current.....100mA (62 ohms)
Isolation resistance .....>1014 ohms/7pF
Voltage withstand ..... 1.2KVrms/1s, 1.0KVrms/1 minute
Termination ..... Dipswitch selectable
Bias resistors ..... Dipswitch selectable
RS485/RS422 Operation ..... Dipswitch selectable
Connections ..... Plug in removable terminals for field termination

CONTROL AND ALARM
Control Modes: .....Single Loop PID
Differential PID
Cascade PID/PID

PID Parameters:
Proportional Band.....20 to 2000 degrees
Reset.....0.61 to 60 repeats per minute
Rate ..... 0 to 99.99 seconds
Reset Windup Limit .....100% fixed
Rate Limit .....X10 fixed
Manual Output ..... 0 to 100%, 1% steps
Control Setpoint..... full range, 0.1 deg. setting
Setpoint Limits..... high and low full range, 0.1˚ setting
Alarm Setpoint.....full range, 1˚ Setting
Alarm Deadband ..... 0 to 50.0, 0.1˚. Setting
Ramp to Setpoint..... 0 to 2000˚ per minute, 1˚. setting
Time delay on interlock..... 0 to 9999 seconds, 1 second settable

Ground Fault Monitor
Trip setting range.....6 to 600 mA
Current indication .....0- 100% of trip set point

Password: ..... 4 levels settable
Time: ..... 24 Hr. clock hrs/min format
Date: ..... mon/day/yr format

Power Train Components
Main Disconnect Switch ..... load rated shunt trip
I²T Fusing .....> 125% load with 100 kaic
Load Circuit Breakers .....>125% load rated with 25 kaic
Contactors (if supplied) .....load rated

IntelliPanel
3-Phase SCR Power Control Panel *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Technical Notes:
[1]Enclosure for codes 12, 14, 15, 16, and 17 are Floor-Mount Designs
[2]Consult Factory for 575/600 VAC Applications and Pricing
[3]NEMA 12 available with additional venting measures. Consult factory.
*Specify Quantity of Circuits

Model **IntelliPANEL Series 1**

IPZ2 **Three Phase Two-Leg Zero-Fired SCR Power Control Panel**

Panel Configuration

Real Time Process Indicators:
Heater Current
Line Voltage
Load Power Measurement (Kw/Kw/Hr)
Duty Cycle (0 - 100%)
Ground Fault Leakage Trending
Life Factor Measurement
Resistance Monitoring
Inlet / Outlet / Shell Temperatures
Historical Hi / Low Temperature Indication & Record

Operational Features
Global Alarm Display, Alarm Setup, Mapping & Configuration
Interlock Status Display, Interlock Setup & Configuration
Real Time Trending (Six Pens), Heater Graphics
RS-485 MODBUS™ Communications
Eight Sensor Inputs Selectable in Groups of Four J, K, E Thermocouples or RTD's, Loop ID / Tagging, Hand / Off / Auto Selection, Language Selection Option (contact factory), Security Code Protection, Built-In Help and Troubleshooting Pages

Selectable Control Setups:
Single Loop
Differential

Cascade:
Outlet and Sheath
Process and Sheath

Remote 4-20mA Command Signal

Code	Current @ 40°C (104°F) Ambient	SCR Component	Max. # Circuits	Type 12 Enclosure Dimensions[3]
02	100 Amp	MXPCII-4-02-1-1-L0-F01-0	4	72"H x 36"W x 12"D
03	150 Amp	MXPCII-4-04-1-1-L0-F01-0	4	72"H x 36"W x 12"D
06	200 Amp	MXPCII-4-06-1-1-L0-F02-0	4	72"H x 36"W x 12"D
08	300 Amp	MXPCII-4-08-1-1-L0-F03-0	4	72"H x 36"W x 12"D
10	400 Amp	MXPCII-4-10-1-1-L0-F04-0	4	72"H x 36"W x 12"D
12[1]	550 Amp	MXPCII-4-12-1-1-L0-F05-0	8	60"H x 60"W x 12"D
14[1]	650 Amp	MXPCII-4-14-1-1-L0-F06-0	8	60"H x 60"W x 12"D
15[1]	800 Amp	(2) MXPCII-4-10-1-1-L0-F04-0	12	72"H x 72"W x 12"D
16[1]	1000 Amp	(2) MXPCII-4-12-1-1-L0-F05-0	12	72"H x 72"W x 12"D
17[1]	1200 Amp	(2) MXPCII-4-14-1-1-L0-F06-0	12	72"H x 72"W x 12"D

Code	Voltage[2]
1	208 VAC
2	240 VAC
3	380 VAC
4	400 VAC
5	415 VAC
6	480 VAC

Code	Sensor Options
J	(8) J Thermocouple Sensor Inputs (1-8)
K	(8) K Thermocouple Sensor Inputs (1-8)
JK	(4) J Thermocouple Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8)
KJ	(4) K Thermocouple Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
R	(8) RTD Sensor Inputs (1-8)
RJ	(4) RTD Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
RK	(4) RTD Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8)
JR	(4) J Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)
KR	(4) K Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)

Code	Overtemperature Controller Options
0	None
1	One 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Sheath)
2	Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (One Sheath, One Shell)
3	Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath)
4	Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath, One Shell)
5	Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Three Sheath)

Code	Communications Option
0	None
1	RS485 / 422 MODBUS™

Code	Remote On / Off Shutdown Contactor Option (Per Sub-Circuit)		
0	None		
1(*)	Industrial Three-Pole Contactor 25 Amp Rating	5(*)	Industrial Three-Pole Contactor 60 Amp Rating
2(*)	Industrial Three-Pole Contactor 35 Amp Rating	6(*)	Industrial Three-Pole Contactor 70 Amp Rating
3(*)	Industrial Three-Pole Contactor 40 Amp Rating	7(*)	Industrial Three-Pole Contactor 80 Amp Rating
4(*)	Industrial Three-Pole Contactor 50 Amp Rating	8(*)	Industrial Three-Pole Contactor 110 Amp Rating

Code	Load Fusing Option (Thermal Magnetic Circuit Breakers)[3]		
9000	None		
9025(*)	20 Amps/Ckt (25 Amp Circuit Breaker)	9060(*)	48 Amps/Ckt (60 Amp Circuit Breaker)
9030(*)	24 Amps/Ckt (30 Amp Circuit Breaker)	9070(*)	56 Amps/Ckt (70 Amp Circuit Breaker)
9035(*)	28 Amps/Ckt (35 Amp Circuit Breaker)	9080(*)	64 Amps/Ckt (80 Amp Circuit Breaker)
9040(*)	32 Amps/Ckt (40 Amp Circuit Breaker)	9090(*)	72 Amps/Ckt (90 Amp Circuit Breaker)
9045(*)	36 Amps/Ckt (45 Amp Circuit Breaker)	9100(*)	80 Amps/Ckt (100 Amp Circuit Breaker)
9050(*)	40 Amps/Ckt (50 Amp Circuit Breaker)	9110(*)	88 Amps/Ckt (110 Amp Circuit Breaker)

IPZ2	03	5	J	2	1	4(3)	-9070(3)	Typical Model Number

CONTROL SYSTEMS

IntelliPanel
3-Phase SCR Power Control Panel *(cont'd.)*

Note: Additional control panel options available. See pages H-143 to H-145.

Technical Notes:
[1]Enclosure for codes 12, 14, 15, 16, and 17 are Floor-Mount Designs
[2]Consult Factory for 575/600 VAC Applications and Pricing
[3]Ventilated NEMA 12 Enclosure Derates Enclosure to NEMA 1.
* Specify Quantity of Circuits

Model **IntelliPANEL Series 1**

IPZ3 **Three Phase Three-Leg Zero-Fired SCR Power Control Panel**

Panel Configuration

Real Time Process Indicators:
Heater Current
Line Voltage
Load Power Measurement (Kw/Kw/Hr)
Duty Cycle (0 - 100%)
Ground Fault Leakage Trending
Life Factor Measurement
Resistance Monitoring
Inlet / Outlet / Shell Temperatures
Historical Hi / Low Temperature Indication & Record

Operational Features
Global Alarm Display, Alarm Setup, Mapping & Configuration
Interlock Status Display, Interlock Setup & Configuration
Real Time Trending (Six Pens), Heater Graphics
RS-485 MODBUS™ Communications
Eight Sensor Inputs Selectable in Groups of Four J, K, E Thermocouples or RTD's, Loop ID / Tagging, Hand / Off / Auto Selection, Language Selection Option (contact factory), Security Code Protection, Ramp-to-Setpoint Built-In Help and Troubleshooting Pages

Selectable Control Setups:
Single Loop
Differential

Cascade:
Outlet and Sheath
Process and Sheath

Remote 4-20mA Command Signal

Code — Current @ 40˚C (104˚F) Ambient

Code	Current	SCR Component	Max. # Circuits	Type 12 Enclosure Dimensions[3]
02	100 Amp	MXPCII-4-02-1-1-L0-F01-0	4	72"H x 36"W x 12"D
03	150 Amp	MXPCII-4-04-1-1-L0-F01-0	4	72"H x 36"W x 12"D
06	200 Amp	MXPCII-4-06-1-1-L0-F02-0	4	72"H x 36"W x 12"D
08	300 Amp	MXPCII-4-08-1-1-L0-F03-0	4	72"H x 36"W x 12"D
10	400 Amp	MXPCII-4-10-1-1-L0-F04-0	4	72"H x 36"W x 12"D
12[1]	550 Amp	MXPCII-4-12-1-1-L0-F05-0	8	60"H x 60"W x 12"D
14[1]	650 Amp	MXPCII-4-14-1-1-L0-F06-0	8	60"H x 60"W x 12"D
15[1]	800 Amp	(2) MXPCII-4-10-1-1-L0-F04-0	12	72"H x 72"W x 12"D
16[1]	1000 Amp	(2) MXPCII-4-12-1-1-L0-F05-0	12	72"H x 72"W x 12"D
17[1]	1200 Amp	(2) MXPCII-4-14-1-1-L0-F06-0	12	72"H x 72"W x 12"D

Code — Voltage[2]

Code	Voltage[2]
1	208 VAC
2	240 VAC
3	380 VAC
4	400 VAC
5	415 VAC
6	480 VAC

Code — Sensor Options

Code	Sensor Options
J	(8) J Thermocouple Sensor Inputs (1-8)
K	(8) K Thermocouple Sensor Inputs (1-8)
JK	(4) J Thermocouple Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8)
KJ	(4) K Thermocouple Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
R	(8) RTD Sensor Inputs (1-8)
RJ	(4) RTD Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
RK	(4) RTD Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8)
JR	(4) J Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)
KR	(4) K Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)

Code — Overtemperature Controller Options

Code	Overtemperature Controller Options
0	None
1	One 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Sheath)
2	Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (One Sheath, One Shell)
3	Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath)
4	Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath, One Shell)
5	Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Three Sheath)

Code — Communications Option

Code	Communications Option
0	None
1	RS485 / 422 MODBUS™

Code — Remote On / Off Shutdown Contactor Option (Per Sub-Circuit)

Code	Remote On / Off Shutdown Contactor Option (Per Sub-Circuit)	Code	Remote On / Off Shutdown Contactor Option (Per Sub-Circuit)
0	None		
1(*)	Industrial Three-Pole Contactor 25 Amp Rating	5(*)	Industrial Three-Pole Contactor 60 Amp Rating
2(*)	Industrial Three-Pole Contactor 35 Amp Rating	6(*)	Industrial Three-Pole Contactor 70 Amp Rating
3(*)	Industrial Three-Pole Contactor 40 Amp Rating	7(*)	Industrial Three-Pole Contactor 80 Amp Rating
4(*)	Industrial Three-Pole Contactor 50 Amp Rating	8(*)	Industrial Three-Pole Contactor 110 Amp Rating

Code — Load Fusing Option (Thermal Magnetic Circuit Breakers)[3]

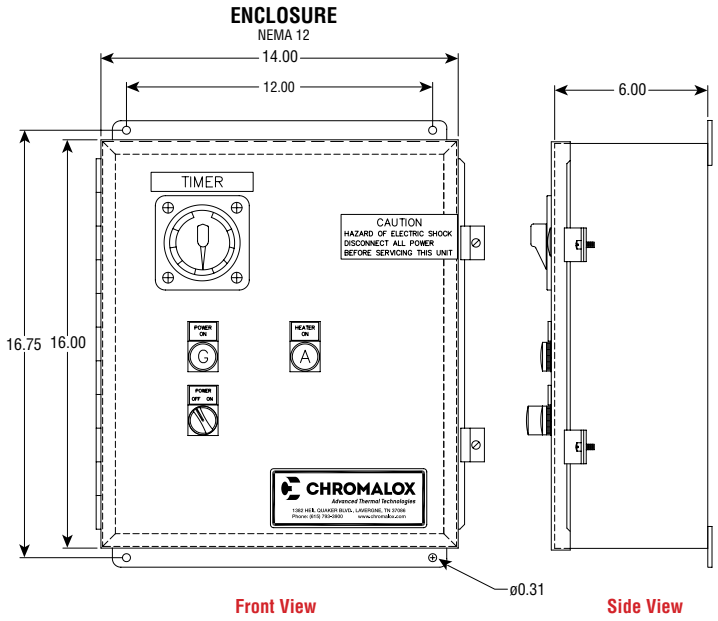
Code	Load Fusing Option (Thermal Magnetic Circuit Breakers)[3]	Code	Load Fusing Option (Thermal Magnetic Circuit Breakers)[3]
9000	None		
9025(*)	20 Amps/Ckt (25 Amp Circuit Breaker)	9060(*)	48 Amps/Ckt (60 Amp Circuit Breaker)
9030(*)	24 Amps/Ckt (30 Amp Circuit Breaker)	9070(*)	56 Amps/Ckt (70 Amp Circuit Breaker)
9035(*)	28 Amps/Ckt (35 Amp Circuit Breaker)	9080(*)	64 Amps/Ckt (80 Amp Circuit Breaker)
9040(*)	32 Amps/Ckt (40 Amp Circuit Breaker)	9090(*)	72 Amps/Ckt (90 Amp Circuit Breaker)
9045(*)	36 Amps/Ckt (45 Amp Circuit Breaker)	9100(*)	80 Amps/Ckt (100 Amp Circuit Breaker)
9050(*)	40 Amps/Ckt (50 Amp Circuit Breaker)	9110(*)	88 Amps/Ckt (110 Amp Circuit Breaker)

IPZ3-	03	6	J	2	1	4(3)	9070(3)	Typical Model Number

HCP

Percentage Timing Input Controllers

- **Motor Driven Cycling Device, 115 & 230 VAC**
- **50/60 Hz, 20 & 25 Amp Capacity**
- **50/60 Hz, 60 Amp Capacity (HCP only)**
- **15 & 30 Second Cycles**



All Dimensions in Inches (mm)

Description

Completely wired mechanical control package for infinitely varying radiant heater output. The heavy gauge metal enclosure includes a door-mounted input controller, indicator lights and ON/OFF switch for the control circuit. Panel mounted inside is a 3-pole magnetic contactor for power interruption, a voltage step-down transformer to provide 120 VAC to the control circuit from a 240 or 480 VAC power supply, and a 2-pole fuse block to protect the transformer. The HCP can be used to control either single or 3-phase loads. PCN 309905

Features

Percentage timing can be set to energize a heater for a chosen percentage (4-100%) of a preset 15 or 30 second cycle, thus derating heat output to match varying work sizes, loads or conveyor speeds.

Settings are repeatable between instruments and provide constant percentage of heat output.

Applications

- Processes requiring exact replication of heat pulses.
- Varying work loads
- Conveyors
- Radiant heat control

Specifications and Ordering Information

Time[1] Cycle Sec.	Volts Mtr.	Capacity Amps	Type of Mtg.	Model	Stock	PCN	Wt. (Lbs.)
15/30	120	60[3]	Surface/Wall	4439-23006	**S**	**309905**	30

Stock Status: **S** = stock

Notes —

1. When used on 50 Hz, standard units will provide 36 second cycle instead of 30, or 18 second cycle instead of 15.
2. 25 Amps permissible on 230V but not UL.
3. Contactor capacity.

WARNING: Hazard of Fire. These devices function as energy controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

CONTROL SYSTEMS

4464/4466/4468
Contactor Panels

- **Fully NEMA 4X Fiberglas® or 304SS Enclosure for Corrosive Environments**
- **NEMA 4 Steel Enclosure for Indoor Environments**
- **Single or Three Phase**
- **120 to 600 VAC**
- **40, 75 or 100 Amp Resistive Loads**
- **120/240/480 VAC Fused Control Power Transformer**

Description

The 4464/4466/4468 Contactor Temperature Control panel combines basic to sophisticated temperature and overtemperature controllers in either NEMA 4 Steel, NEMA 4X Fiberglas® or NEMA 4X 304SS enclosure with a hinged screw cover. The panel is completely assembled, pre-wired, tested and ready for installation.

The simplified to well-featured control options combined with the optional design features provide the user with countless solutions for their varying contactor control panel application needs.

The process and Hi-Limit controllers are available in 1/16 or 1/4 DIN sizes and offer two relay outputs. Optional control features include analog out retransmit, remote setpoint control and Modbus RTU/RS485 communications. Design feature options include main disconnect switch and enclosure heater.

Features

- 1/16 or 1/4 DIN Process Controllers
- 1/16 or 1/4 DIN Hi-Limit Controllers
- Pilot Light or Controller Indication of Power "ON"
- Remote Shutdown Interlock Terminals (Flow, Level and Thermal Fuse)
- Optional Disconnect Switch
- Optional Enclosure Heater
- Wall Mount Enclosures
- Optional Load Fusing

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4464/4466/4468
Contactor Panels *(cont'd.)*

In Stock:

Model	PCN
4468-30100	360022
4468-30101	314798
4468-30110	314800
4468-30111	314819
4468-60100	360073
4468-60101	314827
4468-60110	314835
4468-60111	314843

Ordering Information

Complete the Model Number using the Matrix provided.

Model		NEMA Rating	Enclosure Material	Enclosure Size No Fusing Option	Enclosure Size with Fusing Option
4464	3 Phase Contactor Power Control Panel	4X	304 Stainless	20"H x 16"W x 10"D	20"H x 16"W x 10"D
4466	3 Phase Contactor Power Control Panel	4	Painted Carbon Steel	20"H x 16"W x 8"D	20"H x 16"W x 8"D
4468	3 Phase Contactor Power Control Panel	4X	Fiberglas®	16"H x 14"W x 8"D	18"H x 16"W x 10"D

Panel Configuration

cUL and UL Listed Three Phase Contactor Power Control Panel with three enclosure options for Indoor or Outdoor applications. Features: Factory pre-wired for quick installation, Step-down Transformer & Secondary Fusing for 120 volt Control Circuit, Three-Pole Control Contactor Options Include: Cabinet Heater, Main Disconnect Switch, both 1/4 DIN & 1/16 DIN Process and Hi-Limit Controllers

Code	Current @ 40˚C (104˚F) Ambient
3	40 Amp
6	75 Amp
9	100 Amp

Code	Line Voltage
0	120/208/240/480 VAC
1	575/600 VAC
2	208 VAC
9	Special

Code	Process Controller Options
0	Terminal Block for Customer Supplied Control Signal (Dry Contact or Soldis State Relay, 120 VAC)
1	6040-RR0000 1/16 DIN Relay, Relay
2	6040-RRA100 1/16 DIN Relay, Relay, Retransmit, RS485
3	4040-RR0000 1/4 DIN Relay, Relay
4	4040-RRA110 1/4 DIN Relay, Relay, Retransmit, RS485, Remote Setpoint

Code	Options
0	None
1	Main Disconnect Switch
2	Enclosure Heater
3	Main Disconnect Switch & Enclosure Heater

Code	Overtemperature Controller Options
0	None
1	6050-1R000 1/16 DIN Fixed 5A Relay, Relay
2	6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485
3	4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

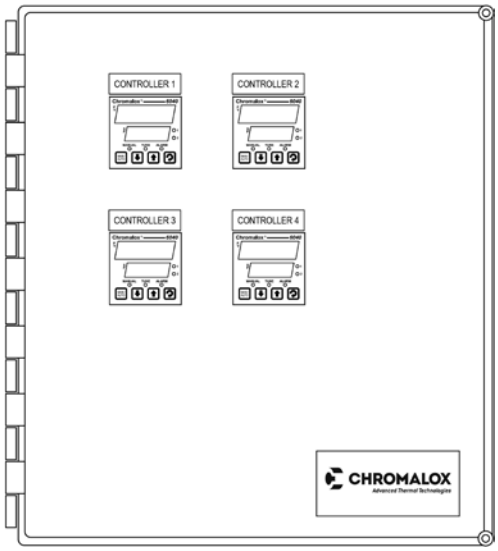
Code	Load Fusing Option (See Note)
Blank	None
9010(*)	8 Amps/Circuit (10 Amp fuse)
9015(*)	12 Amps/Circuit (15 Amp fuse)
9020(*)	16 Amps/Circuit (20 Amp fuse)
9025(*)	20 Amps/Circuit (25 Amp fuse)
9030(*)	24 Amps/Circuit (30 Amp fuse)
9035(*)	28 Amps/Circuit (35 Amp fuse)
9040(*)	32 Amps/Circuit (40 Amp fuse)
9045(*)	36 Amps/Circuit (45 Amp fuse)
9050(*)	40 Amps/Circuit (50 Amp fuse)
9060(*)	48 Amps/Circuit (60 Amp fuse)
9070(*)	56 Amps/Circuit (70 Amp fuse)
9080(*)	64 Amps/Circuit (80 Amp fuse)
9090(*)	72 Amps/Circuit (90 Amp fuse)
9100(*)	80 Amps/Circuit (100 Amp fuse)
9110(*)	88 Amps/Circuit (110 Amp fuse)
9125(*)	100 Amps/Circuit (125 Amp fuse)

4468-	3	0	1	1	1	9025(3)	Typical Model Number

*Specify Number of Circuits (Maximum Three Circuits of Load Fusing).

4463
Multi-zone Control/ Contactor Panel

- **Up to 4 Control Zones in a Single Enclosure**
- **1/16 DIN Controller and 40 Amp Contractor Per Zone**
- **NEMA 4X Enclosure Allows for Hose Down to Corrosive Environments**
- **240 VAC or 480 VAC Loads**



Description

The Chromalox model 4463 Panels provide up to four temperature zones of control in a single NEMA 4X fiberglass enclosure. The 4463 is excellent for multiple zone ovens or any application where multiple heaters are utilized in a process. The multi-zone panel is only16"H x 14"W x 8"D, which is important for applications where space is at a premium.

Ordering Information

Complete the Model Number using the Matrix provided.

Model

4463 Multi-Zone Contactor Power Control Panel NEMA 4X Rated

Panel Configuration
cUL and UL Listed Three Phase or Single Phase Contactor Power Control Panel. Features: Factory pre-wired for quick installation, NEMA 4X rated Enclosure (16"H x 14"W x 8"D), Terminal Blocks for Customer supplied 120 VAC Control Power and up to Four Independent Zones of Control.

Code	Control Zones
10	One 6040-RR0000 1/16 DIN Relay, Relay with One Three-Pole 40 Amp rated Industrial Contactor
20	Two 6040-RR0000 1/16 DIN Relay, Relay with Two Three-Pole 40 Amp rated Industrial Contactors
30	Three 6040-RR0000 1/16 DIN Relay, Relay with Three Three-Pole 40 Amp rated Industrial Contactors
40	Four 6040-RR0000 1/16 DIN Relay, Relay with Four Three-Pole 40 Amp rated Industrial Contactors

Code	
000	Add to Complete Model Number

4463-	**30**	**000**	**Typical Model Number**

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4430 Series
Contactor Panels

- **NEMA 4 or 4X Enclosure**
- **208-600 Volt, with Control Power Transformer**
- **Up to 6 Individually Fused Circuits of Contactors, 40-96 Amps**
- **Up to 6 Circuits of Branch Circuit Fusing, each 30-120 Amps**
- **Optional Digital Indicating Microprocessor-Based Temperature and Overtemperature Controllers**
- **Options:**
  - **Stepper**
  - **High Limit**
  - **SCR Trim Load**
  - **Ground Fault Monitor**
  - **Cabinet Heater**
  - **"Z" Purge System**
  - **Volt and Amp Meters**
  - **Floor Stand Kit**

Description

Chromalox 4430 Series Contactor Panels are designed and engineered to meet virtually every heating application. Ranging in size from 24.9KW to 448.9KW, the 4430 Series handles resistive heating applications exceeding the capabilities of thermostats and manual switches.

Options

- Ground Fault Monitor for Equipment Protection
- Enclosure heater – Anti-Condensation for Instrument Protection for Ambient Temperatures as low as 0˚F
- Z Purge Pressurization System for Class I, Div. 2, Groups C, D environments
- Combination Voltmeter and Ampmeter with Phase Selector Switch
- Floor Stand Kit

See end of this section for an additional list of Special Panel Options and NEMA Descriptions.

Features

- NEMA 4 or 4X Stainless Steel Enclosure
- Manual Disconnect Switch
- Magnetic Contactors
- Load Fusing
- Control Power Transformer
- Temperature Controller (indicating)
- Overtemperature Controller(s) with Manual Reset
- Automatic Shutdown Device for Overtemperature Protection
- Drawings for Record
- Complete Installation and Operation Manuals
- Power “ON” Pilot Lamp

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

4430 Series Contactor Panels *(cont'd.)*

Ordering Information - Complete the Model Number using the Matrix provided.

Technical Notes: Load Fuse Current Rating Reflects 125% of Actual Load Amps.
*External cooling required.
**Ground Fault detection requires grounded supply.

Model

4432 Three Phase Contactor Power Control Panel NEMA 4/12

Panel Configuration

cUL and UL Listed Three Phase Contactor Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 rated Enclosure for Indoor/Outdoor Applications, Main Magnetic Disconnect Switch with Shunt Trip Feature, Three-Pole Contactors, and Sub-Circuit Fusing. Options Include: Process Controller, Hi-Limit Controllers, Stepper, SCR Trim Load, Ground Fault Monitor, Ammeter with Phase Selector Switch, Voltmeter with Phase Selector Switch, Floor Stand Kit, Enclosure Heater, and Type "Z" Purge Pressurization System.

Code	Current @ 40˚C (104˚F) Ambient with NO SOLAR LOAD				
	Circuits	Max. Amps/Ckt	Total Amps	Fuse Amps/Ckt	Enclosure Dimensions
124	1	24	24	30	(24"H x 24"W x 12"D)
148	1	48	48	60	(24"H x 24"W x 12"D)
180	1	80	80	100	(24"H x 24"W x 12"D)
196	1	96	96	120	(24"H x 24"W x 12"D)
224	2	24	48	30	(36"H x 30"W x 12"D)
248	2	48	96	60	(36"H x 30"W x 12"D)
280	2	80	160	100	(36"H x 30"W x 12"D)
296	2	96	192	120	(48"H x 36"W x 12"D)
324	3	24	72	30	(48"H x 36"W x 12"D)
348	3	48	144	60	(48"H x 36"W x 12"D)
380	3	80	240	100	(48"H x 36"W x 12"D)
396	3	96	288	120	(48"H x 36"W x 12"D)
424	4	24	96	30	(48"H x 36"W x 12"D)
448	4	48	192	60	(48"H x 36"W x 12"D)
480	4	80	320	100	(48"H x 36"W x 12"D)
496	4	96	384	120	(48"H x 36"W x 12"D)
524	5	24	120	30	(48"H x 36"W x 12"D)
548	5	48	240	60	(48"H x 36"W x 12"D)
580	5	80	400	100	(48"H x 36"W x 12"D)
596	5	96	480	120	(60"H x 36"W x 12"D)
624	6	24	144	30	(48"H x 36"W x 12"D)
648	6	48	288	60	(48"H x 36"W x 12"D)
680	6	80	480	100	(60"H x 36"W x 12"D)
696	6	96	576	120	(60"H x 36"W x 12"D)

Code	Voltage
1	208 VAC
2	240 VAC
3	380 VAC
4	415 VAC
5	480 VAC

Code	Process Controller Options
0	Customer Supplied Signal (Dry Contact or Solid State Switch, 120 VAC)
1	4040-TRA100 1/4 DIN TRIAC, Relay, Retransmit, RS485 Controller
2	Customer Supplied Signal to Stepper (4 - 20 mA).
3	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 Controller & Stepper
4	Customer Supplied Digital Signal for Stepper and One 24 or 48 Amp SCR Trim Load
5	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load
6	Customer Supplied Digital Signal for Stepper and One 80 or 96 Amp SCR Trim Load
7	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
0	None
1	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch**
2	Cabinet Heater
3	"Z" Purge Pressurization System
4	Ground Fault Monitor & Cabinet Heater
5	Ground Fault Monitor and "Z" Purge System
6	Ground Fault Monitor, Cabinet Heater and "Z" Purge System
7	Enclosure Heater and "Z" Purge System

Code	Options
0	None
1	Multimeter (Volts & Current)

4432-	**624**	**5**	**3**	**1**	**0**	**0**	**Typical Model Number**

4430 Series Contactor Panels *(cont'd.)*

Technical Notes: Load Fuse Current Rating Reflects 125% of Actual Load Amps.

Ordering Information - Complete the Model Number using the Matrix provided.

Model

4436 Three Phase Contactor Power Control Panel with Optional SCR Trim Load Control

Panel Configuration

cUL and UL Listed Three Phase Contactor Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4X 304 Stainless Steel rated Enclosure for Indoor/Outdoor Applications, Main Magnetic Disconnect Switch with Shunt Trip Feature, Three-Pole Contactors, and Sub-Circuit Fusing. Options Include: Process Controller, Hi-Limit Controllers, Stepper, SCR Trim Load, Ground Fault Monitor, Ammeter with Phase Selector Switch, Voltmeter with Phase Selector Switch, Floor Stand Kit, Enclosure Heater, and Type "Z" Purge Pressurization System.

Code	Current @ 40˚C (104˚F) Ambient with NO SOLAR LOAD				
	Circuits	Max. Amps/Ckt	Total Amps	Fuse Amps	Enclosure Dimensions
124	1	24	24	30	(24"H x 24"W x 10"D)
148	1	48	48	60	(24"H x 24"W x 10"D)
180	1	80	80	100	(24"H x 24"W x 10"D)
196	1	96	96	120	(24"H x 24"W x 10"D)
224	2	24	48	30	(36"H x 30"W x 10"D)
248	2	48	96	60	(36"H x 30"W x 10"D)
280	2	80	160	100	(36"H x 30"W x 10"D)
296	2	96	192	120	(48"H x 36"W x 10"D)
324	3	24	72	30	(48"H x 36"W x 10"D)
348	3	48	144	60	(48"H x 36"W x 10"D)
380	3	80	240	100	(48"H x 36"W x 10"D)
396	3	96	288	120	(48"H x 36"W x 10"D)
424	4	24	96	30	(48"H x 36"W x 10"D)
448	4	48	192	60	(48"H x 36"W x 10"D)
480	4	80	320	100	(48"H x 36"W x 10"D)
496	4	96	384	120	(48"H x 36"W x 10"D)
524	5	24	120	30	(48"H x 36"W x 10"D)
548	5	48	240	60	(48"H x 36"W x 10"D)
580	5	80	400	100	(48"H x 36"W x 10"D)
596	5	96	480	120	(60"H x 36"W x 10"D)
624	6	24	144	30	(48"H x 36"W x 10"D)
648	6	48	288	60	(48"H x 36"W x 10"D)
680	6	80	480	100	(60"H x 36"W x 10"D)
696	6	96	576	120	(60"H x 36"W x 10"D)

Code	Voltage
1	208 VAC
2	240 VAC
3	380 VAC
4	415 VAC
5	480 VAC

Code	Process Controller Options
0	Customer Supplied Signal (Dry Contact or Soldid State Relay, 120 VAC)
1	4040-TRA100 1/4 DIN TRIAC, Relay, Retransmit, RS485 Controller
2	Customer Supplied Signal to Stepper (4 - 20 mA).
3	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 Controller & Stepper
4	Customer Supplied Digital Signal for Stepper and One 24 or 48 Amp SCR Trim Load
5	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load
6	Customer Supplied Digital Signal for Stepper and One 80 or 96 Amp SCR Trim Load
7	4040-SRA100 1/4 DIN SSR, Relay, Retransmit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load

Code	Overtemperature Controller Options
0	None
1	One 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
2	Two 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
3	Three 4050-1R000 1/4 DIN Fixed 5A Relay, Relay
4	One 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
5	Two 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485
6	Three 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485

Code	Ground Fault Sensing/Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
0	None
1	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch
2	Enclosure Heater
3	"Z" Purge Pressurization System
4	Ground Fault Monitor & Enclosure Heater
5	Ground Fault Monitor and "Z" Purge System
6	Ground Fault Monitor, Enclosure Heater and "Z" Purge System
7	Enclosure Heater and "Z" Purge System

Code	Options
0	None
4	Multimeter (Volts & Current)

4436-	**624**	**5**	**3**	**1**	**0**	**0**	**Typical Model Number**

CONTROL SYSTEMS

4477
Explosion Proof Mini Contactor Control Panel

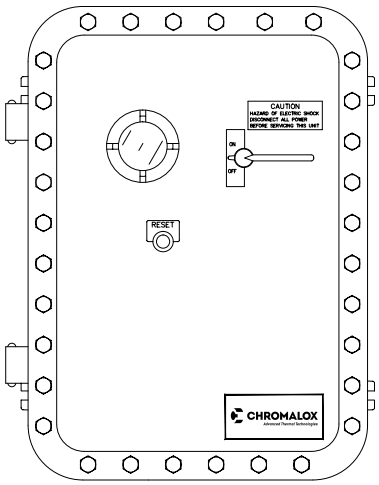
- **NEMA 7 Enclosure**
- **Suitable for Class I, Div. 1 & 2 Groups B, C & D Locations**
- **Suitable for Class II, Div. 1 & 2, Groups E, F & G**
- **Suitable for Hose Down Conditions**
- **45 or 75 Amp Contactor for Resistive Loads**
- **Temperature Controller Optional**
- **Overtemperature Control with Door Mounted Illuminated Reset Pushbutton Option**
- **Circuit Breaker Provides Fault and Circuit Protection**

Ordering Information

Complete the Model Number using the Matrix provided.

Description

The Chromalox model 4477 Panel is excellent for power control in a hazardous environment. The enclosure contains a single 45 or 75 amp 3 pole contactor, a separate thermal magnetic circuit breaker, optional temperature and overtemperature control, an optional window for viewing the controller, and a door mounted, illuminated reset pushbutton for the overtemp circuit. NEMA 7/4 rating of the enclosure is suitable for Class I, Div. 1 & 2, Group B, C & D.



Model

4477 Three Phase MINI Explosion-Proof Contactor Power Control Panel - Class I, Division II

Panel Configuration
Three Phase Contactor Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 7 rated Explosion-Proof Enclosure for Indoor/Outdoor Hazardous Areas, Main Thermal Magnetic Disconnect Switch, Three-Pole Contactor for Power Switching. Options Include: Process and Hi-Limit Controllers, Panel Door Veiwing Window, Enclosure Heater, and Ground Fault Monitor.

Code	Current @ 40˚C (104˚F) Ambient	Enclosure Dimensions
40	45 Amp	(29"H x 21"W x 9"D)
75	75 Amp	(29"H x 21"W x 9"D)

Code	Process Controller Options
0	Terminal Block for Customer Supplied Control (Dry Contact or Solid State Switch, 120 VAC)
1	6040-RR0000 1/16 DIN Relay, Relay
2	6040-RRA100 1/16 DIN Relay, Relay, Retransmit , RS485
3	4040-RR0000 1/4 DIN Relay, Relay
4	4040-RRA110 1/4 DIN Relay, Relay, Retransmit, RS485, Remote Setpoint

Code	Overtemperature Controller Options
0	None
1	6050-1R020 1/16 DIN Fixed 5A Relay, Relay, Digital Input
2	6050-1RA20 1/16 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input
3	4050-1R020 1/4 DIN Fixed 5A Relay, Relay, Digital Input
4	4050-1RA20 1/4 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input

Code	Options
0	None
1	Ground Fault Monitor & Shutdown includes Illuminated Reset Switch
2	Enclosure Heater
3	Enclosure Door Viewing Window
4	Ground Fault Monitor & Enclosure Heater
5	Ground Fault Monitor & Enclosure Viewing Window
6	Ground Fault Monitor, Enclosure Heater, and Enclosure Viewing Window
7	Enclosure Heater and Enclosure Viewing Window

4477-	**40**	**2**	**1**	**3**	**Typical Model Number**

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Panel Selection Guide *(cont'd.)*

Heat Trace Controls & Panels

Model Number	DTS-HAZ, DTS-HAZ-DC	ITC1, ITC2	ITAS-6/36	ITAS-EXT-6/36	ITLS-6/36
Mounting	Pipe or Wall	Wall	Wall or Floor	Wall or Floor	Wall & Floor
Power Control	SSR	SSR	SSR	SSR	SSR
Voltage	100-277	100-277	120-600	120-600	120-600
Max Current (1)	30 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit
Environment	NEMA 4X	NEMA 4X	NEMA 4 or NEMA 4X	NEMA 4 or NEMA 4X	NEMA 4 or NEMA 4X
Temp Control	Integral Controller	IntelliTRACE®	IntelliTRACE® Controller	Controlled by ITAS Base Controller	IntelliTRACE®
Phase	1 Phase	1 Phase	1 & 3 Phase	1 & 3 Phase	1 & 3 Phase
Circuits	1	1 or 2	6,12,18,24,30,36	6,12,18,24,30,36	6,12,18,24,30,36
Standard Features	Soft Start, AC or DC Alarm, Programmable Setpoint, Hi/Lo Temp. & Large Display	Soft Start, Temp., Current, Ground Fault & Sensor Monitoring & Alarms, Communications, 1 or 2 RTD inputs/Ckt, Large TFT Display	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start
Options	Wall Mounting	Ethernet IP, Wireless Communications	Main Disconnect, Enclosure Heater	Main Disconnect, Enclosure Heater	Customizable I/O Mapping, Multiple Sensor Inputs per Circuit, Main Disconnect, Enclosure Heater
Agency Approvals	UL, cUL, CE, IECEx/ATEX	UL, cUL, CE	UL, cUL (CE Optional)	UL, cUL (CE Optional)	UL, cUL (CE Optional)
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Heat Trace Controls & Panels (cont'd.)

Model Number	ITLS-EXT-6/36	ITASC1D2-6/36	ITASC1D2-EXT-6/36	ITLSC1D2-6/36	ITLSC1D2-EXT-6/36
Mounting	Wall & Floor	Wall or Floor	Wall or Floor	Wall or Floor	Wall or Floor
Power Control	SSR	SSR	SSR	SSR	SSR
Voltage	120-600	120-600	120-600	120-600	120-600
Max Current (1)	40 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit	40 Amps per Circuit
Environment	NEMA 4 or NEMA 4X	NEMA 4 or NEMA 4X (Class I, Div. 2)	NEMA 4 or NEMA 4X (Class I, Div. 2)	NEMA 4 or NEMA 4X (Class I, Div. 2)	NEMA 4 or NEMA 4X (Class I, Div. 2)
Temp Control	Controlled by ITLS Base Controller	IntelliTRACE® Controller	Controlled by ITASC1D2 Base Controller	IntelliTRACE® Controller	Controlled by ITLSC1D2 Base Controller
Phase	1 & 3 Phase	1 & 3 Phase	1 & 3 Phase	1 & 3 Phase	1 & 3 Phase
Circuits	6,12,18,24,30,36	6,12,18,24,30,36	6,12,18,24,30,36	6,12,18,24,30,36	6,12,18,24,30,36
Standard Features	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start	Temperature, GFEP & Current Monitoring & Alarms, Soft Start
Options	Customizable I/O Mapping, Multiple Sensor Inputs per Circuit, Main Disconnect, Enclosure Heater	Main Disconnect, Enclosure Heater	Main Disconnect, Enclosure Heater	Customizable I/O Mapping, Multiple Sensor Inputs per Circuit, Main Disconnect, Enclosure Heater	Customizable I/O Mapping, Multiple Sensor Inputs per Circuit, Main Disconnect, Enclosure Heater
Agency Approvals	UL, cUL (CE Optional)	UL, cUL (CE Optional)	UL, cUL (CE Optional)	UL, cUL (CE Optional)	UL, cUL (CE Optional)
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Panel Selection Guide *(cont'd.)*

Heat Trace Controls & Panels (cont'd.)

Model Number	FPAS	FPLS	FPASM	FPLSM
Mounting	Wall	Wall	Wall	Wall
Power Control	Contactor	Contactor	Contactor	Contactor
Voltage	120, 208, 240, 277	120, 208, 240, 277	120, 208, 240, 277	120, 208, 240, 277
Max Current (1)	100/225	100/225	100/225	100/225
Environment	NEMA 4 or Optional NEMA 4X	NEMA 4 or Optional NEMA 4X	NEMA 4 or Optional NEMA 4X	NEMA 4 or Optional NEMA 4X
Temp Control	6040 (Optional)		6040 (Optional)	
Phase	1, 3 Phase	1, 3 Phase	1, 3 Phase	1, 3 Phase
Circuits	120, 208, 240 VAC Load Voltage Systems: 12, 20, 30 or 40 Circuits 277 VAC Load Voltage Systems: 18, 30 or 42 Circuits		120, 208, 240 VAC Load Voltage Systems: 12, 20, 30 or 40 Circuits 277 VAC Load Voltage Systems: 18, 30 or 42 Circuits	
Standard Features	Ground Fault Monitor, Individual Circuit Breakers	Ground Fault Monitor, Individual Circuit Breakers	Ground Fault Monitor, Individual Circuit Breakers, Sentinel Monitoring System	Ground Fault Monitor, Individual Circuit Breakers, Sentinel Monitoring System
Options	Enclosure Heater, Disconnect Switch, Temperature Controller, Z-Purge System for Class I, Div 2.	Enclosure Heater, Disconnect Switch, Z-Purge System for Class I, Div 2.	Enclosure Heater, Disconnect Switch, Temperature Controller, Z-Purge System for Class I, Div 2.	Enclosure Heater, Disconnect Switch, Z-Purge System for Class I, Div 2.
Agency Approvals	UL, cUL	UL, cUL	UL, cUL	UL, cUL
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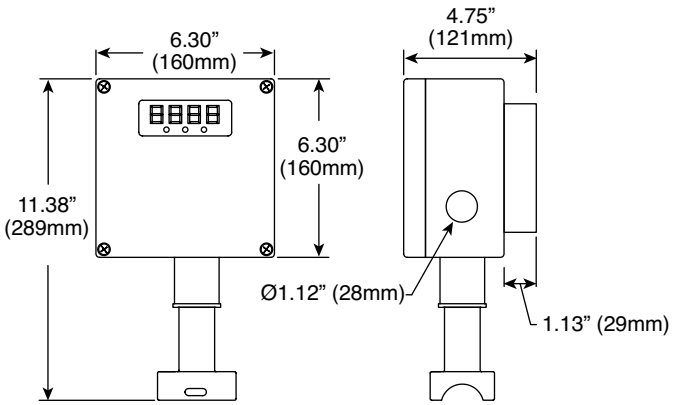
DTS Series

Heat Trace Digital Thermostat

- 30 Amp Solid State Relay (SSR) Output
- 120 to 277 Vac Operation
- C1D2 Hazardous Area Approval
- ATEX / IECEx Zone II
- On/Off Control With 100 Degree Deadband Programmable In One Degree Increments
- Selectable Soft-Start Feature – Eliminates SR Cable In-Rush
- LED Indication for Power, Alarm and Load
- Large LED Display of Process Variables
- Programmable High & Low Temperature Alarms
- Solid State Alarm for Remote Indication of Alarm Status –
  - AC Alarm: DTS-HAZ
  - DC Alarm: DTS-HAZ-DC
- NEMA 4X Enclosure
- Integral Pipe Stand
- Optional Wall Mount
- 100 Ohm Platinum RTD - Included
- Enclosure Serves as Heating Cable, A/C Power & Sensor Connection
- Works with SR, CWM and MI Cable
- RoHS Compliant
- UL, cUL Listed, CE Approved



Description

The DTS-HAZ digital thermostat is a microprocessor based temperature control and power connection kit. It is used for freeze protection or process temperature maintenance of pipes or tanks protected by heat tracing products. This thermostat can be used with Constant Wattage, Mineral Insulated or Self-Regulating heating cables in Ordinary area or Class 1, Division 2 and IECEx/ATEX Zone II hazardous area locations.

This unit is designed to provide local temperature control and monitoring for heat traced pipes or tanks across a variety of industries and applications and will switch 30 amperes of current.

The DTS-HAZ provides easy programming of the temperature set point, high and low temperature alarms, the deadband, the temperature units, the soft start function and the alarm state through the front panel push buttons. LED lights are provided for indication of power to the unit, heater power on (load) and alarm status. A Fail Safe solid state alarm is included for wiring to your building management system to indicate alarm status. This alarm may be set to open or close on all alarm conditions including loss of power, high or low temperature alarm and RTD failure. The loss of power indication qualifies this unit to be used to sense temperature and control heat trace when used in fire protection systems. Choose either the DC or the AC customer supplied voltage alarm variation. The minimum operating ambient temperature is -40°F (-40°C). This unit has programmable high and low temperature alarm set points from -80°F (-62°C) to 1150°F (621°C).

The DTS-HAZ employs a Soft Start feature that uses a proprietary software algorithm which eliminates the inherent self-regulating in-rush current, resulting in less nuisance tripping at cold temperatures. For added flexibility, the user may disable the soft start feature for non-heat trace applications. The alarm contact may be either normally open or normally closed.

A 100 Ohm platinum RTD is provided with a 3 foot (1 M) lead resulting in flexible mounting options for the user.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

DTS Series
Heat Trace Digital Thermostat *(cont'd.)*

PCN	Model
387364	DTS-HAZ
316187	DTS-HAZ-DC

Accessories

PCN	Model
318043	DTS Wall Mount Kit
308144	RTD Extension Wire (50 ft/15m)

Applications

- Freeze Protection of Piping
- Process Temperature Maintenance
- Tank Freeze Protection
- Tank Process Temperature Maintenance

Environments

- Hazardous Areas, Class I, Div 2, Groups A,B,C,D – Temperature Rating: T4A
- IECEx, ATEX Zone II, Temperature Rating: T4

Sensors

- 100 OHM PT RTD
- Probe Length = 4" (10.2 cm)
- Probe Diameter = 1/4" (6.35 mm)
- Leadwire Length = 3ft (1 M)*

* The maximum allowable length of the RTD wire is 50ft (15m) in order to remain UL/cUL compliant.

Markets

- Agriculture
- Alternative Fuels
- Chemical Processing
- Food Processing
- Oil / Gas
- Pharmaceutical
- Power Generation
- Water Treatment
- Building and Construction
- Transportation
- HVAC/Refrigeration

Features

- User Selectable Soft-Start Program
- Small Enclosure. The 6.25 inch by 6.25 inch enclosure houses the temperature control and monitoring unit along with terminals for connecting instrument power, heating cable and RTD.
- 100 Ohm platinum RTD which can be pipe mounted or can be used to sense ambient air temperature.
- Pipe stand-off mount for direct pipe mounting.
- Integral wiring. The wiring of the heating cable, alarm, AC power line and the RTD sensor are all accomplished within the enclosure. This feature reduces both labor and material costs by eliminating the need for an additional heat trace power connection kit as well as the time for the additional wiring.

Specifications

Operating Voltage	120 to 277 VAC, 50/60 Hz, Single Phase
Operating Temperature	
- Hazardous Areas	-40°F to 104°F (-40°C to 40°C)
- Ordinary Areas	-40°F to 140°F (-40°C to 60°C)
Input	100 Ohm platinum RTD
Output	30 amp solid state relay
Alarms	High temp to 1150°F (621°C) Low temp to -80°F (-62°C) RTD Failure Red LED alarm status indicator on front panel
Solid State Alarm Rating - AC	12-277 VAC, 1.8 Amps RMS - Customer Supplied
Solid State Alarm Rating - DC	0-42 VDC, 1.8 Amps RMS- Customer Supplied

Alarm Function:

Mode	Default	Optional
Normal Operation	Closed	Open
Alarm Condition	Open	Closed
Power Off	Open	Open

Deadband	1°F (or ˚C) to 100°F (or ˚C), programmable
Set Points	-80°F to 1100°F programmable (-62˚C to 593˚C)
Units of Temperature	˚F or ˚C, selectable
Control Mode	On/Off control
Soft Start	User selectable integral soft start, patent pending software algorithm, which eliminates nuisance breaker tripping associated with self-regulating cable in-rush

Current Approvals

- CE, UL, cUL Listed
- Ordinary Areas
- Hazardous Area
- Class I, Div. 2 – Groups A, B, C, D
- ATEX/IECEx Zone II (Ex nA IIC)

IntelliTrace
ITC1 & ITC2
Digital Heat Trace Controller
1 & 2 Circuit

- 1 & 2 Circuit Models
- 40 Amps per Circuit
- SSR Control
- 100 – 277 VAC, 50/60 Hz
- Hazardous (Class I, Division 2) or Non Hazardous Areas
- Soft Start Feature
- Operating Temperature: -40˚F to 104˚F (-40˚C to 40˚C)
- Modbus RTU/RS485, RS422 & TCP/Ethernet
- 10” x 8” x 6” (26cm x 21cm x 15cm) NEMA 4X FG Wall Mount Enclosure
- High Resolution Color TFT Display
- LED Indication for Power, Load & Alarm per Circuit
- Front Panel Capacitive Touch Switches
- PID, On/Off or Manual Control Modes
- One or Two Sensor Inputs / Circuit – Min, Max & Averaging
- 2 Circuit Ambient Control from 1 RTD Sensor
- Full Monitoring & Alarms
  - High / Low Temperature & Current, GFEP & Sensor Failure
- Programmable Duty Cycle On Sensor Failure
- AC & DC Alarms
- Password Protected Security Levels
- CE, UL/cUL

Description

The Chromalox intelliTRACE ITC series is designed for line or ambient sensing heat trace applications such as freeze protection and/or process temperature control. This controller may be used with constant wattage, mineral insulated or self regulating heating cables. The ITC is intended for use in industrial locations in either hazardous (Class I, Division 2) or non-hazardous environments.

The ITC Series is offered in either a single circuit or an independently controlled and monitored dual circuit platform. They provide a unique, industry-leading combination of heating capacity, application flexibility and technology.

The ITC is a microprocessor based system with SSR (Solid State Relay) power control which switches an impressive 40 Amps per circuit at 100-277 VAC.

There are three user-selectable control modes available on the ITC: Manual, Off or Auto. An output of 1% to 100% is available while in Manual Mode and you may choose either PID or ON/OFF control while in the Auto Control Mode.

You may employ one or two RTD sensors for either circuit. When using two RTD sensors, the ITC may be set to Low, High or Average. The ITC may also be configured as a 2-circuit ambient sensing controller that uses only one RTD to control both circuits. This provides the owner with much more flexibility and redundancy to help meet their ever-varying process demands.

The ITC employs a soft start feature that uses a proprietary software algorithm which eliminates the inherent self-regulating in-rush current, resulting in less nuisance tripping at cold temperatures. The soft start feature is selectable which allows this controller to be employed in non-heat trace applications as well.

All process conditions may be monitored and managed both locally and remotely. All process variable, communication and alarm settings and security codes are user-adjustable via simple page menu navigation.

In terms of system supervision, the ITC controller monitors temperature, current load and ground fault equipment protection leakage current (GFEP). Additionally, the alarms on the ITC consist of high and low temperature, high and low current, high GFEP current and sensor failure. For GFEP see next page for specifics.

Should the ITC unit realize a failed sensor, the controller automatically switches into a user adjustable manual output duty cycle. To eliminate abrupt current spikes, the Chromalox ITC employs bumpless transfer power switching when switching over from either manual or auto mode.

The ITC unit is housed in a compact wall mountable, NEMA 4X FG or optional 316 SS enclosure and it features a high resolution TFT display, LED indication of Load, Power & Alarm status for each circuit and front panel capacitive touch user interface buttons which are mounted on a hinged door.

The ITC enclosure provides electrical connections for the heating cable, the AC Power and the RTD Sensors and it comes complete with stainless steel mounting brackets.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

ITC1 & ITC2

Digital Heat Trace Controller 1 & 2 Circuit *(cont'd.)*

To comply with NEC code one of the following must apply:

1. Customer supplied 2 pole GFEP breaker in branch circuit breaker box upstream of the controller.
2. Requirement shall not apply in industrial establishments where there is alarm indication of ground faults and the following conditions apply:
   a. Conditions of maintenance and supervision ensure that only qualified person(s) service the installed system
   b. Continued circuit operation is necessary for safe operation of equipment or process

Specifications

Input

Sensor Type	3-wire RTD, 100 Ω PT, 0.00385 Ω/Ω/˚C, 20 Ω balanced lead wire
Number of Sensor Inputs	1 or 2 per Circuit
Sensing Configuration	Range: Single, Low, High, Average, Use RTD1 to control both circuits

Output

Power Switching	SSR
Number of Circuits	1 or 2
Capacity	40 Amps per Circuit

Control Types

PID	Control mode must be set to Auto
Autotune	On or Off
Proportional Band, (˚F)	Range: 1 – 100
Integral (sec/repeat)	Range: 0 – 9,999
Rate or Derivative, (seconds)	Range: 0 – 500
On/Off	Control mode must be set to Auto
Dead band, (˚F)	Range: 2 – 100
Manual	Range: 0 – 100%
Soft Start, Current Clamping	Enable or Disable

Settings

Temperature (PV)	Range: -80˚F to +1100˚F (-62˚C to +593˚C)
Low Temperature Alarm	Range: -80˚F to +1050˚F, Off (-62˚C to +566˚C, Off)
High Temperature Alarm	Range: -80˚F to +1150˚F, Off (-62˚C to +621˚C, Off)
Low Current Alarm	Range: 0.1 A – 50.0 A, Off
High Current Alarm	Range: 0.1 A – 50.0 A, Off
GFEP	Range: 30 mA – 150 mA
GFEP Alarm Condition	Alarm Only, Alarm & Trip, Alarm & Latch, Alarm & Trip & Latch
Output on Sensor Failure	Range: 0–100%, Bumpless Transfer to Manual Mode
Calendar	Year, Month, Day, Date, Hour & Minute
Audible button depress	Range: On, Off
Security	3 Levels of password protected security
Alarm State	Normally Open, Normally Closed

Display, HMI, Indication

Display	3.5" 320 x 240 RGB Full color graphic TFT module
Human Interface	5 Capacitive Touch Input Buttons
LED Indication	Power (Green), Load (Amber), Alarm (Red) – Per Ckt

Alarms

Alarm Types	Low & High Temperature, Low & High Current, High GFEP, Sensor Failure
Alarm Relays	1 x DC Alarm Output, 1.8 Amp, 0 - 50 VDC 1 x AC Alarm Output, 1.8 Amp, 12 - 240 VAC

Alarm Contact State

Mode	Default	Optional
Normal Operation	Closed	Open
Alarm Condition	Open	Closed
Power Off	Open	Open

Communications

Modbus	RTU/RS-485 (2 or 4 wire)
Modbus	TCP/Ethernet (optional)
Webserver/Ethernet IP	(Optional)

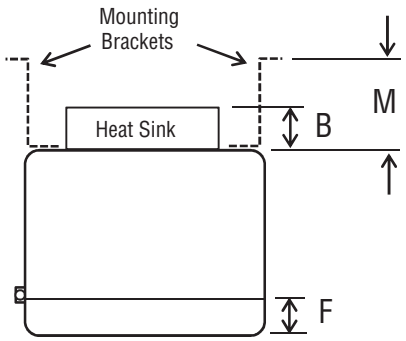
Operating & Environmental

Temperature	-40˚F to 104˚F (-40˚C to 40˚C)
Power Supply	100 to 277V 50/60Hz
Protection	IEC IP66
Enclosure rating	NEMA 4X FG (Optional Stainless Steel)
Approvals	UL/cUL Ordinary and Class I, Division 2, Groups A,B,C,D Hazardous Locations. (UL File: E347725) CE

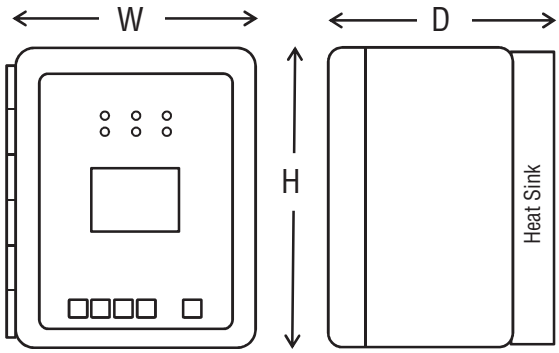
ITC1 & ITC2
Digital Heat Trace Controller
1 & 2 Circuit *(cont'd.)*

Dimensions

		H	W	D	F	B	M
316 SS Enclosure	Inch	11.8	9.9	7.6	0.7	1.8	3.0
	cm	30.2	25.1	19.4	1.7	4.4	7.6
Fiberglass Enclosure	Inch	10.3	8.5	8.0	1.2	1.8	3.0
	cm	26.2	21.3	19.7	3.2	4.4	7.6



Top View



Front View *Side View*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model Product Description

ITC The Chromalox ITC series IntelliTRACE Controller will control 1 or 2 circuits and is designed for industrial Heat Trace Line and/or Ambient Sensing applications in Non-Hazardous or Hazardous (Class I, Division 2) areas. The ITC is a wall mounted device that operates at 100-277 VAC and rated at 40A per circuit in a -40˚F to 104˚F (-40˚C to 40˚C) Ambient. Standard features: NEMA 4X FG enclosure, 3.5" High Resolution TFT Display with integral display heater, front panel capacitive touch switches & LED Indication of Power, Load & Alarm. ON/OFF, PID or Manual SSR power control with a selectable Soft Start program. The ITC accepts up to 2 RTD sensors per circuit for Ambient and/or Line Sensing applications. With multiple sensors, output behavior is based on min, max, average temperature or as 2-circuit ambient sensing control from a single RTD. Other standard features include: 2 x common alarm outputs (1 x AC, 1 x DC), Alarms for Low/High Temperature & Current, GFEP (Ground Fault Equipment Protection) & Sensor Failure, ModBus RTU/RS485 (or /RS422) Communications and user selectable manual output on failed sensor. 16 gage Stainless Steel wall mounting brackets are included. UL/cUL & CE Optional features include: NEMA 4X 316 SS Enclosure, ModBus TCP/Ethernet, Webserver/Ethernet or BACnet communications. Standard 1 year warranty.

Code	Number of Circuits
1	1 Circuit
2	2 Circuits

Code	Communications
0	ModBus RTU/RS485 (& RS422)
1	ModBus TCP/Ethernet
2	Webserver/Ethernet
3	BACnet/Ethernet
9	Other Communications

Code	Enclosure	Enclosure Size H x W x D, In (cm)
0	NEMA 4X Fiberglas	10 x 8 x 8 (25 x 21 x 20)
1	NEMA 4X 316 SS	12 x 10 x 8 (30 x 25 x 19)

Code	Add to Complete Model Number
0	

ITC 2- 0 0 0 **Typical Model Number**

Note: The ITC comes complete with one set of 16 gauge stainless steel wall mounting brackets.

Model	Description	PCN	Model	Description	PCN
ITC1-000	ITC 1 Loop, FG ENC, RS485	316101	ITC1-010	ITC 1 LOOP, SS ENC, RS485	316494
ITC2-000	ITC 2 Loop, FG ENC, RS485	316110	ITC2-010	ITC 2 LOOP, SS ENC, RS485	316507
ITC1-100	ITC 1 Loop, FG ENC, Ethernet	316128	ITC1-110	ITC 1 LOOP, SS ENC, Ethernet	316929
ITC2-100	ITC 2 LOOP, FG ENC, Ethernet	316136	ITC2-110	ITC 2 LOOP, SS ENC, Ethernet	316937

IntelliTrace

Ambient Sensing

ITAS Base Panel

ITAS-EXT Extender Panel

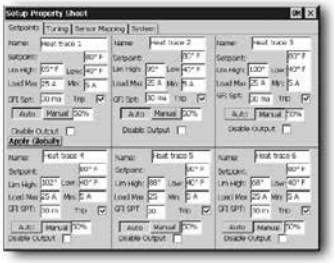
Line Sensing

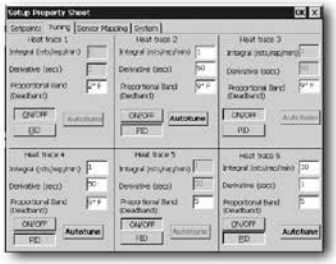
ITLS Base Panel

ITLS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

- **10” VGA Touch Screen HMI**
- **40 Amps/Loop @ 100 – 600 VAC**
- **6 Loops to 72 Loops**
- **NEMA 4 or NEMA 4X Enclosure**
- **SCR Control**
- **Optional Wireless Temperature Sensing**
- **Integral Circuit Panel with Circuit Breakers**
- **Optional Main Disconnect**
- **Soft Start Feature**
- **Full Communications and Enhanced Data Logging**
- **Full Alarm and Monitoring Capabilities on GFEP, Temperature, Sensor, Current Load & Communications**
- **Optional Customizable I/O Mapping**
- **Optional Enclosure Heater**
- **UL, cUL**
- **Optional CE**





The 10” Touch Screen Computer provides real time display of process variable, set point, load current, load demand (%), operation mode type, alarm status and alarm type for any 6 loops at time as well as alarm status for all other loops.

The Quick Launch buttons take you to any other 6-loop real time display screen as well as the Setup, Fault, Log or Communication Screen. All set point, alarm, security, time, loop identification, I/O mapping, tuning, communications and control type mode settings are easily accomplished through the intuitive & familiar Windows based menu screens. All of these functions are achievable locally or remotely via wired or wireless communications.

Description

The intelliTRACE ITAS and ITLS Series is a micro-processor based Control/Monitoring and Power Management system for Ambient Sensing, Line Sensing or a combination of Line and Ambient Sensing Heat Trace Applications and is suitable for use in ordinary areas.

The base panels will handle 6 - 36 loops and may be increased up to 72 loops with the Extension Panels. Each circuit has a 40 Amperage capacity and accepts 100 to 600 VAC service. The SCR Control may be set to Automatic, which includes PID or On/Off control or to Manual, which spans a 0% to 100% control output.

The HMI is a 10” (25 cm) user friendly touch screen computer. It displays the process variable, temperature setpoint, alarm status, current load, control mode, sensor failure manual override output for any 6 loops at a time as well as the alarm status for all other loops.

The standard enclosure is rated for NEMA 4 environments and an optional NEMA 4X 304 SS enclosure is available.

The ITAS / ITLS Control Panel Series provide alarms for high and low temperatures, current load, communications, sensor faults and ground fault leakage. There are several output/control behavior scenarios for the ground fault (GFEP) alarm condition. Choices include Trip and/or Latch options in which both, either or none may be enabled. Trip sets the output to zero %, while Latch requires a manual reset. Alarm events are automatically logged and stored for easy access.

Advanced standard features include a proprietary soft start function, off duty Auto Cycle maintenance program and either Modbus RTU/RS485 or Ethernet communications. Optional features include an industry leading I/O (Sensor & Output) Mapping** function, remote monitoring and wireless communications.

IntelliTrace

Ambient Sensing

ITAS Base Panel
ITAS-EXT Extender Panel

Line Sensing

ITLS Base Panel
ITLS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

Advanced Features

Soft Start Feature
Certain heating cables exhibit inherent current inrush in colder temperatures. This inrush can cause nuisance breaker tripping. To limit inrush current on the overall system, a proprietary Soft Start algorithm is applied during system start-up. This will ONLY occur while the operation mode is set to AUTO. After the Soft Start program completes its cycle, the Control Mode of the system will either be PID or ON/OFF Control Mode, depending what was selected by the user. The default setting of the Soft Start Feature for each circuit is "enabled". However, the Soft Start Feature may be disabled if so desired by the owner. The owner has the option to independently manage the Soft Start Feature on each circuit.

Auto Cycle Feature
During prolonged down time periods, typically during the summer months, it advisable to intermittently exercise the system circuits. This exercising of the loops is accomplished via the Autocycle feature. On a sequential circuit basis, the Autocycle feature periodically monitors system performance between 1-999 hours. This provides a certain level of predictive maintenance of the system as Faults (Alarms) will present themselves accordingly. Problem areas may be addressed during non-essential operating periods. The owner has the option to engage or disengage the Autocycle feature at any time.

I/O (Sensor & Output) Mapping**
When factory enabled, the ITLS & ITLSC1D2 Models provide the owner with customizable I/O Mapping. This becomes a very powerful and desirable feature when the owner needs added flexibility in controlling the circuit outputs beyond the standard single sensor input.

There are two types of I/O Mapping: Sensor Mapping and Output Mapping. Sensor Mapping is the assignment of one or more Sensor Inputs to one or more output circuits. Output Mapping is the assignment of one or more Power Outputs to one or more output circuits.

More on Sensor Mapping

Ambient or Line Sensing - Single Sensor:
A single sensor (RTD) may be mapped (or linked) to multiple Output Circuits. This allows several circuits to be controlled by a single sensor.

Minimum, Maximum, Averaging
Several sensors may be mapped to a single output circuit. This allows a single circuit to be controlled by the Minimum or the Maximum or the Average temperature of all of the sensors mapped to that output circuit. This may be desirable on long runs or zones which realize varying temperatures or weather conditions at different times of the day.

Multiple Sensor Mapping
A single sensor may be used independently or combined with other sensors to control more than one circuit.

Combining Sensing Types
The owner may need to have multiple Line and/or Ambient Sensing control scenarios occurring simultaneously.

More on Output Mapping

Output Power Sensing
A single Output demand value may be mapped to multiple Circuits. This allows several circuits to be controlled by a single Output demand value.

Minimum, Maximum, Averaging
Several Output demand values may be mapped to a single output circuit. This allows a circuit to be controlled by the Minimum or the Maximum or the Average Output demand value of all of the Outputs that are mapped to that single Circuit.

Multiple Output Mapping
A single output demand value may be used independently or combined with other output demand values to control more than one circuit.

*** Available only on ITLS & ITLS-EXT*

Touch Screen Computer:

- 6 Loops displayed / screen
- Quick launch to any 6 loop group, Setup Menu or System Screens
- Full User Setting Capabilities - Specific Loop Naming/Identification, Baud rate, set points, units, alarms, etc.
- Remote Desktop Monitoring

Optional Features:

- NEMA 4X 304 SS Enclosure
- Fully Customizable I/O (Sensor and Output) Mapping**
- Enclosure Heater

IntelliTrace

Ambient Sensing
ITAS Base Panel
ITAS-EXT Extender Panel

Line Sensing
ITLS Base Panel
ITLS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

Technical Specifications

Panel Specifications

Supply Voltage: ..... 100 - 600 VAC, 3 phase

Operating Environment: ..... -40 to +104°F (-40 to +40°C)

Enclosure: ..... NEMA 4 or Optional NEMA 4X 304 SS

Enclosure Size: ..... See Model Description Tables

Communications: ..... Modbus RTU/RS-485, Ethernet

Alarms: ..... Hi/Lo Temp, GFEP – 20 mA to 150 mA, Hi/Lo Current – 0.1 to 50A or off

Input: ..... 100Ω Platinum 3-wire RTD

Output: ..... SCR, Zero cross fired

Current Maximum: ..... 40 Amps/Circuit at 104°F (40°C)

Auto-Cycle: ..... 1-999 hours/off

Failed Sensor Output Setting: ..... 0 – 100%

Control Mode: ..... Auto, Manual (Hand), Off
Auto: PID or ON/OFF with adjustable dead band
Manual: 0% - 100% output, 1% increment

Load Management: ..... DOT (Demand On Transfer) timing, with Soft Start

Approvals: ..... UL, cUL Listed. Optional CE & ATEX Certification

Area Classifications: ..... Ordinary Areas

Temperature Rating ..... T4A (UL)

IntelliTrace
Ambient Sensing
ITAS Base Panel
Heat Tracing Control Panel for Ordinary Areas

Technical Notes:
1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. See ITASC1D2-EXT Extension Panel Order Table to increase total circuits

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **Product Description**

ITAS ITAS series Intelligent Ambient Sensing Heat Trace Panel. Designed for Industrial applications in Non-Hazardous Areas. ITAS series offers the following standard features: NEMA 4 enclosure, Industrial 10" Digital CE Computer Touchscreen Operator Interface, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits (Expandable to Seventy-Two Circuits*), Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment Protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Thermostat Controlled Enclosure Heater, Remote Monitoring Capability, Wireless Ethernet Communications, CE Third Party Compliance

Code	Circuits	NEMA 4 Enclosure Size (HxWxD In. (cm)) 1 Pole	2 Pole	Panelboard Size	Panelboard Rating
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)	N/A	N/A
12	12 Circuits	36 x 30 x 12 (92 x 76 x 31)	-------	18 position	up to 100 A
12	12 Circuits	48 x 36 x 12 (122 x 92 x 31)	48 x 36 x 12 (122 x 92 x 31)	30 position	up to 400 A
18	18 Circuits	48 x 36 x 12 (122 x 92 x 31)	-------	30 position	up to 400 A
18	18 Circuits	-------	60 x 36 x 12 (152 x 92 x 31)	42 position	up to 600 A
24	24 Circuits	48 x 36 x 12 (122 x 92 x 31)	-------	30 position	up to 400 A
24	24 Circuits	-------	62 x 60 x 12 (157 x 152 x 31)	30 position (X2)	up to 400 A
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	-------	30 position	up to 600 A
30	30 Circuits	-------	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	-------	42 position	up to 600 A
36	36 Circuits	-------	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A

Code	Line Voltage	Cable Voltage	Circuit Breaker Rating - Type (1/Loop)
1	208/120 VAC, 3 Phase 4 Wire	120 VAC	120 V-1 Pole
2	208/120 VAC, 3 Phase 4 Wire	208 VAC	208/240V-2 Pole
3	240/120 VAC, Single Phase 3 Wire	240 VAC	208/240V-2 Pole
4	480/277 VAC, 3 Phase 4 Wire	277 VAC	277V-1 Pole
5	480/277 VAC, 3 Phase 4 Wire	480 VAC	480V-2 Pole
6	240/120 VAC, Single Phase 3 Wire	120 VAC	120 V-1 Pole
9	Multiple Line Voltage Requirement	----------	----------

Code	Cable Load Circuit Breaker Rating		
1	15A Thermal Magnetic	**4**	40A Thermal Magnetic
2	20A Thermal Magnetic	**5**	50A Thermal Magnetic
3	30A Thermal Magnetic	**9**	Multiple Breaker Ratings (Consult Sales)

Code	Main Disconnect / Circuit Breaker		
0	None	**A**	100A Thermal Magnetic
1	100A Disconnect	**B**	150A Thermal Magnetic
2	150A Disconnect	**C**	225A Thermal Magnetic
3	250A Disconnect	**D**	250A Thermal Magnetic
4	400A Disconnect	**E**	400A Thermal Magnetic
5	600A Disconnect	**F**	600A Thermal Magnetic

Code	Enclosure
1	NEMA 4 Single-Door Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 24 x 24 x 12 In, (61 x 61 x 31) (cm)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 36 x 30 x 12 In, (92 x 76 x 31) (cm)
4	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 48 x 36 x 12 In, (122 x 92 x 31) (cm)
5	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 60 x 36 x 12 In, (152 x 92 x 31) (cm)
6	NEMA 4X 304 Stainless Steel Floor-Mount Enclosure: 62 x 60 x 12 In, (157 x 152 x 31) (cm)

Code	Enclosure Heater
0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (to 0˚F, -18˚C Ambient)
3	Thermostat Controlled Enclosure Heater (to -40˚F/˚C Ambient)

Code	Input Options
0	Standard Sensor Input
1	Dry Contact Closure from Ambient Sensing Thermostat
2	Remote Snow Sensor Input (i.e. SIT, GIT & CIT Type Sensors)
9	Special Configuration

Code	Communications
0	Standard: Modbus RTU/ RS485 or Modbus TCP/Ethernet
1	Modbus TCP/Wireless
2	BACnet
9	Other

Code	Temperature Sensing Options
0	Standard Wired Sensing
1	Wireless Temperature Sensing
9	Other

ITAS-	**24**	**1**	**3**	**3-**	**1**	**1**	**1**	**0**	**0**	**Typical Model Number**

CONTROL SYSTEMS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

Ambient Sensing

ITAS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **Product Description**

ITAS-EXT ITAS-EXT series Intelligent Ambient Sensing Heat Trace Extension Panel. Designed for industrial applications in non-hazardous areas. Intended to be used with ITAS Heat Trace Ambient Sensing Panel to increase circuit service. ITAS series offers the following standard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits, Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Remote Monitoring Capability, Thermostat Controlled Enclosure Heater, CE Third Party Compliance

Code	Circuits	NEMA 4 Enclosure Size (HxWxD In. (cm)) 1 Pole	2 Pole	Panelboard Size	Panelboard Rating
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)	N/A	N/A
12	12 Circuits	36 x 30 x 12 (92 x 76 x 31)	- - - - - - -	18 position	up to 100 A
12	12 Circuits	48 x 36 x 12 (122 x 92 x 31)	48 x 36 x 12 (122 x 92 x 31)	30 position	up to 400 A
18	18 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
18	18 Circuits	- - - - - - -	60 x 36 x 12 (152 x 92 x 31)	42 position	up to 600 A
24	24 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
24	24 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	30 position (X2)	up to 400 A
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	30 position	up to 600 A
30	30 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	42 position	up to 600 A
36	36 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A

Code	Line Voltage	Cable Voltage	Circuit Breaker Rating - Type (1/Loop)
1	208/120 VAC, 3 Phase 4 Wire	120 VAC	120 V-1 Pole
2	208/120 VAC, 3 Phase 4 Wire	208 VAC	208/240V-2 Pole
3	240/120 VAC, Single Phase 3 Wire	240 VAC	208/240V-2 Pole
4	480/277 VAC, 3 Phase 4 Wire	277 VAC	277V-1 Pole
5	480/277 VAC, 3 Phase 4 Wire	480 VAC	480V-2 Pole
6	240/120 VAC, Single Phase 3 Wire	120 VAC	120 V-1 Pole
9	Multiple Line Voltage Requirement	----------	----------

Code	Cable Load Circuit Breaker Rating
1	15A Thermal Magnetic
2	20A Thermal Magnetic
3	30A Thermal Magnetic
4	40A Thermal Magnetic
5	50A Thermal Magnetic
9	Multiple Breaker Ratings - Consult Sales

Code	Main Disconnect / Circuit Breaker		
0	None	**A**	100A Thermal Magnetic
1	100A Disconnect	**B**	150A Thermal Magnetic
2	150A Disconnect	**C**	225A Thermal Magnetic
3	250A Disconnect	**D**	250A Thermal Magnetic
4	400A Disconnect	**E**	400A Thermal Magnetic
5	600A Disconnect	**F**	600A Thermal Magnetic

Code	Enclosure
1	NEMA 4 Single-Door Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 24 x 24 x 12 In, (61 x 61 x 31) (cm)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 36 x 30 x 12 In, (92 x 76 x 31) (cm)
4	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 48 x 36 x 12 In, (122 x 92 x 31) (cm)
5	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 60 x 36 x 12 In, (152 x 92 x 31) (cm)
6	NEMA 4X 304 Stainless Steel Floor-Mount Enclosure: 62 x 60 x 12 In, (157 x 152 x 31) (cm)

Code	Enclosure Heater
0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (to 0˚F, -18˚C Ambient)
3	Thermostat Controlled Enclosure Heater (to -40˚F/˚C Ambient)

ITAS-EXT-	**24**	**1**	**3**	**1-**	**1**	**0**	**Typical Model Number**

*Designed to be paired with an ITAS Panel

IntelliTrace

Ambient Sensing

ITAS Base Panel
ITAS-EXT Extender Panel

Heat Tracing Control Panel
for Ordinary Areas

Model Number Note

-XXXX Indicates that the design has varied from the order table parameters. This could include one or more of the following non-standard considerations: Special Software or Configuration, Private Branding, Remote Monitoring/Touch-Screen Computer, Sunshield or other Protective Covering, Third Party Approval, Floor Stands, Mounting Options, Special Materials (316 SS) or Coatings, Additional Venting or Cooling, Special Indication or Alarms.

ATEX Certification: Consult Sales on all models.

Technical Notes

1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. These Extension Panels are to be paired with an ITAS Panel.

Spare/Replacement Parts for ITAS & ITAS-EXT

Part Number	Description
0135-02261	SSR/GFI Power Control Assy, with Heat Sink
0135-02262	RTD Sensor Input Board Assembly
0135-02263	Digital Distribution Comm Board Assembly
0002-60054	SSR, 40 Amp rated
0029-00640	SSR Thermstrate Material
0025-05227	Common Alarm Relay
0081-10063	Power Supply 5VDC 6A 30W DIN Rail Mount
0081-10047	Power Supply 24VDC 2.5A 60W DIN Rail Mount
0135-30490	ITAS-Digital Control 10" (250mm) Display, programmed
0017-42931	15A 1P Thermal Mag Circuit Breaker (120V)
0017-43355	20A 1P Thermal Mag Circuit Breaker (120V)
0017-43356	30A 1P Thermal Mag Circuit Breaker (120V)
0017-43427	40A 1P Thermal Mag Circuit Breaker (120V)
0017-43428	50A 1P Thermal Mag Circuit Breaker (120V)
0017-43373	15A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43374	20A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43345	30A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43375	40A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43429	50A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43013	15A 1P Thermal Mag Circuit Breaker (277V)
0017-42912	20A 1P Thermal Mag Circuit Breaker (277V)
0017-42913	30A 1P Thermal Mag Circuit Breaker (277V)
0017-43349	40A 1P Thermal Mag Circuit Breaker (277V)
0017-42966	50A 1P Thermal Mag Circuit Breaker (277V)
0017-42970	15A 2P Thermal Mag Circuit Breaker (480V)
0017-43000	20A 2P Thermal Mag Circuit Breaker (480V)
0017-42928	30A 2P Thermal Mag Circuit Breaker (480V)
0017-43430	40A 2P Thermal Mag Circuit Breaker (480V)
0017-43431	50A 2P Thermal Mag Circuit Breaker (480V)
0023-15097-0001	6" (15 cm) Ribbon Cable with Connectors
0023-15097-0002	72" (180 cm) Ribbon Cable with Connectors

Accessories for ITAS & ITAS-EXT

Part Number	Description
Contact Sales	Power Transformers
317315	RTD Aluminum, NEMA 4
317340	RTD, Expl. Resist., Cast Iron/Alum., NEMA 4
308144	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 50 FT
317342	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 200 FT
0076-15392	HMI Sunscreen, Painted Steel (ITLS/ITAS-6-72)
0076-12009	Floor Stand Kit, 12" (30 cm) Deep, Steel
0076-12050	Floor Stand Kit, 12" (30 cm) Deep, 304 SS
Contact Sales	Floor Stand Kit, 12" (30 cm) Deep, 316 SS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

Line Sensing

ITLS Base Panel Heat Tracing Control Panel for Ordinary Areas

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

*42 - 72 circuit service via ITLS-EXT Extension Panel. See ITLS-EXT Heat Tracing Extension Panel - Line Sensing Order Table

Model **Product Description**

ITLS ITLS series Intelligent Line Sensing Heat Trace Panel. Designed for Industrial applications in Non-Hazardous Areas. ITLS series offers the following standard features: NEMA 4 enclosure, Industrial 10" Digital CE Computer Touchscreen Operator Interface, PID SCR Power Controller Rated at 40A Per Circuit at 104°F (40°C) Ambient, Two to Thirty-Six Circuits (Expandable to Seventy-Two Circuits*), Common Alarm Output, Hand/Off/Auto Operation, 120 Volt Instrument Power Included, Current Monitoring, 30 mA Ground Fault Equipment Protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Remote Monitoring Capability, Thermostat Controlled Enclosure Heater, Customizable I/O Mapping, Wireless Ethernet Communications, CE Third Party Compliance.

Code	Circuits	NEMA 4 Enclosure Size (HxWxD In. (cm)) 1 Pole	2 Pole	Panelboard Size	Panelboard Rating
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)	N/A	N/A
12	12 Circuits	36 x 30 x 12 (92 x 76 x 31)	- - - - - - -	18 position	up to 100 A
12	12 Circuits	48 x 36 x 12 (122 x 92 x 31)	48 x 36 x 12 (122 x 92 x 31)	30 position	up to 400 A
18	18 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
18	18 Circuits	- - - - - - -	60 x 36 x 12 (152 x 92 x 31)	42 position	up to 600 A
24	24 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
24	24 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	30 position (X2)	up to 400 A
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	30 position	up to 600 A
30	30 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	42 position	up to 600 A
36	36 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A

Code	Line Voltage	Cable Voltage	Circuit Breaker Rating - Type (1/Loop)
1	208/120 VAC, 3 Phase 4 Wire	120 VAC	120 V-1 Pole
2	208/120 VAC, 3 Phase 4 Wire	208 VAC	208/240V-2 Pole
3	240/120 VAC, Single Phase 3 Wire	240 VAC	208/240V-2 Pole
4	480/277 VAC, 3 Phase 4 Wire	277 VAC	277V-1 Pole
5	480/277 VAC, 3 Phase 4 Wire	480 VAC	480V-2 Pole
6	240/120 VAC, Single Phase 3 Wire	120 VAC	120 V-1 Pole
9	Multiple Line Voltage Requirement		----------

Code	Cable Load Circuit Breaker Rating		
1	15A	Thermal Magnetic	
2	20A	Thermal Magnetic	
3	30A	Thermal Magnetic	
4	40A	Thermal Magnetic	
5	50A	Thermal Magnetic	
9	Multiple Breaker Ratings - Consult Sales		

Code	Main Disconnect / Circuit Breaker		
0	None	**A**	100A Thermal Magnetic
1	100A Disconnect	**B**	150A Thermal Magnetic
2	150A Disconnect	**C**	225A Thermal Magnetic
3	250A Disconnect	**D**	250A Thermal Magnetic
4	400A Disconnect	**E**	400A Thermal Magnetic
5	600A Disconnect	**F**	600A Thermal Magnetic

Code	Enclosure
1	NEMA 4 Single-Door Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 24 x 24 x 12 In, (61 x 61 x 31) (cm)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 36 x 30 x 12 In, (92 x 76 x 31) (cm)
4	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 48 x 36 x 12 In, (122 x 92 x 31) (cm)
5	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 60 x 36 x 12 In, (152 x 92 x 31) (cm)
6	NEMA 4X 304 Stainless Steel Floor-Mount Enclosure: 62 x 60 x 12 In, (157 x 152 x 31) (cm)

Code	Enclosure Heater
0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (to -0°F Ambient)
3	Thermostat Controlled Enclosure Heater (to -40°F Ambient)

Code**	Inputs/Circuit	I/O Mapping	
0	1	No I/O Mapping	Use Enclosure sizes from above
1	1	Full I/O Mapping	
2	2	Full I/O Mapping	See ITLS I/O mapping: Enclosure size on accessory page
3	3	Full I/O Mapping	
9	X	Special Configuration	Consult Sales

Code	Communications
0	Standard Modbus RTU/ RS485 or Modbus TCP/Ethernet
1	Modbus TCP/Wireless
2	BACnet
9	Other

Code	Monitoring
0	Standard Wired Sensing
1	Wireless Temp Sensing (Must select Full I/O Mapping) See Wireless Guidelines
9	Other

ITLS	**- 24**	**1**	**3**	**3-**	**1**	**1**	**1**	**0**	**0**	**Typical Model Number**

IntelliTrace

Line Sensing

ITLS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **Product Description**

ITLS-EXT ITLS-EXT series Intelligent Line Sensing Heat Trace Extension Panel. Designed for industrial applications in non-hazardous areas. Intended to be used with ITLS Heat Trace Line Sensing Panel to increase circuit service. ITLS-EXT series offers the following standard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits, Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Thermostat Controlled Enclosure Heater, Customizable I/O Mapping, Remote Monitoring Capability, CE Third Party Compliance

Code	Circuits	NEMA 4 Enclosure Size (HxWxD In. (cm)) 1 Pole	2 Pole	Panelboard Size	Panelboard Rating
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)	N/A	N/A
12	12 Circuits	36 x 30 x 12 (92 x 76 x 31)	- - - - - - -	18 position	up to 100 A
12	12 Circuits	48 x 36 x 12 (122 x 92 x 31)	48 x 36 x 12 (122 x 92 x 31)	30 position	up to 400 A
18	18 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
18	18 Circuits	- - - - - - -	60 x 36 x 12 (152 x 92 x 31)	42 position	up to 600 A
24	24 Circuits	48 x 36 x 12 (122 x 92 x 31)	- - - - - - -	30 position	up to 400 A
24	24 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	30 position (X2)	up to 400 A
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	30 position	up to 600 A
30	30 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	- - - - - - -	42 position	up to 600 A
36	36 Circuits	- - - - - - -	62 x 60 x 12 (157 x 152 x 31)	42 position (X2)	up to 600 A

Code	Line Voltage	Cable Voltage	Circuit Breaker Rating - Type (1/Loop)
1	208/120 VAC, 3 Phase 4 Wire	120 VAC	120 V-1 Pole
2	208/120 VAC, 3 Phase 4 Wire	208 VAC	208/240V-2 Pole
3	240/120 VAC, Single Phase 3 Wire	240 VAC	208/240V-2 Pole
4	480/277 VAC, 3 Phase 4 Wire	277 VAC	277V-1 Pole
5	480/277 VAC, 3 Phase 4 Wire	480 VAC	480V-2 Pole
6	240/120 VAC, Single Phase 3 Wire	120 VAC	120 V-1 Pole
9	Multiple Line Voltage Requirement	----------	----------

Code	Cable Load Circuit Breaker Rating
1	15A Thermal Magnetic
2	20A Thermal Magnetic
3	30A Thermal Magnetic
4	40A Thermal Magnetic
5	50A Thermal Magnetic
9	Multiple Breaker Ratings - Consult Sales

Code	Main Disconnect / Circuit Breaker		
0	None	**A**	100A Thermal Magnetic
1	100A Disconnect	**B**	150A Thermal Magnetic
2	150A Disconnect	**C**	225A Thermal Magnetic
3	250A Disconnect	**D**	250A Thermal Magnetic
4	400A Disconnect	**E**	400A Thermal Magnetic
5	600A Disconnect	**F**	600A Thermal Magnetic

Code	Enclosure (Choose the Size that aligns with the Number of INPUTS PER CIRCUIT)
1	NEMA 4 Single-Door Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 24 x 24 x 12 In, (61 x 61 x 31) (cm)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 36 x 30 x 12 In, (92 x 76 x 31) (cm)
4	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 48 x 36 x 12 In, (122 x 92 x 31) (cm)
5	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure: 60 x 36 x 12 In, (152 x 92 x 31) (cm)
6	NEMA 4X 304 Stainless Steel Floor-Mount Enclosure: 62 x 60 x 12 In, (157 x 152 x 31) (cm)

Code	Enclosure Heater
0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (to 0˚F Ambient)
3	Thermostat Controlled Enclosure Heater (to -40˚F Ambient)

Code**	Inputs/Circuit	I/O Mapping	
0	1	No I/O Mapping	Use Enclosure sizes from above
1	1	Full I/O Mapping	
2	2	Full I/O Mapping	See ITLS I/O mapping: Enclosure size on accessory page
3	3	Full I/O Mapping	
9	X	Special Configuration	

ITLS-EXT-	**24**	**1**	**3**	**3-**	**1**	**1**	**1**	**Typical Model Number**

*Designed to be paired with an ITLS Panel

IntelliTrace

Line Sensing

ITLS Base Panel
ITLS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

ITLS & ITLS-EXT I/O Mapping: Enclosure Size

Circuits - Poles	Enclosure Size - H x W x D In (cm)	
	2 Inputs / Output	3 Inputs / Output
06 - 1	24 x 24 x 12	36 x 30 x 12
06 - 2	24 x 24 x 12	36 x 30 x 12
12 - 1	36 x 30 x 12	48 x 36 x 12
12 - 1	48 x 36 x 12	48 x 36 x 12
12 - 2	48 x 36 x 12	48 x 36 x 12
18 - 1	48 x 36 x 12	48 x 36 x 12
18 - 2	60 x 36 x 12	60 x 36 x 12
24 - 1	48 x 36 x 12	48 x 36 x 12
24 - 2	62 x 60 x 12	62 x 60 x 12
30 - 1	60 x 36 x 12	Consult Sales
30 - 2	62 x 60 x 12	Consult Sales
36 - 1	60 x 36 x 12	Consult Sales
36 - 2	62 x 60 x 12	Consult Sales

1. The MAXIMUM number of Inputs for any ITLS System, including Extension Panel, is 252.
2. When **Full I/O Mapping** is selected from the Order Table, any individual sensor or output may be mapped to more than one circuit. For Example: The average temperature of Sensors 1, 2 & 3 is used to control Circuit 1, while simultaneously the maximum temperature of Sensors 3, 4 & 5 is used to control Circuit 2.
3. The maximum amount of inputs for each panel design is as shown in Inputs Table.

Spare/Replacement Parts for ITAS & ITAS-EXT

Part Number	Description
0135-02261	SSR/GFI Power Control Assy, with Heat Sink
0135-02262	RTD Sensor Input Board Assembly
0135-02263	Digital Distribution Comm Board Assembly
0002-60054	SSR, 40 Amp rated
0029-00640	SSR Thermstrate Material
0025-05227	Common Alarm Relay
0081-10063	Power Supply 5VDC 6A 30W DIN Rail Mount
0081-10047	Power Supply 24VDC 2.5A 60W DIN Rail Mount
0135-30490	ITAS-Digital Control 10" (250mm) Display, programmed
0017-42931	15A 1P Thermal Mag Circuit Breaker (120V)
0017-43355	20A 1P Thermal Mag Circuit Breaker (120V)
0017-43356	30A 1P Thermal Mag Circuit Breaker (120V)
0017-43427	40A 1P Thermal Mag Circuit Breaker (120V)
0017-43428	50A 1P Thermal Mag Circuit Breaker (120V)
0017-43373	15A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43374	20A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43345	30A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43375	40A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43429	50A 2P Thermal Mag Circuit Breaker (208/240V)
0017-43013	15A 1P Thermal Mag Circuit Breaker (277V)
0017-42912	20A 1P Thermal Mag Circuit Breaker (277V)
0017-42913	30A 1P Thermal Mag Circuit Breaker (277V)
0017-43349	40A 1P Thermal Mag Circuit Breaker (277V)
0017-42966	50A 1P Thermal Mag Circuit Breaker (277V)
0017-42970	15A 2P Thermal Mag Circuit Breaker (480V)
0017-43000	20A 2P Thermal Mag Circuit Breaker (480V)
0017-42928	30A 2P Thermal Mag Circuit Breaker (480V)
0017-43430	40A 2P Thermal Mag Circuit Breaker (480V)
0017-43431	50A 2P Thermal Mag Circuit Breaker (480V)
0023-15097-0001	6" (15 cm) Ribbon Cable with Connectors
0023-15097-0002	72" (180 cm) Ribbon Cable with Connectors

Accessories for ITLS & ITLS-EXT

Part Number	Description
Contact Sales	Power Transformers
317315	RTD Aluminum, NEMA 4
317340	RTD, Expl. Resist., Cast Iron/Alum., NEMA 4
308144	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 50 FT
317342	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 200 FT
0076-15392	HMI Sunscreen, Painted Steel (ITLS/ITAS 6-72)
0076-12009	Floor Stand Kit, 12" (30 cm) Deep, Steel
0076-12050	Floor Stand Kit, 12" (30 cm) Deep, 304 SS
Contact Sales	Floor Stand Kit, 12" (30 cm) Deep, 316 SS

Total Number of Available Inputs per Panel Design for ITLS & ITLS-EXT

Number of Circuits	Inputs / Circuit Code from Order Table			
	1	2	3	9
06	06	12	18	252
12	12	24	36	252
18	18	36	54	252
24	24	48	72	252
30	30	60	90	252
36	36	72	108	252

IntelliTrace

Ambient Sensing

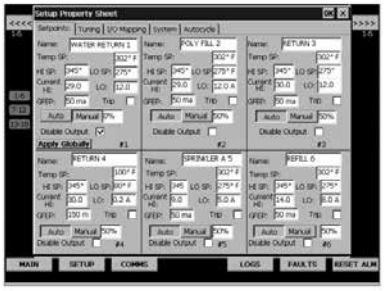
ITASC1D2 Base Panel
ITASC1D2-EXT Extender Panel

Line Sensing

ITLSC1D2 Base Panel
ITLSC1D2-EXT Extender Panel

Heat Tracing Control Panel
Class I, Div. 2, 6-72 Loops

- **Class I, Division 2 Hazardous Environments - Groups A,B,C,D**
- **12” VGA Touch Screen HMI**
- **40 Amps/Loop @ 100 – 600 VAC**
- **SCR Control – PID, On/Off or Manual Control**
- **6 Loops to 72 Loops**
- **NEMA 4 or NEMA 4X Enclosure**
- **User Selectable Soft Start Feature**
- **Optional Customizable I/O Mapping**
- **Full Communications**
- **Enhanced Data Logging**
- **Full Alarm & Monitoring Capabilities on GFEP, Temperature, Sensor, Current Load & Communications**
- **UL, cUL Listed**
- **Optional CE Certification**



The 12” Touch Screen Computer provides real time display of process variable, set point, load current, load demand (%), operation mode type, alarm status and alarm type for any 6 loops at time as well as alarm status for all other loops.

The Quick Launch buttons take you to any other 6-loop real time display screen as well as the Setup, Fault, Log or Communication Screen. All set point, alarm, security, time, loop identification, I/O mapping, tuning, communications and control type mode settings are easily accomplished through the intuitive & familiar Windows based menu screens. All of these functions are achievable locally or remotely via wired or wireless communications.

Description

The intelliTRACE ITASC1D2 and ITLSC1D2 Series is a micro-processor based Control/ Monitoring and Power Management system for Ambient Sensing, Line Sensing or a combination of Line and Ambient Sensing Heat Trace Applications and is suitable for use in Class I, Division 2 environments.

The base panels will handle 6 - 36 loops and may be increased up to 72 loops with the Extension Panels. Each circuit has a 40 Amperage capacity and accepts 100 to 480 VAC service. The SCR Control may be set to Automatic, which includes PID or On/Off control or to Manual, which spans a 0% to 100% control output.

The HMI is a 12” (30 cm) user friendly touch screen computer. It displays the process variable, temperature setpoint, alarm status, current load, control mode, sensor failure manual override output for any 6 loops at a time as well as the alarm status for all other loops.

The standard enclosure is rated for NEMA 4 environments and an optional NEMA 4X 304 SS enclosure is available.

The ITASC1D2 / ITLSC1D2 Control Panel Series provide alarms for high and low temperatures, current load, communications, sensor faults and ground fault leakage. There are several output/control behavior scenarios for the ground fault (GFEP) alarm condition. Choices include Trip and/or Latch options in which both, either or none may be enabled. Trip sets the output to zero %, while Latch requires a manual reset. Alarm events are automatically logged and stored for easy access.

Advanced standard features include a proprietary soft start function, off duty Auto Cycle maintenance program and either Modbus RTU/RS485 or Ethernet communications. Optional features include an industry leading I/O (Sensor & Output) Mapping** function, remote monitoring and wireless communications.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

Ambient Sensing
ITASC1D2 Base Panel
ITASC1D2-EXT Extender Panel

Line Sensing
ITLSC1D2 Base Panel
ITLSC1D2-EXT Extender Panel

Heat Tracing Control Panel Class I, Div. 2, 6-72 Loops

Advanced Features

Soft Start Feature
Certain heating cables exhibit inherent current inrush in colder temperatures. This inrush can cause nuisance breaker tripping. To limit inrush current on the overall system, a proprietary Soft Start algorithm is applied during system start-up. This will ONLY occur while the operation mode is set to AUTO. After the Soft Start program completes its cycle, the Control Mode of the system will either be PID or ON/OFF Control Mode, depending what was selected by the user. The default setting of the Soft Start Feature for each circuit is "enabled". However, the Soft Start Feature may be disabled if so desired by the owner. The owner has the option to independently manage the Soft Start Feature on each circuit.

Auto Cycle Feature
During prolonged down time periods, typically during the summer months, it advisable to intermittently exercise the system circuits. This exercising of the loops is accomplished via the Autocycle feature. On a sequential circuit basis, the Autocycle feature periodically monitors system performance between 1-999 hours. This provides a certain level of predictive maintenance of the system as Faults (Alarms) will present themselves accordingly. Problem areas may be addressed during non-essential operating periods. The owner has the option to engage or disengage the Autocycle feature at any time.

I/O (Sensor & Output) Mapping**
When factory enabled, the ITLS & ITLSC1D2 Models provide the owner with customizable I/O Mapping. This becomes a very powerful and desirable feature when the owner needs added flexibility in controlling the circuit outputs beyond the standard single sensor input.

There are two types of I/O Mapping: Sensor Mapping and Output Mapping. Sensor Mapping is the assignment of one or more Sensor Inputs to one or more output circuits. Output Mapping is the assignment of one or more Power Outputs to one or more output circuits.

More on Sensor Mapping

Ambient or Line Sensing - Single Sensor:
A single sensor (RTD) may be mapped (or linked) to multiple Output Circuits. This allows several circuits to be controlled by a single sensor.

Minimum, Maximum, Averaging
Several sensors may be mapped to a single output circuit. This allows a single circuit to be controlled by the Minimum or the Maximum or the Average temperature of all of the sensors mapped to that output circuit. This may be desirable on long runs or zones which realize varying temperatures or weather conditions at different times of the day.

Multiple Sensor Mapping
A single sensor may be used independently or combined with other sensors to control more than one circuit.

Combining Sensing Types
The owner may need to have multiple Line and/or Ambient Sensing control scenarios occurring simultaneously.

More on Output Mapping

Output Power Sensing
A single Output demand value may be mapped to multiple Circuits. This allows several circuits to be controlled by a single Output demand value.

Minimum, Maximum, Averaging
Several Output demand values may be mapped to a single output circuit. This allows a circuit to be controlled by the Minimum or the Maximum or the Average Output demand value of all of the Outputs that are mapped to that single Circuit.

Multiple Output Mapping
A single output demand value may be used independently or combined with other output demand values to control more than one circuit.

*** Available only on ITLSC1D2 & ITLSC1D2-EXT*

Touch Screen Computer:

- 6 Loops displayed / screen
- Quick launch to any 6 loop group, Setup Menu or System Screens
- Full User Setting Capabilities - Specific Loop Naming/Identification, Baud rate, set points, units, alarms, etc.
- Remote Desktop Monitoring

Optional Features:

- NEMA 4X 304 SS Enclosure
- Fully Customizable I/O (Sensor and Output) Mapping**
- Enclosure Heater

IntelliTrace

Ambient Sensing
ITASC1D2 Base Panel
ITASC1D2-EXT Extender Panel

Line Sensing
ITLSC1D2 Base Panel
ITLSC1D2-EXT Extender Panel

Heat Tracing Control Panel Class I, Div. 2, 6-72 Loops

Technical Specifications

Panel Specifications

Supply Voltage:	100 - 600 VAC, 3 phase
Operating Environment:	-40 to +104°F (-40 to +40°C)
Enclosure:	NEMA 4 or Optional NEMA 4X 304 SS
Enclosure Size:	See Model Description Tables
Communications:	Modbus RTU/RS-485, Ethernet
Alarms:	Hi/Lo Temp, GFEP – 20mA to 150 mA, Hi/Lo Current – 0.1 to 50A or off
Input:	100Ω Platinum 3-wire RTD
Output:	SCR, Zero cross fired
Current Maximum:	40 Amps/Circuit at 104°F (40°C)
Auto-Cycle:	1-999 hours/off
Failed Sensor Output Setting:	0 – 100%
Control Mode:	Auto, Manual (Hand), Off Auto: PID or ON/OFF with adjustable dead band Manual: 0% - 100% output, 1% increment
Load Management:	DOT (Demand On Transfer) timing, with Soft Start
Approvals:	UL, cUL Listed. Optional CE & ATEX Certification
Area Classifications:	HAZ Class 1 Div 2
Temperature Rating	T4A

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

Ambient Sensing
ITASC1D2 Base Panel
Heat Tracing Control Panel
Class I, Div. 2, 6-72 Loops

Technical Notes:
1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. See ITASC1D2-EXT Extension Panel Order Table to increase total circuits

Model Product Description

ITASC1D2 ITASC1D2 series Intelligent Ambient Sensing Heat Trace Panel. Designed for Industrial applications and suitable for Class I, Division 2 Hazardous Areas. The ITASC1D2 series offers the following standard features: NEMA 4 enclosure, Industrial 12" (30 cm) Digital CE Computer Touchscreen Operator Interface, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits (Expandable to Seventy-Two Circuits*), Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment Protection, ModBus RTU/RS485 or TCP/Ethernet Communications, Remote Monitoring Capability, Selectable Soft Start Operation, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Thermostat Controlled Enclosure Heater and CE & ATEX Certification.

Code	Circuits	Enclosure Size HxWxD In (cm)	Line Voltage	Line Phase	Cable Voltage
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
12	12 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
18	18 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
24	24 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480

Code	Enclosure Rating, Material & Size		HxWxD In (cm)	Enclosure Mounting
1	NEMA 4	Painted Steel	Size is per design selection	Wall-Mount Enclosure
2	NEMA 4X	304 SS	24 x 24 x 12 (61 x 61 x 31)	Wall-Mount Enclosure
3	NEMA 4X	304 SS	42 x 36 x 12 (107 x 92 x 31)	Wall-Mount Enclosure
4	NEMA 4X	304 SS	48 x 36 x 12 (122 x 92 x 31)	Wall-Mount Enclosure
5	NEMA 4X	304 SS	60 x 36 x 12 (152 x 92 x 31)	Wall-Mount Enclosure

Code	Enclosure Heater Class 1, Div 2	
0	No Enclosure Heater	
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 6 & 12 circuit designs
2	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 6 & 12 circuit designs
3	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 6 & 12 circuit designs
4	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 18, 24, 30 & 36 circuit designs
5	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 18, 24, 30 & 36 circuit designs
6	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 18, 24, 30 & 36 circuit designs

Code	Input Options
0	Standard Sensor Input
1	Dry Contact Closure from Ambient Sensing Thermostat
2	Remote Snow Sensor Input (i.e SIT, GIT & CIT Type Sensors)
9	Special Configuration

Code	Communications
0	Standard: Modbus RTU/RS485 or Modbus TCP/Ethernet
1	ModBus TCP/Wireless
2	BACNet
9	Other

Code	Temperature Sensing Options
0	Standard Wired Sensing
1	Wireless Temperature Sensing - See Wireless Guidelines
9	Other

ITASC1D2 -	**24**	**1**	**4**	**0 -**	**0**	**1**	**Typical Model Number**

*42 - 72 circuit service via ITASC1D2-EXT Extension Panel. See ITASC1D2-EXT heat Tracing Extension Panel - Ambient Sensing - Class 1, Division 2 Order Table.

IntelliTrace

Ambient Sensing

ITASC1D2-EXT Extender Panel

Heat Tracing Control Panel

Class I, Div. 2, 6-72 Loops

Technical Notes:
1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. These Extension Panels are to be paired w ith an ITASC1D2 Panel.

Model Product Description

ITASC1D2-EXT ITASC1D2-EXT series Intelligent Ambient Sensing Heat Trace Extension Panel. Designed for Industrial applications and suitable for Class I, Division 2 Hazardous Areas. Designed to be used with ITASC1D2 Heat Trace Line Sensing Panel to increase circuit service. ITASC1D2-EXT series offers the following standard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits, Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Thermostat Controlled Enclosure Heater and CE & ATEX Certification

Code	Circuits	Enclosure Size HxWxD In. (cm)	Line Voltage	Line Phase	Cable Voltage
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
12	12 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
18	18 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
24	24 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480

Code	Enclosure Rating, Material & Size		HxWxD In (cm)	Enclosure Mounting
1	NEMA 4	Painted Steel	Size is per design selection	Wall-Mount Enclosure
2	NEMA 4X	304 SS	24 x 24 x 12 (61 x 61 x 31)	Wall-Mount Enclosure
3	NEMA 4X	304 SS	42 x 36 x 12 (107 x 92 x 31)	Wall-Mount Enclosure
4	NEMA 4X	304 SS	48 x 36 x 12 (122 x 92 x 31)	Wall-Mount Enclosure
5	NEMA 4X	304 SS	60 x 36 x 12 (152 x 92 x 31)	Wall-Mount Enclosure

Code	Enclosure Heater Class 1, Div 2	
0	No Enclosure Heater	
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 6 & 12 circuit designs
2	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 6 & 12 circuit designs
3	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 6 & 12 circuit designs
4	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 18, 24, 30 & 36 circuit designs
5	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 18, 24, 30 & 36 circuit designs
6	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 18, 24, 30 & 36 circuit designs

ITASC1D2-EXT -24	**1**	**4**	**Typical Model Number**

Spare/Replacement Parts – ITASC1D2 & ITASC1D2-EXT

Part Number	Description
0135-02261	SSR/GFI Power Control
0135-02262	RTD Sensor Input Board Assembly
0135-02263	Digital Distribution Comm Board Assembly
0002-60054	SSR, 40 Amp rated
0029-00640	SSR Thermstrate Material
0025-05227	Common Alarm Relay
0081-10063	Power Supply 5 VDC 6A 30W DIN Rail Mount
0081-10047	Power Supply 24 VDC 2.5A 60W DIN Rail Mount
0023-15097-0001	6" (15 cm) Ribbon Cable with Connectors
0023-15097-0002	72" (180 cm) Ribbon Cable with Connectors

Accessories for ITASC1D2 & ITASC1D2-EXT

Part Number	Description
Contact Sales	Power Transformers
317315	RTD Aluminum, NEMA 4
317340	RTD, Expl. Resist., Cast Iron/Alum., NEMA 4
308144	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 50 ft
317342	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 200 ft
0076-15392	HMI Sunscreen, Painted Steel (ITLS/ITAS-6-72)
0076-12009	Floor Stand Kit, 12" (30 cm) Deep, Steel
0076-12050	Floor Stand Kit, 12" (30 cm) Deep, 304 SS
Contact Sales	Floor Stand Kit, 12" (30 cm) Deep, 316 SS

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IntelliTrace

Line Sensing

ITLSC1D2 Base Panel

Heat Tracing Control Panel

Class I, Div. 2, 6-72 Loops

Technical Notes:
1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. See ITLSC1D2-EXT Extension Panel Order Table to increase total circuits

Model Product Description

ITLSC1D2 ITLSC1D2 series Intelligent Line Sensing Heat Trace Panel. Designed for Industrial applications and suitable for Class I, Division 2 Hazardous Areas. The ITLSC1D2 series offers the following standard features: NEMA 4 enclosure, Industrial 12" (30 cm) Digital CE Computer Touchscreen Operator Interface, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits (Expandable to Seventy-Two Circuits*), Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment Protection, ModBus RTU/RS485 or TCP/Ethernet Communications, Remote Monitoring Capability, Selectable Soft Start Operation, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Customized I/O (Sensor & Output) Mapping, Thermostat Controlled Enclosure Heater and CE & ATEX Certification.

Code	Circuits	Enclosure Size HxWxD In (cm)	Line Voltage	Line Phase	Cable Voltage
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
12	12 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
18	18 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
24	24 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480

Code	Enclosure Rating, Material & Size		HxWxD In (cm)	Enclosure Mounting
1	NEMA 4	Painted Steel	Size is per design selection	Wall-Mount Enclosure
2	NEMA 4X	304 SS	24 x 24 x 12 (61 x 61 x 31)	Wall-Mount Enclosure
3	NEMA 4X	304 SS	42 x 36 x 12 (107 x 92 x 31)	Wall-Mount Enclosure
4	NEMA 4X	304 SS	48 x 36 x 12 (122 x 92 x 31)	Wall-Mount Enclosure
5	NEMA 4X	304 SS	60 x 36 x 12 (152 x 92 x 31)	Wall-Mount Enclosure

Code	Enclosure Heater Class 1, Div 2	
0	No Enclosure Heater	
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 6 & 12 circuit designs
2	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 6 & 12 circuit designs
3	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 6 & 12 circuit designs
4	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 18, 24, 30 & 36 circuit designs
5	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 18, 24, 30 & 36 circuit designs
6	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 18, 24, 30 & 36 circuit designs

Code	Inputs/Circuit	I/O Mapping	
0	1	No I/O Mapping	Use Enclosure Sizes from Above
1	1	Full I/O Mapping	
2	2	Full I/O Mapping	See ITLSC1D2 I/O Mapping: Enclosure Size Chart
3	3	Full I/O Mapping	
9	X	Special Configuration	

Code	Communications
0	Standard: Modbus RTU/RS485 or Modbus TCP/Ethernet
1	ModBus TCP/Wireless
2	BACNet
9	Other

Code	Temperature Sensing Options
0	Standard Wired Sensing
1	Wireless Temperature Sensing (Must select Full I/O Mapping) See Wireless Guidelines
9	Other

ITLSC1D2 -	**24**	**1**	**4**	**3 -**	**0**	**0**	**Typical Model Number**

*42 - 72 circuit service via ITLSC1D2-EXT Extension Panel. See ITLSC1D2-EXT heat Tracing Extension Panel - Line Sensing - Class 1, Division 2 Order table.

IntelliTrace

Line Sensing

ITLSC1D2-EXT Extender Panel

Heat Tracing Control Panel

Class I, Div. 2, 6-72 Loops

Technical Notes:
1. 120-264V customer supplied instrument power supply
2. Our standard SCCR is 5 KA. Consult sales if a different SCCR is needed.
3. Do Not Exceed 80% of Panelboard Rating
4. These Extension Panels are to be paired with an ITLSC1D2 Panel

Model Product Description

ITLSC1D2-EXT ITLSC1D2-EXT series Intelligent Line Sensing Heat Trace Extension Panel. Designed for Industrial applications and suitable for Class I, Division 2 Hazardous Areas. Designed to be used with ITLSC1D2 Heat Trace Line Sensing Panel to increase circuit service. ITLSC1D2-EXT series offers the following standard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 104˚F (40˚C) Ambient, Six to Thirty-Six Circuits, Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Thermostat Controlled Enclosure Heater, Customized I/O (Sensor & Output) Mapping, Remote Monitoring Capability, CE & ATEX Certification.

Code	Circuits	Enclosure Size HxWxD In. (cm)	Line Voltage	Line Phase	Cable Voltage
06	6 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
12	12 Circuits	24 x 24 x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
18	18 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
24	24 Circuits	42 x 36 x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
30	30 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
36	36 Circuits	60 x 36 x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480

Code	Enclosure Rating, Material & Size		HxWxD, In (cm)	Enclosure Mounting
1	NEMA 4	Painted Steel	Size is per design selection	Wall-Mount Enclosure
2	NEMA 4X	304 SS	24 x 24 x 12 (61 x 61 x 31)	Wall-Mount Enclosure
3	NEMA 4X	304 SS	42 x 36 x 12 (107 x 92 x 31)	Wall-Mount Enclosure
4	NEMA 4X	304 SS	48 x 36 x 12 (122 x 92 x 31)	Wall-Mount Enclosure
5	NEMA 4X	304 SS	60 x 36 x 12 (152 x 92 x 31)	Wall-Mount Enclosure

Code	Enclosure Heater Class 1, Div 2	
0	No Enclosure Heater	
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 6 & 12 circuit designs
2	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 6 & 12 circuit designs
3	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 6 & 12 circuit designs
4	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)	For use with 18, 24, 30 & 36 circuit designs
5	Thermostat Controlled Enclosure Heater (to 0°F Ambient)	For use with 18, 24, 30 & 36 circuit designs
6	Thermostat Controlled Enclosure Heater (to -40°F Ambient)	For use with 18, 24, 30 & 36 circuit designs

Code	Inputs/Circuit	I/O Mapping	
0	1	No I/O Mapping	Use Enclosure Sizes from Above
1	1	Full I/O Mapping	
2	2	Full I/O Mapping	See ITLSC1D2-EXT I/O Mapping: Enclosure Size & Chart
3	3	Full I/O Mapping	
9	X	Special Configuration	

ITLSC1D2-EXT -24	**1**	**4**	**3**	**Typical Model Number**

**** This code MUST match the same code on the Base ITLSC1D2 Panel**

CONTROL SYSTEMS

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IntelliTrace

Line Sensing

ITLSC1D2 Base Panel
ITLSC1D2-EXT Extender Panel

Heat Tracing Control Panel

Class I, Div. 2, 6-72 Loops

Spare/Replacement Parts for ITLSC1D2 & ITLSC1D2-EXT

Part Number	Description
0135-02261	SSR/GFI Power Control
0135-02262	RTD Sensor Input Board Assembly
0135-02263	Digital Distribution Comm Board Assembly
0002-60054	SSR, 40 Amp rated
0029-00640	SSR Thermstrate Material
0025-05227	Common Alarm Relay
0081-10063	Power Supply 5 VDC 6A 30W DIN Rail Mount
0081-10047	Power Supply 24 VDC 2.5A 60W DIN Rail Mount
0023-15097-0001	6" (15 cm) Ribbon Cable with Connectors
0023-15097-0002	72" (180 cm) Ribbon Cable with Connectors

Accessories for ITLSC1D2 & ITLSC1D2-EXT

Part Number	Description
Contact Sales	Power Transformers
317315	RTD Aluminum, NEMA 4
317340	RTD, Expl. Resist., Cast Iron/Alum., NEMA 4
308056	RTD, Snap Lid, Alum., Ambient Sensing
308144	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 50 FT
317342	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 200 FT
0076-12009	Floor Stand Kit, 12" (30 cm) Deep, Steel
0076-12050	Floor Stand Kit, 12" (30 cm) Deep, 304 SS
Contact Sales	Floor Stand Kit, 12" (30 cm) Deep, 316 SS

ITLSC1D2 & ITLSC1D2-EXT I/O Mapping: Enclosure Sizes

Circuits	Enclosure Size - H x W x D, In (cm)	
	2 Inputs / Output	3 Inputs / Output
06	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)
12	24 x 24 x 12 (61 x 61 x 31)	24 x 24 x 12 (61 x 61 x 31)
18	42 x 36 x 12 (107 x 92 x 31)	42 x 36 x 12 (107 x 92 x 31)
24	42 x 36 x 12 (107 x 92 x 31)	48 x 36 x 12 (122 x 92 x 31)
30	60 x 36 x 12 (152 x 92 x 31)	60 x 36 x 12 (152 x 92 x 31)
36	60 x 36 x 12 (152 x 92 x 31)	60 x 36 x 12 (152 x 92 x 31)

1. The MAXIMUM number of Inputs for any ITLSC1D2 System, including Extension Panel, is 252.
2. When **Full I/O Mapping** is selected from the Order Table, any individual sensor or output may be mapped to more than one circuit. For Example: The average temperature of Sensors 1, 2 & 3 is used to control Circuit 1, while simultaneously the maximum temperature of Sensors 3, 4 & 5 is used to control Circuit 2.
3. The maximum amount of inputs for each panel design is as follows:

Total Number of Available Inputs per Panel Design for ITLSC1D2 & ITLSC1D2-EXT

Number of Circuits	Inputs / Circuit Code from Above Order Table			
	1	2	3	9
06	06	12	18	252
12	12	24	36	252
18	18	36	54	252
24	24	48	72	252
30	30	60	90	252
36	36	72	108	252

Wireless Guidelines - Please see ITLS/ITAS Installation & Instruction Maunual for full details

1. Chromalox employs WirelessHART as its standard wireless protocol.
2. Wireless Transmitters require an RTD. Choose the appropriate connection/design for your sensing needs.

IntelliTrace

Wireless Temperature Sensing Solutions

- **Seamlessly Integrates with ITLS & ITAS Heat Trace Control Systems**
- **Line or Ambient Sensing**
- **Ordinary and Hazardous Locations**
- **WirelessHART Certified**
- **Ideal for New Installations, Expansions & System Upgrades**
- **Local or Remote Locations**
- **Added Redundancy & Improved Safety**
- **Process Temperature Control Optimization**
- **System Testing Flexibility**
- **Industry Leading Components**
- **360° Pipe or Structure Mounting**

Wireless Temperature Transmitter

ITLS/ITAS IntelliTrace Heat Trace Control System

NEW!

WirelessHART

Description

Wireless is rapidly becoming the preferred sensing technology of choice in many commercial and industrial systems. Wireless sensing can greatly reduce installation costs and more easily solve geographically and structurally challenging sensing applications. Chromalox now provides fully integrated Wireless Temperature Sensing Solutions for Heat Trace applications in ordinary and hazardous areas. Whether you are designing a new heat trace system, expanding an existing one or need to optimize your process, and you are considering wireless temperature sensing, the Chromalox IntelliTrace ITLS & ITAS heat trace control panels are an ideal choice.

Wireless System Overview

System
The Wireless Temperature Sensing components of the Chromalox Heat Trace system include our IntelliTrace ITLS or ITAS Control Panel, which is configured for wireless sensing, and a specified industrial Wireless Transmitter, that is paired with an appropriate temperature sensor. We vigorously field-tested and validated the highest rated and most recognized industrial components available. Full wireless temperature sensing installation details and considerations are found in our ITLS & ITAS Installation Manual, PK497.

Control Panel
When the wireless temperature sensing feature is selected, our IntelliTrace Control Panel is internally equipped with an industrial-duty WirelessHART certified wireless gateway, antenna and the necessary communication accessories. The panel firmware facilitates wired and wireless temperature sensor inputs seamlessly. Our large 10" (250 mm) touchscreen computer HMI distinguishes wireless circuits from wired ones. Each wireless circuit has its own sensor battery life meter. This provides three levels of remaining battery life so that you may properly plan service before it is needed.

Wireless Transmitter
Chromalox has chosen the Rosemount® 248 Wireless Temperature Transmitter, which is an industry standard in the industrial wireless community. This transmitter is WirelessHART certified and it may be pipe or structure mounted. The 248 Transmitter is offered in either an aluminum or polymer housing and is available with or without the universal mounting bracket.

Temperature Sensor
We have standardized on an RTD type temperature sensor. See the heat trace temperature sensor table for several heat trace sensor choices.

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IntelliTrace

Wireless Temperature Sensing Solutions *(cont'd.)*

Wireless Sensing Components and Accessories

Wireless Temperature Transmitter
Rosemount 248 Wireless Temperature Transmitter, USA Intrinsically Safe and Non-incendive, Aluminum or Polymer Housing, with 1/2-14 NPT Conduit Entry Size, WirelessHART, 2.4 GHz, External Omni-directional Antenna (Aluminum Housing only), 5-point Calibration, External ground lug, 60Hz & 3 Year Warranty

Description	Part Number
Aluminum Housing with universal mounting bracket (248DXI5D2NSWA3WK1B5C4Q4G1WR3)	0108-70477
Aluminum Housing without universal mounting bracket (248DXI5D2NSWA3WK1C4Q4G1WR3)	0108-70478
Polymer Housing with universal mounting bracket (248DXI5P2NSWA3WP5B5C4Q4WR3)	0108-70479
Polymer Housing without universal mounting bracket (248DXI5P2NSWA3WP5C4Q4WR3)	0108-70480
Battery for 248 Wireless Transmitter with Aluminum Housing Only	0108-70432
Battery for 248 Wireless Transmitter with Polymer Housing Only	0108-70481

Rosemount 248 Wireless Temperature Transmitter

Polymer Housing

Aluminum Housing

Rosemount 248 Wireless Temperature Transmitter with Universal Mounting Bracket

Pipe Mounting

Structure Mount

IntelliTrace

Wireless Temperature Sensing Solutions *(cont'd.)*

RBF185M Heat Trace Sensor Pipe Mounted with Connection Head

Heat Trace Temperature Sensor - 100 Ohm, 3-Wire RTD

Pipe Mounted Heat Trace Sensor with Connection Head – 316 SS Sheath, 1/2" or 3/4" NPT Connection Port.

Model Number & Description	Part Number
RBF185M-HT30418RD31SB/C Aluminum - NEMA 4X	317315
RBF185M-HT30418RD91SB/C 316L Stainless Steel - NEMA 4X	317323
RBF185M-HT30418RD93SB/C Aluminum - Class I, Div's 1 & 2, NEMA 4X, IP66	317340
RBF185M-HT30418RD94SB/C 316L Stainless Steel - Class I, Div's 1 & 2, NEMA 4X, IP66	399550

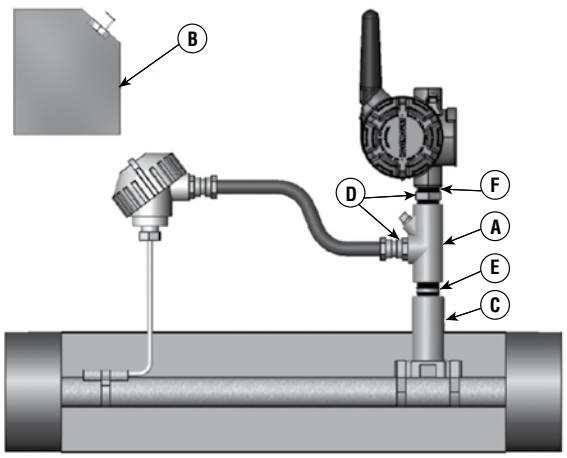
Wireless Transmitter Pipe Mounting Option

Industrial grade components for mounting the wireless transmitter onto insulated or non-insulated piping.

Note: The conduit (customer supplied) from the transmitter fitting to the sensor must be rated for the environment in which it is being installed.

Description			Part Number	
PIPE STANDOFF KIT, DIVISION 1 & DIVISION 2			394337	
Item	**Qty.**	**Component**	**Div. 1**	**Div. 2**
A	1	3/4" Seal fitting	Yes	Yes
B	1	Sealing compound & fiber	Yes	No
C	1	Pipe standoff	Yes	Yes
D	2	3/4" x 1/2" NPT reducer with hex head	Yes	Yes
E	1	All-thread	Yes	Yes
F	1	1/2" NPT X 1" Nipple	Yes	Yes

Pipe Mounting Kit



Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

RSP

Remote Sensor Panel

- **Consolidates Multiple Temperature Sensor Signals into a Single Enclosure**
- **Facilitates 1-252 Sensor Inputs**
- **Fully Integrated Package**
- **Works Seamlessly with ITAS & ITLS Heat Trace Control Systems**
- **Ordinary and Hazardous Locations**
- **Significant Installation Cost Savings**
- **Ideal for New Installations, Expansions & System Upgrades**
- **Local or Remote Locations**
- **Optional Wireless Communication**
- **Optional Enclosure Heater**
- **IP 66, NEMA 4 & 4X Enclosures**
- **UL/cUL, CE**

Remote Sensor Panel

ITLS/ITAS IntelliTrace Heat Trace Control System

Description

The Chromalox RSP - Remote Sensor Panel greatly reduces installation costs as it facilitates the monitoring of 1 - 252 heat trace temperature sensor inputs within a single enclosure.

The RSP is a completely integrated package and it works seamlessly with the Chromalox IntelliTrace ITLS/ITAS heat trace control panels in either ordinary or hazardous areas.

The RSP communicates with the base panel via a single, twisted-pair wire return or via a wirelessly transmitted signal. Multiple RSP modules may be linked together for added convenience.

The RSP comes standard with NEMA 4 Painted Steel, NEMA 4X Fiberglass or NEMA 4X 304 SS wall mounted enclosure for Ordinary or Hazardous (Class I, Division 2) Areas, DIN rail mounted components, wired communication connection to the ITAS/ITLS Heat Trace Control Panel, Power-On lamp.

In addition, enclosure heaters for either ordinary or Class I, Division 2 areas as well as wireless communication between the RSP and base ITAS or ITLS control panels are available options.

Approvals

UL, cUL, CE

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

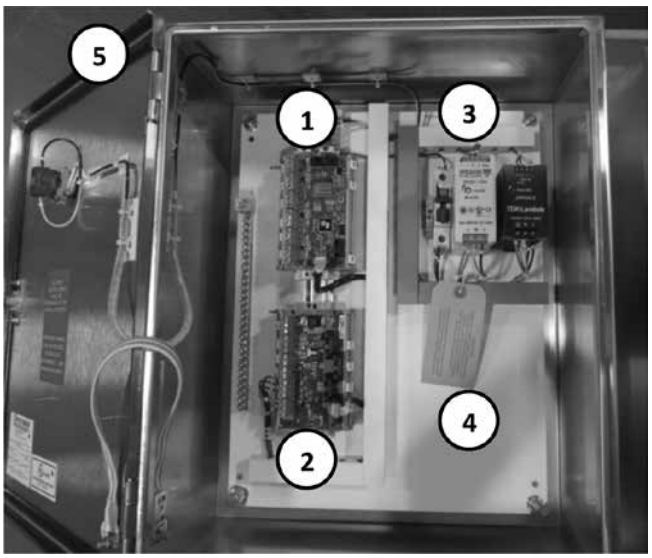
IntelliTrace

RSP

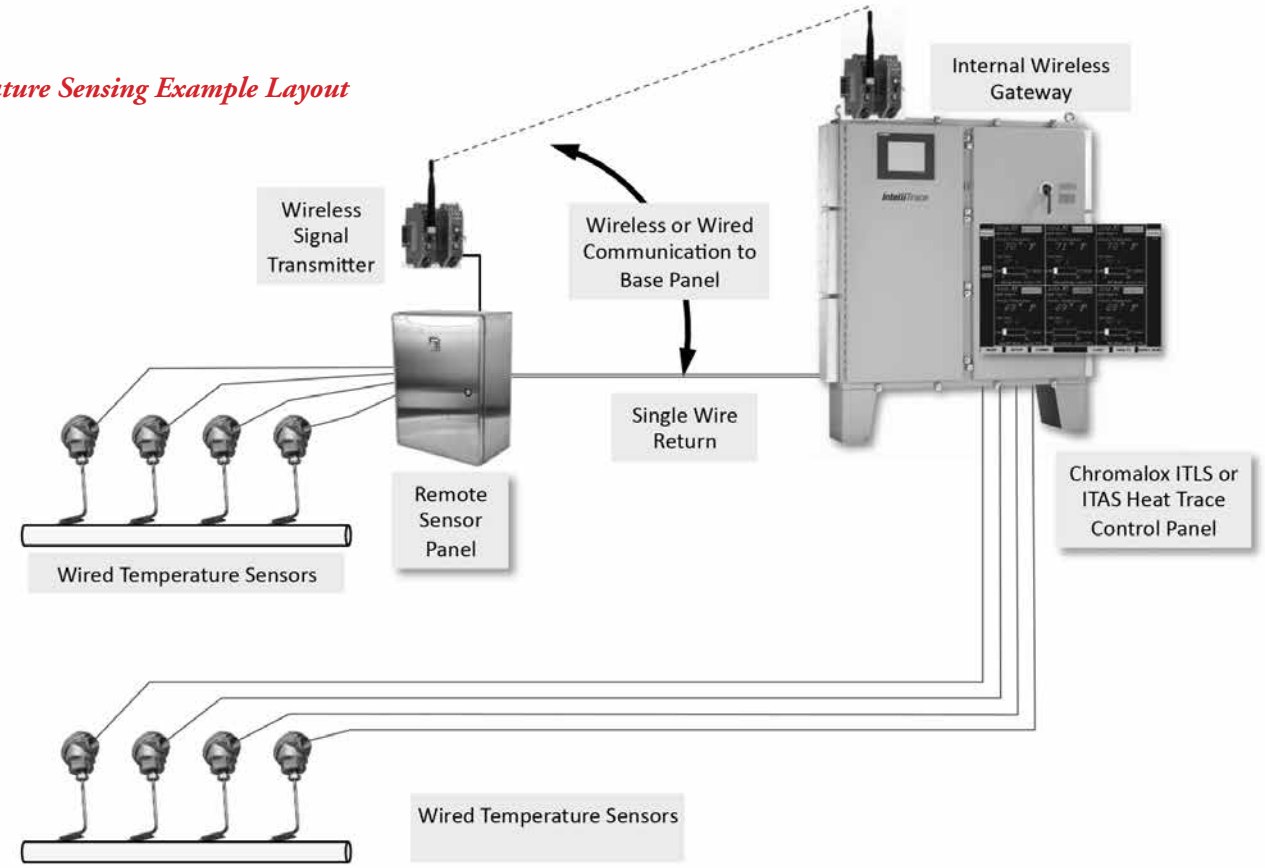
Remote Sensor Panel *(cont'd.)*

Remote Sensor Panel Example

1. **RTD Sensor Board –** facilitates the connection of up to 6 RTD sensor inputs per RTD Sensor board. Multiple boards may be employed in each enclosure.
2. **Communication / Distribution Board –** facilitates the intra-panel connection via Modbus RS485 (twisted pair). Wireless communication is available.
3. **Power Supply –** 100 – 240 VAC IN, 5 VDC out
4. **Enclosure Heater –** (not shown) Both ordinary area and Class I, Div. 2 designs are available
5. **Enclosure –** Fiberglas, Painted Steel or 304 Stainless Steel (316 SS is available as an option)



Temperature Sensing Example Layout



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IntelliTrace

RSP

Remote Sensor Panel *(cont'd.)*

Ordering Information

To Order — Complete the Model Number using the Matrix provided.

Model	Remote Sensor Panel
RSP	Remote Sensor Panel facilitates 1 - 252 heat trace temperature sensor inputs and is designed to work with the Chromalox IntelliTrace ITLS/ITAS heat trace control panels in either ordinary or hazardous areas. Standard Features: NEMA 4 Painted Steel, NEMA 4X Fiberglass or NEMA 4X 304 SS wall mounted enclosure, wired communication to the ITLS/ITAS Control Panel, Power-On lamp. Optional Features: Enclosure Heater, wireless communications. Approvals: UL, cUL, CE

Code	Fiberglass (F), Painted Steel (P) Enclosure Size, In (cm)	Sensor Inputs	Code	304 Stainless Steel (S) Enclosure Size, In (cm)
006F	20 x 16 x 9 (51 x 41 x 22)	1 - 6	**006S**	20 x 16 x 9 (51 x 41 x 22)
012F	20 x 16 x 9 (51 x 41 x 22)	7 - 12	**012S**	20 x 16 x 9 (51 x 41 x 22)
018F	20 x 16 x 9 (51 x 41 x 22)	13 - 18	**018S**	20 x 16 x 9 (51 x 41 x 22)
024P	20 x 16 x 9 (51 x 41 x 22)	19 - 24	**024S**	20 x 16 x 9 (51 x 41 x 22)
030P	24 x 20 x 10 (61 x 51 x 25)	25 - 30	**030S**	24 x 20 x 10 (61 x 51 x 25)
036P	24 x 20 x 10 (61 x 51 x 25)	31 - 36	**036S**	24 x 20 x 10 (61 x 51 x 25)
999P	TBD	37-252	**999S**	TBD

Code	Enclosure Heater (Heater will increase enclosure size)
0	None
1	Ordinary Areas (Codes 006X, 012X)
2	Ordinary Areas (Codes 018X, 024X)
3	Ordinary Areas (Codes 030X, 036X)
4	Hazardous Areas (Codes 006X, 012X) - Class I, Div. 2-Groups ABCD
5	Hazardous Areas (Codes 018X, 024X) - Class I, Div. 2-Groups ABCD
6	Hazardous Areas (Codes 030X, 036X) - Class I, Div. 2-Groups ABCD
9	Code 999P/999S

Code	Communication to ITLS/ITAS Control Panel
0	Wired (RS485)
1	Wireless (Ethernet/Wireless)
9	Other

RSP-	**012S**	**-1**	**1**	**Typical Model Number**

Optional Features:

- Enclosure Heater
- Wireless communications

CHROMALOX

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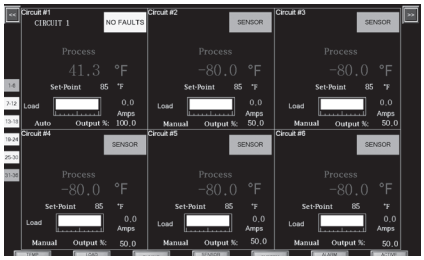
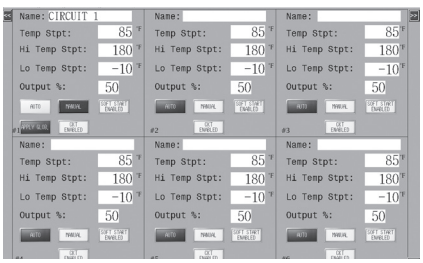
IntelliTrace

Ambient Sensing
CIP Base Panel
CIP-EXT Extension Panel
Commercial Heat Tracing Control Panel for Ordinary Areas

NEW!

- 10” or 7” Touch Screen HMI
- 40 Amps/Circuit @ 100 to 600 VAC
- 2 Circuits to 72 Circuits
- NEMA 4 or NEMA 4X Enclosure
- SCR Control
- Optional Wireless Temperature Sensing
- Integral Circuit Panel with Circuit Breakers
- Optional Main Breaker
- Soft Start Feature
- Full Communications
- Full Alarm and Monitoring Capabilities on GFEP, Temperature, Sensor, Current Load & Communications
- Customizable Sensor Mapping
- Optional Enclosure Heater
- UL, cUL
- Optional CE





The 10” or 7” Touch Screen Computer provides real time display of process variable, set point, load current, load demand (%), operation mode type, alarm status and alarm type for any 2 or 6 circuits at time as well as alarm status for all other circuits.

The Quick Launch buttons take you to any other 2 or 6-circuit real time display screen as well as the Setup, Fault, Log or Communication Screen. All set point, alarm, security, time, circuit identification, sensor mapping, tuning, communications and control type mode settings are easily accomplished through the intuitive & familiar Windows based menu screens. All of these functions are achievable locally or remotely via wired or wireless communications.

Description

The intelliTRACE CIP Series is a microprocessor based Control/Monitoring and Power Management system for Ambient Sensing, Line Sensing or a combination of Line and Ambient Sensing Heat Trace Applications and is suitable for use in ordinary areas.

The base panels will handle 2 - 48 circuits and may be increased up to 72 circuits with the Extension Panels. A 2 to 4 circuit extension panel may be added to a 6-48 circuit panel but not vice versa. Each circuit has a 40 Amperage capacity and accepts 100 to 600 VAC service. The SCR Control may be set to Automatic, which includes PID or On/Off control or to Manual, which spans a 0% to 100% control output.

The HMI is a 10” (25 cm) or 7” (17cm) user friendly touch screen computer. It displays the process variable, temperature setpoint, alarm status, current load, control mode, sensor failure manual override output for any 2 or 6 circuits at a time as well as the alarm status for all other circuits.

The standard enclosure is rated for NEMA 4 environments and an optional NEMA 4X 304 SS enclosure is available.

The CIP Control Panel Series provide alarms for high and low temperatures, current load, communications, sensor faults and ground fault leakage. There are several output/control behavior scenarios for the ground fault (GFEP) alarm condition. Choices include Trip and/or Latch options in which both, either or none may be enabled. Trip sets the output to zero %, while Latch requires a manual reset. Alarm events are automatically logged and stored for easy access.

Advanced standard features include a proprietary soft start function, off duty Auto Cycle maintenance program and either Modbus RTU/RS485 or Ethernet communications. Optional features include an industry leading Sensor Mapping** function, remote monitoring and wireless communications.

IntelliTrace

Ambient Sensing

CIP Base Panel

CIP-EXT Extension Panel

Commercial Heat Tracing Control Panel for Ordinary Areas

Advanced Features

Soft Start Feature
Certain heating cables exhibit inherent current inrush in colder temperatures. This inrush can cause nuisance breaker tripping. To limit inrush current on the overall system, a proprietary Soft Start algorithm is applied during system start-up. This will ONLY occur while the operation mode is set to AUTO. After the Soft Start program completes its cycle, the Control Mode of the system will either be PID or ON/OFF Control Mode, depending what was selected by the user. The default setting of the Soft Start Feature for each circuit is "enabled". However, the Soft Start Feature may be disabled if so desired by the owner. The owner has the option to independently manage the Soft Start Feature on each circuit.

Auto Cycle Feature
During prolonged down time periods, typically during the summer months, it advisable to intermittently exercise the system circuits. This exercising of the circuits is accomplished via the Autocycle feature. On a sequential circuit basis, the Autocycle feature periodically monitors system performance between 1-999 hours. This provides a certain level of predictive maintenance of the system as Faults (Alarms) will present themselves accordingly. Problem areas may be addressed during nonessential operating periods. The owner has the option to engage or disengage the Autocycle feature at any time.

Sensor Mapping**
The CIP Control Panels provide the owner with customizable Sensor Mapping. This becomes a very power-ful and desirable feature when the owner needs added flexibility in controlling the circuit outputs beyond the standard single sensor input.

Sensor Mapping is the assignment of one or more Sensor Inputs to one or more output circuits.

More on Sensor Mapping

Ambient or Line Sensing - Single Sensor:
A single sensor (RTD) may be mapped (or linked) to multiple Output Circuits. This allows several circuits to be controlled by a single sensor.

Minimum, Maximum, Averaging
Several sensors may be mapped to a single output circuit. This allows a single circuit to be controlled by the Minimum or the Maximum or the Average temperature of all of the sensors mapped to that output circuit. This may be desirable on long runs or zones which realize varying temperatures or weather conditions at different times of the day.

Multiple Sensor Mapping
A single sensor may be used independently or combined with other sensors to control more than one circuit.

Combining Sensing Types
The owner may need to have multiple Line and/or Ambient Sensing control scenarios occurring simultaneously.

Touch Screen Computer:

- 2 or 6 Circuit displayed / screen
- Quick launch to any 2 or 6 circuit group, Setup Menu or System Screens
- Full User Setting Capabilities - Specific Circuit Naming/Identification, Baud rate, set points, units, alarms, etc.
- Remote Desktop Monitoring

Optional Features:

- NEMA 4X 304 SS Enclosure
- Fully Customizable Sensor Mapping
- Enclosure Heater

IntelliTrace

Ambient Sensing
CIP Base Panel
CIP-EXT Extension Panel
Commercial Heat Tracing Control Panel for Ordinary Areas

Technical Specifications

Panel Specifications

Supply Voltage: .....100 - 600 VAC, 3 phase

Operating Environment: .....-40 to +104°F (-40 to +40°C)* Enclosure heater required for Ambient Temperatures below 32˚F (0˚C)

Enclosure: .....NEMA 4 or Optional NEMA 4X 304 SS

Enclosure Size: .....See Model Description Tables

Communications: .....Modbus RTU/RS-485, Ethernet

Alarms: .....Hi/Lo Temp, GFEP – 20 mA to 150 mA, Hi/Lo Current – 0.1 to 50A or off

Input: .....100 Platinum 3-wire RTD

Output: .....SCR, Zero cross fired

Current Maximum: .....40 Amps/Circuit at 104°F (40°C)

Auto-Cycle: .....1-999 hours/off

Failed Sensor Output Setting: .....0 – 100%

Control Mode: .....Auto, Manual (Hand), Off
Auto: PID or ON/OFF with adjustable dead band
Manual: 0% - 100% output, 1% increment

Load Management: .....DOT (Demand On Transfer) timing, with Soft Start

Approvals: .....UL, cUL Listed. Optional CE Certification

Area Classifications: .....Ordinary Areas

Temperature Rating .....T4A (UL) (Derate to T3 & Groups B, C, D when using enclosure heater)

IntelliTrace
Ambient Sensing
CIP Base Panel
Commercial Heat Tracing Control Panel for Ordinary Areas

Technical Notes:
1. Refer to PK497 for Installation and Operation details
2. Our standard SCCR is 5 kA. Consult sales if a different SCCR is needed.
3. See CIP-EXT to increase circuits up to 8 circuits for 2-4 Circuit Panels & up to 72 Circuits for 6-48 Circuit Panels.
4. 6-48 Circuit Extension Panels can not be added to 2-4 Circuit Panels but 2-4 circuit extension panels can be added to 6-8 Circuit Panels (up to 72 circuits)

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **Product Description**

CIP IntelliTRACE Line/Ambient Sensing Heat Trace Panels are Designed for Industrial applications in Non-Hazardous Areas. CIP series offers the following standard features: NEMA 4 enclosure, Industrial 10" (7" for 2 and 4 Loop Models) Digital CE Computer Touchscreen Controller Rated at 40A Per Circuit at 104°F (40°C) (Expandable to Seventy-Two Circuits*), Common Alarm Output, Operator Interface, PID SCR Power, Hand/Off/Auto Operation Breaker for Instrument Power Included, Current Monitoring, 30 mA Ground Fault Equipment Protection, ModBus RTU/RS485 or TCP/Ethernet Communications, Lockout Capable Breakers, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Copper Ground Bar (Standard is Aluminum), Remote Monitoring Capability, Thermostat Controlled Enclosure Heater, Heater Power and RTD Terminal Blocks, Wireless Ethernet Communications, CE Third Party Compliance.

Code **Circuits**

02	2 Circuits	**24**	24 Circuits
04	4 Circuits	**30**	30 Circuits
06	6 Circuits	**36**	36 Circuits
12	12 Circuits	**42**	42 Circuits
18	18 Circuits	**48**	48 Circuits

Code	Line Voltage	Cable Voltage
1	208/120 VAC, 3 Phase 4 Wire	120 V- 1 Pole or 208 V - 2 Pole
2	240/120 VAC, Single Phase 3 Wire	120 V- 1 Pole or 240 V - 2 Pole
3	480/277 VAC, 3 Phase 4 Wire	277 V- 1 Pole or 480 V - 2 Pole

Code **Cable Load Circuit Breaker Rating (Select Breaker Amperage and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V Breakers)**

0(*)	None	**3(*)**	30A Thermal Magnetic
1(*)	15A Thermal Magnetic	**4(*)**	40A Thermal Magnetic
2(*)	20A Thermal Magnetic	**5(*)**	50A Thermal Magnetic

Code	Main Disconnect / Circuit Breaker	Applicable Voltage
0	None	None
1	50A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
2	100A Thermal Magnetic	120/208V 3P, 120/240V 1P
3	150A Thermal Magnetic	120/208V 3P
4	200A Thermal Magnetic	120/240V 1P, 277/480V 3P
5	250A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
X	Other (If Main Disconnect is needed Contact Factory for Assistance)	

Code	Enclosure Heater (Anti-Condensation Heater Recommended at a Minimum)
0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (Needed for 0°F, -18°C Minimum Ambient Temperature)
3	Thermostat Controlled Enclosure Heater (Needed for -40°F/°C Minimum Ambient Temperature)

Code **Panel Options**

1	HMI Sunshield (Req'd. if Panel is to be outdoors)	**7**	Copper Ground Bar
2	Panel Weathersheild	**A**	Floor Stands for 10" Deep Panel
3	Heater Power and RTD Terminal Blocks	**B**	Floor Stands for 12" Deep Panel
4	Z-purge system	**C**	Floor Stands for 16" Deep Panel
5	Panel Light (on separate breaker)	**X**	Other (If multiple options needed contact factory)
6	Powered Recepticle (on separate breaker)		

Code	Number of 100 Ohm RTD Sensor Inputs (must be multiple of 6, up to 48 inputs, MAXIMUM 3 RTD's per heater circuit)		
1	6 (Select if Ambient Sensing panel)	**6**	36
2	12	**7**	42
3	18	**8**	48
4	24	**9**	Other (Call Factory for Assitance)
5	30		

Code	Communications
1	Standard: ModBus RTU/RS485 or Modbus TCP/Ethernet
2	ModBus TCP/Wireless
3	BacNet
9	Other

Code	Temperature Sensing Solutions
1	Standard Wired Sensing
2	Wireless Sensing
3	Dry Contact Closure for Ambient Sensing Thermostat
4	Remote Snow Sensor Input (i.e. SIT, GIT & CIT type sensors)

Code	Enclosure (Size determined by Table 1)
1	NEMA 4 Single-Door Wall-Mount Steel Enclosure 24 X 20 X 10
2	NEMA 4 Single-Door Wall-Mount Steel Enclosure 30 X 30 X 10
3	NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X 36 X 12
4	NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X 36 X 16
5	NEMA 4 Single-Door Wall-Mount Steel Enclosure 60 X 36 X 12
6	NEMA 4 Single-Door Wall-Mount Steel Enclosure 60 X 36 X 16
7	NEMA 4X Stainless Steel Wall-Mount Enclosure 24 X 20 X 10
8	NEMA 4X Stainless Steel Wall-Mount Enclosure 30 X 30 X 10
A	NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 12
B	NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 16
C	NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 12
D	NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 16

CIP ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Typical Model Number**

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

IntelliTrace

Ambient Sensing

CIP-EXT Extension Panel

Commercial Heat Tracing Control Panel for Ordinary Areas

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **Product Description**

CIP-EXT CIP-EXT series Intelligent Line/Ambient Sensing Heat Trace Extension Panel. Designed for Industrial applications in Non-Hazardous Areas. Intended To Be Used with CIP Heat Trace Ambient/Line Ambient Sensing Panel to increase circuit service. CIP-EXT series offers the following standard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 104°F (40°C) Ambient, Two to Forty-Eight Circuits, Common Alarm Output, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethernet Communications, UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Copper Ground Bar (Standard is Aluminum), Remote Monitoring Capability, Thermostat Controlled Enclosure Heater, Heater Power and RTD Terminal Blocks, Wireless Ethernet Communications, CE Third Party Compliance.

Code **Circuits**

02	2 Circuits	**24**	24 Circuits
04	4 Circuits	**30**	30 Circuits
06	6 Circuits	**36**	36 Circuits
12	12 Circuits	**42**	42 Circuits
18	18 Circuits	**48**	48 Circuits

Code	Line Voltage	Cable Voltage
1	208/120 VAC, 3 Phase 4 Wire	120 V- 1 Pole or 208 V - 2 Pole
2	240/120 VAC, Single Phase 3 Wire	120 V- 1 Pole or 240 V - 2 Pole
3	480/277 VAC, 3 Phase 4 Wire	277 V- 1 Pole or 480 V - 2 Pole

Code **Cable Load Circuit Breaker Rating (Select Breaker Amperage and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V Breakers)**

0(*)	None	**3(*)**	30A Thermal Magnetic
1(*)	15A Thermal Magnetic	**4(*)**	40A Thermal Magnetic
2(*)	20A Thermal Magnetic	**5(*)**	50A Thermal Magnetic

*Designed to be paired with an ITAS Panel

Code	Main Disconnect / Circuit Breaker	Applicable Votlage
0	None	None
1	50A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
2	100A Thermal Magnetic	120/208V 3P, 120/240V 1P
3	150A Thermal Magnetic	120/208V 3P
4	200A Thermal Magnetic	120/240V 1P, 277/480V 3P
5	250A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
X	Other (If Main Disconnect is needed Contact Factory for Assistance)	

Code **Enclosure Heater (Anti-Condensation Heater Recommended at a Minimum)**

0	No Enclosure Heater
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (Needed for 0°F, -18°C Minimum Ambient Temperature)
3	Thermostat Controlled Enclosure Heater (Needed for -40°F/°C Minimum Ambient Temperature)

Code **Panel Options**

2	Panel Weathersheild	**8**	Loss of Power Relay
3	Heater Power and RTD Terminal Blocks	**A**	Floor Stands for 10" Deep Panel
4	Z-purge system	**B**	Floor Stands for 12" Deep Panel
5	Panel Light (on separate breaker)	**C**	Floor Stands for 16" Deep Panel
6	Powered Receptacle (on separate breaker)	**X**	Other (If multiple options needed contact factory)
7	Copper Ground Bar		

Code **Number of 100 Ohm RTD Sensor Inputs (must be multiple of 6, up to 48 inputs, MAX. 3 RTD's/heater ckt.)**

1	6 (Select if Ambient Sensing panel)	**6**	36
2	12	**7**	42
3	18	**8**	48
4	24	**9**	Other (Call Factory for Assitance)
5	30		

Code **Communications**

1	Standard: ModBus RTU/RS485 or Modbus TCP/Ethernet
2	ModBus TCP/Wireless
3	BacNet
9	Other

Code **Temperature Sensing Solutions**

1	Standard Wired Sensing
2	Wireless Sensing
3	Dry Contact Closure for Ambient Sensing Thermostat
4	Remote Snow Sensor Input (i.e. SIT, GIT & CIT type sensors)

Code **Enclosure (size determined by table 1)**

1	NEMA 4 Single-Door Wall-Mount Steel Enclosure 24 X 20 X 10
2	NEMA 4 Single-Door Wall-Mount Steel Enclosure 30 X 30 X 10
3	NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X 36 X 12
4	NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X 36 X 16
5	NEMA 4 Single-Door Wall-Mount Steel Enclosure 60 X 36 X 12
6	NEMA 4 Single-Door Wall-Mount Steel Enclosure 60 X 36 X 16
7	NEMA 4X Stainless Steel Wall-Mount Enclosure 24 X 20 X 10
8	NEMA 4X Stainless Steel Wall-Mount Enclosure 30 X 30 X 10
A	NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 12
B	NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 16
C	NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 12
D	NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 16

CIP-EXT- ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ **Typical Model Number**

IntelliTrace

Ambient Sensing

CIP Base Panel

CIP-EXT Extension Panel

Commercial Heat Tracing Control Panel for Ordinary Areas

Model Number Note

-XXXX Indicates that the design has varied from the order table parameters. This could include one or more of the following non-standard considerations: Special Software or Configuration, Private Branding, Remote Monitoring/Touch-Screen Computer, Sunshield or other Protective Covering, Third Party Approval, Floor Stands, Mounting Options, Special Materials (316 SS) or Coatings, Additional Venting or Cooling, Special Indication or Alarms.

Technical Notes

1. Refer to PK497 for Installation and Operation details
2. Our standard SCCR is 5 kA. Consult sales if a different SCCR is needed.
3. See CIP/CIP-EXT to increase circuits up to 8 loops for 2-4 Circuit Panels and up to 72 Circuits for 6-48 Circuit Panels. 6-48 Circuit Extension Panels can not be added to 2-4 Circuit Panels but 2-4 circuit extension panels can be added to 6-8 Circuit Panels (up to 72 circuits)

Table 1: Enclosure Size Selection

Circuits - Poles	Enclosure Size - H x W x D In (cm)	
	2 Inputs / Output	3 Inputs / Output
2 Loop 1P	24x20x10	24x20x10
2 Loop 2P	24x20x10	24x20x10
4 Loop 1P	24x20x10	24x20x10
4 Loop 2P	24x20x10	24x20x10
6 Loop 1P	24x20x12	24x20x12
6 Loop 2P	30x30x10	30x30x10
12 Loop 1P	30x30x10	30x30x10
12 Loop 2P	42x36x12	42x36x12
18 Loop 1P	42x36x12	42x36x12
18 Loop 2P	60x36x12	60x36x12
24 Loop 1P	42x36x12	42x36x12
24 Loop 2P	42x36x16	42x36x16
30 Loop 1P	60x36x12	60x36x12
30 Loop 2P	60x36x16	60x36x16
36 Loop 1P	60x36x12	60x36x12
36 Loop 2P	60x36x16	60x36x16
42 Loop 1P	60x36x16	60x36x16
42 Loop 2P	Consult factory	Consult factory
48 Loop 1P	60x36x16	60x36x16
48 Loop 2P	Consult factory	Consult factory

Spare/Replacement Parts for CIP & CIP-EXT

Part Number	Description
N/A	SSR/GFI Power Control Assy, with Heat Sink
0135-02273	Control Module Board Assembly
0135-02262	RTD Sensor Input Board Assembly
0135-02263	Digital Distribution Comm Board Assembly (-EXT panels only)
0002-60054	SSR, 40 Amp rated
0029-00640	SSR Thermstrate Material
0025-05312	Common Alarm Relay
0025-05309	Common Alarm Relay (CID2 Panels Only)
0081-10063	Power Supply 5VDC 6A 30W DIN Rail Mount
0081-10047	Power Supply 24VDC 2.5A 60W DIN Rail Mount
0108-70509	CIP 10" Display
0108-70507	CIP 7" Display
0017-43753	15A 1P Circuit Breaker (120V or 277V)
0017-43754	20A 1P Circuit Breaker (120V or 277V)
0017-43755	30A 1P Circuit Breaker (120V or 277V)
0017-43756	40A 1P Circuit Breaker (120V)
0017-43757	50A 1P Circuit Breaker (120V)
0017-43758	15A 2P Circuit Breaker (208/240V or 480V)
0017-43759	20A 2P Circuit Breaker (208/240V or 480V)
0017-43760	30A 2P Circuit Breaker (208/240V or 480V)
0017-43761	40A 2P Circuit Breaker (208/240V)
0017-43762	50A 2P Circuit Breaker (208/240V)
0023-15097-0001	6" (15 cm) Ribbon Cable with Connectors
0023-15097-0002	72" (180 cm) Ribbon Cable with Connectors

Accessories for CIP & CIP-EXT

Part Number	Description
PCN 514263	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 50 FT
PCN 514255	RTD Ext Wire, 3-wire, 16 ga, Cu, shielded, 200 FT

WeatherTrace

Freeze Protection Heat Trace Panels

- **Standard NEMA 4 Enclosures**
- **NEMA 4X Stainless Steel Enclosure Option**
- **Hand/Off/Auto Selector Switch**
- **12, 18, 20, 30, and 42 Position Panelboards**
- **15, 25, 30, and 40 Amp Single-pole and Double-pole 30 mA Ground Fault Thermal-Magnetic Circuit Breakers**
- **100 and 225 Amp Main Bus**
- **Single-phase 120/240 VAC**
- **Three-phase 120/208 VAC 4-Wire**
- **Three-phase 277 VAC 4-Wire**
- **100 and 250 Amp Main Disconnect Switch Option**
- **Ambient and Line Sensing Control**
- **WeatherTrace Sentinel Monitoring with Common Alarm and Re-Ring Feature***
- **Z-Purge Pressurization System for Class 1, Division 2 Option**
- **Enclosure Heater Option for Subzero Ambients**
- **UL and cUL Third Party Approvals**

* The re-ring feature allows the WeatherTrace panel to communicate additional alarm conditions in the system by momentarily clearing and resetting the alarm output contact. The customer's monitoring device such as a PLC or DCS would interpret this condition to alert the operators of an additional alarm occurring.

FPASM Model Shown

Description

The Chromalox FPAS, FPLS, FPASM, and FPLSM series freeze protection heat trace panels offer power-distribution, ground-fault protection, individual circuit alarming, line and ambient sensing control.

The panels are housed in NEMA 4 enclosures for indoor/outdoor applications. NEMA 4X 304 stainless steel enclosures may be selected as an option for more harsh environments.

The standard models are available in 12, 18, 20, 30, and 42 position panelboards with 100 and 225 amp bus ratings in Single and Three-Phase configurations.

Branch circuit breakers are available in 20, 25, 30, and 40 amp single-pole and two-pole configurations with 30 mA ground-fault equipment protection.

FPAS – Freeze Protection Ambient Sensing Series
The FPAS series controls multiple heat trace circuits via an ambient sensing external thermostat, external electronic controller or via an ambient sensing, door mounted 1601E controller. Chromalox recommended controllers include: RTAS, RTAS-EP, B100, E100 or the 1601E microprocessor controller.

The FPAS may be operated in two modes; automatically with the external controller, or in manual override via the Hand/Off/Auto selector switch.

FPLS – Freeze Protection Line Sensing Series
The FPLS series controls each heat trace line with individual Chromalox RTBC, RTBC-EP, E-100 or E121 pipe line sensing controls. Each circuit should be controlled by an individual sensor/controller. Depending on the application, controllers can switch more that one circuit.

FPASM – Freeze Protection Ambient Sensing Monitor Series

The FPASM WeatherTrace with the Sentinel System, continually monitors the supply voltage to each individual heat trace circuit. Loss of voltage or a ground fault condition will trigger an automatic alarm condition, alerting plant personnel of critical process problems and reducing downtime. An annunciator panel then identifies the faulted zone and a Common Alarm is activated with the re-ring feature.*

The FPASM series controls multiple heat trace circuits via an ambient sensing external thermostat, external electronic controller or via an ambient sensing, door mounted 1601E controller. Chromalox recommended controllers include: RTAS, RTAS-EP, B100, E100 or the 1601E microprocessor controller.

The FPASM may be operated in two modes; automatically with the external controller or in manual override via the Hand/Off/Auto selector switch.

FPLSM – Freeze Protection Line Sensing Monitor Series
The FPLSM series controls heat trace lines with individual Chromalox RTBC, RTBC-EP, E100 or E121 pipe line sensing controls. Each circuit should be controlled by and individual sensor/controller. Depending on the application, controllers can switch more that one circuit.

The FPLSM is identical to the FPLS Plug. It features the WeatherTrace Sentinel which continually monitors the supply voltage to each individual heat trace circuit without the need for additional staff. Loss of voltage or a ground fault condition triggers an automatic alarm condition, alerting plant personnel of critical process problems and reducing downtime. An annunciator panel then identifies the faulted zone and a Common Alarm is activated with the re-ring feature.*

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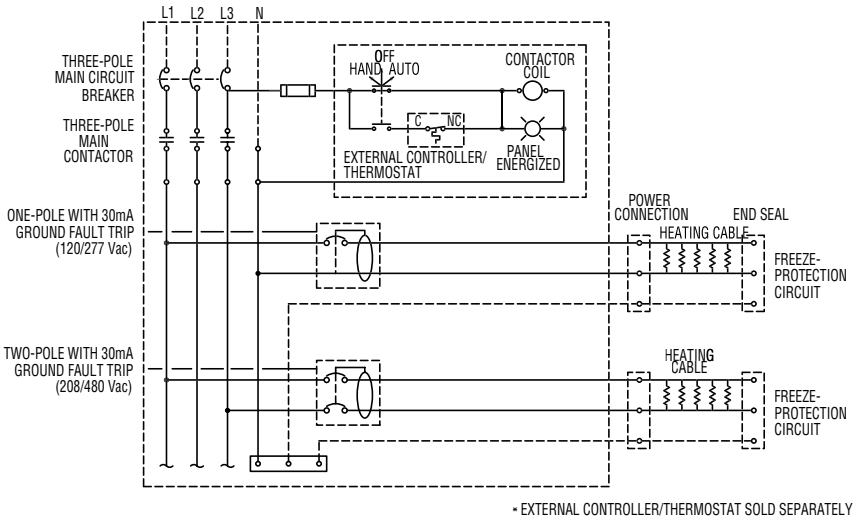
WeatherTrace

Freeze Protection Heat Trace Panels *(cont'd.)*

Specifications

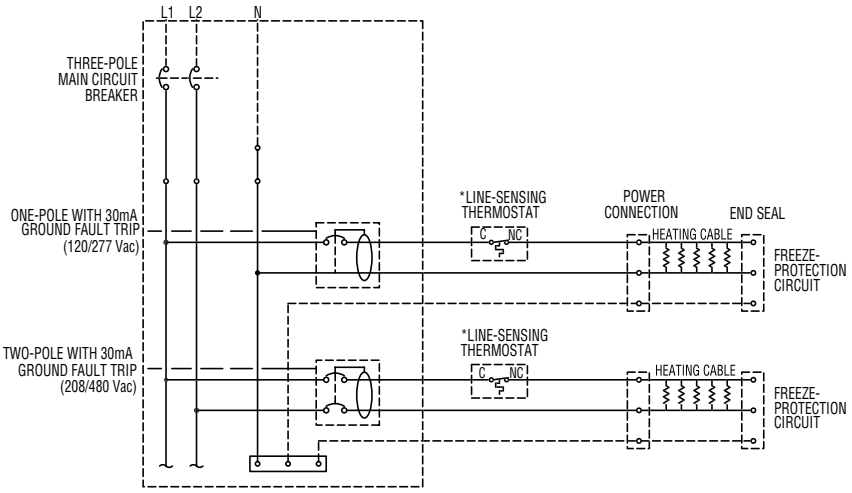
Power Source	120/240 VAC Single Phase 120/208 VAC Three-Phase 4-Wire 277/480 VAC Three-Phase 4-Wire
Ambient Operating Temperature	-32˚F to 122˚F (With Enclosure Heater)
Field Wire Size	14 - 18 AWG (15 - 30 Amp C.B), 8 - 4 AWG (40 Amp C.B)
Ground Fault Breaker Type	30mA Ground Fault Equipment Protection
Enclosure	NEMA 4 or NEMA 4X 304 Stainles Steel (option)
Main Bus Size	100 Amp and 225 Amp
Main Breaker Size	100 Amp Two-Pole Main Disconnect Switch with through Door Rotary Handle 250 Amp Three-Pole Main Disconnect Switch with through Door Rotary Handle
Pressurization System	Type Z Purge Pressurization System for Class 1 Division 2 Area
Approvals	UL and cUL

Ambient Sensing
Three Phase
208/120 4-Wire or 480/277 4-Wire



* EXTERNAL CONTROLLER/THERMOSTAT SOLD SEPARATELY

Line Sensing
Single Phase
240/120



*EXTERNAL CONTROLLER/THERMOSTAT SOLD SEPARATELY

WeatherTrace

Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Remote Mounted Control Accessories	PCN
RTAS Thermostat	389589
RTAS-EP Division 2 Thermostat	389597
B-100 NEMA 4X Thermostat	305365
B-121 Division 2 THermostat	384104
THL NEMA 4X Thermostat	387014
TXL Division 2 Thermostat	387022
LCD-1 Snow Switch	389781

Model **240/120 VAC Single-Phase, 208/120 VAC Three-Phase 4-Wire**

FPAS FPAS series Ambient Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPAS series offers the following standard features: NEMA 4 enclosure, Hand/Off/Auto Selector Switch, Load Energized Indicator Lamp, Main Power On Lamp, Main Contactor, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Remote or Local Ambient Temperature Controller, Enclosure Heater, and Type Z Pressurization System. The FPAS series panels have UL and cUL Third Party Approvals.

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
12	12 Positions (100 Amp Main Rating)	(12) 1-pole breakers or (6) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
20	20 Positions (100 Amp Main Rating)	(20) 1-pole breakers or (10) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
30	30 Positions (225 Amp Main Rating)	(30) 1-pole breakers or (14) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
42	42 Positions (225 Amp Main Rating)	(42) 1-pole breakers or (20) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Line Voltage	Heater Load
1	240/120 VAC Single Phase, 3-Wire	120 VAC
2	208/120 VAC 3-Phase, 4-Wire	120 VAC
3	208/120 VAC 3-Phase, 4-Wire	208 VAC (240 VAC Cable)
4	240/120 VAC Single Phase, 3-Wire	240 VAC

Code	Enclosure Rating
1	NEMA 4 Single Door, Steel Wall-Mount Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 12 & 20)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 30 & 42)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	25 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
4(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
5(*)	15 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
6(*)	20 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
7(*)	25 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
8(*)	30 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
9(*)	40 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 65K Fault Protection (Code 12 & 20 Only)
2	250 Amp with 65K Fault Protection (Code 30 & 42 Only)
	Main Circuit Breakers for 240/120V line Voltage
A	80 Amp, 2 Pole Circuit Breaker
B	175 Amp, 2 Pole Circuit Breaker
C	250 Amp, 2 Pole Circuit Breaker
	Main Circuit Breakers for 208/120V line Voltage
F	50 Amp, 3 Pole Circuit Breaker
G	100 Amp, 3 Pole Circuit Breaker
H	150 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Ambient Controller
0	None (See Accessories)
5	6040-R00000 1/16 DIN Controller (Panel Door Mounted)

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPAS-	**42**	**2**	**1**	**1(20)**	**2**	**5**	**0**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

100 Amp Panel Board	Breaker Rating					225 Panel Board	Breaker Rating				
	Maximum Number of Breakers						Maximum Number of Breakers				
Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	40 Amp	Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	40 Amp
Code 1 (1 Pole CB)	16	12	10	8		Code 1 (1 Pole CB)	37	28	22	18	
Code 2 (1 Pole CB)	20	18	15	12		Code 2 (1 Pole CB)	42	42	33	28	
Code 3 (2 Pole CB)	10	10	8	7	5	Code 3 (2 Pole CB)	20	20	19	16	14
Code 4 (2 Pole CB)	8	6	5	4	3	Code 4 (2 Pole CB)	18	14	11	9	7

WeatherTrace

Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **277 VAC 4-Wire**

FPAS FPAS series Ambient Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPAS series offers the following standard features: NEMA 4 enclosure, Hand/Off/Auto Selector Switch, Load Energized Indicator Lamp, Main Power On Lamp, Main Contactor, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Remote or Local Ambient Temperature Controller, Enclosure Heater, and Type Z Pressurization System. The FPAS series panels have UL and cUL Third Party Approvals.

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
181	18 Positions (100 Amp Main Rating)	(8) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
301	30 Positions (100 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
421	42 Positions (100 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)
302	30 Positions (225 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
422	42 Positions (225 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Power Source	Load Voltage
1	3 Phase Power, 277/480 VAC 4-Wire	277 VAC (240 VAC Cable)

Code	Enclosure Rating
1	NEMA 4 Single-Door, Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 181, 301 & 302)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 421 & 422)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
4(*)	40 Amp 1-Pole GFI Circuit Breaker for 120 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 65K Fault Protection (Code 12 & 20 Only)
2	250 Amp with 65K Fault Protection (Code 30 & 42 Only)
	Main Circuit Breakers
A	30 Amp, 3 Pole Circuit Breaker
B	50 Amp, 3 Pole Circuit Breaker
C	70 Amp, 3 Pole Circuit Breaker
F	125 Amp, 3 Pole Circuit Breaker
G	175Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Ambient Controller
0	None (See Accessories)
5	6040-R00000 1/16 DIN Controller (Panel Door Mounted)

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPAS-	**302**	**1**	**1**	**2(10)**	**2**	**5**	**1**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

Breaker Rating				
	Maximum Number of Breakers			
277 VAC	15 Amp	20 Amp	30 Amp	40 Amp
100 amp Panel Board	20	18	12	9
225 amp Panel Board	20	20	20	20

Remote Mounted Control Accessories	PCN
RTAS Thermostat	389589
RTAS-EP Division 2 Thermostat	389597
B-100 NEMA 4X Thermostat	305365
B-121 Division 2 THermostat	384104
THL NEMA 4X Thermostat	387014
TXL Division 2 Thermostat	387022
LCD-1 Snow Switch	389781

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WeatherTrace

Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **240/120 VAC Single-Phase, 208/120 VAC Three-Phase 4-Wire**

FPLS FPLS series Line Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPLS series offers the following standard features: NEMA 4 enclosure, Main Power on Lamp and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Enclosure Heater, and Type Z Pressurization System. The FPLS series have UL and cUL Third Party Approvals..

Panelboard

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
12	12 Positions (100 Amp Main Rating)	(12) 1-pole breakers or (6) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
20	20 Positions (100 Amp Main Rating)	(20) 1-pole breakers or (10) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
30	30 Positions (225 Amp Main Rating)	(30) 1-pole breakers or (14) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
42	42 Positions (225 Amp Main Rating)	(42) 1-pole breakers or (20) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)

Line Voltage

Code	Line Voltage	Heater Load
1	240/120 VAC, Single Phase, 3 Wire	120 VAC
2	208/120 VAC, 3 Phase, 4 Wire	120 VAC
3	208/120 VAC, 3 Phase, 4 Wire	208 VAC (240 VAC Cable)
4	240/120 VAC, Single Phase, 3 Wire	240 VAC

Enclosure Rating

Code	Enclosure Rating
1	NEMA 4 Single-Door, Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 12 & 20)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 30 & 42)

Branch Circuit Breaker (DO NOTEXCEED MAIN RATING)

Code	Branch Circuit Breaker (DO NOTEXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	25 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
4(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
5(*)	15 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
6(*)	20 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
7(*)	25 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
8(*)	30 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
9(*)	40 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load

Main Disconnect Switch Selection

Code	Main Disconnect Switch Selection
0	None
	Disconnects
1	100 Amp with 65K Fault Protection (Code 12 & 20 Only)
2	250 Amp with 65K Fault Protection (Code 30 & 42 Only)
	Main Circuit Breakers for 240/120V line Voltage
A	80 Amp, 2 Pole Circuit Breaker
B	175 Amp, 2 Pole Circuit Breaker
C	250 Amp, 2 Pole Circuit Breaker
	Main Circuit Breakers for 208/120V line Voltage
F	50 Amp, 3 Pole Circuit Breaker
G	100 Amp, 3 Pole Circuit Breaker
H	150 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Enclosure Heater

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Pressurization Control System

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPLS-	**20**	**1**	**1**	**1(4)**	**2**	**0**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

100 Amp Panel Board	Breaker Rating				225 Panel Board	Breaker Rating			
	Maximum Number of Breakers					Maximum Number of Breakers			
Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp
Code 1 (1 Pole CB)	16	12	10	8	Code 1 (1 Pole CB)	37	28	22	18
Code 2 (1 Pole CB)	20	18	15	12	Code 2 (1 Pole CB)	42	42	33	28
Code 3 (2 Pole CB)	10	10	8	7	Code 3 (2 Pole CB)	20	20	19	16
Code 4 (2 Pole CB)	8	6	5	4	Code 4 (2 Pole CB)	18	14	11	9

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WeatherTrace

Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model	277 VAC 4-Wire

FPLS FPLS series Line Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPLS series offers the following standard features: NEMA 4 enclosure, Main Power on Lamp and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Enclosure Heater, and Type Z Pressurization System. The FPLS series have UL and cUL Third Party Approvals.

Panelboard

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
181	18 Positions (100 Amp Main Rating)	(8) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
301	30 Positions (100 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
421	42 Positions (100 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)
302	30 Positions (225 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
422	42 Positions (225 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)

Power Source

Code	Power Source	Load Voltage
1	3 Phase Power, 277/480 VAC 4-Wire	277 VAC (240 VAC Cable)

Enclosure Rating

Code	Enclosure Rating
1	NEMA 4 Single-Door, Steel Wall-Mount Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 181, 301 & 302)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 421 & 422)

Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load

Main Disconnect or Main Circuit Breaker Selection

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 25K Fault Protection (Code 181, 301 & 421 Only)
2	250 Amp with 35K Fault Protection
	Main Circuit Breakers
A	30 Amp, 3 Pole Circuit Breaker
B	50 Amp, 3 Pole Circuit Breaker
C	70 Amp, 3 Pole Circuit Breaker
F	125 Amp, 3 Pole Circuit Breaker
G	175 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Enclosure Heater

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Pressurization Control System

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPLS-	**181**	**2**	**1**	**1(4)**	**1**	**1**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

Breaker Rating			
	Maximum Number of Breakers		
277 VAC	15 Amp	20 Amp	30 Amp
100 amp Panel B	20	18	12
225 amp Panel B	20	20	20

WeatherTrace Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Remote Mounted Control Accessories	PCN
RTAS Thermostat	389589
RTAS-EP Division 2 Thermostat	389597
B-100 NEMA 4X Thermostat	305365
B-121 Division 2 THermostat	384104
THL NEMA 4X Thermostat	387014
TXL Division 2 Thermostat	387022
LCD-1 Snow Switch	389781

Model **FPASM 240/120 VAC Single-Phase, 208/120 VAC Three-Phase Wire**

FPASM FPASM series Ambient Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPASM series offers the following standard features: NEMA 4 enclosure, Hand/Off/Auto Selector Switch, Load Energized Indicator Lamp, Main Power On Lamp, Main Contactor, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection.The FPASM weatherTRACE Sentinel continually monitors the supply voltage to each individual heat trace circuit. Loss of voltage or ground fault condition triggers automatic alarm condition to an annunciator panel which identifies the faulted zone and a Common Alarm is activated with the Re-Ring Feature. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Remote or Local Ambient Temperature Controller, Enclosure Heater, and Type Z Pressurization System. The FPASM series have UL and cUL Third Party Approvals.

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
12	12 Positions (100 Amp Main Rating)	(12) 1-pole breakers or (6) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
20	20 Positions (100 Amp Main Rating)	(20) 1-pole breakers or (10) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
30	30 Positions (225 Amp Main Rating)	(30) 1-pole breakers or (14) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
42	42 Positions (225 Amp Main Rating)	(42) 1-pole breakers or (20) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Line Voltage	Heater Load
1	240/120 VAC, Single Phase, 3 Wire	120 VAC
2	208/120 VAC, 3 Phase, 4 Wire	120 VAC
3	208/120 VAC, 3 Phase, 4 Wire	208 VAC (240 VAC Cable)
4	240/120 VAC, Single Phase, 3 Wire	240 VAC

Code	Enclosure Rating
1	NEMA 4 Single-Door, Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 12 & 20)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 30 & 42)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	25 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
4(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
5(*)	15 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
6(*)	20 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
7(*)	25 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
8(*)	30 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
9(*)	40 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 65K Fault Protection (Code 12 & 20 Only)
2	250 Amp with 65K Fault Protection (Code 30 & 42 Only)
	Main Circuit Breakers for 240/120V line Voltage
A	80 Amp, 2 Pole Circuit Breaker
B	175 Amp, 2 Pole Circuit Breaker
C	250 Amp, 2 Pole Circuit Breaker
	Main Circuit Breakers for 208/120V line Voltage
F	50 Amp, 3 Pole Circuit Breaker
G	100 Amp, 3 Pole Circuit Breaker
H	150 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Ambient Controller
0	None (See Accessories)
5	6040-R00000 1/16 DIN Controller (Panel Door Mounted)

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPASM-	**42**	**2**	**1**	**5(20)**	**2**	**5**	**0**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

100 Amp Panel Board	Breaker Rating					225 Panel Board	Breaker Rating				
	Maximum Number of Breakers						Maximum Number of Breakers				
Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	40 Amp	Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	40 Amp
Code 1 (1 Pole CB)	16	12	10	8		Code 1 (1 Pole CB)	37	28	22	18	
Code 2 (1 Pole CB)	20	18	15	12		Code 2 (1 Pole CB)	42	42	33	28	
Code 3 (2 Pole CB)	10	10	8	7	5	Code 3 (2 Pole CB)	20	20	19	16	14
Code 4 (2 Pole CB)	8	6	5	4	3	Code 4 (2 Pole CB)	18	14	11	9	7

WeatherTrace
Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **277 VAC 4-Wire; ambient rating 40°C (104°F)**

FPASM FPASM series Ambient Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPASM series offers the following standard features: NEMA 4 enclosure, Hand/Off/Auto Selector Switch, Load Energized Indicator Lamp, Main Power On Lamp, Main Contactor, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection.The FPASM weatherTRACE Sentinel continually monitors the supply voltage to each individual heat trace circuit. Loss of voltage or ground fault condition triggers automatic alarm condition to an annunciator panel which identifies the faulted zone and a Common Alarm is activated with the Re-Ring Feature. Options include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Remote or Local Ambient Temperature Controller, Enclosure Heater, and Type Z Pressurization System. The FPASM series have UL and cUL Third Party Approvals..

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
181	18 Positions (100 Amp Main Rating)	(8) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
301	30 Positions (100 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
421	42 Positions (100 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)
302	30 Positions (225 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
422	42 Positions (225 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Power Source	Heater Load
1	3 Phase Power, 277/480 VAC 4-Wire	277 VAC (240 VAC Cable)

Code	Enclosure Rating
1	NEMA 4 Single-Door, Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 181, 301 & 302)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 421 & 422)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 277 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 277 VAC load
3(*)	30 Amp 1-Pole GFI Circuit Breaker for 277 VAC load
4(*)	40 Amp 1-Pole GFI Circuit Breaker for 277 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnect
1	100 Amp with 25K Fault Protection (Code 181, 301 & 421 Only)
2	250 Amp with 35K Fault Protection
	Main Circuit Breakers
A	30 Amp, 3 Pole Circuit Breaker
B	50 Amp, 3 Pole Circuit Breaker
C	70 Amp, 3 Pole Circuit Breaker
F	125 Amp, 3 Pole Circuit Breaker
G	175Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Ambient Controller
0	None (See Accessories)
5	6040-R00000 1/16 DIN Controller (Panel Door Mounted)

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPASM-	**422**	**1**	**1**	**1(20)**	**2**	**5**	**0**	**0**	**Typical Model Number**

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

Breaker Rating				
	Maximum Number of Breakers			
277 VAC	15 Amp	20 Amp	30 Amp	40 Amp
100 amp Panel Board	20	18	12	9
225 amp Panel Board	20	20	20	20

Remote Mounted Control Accessories	PCN
RTAS Thermostat	389589
RTAS-EP Division 2 Thermostat	389597
B-100 NEMA 4X Thermostat	305365
B-121 Division 2 THermostat	384104
THL NEMA 4X Thermostat	387014
TXL Division 2 Thermostat	387022
LCD-1 Snow Switch	389781

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WeatherTrace
Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model	240/120 VAC Single-Phase, 208/120 VAC Three-Phase 4-Wire
FPLSM	FPLSM series Line Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications. The Chromalox FPLSM series offers the following standard features: NEMA 4 enclosure, Main Power On Lamp, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. The FPLSM WeatherTRACE Sentinel continually monitors the supply voltage to each individual heat trace circuit. Loss of voltage or a ground fault condition trggers and automatic alarm to an annunciator panel which identifies the faulted zone and a Common Alarm is activated with the Re-Ring Feature. Options Include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Cabinet Heater, andType Z Pressurization System. The FPLSM series panels have UL and cUL Third Party Approvals.

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
12	12 Positions (100 Amp Main Rating)	(12) 1-pole breakers or (6) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
20	20 Positions (100 Amp Main Rating)	(20) 1-pole breakers or (10) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
30	30 Positions (225 Amp Main Rating)	(30) 1-pole breakers or (14) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
42	42 Positions (225 Amp Main Rating)	(42) 1-pole breakers or (20) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Line Voltage	Heater Load
1	240/120 VAC, Single Phase, 3 Wire	120 VAC
2	208/120 VAC 3-Phase, 4-Wire	120 VAC
3	208/120 VAC 3-Phase, 4-Wire	208 VAC (240 VAC Cable)
4	240/120 VAC Single Phase, 3 Wire	240 VAC

Code	Enclosure Rating
1	NEMA 4 Single Door, Steel Wall-Mount Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 12 & 20)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure (Codes 30 & 42)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
3(*)	25 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
4(*)	30 Amp 1-Pole GFI Circuit Breaker for 120 VAC load
5(*)	15 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
6(*)	20 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
7(*)	25 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load
8(*)	30 Amp 2-Pole GFI Circuit Breaker for 208/240 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 65K Fault Protection (Code 12 & 20 Only)
2	250 Amp with 65K Fault Protection (Code 30 & 42 Only)
	Main Circuit Breakers for 240/120V Line Voltage
A	80 Amp, 2 Pole Circuit Breaker
B	175 Amp, 2 Pole Circuit Breaker
C	250 Amp, 2 Pole Circuit Breaker
	Main Circuit Breakers for 208/120V Line Voltage
F	50 Amp, 3 Pole Circuit Breaker
G	100 Amp, 3 Pole Circuit Breaker
H	150 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPLSM-	**30**	**2**	**1**	**2(30)**	**3**	**5**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

100 Amp Panel Board	Breaker Rating				225 Panel Board	Breaker Rating			
	Maximum Number of Breakers					Maximum Number of Breakers			
Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp	Line Voltage	15 Amp	20 Amp	25 Amp	30 Amp
Code 1 (1 Pole CB)	16	12	10	8	Code 1 (1 Pole CB)	37	28	22	18
Code 2 (1 Pole CB)	20	18	15	12	Code 2 (1 Pole CB)	42	42	33	28
Code 3 (2 Pole CB)	10	10	8	7	Code 3 (2 Pole CB)	20	20	19	16
Code 4 (2 Pole CB)	8	6	5	4	Code 4 (2 Pole CB)	18	14	11	9

WeatherTrace
Freeze Protection Heat Trace Panels *(cont'd.)*

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model **277 VAC 4-Wire; Ambient Rating 40°C (104°F)**

FPLSM FPLSM series Line Sensing Heat Trace Panels are designed for use in Freeze Protection and Snow Melt applications. The Chromalox FPLSM series offers the following standard features: NEMA 4 enclosure, Main Power On Lamp, and Thermal Magnetic Branch Circuit Breakers with 30mA Ground Fault Equipment Protection. The FPLSM WeatherTRACE Sentinel continually monitors the supply voltage to each individual heat trace circuit. Loss of voltage or a ground fault condition trggers and automatic alarm to an annunciator panel which identifies the faulted zone and a Common Alarm is activated with the Re-Ring Feature. The FPLSM Options Include: NEMA 4X 304 Stainless Steel Enclosures, Main Disconnect Switch, Enclosure Heater, andType Z Pressurization System. The FPLSM series panels have UL and cUL Third Party Approvals.

Code	Panelboard	Available Breaker Poles	Enclosure Size HxWxD In, (cm)
181	18 Positions (100 Amp Main Rating)	(8) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
301	30 Positions (100 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
421	42 Positions (100 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)
302	30 Positions (225 Amp Main Rating)	(14) 1-pole breakers	48 x 36 x 10 (122 x 92 x 25)
422	42 Positions (225 Amp Main Rating)	(20) 1-pole breakers	60 x 36 x 10 (152 x 92 x 25)

Code	Power Source	Heater Load
1	3 Phase Power, 277/480 VAC 4-Wire	277 VAC (240 VAC Cable)

Code	Enclosure Rating
1	NEMA 4 Single-Door, Wall-Mount Steel Enclosure
2	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 181, 301 & 302)
3	NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 421 & 422)

Code	Branch Circuit Breaker Selection (DO NOT EXCEED MAIN RATING)
1(*)	15 Amp 1-Pole GFI Circuit Breaker for 277 VAC load
2(*)	20 Amp 1-Pole GFI Circuit Breaker for 277 VAC load
3(*)	30 Amp 1-Pole GFI Circuit Breaker for 277 VAC load

Code	Main Disconnect or Main Circuit Breaker Selection
0	None
	Disconnects
1	100 Amp with 25K Fault Protection (Code 181, 301 & 421 Only)
2	250 Amp with 35K Fault Protection
	Main Circuit Breakers
A	30 Amp, 3 Pole Circuit Breaker
B	50 Amp, 3 Pole Circuit Breaker
C	70 Amp, 3 Pole Circuit Breaker
F	125 Amp, 3 Pole Circuit Breaker
G	175 Amp, 3 Pole Circuit Breaker
J	225 Amp, 3 Pole Circuit Breaker

Code	Enclosure Heater
0	None
1	Thermostat Controlled Enclosure Heater

Code	Pressurization Control System
0	None
1	Type Z Class 1, Division 2

FPLSM-	**181**	**1**	**1**	**1(5)**	**1**	**0**	**0**	**Typical Model Number**

Technical Notes: (*) Enter number of circuit breakers in parenthesis

Note: Maximum number of circuit breakers is dependent on the panelboard size (see panelboard selection) and the current capacity of the panelboard (see table below)

Breaker Rating			
	Maximum Number of Breakers		
277 VAC	15 Amp	20 Amp	30 Amp
100 amp Panel Board	20	18	12
225 amp Panel Board	20	20	20

Power Control Center™

- **Customized High Performance SCR Power Control Systems**
- **Flexible, Modular SCR Buckets**
- **Expand and Adapt to Changing Applications**
- **Minimizes Process Downtime**
- **Rugged Construction**
- **Extensive Built-In Safety Features**

Description

The Power Control Center™ is a modular heating and control system solution that packages our advanced line of high performance SCR power controllers in the same flexible, modular packaging that made motor control centers (MCC) the industry standard for electrical distribution and motor control. Modular design allows for growth and adaptation, allowing the system size and configuration to be changed at any time, or to add on to existing motor control center line-ups.

The heavy duty, interchangeable SCR "buckets" can be easily removed for maintenance and reconfiguration. These buckets economically package all bus work, wiring, contactors and SCR power modules into one enclosure. Each bucket is pre-wired and pre-tested. The centralized electrical bus and molded stabs have no exposed wires and provide easy installation, optimum conductivity and minimum maintenance.

Designed for personnel, equipment and process protection, the compartmentalized design isolates any potential device failure from affecting other units. The units are constructed for long-term service in our ISO9001 and UL certified panel manufacturing facility.

Modular Design

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Power Control Center™ *(cont'd.)*

Specifications

MCC Make or Model	Square D Allen-Bradley Other
Depth	15" or 20"
Bus Bracing (KAIC)	Standard (42K) 65K
Horizontal Bus (Tin Plated Copper)	600 Amps 800 Amps 1200 Amps
Vertical Bus (Tin Plated Copper)	300 Amps 600 Amps
Horizontal Ground Buss (1/4" x 1")	
Vertical Bus Shutters	Available
Vertical Isolation Barriers	Available
Main Feeder Incoming Power	• 3-wire • 4-wire
Main Feeder	• Lugs Only • Circuit Breaker (KAIC) • Non-Fused Disconnect Switch • Fused Disconnect Switch
Plug-In Unit Switchgear	• Circuit Breaker (KAIC) • Non-Fused Disconnect Switch • Fused Disconnect Switch

Isolation Contactor	Available
Auxiliary Contactor	• 1 Normally Open • 1 Normally Closed • 1 Normally Open/ 1 Normally Closed • Other
Contactor Coil Voltage	• Supplied Internal to unit • Field Supplied
Power ON Light	Available
Power Controller	• Single Phase • 3-Phase • 3-Phase, 4 Wire • Single Phase Tap Changer
Load	Resistive Inductive
kW	Specify
Line Voltage	120, 208, 240, 277, 480, Other
Frequency	60 Hz 50 Hz
Control Signal	Specify
I^2T Fusing	Available
Heat Sink Thermal Switch	Available
Ammeter	Available
Voltmeter	Available
Wattmeter	Available
Auto/Manual	Available

Ordering Information

Contact your Local Chromalox Sales office for detailed application specifications.

NEMA
Enclosure Descriptions

Type 1 Enclosures

Type 1 enclosures are intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment in locations where unusual service conditions do not exist. The enclosures shall meet the rod entry and rust-resistance design tests.

Type 3 Enclosures

Type 3 enclosures are intended for outdoor use primarily to provide a degree of protection against windblown dust, rain, and sleet; and to be undamaged by the formation of ice on the enclosure. They shall meet rain, external icing, dust, and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Type 3R Enclosures

Type 3R enclosures are intended for outdoor use primarily to provide a degree of protection against falling rain; and to be undamaged by the formation of ice on the enclosure. They shall meet rod entry, rain, external icing , and rust-resistance design tests. They are not intended to provide protection against conditions such as dust, internal condensation or internal icing.

Type 4 Enclosures

Type 4 enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure. They shall meet the hosedown and external icing design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

Type 4X Enclosures

Type 4X enclosures are intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure. They shall meet the hosedown, external icing, and corrosion-resistance design tests. They are not intended to provide protection against conditions such as internal condensation or internal icing.

NEMA 7

Enclosures capable of withstanding the pressures resulting from an internal explosion of specified gas, and contain such an explosion sufficiently that an explosive gas-air mixture existing in the atmosphere surrounding the enclosure will not be ignited. Enclosed heat-generating devices will not cause external surfaces to reach temperatures capable of igniting explosive gas-air mixtures in the surrounding atmosphere.

Type 12 Enclosures

Type 12 enclosures are intended for indoor use primarily to provide a degree of protection against dust, falling dirt, and dripping noncorrosive liquids. They shall meet drip, dust, and rust-resistance design tests. They are not intended to provide protection against conditions such as internal condensation. Ventilating a Nema 12 panel alters the rating to Nema 1.

For more detailed NEMA descriptions, refer to the Technical section of this catalog.

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Power Control Panel Options

Air Filter Kits

This option provides filters to cover the intake and exhaust ports in conjunction with any louvers or fans required. Filters are constructed of aluminum, are washable and provide good arrestance of airborne particles with minor pressure drop. The exhaust port filters are removed from their slide racks inside the enclosure and the intake filter and grill are removed via thumb screws outside the enclosure.

Ammeter, Single Phase

A current transformer, integrator board and door mounted ammeter reads the average load current.

Ammeter, Three Phase

A set of three current transformers, an integrator board, a door mounted ammeter and a four position switch permits the customer to read the average line current on any one of the three phases. The four position switch provides “OFF”/”Phase One”/”Phase Two”/”Phase Three” positions.

Annunciation, Audible Horn

This option provides an audible horn to alarm on shutdown or any other alarm condition specified. An acknowledge pushbutton is provided. The horn has NEMA 7 classification, is mounted on the outside of the box and provides approximately 112 dBA at 4 feet. (This option is for the horn only. The alarm signal must be provided by another option or by the controller.)

Annunciation, Flashing Beacon

This option provides a flashing light to alarm on shutdown or any other alarm condition specified. An acknowledge pushbutton is provided. The beacon has NEMA 4 classification and is mounted on the outside of the box. (This option is for the flashing light only. The alarm signal must be provided by another option or by the controller.)

Calibration, Firing Package

This option applies to any special firing package calibration using the standard control signal input range of 4-20mA, 1-5 VDC, etc. For Calibration outside the standard range, consult the factory.

Cascade Control

This option includes two 2104 controllers for heater applications having response lags. The “upper” 2104 is the master controller and receives the setpoint selection for the process. The lower 2104 is the slave controller and controls the actual sheath temperature of the heater, with one alarm setpoint functioning to provide hi-limit shutdown function.

Circuit Breaker

This option replaces our standard mechanical disconnect with a circuit breaker to provide automatic overcurrent protection. A variety of circuit breaker sizes are available. (NOTE: The solid state devices are protected by sub-cycle fuses and, therefore, circuit breakers are usually not necessary.)

Continuous Control Power

This option applies to control panels with shunt trip mechanisms (panels rated at 125 amperes and above), and can also apply to panels of 125 ampacity or less which have shutdown contactors. It provides circuitry to allow instrument power to remain on when the disconnect or shutdown contactor is tripped. An internal switch is provided to turn the instrument power off when desired and a protective shield is provided around the control transformer. Warning signs are also included.

Control Relay, DPDT

This option provides a 10A, 120 VAC DPDT relay with 120 VAC coil leads and all contact leads (both NO and NC) wired to a terminal block for customer use. (NOTE: AC power is customer provided.)

Disconnect Trip, Undervoltage

This option provides a trip to disconnect the voltage from the load when the line voltage falls approximately 40-60% of the coil rating. The panel would then have to be manually reset after the voltage level reaches 80% of the coil rating. Option applies only to models over 125 amperes.

Drawings, Approval

This option applies when the customer requires approval drawings prior to release for manufacturing. (Record documents are normally shipped with each unit.) With this option, we provide one reproducible and three copies of the proposed layout and electrical schematic for customer approval. The production process does not begin until after the Approval Drawings have been returned by the customer. If the approval documents requested are more extensive, consult the factory for pricing.

Floor Stand

This option provides a 12" stand kit for any wall mounted enclosure, making it a free standing floor model.

Fusing, Sub-Circuit

Standard fusing is designed for internal component protection (i.e., SCRs, diodes, firing package and control transformer). This option applies when the customer wants the panels to include fuses for load protection. To perform this task, we must know the number of circuits involved and the ampere rating for each. Therefore, the factory must be consulted on a case-by-case basis. In most cases, the Power Distribution Blocks Option will also be required.

Ground Fault Interrupt

The ground fault interrupt option monitors for ground faults adjustable from 5mA to 100mA. The option consists of a ground fault detector and a current transformer (CT). When the circuit detects a ground fault greater than the set level, the circuit will shut down the panel.

Heaters, Internal Panel

This option provides for a strip heater and a thermostat to maintain the panel’s internal temperature, thus preventing condensation, freezing of water-cooled components and protection of electronic components. For severe environmental conditions, consult the factory.

Power Control Panel Options *(cont'd.)*

Indicator Lights

Standard panels have an amber power "ON" lamp which indicates that the disconnect mechanism is in the ON position and main power is applied to the panel. This option applies to other lights desired on the panel. The application of the lamp and the color of the lens desired must be defined by the customer. Some of the applications could be: contactor "ON" indication, alarm shutdown lamp, overtemperature lamp, pump "ON" lamp, etc. Standard lens colors are as follows:

Lens Color	Indicator Status
Amber	Caution or Equipment ON
Green	Safe or Normal
Red	Emergency Condition
Blue	Condition Indication
White/Clear	Normal Operation or Condition Indication

Instruction Manuals

One set of instruction manuals and drawing is shipped with each piece of equipment. This option covers extra copies of instruction manuals and drawings that may be desired. Extra instruction manuals can be shipped either with the units or separately to another location. Depending upon the model, standard instruction manuals include some combination of: a drawing of the power panel, an electrical schematic, an instruction manual on each electronic temperature controller, an instruction manual on the power controller and a one or two page addendum which describes the options included and the overall operation of the panel. Instruction manuals more extensive than this will require consultation with the factory.

Interlocks, Remote Shutdown

The shutdown circuitry on the overtemperature controller will be routed to and from a pair of jumpered terminal point connections. To interlock a remote shutdown device with the power panel, the customer must install a normally closed contact device which will open upon intent to shut down the panel. For panels rated at 125 amperes and less, the design will be via interruption of power to the shutdown contactor. For power panels rated at 200 ampere capacity and greater, the design will be via interruption of the power to the control relay which engages power to the shunt trip unit, tripping out the disconnect. As many of these interrupt connections can be provided as desired.

Light, Internal Panel Utility

This option provides an 18 inch, 15 watt fluorescent light in the power panel with an ON/OFF switch. The light is positioned toward the front top of the enclosure. The 120 VAC power for the light must be supplied by the customer to a terminal strip. If the panel is to supply the power for the light, the factory should be consulted for sizing the control transformer.

Meter, Kilowatt Hour (Power Consumption)

This option provides a cumulative kilowatt hour meter for monitoring power consumption. It includes a watt transducer, power supply, current transformers (if required), integrator board and a resettable display meter. If the customer desires to maintain readings when the disconnect is in the OFF position, the Continuous Control Power option should be selected.

Operation Voltage, 380 VAC

This option provides for operation at 380 VAC 3 phase.

Operation Voltage, 415 VAC

This option provides for operation at 415 VAC 3 phase.

Operation Voltage, 600 VAC

This option provides for operation at 600 VAC 3 phase.

Partial Load Failure

The Partial Load Failure Detection Option will detect a heater failure in single or three phase circuits. This product is essential for processes where the loss of more than one heating element can cause loss of product or expensive unscheduled maintenance.

The option consists of PLF (Partial Load Failure Boards), current transformers, and indication on the panel of a heater failure.

Power Distribution Blocks

This option provides external connections for six circuits instead of the standard three. The power distribution block to load wiring must exit from the top of the enclosure. If this is not satisfactory, consult the factory.

Reset Pushbutton

This option is necessary when a latching alarm function is desired in a NEMA 3R cabinet, and permits the resetting of the alarm circuit without opening the integrally hinged window.

Shutdown, Phase Loss

This option provides for panel shutdown upon loss of any phase of a 3 phase system. A phase loss relay is wired phase-to-phase on the load side of the I^2T fuses with the output of the relay powering the coil of a 10A, 115 VAC SPDT relay wired to shut down the panel. The unused relay contacts are wired to a terminal block for customer use. On shunt trip models, a normally closed contact is available.

Stock Product Modification

This option enables the removal of prefabricated equipment from stock for customer required modification, when deemed feasible and necessary for fast delivery.

Switch, Auto/OFF/Manual Potentiometer

This option provides a rotary switch to select either automatic control (temperature controller), an OFF position or a manual potentiometer which permits manual control of the heater load from full OFF to full ON.

Switch, Local/OFF/Remote

This option provides switching control from a self-contained panel controller to a remote source, such as an external controller or computer. A door mounted rotary switch is used.

Switch ON/OFF Door Mounted

A door mounted, rotary ON/OFF switch can be connected to allow manual shut down of the panel. For panels with up to 125 ampere capacity, the switch will interrupt the shutdown contactor holding coil, allowing the panel to automatically re-engage once the rotary switch is returned to the "ON" position. This option is not available for panels of 200 amperes or above.

Power Control Panel Options *(cont'd.)*

Tagging, Instrument and Panel

Instrument and Panel Tagging can apply to either individual electronic instruments within a power panel or to the power panel as a complete unit. The Instrument Tag is an adhesive backed, thin film aluminum tag approximately 1" x 3-1/2" that allows two lines of 35 characters each and a purchase order number space for 12 characters. The tagging information should be submitted with the initial purchase order.

Tagging, Internal Parts

When desired, internal parts (i.e., transformer, fuses, disconnect, etc.) can be identified by a tag. Internal tags are made from pressure sensitive tape with parts nomenclature as depicted on the drawings. The tags will be attached to the subpanel near the respective part.

Tags, Engraved

Engraved phenolic tags are either white letters on black background or black letters on white background. Overall individual tag size is 3/4" x 4". Letter size is 5/16" high and approximately 14 letters per line with two lines allowed.

Tags, Stainless Steel

This option provides 1-1/2" x 3" tags made of 20 gauge stainless steel capable of up to two lines of 20 character spaces each. The characters are electro-etched and the tags are attached to the front center of the panel with stainless steel screws.

Thermostats, Heat Sink

This option provides heat sink thermostats on each of the three heat sinks. No circuitry or wiring is included with this option.

Utility Outlet

This option provides for a 120 VAC utility outlet for maintenance instruments with the 120 VAC supplied by the customer to a terminal strip. If the panel is to supply the power for this outlet, the factory should be consulted for the proper size control transformer.

Window, Door Mounted

This option provides a window approximately 5" x 9" to view the electronic instruments in the cabinet, usually a NEMA 3R type.

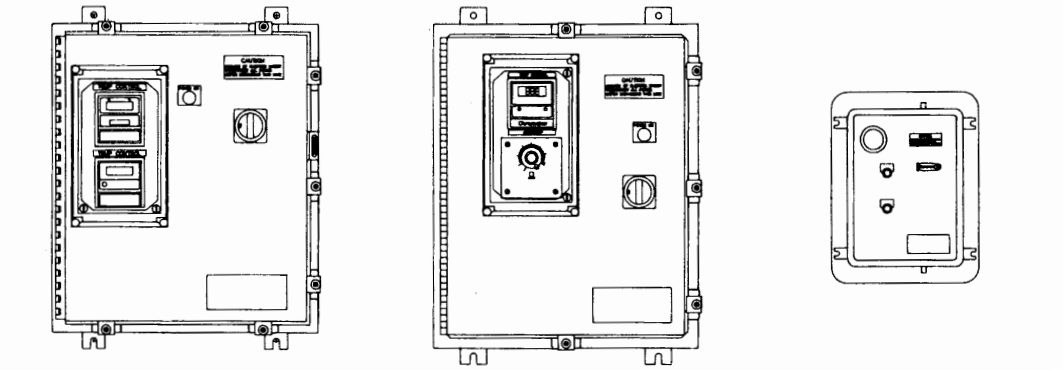
Wiring, SIS Control (Switchboard)

This option provides for SIS control circuit wiring (sometimes called switchboard wiring). Control wiring of 14 gauge or smaller only is included in this option. Internal instrument wiring is not included.

Specification Data Sheet Power Control Panels

Form PK301

Customer Name: _____ Reference No.: _____ ☐ NEW Date: _____



Note — Drawing Is For Illustration Purposes Only

Application

1. APPLICATION DETAILS:

2. HEATED MEDIUM *(Specify)*: ☐ Gas ☐ Liquid ☐ Solid

3. PROCESS TEMPERATURE: _____ °F

If Circulation Heater, flow rate is ☐ Constant ☐ Variable

NOTE: NEMA1 will be quoted if not otherwise specified

4. HEATER DETAILS:

Heater Model No.(s) (if available)

5. HEATER AREA CLASSIFICATION: ☐ Hazardous ☐ Non-hazardous

Total Power Rating: Volts_____ Phase ☐ 1 ☐ 3 kW_____

Number of Circuits: _____ Rating Per Circuit: _____ kW

Enclosure Requirements

1. ENCLOSURE SPACE LIMITATIONS *(If any, specify)*:

2. INSTALLATION ENVIRONMENT: ☐ Indoor ☐ Outdoor ☐ Direct Sunlight

☐ Hosedown ☐ Hazardous Class _____ Div_____ Group_____

3. ENCLOSURE NEMA RATING *(Indicate acceptable NEMA ratings)*:

☐ NEMA12 (Ventilation reduces to NEMA1)

☐ NEMA4X ☐ NEMA4X Stainless Steel

☐ NEMA4 w/purge ☐ NEMA4X w/purge

☐ NEMA7/4 NOTE: NEMA1 will be quoted of not specified.

4. AMBIENT TEMPERATURES: _____ °F Min _____ °F Max

5. CORROSIVE ENVIRONMENT: ☐ No ☐ Yes, Specify _____

Customer Specification(s)

☐ None ☐ Attached

☐ Will Email ☐ Will Fax ☐ Will overnight

☐ Use Specification on file, number _____

Technical Specifications (Check All That Apply)

1. STANDARD PANEL TO BE USED *(Refer to Panel Selection Guide)*:

☐ Yes, Model No.:_____ ☐ No

With exceptions to standard panel as noted below

2. POWER SWITCH DEVICE:

☐ SCR, SCR Type: ☐ Phase Angle ☐ Zero-Cross ☐ 2 leg ☐ 3 leg

☐ Contactor, qty. _____ ☐ SCR trim stages required

3. SHUTDOWN DEVICE ON SCR PANELS:

☐ Contactor (Required for Remote On/Off Capability)

☐ Shunt Trip Disconnect (Must be reset locally)

4. TEMPERATURE CONTROL ZONE(S):

No. Zones _____ kW per Zone _____

5. TEMPERATURE CONTROLLER:

☐ Yes, Model No.:_____ Sensor Type: _____

☐ No, Customer control signal (specify type) _____

6. OVERTEMPERATURE CONTROLLER(S): **QTY:**_____

☐ Yes, Model No.:_____ Sensor Type: _____

☐ No, Customer control signal (specify type) _____

7. AGENCY APPROVALS:

☐ None ☐ UL ☐ Other *(Specify)* _____

8. MAIN DISCONNECT: ☐ Yes ☐ No ☐ Special Requirement _____

9. SPECIAL FEATURES *(Check All That Apply)*:

☐ Load Fusing ☐ Load Circuit Breakers ☐ On/Off Switch

☐ Ammeter ☐ Voltmeter ☐ GFI w/reset pushbutton

☐ Enclosure Heater ☐ Z-Purge ☐ X-Purge

☐ Partial Load Failure Indication ☐ Shorted SCR Detection

☐ Current Transmitter ☐ Floorstand ☐ Panel Lighting

☐ Pilot Lights, Specify

☐ Audible Alarm, Specify

☐ Dry Contact Output, Specify

☐ Other, Specify

Additional Notes:

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

Bulb & Capillary Selection Guide

Model Number	AR, AR-LT, AR-EP*	ARC, ARR*	BCT	GNIT	PIT	B100/E100 B121/E121
Indicating	N	N	Y	N	N	N
Amps	30 A @ 120-277 Vac, 10 @ 480 Vac	30 @ 120-277 Vac	15 A @ 120, 240, 480 Vac	25 A @ 120/240 Vac	22 A @ 120/240 Vac	22 A @120/240/ 480 Vac
Contacts	DPST	SPST	SPDT	DPST	SPDT	SPDT
Ranges (°F)	0-100, 60-250, 200-550, 300-700	60-250, 200-550 300-700	-40 to 120, 0-250, 50-100 0-400, 50-650	30-220	0-150 100-250	25-325 15-140
Capillary Length*	2', 7', 12' & 15'	7', 15'	6' & 10'	5' & 12'	10'	10'
B & C Material**	Copper, Nickel-Copper, Tin Plated Steel		SST or Teflon over SST	Teflon over Cop-per	Tin Plated Copper	SST
Nominal Diff.	4% of SPAN		2-10 DEG	4-12	6	2% of SPAN
NEMA	1, 3, EP	1	1, 4, 7 & 9		1, 4X, EP	4X, 7, 9
Approvals	Internal stat has UL rating	Internal stat has UL rating	UL/CSA		UL	UL/CSA
Notes			1, 2	3	2	1, 2
Page	H-179	H-182	H-184	H-186	H-187	H-189

1. Dual setpoint available
2. Heat/cool switch action
3. Suitable for some corrosive applications

* Not all capillary lengths are available with each range, see products sheet for detail

** Bulb & capillary material is dependent on the temperature range, see product sheet for details

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

AR & ARR

Non-Indicating Temperature Controllers

- **Bulb & Capillary**
- **Operating Environment, -40˚F to 150˚F**
- **0 - 700°F Temperature Range**
- **Single Phase, 120 - 480 Vac**
- **Three Phase, 208-277 Vac**
- **Reverse Acting Model ARR**
- **Knob Cover & Pilot Light (Option)**
- **Double Pole, Single Throw Contacts**

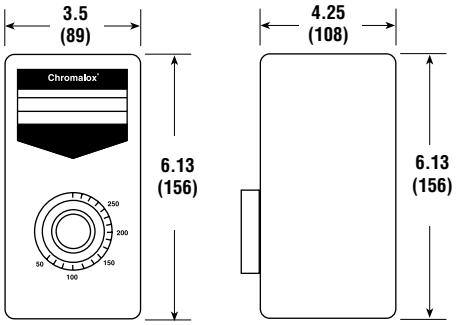
WARNING: Hazard of Fire. These controls function as temperature controls only. Because they do not fail safe, an approved temperature and/or pressure safety control must be used for safe operation.

Applications

- Temperature control of any electrically heated solid, liquid or gas.
- Excellent for ovens or sterilizers
- Molding machines
- Heat exchangers
- Labeling machines
- Water baths
- Heat sealers
- Type ARR may be used to control refrigerating, ventilating and alarm systems.

Note — Refer to AR-LT and AR-EP products for bulb style and capillary configuration drawings.

Dimensions



All Dimensions in Inches (mm)
See table below for Bulb Dimensions

Ordering Information

Temp. Range (˚F)	Amp. 120-277V	Amp. 480V	Bulb Dim. (In.) Style	Dia.	Lgth.	Cap Lgth. (Ft.)	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)
Single Phase AR											**With Knob Cover**				**With Pilot Light**			
0-100	30	10	5	3/8	4-5/16	7	**AR-115**	**S**	**269966**	2.5	**AR-115KC**	**S**	**272727**	2.5	**AR-115P**	**S**	**269974**	2.5
0-100	30	10	5	3/8	4-5/16	2	**AR-115A**	**S**	**299639**	2.5	AR-115AKC	NS	273519	2.5	AR-115AP	NS	273906	2.5
0-100	30	10	5	3/8	4-5/16	12	**AR-115C**	**S**	**277931**	2.5	AR-115CKC	NS	273527	2.5	AR-115CP	NS	273914	2.5
60-250	30	10	4	1/4	5-5/32	7	**AR-214**	**S**	**263038**	2.5	**AR-214KC**	**S**	**272735**	2.5	**AR-214P**	**S**	**265869**	2.5
60-250	30	10	5	3/8	4	7	**AR-215**	**S**	**277940**	2.5	AR-215KC	NS	273551	2.5	AR-215P	NS	273930	2.5
60-250	30	10	5	3/8	4	2	**AR-215A**	**S**	**299655**	2.5	AR-215AKC	NS	273594	2.5	AR-215AP	NS	273949	2.5
60-250	30	10	9	3/16	10-11/16	7	**AR-219**	**S**	**263054**	2.5	AR-219KC	NS	272743	2.5	**AR-219P**	**S**	**265877**	2.5
200-550	30	10	4	1/4	7-5/16	7	**AR-514**	**S**	**263046**	2.5	AR-514KC	NS	272751	2.5	**AR-514P**	**S**	**265885**	2.5
200-550	30	10	9	3/16	12	7	**AR-519**	**S**	**263062**	2.5	AR-519KC	NS	272778	2.5	**AR-519P**	**S**	**265893**	2.5
300-700	30	10	5	3/8	3-11/16	7	**AR-715**	**S**	**269640**	2.5	AR-715KC	NS	273770	2.5	AR-715P	NS	272081	2.5
300-700	30	10	9	3/16	12	7	**AR-719**	**S**	**269659**	2.5	AR-719KC	NS	273797	2.5	AR-719P	NS	269923	2.5
Three Phase AR-3											**With Knob Cover**				**With Pilot Light**			
60-250	30	-	5	3/8	4-1/4	7	AR-2153	**S**	263097	2.5	AR-2153KC	NS	273800	2.5	AR-2153P	NS	265818	2.5
Single Phase ARR Reverse Acting											**With Knob Cover**				**With Pilot Light**			
60-250	30	-	5	3/8	4	7	**ARR-215**	**S**	**272292**	2.5	ARR-215KC	NS	273842	2.5				
200-550	30	-	9	3/16	11-1/4	7	ARR-519	NS	272989	2.5	ARR-519KC	NS	273893	2.5				

Stock Status: **S** = stock NS = non-stock

1. 120 - 250 Vac.

Other Notes —

A. Thermowells (CPW_) and Universal Compression fitting (CCF) for all AR thermostats must be ordered separately.
B. See ordering information table above for Bulb and Capillary dimensions.
C. Pilot Duty Rating, 125 VA for 120 Vac, 250 VA for 250 - 277 Vac.

AR-LT & AR-EP

Non-Indicating Temperature Controllers

- **AR-LT Weather Resistant Enclosure**
- **AR-EP Explosion-Proof Enclosure**
- **Bulb & Capillary**
- **Sensitive, Long-Lasting, Snap Action Mechanism**

AR-LT

AR-EP

Features

- Double pole, single throw contacts that open on temperature rise. At positive off position, contacts cannot close.
- Differential ± 4% of scale.
- Bulb and capillary: copper for units rated at 250°F and lower; nickel-plated copper for units between 200 and 500°F; tin-plated steel for units between 300 and 700°F.

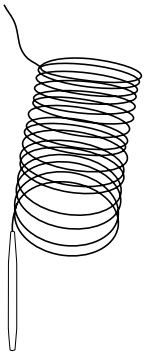
WARNING: Hazard of Fire. These controls function as temperature controls only. Because they do not fail safe, an approved temperature and/or pressure safety control must be used for safe operation.

Bulb Style 4 and 5

- For confined locations
- For insertion into drilled holes in platens or dies
- For direct immersion

Bulb Style 9

- For control air and pipeline heating
- May be coiled to inside radii of 1/2", minimum
- Compression fittings and protective wells available

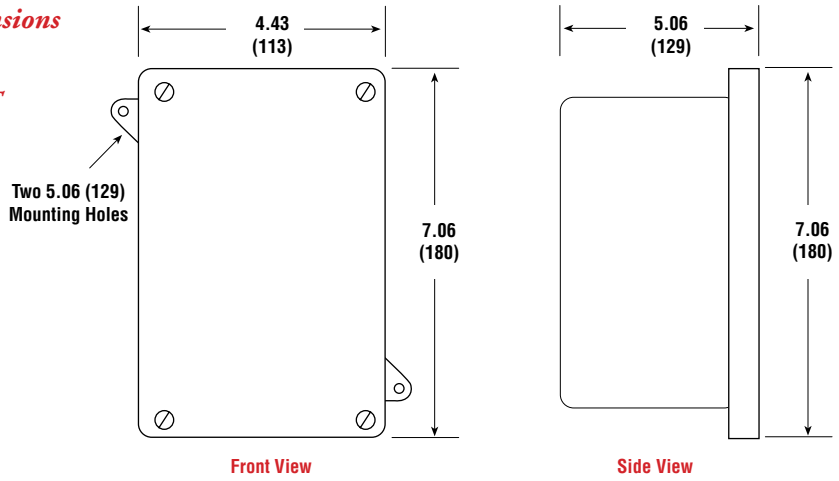


AR-LT & AR-EP

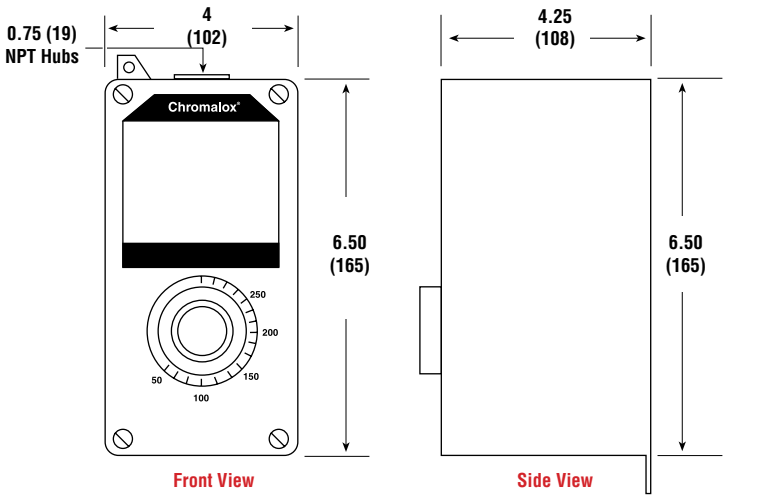
Non-Indicating Temperature Controllers *(cont'd.)*

Dimensions

AR-LT



AR-EP



All Dimensions in Inches (mm)
See table below for Bulb Dimensions

Ordering Information

Temp. Range (°F)	Amp.		Bulb Dim. (In.)			Cap Lgth. (Ft.)	AR-LT Watertight & Weather-Resistant				AR-EP Explosion Proof			
	120-277V	480V	Style	Dia.	Lgth.		Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)
0-100	30	10	5	3/8	4-5/16	7	AR-115LT	NS	269990	5	AR-115EP	NS	299428	5
0-100	30	10	5	3/8	4-5/16	2	AR-115ALT	NS	299700	5	AR-115AEP	NS	227985	5
0-100	30	10	5	3/8	4-5/16	12	AR-115CLT	NS	299719	5	AR-115CEP	NS	299444	5
60-250	30	10	4	1/4	5-5/32	7	AR-214LT	NS	269691	5	AR-214EP	NS	299401	5
60-250	30	10	4	1/4	5-5/32	15	AR-214DLT	NS	299727	5	AR-214DEP	NS	227977	5
60-250	30	10	5	3/8	4	7	AR-215LT	NS	299823	5	AR-215EP	NS	299250	5
60-250	30	10	5	3/8	4	2	AR-215ALT	NS	299735	5	AR-215AEP	NS	227969	5
60-250	30	10	9	3/16	10-11/16	7	AR-219LT	NS	272313	5	AR-219EP	NS	299399	5
60-250	30	10	9	3/16	10-11/16	15	AR-219DLT	NS	299743	5	AR-219DEP	NS	227950	5
200-550	30	10	4	1/4	5-5/8	7	AR-514LT	NS	293579	5	AR-514EP	NS	299436	5
200-550	30	10	9	3/16	9	7	AR-519LT	NS	293587	5	AR-519EP	NS	299268	5
300-700	30	10	5	3/8	3-11/16	7	AR-715LT	NS	299807	5	AR-715EP	NS	299452	5
300-700	30	10	9	3/16	12	7	AR-716LT	NS	299815	5	AR-719EP	NS	299479	5

Stock Status: **S** = stock NS = non-stock

Notes —

A. AR-EPs are UL listed for use in Class 1, Div. 1 & 2, Groups C & D and Class II, Groups E, F and G Hazardous Locations and for 120 to 277 Vac Applications only. Not rated for 480 Vac.

B. See ordering information table above for Bulb and Capillary dimensions.

C. Thermowells (CPW_) and Universal Compression fitting (CCF) for all AR thermostats must be ordered separately.

D. Pilot Duty rating, 125 VA for 125 Vac, 250 VA for 250 - 277 Vac.

ARC
Non-Indicating Thermal Cutout

- **60 - 700°F Temperature Range**
- **Single Phase, 120 - 277 Vac**
- **Bulb & Capillary**
- **Single Pole**

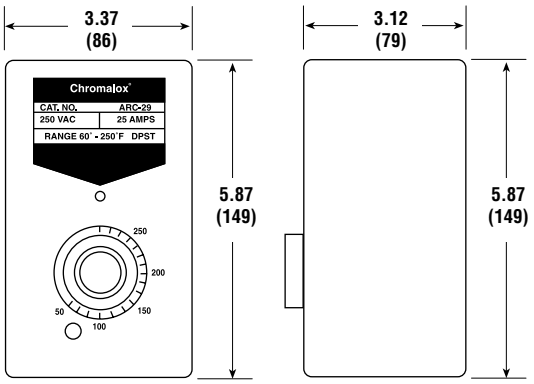
Application

When properly applied, the ARC protects against damage due to product or heater overheating by opening a circuit when a preset temperature is reached.

Features

- Manual reset button provides for manual restoration of process circuit when overheat condition is corrected.
- Neon pilot light glows when cutout is reclosed. Pilot light and knob cover are furnished.
- Sensing bulb should be placed at most critical point in system with control set from 25 to 35°F above working temperature.
- Compression fittings and protective wells are available.
- Not a fail-safe device.

Dimensions



All Dimensions in Inches (mm)
See table below for Bulb Dimensions

WARNING: Hazard of Fire. These controls do not fail-safe. An approved temperature and/or pressure safety control must be used for safe operation.

Note — Refer to AR-LT and AR-EP products for bulb style and capillary configuration drawings.

Ordering Information

Temp. Range (°F)	Amp. 120¹-277V	Bulb Dimensions (In.)			Cap Lgth. (Ft.)	Model	Stock	PCN	Wt. (Lbs.)
		Style	Dia.	Lgth.					
60-250	30	5	3/8	4-1/4	7	**ARC-215**	**S**	**278213**	2.5
200-550	30	5	3/8	3-1/4	7	**ARC-515**	**S**	**278230**	2.5
200-550	30	9	3/16	11-3/16	7	**ARC-519**	**S**	**278256**	2.5
300-700	30	5	3/8	3-11/16	7	**ARC-715**	**S**	**299612**	2.5

Stock Status: S = stock

1. Rating 125 VA for 125 Vac, 250 VA for 250 - 277 Vac. Not rated for 480 Vac.

Other Notes —

A. Thermowells (CPW_) and Universal Compression fitting, (CCF) for all AR thermostats, must be ordered separately. See type CCF.

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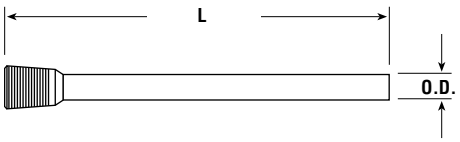
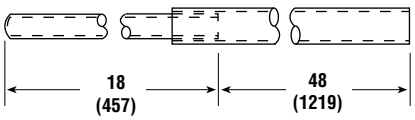
Protective Wells & Compression Fittings

- **Protects Thermostat Sensors in Suitable Corrosive Applications**
- **Seals Sensor Inserted Through a Tank, Pipe or Duct Wall**

Steel, MONEL®, Stainless or Lead 3/8-18 x 1/2-14 NPT



Quartz, 1/2 O.D., 3/8 I.D., 200˚F Max. Temp.



Quartz Tube — Flexible Plastic Tube

Applications

- Protective wells are used to enclose and protect the sensing device from some physical damage and corrosive liquids.
- Compression fittings are used for sealing the aperture required for the sensor to penetrate the wall of pipe, tank or duct.

Ordering Information — Protective Wells

Well Material	Dimensions (In.) O.D.	L	I.D.	Model	Stock	PCN	Wt. (Lbs.)
For AR, BCT and 400 Series Thermostats							
Steel	1/2	12	0.43	**CPWS-12**	**S**	**265981**	1
Steel	1/2	24	0.43	**CPWS-24**	**S**	**265990**	1
Steel	1/2	36	0.43	CPWS-36	NS	266001	1
MONEL®	1/2	12	0.43	**CPWM-12**	**S**	**266044**	1
SST	1/2	12	0.43	**CPWSS-12**	**S**	**266010**	1
SST	1/2	24	0.43	**CPWSS-24**	**S**	**266028**	1
SST	1/2	36	0.43	CPWSS-36	NS	266036	1
Quartz	1/2	18	0.375	CPWQ-18	NS	269958	1

Stock Status: **S** = stock NS = non-stock

Compression Fittings

Use With	Material	NPT Size	Model	Stock	PCN	Wt. (Lbs.)
AR, BCT & 400 Series	300 Series SST	3/8-18	**CCF-25D**	**S**	**266351**	0.1
AR, BCT & 400 Series	300 Series SST	1/2-14	**CCF-25E**	**S**	**266360**	0.1

Stock Status: **S** = stock AS = assembly stock NS = non-stock

BCT
Indicating Temperature Controller

- 0 - 650°F
- 15 Amp Resistive
- 125, 250, 480 Vac
- General Purpose or Explosion Proof Enclosure
- Dual °F and °C Indication Scale
- Bulb & Capillary
- Single or Dual Switches

BCT-800

BCT-820E

Applications

- Temperature control of any heated or cooled solid, liquid or gas.
- BCT-800 for NEMA I General Purpose Enclosure Applications.
- BCT-820E for NEMA 4, 7 or 9 Explosion-Proof Enclosure Applications.

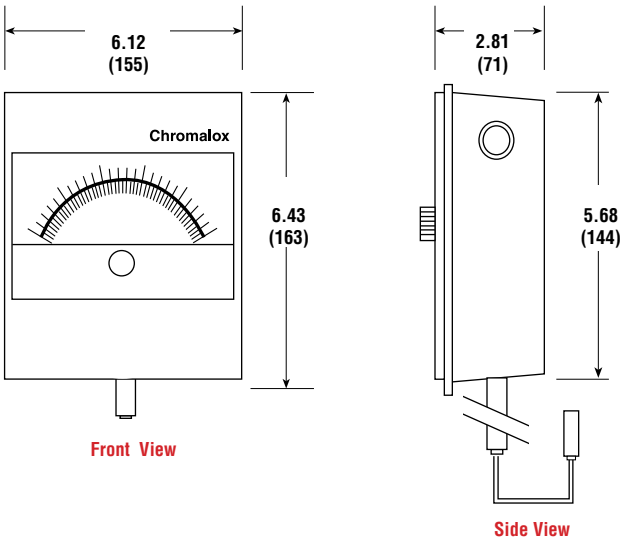
WARNING: Hazard of Fire. These devices function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

Features

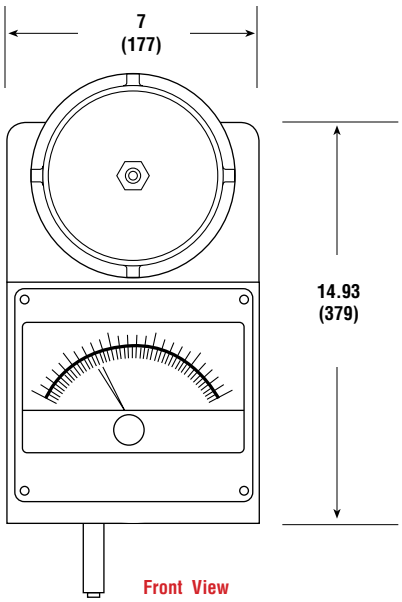
- Sturdy die-cast case. Can be surface or flush-mounted in a panel.
- Snap-action switches, 3-wire single pole, double throw (SPDT). Dual switches have separate knob and temperature pointers for each switch. Inner knob sets #1, outer knob #2 switch.
- For use in ambient temperatures between -40 and 160°F.
- BCT-820E-Meets
  Class I, Division 1 & 2, Groups B, C & D
  Class II, Division 1 & 2, Groups E, F & G

BCT
Indicating Temperature Controller *(cont'd.)*

Dimensions
BCT-800



BCT-820E



Ordering Information

w/All Dimensions in Inches (mm)
See table below for Bulb Dimensions

					General Purpose Enclosure (NEMA 1)				Explosion Proof Enclosure (NEMA 4, 7, 9)			
Dual Temp. Range (˚F)	Bulb Dia. (In.)	Lgth. (In.)	Blb & Cap. Mtl.	Cap. Lgth. (Ft.)	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)
-40 to +120	3/8	6-1/2	SST	6	BCT-800-4BS	NS	227010	4	BCT-820E-4BS	NS	227168	9
-40 to +120	3/8	6-1/2	SST	6	BCT-802-4BS	NS	227088	4	BCT-822E-4BS	NS	227248	9
0-250	3/8	4-5/16	SST	6	BCT-800-6BS	NS	227037	4	BCT-820E-6BS	NS	227184	9
0-250	3/8	4-5/16	SST	6	BCT-802-6BS	NS	227109	4	BCT-822E-6BS	NS	227264	9
0-250	3/8	4-5/16	§	10	BCT-800-6BS-TEF	NS	310463	4	BCT-820E-6BS-TEF	NS	227221	9
0-250	3/8	4-5/16	§	10	BCT-802-6BS-TEF	NS	227141	4	BCT-822E-6BS-TEF	NS	227301	9
0-400	3/8	2-7/8	SST	6	BCT-800-7BS	NS	227045	4	BCT-820E-7BS	NS	227192	9
0-400	3/8	2-7/8	SST	6	BCT-802-7BS	NS	227117	4	BCT-822E-7BS	NS	227272	9
50-650	3/8	3	SST	6	BCT-800-8BS	NS	227053	4	BCT-820E-8BS	NS	227205	9
50-650	3/8	3	SST	6	BCT-802-8BS	NS	227125	4	BCT-822E-8BS	NS	227280	9
50-100	3/8	4-5/16	SST	6	BCT-800-9BS	NS	227061	4	BCT-820E-9BS	NS	227213	9
50-100	3/8	4-5/16	SST	6	BCT-802-9BS	NS	227133	4	BCT-822E-9BS	NS	227299	9

Stock Status: **S** = stock NS = non-stock

1. Dual switch models.

Other Note —

A. §Teflon® sleeved stainless steel.

GNIT
Non-Indicating Thermostat

- **For Some Corrosive Environment Applications**
- **5' or 12' Teflon® Sleeved Bulb & Capillary**
- **Plastic, Gasketed Enclosure Resists Corrosion**
- **Adjustable Setpoint Dial, 30 to 220˚F**
- **Double Pole, Single Throw Contacts**
- **25 Amps, 120 - 240 Vac**
- **Accuracy ± 9˚F**

WARNING: Hazard of Fire. These devices function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

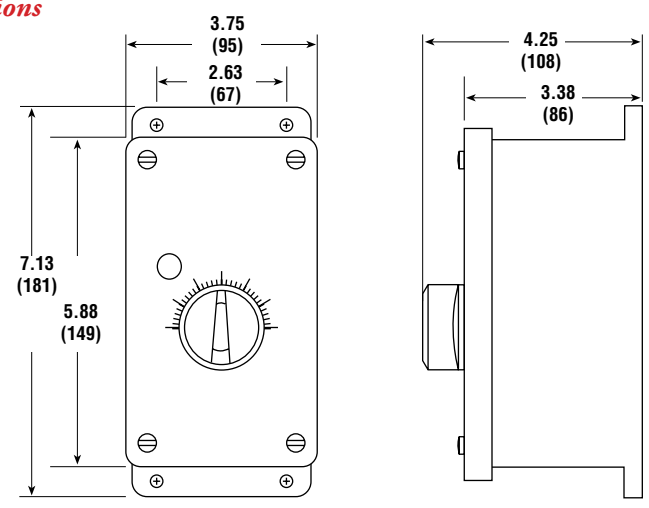
Description

The GNIT Non-Indicating Temperature Controller provides ON/OFF control of temperature ranges from 30 to 220˚F for temperature regulation of aqueous solutions. The plastic, gasketed, moisture-resistant enclosure and Teflon® covered sensor and capillary make it an excellent choice for most corrosive industrial environments.

Features

- Double pole, single throw contacts open on temperature rise
- Standard PI terminal blocks included
- ± 9˚F Accuracy, Full Span
- Operating Ambient 30 - 150˚F

Dimensions



All Dimensions in Inches (mm)

Specifications and Ordering Information

Model	PCN	Temperature Range (˚F)	Volts	Max. Amps	Sensor Length (Ft.)	Stock
GNIT-5	**360946**	30 - 220	120/240	25	5	**S**
GNIT-12	**360954**	30 - 220	120/240	25	12	**S**

Stock Status: **S** = stock NS = non-stock

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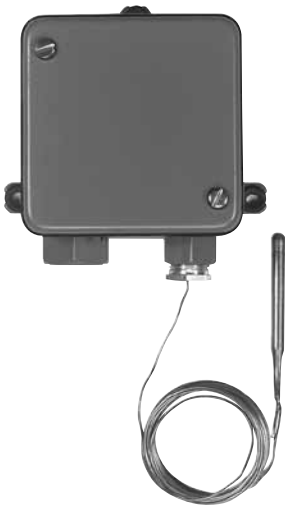
PIT

Non-Indicating Temperature Controllers

- **Compact Size**
- **Explosion Resistant and Raintight Applications**
- **0 - 150°F and 100 - 250°F Temperature Range**
- **Single Phase, 120 - 277 Vac**
- **Bulb & Capillary**

PIT (Rain Tight)



PIT-EP (Explosion-Resistant)

Applications

For a variety of process applications requiring rain-tight or explosion-resistant enclosure, PIT controllers may be used in pipe tracing and snow melting applications with electric heating cable.

Groups E, F and G applications. External adjusting knob and tin-plated copper bulb and capillary.

Features

- Opens or closes a circuit on temperature rise.
- Single pole, double throw (SPDT) snap action switch.
- Rain-tight gasketed enclosure, Type PIT, is 0.062" steel. Simple mounting on three rubber-cushioned feet. Has adjustable high limit stop. Plain copper bulb and capillary.
- Capillary Length 10 ft 1/16" Dia.
- Explosion-proof cast aluminum housing approved for Class I, Group D & Class II,

Ampere Ratings

For control applications involving pump, fan or other motors.

Voltages (AC only)	120	208	240
Full Load Amps	16	9.2	8
Locked Rotor Amps	96	55.2	48

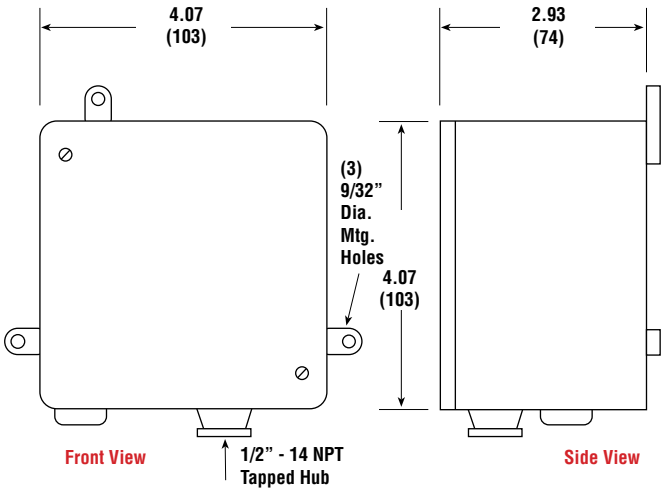
WARNING: Hazard of Fire. These controls function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

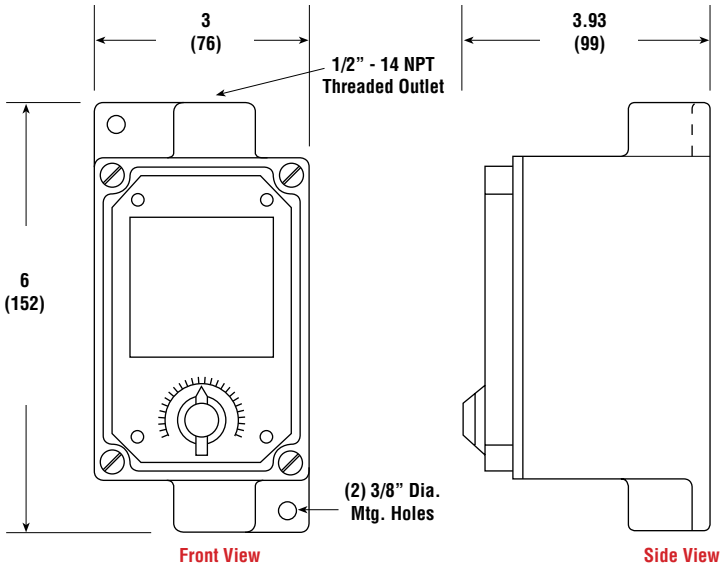
PIT
Non-Indicating Temperature Controllers *(cont'd.)*

Dimensions

PIT (Rain-Tight)



PIT-EP (Explosion Resistant)



Ordering Information — PIT Rain-Tight and Explosion-Proof

Temp. Range (˚F)	Amp. 120-277V	Bulb Dimensions (In.)		Nominal Diff. (˚F)	Model	Stock	PCN	Wt. (Lbs.)
		Diameter	Lgth.					
Rain-Tight Gasketed Enclosure								
0 - 150	22	0.290	2-1/2	6	**PIT-15**	**S**	**140610**	2.5
100 - 250	22	0.290	2-1/2	6	**PIT-25**	**S**	**140628**	2.5
Explosion-Proof Enclosure[1]								
0 - 150	22	0.290	2-1/2	6	**PIT-15EP**	**S**	**140943**	2.5
100 - 250	22	0.290	2-1/2	6	**PIT-25EP**	**S**	**140951**	2.5

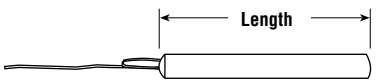
Stock Status: **S** = stock NS = non-stock

1. PIT-EP's are UL listed for use in Class I, Group D and Class II, Groups E, F and G Hazardous Locations.

Other Notes —

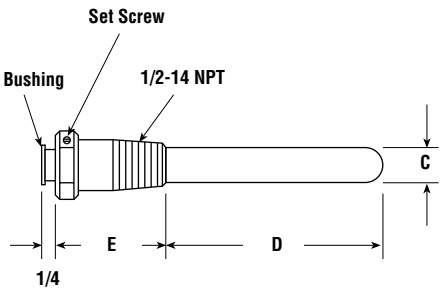
A. Capillary length is 10' with 1/16" Dia.
B. See ordering information table above for Bulb and Capillary dimensions.
C. Pilot duty rating, 125 VA for 120 - 277 Vac.

Sensing Bulbs for PIT and PIT-EP



All Dimensions in Inches (mm)

Protective Wells



PIT Protective Wells

Well Material	Dimensions (In.)				Model	Stock	PCN	Wt. (Lbs.)
	C	D	E	I.D.				
Copper	3/8	2-3/8	2-15/16	0.290[1]	**CPWC-1**	**S**	**269624**	0.5

Stock Status: **S** = stock NS = non-stock

B100 & E100

Heat Trace/Freeze Protection Thermostats

- **B100 Direct Mount for Freeze Protection (Ambient)**
- **E100 Remote Mount for Heat Trace (Bulb & Capillary)**
- **22 Amp Resistive Switch**
- **Single and Dual Output Models**
- **± 1% Setpoint Repeatability**
- **Fast Response for Protection of Valves and Piping**
- **NEMA 4X, 7 and 9 Enclosures**

B100 / E100
NEMA 4X

(Models E121/122, B121 only)

B121 / E121
NEMA 7

Applications

- E100 NEMA 4X Line or Pipe Sensing
- B100 NEMA 4X Ambient Air Sensing
- E121/122/122P NEMA 7 Line or Pipe Sensing
- B121 NEMA 7 Ambient Air Sensing

WARNING: Hazard of Fire. These devices function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

Description

Maintaining proper viscosity and flow is critical in heat trace or freeze protection applications. The E100 remote mount thermostats utilize a stainless steel bulb and capillary design to accurately sense temperature at key points along a pipe. The B100 direct mount thermostats feature liquid-filled thermal assemblies and sense air temperatures from 15 to 140˚F. Both models are epoxy coated to seal from moisture and contaminants in compliance with NEMA 4X requirements. NEMA 7 stats E121/122/122P and B121 are designed for Class I, Division I and 2, Groups B, C, D, and Class 2, Division I and 2, Group E, F, G.

Specifications

Ambient Temperature Limits	-40˚ to +160˚F (B100); -58˚F to +160˚F (B121, B122, E122, E121) (-40 to +71˚C); set point typically shifts
Switch Output	One SPDT (types B100, E100, B121, E121); two SPDT (types E122, E122P)
Electrical Rating	22 Amps 125/250/480 Vac resistive
Weight	Types B100, E100: 1 lb., 8 oz (0,68 kg) Types B121, E121, E122, E122P: 3 lbs., 10 oz (1,6 kg.)
Electrical Connection	Types E121, E122, E122P, B121: terminal block; Types B100, E100: direct to swtich
Temperature Assembly	Types E100, E121, E122, E122P: 10 feet stainless steel bulb and capillary Types B100, B121: immersion stem
Fill	Non-toxic oil filled
Temperature Deadband	Typically 2% of range
Bulb Dimensions (E100, E121, E122)	Length 11-5/8", OD 1/8"
(B100, B121)	Length 2-11/16", OD 9/16"

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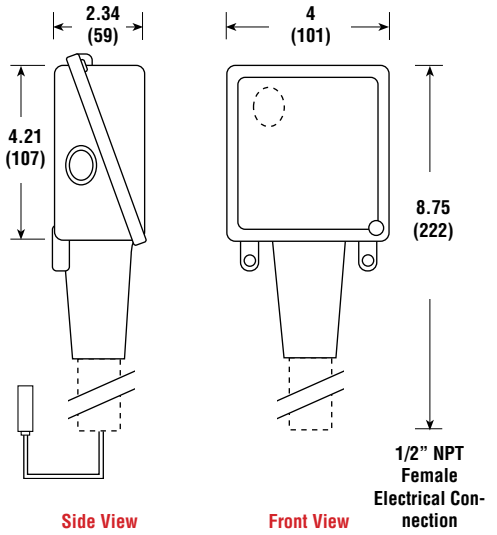
B100 & E100

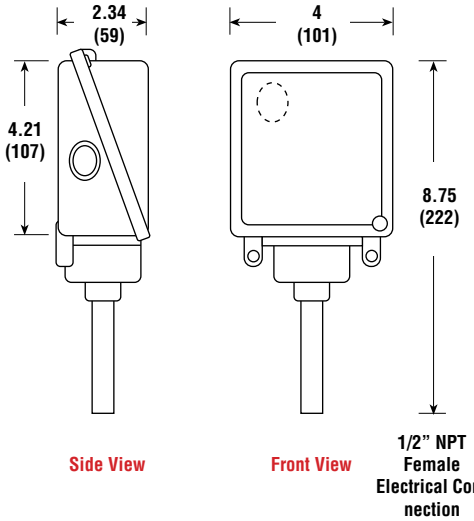
Heat Trace/Freeze Protection Thermostats *(cont'd.)*

Dimensions

E100 Heat Trace, NEMA 4X Line and Pipe Sensing

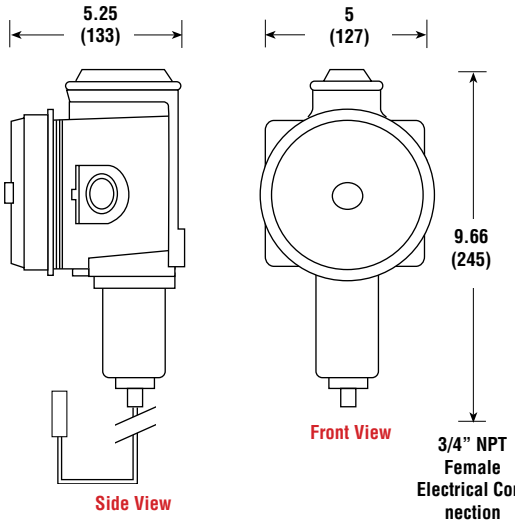


B100 Freeze Protection, NEMA 4X Ambient Sensing

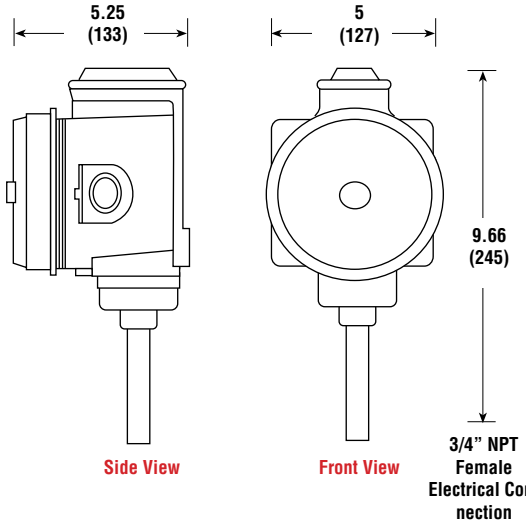


All Dimensions in Inches (mm)

E121/122 Heat Trace, NEMA 7 and 9 Line and Pipe Sensing



B121 Freeze Protection, NEMA 7 and 9 Ambient Sensing



Ordering Information

Thermostat Type	Model	Switch Output	Enclosure NEMA	Stock	PCN
Heat Trace, Remote Bulb and Capillary 25 - 325˚F (-5 to +163˚C)	**E100**	Single Output	4X	**S**	**305322**
	E121	Single Output	4X,7,9	**S**	**384112**
	E122	Dual Output, Dual Setpoint	4X,7,9	NS	305349
	E122P	Dual Output, Common Setpoint	4X,7,9	NS	305357
Freeze Protection Direct Mount 15 - 140˚F (-10 to +60˚C)	**B100**	Single Output	4X	**S**	**305365**
	B121	Single Output	4X,7,9	**S**	**384104**

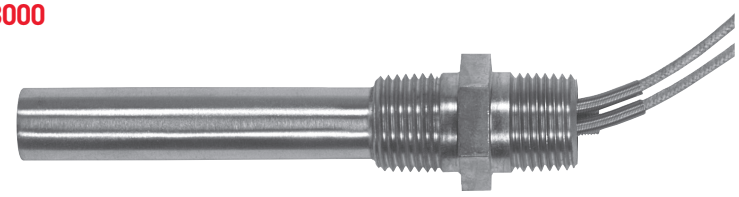
17000 & 18000

Cartridge and Immersion Temperature Controllers

- Cartridge Immersion (17000 Series)
- Coupling Head Immersion (18000 Series)
- Non-Indicating
- -100 to +600°F Temperature Range
- Slow Make & Break SPST
- 0.1°F Accuracy
- Not Recommended for Pilot Duty Switching of Mechanical Contactor

Cartridge Type
Model 17000

Coupling Head
Model 18000



Application

Cartridge type is designed for drilled hole cartridge heating installations in molding presses, platens, rubber vulcanizers, hot plates, etc.

Features

- Adjustable range from -100 to +600°F offers wide field of application.
- Resolution sensitivity of 0.1°F offers close control of process.
- Compact size. Lengths under 5" and diameters less than 13/16" fit almost any application.
- Fast response as external metal shell expands or contracts with each temperature change.
- Sheathing is brass for low range units; stainless steel for higher temperature use.
- Couplings for hex head and coupling head types are brass with standard pipe threads for mounting. Hex head and coupling head immersion types are screwed directly through the threaded opening in tank or duct or directly into a pipeline containing gas or liquid. The coupling head unit may be directly attached to electrical conduit by means of standard male pipe threads.

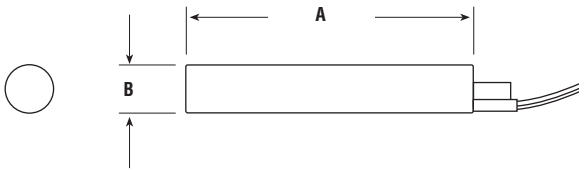
WARNING: Hazard of Fire. These controls function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

17000 & 18000

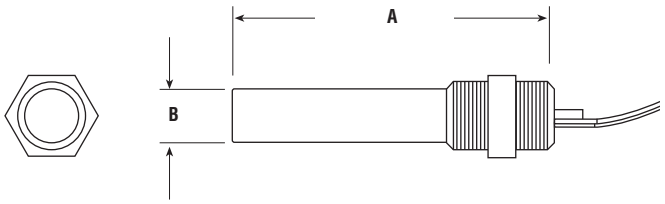
Cartridge and Immersion Temperature Controllers *(cont'd.)*

Dimensions

Cartridge (Model 17000)



Coupling Head (Model 18000)



All Dimensions in Inches (mm)

Ordering Information

Temperature Range (˚F)	Contact Oper./ Temp. Rise	Max. Amps AC		Dimensions (In.)		Material	Model	Stock	PCN	Wt. (Lbs.)
		120V	240V	A	B					
Cartridge Type										
-100 to +600	Opens	10	5	3-23/32	5/8	SST Shell/Brass Head	**17002-0**	**S**	**265498**	2
-100 to +600	Closes	10	5	3-23/32	5/8	SST Shell/Brass Head	**17023-0**	**NS**	**227900**	2
-100 to +600	Opens	25	12.5	3-23/32	13/16	SST Shell/Brass Head	**17052-0**	**NS**	**265519**	3
Coupling Head Immersion Type										
-100 to +600	Opens	10	5	4-21/32	5/8	SST Shell/Brass Head	**18002-0**	**NS**	**227854**	5
-100 to +600	Closes	10	5	4-21/32	5/8	SST Shell/Brass Head	**18023-0**	**NS**	**227846**	5

Stock Status: **S** = stock NS = non-stock

Notes —

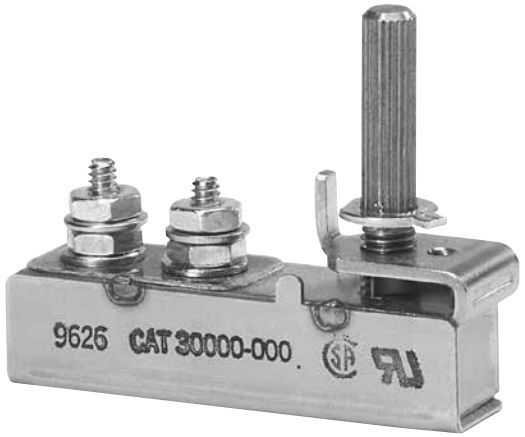
1. All models are UL Recognized

Important: Connect 0.1 μf capacitor across switch leads on all 240 Vac applications. Obtain from radio supply store.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

30000
Surface Mount Temperature Controller

- **Fully Adjustable**
- **Overlapping Ranges from 50 - 600°F**
- **1200 Watt Resistive Load Rating at 120 Vac/240 Vac**
- **Narrow Temperature Differential**
- **Economical**
- **Compact Size**



Applications

- Appliances
- Vending Machines
- Platens
- Plastic Laminating Presses
- Dental Equipment
- Popcorn Machines
- Hot Stamping
- Food Warming Trays

Features

The 30000 Surface Mounting Controller operates on the principle of the differential expansion of metals. A temperature increase causes the stainless steel outer case to expand at a greater rate than the internal bridge assembly. Because the case is in direct contact with the heated surface, a temperature change is sensed almost instantaneously. With an increase in temperature, the case expands. This results in a linear change of the internal bridge assembly causing the electrical contacts to open. A decrease in temperature closes the contacts.

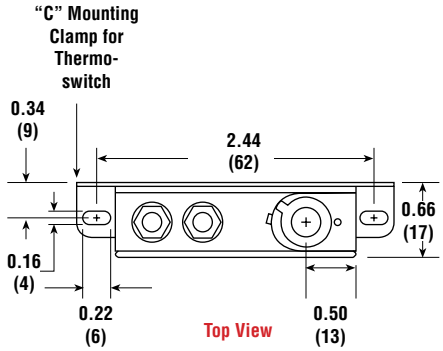
Specifications

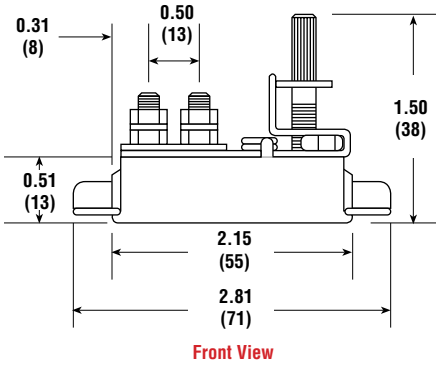
Contact Operation on Temperature Rise	Opens
Material	Stainless Steel case and cover Aluminum bronze adjusting screw Aluminum mounting clamps **Note:** Units shipped with “C” mounting clamp
Current Rating	120 Vac, 10 Amps, 240 Vac, 5 Amps Resistive
Adjustment	30000-000 250˚F per full turn 30002-001 575˚F per full turn

Note: Not for use as a pilot duty contact for a magentic contactor.

30000
Surface Mount Temperature Controller *(cont'd.)*

Dimensions





All Dimensions in Inches (mm)

WARNING: Hazard of Fire. These controls function as temperature controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

Ordering Information

Description	Approximate Temperature Range and Factory Setting Tolerance	Contact Operation on Temp. Rise	Model	Stock	PCN
Adjustable low temperature	50-300˚F ± 5F˚ or 3% of setting value (whichever is greater)	Opens	**11-030000-000**	**S**	**305293**
Adjustable, high temperature	50-600˚F ± 10F˚ or 3% of setting value (whichever is greater)	Opens	**11-030002-000**	**S**	**305314**

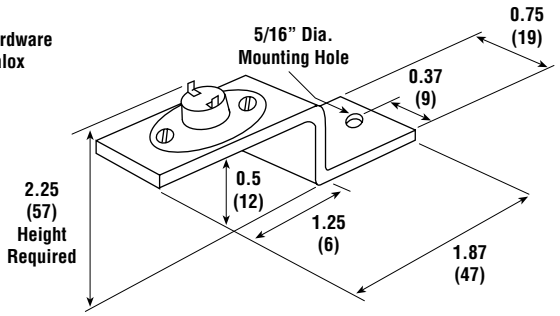
Stock Status: **S** = stock AS = assembly stock NS = non-stock

SBKT
Control Panel Thermostat

- **Control Cabinet Temperature Control Applications**
- **Three Temperature Ranges**
- **Easy Installation**

Dimensions

Note: Leads and mounting hardware provided to mount on Chromalox Strip Heaters



All Dimensions in Inches (mm)

Description

The SBKT Thermostat is designed for control of temperature in instrument control cabinets. The thermostat assembly consists of a Therm-O-Disk™ Model 36TX11 Thermostat (5/8" disk) mounted on an oval bracket. The thermostat has tabs for wiring terminals.

Specifications

Current Voltage Ratings (Resistive) ..... 15A @ 120V
10.5A @ 240V
9.3A @ 277V

Ambient Temperature ..... 350˚F Max

Ordering Information

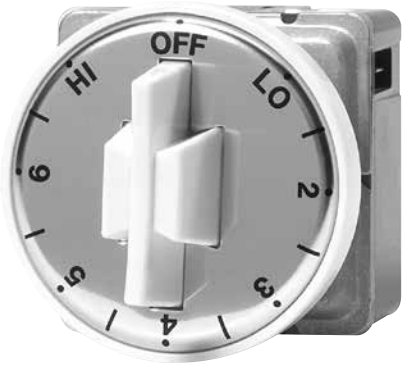
Model	Opens	Closes	Stock	PCN
SBKT-1	53˚F	38˚F	**S**	386011
SBKT-2	75˚F	60˚F	**S**	386020
SBKT-3	120˚F	106˚F	**S**	386038

Stock Status: **S** = stock NS = non-stock

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

CH
Infinite Control Mechanism

- **Mechanical Bi-Metal Operation**
- **Knob Setting 0 - 100% Output**
- **Double Pole, Single Throw (DPST) Snap-Action**
- **Positive Break**
- **120 or 240 Vac**
- **1,800 & 3,600 Watts**
- **UL Component Recognized**



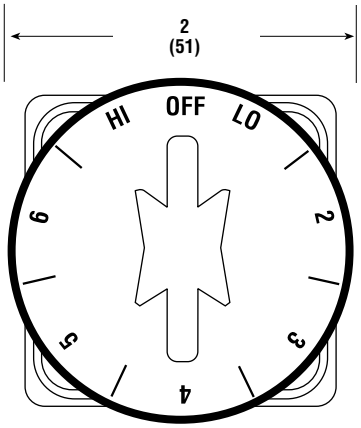
Description

The CH gives infinite control for noninductive loads up to 15 Amps on 120 or 240 Vac (cannot be used with external contactor). It can be turned either to left or right to select proper heat from 0-100% wattage with infinite control over the first 50% of total wattage.

Energized continuously in HI position, at other settings it delivers selected input level under control of a simple bimetal timer.

Only 3 mounting holes are necessary to install the CH in customer supplied box or panel. It is designed for use at ambient temperatures up to 180°F.

Dimensions



All Dimensions in Inches (mm)

Features

- Simplicity of design with no cams or levers to adjust, and no motor to burn out.
- Automatic compensation for line voltage fluctuations up to ± 15%.
- Bimetal acts at settings less than HI to limit electrical input and reduce temperature.

WARNING: Hazard of Fire. These devices function as energy controls only. Because they do not fail-safe, an approved temperature and/or pressure safety control must be used for safe operation.

Specifications and Ordering Information

Volts	Max. Rating Watts, AC*	Model	Stock	PCN	Wt. (Lbs.)
120	1800	**CH-152**	**S**	**266386**	3
240	3600	**CH-252**	**S**	**266394**	3

Stock Status: **S** = stock NS = non-stock
Notes — 1. CH cannot be used with contactor.

CHROMALOX
Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

WR
Wall Mounted Room Thermostats

- **Heavy Duty**
  25 Amps, 120 Vac
  22 Amps, 240 Vac
  18 Amps, 277 Vac
- **Positive Snap-Action Switch**
- **3 Degree Control Differential**
- **UL Listed, CSA Certified**

WR-80

WR-90

Description

WR-80
Range 40-80°F Internal Sensing Element Indicating Thermometer

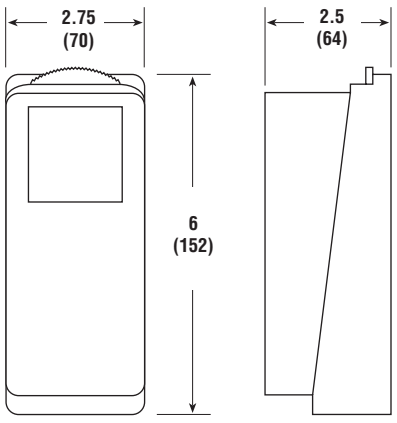
WR-90
External Sensing Bulb Range 20-90°F

The WR Series Room Thermostats are designed to directly control individual heaters or, by using an external contactor, can control several heaters. The WR-90 is particularly useful for maintaining lower temperatures (in garages, warehouses, etc.) and avoiding unnecessary heating costs.

Each design has accuracy and provides long reliable service with a 3 degree control differential. Both units are heavy duty, single stage, with a SPST line voltage snap-action switch and are finished with tough, metallic gray enamel housings.

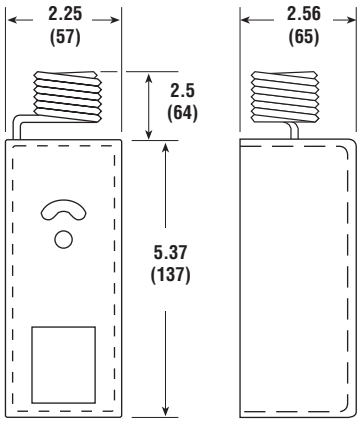
WARNING: Hazard of Fire. The WR thermostats are designed for temperature control service only. Because they do not fail-safe, they should not be used for temperature limiting duty.

Dimensions



Front View Side View

WR-80



Front View Side View

WR-90

All Dimensions in Inches (mm)

Specifications and Ordering Information

Model	Temp. Range (˚F)	Voltage/Current			Stock	PCN	Wt. (Lbs.)
		120V	240V	277V			
WR-80	40 - 80	25A	22A	18A	**S**	**263177**	1
WR-90	20 - 90	25A	22A	18A	**S**	**263185**	1

Stock Status: **S** = stock NS = non-stock
Note — 1. Pilot Duty rating, 125 VA for 120 - 277 Vac.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

EPETD-8D

Explosion Proof Room Thermostat

- **Heavy Duty**
- **22 Amps @ 120 - 277 Vac**
- **Full Load Motor Rating:**

  3/4 HP @ 125Vac, 1-1/2 HP @ 250Vac
- **Double Pole, Double Throw (DPDT) Snap Action Switch Operation**
- **Heat, Cool or Heat/Cool compatible**
- **Temperature Range 50-90˚F (10-32˚C)**
- **Temperature Adjustment Knob with Dual Temperature Scale**
- **Bi-Metal Temperature Sensor**
- **Case accepts 2 x 3/4”NPT conduit (on top and bottom)**
- **3/4 NPT Plug & 1/2 X 3/4 NPT Adapter included**
- **1/2” thick cast Aluminum housing**
- **UL/cUL Class I, Groups C&D, Class II, Groups E, F & G**
- **NEMA Class 7, Div 1 Approved**
- **Tolerance: Heat 2°F/Cool 4°F**
- **Dimensions: 5.625” x 6.375” (143mm x 162mm)**

Description

The EPETD-8D Thermostat is designed to control heating, cooling, heating and cooling or ventilation systems in commercial or industrial applications that are located in hazardous areas.

Applicable industries include oil & gas, petrochemical, power generation, food & beverage, waste water, mining, agriculture, general industrial and the life sciences including lab/analytical and medical.

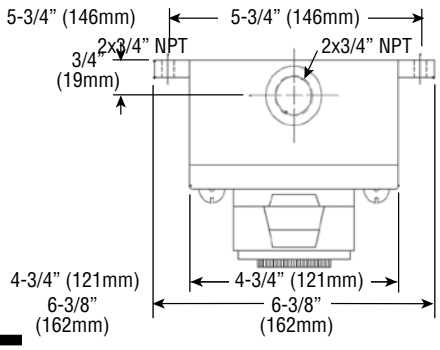
The EPETD-8D is suitable for challenging environments found in grain elevators, munition plants, hospital operating rooms, fueling depots as well as any hazardous area with comfort-air needs.

This thermostat has a snap action, double pole-double throw switch operated by a bimetal actuator and is offered with an adjustable, dual temperature scale knob with positive off.

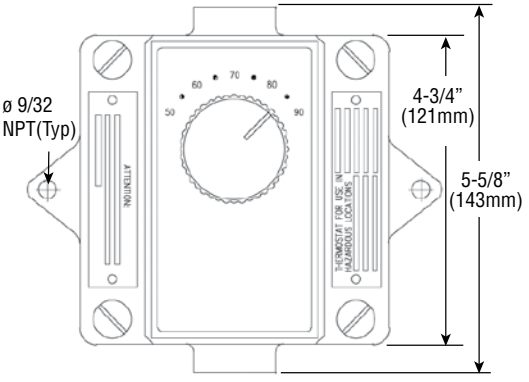
No leveling is required during installation. The case is conveniently equipped with top and bottom 3/4”NPT taps, a 1/2” x 3/4” adapter and a 3/4”NPT plug.

The EPETD-8D is UL/cUL Listed for Class I, Groups C & D, Class II, Groups E, F & G and carries a NEMA7/Div 1 enclosure rating.

Dimensions In. (mm)



Top View



Front View

Specifications and Ordering Information

Model	Temperature Range	Current	Voltage	Weight	Approvals	PCN
EPETD-8D	50-90˚F 10-32˚C	22 Amps	120-277 Vac	5 lbs. 2.3 kg	UL/cUL Class I, Groups C & D Class II, Groups E, F & G NEMA 7, Div I	266204

WCRT

Corrosion Resistant Wall Mounted Industrial Room Thermostat

- **25-Amps, 120 - 240 Vac 22 - Amps, 277 Vac**
- **Positive Snap-Action Switch**
- **Heating or Cooling Control, SPDT Contacts**
- **NEMA 4X Weatherproof Enclosure**
- **40 - 100°F Temperature Range**
- **2.5°F Differential**

Description

The WCRT Room Thermostat is designed to directly control an individual heater. Using an external contactor, it can control several heaters. The WCRT provides high level accuracy and sensitivity with 2.5°F differential. The control has a SPDT output and can be used for heating or cooling.

WARNING: Hazard of Fire. The WCRT thermostat is designed for temperature control service only. Because it is not fail-safe, it should not be used for temperature limiting duty.

Applications

- Can be used to control room temperature in harsh environments regardless of whether heating or cooling is required.
- Tolerates continuous spraying with water, high humidity, airborne contamination and moderately corrosive conditions.

Ratings for Other Electrical Applications

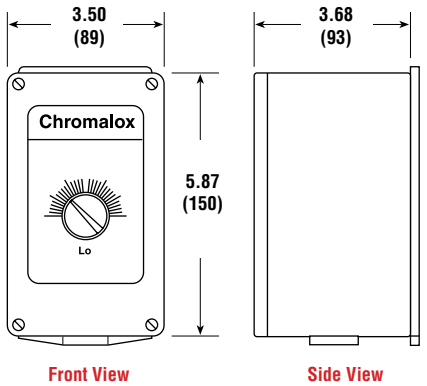
Type of Service	Maximum Rating (Amps AC)		
	120V	240V	277V
Locked Rotor	80	60	50
Inductive	16	12	10
Pilot Duty	125VA	125VA	125VA

Suitable for 24 Vac Operation @ 100mA Minimum

Features

- Shielded sensing bulb is nickel-plated and attached directly to bottom of enclosure where it is shielded from damage and accumulation of insulating particles.
- Sealed Noryl case with neoprene gasket to seal out dust and moisture. Knob opening is closed with lubricated "O" ring.
- Adjustable Knob setting is accurate to ± 2.5°F with large easily-read numerical dial.
- Positive OFF for heating is provided by setting unit to LO position. (At LO Position, heat circuit is open and cool circuit is closed at any temperature.)

Dimensions



All Dimensions in Inches (mm)

Specifications and Ordering Information

Model	Type	Temp. Range (°F)	Voltage/Current, Resistive			Voltage/Current, Inductive			Stock	PCN	Wt. (Lbs.)
			120V	240V	277V	120V	240V	277V			
WCRT-100	SPDT	40-100	22A	22A	18A	16A	12A	10A	**S**	**223589**	1

Stock Status: **S** = stock NS = non-stock

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

WT

Wall Mounted Residential & Commercial Room Thermostat

- **22 Amps, 24V AC/DC, 120V-240 VAC; 18 Amps, 277 VAC**
- **45 - 75°F Temperature Range**
- **Ivory Color**
- **Mounts in Standard Electrical Box**

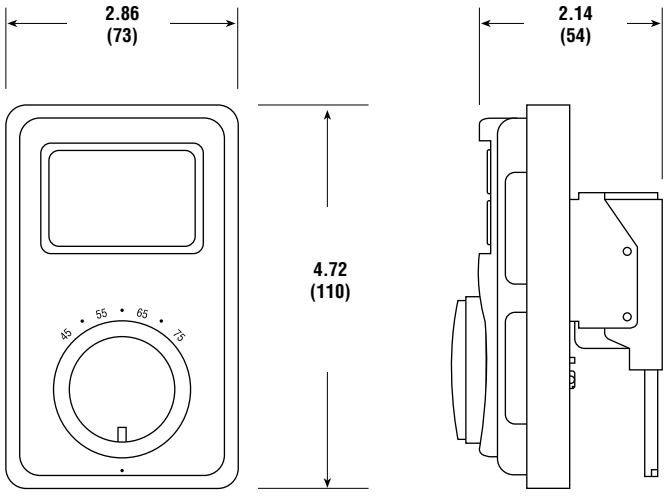
Description

The WT-121 and WT-122 Room Thermostats are designed to control individual heaters or may be used with an external contactor. The WT-121 provides heat control with a SPST snap action switch (open on rise) for breaking one line of the power source. The WT-122 also is a heat control but uses a DPST snap action switch and will break both lines of the power source.

Both models include heat anticipators—assuring closer and more even temperature regulation.

WARNING: Hazard of Fire. The WT thermostats are designed for temperature control service only. Because they are not fail-safe, they should not be used for temperature limiting duty.

Dimensions



Front View

Side View

All Dimensions in Inches (mm)

Specifications and Ordering Information

Model	Type	Temp. Range (˚F)	Voltage/Current					Stock	PCN	Wt. (Lbs.)
			24V	120V	208V	240V	277V			
WT-121	SPST	45-75	22A	22A	22A	22A	18A	**S**	**309999**	1
WT-122	DPST	45-75	22A	22A	22A	22A	18A	**S**	**310009**	1

Stock Status: **S** = stock NS = non-stock

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

HGR
Magnetic Contactors

- **Mercury Displacement Type**
- **Quiet Operation**
- **Hermetically Sealed Mercury Contacts**
- **2 or 3-Pole, 35 - 120 Amps**

HGR Open Type

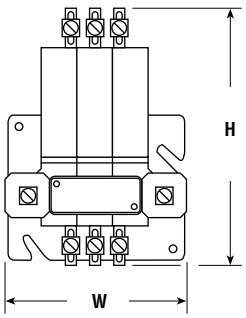
without Enclosure

Description

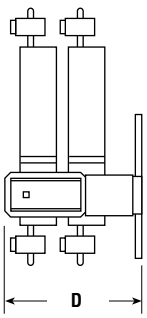
The HGR Mercury Displacement contactor withstands rapid cycling of up to thirty times a minute because there is only one frictionless, moving part—a ferromagnetic plunger that floats on the mercury pool. When the relay coil is energized this plunger is pulled into the mercury pool causing the mercury level to rise. The rising mercury then contacts a secondary mercury pool, or directly contacts the center electrode.

Features

- Superior arc-quenching takes place within hermetically sealed body, making relays impervious to dirt, dust, moisture, and chemical vapors. Arcing is confined within a sealed arc-quenching gas atmosphere that dissipates heat and extends relay life.
- Operational and maintenance costs are reduced because there are no springs or button contacts to wear out, pit, or burn. Because of simplified construction of the contact tube and coil termination, installation and service are routine operations that can be handled by an electrician without sophisticated equipment.
- Compact size allows space savings for panel-mounted applications.
- Low, predictable contact resistance and reduced RFI improve the interface capability with electronic control devices.



Front View



Side View

Open Type (In.)

	H	W	D
HGR-235	4-11/16	4	2-5/8
HGR-335	4-11/16	4	3-5/8
HGR-350	4-11/16	4	3-5/8
HGR-360	5-1/2	4	3-3/4
HGR-380	5-3/4	5-3/4	5
HGR-3100	5-3/4	5-3/4	5
HGR-3150	6-1/4	5-3/4	5

Specifications and Ordering Information

All Dimensions in Inches

Poles	Ampere Rating Per Pole 120V	208V	240V	277V	480V	600V	Holding Coil[1] VA	Open Type (without Enclosure)[2] Model	Stock	PCN	Wt. (Lbs.)
2	35	35	35	35	35	35	13.2	HGR-235	NS	240100	2
3	35	35	35	35	35	35	27.6	**HGR-335**	**S**	**240119**	3
3	50	50	50	50	50	50	21.0	**HGR-350**	**S**	**240127**	3
3	60	60	60	60	60	_	27.6	HGR-360	NS	240135	3
3	80	80	80	80	80	_	82.8	HGR-380	NS	240143	6
3	100	100	100	100	100	_	84.0	HGR-3100	NS	240151	7
3	150	140	135	130	120	_	86.9	HGR-3150	NS	240160	7

Stock Status: **S** = stock NS = non-stock

Notes —
1. 120 Vac coils.
2. UL Listed.

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CONT

Definite Purpose Magnetic Contactor

- 40 - 120 Amps
- 3 Pole, Open Contacts
- 120 Vac Coil Standard, Other coil Voltages Available
- Available With or Without Enclosure
- NEMA 1, 4 and 7 Enclosures
- UL Recognized, CSA Certified

Description

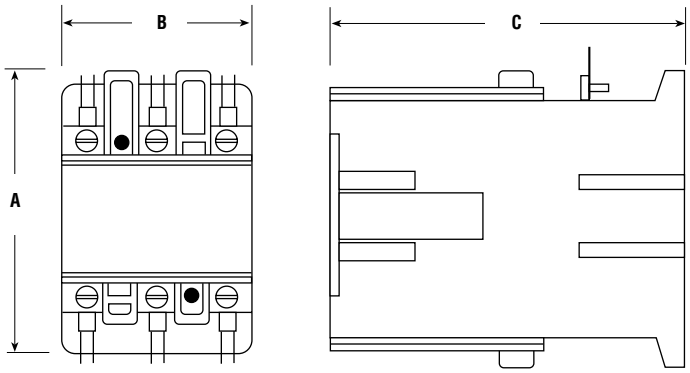
The CONT contactors are used for heating loads where the voltage, number of phases or ampere draw exceeds the rating of the thermostat. Some models are available from stock with and without enclosures.

Specifications

Voltage	120, 208, 240, 277, 480 & 600 Vac
Amp Ratings	40 A, 75 A, 120 A Resistive
Load Termination	Quick Disconnect Terminals, Box Lugs
Coil Voltage	120 Vac, (24, 208-240, 277, 480 & 600 Vac Available)
Enclosure Options	1. No enclosure, Contactor only. Industry standard mounting holes 2. NEMA 1 General Purpose Enclosure 3. NEMA 4 Weather Proof Enclosure (meets NEMA 12 requirements) 4. NEMA 7 Explosion Proof Enclosure NEMA 7 enclosures are predrilled and tapped with quantity 2, 1" conduit openings on the bottom of the enclosure. For additional conduit openings and sizes, contact Chromalox for pricing and availability.

Dimensions

Figure 1
Contactor Only



Front View

Side View

All Dimensions in Inches (mm)

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CONT
Definite Purpose Magnetic Contactor *(cont'd.)*

Figure 2
NEMA 1
Enclosure

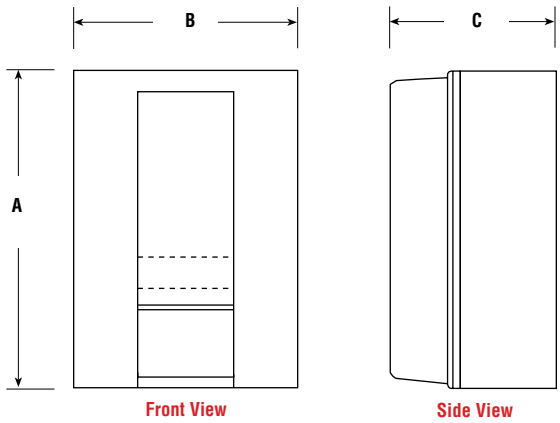


Figure 3
NEMA 4
Enclosure

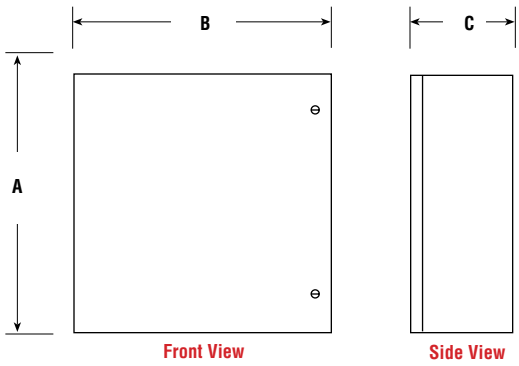
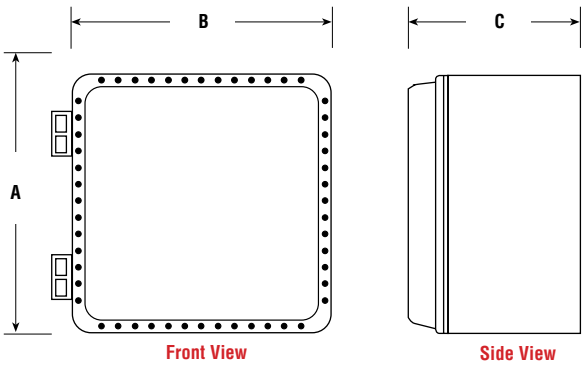


Figure 4
NEMA 7
Enclosure



All Dimensions in Inches (mm)

Ordering Information

Amps per Pole	Holding Coil Voltage*	Hold Coil VA	Fig. No.	Dimensions (In.) A	B	C	Model	Alternate Part Number	Stock	PCN	Wt. (Lbs.)
Contactor Only											
40	120	6	1	4	2.50	3	**CONT-04000**	**8640-70002**	**S**	**305390**	1
75	120	10	1	4.12	3.88	3.81	**CONT-07500**	**8640-70003**	**S**	**305402**	2
120	120	19	1	4.93	5.25	4.75	CONT-12000	8640-70001	NS	305410	4
NEMA 1, General Purpose Enclosure											
40	120	6	2	8.75	5.00	4.00	**CONT-04010**		**S**	**305429**	5
75	120	10	2	12.69	7.81	6.31	**CONT-07510**		**S**	**305437**	8
NEMA 4, Weather Proof Enclosure											
40	120	6	3	7.87	5.91	4.72	CONT-04040		NS	305453	8
75	120	10	3	12	12	6	CONT-07540		NS	305461	12
120	120	19	3	20	16	8	CONT-12040		NS	305470	15
NEMA 7, Explosion Proof Enclosure											
40	120	6	4	8	8	6	CONT-04070		NS	305488	60
75	120	10	4	12	12	8	CONT-07570		NS	305496	65
120	120	19	4	18	18	8	CONT-12070		NS	305509	70

Stock Status: **S** = stock NS = non-stock

* Other coil voltages are available. For 208/240Vac coil the last digit is (2). For 480Vac coil the last digit is (4). i.e. 480Vac, 40Amp is CONT-04004

WC & WCS

Screwplug Liquid Level Control

- **Process Temperatures Up to 240°F**
- **120 or 240 Vac Input, Single Phase**
- **Positive OFF When Liquid Level Drops to Expose Output Element**
- **Single Pole, Single Throw (SPST) Snap-Action Switch**
- **Manual Reset Required to Re-Energize Heater**

Description

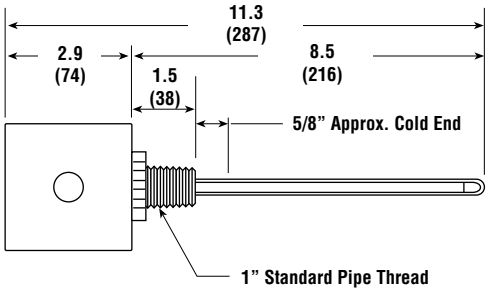
The WC Liquid Level Control consists of a low wattage heater and SPST latching cutout switch, physically designed as a screwplug heater. When the WC is in liquid, the heat of the small wattage heater is dissipated into the liquid. When the liquid level drops below the heater, the thermostat changes states (opens) and remains open until it is physically reset. This action can protect the main process heater and the process.

Features

- Positive Action Switch requires manual reset to re-energize the heater
- Pilot light indicates heater ON.
- 25 Amps Cutout Contact at 277V maximum. For higher voltages or currents, use an external contactor.

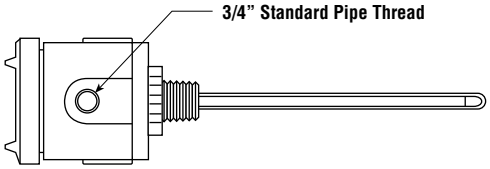
Dimensions

E1 General Purpose Enclosure



All Dimensions in Inches (mm)

E2 Moisture Resistant/ Explosion Proof Enclosure



Specifications and Ordering Information

Input Volts	Watts	W/In²	Material			E1 General Purpose				E2 Moisture Resistant/Explosion Proof			
			Heater Element	Thermowell	Screw Plug	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)
120	100	9.7	INCOLOY®	Copper	Brass	**WC-120**	**S**	**269501**	2.5	WC-120E2	NS	269544	6
240	200	10.4	INCOLOY®	Copper	Brass	WC-240	NS	269510	3	WC-240E2	NS	269552	7
120	100	9.7	INCOLOY®	INCOLOY®	SST	**WCS-120**	**S**	**269528**	2.5	WCS-120E2	NS	269560	6
240	200	10.4	INCOLOY®	INCOLOY®	SST	WCS-240	NS	269536	3	WCS-240E2	NS	269579	7

Stock Status: **S** = stock NS = non-stock

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MGO Thermocouples

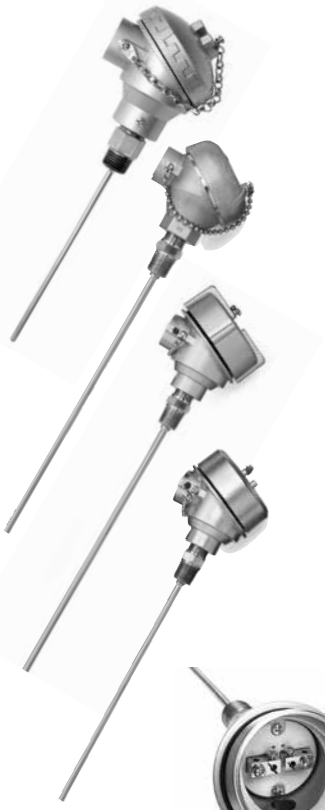
Type J, K, T and E Thermocouples
- Grounded
- Ungrounded
- Exposed

Sheath Materials
- 304 Stainless Steel
- 316 Stainless Steel
- Inconel 600

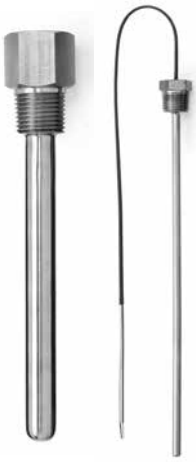
Connection Heads
- Standard Aluminum
- Aluminum Flip Top
- Cast Iron/Aluminum
- 316 Stainless Steel
- Explosion Proof 316 Stainless Steel
- Explosion Proof Aluminum

Termination Options
- T/C wire with Stripped Leads
- Spade Lugs
- Thermocouple Plugs
- Terminal Blocks for Connections Heads

Connection Head



Connection Head



Thermowells

Junction Fittings

Connectors

Connection Heads

Description

Industrial MGO insulated thermocouples are equipped with heavy duty features such as metal jacketed lead wire and metal connection heads. Their rugged design enables them to be used in harsh environments and continuous processes. MGO Thermocouples are integral components of all thermal systems. A wide selection of sensors, connection heads, lead wire termination options and accessories are available from stock or can be quickly manufactured to customer specifications.

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

MGO Thermocouples

Ordering Information

CODE	Thermocouple Alloy	Min Temp. ˚F	Max Temp ˚F
J	Iron/Constantan	32	700
K	Chromel/Alumel	32	1600
T	Copper/Constantan	-328	400
E	Chromel/Constantan	32	800

CODE	Number of Elements
S	One (Single)
D	Two (Dual)

CODE	Sheath Diameter
A	1/16"
B	1/8"
C	3/16"
E	1/4"
F	3/8"

CODE	Sheath Material	Thermocouple Type
2	304 Stainless Steel = General Purpose, Good Corrosion Resistance	J, K, T, E
3	316 Stainless Steel = Superior Corrosion Resistance	J, K, T, E
4	Inconel 600 = Excellent Corrosion Resistance at High Temperatures	J, K,

CODE	Junction
G	Grounded
U	Ungrounded
E	Exposed (Not available on 1/16" Diameter Sheath)

CODE	PROBE LENGTH (On bent T/Cs PROBE LENGTH = Hot Leg + Cold Leg)
XXX	XXX = Probe Length in Inches

CODE	Fraction of an inch Probe Lengths
A	None
B	1/4"
C	1/2"
E	3/4"

CODE	Sheath Bend and Angle
000	None
2XX	45˚ Sheath Bend XX = Length in inches from Probe Tip to start of bend (Hot Leg)
3XX	90˚ Sheath Bend XX = Length in inches from Probe Tip to start of bend (Hot Leg)

CODE	Junction Fitting
J1	None (Epoxy Seal)
J3	1/2" x 1/2" NPT 316 Stainless Steel Hex Nipple (For Connection Head or Replacement Probe)
J4	Spring loaded 1/2" x 1/2" NPT 316 Stainless Steel Hex Nipple (Connection Head Use Only)
J5	Stainless Steel transition Joint (400˚F Max) with spring style strain relief
J6	Stainless steel transition Joint with High Temp. Potting (1000˚F) with spring style strain relief
J7	Stainless steel transition fitting without strain relief
J8	Stainless steel transition fitting same diameter as sheath (Not available on 1/16" Diameter Sheath)
JC	1/2" NPT Fixed Bushing 316 Stainless Steel

CODE	Lead-Wire Type & Connection Head Options	Thermocouple Types
NA	None	J,K,T,E
F1	Fiberglass insulation-solid conductor	J,K,T
F2	Fiberglass insulation-solid conductor (flexible armor)	J,K,T
F3	Fiberglass insulation-solid conductor (stainless steel overbraid)	J,K
F4	Fiberglass insulation-stranded conductor	J,K
F5	Fiberglass insulation-stranded conductor (flexible armor)	J,K
F6	Fiberglass insulation-stranded conductor (stainless steel overbraid)	J
T1	Teflon insulation-solid conductor	J,K,T
T2	Teflon insulation-solid conductor (flexible armor)	J,K,T
T3	Teflon insulation-stranded conductor	J,K
T4	Teflon insulation-stranded conductor (flexible armor)	J,K
H1	Cast Aluminum Connection Head with Terminal Block	J,K,T,E
H2	Flip Top Aluminum Connection Head w/Terminal Block	J,K,T,E
H4	Explosion Proof 316 SS Conn. Head w/Terminal Block	J,K,T,E
H5	316 Stainless Steel Connection Head with Terminal Block	J,K,T,E
H7	Cast Iron Connection Head with Terminal Block	J,K,T,E
H8	Explosion-Proof Cast Iron/Alum. Conn. Head w/Terminal Block	J,K,T,E

J	S	E	2	U-	012	A	000-	J5	T3

Continued on Next Page

MGO Thermocouples

Ordering Information (continued)

J	S	E	2	U-	012	A	000-	J5	T3	036	02	Typical Model Number

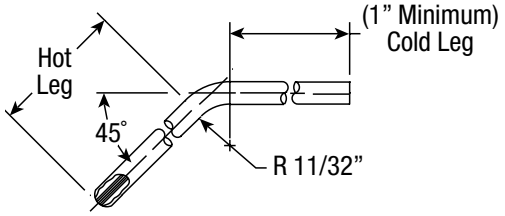
CODE — **Lead Length "F" Dimension**

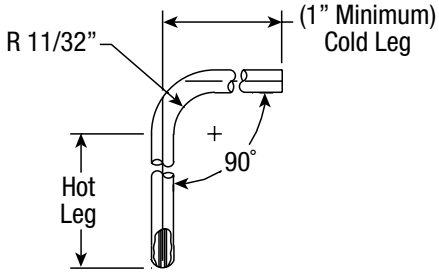
XXX — XXX = Lead Length in Inches

CODE	Termination Options	Thermocouple Types
01	None	J,K,T,E
02	Leads stripped 2"	J,K,T,E
03	Leads stripped 2" with spade lugs	J,K,T,E
04	Leads stripped 2" with 1/2" NPT Bx connector	J,K,T,E
05	Leads stripped 2" with spade lugs & 1/2" NPT Bx connector	J,K,T,E
06	Standard thermocouple plug*	J,K,T
07	Standard thermocouple jack*	J,K,T
08	Standard thermocouple plug with mating connector*	J,K,T
09	Standard thermocouple jack with mating connector*	J,K,T
10	Miniature thermocouple plug*	J,K
11	Miniature thermocouple jack*	J,K
12	Miniature thermocouple plug with mating connector*	J,K
13	Miniature thermocouple jack with mating connector*	J,K
18	Thermowells for 1/4" diameter Probes (4" to 26" length), Matching Built-Up Protection Wells, External 1/2" NPT and Internal 1/2" NPT, 316SS, .260 Bore	

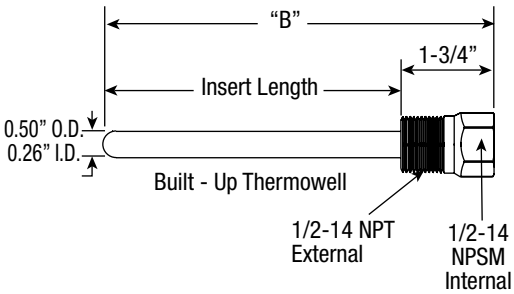
* Plugs and Jacks 500°F maximum temp., single element thermocouples only

Bend Dimensions





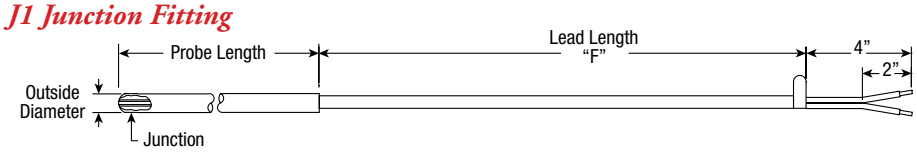
Built Up Thermowell



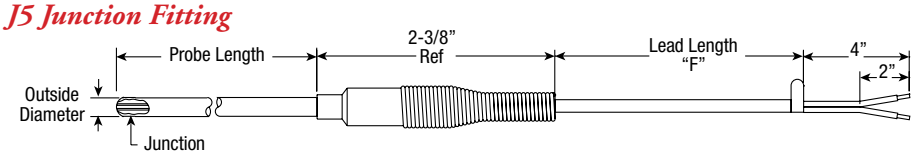
SENSORS

MGO Thermocouples

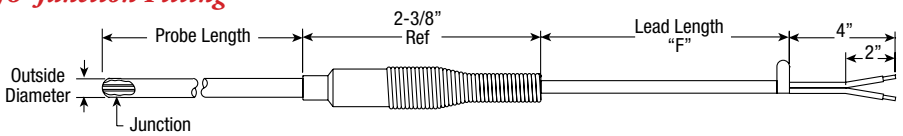
J1 Junction Fitting



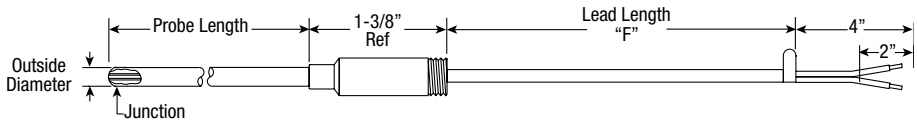
J5 Junction Fitting



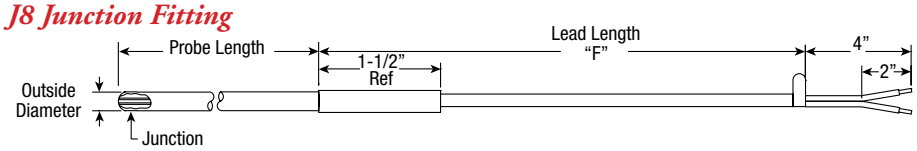
J6 Junction Fitting



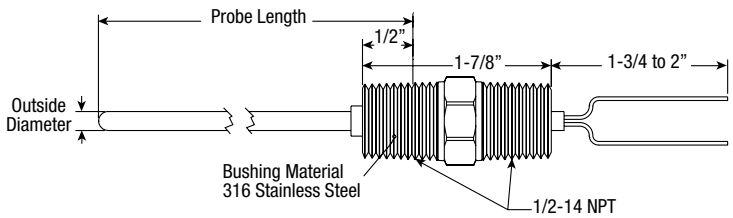
J7 Junction Fitting



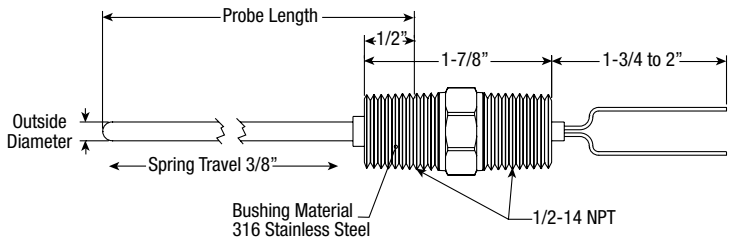
J8 Junction Fitting



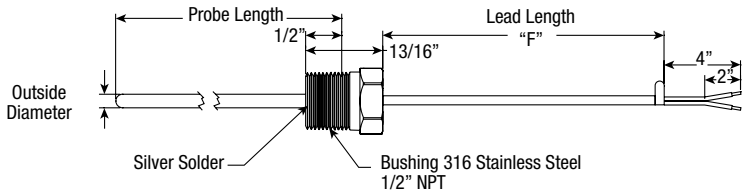
J3 Junction Fitting (Fixed)



J4 Junction Fitting (Spring Loaded)

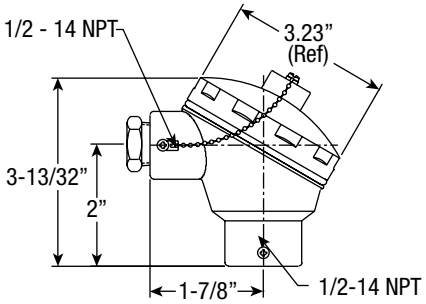


JC Junction Fitting (Fixed)



MGO Thermocouples

Connection Heads



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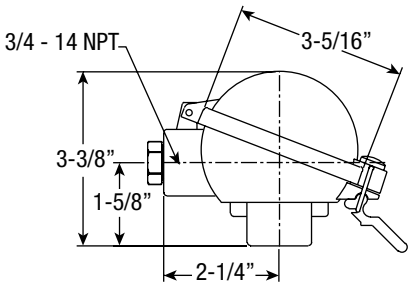

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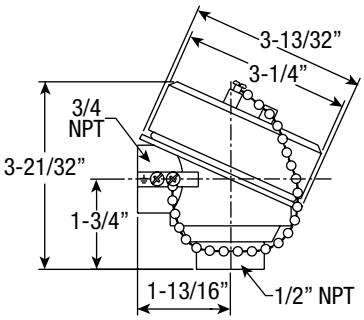

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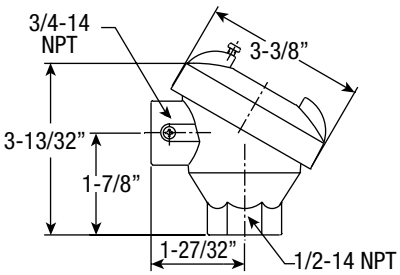

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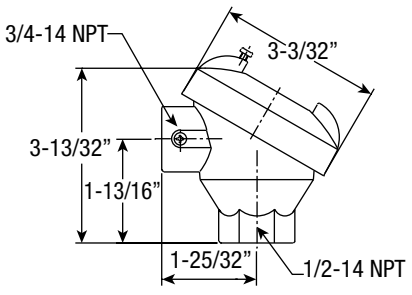

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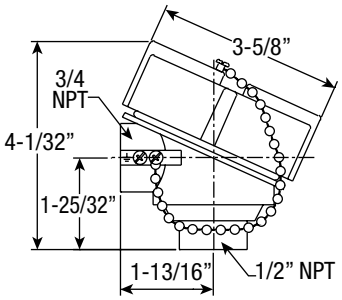

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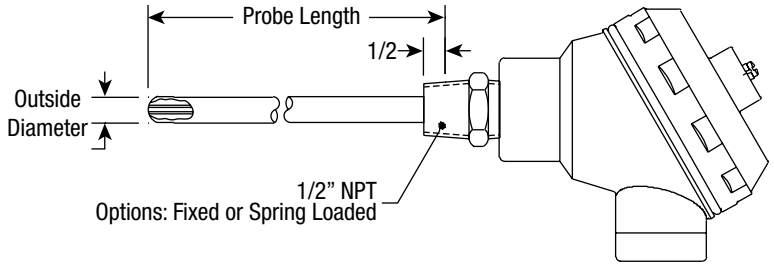


SENSORS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

Plastics Industry Thermocouples

Type J, K, and T Thermocouples
- Grounded
- Ungrounded

Sheath Materials
- 304 Stainless Steel
- 316 Stainless Steel

Junction Fittings
- Crimped
- Single Slot Spring Loaded Bayonet Fitting

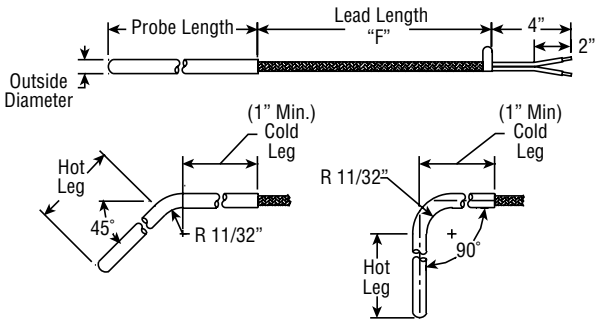
Termination Options
- T/C Wire with Stripped Leads
- Spade Lugs
- Thermocouple Plugs

Description

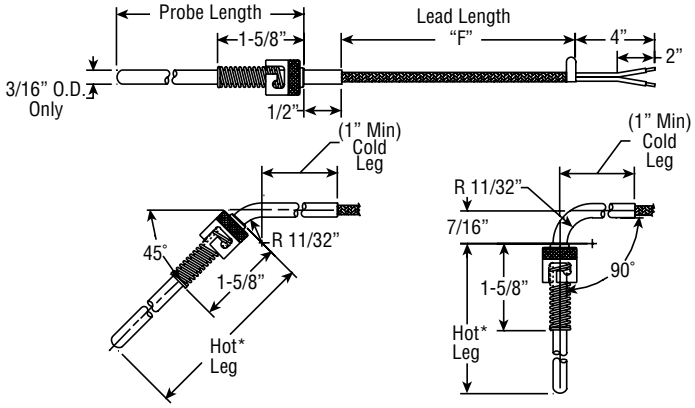
This style of thermocouple is commonly used on plastic extruders and injection molding machines. They are also commonly used on presses such as those used in the rubber industry.

The hollow tube thermocouple typically has a spring loaded bayonet cap. When properly installed, the spring enables sensing tip to press against the bottom of the probe area for accurate temperature readings. A wide selection of sensors, lead wire termination options and accessories is available from stock or can quickly be manufactured to customer specifications.

Dimensions (Crimped Junction)



Dimensions (Quick Detach Style, 3/16 Diameter)



***NOTE:** Hot leg minimum dimension is 2 inches.

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Plastics Industry Thermocouples

Ordering Information

CODE	Thermocouple Alloy	Min Temp. ˚F	Max Temp ˚F
JP	Iron/Constantan	32	700
KP	Chromel/Alumel	32	1600
TP	Copper/Constantan	-328	400

CODE	Number of Elements
S	One (Single)
D	Two (Dual)

CODE	Sheath Diameter
B	1/8" (Not Available in Dual Elements)
C	3/16"
E	1/4"

CODE	Sheath Material
2	304 Stainless Steel = General Purpose, Good Corrosion Resistance
3	316 Stainless Steel = Superior Corrosion Resistance

CODE	Junction Note: Round Tip Standard
G	Grounded
U	Ungrounded

CODE	PROBE LENGTH (Max. Length 120") (On Bent T/Cs PROBE LENGTH = Hot Leg + Cold Leg)
XXX	XXX = Lead Length in Inches

CODE	Fraction of an Inch Probe Lengths**
A	None
B	1/4"
C	1/2"
E	3/4"

CODE	Sheath Bend Angle and Length**
000	None
2XX	45˚ Sheath Bend XX = Length in inches from probe tip to start of bend (Hot Leg).
3XX	90˚ Sheath Bend XX = Length in inches from probe tip to start of bend (Hot Leg).

CODE	Junction Fitting
J2	Crimped
J9	7/16" ID Single slot spring loaded bayonet fitting (3/16" Diameter Sheath Only)

CODE	Lead-Wire Type	Thermocouple Types
NA	None	J, K, T
F1	Fiberglass insulation - Solid conductor	J, K, T
F2	Fiberglass insulation - Solid conductor - flexible armor	J, K, T
F3	Fiberglass insulation - Solid conductor - stainless steel overbraid	J, K
F4	Fiberglass insulation - Stranded conductor	J, K
F5	Fiberglass insulation - Stranded conductor	J, K
F6	Fiberglass insulation - Stranded conductor - stainless steel overbraid	J
T1	Teflon insulation - Solid conductor	J, K, T
T2	Teflon insulation - Solid conductor - flexible armor	J, K, T
T3	Teflon insulation - Stranded conductor	J, K
T4	Teflon insulation - Stranded conductor - flexible armor	J, K

CODE	Lead Length "F" Dimension
XXX	XXX = Lead Length in Inches

CODE	Termination Options	Thermocouple Types
01	None	J, K, T
02	Leads stripped 2 inches	J, K, T
03	Leads stripped 2 inches with spade lugs	J, K, T
04	Leads stripped 2" with 1/2" NPT Bx Connector	J, K, T
05	Leads stripped 2" with Spade Lugs & 1/2" NPT Bx Connector	J, K, T
06	Standard thermocouple plug*	J, K, T
07	Standard thermocouple jack*	J, K, T
08	Standard thermocouple plug with mating connector*	J, K, T
09	Standard thermocouple jack with mating connector*	J, K, T
10	Miniature thermocouple plug*	J, K
11	Miniature thermocouple jack*	J, K
12	Miniature thermocouple plug with mating connector	J, K
13	Miniature thermocouple jack with mating connector	J, K

*Plugs & jacks 500˚ maximum temperatures, Single element thermocouples only

JP	S	C	3	U-	012	A	000-	J9	T3	036	02	Typical Model Number

**Under 10" probe lengths can be combined to obtain fractional sizes. Examples: 29C = 45˚, 9-1/2": 36E = 90˚, 6-3/4"

SENSORS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

Adjustable Depth Sensors

Type J, K, and T Thermocouples
- **Grounded**

Sheath Materials
- **3/16" Diameter 316 Stainless Steel**

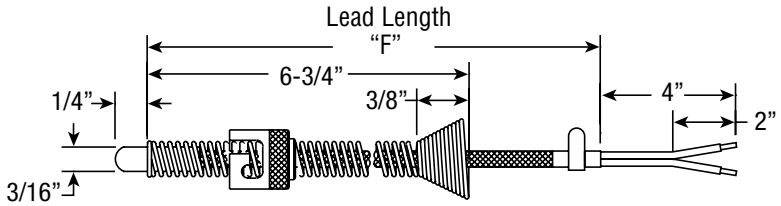
Adjustment Fittings
- **Single Slot Spring Loaded Bayonet Fitting**
- **9/32" Conduit with Bayonet Fitting**

Termination Options
- **T/C wire with Stripped Leads**
- **Spade Lugs**
- **Thermocouple Plugs**

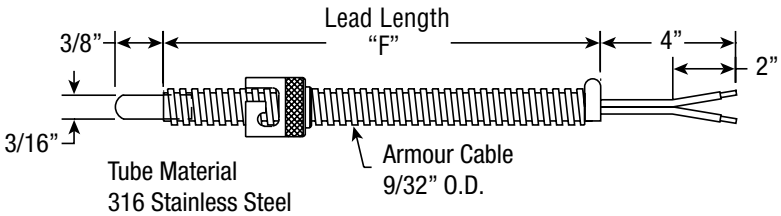
ADSCJ

ADSSJ

Dimensions - ADS (Spring Type Adjustment)



Dimensions - ADS (Conduit Style Adjustment)



Description

This style of thermocouple is commonly used on plastic extruders and injection molding machines. They are also used on presses such as those used in the rubber industry.

The hollow tube thermocouple typically has a spring loaded bayonet cap. When properly installed, the sensing tip presses against the bottom of the probe area for accurate temperature readings. Since the depth is adjustable, fewer thermocouples have to be kept as spares when compared to fixed depth thermocouples. A wide selection of sensors, lead wire termination options and accessories is available from stock or can quickly be manufactured to customer specifications.

Since the thermocouple depth is adjustable, it isn't necessary to stock multiple sizes, therefore reducing inventory and costs.

Applications

- Plastic Extruders
- Injection Moldings
- Presses

Adjustable Depth Sensors

Ordering Information

ADS **Adjustable Depth Sensor**

CODE	Sensor Type
S	Spring (Applicable Leadwire Type Codes: F3, F4, F6, T3)
C	Conduit (Applicable Leadwire Type Codes: F2, F5, T2, T4)

CODE	Thermocouple Alloy	Min Temp F.	Max Temp F.
J	Iron/Constantan	32	700
K	Chromel/Alumel	32	1600
T	Copper/Constantan	-328	400

CODE	Lead Wire Type	Thermocouple Types
F4	Fiberglass Insulation - Stranded Conductor	J, K
F6	Fiberglass Insulation - Stranded Conductor - Stainless Steel Overbraid	J, K, T
T3	Teflon Insulation - Stranded Conductor	J, K, T

CODE	Lead Length "F" Dimension
XXX	XXX = Lead Length in inches

CODE	Termination Options	Thermocouple Types
01	None	J,K,T
02	Leads stripped 2"	J,K,T
03	Leads stripped 2" with spade lugs	J,K,T
04	Leads stripped 2" with 1/2" NPT Bx connector	J,K,T
05	Leads stripped 2" with spade lugs & 1/2" NPT Bx connector	J,K,T
06	Standard thermocouple plug*	J,K,T
07	Standard thermocouple jack*	J,K,T
08	Standard thermocouple plug with mating connector*	J,K,T
09	Standard thermocouple jack with mating connector*	J,K,T
10	Miniature thermocouple plug*	J,K
11	Miniature thermocouple jack*	J,K
12	Miniature thermocouple plug with mating connector*	J,K
13	Miniature thermocouple jack with mating connector*	J,K

* Plugs and Jacks 500°F maximum temperature

ADS-	S	J	F6-	036	02	Typical Model Number

SENSORS

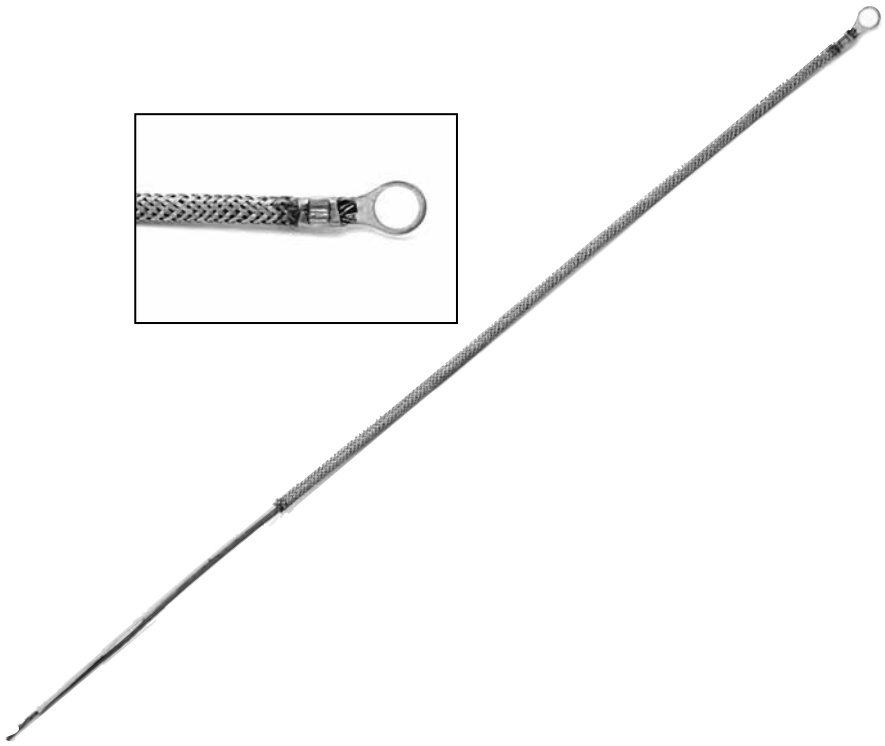
Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

Ring Type Thermocouples

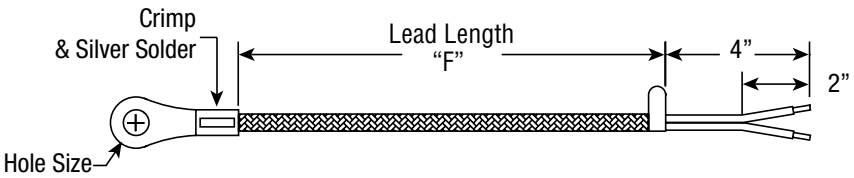
Type J, K, and T Thermocouples
- **Grounded**

Sheath Materials
- **3/16" or 3/8" Diameter Ring Hole Size**

Termination Options
- **T/C Wire with Stripped Leads**
- **Spade Lugs**
- **Thermocouple Plugs**



Dimensions - RTT (Ring Type Thermocouple)



Description

These ring type assemblies have the thermocouples embedded into a nickel-plated, stainless steel terminal for grounded junctions. Ring type therocouples measure the surface temperature of nozzles, extruder barrels, die heads, molds, and many other similar surfaces. A wide selection of sensors, lead wire termination options and accessories is available from stock or can quickly be manufactured to customer specifications.

Ring Type Thermocouples

Ordering Information

RTT **Ring Type Thermocouple, Nickel Plated**

CODE	Thermocouple Alloy	Min Temp F.	Max Temp F.
J	Iron/Constantan	32	700
K	Chromel/Alumel	32	1600
T	Copper/Constantan	-328	400

CODE	Lead Length "F" Dimension, Lead Wire is Fiberglass Insulation Stranded Conductor - Stainless Steel Overbraid
XXX	XXX = Lead Length in Inches

CODE	Hole Size
C	3/16"
F	3/8"

CODE	Termination Options	Thermocouple Types
01	None	J,K,T
02	Leads stripped 2"	J,K,T
03	Leads stripped 2" with spade lugs	J,K,T
04	Leads stripped 2" with 1/2" NPT Bx connector	J,K,T
05	Leads stripped 2" with spade lugs & 1/2" NPT Bx connector	J,K,T
06	Standard thermocouple plug*	J,K,T
07	Standard thermocouple jack*	J,K,T
08	Standard thermocouple plug with mating connector*	J,K,T
09	Standard thermocouple jack with mating connector*	J,K,T
10	Miniature thermocouple plug*	J,K
11	Miniature thermocouple jack*	J,K
12	Miniature thermocouple plug with mating connector*	J,K
13	Miniature thermocouple jack with mating connector*	J,K

* Plugs and Jacks 500°F maximum temperature

RTT-	**J**	**036**	**C**	**02**	**Typical Model Number**

SENSORS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

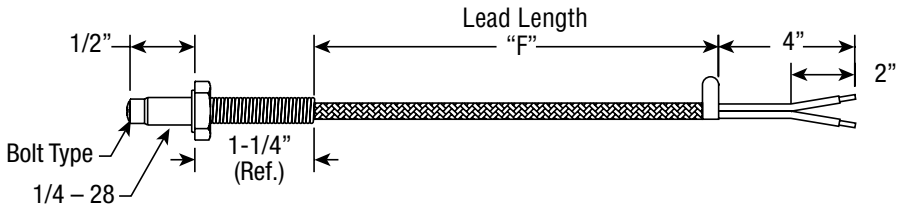
Nozzle Type Thermocouples

Type J, K, and T Thermocouples
- **Grounded**

Mounting Bolt
- **1/4 -28 NF Threaded Bolt**

Termination Options
- **T/C wire with Stripped Leads**
- **Spade Lugs**
- **Thermocouple Plugs**

Dimensions - NTT (Nozzle Type Thermocouple)



Description

Threaded nozzle thermocouples measure the temperature of the nozzle when placed in a threaded, shallow drill-hole on an injection nozzle. This type of TC does not directly contact the material flow. They are ideal in applications for nozzles with minimal wall thickness between the inside bore and hex flat. Threaded nozzle TCs are equipped with either a threaded, rotatable swivel bolt, or a fixed bolt which turns independently of the extension leads for easy installation. A wide selection of sensors, lead wire termination options and accessories is available from stock or can quickly be manufactured to customer specifications.

Applications

- Injection Molds
- Plastic Extruders
- Presses

Nozzle Type Thermocouples

Ordering Information

NTT **Nozzle Type Thermocouple**

CODE	Thermocouple Alloy	Min Temp F.	Max Temp F.
J	Iron/Constantan	32	700
K	Chromel/Alumel	32	1600
T	Copper/Constantan	-328	400

CODE	Lead Wire Type	Thermocouple Types
F4	Fiberglass insulation - Stranded conductor	J,K
F6	Fiberglass insulation - Stranded conductor - stainless steel overbraid	J,K,T
T3	Teflon insulation - Stranded conductor	J,K,T

CODE	Lead Length "F" Dimension
XXX	XXX = Lead Length in Inches

CODE	Bolt Type
F	Fixed
R	Rotate Swivel

CODE	Termination Options	Thermocouple Types
01	None	J,K,T
02	Leads stripped 2"	J,K,T
03	Leads stripped 2" with spade lugs	J,K,T
04	Leads stripped 2" with 1/2" NPT Bx connector	J,K,T
05	Leads stripped 2" with spade lugs & 1/2" NPT Bx connector	J,K,T
06	Standard thermocouple plug*	J,K,T
07	Standard thermocouple jack*	J,K,T
08	Standard thermocouple plug with mating connector*	J,K,T
09	Standard thermocouple jack with mating connector*	J,K,T
10	Miniature thermocouple plug*	J,K
11	Miniature thermocouple jack*	J,K
12	Miniature thermocouple plug with mating connector*	J,K
13	Miniature thermocouple jack with mating connector*	J,K

* Plugs and Jacks 500°F maximum temperature

NTT-	**J**	**F6**	**036**	**R**	**02**	**Typical Model Number**

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

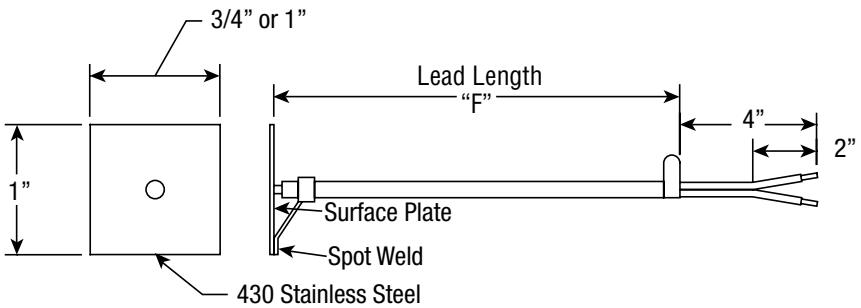
Surface Plate Thermocouples

Type J, K, and T Thermocouples
- **Grounded**

Plate Size
- **1" X 1"**
- **3/4" X 1"**

Termination Options
- **T/C Wire with Stripped Leads**
- **Spade Lugs**
- **Thermocouple Plugs**

Dimensions - SPT (Surface Plate Thermocouple)



Description

Surface Plate Thermocouples are ideal for measuring the temperature of a flat surface such as a grill plate or oven wall. A wide selection of sensors, lead wire termination options and accessories is available from stock or can quickly be manufactured to customer specifications.

Applications

- Grill Plates
- Oven Walls

Surface Plate Thermocouples

Ordering Information

SPT **Surface Plate Thermocouple**

CODE	Thermocouple Alloy	Min Temp F.	Max Temp F.
J	Iron/Constantan	32	700
K	Chromel/Alumel	32	1600
T	Copper/Constantan	-328	400

CODE	Lead Wire Type 20 Gauge Standed Conductor	Thermocouple Types
F4	Fiberglass insulation - Stranded conductor	J,K
F6	Fiberglass insulation - Stranded conductor - stainless steel overbraid	J,K,T
T3	Teflon insulation - Stranded conductor	J,K,T

CODE	Lead Length "F" Dimension
XXX	XXX = Lead Length in inches

CODE	Plate Size
A	1" x 1"
B	3/4" x 1"

CODE	Termination Options	Thermocouple Types
01	None	J,K,T
02	Leads stripped 2"	J,K,T
03	Leads stripped 2" with spade lugs	J,K,T
04	Leads stripped 2" with 1/2" NPT Bx connector	J,K,T
05	Leads stripped 2" with spade lugs & 1/2" NPT Bx connector	J,K,T
06	Standard thermocouple plug*	J,K,T
07	Standard thermocouple jack*	J,K,T
08	Standard thermocouple plug with mating connector*	J,K,T
09	Standard thermocouple jack with mating connector*	J,K,T
10	Miniature thermocouple plug*	J,K
11	Miniature thermocouple jack*	J,K
12	Miniature thermocouple plug with mating connector*	J,K
13	Miniature thermocouple jack with mating connector*	J,K

* Plugs and Jacks 500°F maximum temperature

SPT-	**J**	**F6**	**036**	**A**	**02**	**Typical Model Number**

SENSORS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

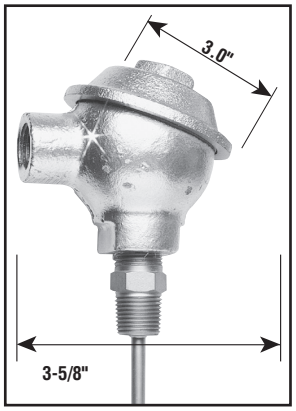
PR

RTD Probes with Connection Head

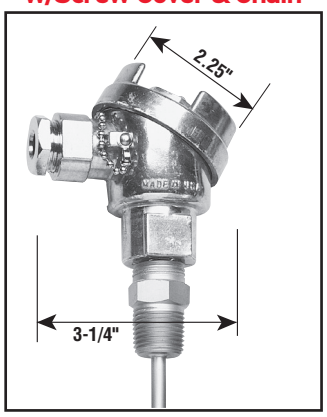
- Precision 100 Ohm Platinum RTD Element
- Rugged Design Offers Variety of Protection Heads with 1/2" NPT Mounting Threads
- 304 SS Sheath
- Spring Loaded Styles Available
- Available with PFA Teflon® Coating
- 6, 9, 12, 18 and 24" Lengths

- PR-12 — Cast Iron Protection Head with Internal Terminal Block
- PR-14 — Miniature Aluminum Head, Screw Cover and Chain Design with Internal Terminal Block
- PR-18 — Aluminum Head, Convenient Snap-Lock Design with Internal Terminal Block
- PR-19 — Subminiature Aluminum Head with Internal Terminal Block

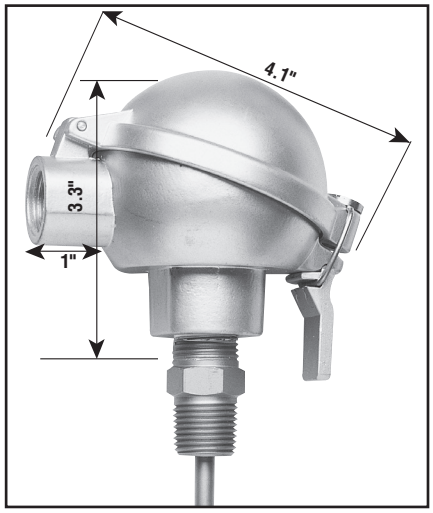
PR-12— Cast Iron



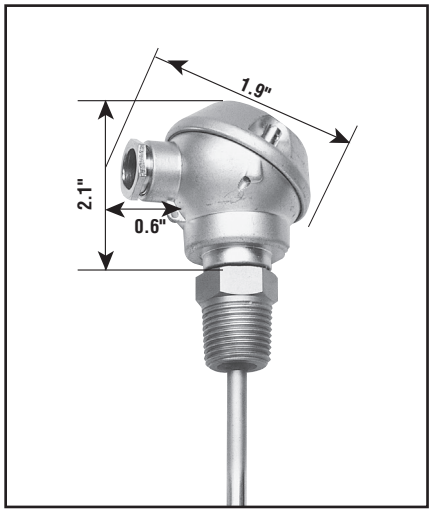
PR-14 — Aluminum w/Screw Cover & Chain

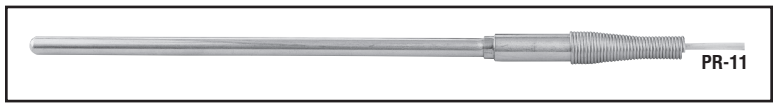


PR-18 — Aluminum w/Snap-Lock



PR-19 — Subminiature Aluminum





Stock PR-11s with Compatible Compression Fittings (SSLK)

Model	PCN	1/8 NPT Compression Fitting	PCN	1/4 NPT Compression Fitting	PCN
PR-11-2-100-1/4-6C	308013	SSLK-14-18-TEFLON/C	308750	SSLK-14-14-TEFLON/C	308769
PR-11-2-100-1/4-12C	308021	SSLK-14-18-TEFLON/C	308750	SSLK-14-14-TEFLON/C	308769
PR-11-2-100-1/4-18C	308030	SSLK-14-18-TEFLON/C	308750	SSLK-14-14-TEFLON/C	308769

* For details on SSLK Compression Fitting, see separate catalog sheet.

Stock PR-18 with Compatible Thermowells (260S, 260L)

Model	PCN	Thermowell Match	PCN	Thermowell Match	PCN
PR-18-2-100-1/4-6-E/C	308056	3/4-260S-U4 1/2-304SS/C 3/4-260S-U4 1/2-316SS/C	308662 308697	1/2-260S-U4 1/2-304SS/C 1/2-260S-U4 1/2-316SS/C	NS NS
PR-18-2-100-1/4-12-E/C	308064	3/4-260S-U10 1/2-304SS/C 3/4-260S-U10 1/2-316SS/C	308670 308700	1/2-260S-U10 1/2-304SS/C 1/2-260S-U10 1/2-316SS/C	327361 327370
PR-18-2-100-1/4-18-E/C	308072	3/4-260S-U16 1/2-304SS/C 3/4-260S-U16 1/2-316SS/C	NS NS	1/2-260S-U16 1/2-304SS/C 1/2-260S-U16 1/2-316SS/C	NS NS
NBS-2-100-1/4-4-E-HNSL/C*	308080	3/4-260S-U2 1/2-304SS/C 3/4-260S-U2 1/2-316SS/C	308654 308689	1/2-260S-U2 1/2-304SS/C 1/2-260S-U2 1/2-316SS/C	NS NS

*HNSL designates Spring Loaded probe

PR

RTD Probes with Connection Head *(cont'd.)*

Ordering Information

CODE	Assembly Type
PR-11	304SS Steel Transition with 36 inch Leadwire
PR-12	Cast Iron Connection Head with Screw Top
PR-14	Aluminum Connection Head with Screw Top and Chain
PR-18	Aluminum Connection Head with Snap Lock
PR-19	Subminiature Aluminated Connection Head with Screw Top

CODE	RTD Type
2-100	3-Wire, 100 OHM, Platinum RTD

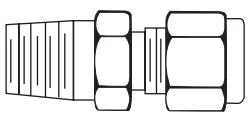
CODE	O.D. Sheath Dimensions
116	1/16 Inch
18	1/8 Inch
316	3/16 Inch
14	1/4 Inch

CODE	Probe Length
**-E/C	** Is Number of inches, Minimum 2" length

PR-11	-2-100	-18	-9-E/C	Typical Model Number

Compression Fittings

- **Ferrule Design for Positive Pressure Seal**
- **Fits Probe Diameters from 1/16" to 1/2"**
- **Heavy Duty Brass or Stainless Steel Construction**



In Stock:

Model	PCN
SSLK-18-18-TEFLON/C	308718
SSLK-18-14-TEFLON/C	308726
SSLK-316-18-TEFLON/C	308734
SSLK-316-14-TEFLON/C	308742
SSLK-14-18-TEFLON/C	308750
SSLK-14-14-TEFLON/C	308769
SSLK-18-18/C	277405

Ordering Information — Compression Fittings [1]

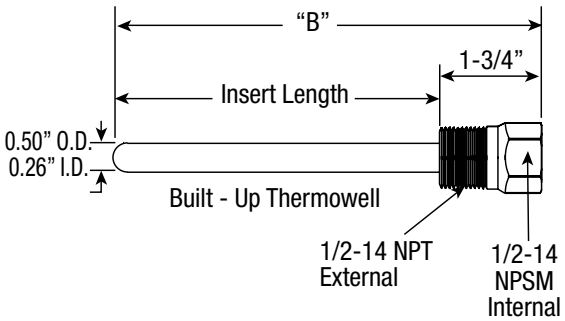
Probe OD	NPT Thread	316SS
1/16"	1/16"	SSLK-116-116/C
1/16"	1/8"	SSLK-116-18/C
1/8"	1/8"	SSLK-18-18/C
1/8"	1/4"	SSLK-18-14/C
3/16"	1/8"	SSLK-316-18/C
3/16"	1/4"	SSLK-316-14/C
1/4"	1/8"	SSLK-14-18/C
1/4"	1/4"	SSLK-14-14/C
5/16"	1/4"	SSLK-516-14/C
3/8"	1/4"	SSLK-38-14/C
3/8"	3/8"	SSLK-38-38/C
3/8"	1/2"	SSLK-38-12/C
1/2"	1/2"	SSLK-12-12/C

1. Fittings have metal ferrules and are non-readjustable. Adjustable Teflon models are available and in stock.

Built-Up Thermowells

- **Isolates Sensor from Process**
- **For 1/4" Diameter Probes (4" to 26"Length)**
- **1/2 NPT Outside 1/2 NPT Inside Thread**
- **304 Stainless Steel**

Dimensions - BUTW (Built Up Thermowell)



Note:
When fitting thermocouple to thermowell, probe length is the same as "B" dimension on thermowell.

Description

Thermowells are among the simplest accessories used in industrial temperature measurement applications. They are used to provide isolation between a temperature sensor and the environment, either liquid, gas or slurry. A thermowell allows the temperature sensor to be removed and replaced without compromising either the ambient region or the process.

Ordering Information

BUTW **Built Up Thermowell with 0.50" O.D., 0.26" I.D.**

CODE	Bushing Threads
A	1/2 NPT Outside, 1/2 NPT Inside

CODE	"B" Dimension
XXX	XXX = Length in Inches

CODE	Fraction of an inch
A	None
B	1/4"
C	1/2"
E	3/4"

BUTW	A	012	A	Typical Model Number

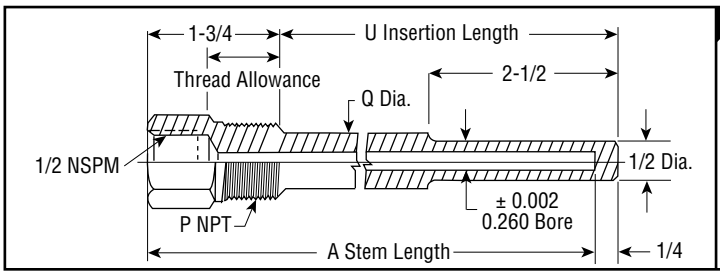
260S/260L
Thermowell
For General Use

- **260S Standard Thermowell**
- **260L With 2 or 3" Lagging Extentions**
- **Standard Threaded Well for 1/4" Diameter Elements**
- **1/2 and 3/4" NPT Standard. Additional Thread Sizes are Available on Request**
- **Standard Well Materials: 304 SS, 316 SS, Carbon Steel and Brass**
- **PFA Teflon® Coated Thermowells are Available**
- **For Companion Probe See Models NB & PR**

In Stock:

Model	PCN
3/4-260S-U2 1/2-304SS/C	308654
3/4-260S-U2 1/2-316SS/C	308689
3/4-260S-U4 1/2-304SS/C	308662
3/4-260S-U4 1/2-316SS/C	308697
3/4-260S-U10 1/2-304SS/C	308670
3/4-260S-U10 1/2-316SS/C	308700
1/2-260S-U10 1/2-304SS/C	327361
1/2-260S-U10 1/2-316SS/C	327370

Dimensions (Inches) 260S



Note — NPSM internal pipe thread will accept both NPT and NPS male threads.

Ordering Information

STANDARD THERMOWELLS

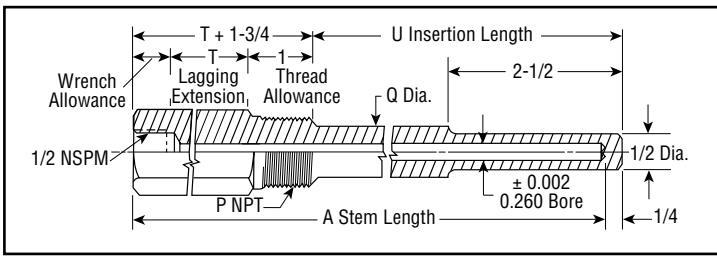
CODE	EXTERNAL THREADDING
1/2-260S	1/2" NPT
3/4-260S	3/4" NPT

CODE	Insertion Length	NB or PR Probe Code Match
U2 1/2	2-1/2"	4/C
U4 1/2	4-1/2"	6/C
U7 1/2	7-1/2"	9/C
U10 1/2	10-1/2"	12/C
U13 1/2	13-1/2"	15/C
U16 1/2	16-1/2"	18/C
U22 1/2	22-1/2"	24/C

CODE	Thermowell Material
304SS/C	304 Stainless Steel
316SS/C	316 Stainless Steel
CS/C	Carbon Steel
BRASS/C	Brass

3/4-260S-	U4 1/2-	304SS/C	Typical Model Number

Dimensions (Inches) 260L



Note — NPSM internal pipe thread will accept both NPT and NPS male threads.

Ordering Information

LAGGING EXTENTION THERMOWELLS

CODE	EXTERNAL THREADDING
1/2-260L	1/2" NPT
3/4-260L	3/4" NPT

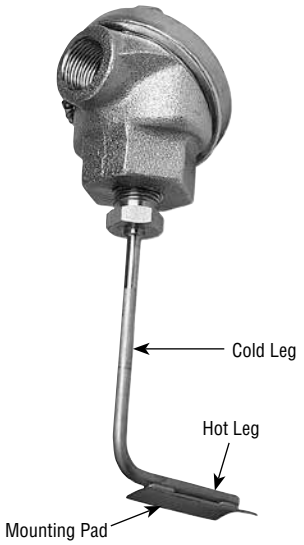
CODE	Insertion Length	NB or PR Probe Code Match
U2 1/2	2-1/2"	6/C
U4 1/2	4-1/2"	9/C
U7 1/2	7-1/2"	12/C
U10 1/2	10-1/2"	15/C
U13 1/2	13-1/2"	18/C
U19 1/2	19-1/2"	24/C

CODE	Thermowell Material
304SS/C	304 Stainless Steel
316SS/C	316 Stainless Steel
CS/C	Carbon Steel
BRASS/C	Brass

3/4-260L-	U4 1/2-	304SS/C	Typical Model Number

RBF
Heat Trace or Pipe Sensor

- **Heat Trace or Pipe Sensing Applications**
- **316 Stainless Steel Sheath**
- **Moisture Resistant Heads**
- **3/4" or 1/2" NPT Threaded Extension Wire Opening**
- **4" to 8" Cold Leg Standard for Varying Insulation Depths**
- **100 ohm RTD, ± .12% Accuracy**
- **Fiberglass Insulated RTD Probe**
- **RTD or Universal Transmitter Available (Must Specify Temperature Range)**



Description

For measuring the surface temperature of process piping that is carrying products whose temperatures must be controlled to prevent freeze-up, or to maintain a viscosity level so that the inner medium will flow. The RTD Sensor Element is made up with a 316SS sheath, and with a stainless steel mounting pad. Cold legs are available in customer specified lengths to accommodate pipe insulation thickness.

Model	Sensor	Insulation	Common Junction	Range (˚F) Min	Max
RBF185M-HT	RTD	Fiberglass		-100	900

Sheath Leg Lengths

Code	Hot	Cold
304	3"	4"
306	3"	6"
308	3"	8"

Code	Mounting Pads
18RD	Fits All Pipe Sizes*

Code	Connection Heads
31SB/C	Aluminum
49SB/C	Flip top Aluminum Head
91SB/C	316L Stainless Steel
93SB/C	Aluminum
94SB/C	316L Stainless Steel

RBF-185M-HT	**304**	**18RD**	**31SB/C**

*Mounting pads conform to pipe with pipe clamps

†Replaces RBF185M-HT-0304-18RD-71SB/C

In Stock:

Model	PCN	Stock Status
RBF185M-HT-304-18RD-31SB/C	317315	ST
RBF185M-HT-304-18RD-93SB/C	317340	ST
RBF185M-HT-304-18RD-49SB/C	399517	NS
RBF185M-HT-304-18RD-91SB/C	317323	NS
RBF185M-HT-304-18RD-94SB/C	399550	NS

Approvals Chart

Connection Head	Approval Agency			
	FM	CSA	ATEX	IECEx
31SB/C	N/A	N/A	N/A	N/A
49SB/C	N/A	N/A	N/A	N/A
91SB/C	N/A	N/A	N/A	N/A
93SB/C	Class I Division 1; Groups A,B,C,D DIP Class II Division 1; Groups E,F,G Class III; Type 4/4X	Class I Division 1; Groups A,B,C,D DIP Class II Division 1; Groups E,F,G Class III; Type 4/4X Class I Zone 1 AEx d IIC Gb; Zone 21 Aex tb IIIC Db; IP66	Ex II 2 GD Ex db IIC Gb; Ex tb IIIC Db; IP66	Ex db IIC Gb; Ex tb IIIC Db; IP66 Ta = -20°C to 100°C
94SB/C	Class I Division 1; Groups A,B,C,D DIP Class II Division 1; Groups E,F,G Class III; Type 4/4X	Class I Division 1; Groups A,B,C,D DIP Class II Division 1; Groups E,F,G Class III; Type 4/4X Class I Zone 1 AEx d IIC Gb; Zone 21 Aex tb IIIC Db; IP66	Ex II 2 GD Ex db IIC Gb; Ex tb IIIC Db; IP66	Ex db IIC Gb; Ex tb IIIC Db; IP66 Ta = -20°C to 100°C

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

RBF-HT

RTD Heat Trace Sensors

- **RTD for Heat Trace Applications**
- **-76°F (-60°C) to 400°F (204°C) Temperature Range**
- **316 Stainless Steel Sheath**
- **100 ohm RTD, =.00385 ohms/°C**
- **±1°F(0.5°C) Accuracy at 32°F (0°C)**
- **1/2"(12.7mm) conduit fitting**
- **Available in 3', 10', 50' Lengths**
- **SS Flex Armor outer shield**
- **3"L x 3/16" D Probe**

Description

The Chromalox RTD-HT sensors are used for measuring the surface temperature of process piping that is carrying products whose temperature must be controlled to prevent freeze-up, or to maintain viscosity level so that the inner medium will flow. The RTD sensor element is made up with a 316 SS sheath and can be installed directly to a controller or junction box using the 1/2" conduit fitting.

Ordering Information

Model	Description	PCN	Stock Status
RBF185L383-003-00-18-T3A036-Z-018-2,Z(Z371)	3' (0.3 m) Flexible Armor, 18" (457 mm) leads	399031	**NS**
RBF185L383-003-00-18-T3A120-Z-018-2,Z(Z371)	10' (3 m) Flexible Armor, 18" (457 mm) leads	399040	**NS**
RBF185L383-003-00-18-T3A600-Z-018-2,Z(Z371)	50' (15.2 m) Flexible Armor, 18" (457 mm) leads	399058	**NS**

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

GIC-AMB
Ambient Heat Trace Sensor

- **RTD for Heat Trace Applications**
- **-76°F (-60°C) to 400°F (204°C) Temperature Range**
- **Copper Sheath probe protected by vented 304 SS guard**
- **100 ohm RTD, = .00385 ohms/°C**
- **±1°F (0.5°C) Accuracy at 32°F (0°C)**
- **1/2"(12.7mm) NPT fitting**
- **.5/8"L x 1/4" D Probe**

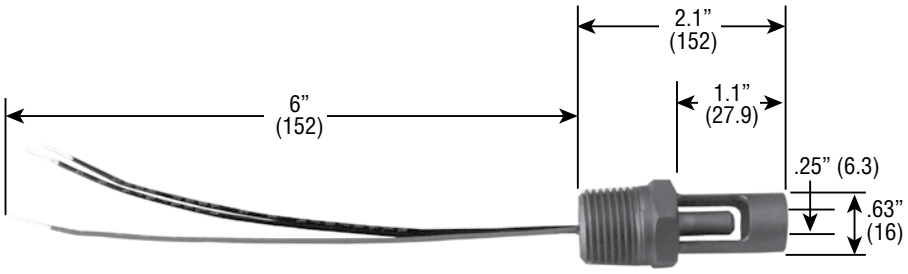
NEW!

Description

The Chromalox GIC-AMB sensor is used for measuring the ambient air temperature to prevent freeze-up of process piping that is carrying products whose temperature must be kept above freezing so that the inner medium will flow. The RTD sensor element is made up with a Copper sheath and can be installed directly to a controller or junction box using the 1/2" NPT conduit fitting. The 304 SS guard protects the probe against accidental damage.

Ordering Information

Model	PCN	Stock Status
GIC-AMB	392497	S



Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

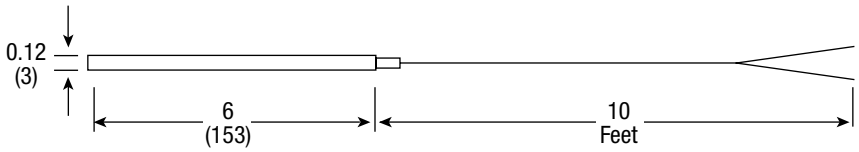
Thermocouple Sensors- Special Purpose

Description

The Sensors shown on this page represent some models designed for specific applications. They include a 6" by 1/8" diameter J thermocouple with 10' Fiberglass® leads, and a type K thermocouple with identical physical characteristics.

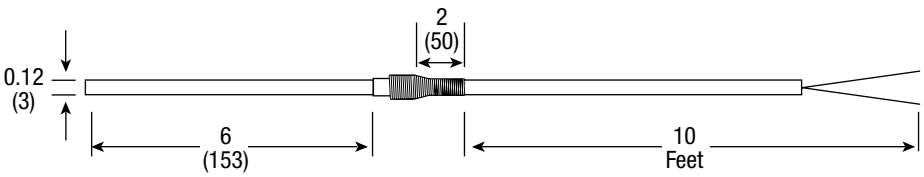
C700JUA and C700KUA

C700JUA and C700KUA are designed for general applications. They are encased in a thin stainless steel sheath and can be used in mildly corrosive fluids.



C700JU and C700KU

This model thermocouple features a metal transition and spring relief.



Type	Model	Old CIC PN	Old Model Number	PCN
J	TJ120-ICSS-18U-6-GG/C (C700JUA)	0104-10000	C700JUA	309980
K	TJ120-CASS-18U-6-GG/C (C700KUA)	0104-10008	C700KUA	309972
J	TJ120-ICSS-18U-6-GG/C (C700JU)	0104-12119	C700JU	293544
K	TJ120-CASS-18U-6-GG/C (C700KU)	0104-12120	C700KU	293552

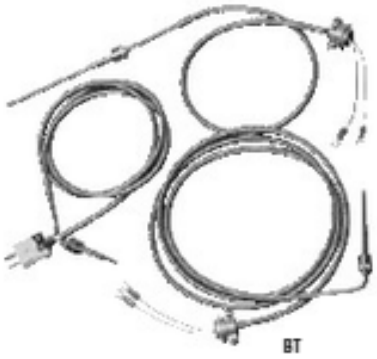
1/8 NPT Compression Fitting	PCN
SSLK-18-18-TEFLON/C	308718

1/4 NPT Compression Fitting	PCN
SSLK-18-14-TEFLON/C	308726

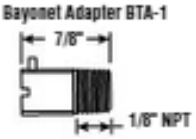
BT & CF PROBES

Bayonet & Compression RTDs

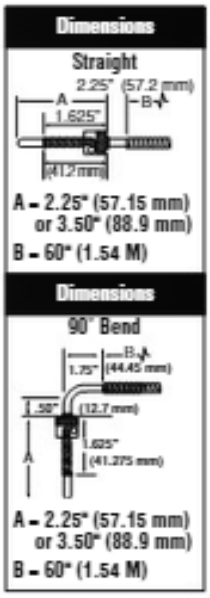
- **Service Temperature to 900°F (482°C)**
- **304 Stainless Steel Construction**
- **Flexible 0.275" Stainless Steel Cable (60" Length Standard)**
- **45° Bend Available on Both BT and CF Styles**
- **A Wide Variety of Immersion Lengths, Styles and Mounting Arrangements Available**
- **Ideal for Extruders and Packaging Machines**
- **Precision 100 Ohm PT RTD Element**



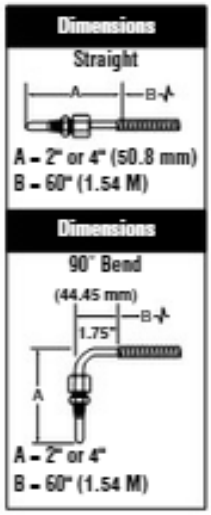
Termination Types —



Bayonet



Compression Fitting



In Stock:

Model	PCN
CF-000-RTD-2-60-1/C	327388
CF-000-RTD-4-60-1/C	327396
CF-090-RTD-2-60-1/C	327409
CF-090-RTD-4-60-1/C	327417
BTA-1 (Bayonet Adapter)	308558

CODE	Assembly Type
BT-000	Straight Probe with a Spring Loaded Bayonet Fitting
CF-000	Straight Probe with a Brass 1/8 NPT Compression Fitting
BT-090	90° Angle Probe with a Spring Loaded Bayonet Fitting
CF-090	90° Angle Probe with a Brass 1/8 NPT Compression Fitting

CODE	Sensor Type
RTD	3-WIRE, 100 OHM, PLATINUM RTD

CODE	Insertion Length (Inches)
2-1/4	Bayonet Style Only
3-1/2	Bayonet Style Only
2	CF Style Only
4	CF Style Only

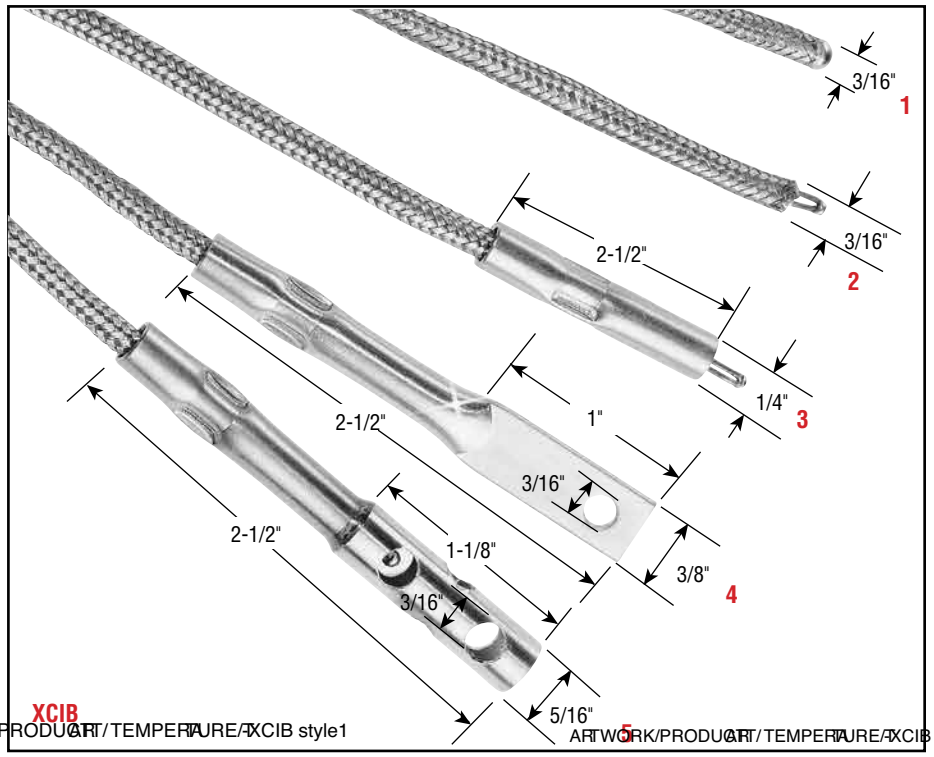
CODE	End Termination
1/C	SPADE LUGS
2/C	OTP (M) Connector for RTD OST (M) Connector for Thermocouple

BT-090	**-J**	**-2**	**-2/C**	**Typical Model Number**

XCIB

High-Temp. Overbraided Thermocouples

- **Withstands Temperatures Up to 2000°F (1093°C)**
- **High Temperature Ceramic Insulation with INCONEL® Overbraid**
- **Standard Lengths are 3 and 10 Feet. Additional Lengths Available**
- **J, K or E Thermocouple Calibrations**
- **Grounded Junction**



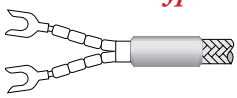
XCIB ARTWORK/PRODUCART/TEMPERATURE/1XCIB style1

ARTWORK/PRODUCART/TEMPERATURE/4XCIB style4

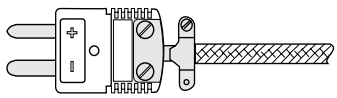
In Stock:

Model	PCN
XCIB-K-1-2-3/C	326810
XCIB-K-1-2-10/C	326828
XCIB-K-1-3-10/C	326836
XCIB-K-1-4-3/C	326844
XCIB-K-1-4-10/C	326852
XCIB-K-2-2-3/C	326860
XCIB-K-2-2-10/C	326879
XCIB-K-4-2-10/C	326887
XCIB-K-4-4-3/C	326895
XCIB-J-4-4-3/C	326908
XCIB-K-4-4-10/C	326916
XCIB-J-4-4-10/C	326924

Termination Types

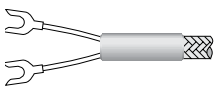


1. Ceramic beaded leads with compensated spade lugs.



2. OST standard thermocouple connector (to 425°F)

3. NHXH ceramic connector (to 1200°F)



4. Nextel insulated leads with compensated spade lugs.

Specifications and Ordering Information — XCIB

Model	Probe Style	Termination Type	Model	Probe Style	Termination Type
XCIB-(1)-1-1-(2)/C	1	1	XCIB-(1)-3-3-(2)/C	3	3
XCIB-(1)-1-2-(2)/C		2	XCIB-(1)-3-4-(2)/C		1
XCIB-(1)-1-3-(2)/C		3	XCIB-(1)-4-1-(2)/C	4	1
XCIB-(1)-1-4-(2)/C		4	XCIB-(1)-4-2-(2)/C		2
XCIB-(1)-2-1-(2)/C	2	1	XCIB-(1)-4-3-(2)/C		3
XCIB-(1)-2-2-(2)/C		2	XCIB-(1)-4-4-(2)/C		4
XCIB-(1)-2-3-(2)/C		3	XCIB-(1)-5-1-(2)/C	5	1
XCIB-(1)-2-4-(2)/C		4	XCIB-(1)-5-2-(2)/C		2
XCIB-(1)-3-1-(2)/C	3	1	XCIB-(1)-5-3-(2)/C		3
XCIB-(1)-3-2-(2)/C		2	XCIB-(1)-5-4-(2)/C		4

Note — 1. Specify thermocouple type:
2. Specify length in feet (3 or 10 Ft. standard)
J: Iron-Constantan K: Chromel-Alumel E: Chromel-Constantan

SENSORS

Toll free: ph 800-925-4328 Local: ph 262-253-4800 Email: info@gordonhatch.com

Thermocouple Wire

Type J or K Thermocouple Wire

#20 or #24 Gauge Solid or Standed

Insulation Types
- **Fiberglass**
- **Fiberglass with Metal Overbraid**
- **Teflon**

Up to 1,000 rolls

Description

Thermocouple extension wire is necessary to extend the thermocouple signal from the sensor to the contol.

Ordering Information

TCW — Thermocouple Wire

CODE	Wire Gauge
20	20 Gauge Wire
24	24 Gauge Wire

CODE	Thermocouple Alloy
J	Iron/Constantan
K	Chromal/Alumel

CODE	Insulation
F	Fiberglass Insulation
B	Fiberglass Insulation - Stainless Steel Overbraid
T	Teflon Insulation

CODE	Conductor
S	Solid
T	Stranded

CODE	Length
XXX	XXX = Length in Feet

TCW–	20	J	F	S-	100	Typical Model Number

RTD Extenstion Wire

Description

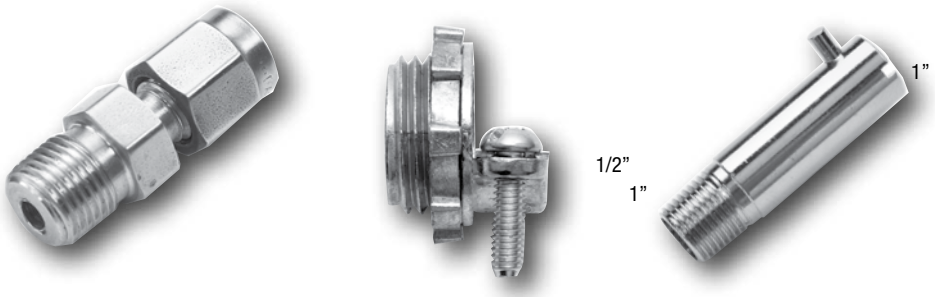
Use of twisted-shielded Copper RTD extention wire provides interference free application. The shield should be grounded at one end only. (Preferably the controller end)

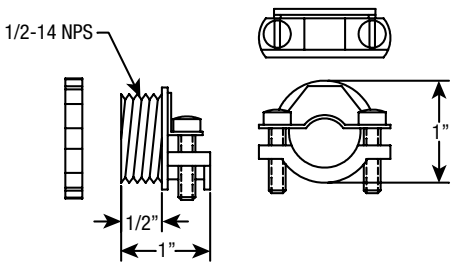
Description	Length (Ft.)	Model	Stock	PCN	Wt. (lbs.)
3-wire, 16 gauge CU, Polyvinyl, twisted, shielded, covered in polyvinyl Temp. range 215° F	50	**3 Cu-PALP-TW-16-50**	**S**	308144	3
	200	**3 Cu-PALP-TW-16-50**	**S**	308152	11

Stock Status: S = stock NS = non-stock

Accessories

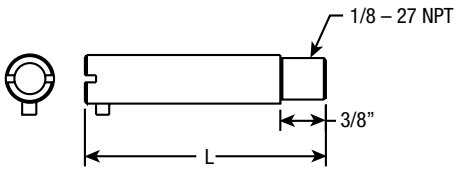
- **Connectors**
- **Fittings**
- **Adapters**





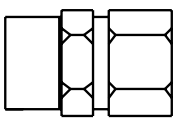
BX Connector

Part Number	Material
PC4387-1	Galvanized Steel



Quick Detatch Adapters

Part Number	"L" Dimension	Material
TC6136-8	7/8"	Stainless Steel
TC6136-12	1-1/4"	Plated Steel
TC6136-15	1-1/2"	Plated Steel
TC6136-20	2"	Plated Steel
TC6136-25	2-1/2"	Plated Steel
TC6136-32	3-1/4"	Plated Steel
TC6136-40	4"	Plated Steel

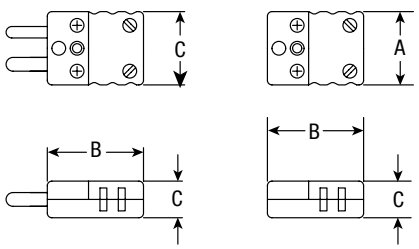


Compression Fittings

Supplied with Metal Ferrules Only			
Part Number	TC Size	Thread Size	Material
PC4381-1	3/16"	1/8 NPT	Brass
PC4381-2	1/8"	1/8 NPT	Brass
PC4381-6	3/16"	1/4 NPT	Brass
PC4381-8	1/8"	1/8 NPT	Stn. Stl.
PC4381-9	1/8"	1/4 NPT	Stn. Stl.
PC4381-10	3/16"	1/8 NPT	Stn. Stl.
PC4381-11	3/16"	1/4 NPT	Stn. Stl.
PC4381-12	1/4"	1/8 NPT	Stn. Stl.
PC4381-13	1/4"	1/4 NPT	Stn. Stl.

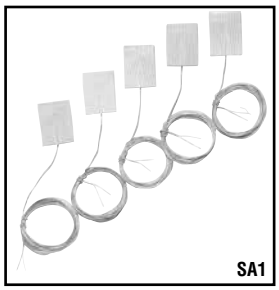
Connector Dimensions

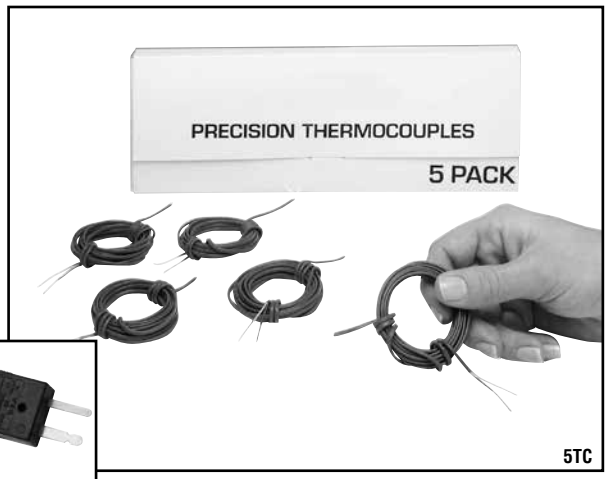
		Dim. A	Dim. B	Dim. C
Male Connector	Mini	5/8"	3/4"	5/16"
	Standard	1"	15/16"	1/2"
Female Connector	Mini	5/8"	3/4"	5/16"
	Standard	1"	15/16"	1/2"

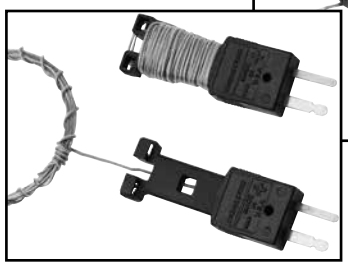


5TC, 5SC & SA1
Precision Insulated Thermocouples

- J, K, T and E Calibrations
- Made From Special Limits of Error Wire
- Available in 36 and 72" Lengths
- Convenient 5-Packs







5TC

- PFA Teflon® or Glass Braid Insulation
- 20, 24, 30 and 36" AWG Wires
- Stocked in 36 and 72" Lengths

Specifications and Ordering Information — 5TC

Model	Wire Gauge	Dia. (In.)	Insulation
5TC-GG-(1)-20-(2)/C	20	0.032	Glass Braid
5TC-GG-(1)-24-(2)/C	24	0.020	Glass Braid
5TC-GG-(1)-30-(2)/C	30	0.010	Glass Braid
5TC-TT-(1)-20-(2)/C	20	0.032	Teflon®
5TC-TT-(1)-24-(2)/C	24	0.020	Teflon®
5TC-TT-(1)-30-(2)/C	30	0.010	Teflon®
5TC-TT-(1)-36-(2)/C	36	0.005	Teflon®

1. Specify calibration: J, K, T or E.
2. Specify length: 36 or 72 inches.

5SC

- 30 and 36" AWG Wires with PFA Teflon®
- 30" AWG Wires with Glass Braid Insulation
- Molded Subminiature Connector

Specifications and Ordering Information — 5SC

Model	Wire Gauge	Length (In.)	Insulation
5SC-TT-(1)-36-36/C	36	36	Teflon®
5SC-TT-(1)-36-72/C	36	72	Teflon®
5SC-TT-(1)-30-36/C	30	36	Teflon®
5SC-TT-(1)-30-72/C	30	72	Teflon®
5SC-GG-(1)-30-36/C	30	36	Glass Braid
5SC-GG-(1)-30-72/C	30	72	Glass Braid

1. Specify calibration: J, K, T or E.

SA1

- Self-Adhesive Backing, Standard 36" Length
- Better than 0.3 Second Response Time
- Rated to 350°F Long Term

Specifications and Ordering Information — SA1

Model	Thermocouple
SA1-J/C	J Iron-Constantan
SA1-K/C	K Chromel-Alumel
SA1-E/C	E Chromel-Constantan
SA1-T/C	T Copper-Constantan

Teflon® is a registered trademark of DuPont.

In Stock:

Model	PCN	Model	PCN
5TC-GG-J-24-36/C	326713	5TC-TT-K-24-36/C	326764
5TC-GG-K-24-36/C	326721	5TC-TT-J-30-36/C	326772
5TC-GG-J-30-36/C	326730	5TC-TT-K-30-36/C	326780
5TC-GG-K-30-36/C	326748	SA1-J/C	326799
5TC-TT-J-24-36/C	326756	SA1-K/C	326801

SRTD
Surface Mount RTD Series

- Surface Mount (SA1)
- Response Time in Milliseconds
- Rated to 500°F (260°C) Long Term
- 36" Teflon® Insulated 3-Wire Leads (SRTD)

SRTD

SA1

Specifications and Ordering Information

Model	Accuracy (Tolerance)	PCN
SRTD-1/C	±0.50 Ohms ±0.50% of temperature rdg	338052
SRTD-2/C	±0.22 Ohms ±0.25% of temperature rdg	339178
OB-101-1/2/C	Expoxy Adhesive 221°F (105°C) Twin Pak 1/2 oz.	339186
OB-200-2/C	Expoxy Adhesive 500°F (260°C) Twin Pak 2 oz.	339194

Note — Additional lead wire is available, add suffix "-length in inches". Comes with complete operator's manual.

Model	Style	Load Length (Inches)
SA1-RTD	3-Wire	40
SA1-RTD-80	3-Wire	80
SA1-RTD-120	3-Wire	120

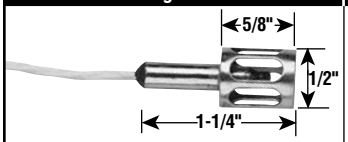
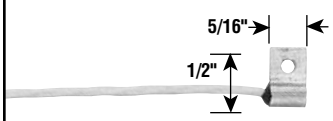
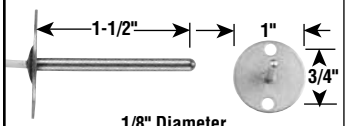
RTD 800
Precision RTD Probes

- 100 Ohm Platinum RTD Sensors
- 36" Teflon® Insulated 3-Wire Leads
- Standard with Subminiature MTP Series Connector

Description

The RTD-805/C has its element mounted in an open-ended stainless steel housing. The encapsulated sensor design on the RTD-830/C provides low cost with a fast response and is designed for mounting on flat sufaces. A stainless steel housing with 1/4" hex head and a #8-32 NC-2A threaded body encapsulates the element on the RTD-850/C. This unit is designed for applications requiring vibration and shock resistance. The RTD-860/C has a closed-end stainless steel tube with the sensor mounted in the tip, the mounting plate includes two holes for easy installation.

Configurations and Specifications

Configuration	Model	Temperature Range	Applications	PCN
	RTD-805/C	-50 to 230°C	Gas & Air	339207
	RTD-830/C	-50 to 230°C	Flat Surface	339215
	RTD-850/C	-50 to 230°C	Threaded Tip	339223
	RTD-860/C	-200 to 230°C	Gas & Air	339231

Teflon® is a registered trademark of DuPont.

CONNECTORS

Standard & Subminiature Thermocouple and RTD

- **OST Series Rated to 425°F (220°C) Standard Size**
- **OTP Series Rated to 425°F (220°C) Standard Size**
- **NHX Series Rated to 1200°F (650°C) Standard Size**
- **UPJ Series Rated to 425°F (220°C) Standard Sizes and Subminiature**
- **SMP Series Rated to 425°F (220°C) Subminiature Size**
- **MTP Series Rated to 425°F (220°C) Subminiature Size**
- **SHX Series Rated to 1200°F (650°C) Subminiature Size**
- **MPJ Series Rated to 425°F (220°C) Subminiature Size**

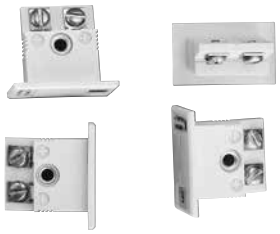
In Stock:

Model	PCN
OTP-U-M/C	308179
OTP-U-F/C	308187
OST-K-M/C	308806
OST-K-F/C	308814
OST-J-M/C	308785
OST-J-F/C	308793
NHX-K-M/C	327425
NHX-K-F/C	327433
NHX-J-M/C	327441
NHX-J-F/C	327450
SMP-K-M/C	327468
SMP-K-F/C	327476
SMP-J-M/C	327484
SMP-J-F/C	327492

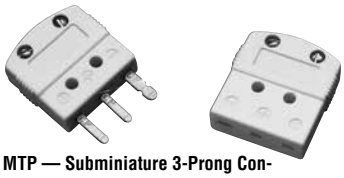
OST — Standard Connectors

NHX — Extra Heavy Duty High Temperature Ceramic Connectors

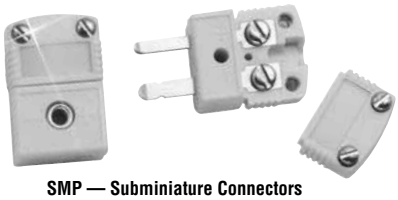
OTP — Thermocouple and RTD Connectors



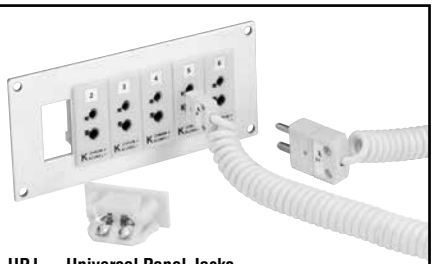
MPJ – Miniature Panel Jacks



MTP — Subminiature 3-Prong Connectors



SMP — Subminiature Connectors



UPJ — Universal Panel Jacks
(Accepts both Standard and Subminiature Plugs)

SHX — Subminiature High Temperature Ceramic Connectors

Mounting Plate w/Female Connectors

Model	# of Jacks
UJP-1-6-(1)/C	6
UJP-1-12-(1)/C	12
1-type of TC; J, K, T, R, S, U, Includes UPJ Female Connectors	

CODE	Connectors
NHX	Extra Heavy Duty / High Temperature Ceramic (1200˚F)
OST	Standard 2-Pin
OTP	Thermocouple or RTD 3-Pin
UPJ	Universal Panel Jack for 2-Pin
SMP	Subminiature 2-Pin
MTP	Subminiature 3-Pin
SHX	Subminiature High Temperature Ceramic (1200˚F) 2-Pin or Socket
MPJ	Miniature Panel Jack for 2-Pin

CODE	Thermocouple Type or Uncompensated
J	J-Iron Constantan (Black)
K	K-Chromel Alumel (Yellow)
E	E-Chromel Constantan (Purple)
T	T-Copper Constantan (Blue)
U	U-Uncompensated for RTDs (White)

CODE	Connector Junction Type
M/C	Male Connection
F/C	Female Connection

OTP	-E	-M/C	Typical Model Number