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

In Stach			Code	Vol
			Ō	120
Model	PCN		1	208
4224-35111	314771		2	380
		-	1	Cod
				0
				1
				b
Note: Additional control panel of	options avail-			
able. See pages H-143 to H-14	5.			
* Coo "Cingle Channel Controll	oro" for			
controller specifications				
controller specifications.				
				1

Description

The Chromalox 4214 and 4224 SCR Control Panels combine full-featured 1/16 DIN, digitalindicating 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

CHROMALOX

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- 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

Ordering Information

Complete the Model Number using the Matrix provided.

Model

4214	Single	e Pha	se Zero	Fired SCR	Power	Control P	Panel
	Panel Single Trans Indoo Option Cabin	Conf e Phas forme r/Out ns Inc et He	iguratio se SCR er with door A _l clude: F ater	on Power Con Primary & S oplications, Process Con	trol Par Seconda Three-I troller,	nel. Featur ary Fusing Pole Shutc Hi-limit Co	es: Factory pre-wired for quick installation, Step-down for 120 volt Control Circuit, NEMA 4 rated Enclosure for down Contactor, SSR for Power Switching with I ² t Fusing. ontrollers, Ground Fault Monitor, Disconnect Switch, and
	Code	Cur	rent @	40°C (104°	F) Amb	ient with	no Solar Load Enclosure Dimensions
	3	30		,	,		(16"H x 16"W x 6"D)
			Code	Voltage			
			0 1 2 3	120 VAC 208 VAC 240 VAC 380 VAC	4 5 6	415 VA 480 VA 575/60	C C O VAC
			1	Code	Proce	ss Contro	Iler Options
				0 1 6	Custo 6040- LM-2	mer Supp SR000 1/ ⁻ Module (4	lied Digital Signal (3-20 VDC) 16 DIN SSR, Relay 4-20mA Input)
					Code	Overte	mperature Controller Options
					0	None 6050-S	SR000 1/16 DIN Fixed Relay, Relay
						Code	Options
						0 1 2 3	None Main Disconnect with Through Door Operator Ground Fault Monitor includes Illuminated Reset Switch* Thermostat Controlled Enclosure Heater Ground Fault Monitor & Main Disconnect Switch*
						5 6	Main Disconnect Switch & Enclosure Heater Ground Fault Monitor, Main Disconnect Switch & Enclosure Heater*
4014			<u> </u>			7	Ground Fault Monitor & Enclosure Heater*
4214-	3		5	5	5	1	iypicai modei number

Ground Fault detection requires grounded supply.

CHROMALOX-

Three Phase Two-Leg Zero Fired SCR Power Control Panel

Model 4224

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

		Monito	Disconne Current (30	ect Switch	and Ca D4°F) A	abinet Heat I mbient (wi	er. th no Solar Load)	Enclosure Dimensions (24"H x 24"W x 10"D)
dditional control panel options avail-			<u>Code</u> 1 2 3 4 5	208 V/ 240 V/ 380 V/ 415 V/ 480 V/	e NC NC NC NC			
e pages H-143 to H-145.			0	575/60 Code	U VAU	ress Contro	ller Antions	
				0 1 6	Cus 604 LM- <u>Cod</u> 0 1	tomer Supp 0-SR0000 2 Module (e Overto None 6050-	lied Digital Signal (3-: 1/16 DIN SSR, Relay 4-20mA Input) emperature Controlle 1R000 1/16 DIN Fixed	20 VDC) r Options
						Code	Options	
						0 1 2 3 4 5 6 7	None Main Disconnect Ground Fault Mo Reset Switch** Thermostat Cont Ground Fault Mo Switch** Main Disconnect Ground Fault Mo & Enclosure Heat Ground Fault Mo	Switch nitor includes Illuminated rolled Enclosure Heater nitor & Main Disconnect Switch & Enclosure Heater nitor, Main Disconnect Switch er** nitor & Enclosure Heater**
	4224-	3	5	5	5	 1	Typical Model N	lumber

**Ground Fault detection requires grounded supply.



Note: Ac able. See

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

CHROMALOX-

H-107

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

Orde	ering.	Infor	matio	m			
Model	Single	Phase 2	Zero Fir	ed SC	R Mini P	ower Control	Panel
4168	cUL an lation, rated E Shutdo Discon Code	d UL Lis Step-do nclosur wn Con nect Sw Currer	sted Sin wn Tran e (24"H itactor. (vitch and nt @ 40	gle Ph isform x 20"V Option d Enclo ° C (10	ase SCR er with P V x 8"D), s Include osure Hea 4°F)	Power Contr rimary & Sec External Heat : Process and tter.	ol Panel. Features: Factory pre-wired for quick instal- condary Fusing for 120 volt Control Circuit, NEMA 4 t Sinks for Indoor/ Outdoor Applications, I²t Fusing, and d Hi-Limit Controllers, Ground Fault Monitoring, Main
	3	30 Am	ip in				
	Ĭ	Code	Voltan	e			
		Code 1 2 3 4 6	Voltag 120 V/ 208 V/ 208 V/ 240 V/ 480 V/ 575/60 Code 0 1 2 3 4 5 7 7	e AC AC AC AC AC Proce 6040 6040 4040 4040 4040 4040 0 Custa 0 1 2 3 4	s ess Conti (6 - 12 \ -SR0000 -SRA10 -SRA10	oller Option: /DC Control S 1/16 DIN SS 1/16 DIN SS 1/4 DIN SSF 1/4 DIN SSF 1/4 DIN SSF 1/4 DIN SSF 04000 1/4 DI plied Remote imperature C R000 1/16 D RA10 1/16 D RA10 1/16 D R000 1/1 DI RA10 1/14 DI Options None Ground Fa Main Disc 9010(*) 9025(*) 9030(*) 9030(*) 9040(*) 9050(*)	s Signal Customer Supplied) R, Relay R, Relay, Retransmit, RS485, Remote Setpoint N Graphic Display, SSR, Relay, Retransmit, Ethernet e 4 - 20 mAdc, 0-10 VDC, 0-5 VDC ontroller Options IN Fixed 5A Relay, Relay IN Fixed 5A Relay, Relay, Retransmit, RS485 V Fixed 5A Relay, Relay, Retransmit, RS485 W Fixed 5A Relay, Relay, Retransmit, RS485 W Fixed 5A Relay, Relay, Retransmit, RS485 V Fixed 5A Relay, Relay, Retransmit, RS485 V Fixed 5A Relay, Relay, Retransmit, RS485 W Fixed 5A Rel
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

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

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

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

PCN
314739
314763

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

Load Fusing Option
8 Amps/Circuit (10 Amp Fuse)
12 Amps/Circuit (15 Amp Fuse)
16 Amps/Circuit (20 Amp Fuse)
20 Amps/Circuit (25 Amp Fuse)
24 Amps/Circuit (30 Amp Fuse)
28 Amps/Circuit (35 Amp Fuse)
32 Amps/Circuit (40 Amp Fuse)
36 Amps/Circuit (45 Amp Fuse)
40 Amps/Circuit (50 Amp Fuse)
48 Amps/Circuit (60 Amp Fuse)
56 Amps/Circuit (70 Amp Fuse)
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

Ord	ering	Infor	mation

Model	Three I	Phase 1	Two-Leg	Zero F	ired SCF	R Mini Power	Control Panel			
4268	cUL and lation, S rated En Shutdo Disconi Code	d UL Li Step-do nclosur wn Cor	Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick instal- down Transformer with Primary & Secondary Fusing for 120 volt Control Circuit, NEMA 4 sure (24"H x 20"W x 8"D), External Heat Sinks for Indoor/Outdoor Applications, I ² t Fusing, and Contactor. Options Include: Process and Hi-Limit Controllers, Ground Fault Monitoring, Main							
		Innect Switch and Enclosure Heater.								
		Curre	nt @ 4U	C (104	· F)					
	5 6	65 Am	65 Amp							
		Code	Voltag							
		2	208 V/	AC						
		3	240 VA	AC						
		4	480 VA 575/60	40 00 VAC						
		Ĭ	Code	Proce	ss Contr	oller Options				
			0	None	(6 - 12 V	DC Control S	ignal Customer Supplied)			
			1	6040-	SR0000	1/16 DIN SSF	R, Relay			
			2	6040- 4040-	SRATUU	1/16 DIN SSI 1/4 DIN SSB	R, Kelay, Ketransmit , K5485 Relav			
			4	4040-	SRA110	1/4 DIN SSR	, Relay, Retransmit, RS485, Remote Setpoint			
			5	4080-	COSRA-C	04000 1/4 DI	V Graphic Display, SSR, Relay, Retransmit, Ethernet			
			1		mer Sup	plied Remote mnoraturo Co	4 - 20 MACC, U-10 VDC, U-5 VDC			
				0000	None					
				1	6050-1	R000 1/16 DI	N Fixed 5A Relay, Relay			
				2	6050-1	RA10 1/16 DI	N Fixed 5A Relay, Relay, Retransmit, RS485			
				3 4	4050-1	RA10 1/4 DIN	l Fixed 5A Relay, Relay I Fixed 5A Relay. Relay. Retransmit. RS485			
					Code	Options				
					0	None				
					1	Ground Fai Main Disc	ult Monitor & Shutdown incl. Illuminated Reset Switch** onnect with Through Door Operator			
					3	3 Thermostat Controlled Enclosure Heater				
					4	Ground Fa	ult Monitor & Main Disconnect Switch **			
					6	Ground Fa	ult Monitor & Enclosure Heater **			
					7	Ground Fa	ult Monitor, Main Disconnect Switch & Enclosure			
						Heater **	Lood Fusing Ontion*			
						Blank				
						9010(*)	8 Amps/Circuit (10 Amp fuse)			
						9015(*)	12 Amps/Circuit (15 Amp fuse)			
						9020(^) 9025(*)	16 Amps/Circuit (20 Amp fuse) 20 Amps/Circuit (25 Amp fuse)			
						9030(*)	24 Amps/Circuit (30 Amp fuse)			
						9035(*)	28 Amps/Circuit (35 Amp fuse)			
						9040(^) 9045(*)	32 Amps/Circuit (40 Amp fuse) 36 Amps/Circuit (45 Amp fuse)			
						9050(*)	40 Amps/Circuit (50 Amp fuse)			
						9060(*)	48 Amps/Circuit (60 Amp fuse)			
						9070() 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
- I²T 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

Three P	hase Two-Le	g Zero Fired SC	R Power Control Panel				
Panel C cUL and ry & Sec Switch, "Control Control	onfiguration I UL Listed TH condary Fusin Three-Pole S Signal, Door Signal or 10H	nree Phase SCR ng for 120 volt (hutdown Contac Mounted Poter (Potentiometer	Power Control Panel. Features: Factory pre-wired for quick installation, Step-down Transformer with Prima- control Circuit, NEMA 1/12** rated Enclosure for Indoor Applications, Forced Air Cooling, Main Disconnect ctor, and SCRs for Power Switching. Options Include: Process and Hi-Limit Controllers, Customer Supplied itiometer and Ground Fault Monitor. NOTE: A Vari-Watt is supplied when either the Customer Supplied Control Option is selected.				
Code	Current @	40°C (104°F) A	mbient				
		SCR Compon	ent Enclosure Dimensions				
40	90 Amp	SCR Power C	ontroller (24"H x 24"W x 10"D)				
	Code	Process Controller Options					
	1 2 3 4 5 6 7	Terminal Block Door Mounted 6040-SR0000 6040-SRA100 4040-SR0000 4040-SRA110 4080-C0SRA-0	10K Potentiometer, 0 - 100% Power Ouput Scale 1/16 DIN SSR, Relay 1/16 DIN SSR, Relay 1/16 DIN SSR, Relay 1/4 DIN SSR, Relay 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint 04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet				
		Code Over	temperature Controller Options				
		 0 None 1 6050 2 6050 3 4050 4 4050 	-1R000 1/16 DIN Fixed 5A Relay, Relay -1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 -1R000 1/4 DIN Fixed 5A Relay, Relay -1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485				
		Code	Ground Fault Sensing/Interrupt Option				
		0 1	None Ground Fault Monitor & Shutdown includes Illuminated Reset Switch				
40	5	30	Typical Model Number				
	Three P Panel C CUL and ry & See Switch, "Control Control 40 40 40 40	Three Phase Two-LeePanel ConfigurationcUL and UL Listed TIry & Secondary FusinSwitch, Three-Pole S"Control Signal, DoorControl Signal or 10hCodeCodeCurrent @4090 AmpCode123456776776777777777777777777777<	Three Phase Two-Leg Zero Fired SCPanel ConfigurationcUL and UL Listed Three Phase SCRry & Secondary Fusing for 120 volt CSwitch, Three-Pole Shutdown Contac"Control Signal, Door Mounted PotenCodeCurrent @ 40° C (104°F) ASCR Compon4090 AmpSCR Power C1Terminal Block2Door Mounted36040-SR000046040-SRA10054040-SR000064040-SRA11074080-COSRA-C0None16050-26050-34050-44050-4011111				

Technical Notes:

*Ground Fault detection requires grounded supply

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

H-111

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	t @ 40°	C (104ºF) A	\mbient		
		S	CR Compo	nent	Enclosure Dimensions	
40	30 Amp) S	olid State	Relays	(24"H x 24"W x 10"D)	
	Code	Proce	ss Control	er Options		
	1	Termin	nal Block fo	or Customer Supposure or 10K Pot	olied Control Signal (4-20 mA, 3-20 entiometer)	
	2	Door I	: 0 - 100% Power Ouput Scale.			
	3	6040-	SR0000 1/	16 DIN SSR, Rela	ay	
	4	6040-	SRA100 1/	ay, Retransmit , RS485		
	5	4040-	SR0000 1/	4 DIN SSR, Relay	/	
	6	4040-	SRA110 1/	4 DIN SSR, Relay	, Retransmit, RS485, Remote Setpoi	
	7	4080-	COSRA-04	000 1/4 DIN Grap	hic Display, SSR, Relay, Retransmit,	
	1	Etherr	et			
		Code	Overter	nperature Contro	oller Options	
		0	None			
		1	6050-1	R000 1/16 DIN Fi	ixed 5A Relay, Relay	
		2	6050-1	RA10 1/16 DIN F	ixed 5A Relay, Relay, Retransmit,	
		-	RS485			
		3	4050-1	R000 1/4 DIN Fix	ed 5A Relay, Relay	
		4	4050-1	RA10 1/4 DIN FIX	ked 5A Relay, Relay, Retransmit,	
			K5465			
			Code	Options		
			0	None		
			1	Ground Fault	Monitor & Shutdown includes Illumi-	
			•	nated Reset S	witch *	
			2	Thermostat Co	ontrolled Enclosure Heater	
			3	Ground Fault I	vionitor & Enclosure Heater	
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

					SCR Component	Enclosure Dimensions (250 lbs.)			
	40		45 Amp		Solid State Relays	(28.5"H x 21"W x 13"D)			
		Code	Proces	s Controll	er Options				
		0	Termina	al Block fo	r Customer Supplied Signal (4-20 mA, 3-20 VDC, Contact Closure or 10K Potentiometer)			
		1	6040-S	R0000 1/	16 DIN SSR, Relay				
		2	6040-S	RA100 1/	16 DIN SSR, Relay, Retransm	it , RS485			
		3	4040-S	R0000 1/4	1 DIN SSR, Relay				
		4	4040-S	RA110 1/	RA110 1/4 DIN SSR, Relay, Retransmit, RS485, Remote Setpoint				
		5	4080-C	0SRA-04000 1/4 DIN Graphic Display, SSR, Relay, Retransmit, Ethernet Overtemperature Controller Option					
			Code						
			0	None	None				
			1	6050-1R020 1/16 DIN Fixed 5A Relay, Relay, Digital Input					
			2	6050-1	RA20 1/16 DIN Fixed 5A Rela	v, Relav, Retransmit, Digital Input			
			3	4050-1	R020 1/4 DIN Fixed 5A Relay	, Relay, Digital Input			
			4	4050-1	RA20 1/4 DIN Fixed 5A Relay	, Relay, Retransmit, Digital Input			
				Code	Options				
				0	None				
				1	NEMA 7/4 Weather Proof	Gasket for Out Door Applications			
				2	Ground Fault Monitor & S	hutdown 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			
	40	5	1	1	Tynical 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



c (UL) us

- 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 fieldproven 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.



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

- with I²T fusing for SCR Protection • Fan Cooling

Description

control system.

SCR's deliver:

Reduced Power Cost

Extended Heater Life

Improved Process Products

· Stable Process Temperature

4232/4233 Features

Less Maintenance

The 4230 Series of SCR Power Control Panels

offers convenient, economical control of resis-

tive loads and capabilities beyond the smaller,

46 Standard Options increase the application

flexibility of the 4230 Series. These pre-engi-

neered, pre-wired panels require only sensor,

totally eliminate the need to design your panel, specify and purchase separate components,

and assemble them into a functioning power

SCR power control efficiently and accurately

proportions power to the resistive heating

load. Unlike traditional contactor control,

load and power supply connections - and

more compact 4530 series. An additional

- 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)

Zero-crossover Distributed Fired SCR (DOT)

- · Up to 6 SCR Circuits
- Load Fusing Protects SCRs and Load

4232 3-Phase, 2 Leg **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.



*Ground Fault detection requires grounded supply.

Technical Notes:

- ¹ Includes Chromalox Load Management Module ²Load 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).

CHROMALOX-

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

Model

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

Panel Configuration

Panel Configuration cUL and UL Listed Three Phase SCR Power Control Panel. Features: Factory pre-wired for quick installa-tion, 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 Con-trollers, Ground Fault Monitor, Sub-Circuit Fusing for Heater Load, Shorted SCR Detection, Multimeter (Amps & Volts) with Phase Selector Switch and Floor Stand Kit.

LOOE	(104°F	ι@40°C) Ambiei	, nt	SCR C	omponent	E	nclosure Dim. (HxWxD)
02	100 Am	,	MXP	CII-3-02	-1-1-L0-F0	1-0 (6	50" x 36" x 12")	,
03	150 Am	ıp	MXP	CII-3-04	-1-1-L0-F0	1-0 (6	60" x 36" x 12")	
16	200 Am	ip	MXP	311-3-06	-1-1-L0-F0	2-0 (6	50" x 36" x 12")	
Uð 1 N	300 All 400 Δm	ip in	MXP	211-3-00 211-3-10	-1-1-LU-FU	3-0 (0 4-0 (7	00 X 30 X IZ) 72" x 36" x 12")	
12	550 Am	קי מו	MXP	CII-3-12	-1-1-L0-F0	5-0 (7	72" x 36" x 12")	
14	650 Am	ip	MXP	CII-3-14	-1-1-L0-F0	6-0 (7	72" x 36" x 12")	
15 ¹	800 Am	ıp (2) MXP	CII-3-10	-1-1-L0-F0	4-0 (7	72" x 72" x 12")	Floor Mount
16 ¹	1000 A	mp (2) MXP		-1-1-L0-F0	5-0 (7 6 0 (7	72" x 72" x 12")	Floor Mount
17.		Noltan	2) IVIAPI e	511-3-14	-1-1-LU-FU	0-0 (7	(2 x / 2 x 2)	
	1	208 VA		4	415 VAC			
	2	240 VA	IC IC	5	480 VAC	VAC		
	1	Code	Proce	ss Con	troller Opti	ons		
		0	None					
		1	4040-	AR000	0 1/4 DIN S	SSR, Rel	ay lav Betransmit I	RS185 Remote Setnoint
		3	4040-	COARA-	04000 1/4	DIN Gra	phic Display, SSR	, Relay, Retransmit, Ethe
			Code	Over	emperatur	e Contr	oller Options	
			0	None	1050-1800	ום 1/4 ח	N Fixed 5A Relay	Belay
			2	Two	1050-1R00	0 1/4 DI	N Fixed 5A Relay	, Relav
			3	Three	4050-1R0	00 1/4 E	DIN Fixed 5A Rela	ay, Relay
			4	One 4	1050-1RA1	0 1/4 DI	N Fixed 5A Relay	, Relay, Retransmit, RS4
			5	IW0 4	1050-1RA1	0 1/4 DI 10 1/4 F	N Fixed 5A Relay	/, Relay, Retransmit, RS4
			U I	Code	Ground I	ault Cor	neing/Interrunt &	Shorted SCB Detection Or
				0000	None		ising/interrupt &	
				1	Shorted	SCR Det	tection	
				2	Ground	Fault Mo	nitor & Shutdow	n, Illuminated Reset
				3	Ground	Fault Mo	nitor & Shutdow	n, Illuminated Reset
				_	Switch(c	ode 15,	16,17)	
				4 5	Ground Ground I	Fault Mo Fault Mo	nitor & Shorted S nitor & Shorted S	SCR Detection(code 02-1
				Ĭ	Code	Options		
					0	None		
					4	Multime	ter (Volts & Curr	rent) ntion23 (*) No. of Circuits
						annn	None	plion ^{2,0} (*) NO. OI CIrcuits
						9010(*)	8 Amps/ Circuit	t (10 Amp fuse)
						9015(*)	12 Amps/ Circu	iit (15 Amp fuse)
						9020(*)	16 Amps/ Circu	iit (20 Amp fuse)
						9025(*)	20 Amps/ Circu	iit (25 Amp fuse)
						9030() 9035(*)	24 Amps/ Circu 28 Amps/ Circu	iit (30 Amp iuse) iit (35 Amp fuse)
						9040(*)	32 Amps/ Circu	iit (40 Amp fuse)
						9045(*)	36 Amps/ Circu	iit (45 Amp fuse)
						9050(*)	40 Amps/ Circu	iit (50 Amp fuse)
						9060(*)	48 Amps/ Circu	it (60 Amp fuse)
						9070(^) DN&N(*)	56 Amps/ Circu	lit (70 AMP TUSE) lit (80 Amp fuse)
						9090(*)	72 Amps/ Circu	iit (90 Amp fuse)
						9100(*)	80 Amps/ Circu	iit (100 Amp fuse)
						9110(*)	88 Amps/ Circu	iit (110 Amp fuse)
						9125(*)	100 Amps/ Circ	uit (125 Amp fuse)
						9150(*)	120 Amps/ Circ	cuit (150 Amp fuse)
						9200(*)	160 Amps/ Circ	uit (175 Amp fuse)
03	5	1	1	0	C	025(5)	Tynical Mode	l Numher

9025(5) Typical Model Number 0 -

4233 3-Phase, 3 Leg 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.

Technical Notes:

¹Includes 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

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	Curre	nt @ 40°C	;						
	(104º	F) Ambier	nt	S	CR Com	ponent	Enclosure Dim. (HxWxD)		
02 03 06 10 12 14 15 ¹ 16 ¹ 17 ¹	100 / 150 / 200 / 300 / 400 / 550 / 650 / 800 / 1000 1200	Amp Amp Amp Amp Amp Amp Amp Amp	M M M M M (2) M (2) M (2) M	XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3- XPCII-3-	02-1-1- 04-1-1- 06-1-1- 08-1-1- 10-1-1- 12-1-1- 14-1-1- 10-1-1- 12-1-1- 14-1-1-	L0-F01-0 L0-F02-0 L0-F03-0 L0-F03-0 L0-F05-0 L0-F05-0 L0-F06-0 L0-F05-0 L0-F05-0 L0-F05-0	(60" x 36" x 12") (60" x 36" x 12") (60" x 36" x 12") (72" x 72" x 12") Floor Mount (72" x 72" x 12") Floor Mount (72" x 72" x 12") Floor Mount		
	Code	Voltag	(<u>_) m</u>			201000			
	Code 1 2 3	Voltagy 208 VA 240 VA 380 VA Code 0 1 2 3	e CC CC Proc: None 40400 40400 40400 0 1 2 3 3 4 5 6	4 415 5 480 6 575 ess Cont -AR0000 -ARA110 -COARA- Overta None One 4 Two 4 Three 0 0 1 2 3 4 5	5 VAC 5	AC Pptions N SSR, Ref N SSR, Ref N SSR, Ref N SSR, Ref N SSR, Ref N SSR, Ref (1/4 DIN G ture Conti (000 1/4 D (000	lay lay, Retransmit, RS485, Remote Setpoint aphic Display, SSR, Relay, Retransmit, Ethernet oller Options IN Fixed 5A Relay, Relay IN Fixed 5A Relay, Relay DIN Fixed 5A Relay, Relay, Retransmit, RS485 IN Fixed 5A Relay, Relay, Retransmit, RS485 IN Fixed 5A Relay, Relay, Retransmit, RS485 DIN Fixed 5A Relay, Relay, Retransmit, RS485 ensing/Interrupt & Shorted SCR Detection Option retion witor & Shutdown, Illum. Reset Switch (Code 02-14) witor & Shutdown, Illum. Reset Switch (Code 15, 16, 17) witor & Shutdown, Illum. Reset Switch (Code 15, 16, 17) witor & Shutdown, Illum. Reset Switch (Code 15, 16, 17) witor & Shorted SCR Detection (Code 02-14) witor & Shorted SCR Detection (Code 02-14) witor & Shorted SCR Detection (Code 15, 16, 17) Experimentation (Code 15, 16, 17) None 8 Amps/Circuit (10 Amp Fuse) 12 Amps/Circuit (10 Amp Fuse) 12 Amps/Circuit (25 Amp Fuse) 24 Amps/Circuit (35 Amp Fuse) 23 Amps/Circuit (35 Amp Fuse) 32 Amps/Circuit (40 Amp Fuse) 32 Amps/Circuit (40 Amp Fuse) 33 Amps/Circuit (50 Amp Fuse) 34 Amps/Circuit (50 Amp Fuse) 35 Amps/Circuit (50 Amp Fuse) 36 Amps/Circuit (50 Amp Fuse) 36 Amps/Circuit (50 Amp Fuse) 36 Amps/Circuit (50 Amp Fuse) 36 Amps/Circuit (50 Amp Fuse) 37 Amps/Circuit (50 Amp Fuse) 38 Amps/Circuit (50 Amp Fuse) 39 Amps/Circuit (50 Amp Fuse) 30 Amps/Circuit (50 Amp Fuse) 31 Amps/Circuit (50 Amp Fuse) 32 Amps/Circuit (50 Amp Fuse) 33 Amps/Circuit (50 Amp Fuse) 34 Amps/Circuit (50 Amp Fuse) 35 Amps/Circuit (70 Amp Fuse) 36 Amps/Circuit (50 Amp Fuse) 37 Amps/Circuit (50 Amp Fuse) 38 Amps/Circuit (50 Amp Fuse) 39 Amps/Circuit (50 Amp Fuse) 30 Amps/Circuit (50 Amp Fuse) 30 Amps/Circuit (50 Amp Fuse) 31 Amps/Circuit (50 Amp Fuse) 32 Amps/Circuit (70 Amp Fuse) 33 Amps/Circuit (70 Amp Fuse) 34 Amps/Circuit (70 Amp Fuse) 35 Amps/Circuit (70 Amp Fuse) 36 Amps/Circuit (70 Amp Fuse) 37 Amps/Circuit (70 Amp Fuse) 38 Amps/Circuit (70 Amp Fuse) 39 Amps/Circuit (70 Amp Fuse) 30 Amps/Circuit (70 Amp Fuse) 30 Amps/Circuit (70 Amp Fuse) 30 Am		
03	5	1		0	n	9090(*) 9090(*) 9100(*) 9110(*) 9125(*) 9150(*) 9175(*) 9200(*) - 9025/5	72 Amps/Circuit (90 Amp Fuse) 72 Amps/Circuit (90 Amp Fuse) 80 Amps/Circuit (100 Amp Fuse) 100 Amps/Circuit (110 Amp Fuse) 120 Amps/Circuit (125 Amp Fuse) 120 Amps/Circuit (150 Amp Fuse) 140 Amps/Circuit (175 Amp Fuse) 160 Amps/Circuit (200 Amp Fuse)		

CHROMALOX



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

4233

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.



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				
124 148 172	1 1 1	24 48 72	24 48 72	30 60 90	(24"H x 24"W x 10"D) (24"H x 24"W x 10"D) (24"H x 24"W x 10"D)				
224 248	2 2	24 48 70	48 96	30 60	(24"H x 24"W x 10"D) (36"H x 30"W x 10"D) (36"H x 30"W x 10"D)				
324 348	2 3 3	24 48	72 144	90 30 60	(36 H x 30 W x 10 D) (36"H x 30"W x 10"D) (48"H x 36"W x 10"D)				
372 424	3	72 24	216 96	90 30	(48"H x 36"W x 10"D) (48"H x 36"W x 10"D) (48"H x 36"W x 10"D)				
440 472 524	4 4 5	40 72 24	<u> </u>	90 90 30	(40 H X 36 W X 10 D) (60"H X 36"W X 10"D) (48"H X 36"W X 10"D)				
548 572	5	48 72	240 360	60 90	(48"H x 36"W x 10"D) (62"H x 60"W x 12"D)				
624 648 672	6 6 6	24 48 72	144 288 432	30 60 90	(60"H x 36"W x 10"D) (60"H x 36"W x 10"D) (62"H x 60"W x 12"D)				
	- 3 4 5 6	380 VAC 415 VAC 480 VAC 575/600 VAC							
		3 4040-SR 4 4040-SR 5 4040-SR Managen 6 4080-C0 7 4080-C0	A110 1/4 DIN SSR A110 1/4 DIN SSR A110 1/4 DIN SSR hent Module SRA-04000 1/4 DII SRA-04000 1/4 DII	, neiay & Load Manage , Relay, Retransmit, RS , Relay, Retransmit, RS V Graphic Display, SSR V Graphic Display, SSR	485, Remote Setpoint 485, Remote Setpoint 485, Remote Setpoint & Loa , Relay, Retransmit, Etherne , Relay, Retransmit, Etherne				
		& Load N Code	lanagement Modul Overtemperature	e Controller Options					
		0 1 2 3 4 5 6	None One 4050-1R000 Two 4050-1R000 Three 4050-1R00 One 4050-1RA10 Two 4050-1RA10 Three 4050-1RA1	1/4 DIN Fixed 5A Relay 1/4 DIN Fixed 5A Relay 0 1/4 DIN Fixed 5A Relay 1/4 DIN Fixed 5A Relay 1/4 DIN Fixed 5A Relay 0 1/4 DIN Fixed 5A Relay	; Relay ; Relay ay, Relay ; Relay, Retransmit, RS485 ; Relay, Retransmit, RS485 ay, Relay, Retransmit, RS48				
			Code Ground F and "Z" F	ault Sensing/Interrupt, Purge Pressurization O	, Enclosure Heater ption				
			0 None 1 Ground Fa 2 Enclosure 3 "Z" Purge 4 Ground Fi 5 Ground Fi 6 Ground Fi 7 Enclosure	ault Monitor & Shutdov Heater Pressurization System ault Monitor & Cabinet ault Monitor and "Z" Pu ault Monitor, Cabinet He Heater and "Z" Purge S	vn incl. Illum. Reset Switch ³ Heater rge System eater and "Z" Purge System System				
			Code 0 4 	Uptions None Multimeter (Volts & C	Current)				
624	5	3 1	0 0	Typical Model Numb	er				

CONTROL SYSTEMS

CHROMALOX -

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:

- ¹Code 0: Up to Two Circuits Maximum.
- ²Load 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/Cl	t Tota	al Amps	Fuse Amps/Ckt ²	Enclosure Dimensions
	124 148 172	1 1 1		24 48 72		24 48 72	30 60 90	(24"H x 24"W x 10"D) (24"H x 24"W x 10"D) (24"H x 24"W x 10"D)
	224 248 272	2 2 2		24 48 72		48 96 144	30 60 90	(24"H x 24"W x 12"D) (36"H x 30"W x 12"D) (36"H x 30"W x 12"D)
	324 348 372	3 3 3		24 48 72		72 144 216	30 60 90	(36"H x 30"W x 12"D) (48"H x 36"W x 12"D) (48"H x 36"W x 12"D)
	424 448 472	4 4 4		24 48 72		96 192 288	30 60 90	(48"H x 36"W x 12"D) (48"H x 36"W x 12"D) (60"H x 36"W x 12"D)
	524 548 572	5 5 5		24 48 72		120 240 360	30 60 90	(48"H x 36"W x 12"D) (48"H x 36"W x 12"D) (62"H x 60"W x 12"D)
	624 648 672	6 6 6		24 48 72		144 288 432	30 60 90	(60"H x 36"W x 12"D) (60"H x 36"W x 12"D) (62"H x 60"W x 12"D)
		Code	Voltage)				
		3 4 5 6	380 VA 415 VA 480 VA 575/600 Code 0 1 2 3 4 5	C C VAC Proces: ¹ Custom 4040-S Custom 4040-S 4040-S 4040-S Load M	s Controlle er supplie R0000 1/4 er supplie R0000 1/4 RA110 1/4 RA110 1/4 anagemer	er Option d SSR dr DIN SSF d 4-20m/ DIN SSF DIN SSF DIN SSF DIN SSF to DIN SSF	s ive signal (12-24V 3, Relay 4, Input to Load Ma 4, Relay & Load Ma 8, Relay, Retransm 8, Relay, Retransm	DC @ 120 mA) inagement Module anagement Module it, RS485, Remote Setpoint it, RS485, Remote Setpoint &
			6 7 	4080-C 4080-C & Load	0SRA-040 0SRA-040 Managem	00 1/4 DI 00 1/4 DI ient Modu	IN Graphic Display IN Graphic Display Ile	, SSR, Relay, Retransmit, Ethernet , SSR, Relay, Retransmit, Ethernet
				Code	Overtem	perature	Controller Options	3
				0 1 2 3 4 5 6	None One 4050 Two 4050 Three 4050 Two 4050 Three 4050)-1R000 1)-1R000 ⁻ 50-1R000)-1RA10 ⁻)-1RA10 ⁻ 50-1RA10	1/4 DIN Fixed 5A R 1/4 DIN Fixed 5A R) 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A R 1/4 DIN Fixed 5A F) 1/4 DIN Fixed 5A	telay, Relay telay, Relay Relay, Relay telay, Relay, Retransmit, RS485 telay, Relay, Retransmit, RS485 Relay, Relay, Retransmit, RS485
					Code	Ground and "Z"	Fault Sensing/Inte Purge Pressurizat	rrupt, Enclosure Heater tion Option
					0 1 2 3 4 5 6 7	None Ground I Cabinet I "Z" Purge Ground I Ground I Cabinet I	Fault Monitor & Sh Heater 9 Pressurization Sy Fault Monitor & Ca Fault Monitor and " Fault Monitor, Cabi Heater and "Z" Purg	utdown incl. Illum. Reset Switch ⁴ stem binet Heater Z" Purge System net Heater and "Z" Purge System ge System
						Code	Options	
						0 4 	None Multimeter (Vol	ts & Current)
4236-	624	5	3	1	 	 N	Tynical Model N	lumher
4200*	024	U	U		U		iypioar moudi N	

CHROMALOX

H-118

Intelli<mark>Panel</mark>

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

60

- 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

CONTROL

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CHROMALOX —
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H-119

IntelliPanel 3-Phase SCR Power

Control Panel *(cont'd.)*

Specifications

INPUTS: 4-channel RTD input module Input Ranges Type Pt100 Type Pt100 -200.0/850.0°C, -328/1562°F Type Pt100 -38.0/450.0°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)

Notes:

- 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.
- 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	

General Specifications

Number of Channels4, differential
Common Mode Range1.3 VDC to +3.8 VDC
Common Mode Rejection 100dB min. @ VDC 50/60Hz.
Input Impedance 5M
Absolute Maximum
$\textbf{Ratings} \ \dots \text{Fault-protected inputs to } \pm 50 \ \text{VDC}$
Update Rate 4 channels per scan
Open Circuit Protection Upscale or Downscale
Display Resolution $\pm 0.1^\circ C \text{ or } \pm 0.1^\circ F$
Cold Junction CompensationAutomatic

Conversion Time 270ms per channel			
Warm-Up Time30 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)			
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: AllDry contact or triac rated for 120 VAC at 20 mA			
Relay Output Specifications Output Voltage			
Range			
Maximum Voltage264 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	N	lodBus Slave
Physical	R	S-422 4 wire
	F	RS-485 2 wire
Baud Rate2.4, 4.8	3, 9.6, 19.2	2, 38.4 Kbaud

Stop Bits 1 or 2 Parity odd, even, none

On Delay Address Max_network distance	5, 10, 20 ms. 1 – 128 4000 feet
Max number of devices	32 ner network
Max. baud rate	
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
Connections Plug in	selectable 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
Reset0.61 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
I ² T Fusing	> 12	5% load with 100 kaic
Load Circuit Bro	eakers .	>125% load rated
		with 25 kaic
Contactors (if s	upplied)	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:

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



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

Note: Additional control panel options available. See pages H-143 to H-145. Technical Notes: 'Enclosure for codes 12, 14, 15, 16, and 17 are Floor-Mount Designs

²Consult Factory for 575/600 VAC Applications and Pricing ³Ventilated 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 Operational Features Real Time Process Indicators:** Selectable Control Setups: Global Alarm Display, Alarm Setup, Mapping & Configuration Interlock Status Display, Interlock Setup & Configuration Real Time Trending (Six Pens), Heater Graphics RS-485 MODBUS™ Communications Heater Current Single Loop Line Voltage Load Power Measurement (Kw/Kw/Hr) Differential Duty Cycle (0 - 100%) Cascade: Ground Fault Leakage Trending Eight Sensor Inputs Selectable in Groups of Four J, K, E Thermocouples Outlet and Sheath or RTD's, Loop ID / Tagging, Hand / Off / Auto Selection, Life Factor Measurement Process and Sheath Language Selection Option (contact factory), Security Code Protection, Ramp-to-Setpoint Resistance Monitoring Inlet / Outlet / Shell Temperatures Remote 4-20mA Command Built-In Help and Troubleshooting Pages Historical Hi / Low Temperature Signal Indication & Record Current @ 40°C (104°F) Ambient Code SCR Component Max. # Circuits Type 12 Enclosure Dimensions³ MXPCII-4-02-1-1-L0-F01-0 MXPCII-4-04-1-1-L0-F01-0 MXPCII-4-06-1-1-L0-F02-0 02 100 Amp 72"H x 36"W x 12"D 72"H x 36"W x 12"D 72"H x 36"W x 12"D 03 06 150 Amp 200 Amp Δ ġ MXPCII-4-08-1-1-L0-F03-0 MXPCII-4-10-1-1-L0-F04-0 MXPCII-4-12-1-1-L0-F05-0 72"H x 36"W x 12"D 72"H x 36"W x 12"D 72"H x 36"W x 12"D 60"H x 60"W x 12"D 08 300 Amp 4 10 121 400 Amp 550 Amp 4 8 14¹ 15¹ 16¹ MXPCII-4-14-1-1-L0-F06-0 MXPCII-4-10-1-1-L0-F04-0 MXPCII-4-12-1-1-L0-F05-0 650 Amp 60"H x 60"W x 12"D 800 Amp 1000 Amp 12 12 72"H x 72"W x 12"D 72"H x 72"W x 12"D MXPCII-4-14-1-1-L0-F06-0 72"H x 72"W x 12"D 171 1200 Amp 12 Voltage² Code 208 VAC ż 240 VAC 380 VAC 400 VAC 3 4 5 415 VAC 6 480 VAC Code Sensor Options J Thermocouple Sensor Inputs (1-8) (8) (8) ĸ K Thermocouple Sensor Inputs (1-8) J Thermocouple Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8) K Thermocouple Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8) ĴŔ (4) a Thermocouple concornent (1-4) and (4) J Thermocouple Sensor I (4) K Thermocouple Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
(4) RTD Sensor Inputs (1-4) and (4) J Thermocouple Sensor Inputs (5-8)
(4) ATD Sensor Inputs (1-4) and (4) K Thermocouple Sensor Inputs (5-8)
(4) J Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)
(4) K Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)
(4) K Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8)
(4) K Thermocouple Sensor Inputs (1-4) and (4) RTD Sensor Inputs (5-8) KJ ŔĴ RK JR KR Code **Overtemperature Controller Options** None 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Sheath) Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (One She (One Sheath, One Shell) 3 Two 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath) Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Two Sheath, One Shell) Three 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 (Three Sheath) 4 5 Code **Communications Option** None RS485 / 422 MODBUS™ Λ 1 Code Remote On / Off Shutdown Contactor Option (Per Sub-Circuit) None 0 Industrial Three-Pole Contactor 60 Amp Rating Industrial Three-Pole Contactor 70 Amp Rating Industrial Three-Pole Contactor 80 Amp Rating 1(* 2(* Industrial Three-Pole Contactor 25 Amp Rating Industrial Three-Pole Contactor 35 Amp Rating 6(*) 7(*) 8(*) 3(*) 4(*) Industrial Three-Pole Contactor 40 Amp Rating Industrial Three-Pole Contactor 50 Amp Rating Industrial Three-Pole Contactor 110 Amp Rating Load Fusing Option (Thermal Magnetic Circuit Breakers)³ Code 9000 None 20 Amps/Ckt (25 Amp Circuit Breaker) 48 Amps/Ckt (60 Amp Circuit Breaker) 56 Amps/Ckt (70 Amp Circuit Breaker) 64 Amps/Ckt (80 Amp Circuit Breaker) 9060(*) 9025/ 24 Amps/Ckt (30 Amp Circuit Breaker) 9070 9030 9035 28 Amps/Ckt (35 Amp Circuit Breaker) 9080(72 Amps/Ckt (90 Amp Circuit Breaker) 80 Amps/Ckt (100 Amp Circuit Breaker) 88 Amps/Ckt (110 Amp Circuit Breaker) 9N4N(* 32 Amps/Ckt (40 Amp Circuit Breaker) 36 Amps/Ckt (45 Amp Circuit Breaker) 9090(* 9045 9100 9050(*) 40 Amps/Ckt (50 Amp Circuit Breaker) 9110(*) IPZ3-03 6 J 2 1 4(3) 9070(3) Typical Model Number H-122

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 doormounted 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

Time¹ Cycle Sec.	Volts Mtr.	Volts Capacity Type Wt. Mtr. Amps of Mtg. Model Stock PCN (Lbs.)								
15/30	30 120 60 ³ Surface/Wall 4439-23006 S 309905 30									
Stock Status: S = stock										
Notes 1. W 30	s — hen useo), or 18 s	d on 50 Hz econd cycl	, standard units wi e instead of 15.	ll provide 36 seco	nd cycle i	nstead of				

- 25 Amps permissible on 230V but not UL. 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.

|--|

CONTROLS

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

c UL us

CONTROLS

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

CHROMALOX

Ordering Information

Complete the Model Number using the Matrix provided.

4464 3 Phase Contactor Power Control Panel 4X 304 Stainless 20"H x 16"W x 10"D 20"H x 16"W x 2D 4466 3 Phase Contactor Power Control Panel 4X Painted Carbon Steel 20"H x 16"W x 2D 20"H x 16"W x 10"D 4466 3 Phase Contactor Power Control Panel 4X Painted Carbon Steel 20"H x 16"W x 2D 20"H x 16"W x 10"D 4468 3 Phase Contactor Power Control Panel 4X Painted Carbon Steel 20"H x 16"W x 2D 20"H x 16"W x 10"D 4464 10"H x 16"W x 10"D 20"H x 16"W x 2D 20"H x 16"W x 2D 20"H x 16"W x 2D 4464 3 Phase Contactor Power Control Power Control Panel with three enclosure options for Indoor or Outdoor applications. Features: Factory pre-wired for 9 Disconnect Switch, both 1/4 DIN & 1/16 DIN Process and Hi-Limit Controllers Code Contextor Options Include: Cabinet Heater, Main 3 40 Amp 6 75 Amp 9 9 100 Amp 9 100 Amp 6 75 Amp 9 9 100 Amp 9 100 Amp 6 75 Amp 9 9 640-RN000 1/16 DIN Relay, Relay 1 6040-RR0000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-Relay Relay<	əl				F	NEMA Rating	Enclosure Material	Enclosure Size No Fusing Option	Enclosure Size with Fusing Option
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 Une Voltage 0 120/208/240/480 VAC 1 575/600 VAC 2 208 VAC 9 Special Code Process Controller Options Code Odd-PR0000 1/16 DIN Relay, Relay 2 208 VAC 9 Special Code Process Controller Options 1 6040-PR0000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RR0100 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RR000 1/4 DIN Relay, Relay, Retransmit, RS485, Remote Setpoint 4 400-RR000 1/4 DIN Relay, Relay, Retransmit, RS485 3 4060-RR000 1/16 DIN Fixed SA Relay, Relay 4 6050-IR000 1/16 DIN Fixed SA Relay, Relay	3 Phase 3 Phase 3 Phase	ase Contacto ase Contacto ase Contacto	tor Power tor Power tor Power	er Control Pa er Control Pa er Control Pa	anel anel anel	4X 4 4X	304 Stainless Painted Carbon Steel Fiberglas®	20"H x 16"W x 10"D 20"H x 16"W x 8"D 16"H x 14"W x 8"D	20"H x 16"W x 10"D 20"H x 16"W x 8"D 18"H x 16"W x 10"D
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 2 208 VAC 9 Special 0 Terminal Block for Customer Supplied Control Signal (Dry Contact or Soldis State Relay, 120 VAC) 1 575/600 VAC 2 208 VAC 9 Special 0 Terminal Block for Customer Supplied Control Signal (Dry Contact or Soldis State Relay, 120 VAC) 1 6040-RRA100 1/16 DIN Relay, Relay 2 6040-RRA100 1/16 DIN Relay, Relay 2 6040-RRA100 1/16 DIN Relay, Relay 4 4040-RRA101 1/4 DIN Relay, Relay 2 Enclosure Heater 3 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 4 6050-IRA00 1/16 DIN Fixed 5A Relay, Relay 2 6050-IRA00 1/16	Panel (cUL and quick ir Discon	el Configura and UL Liste c installation onnect Swite	r ation ted Three on, Step-o tch, both	ee Phase Co -down Trans :h 1/4 DIN 8	ontactor Power Co sformer & Second & 1/16 DIN Proces	ntrol Panel w ary Fusing fo s and Hi-Lim	ith three enclosure options fo r 120 volt Control Circuit, Thr it Controllers	r Indoor or Outdoor applicat ree-Pole Control Contactor O	ions. Features: Factory pre-wired for ptions Include: Cabinet Heater, Main
3 40 Amp 6 75 Amp 9 100 Amp 0 120/208/240/480 VAC 1 575/600 VAC 2 208 VAC 9 Special 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-RR0000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RR0000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RR0000 1/14 DIN Relay, Relay 4 4040-RR0000 1/14 DIN Relay, Relay, Retransmit, RS485 3 4040-RR0000 1/14 DIN Relay, Relay 4 606 Overtemperature Controller Options 0 None 1 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 1 6050-1RA101 1/16 DIN Fixed 5A Relay, Relay 2 6050-1RA101 1/16 DIN Fixed 5A Relay, Relay 4 4050-1R000 1/16 DIN Fixed 5A Rel	Code	e Current	nt @ 40°	°C (104°F)	Ambient				
Code Line Voltage 0 120/208/240/480 VAC 1 575/600 VAC 2 208 VAC 9 Special Code 0 Terminal Block for Customer Supplied Control Signal (Dry Contact or Soldis State Relay, 120 VAC) 1 6040-RRA000 1/16 DIN Relay, Relay 2 6040-RRA000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RRA110 1/16 DIN Relay, Relay, Retransmit, RS485, Remote Setpoint Code Options 0 None 1 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 0 None 1 6050-1R000 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 3 4050-1R000 1/16 DIN Fixed 5A Relay, Relay 4 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 4 4050-1R100 1/16 DIN Fixed 5A Relay, Relay 4 4050-1R100 1/16 DIN Fixed 5A Relay, Relay 4 <t< th=""><th>3 6 9</th><th>40 Amp 75 Amp 100 Am</th><th>ip ip mp</th><th></th><th></th><th></th><th></th><th></th><th></th></t<>	3 6 9	40 Amp 75 Amp 100 Am	ip ip mp						
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-RRA0000 1/16 DIN Relay, Relay 2 6040-RRA0000 1/16 DIN Relay, Relay, Retransmit, RS485 3 4040-RRA110 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 2 Godo-1RA10 1/6 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1RA10 1/16 DIN Fixed 5A Relay, Relay 3 4050-1RA10 1/16 DIN Fixed 5A Relay, Relay 4 4050-1RA10 1/4 DIN Fixed 5A Relay		Code	Line V	Voltage					
Code Process Controller Options 0 Terminal Block for Customer Supplied Control Signal (Dry Contact or Soldis State Relay, 120 VAC) 1 6040-RR0000 1/6 DIN Relay, Relay 2 6040-RR0000 1/4 DIN Relay, Relay 3 4040-RR0000 1/4 DIN Relay, Relay 4 4040-RRA110 1/4 DIN Relay, Relay 4 4040-RRA110 1/4 DIN Relay, Relay 6 0 1 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 1 0 None 1 6050-1R000 1/16 DIN Fixed 5A Relay, Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 3 4050-1R000 1/4 DIN Fixed 5A Relay, Relay, Relay, Relay, Relay, Relay, Relay 4 4050-1R000 1/4 DIN Fixed 5A Relay, Relay, Relay, Relay, Relay 4 4050-1R010 1/16 DIN Fixed 5A Relay, Rela		0 1 2 9	120/2 575/6 208 V Specia	208/240/48 600 VAC VAC ial	O VAC				
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-RRA100 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 3 Main Disconnect Switch & Enclosure Heater 1 6050-1R000 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 3 4050-1RA10 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 3 4050-1RA10 1/16 DIN Fixed 5A Relay, Relay 4 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485			Code	Process	Controller Optio	ns			
Code Options 0 None 1 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 0 None 1 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 3 4050-1R000 1/4 DIN Fixed 5A Relay, Relay 4 4050-1RA10 1/16 DIN Fixed 5A Relay, Relay 4 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay 6 Code 4 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay 6 Code 4 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay 6 Code 4 Code			0 1 2 3 4	Termina 6040-RI 6040-RI 4040-RI 4040-RI	I Block for Custor R0000 1/16 DIN F RA100 1/16 DIN F R0000 1/4 DIN Re RA110 1/4 DIN Re	ner Supplied Ielay, Relay Ielay, Relay, Iay, Relay Iay, Relay, R	Control Signal (Dry Contact Retransmit, RS485 etransmit, RS485, Remote S	or Soldis State Relay, 120 \ Setpoint	/AC)
0 None 1 Main Disconnect Switch 2 Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 3 Main Disconnect Switch & Enclosure Heater 0 None 1 6050-1R000 1/16 DIN Fixed 5A Relay, Relay 2 6050-1R000 1/16 DIN Fixed 5A Relay, Relay, Retransmit, RS485 3 4050-1R10 1/4 DIN Fixed 5A Relay, Relay 4 4050-1R10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485 Code Load Eusing Ontion (See Note)				Code	Options				
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 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485 4 4050-1RA10 1/4 DIN Fixed 5A Relay, Relay, Retransmit, RS485 Code Load Eusing Option (See Note)				0 1 2 3	None Main Disconnec Enclosure Heate Main Disconnec	t Switch r t Switch & E	nclosure Heater		
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 Eusing Ontion (See Note)					Code Overten	nperature Co	ontroller Options		
Code Load Fusing Ontion (See Note)					U None 1 6050-1R 2 6050-1R 3 4050-1R 4 4050-1R	000 1/16 DIN A10 1/16 DIN 000 1/4 DIN F A10 1/4 DIN F	Fixed 5A Relay, Relay Fixed 5A Relay, Relay, Retrans Fixed 5A Relay, Relay Fixed 5A Relay. Relay. Retransn	mit, RS485 nit, RS485	
					Code	Load Fu	sing Option (See Note)	,	
Blank None 9010(*) 8 Amps/Circuit (10 Amp fuse) 9015(*) 12 Amps/Circuit (20 Amp fuse) 9025(*) 20 Amps/Circuit (20 Amp fuse) 9025(*) 20 Amps/Circuit (25 Amp fuse) 9030(*) 24 Amps/Circuit (30 Amp fuse) 9030(*) 24 Amps/Circuit (30 Amp fuse) 9030(*) 24 Amps/Circuit (30 Amp fuse) 9040(*) 32 Amps/Circuit (40 Amp fuse) 9040(*) 32 Amps/Circuit (45 Amp fuse) 9040(*) 36 Amps/Circuit (50 Amp fuse) 9050(*) 40 Amps/Circuit (60 Amp fuse) 9050(*) 40 Amps/Circuit (80 Amp fuse) 9050(*) 64 Amps/Circuit (10 Amp fuse) 9070(*) 56 Amps/Circuit (10 Amp fuse) 9090(*) 72 Amps/Circuit (10 Amp fuse) 9100(*) 80 Amps/Circuit (10 Amp fuse) 9100(*) 80 Amps/Circuit (10 Amp fuse) 9100(*) 80 Amps/Circuit (125 Amp fuse) 9100(*) 80 Amps/Circuit (125 Amp fuse) 9100(*) 80 Amps/Circuit (10 Amp fuse) 9100(*) 80 Amps/Circuit (125 Amp fuse) 9125(*) 100 Amps/Circuit (125 Amp fuse)					Blank 9010(*) 9020(*) 9020(*) 9030(*) 9035(*) 9040(*) 9040(*) 9040(*) 9050(*) 9050(*) 9050(*) 9050(*) 9050(*) 9090(*) 9100(*) 9110(*) 9110(*) 9125(*)	None 8 Amps/ 12 Amps 20 Amps 20 Amps 24 Amps 32 Amps 32 Amps 36 Amps 48 Amps 56 Amps 64 Amps 72 Amps 80 Amps 80 Amps 100 Amp	Circuit (10 Amp fuse) S/Circuit (15 Amp fuse) s/Circuit (20 Amp fuse) s/Circuit (25 Amp fuse) s/Circuit (30 Amp fuse) s/Circuit (35 Amp fuse) s/Circuit (40 Amp fuse) s/Circuit (40 Amp fuse) s/Circuit (50 Amp fuse) s/Circuit (60 Amp fuse) s/Circuit (70 Amp fuse) s/Circuit (80 Amp fuse) s/Circuit (100 Amp fuse) s/Circuit (110 Amp fuse) s/Circuit (125 Amp fuse)		
4468-3 0 1 1 9025(3) Typical Model Number *Cossify Number of Circuits (Maximum Three Circuits of Load Eucling)	J- 3	0	1		1 9025(3)	Typical	Model Number		

H-150

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

Ordering Information

Complete the Model Number using the Matrix provided.



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.

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	Contro	Zones
	10	One 60 Industr	40-RR0000 1/16 DIN Relay, Relay with One Three-Pole 40 Amp rated ial Contactor
	20	Two 60 Industr	40-RR0000 1/16 DIN Relay, Relay with Two Three-Pole 40 Amp rated ial Contactors
	30	Three 6 rated Ir	040-RR0000 1/16 DIN Relay, Relay with Three Three-Pole 40 Amp ndustrial Contactors
	40	Four 60 Industr	040-RR0000 1/16 DIN Relay, Relay with Four Three-Pole 40 Amp rated ial Contactors
		Code	
		000 	Add to Complete Model Number
4463-	30	000	Typical Model Number



Description

switches.

Options

Protection

tures as low as 0°F

Phase Selector Switch

• Floor Stand Kit

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

Ground Fault Monitor for Equipment

• Enclosure heater – Anti-Condensation for

• Z Purge Pressurization System for Class I,

Combination Voltmeter and Ampmeter with

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

Div. 2, Groups C, D environments

Instrument Protection for Ambient Tempera-

handles resistive heating applications exceed-

ing the capabilities of thermostats and manual

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



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

CONTROL SYSTEMS

CHROMALOX -



4430 Series Contactor Panels (cont'd.) Ordering Information - Complete the Model Number using the Matrix provided.

Model

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

CHROMALOX

4432 Three Phase Contactor Power Control Panel NEMA 4/12

Panel Configuration

oouc	Curre	III @ 40	し (104 Г)А Ш	idient with NO SOLAR	LUAD	
	Circui	ts	Max. Amps/0	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		08	80	100	(24°H X 24°W X 12°D) (24°H x 24°W x 12°D)
204	1 0		90	30	20	(24 II X 24 W X IZ D) (26"Ll x 20"W(x 10"D)
224 248	2		24 48	40 96	30 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)
548 280	3		48 80	144 240	60 100	(48°H X 36°W X 12°D) (48°H y 36°W y 12°D)
396	3		96	288	120	(48"H x 36"W x 12"D)
124	4		24	96	30	(48"H x 36"W x 12"D)
148	4		48	192	60	(48"H x 36"W x 12"D)
180	4		80	320	100	(48"H x 36"W x 12"D)
196	4		96	384	120	(48"H x 36"W x 12"U)
5/24	5		24 10	120	30	(48"H x 36"W x 12"D) (48"H x 36"W x 12"D)
580	5		40	400	100	(48 H x 36 W x 12 D) (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)
548	6		48	288	60	(48"H x 36"W x 12"D)
180 196	6		80 96	480 576	100	(60 H X 36 W X 12 D) (60"H x 36"W x 12"D)
	Code	Voltage		010	120	
	1	208 VAC				
	2 3 4 5	240 VAC 380 VAC 415 VAC 480 VAC				
	Ī	Code	Process C	ontroller Options		
		1 2 3 4 5 6 7	4040-TRA Customer 4040-SRA Customer 4040-SRA Customer 4040-SRA	100 1/4 DIN TRIAC, Re Supplied Signal to Ste 100 1/4 DIN SSR, Rela Supplied Digital Signal 100 1/4 DIN SSR, Rela Supplied Digital Signal 100 1/4 DIN SSR, Rela	Jay, Retransmit, RS pper (4 - 20 mA). y, Retransmit, RS48 for Stepper and On y, Retransmit, RS48 for Stepper and On y, Retransmit, RS48	485 Controller 35 Controller & Stepper e 24 or 48 Amp SCR Trim Load 35 & Stepper & One 24 or 48 Amp SCR Trim Load e 80 or 96 Amp SCR Trim Load 35 & Stepper & One 80 or 96 Amp SCR Trim Load
			Code (Overtemperature Cont	roller Options	
			0 1 2 1 3 1 4 0 5 1 6 1	None Dne 4050-1R000 1/4 D Two 4050-1R000 1/4 D Three 4050-1R000 1/4 D Two 4050-1RA10 1/4 D Two 4050-1RA10 1/4 D Three 4050-1RA10 1/4 D	IN Fixed 5A Relay, F IN Fixed 5A Relay, F DIN Fixed 5A Relay, F IN Fixed 5A Relay, F DIN Fixed 5A Relay, F DIN Fixed 5A Relay	Relay Relay Relay Relay, Retransmit, RS485 Relay, Retransmit, RS485 Relay, Retransmit, RS485
				Jode Ground Fa	uit Sensing/Interrup	it, Enclosure Heater, and "Z" Purge Pressurization Option
				None Ground Fai Cabinet He "Z" Purge P Ground Fai Ground Fai Ground Fai Ground Fai Factor Ground Fai Ground Fai Ground Fai	It Monitor & Shutd ater Iressurization Syster It Monitor & Cabine It Monitor, Cabinet Jeater and "7" Purce	own includes Illuminated Reset Switch** n et Heater urge System Heater and "Z" Purge System System
				Code	Options	. 030000
1				0000		

H-128

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

44

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 & Second-ary 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.

			Int Total Among		
	Circuits	Max. Amps/C	KL IOTAI 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)
<u>196</u>	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) (49"H x 30"W x 10"D)
290	2	96	192	120	(48 H X 36 W X 10 D)
324	3	24	(2	30	(48"H x 36"W x 10"D)
348	3	48	144	6U 100	(48 H X 36 W X 10 D) (48"H x 36"W x 10"D)
306	3	96	240	120	$(4011 \times 30 \text{ W} \times 10 \text{ D})$ $(48"\text{H} \times 36"\text{W} \times 10"\text{D})$
121	0	24	06	20	(48"H x 26"W x 10"D)
424	4	4	192	50 60	$(48"H \times 36"W \times 10"D)$
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 × 36"W × 10"D)
648 690	6	48	288	60	(48"H x 36"W x 10"D)
UX0 909	b	U8 20	48U 576	100	(00 H X 30 W X 10 D) (60"H x 36"W x 10"D)
030	Code	Veltera	570	120	
	Loue				
	1	208 VAC			
	2	240 VAC			
1	2	< X I I V//VI			
	3 4	415 VAC			
	3 4 5	415 VAC 480 VAC			
	3 4 5 	415 VAC 480 VAC Code Proce	ss Controller Ontions	3	
	3 4 5 	415 VAC 480 VAC Code Proce	ss Controller Options	s (Dry Contact or Sy	oldid State Belav, 120 VAC)
	3 4 5 	380 VAC 415 VAC 480 VAC Code Proce 0 Custo 1 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/	s (Dry Contact or So AC, Relay, Retrans	oldid State Relay, 120 VAC) smit. RS485 Controller
	3 4 5	380 VAC 415 VAC 480 VAC Code Proce 0 Custo 1 4040- 2 Custo	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t	s (Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20	oldid State Relay, 120 VAC) smit, RS485 Controller mA).
	3 4 5	Code Proce 0 Custo 1 4040- 2 Custo 3 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR	s (Dry Contact or Sc AC, Relay, Retrans to Stepper (4 - 20 8, Relay, Retransm	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper
	3 4 5 	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital (s (Dry Contact or Sc AC, Relay, Retrans to Stepper (4 - 20 t, Relay, Retransm Signal for Stepper	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load
	3 4 5	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital (SRA100 1/4 DIN SSR mer Supplied Digital (s (Dry Contact or Sc AC, Relay, Retrans to Stepper (4 - 20 t, Relay, Retransm Signal for Stepper t, Relay, Retransm Signal for Stepper	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load
	345	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR	Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper Balay Retransm	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load at RS485 & Stepper & One 20 or 96 Amp SCR Trim Load
	345	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR sRA100 1/4 DIN SSR	Correction States (Dry Contact or States) (Dry Contact or States) (Contact of the States) (Contact of Stepper (Contact of Stepper (Contact of Stepper (Contact of Stepper (Contact of Stepper) (Contact of Stepper) (Contact of Stepper)	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load
	345	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 Custo 7 4040-	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature	Controller Option (Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load
	345	380 VAC 415 VAC 480 VAC Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 0 0	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal f SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None	Contact or So AC, Relay, Retrans to Stepper (4 - 20 t, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper t, Relay, Retransm E Controller Optio	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load
	345	380 VAC 415 VAC 480 VAC Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 2 Custo 3 4040- 6 Custo 7 4040- 1 2 2 Custo 3 4040- 1 2	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000	Contact or So AC, Relay, Retrans to Stepper (4 - 20 t, Relay, Retransm Signal for Stepper t, Relay, Retransm Signal for Stepper t, Relay, Retransm controller Optio	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ns
	345	Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 1 2 Custo 3 4040- 6 Custo 7 4040- 1 2 2 3	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Twree 4050-1R000 Three 4050-1R000	Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper A, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Option 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 00 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load Ins A Relay, Relay A Relay
	345	State State <th< td=""><td>ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R010 One 4050-1R010</td><td>Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A)</td><td>oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load Ins A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay</td></th<>	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R010 One 4050-1R010	Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A)	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load Ins A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay
	345	State State <th< td=""><td>ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R010 One 4050-1RA10 Two 4050-1RA10</td><td>Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A) (1/4 DIN Fixed 5A)</td><td>oldid State Relay, 120 VAC) smit, RS485 Controller I mA). it, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NRelay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485</td></th<>	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R010 One 4050-1RA10 Two 4050-1RA10	Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A) (1/4 DIN Fixed 5A)	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). it, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NRelay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485
	345	State State <th< td=""><td>ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSF mer Supplied Digital 3 SRA100 1/4 DIN SSF mer Supplied Digital 3 SRA100 1/4 DIN SSF Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1RA10 Two 4050-1RA10 Two 4050-1RA10</td><td>(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 k, Relay, Retransm Signal for Stepper k, Relay, Retransm controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A</td><td>oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NRS N Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485</td></th<>	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSF mer Supplied Digital 3 SRA100 1/4 DIN SSF mer Supplied Digital 3 SRA100 1/4 DIN SSF Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1RA10 Two 4050-1RA10 Two 4050-1RA10	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 k, Relay, Retransm Signal for Stepper k, Relay, Retransm controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NRS N Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485
	345	300 VAC 415 VAC 480 VAC Code Proce 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 0 1 2 2 3 4040- 6 Custo 7 4040- 1 2 3 4 5 6 1 2 3 4 5 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Digital S SRA100 1/4 DIN SSR mer Supplied Digital S SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R000 Three 4050-1RA10 Three 4050-1RA10 Three 4050-1RA10 Three 4050-1RA10	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 k, Relay, Retransm Signal for Stepper k, Relay, Retransm Signal for Stepper k, Relay, Retransm Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NR Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
	345	State State <th< td=""><td>ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Digital SRA100 1/4 DIN SSR mer Supplied Digital SRA100 1/4 DIN SSR mer Supplied Digital SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1RA10 Two 4050-1RA10 Three 4050-1RA10 Three 4050-1RA10 Code Groun 0 None</td><td>(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm 6 Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A</td><td>oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NR A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option</td></th<>	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Digital SRA100 1/4 DIN SSR mer Supplied Digital SRA100 1/4 DIN SSR mer Supplied Digital SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1RA10 Two 4050-1RA10 Three 4050-1RA10 Three 4050-1RA10 Code Groun 0 None	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm 6 Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NR A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 2 3 4 0 1 2 3 4 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1RA10 Three 4050-1RA10	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ns A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 2 Custo 7 4040- 1 2 2 2 3 4040- 1 2 2 3 4 5 6 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Two 4050-1R010 Two 4050-1R010 Three 4050-1R010Three 4050-1R0100 Three 4050	Gry Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Option 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 5A Relay, Relay, Relay, Retransmit, RS485 5A Relay, Relay, Retransmit, RS485 5A Relay, Relay, Relay, Retransmit, RS485 5A Relay, Relay, Retransmit, RS485 5A Relay, Relay, Retransmit, RS485 5A Relay, Retransmit, RS485 5A Rela
	345	State Proce 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 2 Custo 7 4040- 1 2 3 4 5 6 4 5 6 6 1 2 3 4 5 6 6 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1R010 Three 4050-1RA10 Two 4050-1RA10 Three 4050-1RA100 Three 4050+	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 R, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ns A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option
	345	State Proce 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 3 4040- 6 Custo 7 4040- 1 2 3 4 5 6 1 2 3 4 5 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal f SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1R010 Two 4050-1R010 Three 4050-1R0100 Three 4050-1R010 Three 4050-1R0100 Three 4050-1R0100 Three 4050-1R01000	Controller Operation (Dry Contact or Stack, Relay, Retransmostig (Dry Contact or Stepper (4 - 20 R, Relay, Retransmostig Signal for Stepper R, Relay, Retransmostig (1/4 DIN Fixed 5A (1/4 DIN Fixed	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load National Stepper & One 80 or 96 Amp SCR Trim Loa
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 8 3 9 6 1 2 2 3 4 5 6 8 6 8 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Three 4050-1R000 Three 4050-1R010 Three 4050-1R010 Three 4050-1R010 Three 4050-1RA10 Three 4050-1RA100 Three	(Dry Contact or So AC, Relay, Retranso to Stepper (4 - 20 R, Relay, Retransor Signal for Stepper A, Relay, Retransor Signal for Stepper R, Relay, Retransor Controller Optio 1/4 DIN Fixed 5A 0 1/4 DIN F	oldid State Relay, 120 VAC) smit, RS485 Controller mA). it, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load it, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load it, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load it, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load NR A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 55 A Relay, Relay, Retransmit, RS485 56 A Relay, Relay, Retransmit, RS485 57 Relay, Relay, Retransmit, RS485 58 Studown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 3 4040- 6 Custo 7 4040- 6 0 1 2 3 4 5 6 6 0 1 2 3 4 5 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1R000 Three 4050-1RA10 Two 4050-1RA10 Two 4050-1RA10 Three	(Dry Contact or St AC, Relay, Retrans to Stepper (4 - 20 k, Relay, Retransm Signal for Stepper k, Relay, Retransm Signal for Stepper k, Relay, Retransm Controller Optio (1/4 DIN Fixed 5A (1/4 DIN Fixed 5A) (1/4 DIN Fixed 5A) (1	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 55 A Relay, Relay, Retransmit, RS485 55 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option a Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System "Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 6 8 5 6 Custo 8 5 6 Custo 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 40000 Three 4050-1R000 Three 40000 Three 40000 Th	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 k, Relay, Retransm Signal for Stepper k, Relay, Retransm Signal for Stepper k, Relay, Retransm controller Option 1/4 DIN Fixed 5A 0 1/4 DIN Fixed	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System "Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 1 2 3 4 5 6 6 6 8 6 8 6 8 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Two 4050-1R000 Three 4050-1R000 Three 4050-1R000 Three 4050-1R010 Three 4050-1R0100 Three 4050-1R0100 Three 40000 Three 40000 Three 40000 Three 40000 Three 4	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm Signal for Stepper 8, Relay, Retransm 2 Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed	oldid State Relay, 120 VAC) smit, RS485 Controller I mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System "Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 0 1 2 3 4 5 6 6 6 8 6 8 6 8 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1R000 Three 4050-1R010 Three 40000 Three 40000 Three 40000 Three 40000 Three 4	(Dry Contact or So AC, Relay, Retrans to Stepper (4 - 20 K, Relay, Retransm Signal for Stepper R, Relay, Retransm Signal for Stepper R, Relay, Retransm Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 0 1/4 DIN Fixed 5A 10 1	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ns A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 SA Relay, Relay, Retransmit, RS485 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System Z" Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 2 Custo 7 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 0 1 2 3 4 5 6 6 6 8 6 8 6 8 6	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal 1 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Three 4050-1R000 Three 4050-1R000 Three 4050-1R010 Three 4050-1R010 Three 4050-1RA10 Three 4050-1 Three 4050-	(Dry Contact or So AC, Relay, Retranso to Stepper (4 - 20 R, Relay, Retransor Signal for Stepper R, Relay, Retransor Signal for Stepper R, Relay, Retransor Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fix	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 56 A Relay, Relay, Retransmit, RS485 56 A Relay, Relay, Retransmit, RS485 51 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option a Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System Z" Purge System
	345	State State 415 VAC 480 VAC 0 Custo 1 4040- 2 Custo 3 4040- 4 Custo 5 4040- 6 Custo 7 4040- 6 Custo 7 4040- 1 2 3 4040- 1 2 3 4040- 6 Custo 7 4040- 6 Custo 7 4040- 6 0 1 2 3 4 5 6 6 6 1 1 1 2 1 2 1 2 1 2 3 4 5 6 6 1 1 1 1 1 2 1 1 2 1 2 1 2 2 3 4 5 6 1 1 <td< td=""><td>ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R010 Two 4000 Two 4000 Two 4000 Two 4000 Two 4000 Two 40</td><td>(Dry Contact or So AC, Relay, Retranso o Stepper (4 - 20 R, Relay, Retransor Signal for Stepper R, Relay, Retransor Signal for Stepper R, Relay, Retransor Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixe</td><td>oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 554 Relay, Relay, Retransmit, RS485 564 Relay, Relay, Retransmit, RS485 51 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option a Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System Z" Purge System Dits & Current)</td></td<>	ss Controller Options mer Supplied Signal (TRA100 1/4 DIN TRI/ mer Supplied Signal t SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR mer Supplied Digital 3 SRA100 1/4 DIN SSR Overtemperature None One 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R000 Two 4050-1R010 Two 4000 Two 4000 Two 4000 Two 4000 Two 4000 Two 40	(Dry Contact or So AC, Relay, Retranso o Stepper (4 - 20 R, Relay, Retransor Signal for Stepper R, Relay, Retransor Signal for Stepper R, Relay, Retransor Controller Optio 1/4 DIN Fixed 5A 1/4 DIN Fixed 5A 0 1/4 DIN Fixe	oldid State Relay, 120 VAC) smit, RS485 Controller mA). nit, RS485 Controller & Stepper r and One 24 or 48 Amp SCR Trim Load nit, RS485 & Stepper & One 24 or 48 Amp SCR Trim Load r and One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load nit, RS485 & Stepper & One 80 or 96 Amp SCR Trim Load ms A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay A Relay, Relay, Retransmit, RS485 54 Relay, Relay, Retransmit, RS485 554 Relay, Relay, Retransmit, RS485 564 Relay, Relay, Retransmit, RS485 51 Interrupt, Enclosure Heater, and "Z" Purge Pressurization Option a Shutdown includes Illuminated Reset Switch n System Enclosure Heater nd "Z" Purge System inclosure Heater and "Z" Purge System Z" Purge System Dits & Current)
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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	Curren	t @ 40°	C (104°F	Ambient Enclosure Dimensions			
	40 75	45 Amı 75 Amı	0 0		(29"H x 21"W x 9"D) (29"H x 21"W x 9"D)			
		Code	Process Controller Options					
		0 1 2 3 4	Termir (Dry C 6040-1 6040-1 4040-1 4040-1	nal Block ontact of RR0000 RRA100 RR0000 RR0000 RRA110	for Customer Supplied Control r Solid State Switch, 120 VAC) 1/16 DIN Relay, Relay 1/16 DIN Relay, Relay, Retransmit , RS485 1/4 DIN Relay, Relay 1/4 DIN Relay, Relay, Retransmit, RS485, Remote Setpoint			
			Code	Overte	mperature Controller Options			
			0 1 2 3 4	None 6050-1 6050-1 4050-1 4050-1	IR020 1/16 DIN Fixed 5A Relay, Relay, Digital Input IRA20 1/16 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input IR020 1/4 DIN Fixed 5A Relay, Relay, Digital Input IRA20 1/4 DIN Fixed 5A Relay, Relay, Retransmit, Digital Input			
				Code	Options			
				0 1 2 3 4 5 6	None Ground Fault Monitor & Shutdown includes Illuminated Reset Switch Enclosure Heater Enclosure Door Viewing Window Ground Fault Monitor & Enclosure Heater Ground Fault Monitor & Enclosure Viewing Window Ground Fault Monitor, Enclosure Heater, and Enclosure Viewing Window			
					Enclosure Healer and Enclosure Viewing Window			
4477-	40	2	1	3	Typical Model Number			

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., Cur- rent, 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 Map- ping, 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 nonheat 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.

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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 Construct
- 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, 50/6	60 Hz, Single Ph	ase	
Operating Temperature - Hazardous Areas - Ordinary Areas	-40°F to 104°F (-40°(-40°F to 140°F (-40°(C to 40°C) C to 60°C)		
Input	100 Ohm platinum R	100 Ohm platinum RTD		
Output	30 amp solid state re	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		ont panel	
Solid State Alarm Rating - AC Solid State Alarm Rating - DC	12-277 VAC, 1.8 Amp 0-42 VDC, 1.8 Amps	os RMS - Custo RMS- Custome	mer Supplied r Supplied	
Alarm Function:	<u>Mode</u> Normal Operation Alarm Condition Power Off	Default Closed Open Open	Optional Open Closed Open	
Deadband	1°F (or °C) to 100°F (or °C), program	mable	
Set Points	-80°F to 1100°F prog	rammable (-62°	°C to 593°C)	
Units of Temperature	°F or °C, selectable			
Control Mode	On/Off control	On/Off control		
Soft Start	User selectable integr software algorithm, v tripping associated w	ral soft start, pa /hich eliminates ith self-regulati	tent pending nuisance breaker ng 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)



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

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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



(h) (h) (f) (f)

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 leak-age 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.

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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:
 - 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) Low Temperature Alarm High Temperature Alarm Low Current Alarm High Current Alarm GFEP GFEP Alarm Condition Output on Sensor Failure Calendar Audible button depress Security Alarm State	Range: -80° F to $+1100^{\circ}$ F (-62 $^{\circ}$ C to $+593^{\circ}$ C) Range: -80° F to $+1050^{\circ}$ F, Off (-62 $^{\circ}$ C to $+566^{\circ}$ C, Off) Range: -80° F to $+1150^{\circ}$ F, Off (-62 $^{\circ}$ C to $+621^{\circ}$ C, Off) Range: 0.1 A -50.0 A, Off Range: 30 mA -150 mA Alarm Only, Alarm & Trip, Alarm & Latch, Alarm & Trip & Latch Range: 0–100%, Bumpless Transfer to Manual Mode Year, Month, Day, Date, Hour & Minute Range: On, Off 3 Levels of password protected security 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,
Alarm Relays	High GFEP, Sensor Failure1 x DC Alarm Output, 1.8 Amp, 0 - 50 VDC1 x AC Alarm Output, 1.8 Amp, 12 - 240 VACModeDefaultOptionalNormal OperationClosedOpenAlarm ConditionOpenClosedPower OffOpenOpen
Communications	
Modbus	RTU/RS-485 (2 Of 4 WIRe)
Webserver/Ethernet IP	(Ontional)
	(Optional)
Uperating & Environmental Temperature Power Supply Protection Enclosure rating Approvals	-40°F to 104°F (-40°C to 40°C) 100 to 277V 50/60Hz IEC IP66 NEMA 4X FG (Optional Stainless Steel) 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

		н	w	D	F	В	м
316 SS	Inch	11.8	9.9	7.6	0.7	1.8	3.0
Enclosure	cm	30.2	25.1	19.4	1.7	4.4	7.6
Fiberglass	Inch	10.3	8.5	8.0	1.2	1.8	3.0
Enclosure	cm	26.2	21.3	19.7	3.2	4.4	7.6





Ordering Information

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

Model	Product	Descri	otion

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.

1	1 Circuit							
2	2 Circuits							
	Code	Comm	unications					
	0	ModBi	us RTU/RS485 (& RS422))				
	1	ModBi	us TCP/Ethernet					
	2	Webse	rver/Ethernet					
	3	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 ŠŠ	12 x 10 x 8`(30 x 25 x 19)				
			Code Add to Complete Model Number					
	1							

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

CHROMALOX-

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

CONTRO SYSTEM

H-137

IntelliTrace

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





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actional tiend Free stations)	Popolitical Bend B (Deadhand)	Proportional Band Development
PE Autotune	HD Automatic	BD Autotane

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

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

CHROMALOX -

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:	100 Ω 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

ITAS Base Panel

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

Heat Tracing Control Panel for Ordinary Areas To Order — Complete the Model Number using the Matrix provided. Model Product Description

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 ITAS

Code	Circuit	S			1 Pole	+ CIICIO	SULE SIZE	י עדאאדו) י	2 Pole	Panelboard Size	Panelboard R
06	6 Circu	uits	24 x	24 x 12 (61 x 61 x	31)		24 x 2	4 x 12 (61 x 61 x 31)	N/A	N/A
12	12 Circ	cuits	36 x	30 x 12 (92 x 76 x	31)				18 position	up to 100
12	12 Circ	cuits	48 x	36 x 12 i	122 x 92 x	(31)		48 x 3	6 x 12 (122 x 92 x 31)	30 position	up to 400
18	18 Circ	cuits	48 x	36 x 12 i	122 x 92 x	31		10 / 0		30 position	up to 400
18	18 Circ	cuits	.0 .	-		,		60 x 3	6 x 12 (152 x 92 x 31)	42 position	up to 600
24	24 Circ	stite	48 x	36 x 12 (122 x 92 x	(31)		00 / 0		30 position	up to 200
24	24 Circ	nits	10 /	-		(01)		62 x 6	0 x 12 (157 x 152 x 31)	30 position (X2)	up to 400
30	30 Circ	nits	60 x	36 x 12 (152 x 92 x	(31)		OL X O		30 position	up to 600
30	30 Circ	nite	00 1		102 × 52 ×	(01)		62 x 6	0 x 12 (157 x 152 x 31)	42 position (X2)	up to 600
36	36 Circ	nite	60 v	36 y 12 (152 x 92 x	(31)		02 × 0		42 position (A2)	up to 600
36	36 Circ	nits	00 1			(01)		62 x 6	0 x 12 (157 x 152 x 31)	42 position (X2)	up to 600
1	Code	Line Vo	ltage			Ca	ble Volta	10e Ci	rcuit Breaker Rating - Type	(1/Loon)	up to 000
	1	208/12	20 VAC. (3 Phase 4	1 Wire	12	0 VAC	12	20 V-1 Pole	(1,-00P)	
	ż	208/12	O VAC	3 Phase 4	4 Wire	20	8 VAC	2	08/240V-2 Pole		
	3	240/12	VAC 9	Single Ph	lase 3 Wir	e 24	O VAC	2	08/240V-2 Pole		
	ă	480/27	7 VAC (3 Phase 4	4 Wire	27	7 VAC	2	77V-1 Pole		
	5	480/27	7 VAC. '	3 Phase /	1 Wire	48		4	80V-2 Pole		
	6	2/10/10		Single Dh	1 WILC 1266 2 Mire	0 1 0 10 ם		1	20 V-1 Pole		
	ů	Z40/12 Multiple	alina 14	oltano Do	ast o Will	בו כ 	0 740	1			
	9 	Code	Cable	a load Ci	reuit Pres	kor Dol	tina				
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		3		Therma		;	9 111		Ker Hallings (Consult Sales)		
			Code	Main	Disconne	ct / Cir	cuit Brea	Ker			
			0	None	;		A 100	A Thermal	Magnetic		
			1	100A	Disconne	ct	B 150	A Thermal	Magnetic		
			2	150A	Disconne	ct	C 225	A Thermal	Magnetic		
			3	250A	Disconne	ct	D 250	A Thermal	Magnetic		
			4	400A	Disconne	ct	E 400	A Thermal	Magnetic		
			5	600A	Disconne	ct	F 600	A Thermal	Magnetic		
			Ĩ	Code	Enclos	IIFe					
				1		4 Cinal	o Door V	All Mount	Stool Epologuro		
				2		4 311191	Stainles	c Stool Wa	LMount Enclosure: 24 x 24 x	(12 ln (61 x 61 x 31) (cm)	
				2		17 204	Stainles	s Steel Wa	I-Mount Enclosure: 26 x 20 x	$(12 \text{ In}, (01 \times 01 \times 01) (011)$	
				1	NEMA	1X 304	Stainles	s Steel Wai	I-Mount Enclosure: 48 x 36 x	$(12 \text{ III}, (32 \times 70 \times 31) (011))$	
				4		40 304	Stainles	s Sleel Wal	Mount Enclosure: 60 x 26 x	(12 III, (122 X 92 X 31) (011))	
				U C		40 304	Stainles	s Sleel Wal	r Mount Enclosure: 60 x 50 7	x 12 III, (152 X 92 X 51) (611) x 19 In (157 x 159 x 91) (6r	n)
				0		4A 304		S SLEEL FIUL		x 12 III, (157 x 152 x 51) (CI	1)
					Loae	Enclos	ure Heat	er			
					U 1	NU EII(JUSUIE H	trolled Env	Nosura Haatar (Anti-Condona	eation Heater)	
					1	Therm	usiai UUI		Nosure Heater (Anti-Oundens	Ambiant)	
					2	Therm	USIAL UOP		Siosure Heater (to U F, -18 C /	AIIIJICIIL)	
					3 	nierm		Catle C	ciosure meater (to -40 F/ C Ar	inneilt)	
						Code	Input	Uptions	1		
						0	Stand	ard Sensor	Input		
						1	Dry C	ontact Clos	ure from Ambient Sensing T	hermostat	
						2	Remo	te Snow Se	ensor Input (i.e. SIT, GIT & C	IT Type Sensors)	
						9	Specia	al Configur	ation		
							Code	Commu	nications		
							0	Standar	d: Modbus BTU/ BS485 or M	Iodhus TCP/Ethernet	
							1	Modhur	TCP/Wireless		
							2	RACnot	5 TOT / WILCIG33		
							<u>د</u>	Othor			
							9 	Codo	Tomporature Canaina 0-4	0.00	
								Code	remperature Sensing Opti	ons	
								0	Standard Wired Sensing		
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		1						9	Other		
24	1	3	3-	1	1	1	'	 	Tynical Model Number		

IntelliTrace

ITAS-EXT Extender Panel

Heat Tracing Control Panel for Ordinary Areas

Ordering Information

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

CHROMALOX

Model	Produ	uct Desc	ription												
ITAS-EXT	ITAS- ITAS Ratec Fault Remo	EXT seri Heat Tra 1 at 40A Equipme ote Moni	es Intellige ce Ambien Per Circuit ent protecti toring Capa	nt Amb t Sensi at 104 ion, Mo ability,	bient Sensir ng Panel to °F (40°C) Aı bdBus RTU/ Thermostat	ng Heat Tra increase mbient, Siz 'RS485 or t Controlle	ace Exten circuit se x to Thirt TCP/Ethe d Enclos	sion Pane rvice. ITAS y-Six Circ ernet Com ure Heater	I. Designe S series o uits, Com municatio ; CE Thirc	ed for indus ffers the fol mon Alarm ons, UL & c Party Com	strial applic lowing sta Output, Ha UL Third F upliance	cations in non-h Indard features and/Off/Auto O Party Compliand	nazardous area NEMA 4 encl peration, Curr ce. Options Inc	as. Intended losure, PID S ent Monitori clude: NEMA	to be used with SCR Power Controller ing, 30 mA Ground A 4XSS Enclosure,
	_					NEMA 4	Enclosu	ıre Size (HxWxD I	n. (cm)					
<u>C</u>	ode	Circuit	S		1	Pole				2 Pc	ole		Panelboard	Size	Panelboard Rating
	06	6 Circu	its	24 x	24 x 12 (6	1 x 61 x 3	31)		24 x 24	1 x 12 (61 x	x 61 x 31))	N/A	•	N/A
	12	12 UIC 12 Circ	uite	30 X /18 v	30 X 12 (9	2 X / D X 3 22 v 02 v	31) 31)		18 v 36	 v 12 (122) v 02 v 31	1)		1 1	up to 100 A
	18	18 Circ	uits	48 x	36 x 12 (1	22 x 92 x 22 x 92 x	31)		40 × 00			")	30 position	1	up to 400 A
	18	18 Circ	uits	10 /			01)		60 x 36	6 x 12 (152	2 x 92 x 31	1)	42 position	1	up to 600 A
	24	24 Circ	uits	48 x	36 x 12 (1	22 x 92 x	31)					,	30 positior	l	up to 400 A
	24	24 Circ	uits						62 x 60) x 12 (157	7 x 152 x 3	31)	30 positior	ı (X2)	up to 400 A
	30	30 Circ	uits	60 x	36 x 12 (1	52 x 92 x	31)		60 v 60		 / v 150 v /	241	30 position) . (V0)	up to 600 A
	30 36	30 UIIC 36 Circ	uite	60 v	36 v 12 (1	 52 v 02 v	31)		62 X 61	JX IZ (I5/	× 152 X 3	51)	42 position	1 (XZ) 1	up to 600 A
	36	36 Circ	uits	00 X			51)		62 x 60) x 12 (157	7 x 152 x 3	31)	42 position	i (X2)	up to 600 A
	 	Code	Line Vol	tage			Cab	le Voltag	e Ci	rcuit Break	er Ratino	1 - Type (1/Loc))	. ()	
		1	208/120		3 Phase 4	Wire	120	VAC	12	0 V-1 Pole		, .,po (.,_o	·r/		
		ż	208/120	VAC.	3 Phase 4	Wire	208	VAC	2)8/240V-2	Pole				
		3	240/120	VAC,	Single Pha	se 3 Wire	240	VAC	2	08/240V-2	Pole				
		4	480/277	VAC,	3 Phase 4	Wire	277	VAC	2	77V-1 Pole	1				
		5	480/277	VAC,	3 Phase 4	Wire	480	VAC	4	SUV-2 Pole					
		0 Q	Z40/120 Multinle	I ine V	oltane Ren	Se S Wile	120	VAG		20 V-1 POR	e				
		Ĭ	Code	Cable	e I nad Ciri	cuit Break	er Ratir	IU							
			1	15A	Thermal	Magnetic		.9							
			2	20A	Thermal	Magnetic									
			3	30A	Thermal	Magnetic									
			4	40A	Thermal	Magnetic									
			0 0	OUA Multi	nle Breake	Magnetic r Ratings	- Consul	t Sales							
			Ĩ.	Code	Main	Disconne	ct / Circi	iit Break	or						
				0000	None	Disconne		A 100A	Thermal	Magnetic					
				1	100A	Disconne	:t	B 150A	Thermal	Magnetic					
				2	150A	Disconne	ct	C 225A	Thermal	Vagnetic					
				3	250A	Disconne	ct	D 250A	Thermal	Vagnetic					
				4	400A I	Disconne	ct	E 400A	Thermal	Vlagnetic					
				9 	Code	Enclose	ji Ino	F DUUA	Inernal	viagnetic					
					1	NEMA		Door Wa	II Mount	Stool Engle					
					2		1X 304 S	tainless 9	Steel Wal	-Mount Fr	nclosure: 2	24 x 24 x 12 lr	(61 x 61 x 3	31) (cm)	
					3	NEMA 4	4X 304 S	tainless S	Steel Wal	-Mount En	nclosure: 3	36 x 30 x 12 lr	i, (92 x 76 x 3	31) (cm)	
					4	NEMA 4	4X 304 S	tainless \$	Steel Wal	-Mount En	nclosure: 4	48 x 36 x 12 Ir	i, (122 x 92 x	(31) (cm)	
					5		1X 304 S	tainless S	Steel Wal	-Mount En	iclosure: 6	50 x 36 x 12 lr	i, (152 x 92 x	(31) (cm)	N N
					0		Freleeu				nciosure.	02 X 00 X 12 1	II, (157 x 152)
									tar						
						U 1	NU ENCIO	sure Hea	nlled Enc	losure Hea	ater (Δnti-I	Condensation	Heater)		
						ż	Thermos	stat Contr	olled End	losure Hea	ater (to 0°F	F, -18°C Ambie	nt)		
						3	Thermos	stat Contr	olled End	losure Hea	ater (to -40	0°F/°C Ambient	t) ´		
ITAS-FXT-	24	1	3	1-	1	0	Tynical	Model Nu	mher						
	<u>.</u>		U			U	Typical		IIIIDEI						

*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.

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					

Spare/Replacement Parts for ITAS & ITAS-EXT

Accessories for ITAS & ITAS-EXT

Part Number	Description	
Contact Sales	Power Transformers	1
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	Ē
Contact Sales	Floor Stand Kit, 12" (30 cm) Deep, 316 SS	

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IntelliTrace

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

ITLS Base Panel Heat Tracing Control Panel for Ordinary Areas

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.

 NEMA 4 Enclosure Size (HxWxD In (cm)

Code	Circuits		1	Pole	.11610301	6 0126 (11		/ 2 Pole	Panelboard Size	Panelboard Rating
06	6 Circuits	24 x	24 x 12 (6	1 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 (9	2 x 76 x 31)			· · · · · · · · · · · · · · · · · · ·	18 position	up to 100 A
12	12 Circuits	48 x	36 x 12 (1	22 x 92 x 3	1)		48 x 36 x 12	(122 x 92 x 31)	30 position	up to 400 A
18	18 Circuits	48 x	36 x 12 (1	22 x 92 x 3	1)		00 00 10		30 position	up to 400 A
18	18 Circuits	40			1)		ь0 x 36 x 12	(152 x 92 x 31)	42 position	up to 600 A
24 24	24 Circuits 24 Circuits	48 x	36 x 12 (1 	22 x 92 x 3	1)		62 x 60 x 12	(157 x 152 x 31)	30 position 30 position (X2)	up to 400 A up to 400 A
30	30 Circuits	60 x	36 x 12 (1	52 x 92 x 3	1)		CO ··· CO ··· 10		30 position	up to 600 A
30	30 GICUIIS	60 v	 36 v 12 (1	 52 v 02 v 3	1)		62 X 60 X 12	(157 X 152 X 31)	42 position (X2)	up to 600 A
36	36 Circuits	00 x			1)		62 x 60 x 12	(157 x 152 x 31)	42 position (X2)	up to 600 A
1	Code Line V	oltage			Cable	Voltage	Circuit B	reaker Rating - Type	(1/Loop)	
	1 208/1	20 VAC.	3 Phase 4	Wire	120 V	AC	120 V-1	Pole		
	2 208/1	20 VAC,	3 Phase 4	Wire	208 V	AC	208/240	V-2 Pole		
	3 240/1	20 VAC,	Single Pha	se 3 Wire	240 V	AC	208/240	V-2 Pole		
	4 480/2	77 VAC,	3 Phase 4	Wire	277 V	AC	277V-1	Pole		
	5 480/2	77 VAC,	3 Phase 4	Wire	480 V	AC	480V-2	Pole		
	6 240/1	20 VAC,	Single Pha	se 3 Wire	120 V	AC	120 V-1	Pole		
	9 <u>IVIUITIP</u>	le Line V	oltage Req	uirement	. Doting					
			E LOAD UIT	CUIT Breake	r Kating	40.4	Themesel Mean			
		15A 20A	Thermal	Magnetic	4	40A	Thermal Mag	netic		
	3	20A 30A	Thermal	Magnetic	g	Multin	le Breaker Ba	tings - Consult Sales		
		Code	Main	Disconnect	/ Circui	t Breaker				
		0	None		A	100A Th	nermal Magne	tic		
		1	100A	Disconnect	B	150A Th	ermal Magne	tic		
		2	150A	Disconnect	C	225A Th	nermal Magne	tic		
		3	250A	Disconnect	D	250A Th	iermal Magne	tic		
		4	400A	Disconnect	Ē	400A Th	nermal Magne	tic		
		5	600A	Disconnect	F	600A Th	iermal Magne	tic		
			Code	Enclosur	e					
			1	NEMA 4	Single-D	oor Wall-	Mount Steel E	nclosure		
			2		304 Sta	ainless Ste	eel Wall-Mour	It Enclosure: 24 x 24	$x 12 \ln (61 \times 61 \times 31) (cm)$	
			3		1 304 318 1 204 Sta	anness Ste	eel wall-woul	IL EIICIOSUIE: 30 X 30	X Z II, (9Z X / 0 X 3 I) (CIII) x 12 ln (122 x 02 x 21) (cm)	
			5	NFMA 4)	(304 Sta	ainless Ste	eel Wall-Mour	it Enclosure: 60 x 36	$x 12 \ln (152 \times 92 \times 31)$ (cm)	
			6	NEMA 4X	304 Sta	ainless Ste	eel Floor-Mou	nt Enclosure: 62 x 60) x 12 ln, (157 x 152 x 31) (cr	n)
				Code E	nclosure	Heater				
				0 1	lo Enclos	sure Heate	er _			
				1	hermost	at Contro	lled Enclosure	e Heater (Anti-Condei	nsation Heater)	
				2 I 3 T	hermost	at Contro	lled Enclosure	Heater (to -40°F Am	hient)	
					nde**	Innuts/Ci	ircuit I/O	Manning	ision()	
					0	1	No	I/O Mapping		
					ĩ	1	Ful	I/O Mapping	Use Enclosure sizes from	above
					2	2	Ful	I/O Mapping	See ITLS I/O mapping: En	closure size on
					3	3	Ful	I/O Mapping	accessory page	
					9	Х	Spe	cial Configuration	Consult Sales	
						Code	e Commu	nications		
						0	Standard	Modbus RTU/ RS48	35 or Modbus TCP/Ethernet	
						1	Modbus	TCP/Wireless		
						2	BACnet Other			
						9	Cada	Monitoriza		
							Code			
							0	Standard Wired Sei	nsing aing (Must calest Full I/O Mar	nning)
							1	wireless Temp Sen	sing (Must select Full I/O Ma	pping)
							9	Other	311165	
24	1 3	3-	1	1	1	0	0	Typical Model Nur	nber	
		•	•	•	-		•	- Jp. ca. model Nul		
4										

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.

LS-EX	T ITLS Hea Rate Faul	G-EXT seri t Trace Lin ed at 40A t Equipmo rmostat C	es Intellige ne Sensing Per Circuit ent protecti ontrolled E	nt Line S Panel to at 104°f on, Moo nclosur	Sensing H o increase F (40°C) A dBus RTU e Heater, (leat Trace Ex circuit serv mbient, Six /RS485 or T Customizabl	ttension F ice. ITLS- to Thirty- CP/Ether e I/O Map	Panel. Design EXT series o Six Circuits, net Commun oping, Remot	ned for indus offers the foll Common Ala ications, UL te Monitoring	trial applications owing standard fe arm Output, Hand & cUL Third Part g Capability, CE TI	in non-haza features: NEI d/Off/Auto O ty Complian hird Party C	rdous areas. Intende MA 4 enclosure, PID peration, Current Me ce. Options Include: ompliance	ed to be used with ITL SCR Power Controlle onitoring, 30 mA Grou NEMA 4XSS Enclosur
	Code	Circuit	\$		1	NEMA 4 I Pole	Enclosur	e Size (HxW	/xD In. (cm) 2 Pole		Panelhoard Size	Panelhoard B
	06 12 12 18 18 24 24	6 Circu 12 Circu 12 Circu 18 Circu 18 Circu 24 Circu 24 Circu	its cuits cuits cuits cuits cuits cuits cuits	24 x 2 36 x 3 48 x 3 48 x 3 48 x 3	24 x 12 (6 30 x 12 (9 36 x 12 (1 36 x 12 (1 36 x 12 (1 	51 x 61 x 31 52 x 76 x 31 22 x 92 x 3 22 x 92 x 3 22 x 92 x 3)) 31) 31) 31)	24 48 60	4 x 24 x 12 (3 x 36 x 12 () x 36 x 12 (2 x 60 x 12 ((122 x 92 x 31) (152 x 92 x 31) (152 x 92 x 31))	N/A 18 position 30 position 30 position 42 position 30 position 30 position (X2	N/A up to 100 up to 400 up to 400 up to 600 up to 400
	30 30 36 36	30 Circ 30 Circ 36 Circ 36 Circ	auits auits auits auits	60 x 3 60 x 3	36 x 12 (1 	52 x 92 x 3 52 x 92 x 3	81) 81)	62	2 x 60 x 12 (2 x 60 x 12 ((157 x 152 x 31)	,))	30 position 42 position (X2 42 position 42 position (X2	up to 600 / up to 600 / up to 600 / up to 600 /
		Code	Line Volt	age			Cable	Voltage	Circuit B	reaker Rating -	/ Type (1/Lo	op)) up to ooo i
		1 2 3 4 5 6 9	208/120 208/120 240/120 480/277 480/277 240/120 Multiple	VAC, 3 VAC, 3 VAC, S VAC, 3 VAC, 3 VAC, S Line Vo	B Phase 4 B Phase 4 Bingle Pha B Phase 4 B Phase 4 B Phase 4 Bingle Pha	Wire Wire ase 3 Wire Wire Wire ase 3 Wire Juirement	120 V 208 V 240 V 277 V 480 V 120 V	AC AC AC AC AC AC	120 V-1 I 208/240 208/240 277V-1 I 480V-2 I 120 V-1	Pole V-2 Pole V-2 Pole Pole Pole Pole			
			Code	Cable	Load Cir	cuit Breake	er Rating						
			2 3 4 5 9	20A 30A 40A 50A Multip Code 0 1 2 3 4 5	Thermal Thermal Thermal Thermal Ile Breake Main None 100A 150A 250A 400A 600A	Magnetic Magnetic Magnetic r Ratings - Disconnect Disconnect Disconnect Disconnect Disconnect	Consult t / Circuit A B C D E F	Sales 1 Breaker 100A Ther 150A Ther 225A Ther 250A Ther 400A Ther 600A Ther	mal Magnei mal Magnei mal Magnei mal Magnei mal Magnei mal Magnei	tic tic tic tic tic tic			
					Code	Enclosur	e (Choos	se the Size i	that aligns	with the Numbe	er of INPUT	S PER CIRCUIT)	
					1 2 3 4 5 6	NEMA 4 NEMA 42 NEMA 42 NEMA 42 NEMA 42 NEMA 42	Single-D (304 Sta (304 Sta (304 Sta (304 Sta (304 Sta	oor Wall-Mo ainless Steel ainless Steel ainless Steel ainless Steel ainless Steel	ount Steel E I Wall-Moun I Wall-Moun I Wall-Moun I Wall-Moun I Floor-Moun	nclosure t Enclosure: 24 x t Enclosure: 36 x t Enclosure: 48 x t Enclosure: 60 x nt Enclosure: 62	x 24 x 12 li x 30 x 12 li x 36 x 12 li x 36 x 12 li x 36 x 12 li 2 x 60 x 12 li	n, (61 x 61 x 31) (c n, (92 x 76 x 31) (c n, (122 x 92 x 31) (n, (152 x 92 x 31) (n, (157 x 152 x 31)	m) m) cm) cm)) (cm)
						Code E 0 N 1 T 2 T 3 T	o Enclos hermosta hermosta hermosta	Heater ure Heater at Controlled at Controlled at Controlled	d Enclosure d Enclosure d Enclosure	Heater (Anti-Cor Heater (to 0°F A Heater (to -40°F	ndensation Imbient) F Ambient)	Heater)	
						<u>C</u>	ode**	Inputs/Circ	uit I/O	Mapping			
						_	u 1	1 1	NO Full	I/O Mapping	Use	e Enclosure sizes fr	om above
							2 3	2 3	Full Full	I/O Mapping I/O Mapping	See acc	e ITLS I/O mapping: essory page	: Enclosure size on
							9	Х	Spe	cial Configuratio	on		
LS-EX	г- 24	1	3	3-	1	1	1	Typical Mo	del Numbe	r			
	-			0.0	- -			,,					

Designed to be paired with an ITLS Panel

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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

Cirouito	Enclosure Size	- H x W x D In (cm)
Poles	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

1 1	.
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

	Inp	uts / Circuit Cod	le from Order Ta	able
Number of Circuits	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

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.

CHROMALOX-

IntelliTrace

Ambient SensingLine SensingITASC1D2 Base PanelITLSC1D2 Base PanelITASC1D2-EXT Extender PanelITLSC1D2-EXT Extender PanelHeat 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:	100 Ω 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

CHROMALOX

H-149

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** 24 x 24 x 12 (61 x 61 x 31) 120/208/240/277/480 120/208/240/277/480 06 6 Circuits 12 Circuits 24 x 24 x 12 (61 x 61 x 31) 120/208/240/277/480 120/208/240/277/480 12 18 18 Circuits 42 x 36 x 12 (107 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 42 x 36 x 12 (107 x 92 x 31) 24 24 Circuits 120/208/240/277/480 120/208/240/277/480 30 30 Circuits 60 x 36 x 12 (152 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 36 120/208/240/277/480 120/208/240/277/480 36 Circuits 60 x 36 x 12 (152 x 92 x 31) Enclosure Rating, Material & Size Code HxWxD In (cm) **Enclosure Mounting** Painted Steel NEMA 4 Size is per design selection Wall-Mount Enclosure 1 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 48 x 36 x 12 (122 x 92 x 31) Wall-Mount Enclosure 4 NEMA 4X 304 SS 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 Thermostat Controlled Enclosure Heater (Anti-Condensation Heater) For use with 6 & 12 circuit designs 1 Thermostat Controlled Enclosure Heater (to 0°F Ambient) For use with 6 & 12 circuit designs 2 Thermostat Controlled Enclosure Heater (to -40°F Ambient) For use with 6 & 12 circuit designs 3 4 Thermostat Controlled Enclosure Heater (Anti-Condensation Heater) For use with 18, 24, 30 & 36 circuit designs Thermostat Controlled Enclosure Heater (to 0°F Ambient) For use with 18, 24, 30 & 36 circuit designs 5 Thermostat Controlled Enclosure Heater (to -40°F Ambient) For use with 18, 24, 30 & 36 circuit designs 6 Input Options Code 0 Standard Sensor Input Dry Contact Closure from Ambient Sensing Thermostat 1 2 Remote Snow Sensor Input (i.e SIT, GIT & CIT Type Sensors) g **Special Configuration** Code Communications Standard: Modbus RTU/RS485 or Modbus TCP/Ethernet 0 ModBus TCP/Wireless 1 2 BACNet Other g Code **Temperature Sensing Options** 0 Standard Wired Sensing Wireless Temperature Sensing - See Wireless Guidelines 1 9 Other ITASC1D2 -24 4 0 -0 1 **Typical Model Number** 1

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



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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 with 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	5	Enclosu	re Size HxWxD In. (d	cm) Line Voltage	Line Phase	Cable Voltage
06	6 Circui	its	24 x 24	x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
12	12 Circ	uits	24 x 24	x 12 (61 x 61 x 31)	120/208/240/277/480	1	120/208/240/277/480
18	18 Circ	uits	42 x 36	x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
24	24 Circ	uits	42 x 36	x 12 (107 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
30	30 Circ	uits	60 x 36	x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
36	36 Circ	uits	60 x 36	x 12 (152 x 92 x 31)	120/208/240/277/480	1	120/208/240/277/480
	Code	Enclos	ure Ratin	g, Material & Size	HxWxD In (cm)	Enclosure Mo	ounting
	1	NEMA	4	Painted Steel	Size is per design selection	Wall-Mount E	inclosure
	2	NEMA	4X	304 SS	24 x 24 x 12 (61 x 61 x 31)	Wall-Mount E	nclosure
	3	NEMA	4X	304 SS	42 x 36 x 12 (107 x 92 x 31)	Wall-Mount E	nclosure
	4	NEMA	4X	304 SS	48 x 36 x 12 (122 x 92 x 31)	Wall-Mount E	nclosure
	5	NEMA	4X	304 SS	60 x 36 x 12 (152 x 92 x 31)	Wall-Mount E	nclosure
		Code	Enclosu	e Heater Class 1, D	iv 2		
		0	No Enclo	sure Heater		、 <u>-</u>	
		1	Thermos	tat Controlled Enclos	sure Heater (Anti-Condensation Heater) For us	e with 6 & 12 circuit designs
		2	Thermos	tat Controlled Enclos	sure Heater (to 0°F Ambient)	For us	e with 6 & 12 circuit designs
		3	Thermos	tat Controlled Enclos	sure Heater (to -40°F Ambient)	, For us	e with 6 & 12 circuit designs
		4	Thermos	tat Controlled Enclos	sure Heater (Anti-Condensation Heater) For us	e with 18, 24, 30 & 36 circuit design
		5	Thermos	tat Controlled Enclos	sure Heater (to 0°F Ambient)	For us	e with 18, 24, 30 & 36 circuit design
		6	Thermos	tat Controlled Enclos	sure Heater (to -40°F Ambient)	For us	e with 18, 24, 30 & 36 circuit design

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	ber Description								
Contact Sales	es 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								



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. Enclosure Size HxWxD In (cm) **Code Circuits** Line Voltage Line Phase **Cable Voltage** 06 6 Circuits 24 x 24 x 12 (61 x 61 x 31) 120/208/240/277/480 120/208/240/277/480 24 x 24 x 12 (61 x 61 x 31) 120/208/240/277/480 120/208/240/277/480 12 12 Circuits 18 18 Circuits 42 x 36 x 12 (107 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 24 24 Circuits 42 x 36 x 12 (107 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 30 30 Circuits 60 x 36 x 12 (152 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 36 120/208/240/277/480 120/208/240/277/480 36 Circuits 60 x 36 x 12 (152 x 92 x 31) 1 Code **Enclosure Rating, Material & Size** HxWxD In (cm) **Enclosure Mounting** NEMA 4 Painted Steel Size is per design selection Wall-Mount Enclosure 1 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 No Enclosure Heater Λ Thermostat Controlled Enclosure Heater (Anti-Condensation Heater) For use with 6 & 12 circuit designs 1 Thermostat Controlled Enclosure Heater (to 0°F Ambient) For use with 6 & 12 circuit designs 2 3 Thermostat Controlled Enclosure Heater (to -40°F Ambient) For use with 6 & 12 circuit designs Thermostat Controlled Enclosure Heater (Anti-Condensation Heater) 4 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 For use with 18, 24, 30 & 36 circuit designs 6 Thermostat Controlled Enclosure Heater (to -40°F Ambient) Code Inputs/Circuit I/O Mapping 0 No I/O Mapping Use Enclosure Sizes from Above Full I/O Mapping 1 1 2 2 Full I/O Mapping See ITLSC1D2 I/O Mapping: Enclosure Size Chart Full I/O Mapping 3 3 Х Special Configuration a Code Communications Standard: Modbus RTU/RS485 or Modbus TCP/Ethernet 0 ModBus TCP/Wireless 1 2 BACNet 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 3 -0 1 4 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) 120/208/240/277/480 120/208/240/277/480 12 12 Circuits 24 x 24 x 12 (61 x 61 x 31) 120/208/240/277/480 120/208/240/277/480 18 18 Circuits 42 x 36 x 12 (107 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 120/208/240/277/480 120/208/240/277/480 24 24 Circuits 42 x 36 x 12 (107 x 92 x 31) 60 x 36 x 12 (152 x 92 x 31) 30 120/208/240/277/480 120/208/240/277/480 30 Circuits 36 36 Circuits 60 x 36 x 12 (152 x 92 x 31) 120/208/240/277/480 120/208/240/277/480 1 HxWxD, In (cm) Enclosure Rating, Material & Size Code **Enclosure Mounting** NEMA 4 Painted Steel Size is per design selection Wall-Mount Enclosure NEMA 4X 304 SS Wall-Mount Enclosure 2 24 x 24 x 12 (61 x 61 x 31) 3 NEMA 4X 304 SS 42 x 36 x 12 (107 x 92 x 31) Wall-Mount Enclosure 304 SS 48 x 36 x 12 (122 x 92 x 31) 4 NEMA 4X 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 Λ No Enclosure Heater Thermostat Controlled Enclosure Heater (Anti-Condensation Heater) For use with 6 & 12 circuit designs 1 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 Thermostat Controlled Enclosure Heater (to -40°F Ambient) 6 For use with 18, 24, 30 & 36 circuit designs Code Inputs/Circuit I/O Mapping 0 No I/O Mapping Use Enclosure Sizes from Above 1 1 Full I/O Mapping 1 2 2 Full I/O Mapping See ITLSC1D2-EXT I/O Mapping: Enclosure Size & Chart 3 Full I/O Mapping 3 Х 9 Special Configuration ITLSC1D2-EXT -24 1 4 3 **Typical Model Number**

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

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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

	Enclosure Size - H x W x D, In (cm)										
Circuits	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

	Inputs / Circuit Code from Above Order Table							
Number of Circuits	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.

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



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 Wireless HART 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 Wireless HART 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



Rosemount 248 Wireless Temperature Transmitter with Universal Mounting Bracket





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	317315
Aluminum - NEMA 4X BBE185M-HT30418BD91SB/C	
316L Stainless Steel - NEMA 4X	317323
RBF185M-HT30418RD93SB/C	317340
Aluminum - Class I, Div's 1 & 2, NEMA 4X, IP66	
RBF185M-HT30418RD94SB/C	399550
316L Stainless Steel - Class I, Div's 1 & 2, NEMA 4X, IP66	

Wireless Transmitter Pipe Mounting Option

Industrial grade components for mounting the wireless transmitter onto insulated or noninsulated 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.

	Part Number							
	PIPE STANDOFF KIT, DIVISION 1 & DIVISION 2							
ltem	Qty.	Component	Div. 1	Div. 2				
А	1	3/4" Seal fitting	Yes	Yes				
В	1	Sealing compound & fiber	Yes	No				
С	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				





CHROMALOX-

H-157

Consolidates Multiple Temperature Sensor Signals into a Single Enclosure

IntelliTrace

Facilitates 1-252 Sensor Inputs

Remote Sensor Panel

Fully Integrated Package

RSP

- 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



IntelliTrace RSP Remote Sensor Panel (cont'd.)

Remote Sensor Panel Example

- 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.
- 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)





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CONTROL SYSTEMS

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

		Fiberg	lass (F), Painted Steel (P)	Sensor		304 Stainless Steel (S)							
C	ode	Er	closure Size, In (cm)	Inputs	Code	Enclosure Size, In (cm)							
0	06F	20 x 10	6 x 9 (51 x 41 x 22)	1 - 6	006S	20 x 16 x 9 (51 x 41 x 22)							
0	12F	20 x 10	6 x 9 (51 x 41 x 22)	7 - 12	012S	20 x 16 x 9 (51 x 41 x 22)							
0	18F	20 x 10	6 x 9 (51 x 41 x 22)	13 - 18	018S	20 x 16 x 9 (51 x 41 x 22)							
0	24P	20 x 10	6 x 9 (51 x 41 x 22)	19 - 24	024S	20 x 16 x 9 (51 x 41 x 22)							
0	30P	24 x 20	0 x 10 (61 x 51 x 25)	25 - 30	030S	24 x 20 x 10 (61 x 51 x 25)							
0	36P	24 x 20	0 x 10 (61 x 51 x 25)	31 - 36	036S	24 x 20 x 10 (61 x 51 x 25)							
9	99P	TBD		37-252	999S	TBD							
	1												
		Code	Enclosure Heater (Heate	r will incre	ease enc	losure size)							
		0	None										
		1	Ordinary Areas (Codes 006X, 012X)										
		2	Ordinary Areas (Codes 018X, 024X)										
		3	Ordinary Areas (Codes 03	30X, 036X)									
		4	Hazardous Areas (Codes	006X, 012	X) - Cla	ss I, Div. 2-Groups ABCD							
		5	Hazardoua Araga (Codeo)	010V 001		and Div 2 Croups 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

Typical Model Number

Optional Features:

RSP-

Enclosure Heater

Wireless communications

012S

-1

1



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



- 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

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IntelliTrace

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

Auto: PID or ON/OFF with adjustable dead band Manual: 0% - 100% output, 1% increment

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

Technical Specifications

Failed Sensor Output Setting:0 – 100%

Area Classifications:.....Ordinary Areas

Control Mode:Auto, Manual (Hand), Off

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

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

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

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	n	t	ρ		i7	r	a	CF	ב		Techni 1. Ref 2. Our	cal No er to Pl	t es: (497 ard S	7 for I	Install 1 is 5 l	ation kA. C	an	and Operation details Consult sales if a different SCCR is needed.
A	nb	ier	nt S	ens	ing						3. See 4. 6-48 to 6	CIP-E Circuit -8 Circ	KT to Exte uit P	o incre ension anels	ease o n Pan s (up 1	circuit els ca to 72	ts u an n cire Or	ts up to 8 circuits for 2-4 Circuit Panels & up to 72 Circuits for 6-48 Circuit Panels an not be added to 2-4 Circuit Panels but 2-4 circuit extension panels can be adde circuits) Ordering Information
C	, on	n	' Ba me	ase erci	e F ial	an H€	el ea	t Tr	a	cin	a C	on	r	ol	Pa	ne	то Э	To Order — Complete the Model Number using the Matrix provided L for Ordinary Areas
Мо	del	Pro	duct D	escrip	tion						5 -							,
CIP		Inte NEN Cor Pro Bar Thiu	elliTRA MA 4 er nmon tection (Stand rd Part	CE Line Inclosur Alarm , ModE lard is y Comp	e/Amb re, Indi Outpu Bus RT Alumi pliance	ient Ser ustrial 1 U/RS48 inum), I e.	nsing 0" (7 ator 1 35 or Remo	Heat Tra " for 2 an Interface TCP/Ethe ote Monif	ice P id 4 L , PID ernet toring	anels a oop Mi SCR Comm g Capa	re Desig odels) Di Power, H unicatio bility, Th	ned for gital CE land/Off ns, Lock ermosta	Indus Com /Auto out C it Coi	strial a puter O Ope Capabl ntrolle	applica Touchs ration le Brea ed Encl	tions screer Break kers, l losure	in N n Co cer f UL & e He	in Non-Hazardous Areas. CIP series offers the following standard features: n Controller Rated at 40A Per Circuit at 104°F (40°C) (Expandable to Seventy-Two Circuits* cer for Instrument Power Included, Current Monitoring, 30 mA Ground Fault Equipmer UL & cUL Third Party Compliance. Options Include: NEMA 4XSS Enclosure, Copper Groun e Heater, Heater Power and RTD Terminal Blocks, Wireless Ethernet Communications, C
		02		2 Circ	s uits		2	4 24 0	Circui	ts								
		04 06 12 18		4 Circ 6 Circ 12 Circ 18 Circ	uits uits uits uits		3 3 4 4	0 30 0 6 36 0 2 42 0 8 48 0	Circui Circui Circui Circui	ts ts ts ts								
		Î		ode	Lin	e Volta	ge					Cable	Volta	age				
				1 2 3	20 24 48	8/120 \ 0/120 \ 0/277 \	/AC, 3 /AC, 3 /AC, 3	3 Phase Single Pl 3 Phase	4 Wi hase 4 Wi	re 3 Wire re		120 V 120 V 277 V	· 1 Po · 1 Po · 1 Po	ole or ole or ole or	208 V 240 V 480 V	- 2 P - 2 P - 2 P	ole ole ole	vole vole
					<u>Co</u>	de)(*)	Cab	l e Load e	Circu	it Brea	aker Rat	ing <mark>(Se</mark>	ect E 3(*)	Break	er Amp)A The	rmal l	e ar Mac	ie and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V Breakers) Magnetic
					1	2(*) 2(*)	15A 20A	Thermal Thermal	l Mag I Mag	inetic inetic	noot / Ci	inouit D	4(*) 5(*)	40)A The)A The	rmal I rmal I	Mag	Magnetic Magnetic Magnetic
						-	COU O	e IV N	one	JISCON	neci / G	Ircuit Bi	еаке	r		N	lone	Ione
							1 2	50 10	0A TI 00A ⁻	nermal Fherma	Magnet al Magne	ic etic				1	20/2 20/2	20/208V 3P, 120/240V 1P, 277/480V 3P 20/208V 3P, 120/240V 1P
							3 4	1: 20	50A 00A	Therma Therma	al Magne al Magne	etic etic				1	20/2 20/2	20/208V 3P 20/240V 1P, 277/480V 3P
							5 X	2: 0	50A ⁻ ther	Therma (If Mai	al Magne n Discor	etic inect is	need	ed Co	ontact I	1 Factor	20/2 ry fo	20/208V 3P, 120/240V 1P, 277/480V 3P ry for Assistance)
								<u> </u>	ode	Fnc	losure l	leater (Anti-	Cond	ensati	on He	ate	eater Recommended at a Minimum)
									Ö	No	Enclosu	ire Heat	er	Conta	ciisati		alc	
									1 2 3	The The The	ermosta ermosta ermosta	t Contro t Contro t Contro	lled E lled E lled E	Enclos Enclos Enclos	sure H sure H sure H	eater eater eater	(An (Ne (Ne	(Anti-Condensation Heater) (Needed for 0°F, -18°C Minimum Ambient Temperature) (Needed for -40°F/°C Minimum Ambient Temperature)
										Cod 1	e Pai HM	1el Opti 11 Sunst	ons ield ((Rea'a	d if Pa	nel is	to	s to be outdoors) 7 Copper Ground Bar
										23	Par Hea	nel Weat	hers ler ar	heild nd RT	D Tern	ninal I	Bloc	A Floor Stands for 10" Deep Panel Blocks B Floor Stands for 12" Deep Panel
										4 5 6	Z-p Par Pov	urge sy nel Light wered R	stem (on ecep	separ ticle (ate bre	eaker) barate) bre	C Floor Stands for 16 Deep Panel C Floor Stands for 16 Deep Panel C Other (If multiple options needed contact factory)
											Cou	le	Num (mus	ber of t be r	f 100 (nultip	Ohm F le of (RTD 6, u	RTD Sensor Inputs 6, up to 48 inputs, MAXIMUM 3 RTD's per heater circuit) Sensing papel) 6 36
											2		12	GIGUL	II AIIIL		56113	7 42 8 49
											4	_	24 30					9 Other (Call Factory for Assitance)
												-	Code		Comm Standa	ard: N	ntioi Mod	ations ModBus RTU/RS485 or Modbus TCP/Ethernet
													2 3 9		ModBi BacNe Other	us TC t	P/W	P/Wireless
															Code	T	emp	emperature Sensing Solutions
															1 2 3 4	S V E	Stan Vire Ory (Rem	Standard Wired Sensing Wireless Sensing Dry Contact Closure for Ambient Sensing Thermostat Bemote Snow Sensor Input (i.e. SIT GIT & CIT type sensors)
																	Cod	Code Enclosure (Size determined by Table 1)
																	123456	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 12
																	7 8 A B C D	 NEMA 4X Stainless Steel Wall-Mount Enclosure 24 X 20 X 10 NEMA 4X Stainless Steel Wall-Mount Enclosure 24 X 20 X 10 NEMA 4X Stainless Steel Wall-Mount Enclosure 30 X 30 X 10 NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 12 NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 36 X 12 NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 12 NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 12 NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 36 X 12
CIP] [<u> </u>	Г] [7					 	Typical Model Number

CHROMALOX-

Ordering Information

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

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

IntelliTrace

Model	Product	Description	1					
CIP-EXT	CIP-EXT Sensing Forty-Eig Third Pa	series Intellige Panel to incre pht Circuits, Co rty Compliance	ent Line/Ambient S ase circuit service ommon Alarm Out e. Options Include	Sensing Heat Trace Ext e. CIP-EXT series offers tput, Hand/Off/Auto Op e: NEMA 4XSS Enclosu	ension Panel. I the following eration, Currer re, Copper Gro	Designe standa It Moni und Ba	gned for Industrial applications in Non-Hazardous Areas. Intended To Be Used with CIP Hi Idard features: NEMA 4 enclosure, PID SCR Power Controller Rated at 40A Per Circuit at 1 onitoring, 30 mA Ground Fault Equipment protection, ModBus RTU/RS485 or TCP/Ethern Bar (Standard is Aluminum), Remote Monitoring Capability, Thermostat Controlled Enclo	eat Trace Ambient/Line Ambient 04°F (40°C) Ambient, Two to et Communications, UL & cUL sure Heater, Heater Power and
	RTD Teri	minal Blocks, V	Wireless Ethernet	Communications, CE 1	hird Party Con	nplianc	ance.	
	0000	2 Circuit	s 21	24 Circuits				
	04	4 Circuit	s 30	30 Circuits				
	06 12	6 Circuit	s 36	36 Circuits				
	18	18 Circuit	s 48	48 Circuits				
		Code L	ine Voltage.		(Cable	le Voltage	
		1 2 2 2	08/120 VAC, 3 P	hase 4 Wire	1	20 V-	V- 1 Pole or 208 V - 2 Pole V- 1 Pole or 240 V - 2 Pole	
		3 4	80/277 VAC, 3 P	hase 4 Wire	2	277 V-	V- 1 Pole or 480 V - 2 Pole	
		Co	de Cable L	oad Circuit Breake	r Rating <mark>(Se</mark> l	ect Br	Breaker Amperage and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V I	Breakers)
		1	(*) None (*) 15A The	ermal Magnetic		3(^) 4(*)) 40A Thermal Magnetic *Designed to be	paired with an ITAS Panel
		2	(*) 20A The	ermal Magnetic		5(*í)) 50A Thermal Magnetic	
			Code	Main Disconned	t / Circuit Br	eaker	er Applicable Votlage	
			1 2 3 4 5	50A Thermal Ma 100A Thermal M 150A Thermal M 200A Thermal M 250A Thermal M	gnetic agnetic agnetic agnetic agnetic		120/208V 3P, 120/240V 1P, 277/480V 3P 120/208V 3P, 120/240V 1P 120/208V 3P 120/240V 1P, 277/480V 3P 120/240V 1P, 277/480V 3P	
			x	Other (If Main D	isconnect is	neede	ded Contact Factory for Assistance)	
				Code Enclos	ure Heater (A	Anti-C	i-Condensation Heater Recommended at a Minimum)	
				1 Therm	ostat Contro	lled Er	Enclosure Heater (Anti-Condensation Heater)	
				2 Therm 3 Therm	ostat Contro ostat Contro	lled Er Iled Fr	Enclosure Heater (Needed for 0°F, -18°C Minimum Ambient Temperature) Enclosure Heater (Needed for -40°F/°C Minimum Ambient Temperature)	
				Code	Panel Optio	ons		
				2	Panel Weat	hersh	sheild 8 Loss of Power Relay	
				4	Z-purge sys	er and stem	n B Floor Stands for 10' Deep Panel B Floor Stands for 12" Deep Panel	
				5 6	Panel Light Powered R	(on s ecepta	n separate breaker) C Floor Stands for 16" Deep Panel ptacle (on separate breaker) X Other (If multiple options needed co	ontact factory)
					Copper Gro	und B] Bar per of 100 Ohm BTD Sensor Inputs (must be multiple of 6, up to 48 inputs, 1	IAV 3 RTD's/heater akt)
					1	6 (Se	Select if Ambient Sensing panel) 6 36	IAA. J IIID S/IIEdici CKL.)
					2	12	7 42	
					3 4	18 24	9 Other (Call Factory for Assi	itance)
					5	30		
						ode 1	Communications	
						2	ModBus TCP/Wireless	
						3 9	BacNet	
							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)	00 1/ 40
							 NEMA 4 Single-Door Wall-Mount Steel Enclosure 24 X NEMA 4 Single-Door Wall-Mount Steel Enclosure 30 X 	20 X 10 30 X 10
							3 NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X	36 X 12 36 X 16
							5 NEMA 4 Single-Door Wall-Mount Steel Enclosure 42 X	36 X 12
							 6 NEMA 4 Single-Door Wall-Mount Steel Enclosure 60 X 7 NEMA 4X Stainless Steel Wall-Mount Enclosure 24 X 2 	36 X 16 0 X 10
							8 NEMA 4X Stainless Steel Wall-Mount Enclosure 30 X 3	0 X 10
							B NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 3 B NEMA 4X Stainless Steel Wall-Mount Enclosure 42 X 3	6 X 16
							C NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 3 NEMA 4X Stainless Steel Wall-Mount Enclosure 60 X 3	6 X 12 6 X 16
GIP-EXI-							L I Iypical Model Number	

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

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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 nonstandard 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)

Spare/ Keptac	
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

company Dente for CID 9 CID EVT

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

Table 1: Enclosure Size Selection

Cirouito	Enclosure Size - H x W x D In (cm)							
Poles	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						

CHROMALOX-

Weather Trace

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 Singlepole 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.

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.*

CHROMALOX-

Weather Trace

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





H-162

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

		Model	240/12	20 VAC S	Single-Pl	iase, 208	/120 VAC	Three-Ph	ase 4-Wi	ire		
Ondening		FPAS	FPAS s Chrom cator L	eries Am alox FPA amp, Ma	ibient Ser S series c in Power	ising Heat offers the f On Lamp,	Trace Pan ollowing s Main Con	els are des tandard fea tactor, and	igned for atures: NE Thermal	use in ind MA 4 enc Magnetic	ustrial Freeze Protection losure, Hand/Off/Auto Se Branch Circuit Breakers	and Snow Melt applications. The elector Switch, Load Energized Indi- with 30mA Ground Fault Equipment
Oraering			Contro	ller. Encl	osure Hea	iter, and Ty	4A 304 31 /ne 7 Pres	surization	Svstem, T	The FPAS s	series panels have UL an	d cIII Third Party Approvals.
Information	n		Code	Panel	board		po <u> </u>	Junear	Availa	ble Break	er Poles	Enclosure Size HxWxD In. (cm)
To Order —			12	12 Po	sitions (1	00 Amp M	/ain Ratir	ng) (12)	1-pole br	eakers or	(6) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
Complete the			20	20 Po	sitions (1	00 Amp M	/lain Ratir	ığ) (20)	1-pole br	eakers or	(10) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25)
Model Numbe	r		30	30 Po	sitions (2	25 Amp	Aain Ratir	1g) (30)	1-pole br	eakers or	(14) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
using the Mat	iv		42	42 Po	sitions (2	25 Amp I	lain Ratir	ng) (42)	1-pole br	eakers of	(20) 2-pole Breakers	60 x 36 x 10 (152 x 92 x 25)
nrovided	17			Code	Line \	/oltage			He	ater Load		
providou.				1	240/1	20 VAC 3	Dingle Pha	ise, 3-Wire -Wire	e 120			
	1			3	208/1	20 VAC 3	-Phase, 4	-Wire	208	3 VAC 3 VAC (24	O VAC Cable)	
Remote Mounted Control	PCN			4	240/1	20 VAC S	ingle Pha	se, 3-Wire	240) VAC	,	
Accessories					Code	Enclos	sure Ratii	ng				
RTAS	389589				1	NEMA	4 Single	Door, Stee	el Wall-M	ount Encl	osure	
	200507				2	NEMA	4X 304 S	Stainless S	teel Wall-	-Mount E	nclosure (Codes 12 & 2	20)
Division 2	389397				3	NEMA	4X 304 S	Stainless S	teel Wall-	-Mount E	nclosure (Codes 30 & 4	12)
Thermostat						Code	Brancl	h Circuit B	reaker Se	election (DO NOT EXCEED MAIN RA	TING)
B-100 NEMA	305365					1(*) 2(*)	15 Am	ip 1-Pole (SEL Circui	t Breaker t Breaker	for 120 VAC load	
B-121 Division	384104					2() 3(*)	20 Am	ip 1-Pole (GEL Circui	t Breaker	for 120 VAC load	
2 THermostat	001101					4 (*)	30 Am	ip 1-Pole (GFI Circui	t Breaker	for 120 VAC load	
THL NEMA 4X	387014					5(*)	15 Am	ip 2-Pole (GFI Circui	t Breaker	for 208/240 VAC load	
Thermostat	007000					b(^) 7(*)	20 Am	10 2-Pole (10 2-Pole (aFI CIRCUI SEL Circui	t Breaker t Breaker	for 208/240 VAC load	
Thermostat	387022					8(*)	30 Am	ip 2-Pole (GFI Circui	t Breaker	for 208/240 VAC load	
LCD-1 Snow	389781					9(*)́	40 Am	ip 2-Pole (GFI Circui	t Breaker	for 208/240 VAC load	
Switch							Code	Main D	isconnec	t or Main	Circuit Breaker Selec	tion
							0	None				
								Discon	nects)	0.0-1-1
							1	100 Am 250 Δm	ip with 65 on with 69	SK Fault F SK Fault F	Protection (Code 12 & 2 Protection (Code 30 & 4	20 UNIY) 12 Only)
							2	Main C	ircuit Bre	akers for	r 240/120V line Voltag	e e
							Α	80 Amp	, 2 Pole (Circuit Br	eaker	_
							B	175 Am	ip, 2 Pole	Circuit B	Freaker	
							L.	Zou An Main C	ip, 2 Pole ircuit Bre	akers for	reaker r 208/120V line Voltag	8
							F	50 Amp), 3 Pole (Circuit Br	eaker	<u> </u>
							G	100 Am	ip, 3 Pole	Circuit B	reaker	
							H	150 Am	ip, 3 Pole	Circuit B	breaker	
							J	ZZ5 AII	ip, 3 Pole			
									Ampler None (ller	
								5	6040-R		'16 DIN Controller (Pan	el Door Mounted)
								J	Code	Fnclos	ure Heater	
									0000	None		
									1	Thermo	ostat Controlled Enclos	ure Heater
									Ī	Code	Pressurization Contr	ol System
										0	None	
										1	Type Z Class 1, Divis	ion 2
										I		
			40			1/00	-		۱ ۲		Tourised Marcheller	
		FPAS-	42	2	1	1(20)	2	5	U	U	iypical Model Numb	ier

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		Bro	eaker Rat	ing		225 Panel Board	Breaker Rating				
		Maximum	Number o	f Breakers	S		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



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

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Weather Trace

FPAS

Freeze Protection Heat Trace Panels

(cont'd.)

Ordering

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

Information

Model 277 VAC 4-Wire

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	Panelb	oard				Availab	le Breake	r Poles	Enclosure Size HxWxD In, (cm)
	181 301 421 302 422	18 Posi 30 Posi 42 Posi 30 Posi 42 Posi	itions (10 itions (10 itions (10 itions (22 itions (22	0 Amp N 0 Amp N 0 Amp N 5 Amp N 5 Amp N	lain Rati lain Rati lain Rati lain Rati lain Rati	ng) ng) ng) ng) ng)	(8) 1-r (14) 1 (20) 1 (14) 1 (20) 1	pole break -pole breat -pole breat -pole breat -pole breat	ers kers kers kers kers	48 x 36 x 10 (122 x 92 x 25) 48 x 36 x 10 (122 x 92 x 25) 60 x 36 x 10 (122 x 92 x 25) 48 x 36 x 10 (152 x 92 x 25) 48 x 36 x 10 (122 x 92 x 25) 60 x 36 x 10 (152 x 92 x 25)
		Code	Power	Source				Load Vo	oltage	
		1	3 Phase	e Power,	277/48) VAC 4-Wir	e	277 VA	C (240 VAC Cab	le)
		1	Code	Enclos	ure Rati	ng				
			1 2 3	NEMA NEMA NEMA	4 Single 4X 304 4X 304	-Door, Wall [,] Stainless St Stainless St	-Mount St eel Wall-N eel Wall-N	eel Enclos 1ount Encl 1ount Encl	ure osure; (Code 18 osure; (Code 42	1, 301 & 302) 1 & 422)
				Code	Branch (Circuit Brea	ker Selec	tion (DO N	IOT EXCEED MA	IN RATING)
				1(*) 2(*) 3(*) 4(*)	15 Amp 20 Amp 30 Amp 40 Amp	1-Pole GFI 1-Pole GFI 1-Pole GFI 1-Pole GFI	Circuit Bre Circuit Bre Circuit Bre Circuit Bre	eaker for 1 eaker for 1 eaker for 1 eaker for 1	20 VAC load 20 VAC load 20 VAC load 20 VAC load	
					Code	Main D	isconnect	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 175 Amp, 3 Pole Circuit Breaker G 175 Amp, 2 Pole Circuit Breaker									
						Code	Ambie	nt Controll	ler	
						0 5	None (8 6040-R	See Access 00000 1/10	ories) 6 DIN Controller	(Panel Door Mounted)
							Code	Enclosu	re Heater	
							0 1 	None Thermo Code	stat Controlled I Pressurizatio	Enclosure Heater n Control System
								U 1 	Type Z Class	1, Division 2
FPAS-	302	1	1	2(10)	2	5	1	0	Typical Mode	l 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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Weather Trace

Freeze Protection Heat Trace Panels (cont'd.)

	Model	240/12	O VAC S	ingle-P	hase, 208	/120 VAC T	hree-Phase	4-Wire				
	FPLS	FPLS s	eries Lin	e Sensi	ng Heat Tr	ace Panels	are designe	d for use ir	n industrial Freez	e Protection and Si	now Melt application	tions. The Chromalox
Ordering		with 30	OmA Gro eater, and	und Fau d Type 7	ilt Equipm 7 Pressuri:	ent Protection	on. Options m. The FPI	include: N	EMA 4X 304 Stai	inless Steel Enclosi	ures, Main Disco als	anect Switch, Enclo-
Information	Ī	inde	Panelh	nard				Availahl	e Breaker Pole	s Enclosure S	Size HxWxD In	(cm)
	-	12	12 Pos	itions	(100 Amr	Main Rati	ina) (12)	1-nole hr	eakers or (6) 2	-nole Breakers	48 x 36 x 1($\frac{1}{122 \times 92 \times 25}$
To Order —		żŌ	20 Pos	itions	100 Am	Main Rati	ina) (20)	1-pole br	eakers or (10)	2-pole Breakers	48 x 36 x 10	Ú (122 x 92 x 25)
Complete the		30	30 Pos	itions	225 Amp	Main Rati	ing) (30)	1-pole br	eakers or (14)	2-pole Breakers	60 x 36 x 10) (152 x 92 x 25)
Model Number		42	42 Pos	itions	225 Amp	Main Rati	ing) (42)	1-pole br	eakers or (20)	2-pole Breakers	60 x 36 x 10) (152 x 92 x 25)
ucina the Matrix		1	Code	Line	Voltage		_, , ,	Hea	ater Load	•		
nsing int mains			1	240/	120 VAC.	Single Phas	se, 3 Wire	120) VAC			
ριονίαθα.			2	208/	/120 VAC,	3 Pňase, 4	Wire	120) VAC			
			3	208/	120 VAC,	3 Phase, 4	Wire	208	3 VAC (240 VAC (Cable)		
			4	240/	120 VAC,	Single Phas	se, 3 Wire	240) VAC			
					ENCI	DSURE KATI	1g Deer Well	Mount Cto				
				2	NEN	1A 4 Single- 1A 4X 304 S	Door, wall- Stainless St	eel Wall-Mc	ei Eliciosure Sunt Enclosure: (Code 12 & 20)		
				3	NEN	1A 4X 304 S	Stainless St	eel Wall-Mc	ount Enclosure; (Code 30 & 42)		
					Code	e Branc	h Circuit Bı	reaker (DO	NOTEXCEED MA	AIN RATING)		
					1(*) 15 Am	1p 1-Pole G	FI Circuit B	reaker for 120 V	AC load		
					2(*) 20 Am	ip 1-Pole G	FI Circuit B	reaker for 120 V	AC load		
					3(*) 25 Am	ip 1-Pole G	FI Circuit B	reaker for 120 V	AC load		
					4(^ 5/*) 30 Aff 15 Am	10 1-2016 G	FI GITCUIT B	reaker for 120 V/			
					5(*	20 Am	ip 2-Pole G	FI Circuit B	reaker for 200/2	40 VAC load		
					7(*	25 Am	np 2-Pole G	FI Circuit B	reaker for 208/2	40 VAC load		
					8(*) 30 Am	p 2-Pole G	FI Circuit B	reaker for 208/24	40 VAC load		
					9(*) <u>40 Arr</u>	1p 2-Pole G	FI Circuit B	reaker for 208/24	40 VAC load		
						Code	Main D	isconnect	Switch Selectior	1		
						0	None	nanta				
						1	100 Am	n with 65K	Fault Protection	(Code 12 & 20 On	dv)	
						ż	250 Am	np with 65K	Fault Protection	(Code 30 & 42 On	lv)	
							Main C	ircuit Brea	kers for 240/120	V line Voltage	57	
						A	80 Am	p, 2 Pole C	ircuit Breaker			
						B	1/5 Ar	np, 2 Pole (Circuit Breaker			
						U	Zou Al Main C	ircuit Brea	bircuit Breaker kors for 208/120	V line Voltane		
						F	50 Am	n 3 Pole Ci	ircuit Breaker	v ille voltage		
						Ġ	100 Ar	np. 3 Pole (Circuit Breaker			
						Н	150 Ar	np, 3 Pole (Circuit Breaker			
						J	225 Ar	np, 3 Pole (Circuit Breaker			
							Code	Enclosu	re Heater			
							0	None	atat Controlled F	nologura Haatar		
							1	Code		Control Sustem		
									Nono	i cuitrui system		
								U 1	INORE Type 7 Class 1	Division 2		
								ľ	1 ype 2 01038 1	, DIVISION 2		
	FPLS-	20	1	1	1(4)	2	Ŭ	Ö	Typical Mode	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		Breake	r Rating		225 Panel Board	Breaker Rating			
	Maxin	num Num	ber of Bro	eakers		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

CHROMALOX -

Weather Trace

Model

FPLS

277 VAC 4-Wire

Freeze Protection Heat Trace Panels (cont'd.)

Ordering Information

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

Code	Panel	board				Available Breaker P	oles	Enclosure Size HxWxD In, (cm
181	18 Po:	sitions (1	00 Amp N	/lain Ratir	a)	(8) 1-pole breakers	6	48 x 36 x 10 (122 x 92 x 25)
301	30 Po:	sitions (1	00 Amp N	/lain Ratir	g)	(14) 1-pole breake	rs	48 x 36 x 10 (122 x 92 x 25)
421	42 Po:	sitions (1	00 Amp I	/lain Ratir	g)	(20) 1-pole breake	rs	60 x 36 x 10 (152 x 92 x 25)
302	30 Po	sitions (2	25 Amp I	/lain Ratir	g)	(14) 1-pole breake	rs	48 x 36 x 10 (122 x 92 x 25)
422	42 Po:	sitions (2	25 Amp M	/lain Ratir	g)	(20) 1-pole breake	rs	60 x 36 x 10 (152 x 92 x 25)
	Code	Power	Source			Load Voltag	ge	
	1	3 Phas	e Power,	277/480	/AC 4-Wire	277 VAC (2	40 VAC Cable)	
		Code	Enclos	ure Ratin	ġ			
		1	NEMA 4	1 Sinale-D	oor. Steel W	/all-Mount Enclosure		
		2	NEMA 4	1X 304 St	inless Steel	Wall-Mount Enclosure	e (Codes 181, 3	301 & 302)
		3	NEMA 4	4X 304 Sta	inless Steel	Wall-Mount Enclosure	e (Codes 421 8	422)
			Code	Branch	Circuit Brea	aker Selection (DO NO	T EXCEED MA	IN RATING)
			1(*)	15 Amp	1-Pole GFI	Circuit Breaker for 12	0 VAC load	, i construction of the second s
			2(*)	20 Am	1-Pole GFI	Circuit Breaker for 12	0 VAC load	
			• • •					

FPLS series Line Sensing Heat Trace Panels are designed for use in industrial Freeze Protection and Snow Melt applications.

FPLS-	181	2	1	1(4)	1	1	0	Typical Model Number					
							0 1 	None Type Z Class 1, Division 2					
							Code	Pressurization Control System					
						1	inermo	DSTAT CONTROLLED ENCLOSURE HEATER					
						0	None						
						Code	Enclos	ure Heater					
					J	225 AF	np, 3 Pole	e Circuit Breaker					
					G	175 Ar	np, 3 Pole	e Circuit Breaker					
					F	125 Ar	np, 3 Pole	e Circuit Breaker					
					Ċ	70 Am	p, 3 Pole (Circuit Breaker					
					B	50 Am	50 Amp, 3 Pole Circuit Breaker						
					Δ	30 Am	Main Circuit Breakers 30 Amp. 3 Pole Circuit Breaker						
					2	250 Ar	250 Amp with 35K Fault Protection						
					1	100 Ar	np with 25	5K Fault Protection (Code 181, 301 & 421 Only)					
						Disco	<u>nnects</u>						
					0	None							
					0000	mann							

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.)

		Model	FPASN	<u>// 240/120</u>	J VAC Sir	igle-Ph	ase, 208	۱ <u>/120 ۱</u>	VAC Thre	e-Phase	e Wire		
Ordering		FPASM	FPASM Chrom Indicat ment F of volt; a Com Switch have L	1 series An ialox FPAS tor Lamp, I Protection. age or gro imon Alarn h, Remote JL <u>and cUI</u>	nbient Se M series Main Pov The FPA und fault n is activ or Local L T <u>hird P</u>	ensing H offers t ver On I SM wea t conditi tated wil Ambien varty Ap	leat Trace the follow Lamp, Ma therTRA(ion trigge th the Re it Temper provals.	e Pane ving st ain Co CE Sei ers auf -Ring rature	els are de tandard fe intactor, a ntinel con tomatic a Feature. Controlle	signed f eatures: and Ther itinually larm cor Options er, Enclo	for use in NEMA 4 e rmal Magr monitors ndition to include: N sure Heate	industrial Freeze Protectio enclosure, Hand/Off/Auto tetic Branch Circuit Break the supply voltage to eac an annunciator panel whi JEMA 4X 304 Stainless S ¹ er, and Type Z Pressurizat	on and Snow Melt applications. The Selector Switch, Load Energized (ers with 30mA Ground Fault Equip- th individual heat trace circuit. Loss ich identifies the faulted zone and teel Enclosures, Main Disconnect tion System. The FPASM series
Information	2		Code	Panelbo	Jard				Avai	ilable B	reaker Pr	oles	Enclosure Size HxWxD In, (cm)
To Order — Complete the Model Number using the Matr provided.	ix		12 20 30 42	12 Posit 20 Posit 30 Posit 42 Posit <u>Code</u> 1 2	ions (10 ions (10 ions (22 ions (22 Line Vi 240/1 208/1	0 Amp 0 Amp 5 Amp 5 Amp <u>5 Amp</u> <u>5 Amp</u> 20 VAC 20 VAC	Main Ra Main Ra Main Ra Main Ra , Single I . 3 Phas	ting) ting) ting) ting) ting) Phase e, 4 V	(12) (20) (30) (42) (42) (42)	1-pole b 1-pole b 1-pole b 1-pole t 1-pole t He: 12(12)	Dreakers of Dreakers of Dreakers of Dreakers of Dreakers of ater Load D VAC D VAC	rr (6) 2-pole Breakers rr (10) 2-pole Breakers rr (14) 2-pole Breakers rr (20) 2-pole Breakers	48 x 36 x 10 (122 x 92 x 25) 48 x 36 x 10 (122 x 92 x 25) 60 x 36 x 10 (152 x 92 x 25) 60 x 36 x 10 (152 x 92 x 25) 60 x 36 x 10 (152 x 92 x 25)
Remote Mounted Control	PCN			3 4	208/12 240/11	20 VAC, 20 VAC	3 Phase , Single I), 4 W Phase	/ire 9, 3 Wire	208 24(3 VAC (24) 3 VAC	0 VAC Cable)	
Accessories RTAS	389589	i			Code	Enclo	JSURE R	ating					
Thermostat RTAS-EP	389597				1 2 3	NEM/ NEM/ NEM	A 4 Singi A 4X 304 A 4X 30	le-Dor 4 Stair 4 Stai	or, Wall-n nless Ste	Hount ک el Wall- Wall امد	Steel Encio -Mount Er -Mount Er	osure oclosure; (Code 12 & 20 oclosure: (Code 30 & 42	
Division 2 Thermostat		i				Code	Brar	nch Ci	ircuit Bre	aker Sr	election (f	DO NOT EXCEED MAIN F	/ Rating)
B-100 NEMA 4X Thermostat	305365					1(*) 2(*)	15 A 20 A	Amp 1 Amp 1	-Pole GF I-Pole GF	I Circuit I Circui	t Breaker t Breaker	for 120 VAC load for 120 VAC load	
B-121 Division 2 THermostat	384104					3(*) 4(*)	25 A 30 A	۲ Amp Amp	-Pole GF	I Circuit I Circui	t Breaker t Breaker	for 120 VAC load for 120 VAC load	
THL NEMA 4X Thermostat	387014					5(*) 6(*)	15 A 20 A	Amp 2 Amp 2	-Pole GF	I Circun	t Breaker t Breaker	for 208/240 VAC load for 208/240 VAC load	
TXL Division 2 Thermostat	387022					/(*) 8(*) 9(*)	25 A 30 A 40 /	Amp 2 Amp 2	-Pole GF	I Circun I Circui Circui	t Breaker t Breaker	for 208/240 VAC load for 208/240 VAC load	
LCD-1 Snow Switch	389781	i				ອ()	40 A	<u>anp∠</u> e /	Main Dis	connec	t or Main	Circuit Breaker Selecti	inn
							0	1	None			On our Distance	<u> </u>
							1 2	L T	Disconne 100 Amp 250 Amp	with 65 with 65 with 6!	5K Fault P 5K Fault P	rotection (Code 12 & 20 Protection (Code 30 & 42) Only) 2 Only)
							Ą	<u> </u> {	Main Circ 80 Amp,	<u>cuit Bre</u> 2 Pole (akers for Circuit Bre	240/120V line Voltage eaker	
							С В		175 Amp, 250 Amp	, 2 Pole , 2 Pole	Circuit Br Circuit Br	reaker reaker	
							F		<u>/lain cinc</u> 50 Amp, 1 100 Amp	3 Pole (<u>akers ion</u> Circuit Bre	208/1209 Illie voltage aker reaker	
							Ĥ	1	150 Amp 225 Amp	, 3 Pole , 3 Pole	Circuit Br Circuit B	reaker reaker	
							1	Ī	Code	Ambier	it Control	ler	
									0 5	None (\$ 6040-F	See Acces 300000_1/	ssories) /16 DIN Contr <u>oller (Pan</u> e	el Door Mounted)
									1 7	Code	Enclosu	ire Heater	,
										0 1	None Thermo	stat Controlled Enclosu	re Heater
											Code	Pressurization Contro	I System
											U 1 	None Type Z Class 1, Divisic	on 2
		FPASM	- 42	2	1	5(20)	1 2		5	0	0	Typical Model Numbe	er
		Technics	-I Neter	- (*) Eate	-			liara i	n novontk				

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		Bro	eaker Rati	ng		225 Panel Board	Breaker Rating				
	Maximum Number of Breakers				S		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

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



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WeatherTrace Freeze Protection

Heat Trace Panels

(cont'd.) 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 weather TRACE Sentinel continually monitors the supply voltage to each Ordering individual heat trace circuit. Loss of voltage or ground fault condition triggers automatic alarm condition to an annunciator Information 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, To Order and Type Z Pressurization System. The FPASM series have UL and cUL Third Party Approvals.. Complete the Code Panelboard **Available Breaker Poles** Enclosure Size HxWxD In, (cm) Model Number 18 Positions (100 Amp Main Rating) 181 (8) 1-pole breakers 48 x 36 x 10 (122 x 92 x 25) using the Matrix 30 Positions (100 Amp Main Rating) 42 Positions (100 Amp Main Rating) 301 (14) 1-pole breakers 48 x 36 x 10 (122 x 92 x 25) provided. 421 (20) 1-pole breakers 60 x 36 x 10 (152 x 92 x 25) 30 Positions (225 Amp Main Rating) 48 x 36 x 10 (122 x 92 x 25) 302 (14) 1-pole breakers 42 Positions (225 Amp Main Rating) 422 (20) 1-pole breakers 60 x 36 x 10 (152 x 92 x 25) Code **Power Source Heater Load** 3 Phase Power, 277/480 VAC 4-Wire 277 VAC (240 VAC Cable) 1 **Enclosure Rating** Code NEMA 4 Single-Door, Wall-Mount Steel Enclosure 1 NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 181, 301 & 302) 2 NEMA 4X 304 Stainless Steel Wall-Mount Enclosure; (Code 421 & 422) 3 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 30 Amp 1-Pole GFI Circuit Breaker for 277 VAC load 3(*) 4(*) 40 Amp 1-Pole GFI Circuit Breaker for 277 VAC load Main Disconnect or Main Circuit Breaker Selection Code 0 None Disconnect 100 Amp with 25K Fault Protection (Code 181, 301 & 421 Only) 1 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 225 Amp, 3 Pole Circuit Breaker . Code Ambient Controller 0 None (See Accessories) 6040-R00000 1/16 DIN Controller (Panel Door Mounted) 5 Code **Enclosure Heater** 0 None Thermostat Controlled Enclosure Heater 1 Code Pressurization Control System

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)

422

1

1

1(20)

2

5

FPASM-

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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0

0

0

None

Type Z Class 1, Division 2

Typical Model Number

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

	Model	240/1	20 VAC	Single-F	Phase, 20	8/120 VA	C Three-l	Phase 4-W	/ire	
Ordering	FPLSM	FPLSI The C Magn ally m autom Featur suriza	M series hromale etic Bra ionitors natic ala re. Optic ition Sv:	s Line Ser ox FPLSM nch Circu the supp urm to an ons Inclu stem, The	nsing Hea A series o uit Breake oly voltage annuncia de: NEMA e FPLSM	It Trace Pa ffers the f rs with 30 to each i tor panel AX 304 S series pan	anels are ollowing mA Grou ndividual which ide Stainless iels have	designed f standard f ind Fault E heat trace entifies the Steel Enclo UL and cL	for use in industrial Freeze Prote eatures: NEMA 4 enclosure, Ma quipment Protection. The FPLS e circuit. Loss of voltage or a gro faulted zone and a Common Al psures, Main Disconnect Switch IL Third Party Approvals.	ection and Snow Melt applications. in Power On Lamp, and Thermal M WeatherTRACE Sentinel continu- ound fault condition trggers and arm is activated with the Re-Ring I, Cabinet Heater, andType Z Pres-
T		Code	Panel	hoard				Available	Breaker Poles	Enclosure Size HxWxD In. (cm)
Information		12	12 Do	citione (1	00 Amn M	Jain Datin	(12)	1-nolo br	eakers or (6) 2-pole Breakers	$18 \times 36 \times 10$ (122 × 02 × 25)
T 0 /		20	20 Po	sitions (1 sitions (1	00 Amp I 00 Δmn I	Jain Ratir	ig) (12) ig) (20)	1-pole bi	eakers or (10) 2-pole Dieakers	$40 \times 30 \times 10$ (122 × 32 × 23) $48 \times 36 \times 10$ (122 × 92 × 25)
Io Uraer —		30	30 Po	sitions (2	25 Amn M	Jain Ratir	ig) (20) ig) (30)	1-nole hr	eakers or (14) 2-pole Breakers	$60 \times 36 \times 10 (152 \times 92 \times 25)$
Complete the		42	42 Po	sitions (2	25 Amp 1	Main Ratir	ig) (00)	1-pole br	eakers or (20) 2-pole Breakers	$60 \times 36 \times 10$ (152 × 92 × 25)
Model Number			Code	l ine \	/oltane		.9) ()	He	ater I oad	
using the Matrix			1	240/1		Single Pha	se 3 Wir	- 120		
provided.			2	208/1	20 VAC, C 20 VAC 3	-Phase 4-	-Wire	120) VAC	
			3	208/1	20 VAC 3	-Phase, 4-	Wire	208	3 VAC (240 VAC Cable)	
			4	240/1	20 VAC S	ingle Phas	se, 3 Wire	e 240) VAC	
			I.	Code	Enclos	sure Rati	ng			
				1	NEMA	4 Sinale	Door. Ste	el Wall-M	ount Enclosure	
				2	NEMA	4X 304 S	tainless	Steel Wall-	Mount Enclosure (Codes 12 & 2	20)
				3	NEMA	4X 304 S	tainless \$	Steel Wall-	Mount Enclosure (Codes 30 & 4	42)
				1	Code	Branch	ı Circuit I	Breaker Se	election (DO NOT EXCEED MAIN	RATING)
					1(*)	15 Am	p 1-Pole	GFI Circui	t Breaker for 120 VAC load	
					2(*)	20 Am	p 1-Pole	GFI Circui	t Breaker for 120 VAC load	
					3(*)	25 Am	p 1-Pole	GFI Circui	t Breaker for 120 VAC load	
					4(*)	30 Am	p 1-Pole	GFI Circui	t Breaker for 120 VAC load	
					5(*)	15 Am	p 2-Pole	GFI Circui	t Breaker for 208/240 VAC load	
					D(^) 7(*)	20 AM	p 2-Pole	GEL Circuit	t Breaker for 208/240 VAC load	
					7() 8(*)	20 AIII 30 Am	p 2-Pule	GEL Circuit	t Breaker for 208/240 VAC load	
					0()	Code	Main [lisconnec	t or Main Circuit Breaker Selec	tion
						0000	None	J1300111100	t of main circuit breaker Selec	
						U	Disco	nnoete		
						1	100 A	mn with 6	5K Fault Protection (Code 12 &	20 Only)
						2	250 A	mp with 6	5K Fault Protection (Code 30 &	42 Only)
						-	Main	Circuit Bro	eakers for 240/120V Line Volta	ae
						Α	80 Am	np, 2 Pole	Circuit Breaker	-
						В	175 A	mp, 2 Pole	e Circuit Breaker	
						C	250 A	mp, 2 Pole	e Circuit Breaker	
						-	<u>Main</u>	Circuit Bro	eakers for 208/120V Line Volta	ge
						F C	50 Añ	1p, 3 Pole	Circuit Breaker	
						ы Ц	100 A	1111, 3 POIG mn 3 Polg	e Gircuit Breaker	
							225 A	mp, 3 Pole	e Circuit Breaker	
							Code	Enclose	re Hester	
							0000	Nono		
							U 1	Thermo	stat Controlled Enclosure Heate	r
							•	Code	Pressurization Control Susta	m
								n oute	Nono	
								U 1	NULLE Type 7 Class 1 Division 2	
								1	1945 L 01033 1, DIVISIUII Z	
	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			akers		Maximum Number of Breakers			kers
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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CONTROL SYSTEMS

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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; 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	Panell	board				Availa	ible Breaker Poles	Enclosure Size HxWxD In, (cm)
	181	18 Pos	sitions (1	00 Amp	Main Ratin	g)	(8) 1-p	ole breakers	48 x 36 x 10 (122 x 92 x 25)
	301	30 Pos	sitions (1	00 Amp	Main Ratin	g)	(14) 1-	pole breakers	48 x 36 x 10 (122 x 92 x 25)
	421	42 Pos	sitions (1	00 Amp	Main Ratin	g)	(20) 1-	pole breakers	60 x 36 x 10 (152 x 92 x 25)
	302	30 Pos	sitions (2	25 Amp	Main Ratin	g)	(14) 1-	pole breakers	48 x 36 x 10 (122 x 92 x 25)
	422	42 Pos	sitions (2	25 Amp	Main Ratin	g)	(20) 1-	pole breakers	60 x 36 x 10 (152 x 92 x 25)
		Code	Power	Source				Heater Load	
		1	3 Phas	se Power	, 277/480	VAC 4-W	/ire	277 VAC (240 VAC	Cable)
			Code	Enclo	sure Ratin	g			
			1	NEMA	4 Single-D	oor, Wall	-Mount S	teel Enclosure	
			2	NEMA	4X 304 Sta	ainless St	eel Wall-I	Nount Enclosure; (Code	181, 301 & 302)
			3	NEMA	4X 304 Sta	ainless St	eel Wall-I	Nount Enclosure; (Code	421 & 422)
				Code	Branch	Circuit B	reaker So	election (DO NOT EXCE	ED MAIN RATING)
				1(*)	15 Amp	1-Pole	GFI Circui	t Breaker for 277 VAC lo	bad
				2(*)	20 Amp) 1-Pole (GFI Circui	t Breaker for 277 VAC lo	bad
				3(*)	30 Amp	1-Pole	GFI Circui	t Breaker for 277 VAC lo	bad
					Code	Main D	isconneo	t or Main Circuit Break	er Selection
					0	None			
						Discon	<u>nects</u>		
					1	100 An	np with 2	5K Fault Protection (Co	de 181, 301 & 421 Only)
					2	250 An	np with 3	5K Fault Protection	
						Main C	<u>Sircuit Bro</u>	<u>Bakers</u> Girouit Drookor	
					A R	50 Amr		Circuit Breaker	
					D C	70 Amr		Circuit Brooker	
					F	10 Am	n 3 Pole	Circuit Brooker	
					Ċ	175 Am	1p, 3100 1n 3 Pole	Circuit Breaker	
					J	225 Am	1p, 3 Pole	e Circuit Breaker	
						Code	Enclos	ure Heater	
						0	None		
						1	Therm	ostat Controlled Enclosu	ire Heater
							Code	Pressurization Contr	ol System
							0	None	
							1	Type Z Class 1, Divisi	on 2
FPLSM-	181	1	1	1(5)	1	Ó	Ō	Typical Model Numb	er

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 CenterTM

- 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





IS@9001



Power Control CenterTM (cont'd.)





Specifications

MCC Make or Model	Square D	Isolation Contactor	Available	
	Allen-Bradley Other	Auxiliary Contactor	 1 Normally Open 1 Normally Closed 	
Depth	15" or 20"		• 1 Normally Open/	
Bus Bracing (KAIC)	Standard (42K) 65K		1 Normally Closed • Other	
Horizontal Bus (Tin Plated Copper)	600 Amps 800 Amps 1200 Amps	Contactor Coil Voltage	 Supplied Internal to unit Field Supplied 	
Vertical Bus	300 Amps	Power ON Light	Available	
(Tin Plated Copper)	600 Amps	Power Controller	Single Phase	
Horizontal Ground Buss (1/4" x 1")			 3-Phase 3-Phase, 4 Wire Single Phase Tap Changer 	
Vertical Bus Shutters	Available	Load	Resistive	
Vertical Isolation Barriers	Available		Inductive	
Main Feeder	• 3-wire	kW	Specify	
Incoming Power	• 4-wire	Line Voltage	120, 208, 240, 277, 480, Other	
Main reeuer	 Cugs Only Circuit Breaker (KAIC) 	Frequency	60 Hz 50 Hz	
	Non-Fused	Control Signal	Specify	
	Fused Disconnect	I ² T Fusing	Available	
Plug-In Unit Switchgear	Switch • Circuit Breaker	Heat Sink Thermal Switch	Available	
i ng in onit officingou	(KAIC)	Ammeter	Available	
	 Non-Fused Disconnect Switch 	Voltmeter	Available	
	Fused Disconnect	Wattmeter	Available	
	Switch	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 heatgenerating 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.

CHROMALOX-

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 I²T 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.

CHROMALOX-

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 $1" \times 3-1/2"$ 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	Technical Specifications (Check All That Apply)
1. APPLICATION DETAILS:	1 STANDARD PANEL TO BE USED (Refer to Panel Selection Guide):
	With exceptions to standard panel as noted below
	2. POWER SWITCH DEVICE:
	□ SCR. SCR Type: □ Phase Angle □ Zero-Cross □ 2 leg □ 3 leg
2. HEATED MEDIUM (Specify): □ Gas □ Liquid □ Solid	□ Contactor, gty □ SCR trim stages required
3. PROCESS TEMPERATURE:°F	3. SHUTDOWN DEVICE ON SCR PANELS:
If Circulation Heater, flow rate is 🛛 Constant 🖓 Variable	□ Contactor (Required for Remote On/Off Capability)
NOTE: NEMA1 will be quoted if not otherwise specified	Shunt Trip Disconnect (Must be reset locally)
4. HEATER DETAILS:	4. TEMPERATURE CONTROL ZONE(S):
Heater Model No.(s) (if available)	No. Zones kW per Zone
5. HEATER AREA CLASSIFICATION: Hazardous Non-hazardous	5. TEMPERATURE CONTROLLER:
Total Power Rating: Volts Phase □ 1 □ 3 kW	□ Yes, Model No.: Sensor Type:
Number of Circuits: Rating Per Circuit: kW	□ No, Customer control signal (specify type)
Enclosure Requirements	6. OVERTEMPERATURE CONTROLLER(S): QTY:
1. ENCLOSURE SPACE LIMITATIONS (If any, specify):	□ Yes, Model No.: Sensor Type:
	□ No, Customer control signal (specify type)
	7. AGENCY APPROVALS:
Hosedown Li Hazardous Class Div Group	□ None □ UL □ Other <i>(Specify)</i>
3. ENCLUSURE NEMA RATING (Indicate acceptable NEMA ratings):	8. MAIN DISCONNECT: 🗆 Yes 🗆 No 🗆 Special Requirement
	9. SPECIAL FEATURES (Check All That Apply):
	Load Fusing Load Circuit Breakers L On/Off Switch
NEMA4 W/purge NEMA7/4 NOTE: NEMA1 will be guated of pat appointing	
A AMPLENT TEMPEDATURES: °E Min °E Min	
Customer Specification(s)	
Use Specification on file, number	Other, Specify
Additional Notes:	

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CONTROL SYSTEMS

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	Ν
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



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.

Ordering Information



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

Temn	An	ıp.	Bu	ilb Dir	n. (In.)	Can												
Range (°F)	120- 277V	480V	Style	Dia.	Lgth.	Lgth. (Ft.)	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)	Model	Stock	PCN	Wt. (Lbs.)
Single P	Single Phase AR										With Knob C	over			With Pilot I	Light		
0-100 0-100 0-100	30 30 30	10 10 10	5 5 5	3/8 3/8 3/8	4-5/16 4-5/16 4-5/16	7 2 12	AR-115 AR-115A AR-115C	s s s	269966 299639 277931	2.5 2.5 2.5	AR-115KC AR-115AKC AR-115CKC	S NS NS	272727 273519 273527	2.5 2.5 2.5	AR-115P AR-115AP AR-115CP	S NS NS	269974 273906 273914	2.5 2.5 2.5
60-250 60-250 60-250 60-250	30 30 30 30	10 10 10 10	4 5 5 9	1/4 3/8 3/8 3/16	5-5/32 4 4 10-11/16	7 7 2 7	AR-214 AR-215 AR-215A AR-219	ទទទ	263038 277940 299655 263054	2.5 2.5 2.5 2.5	AR-214KC AR-215KC AR-215AKC AR-219KC	S NS NS NS	272735 273551 273594 272743	2.5 2.5 2.5 2.5	AR-214P AR-215P AR-215AP AR-219P	S NS NS S	265869 273930 273949 265877	2.5 2.5 2.5 2.5
200-550 200-550	30 30	10 10	4 9	1/4 3/16	7-5/16 12	7 7	AR-514 AR-519	s s	263046 263062	2.5 2.5	AR-514KC AR-519KC	NS NS	272751 272778	2.5 2.5	AR-514P AR-519P	S S	265885 265893	2.5 2.5
300-700 300-700	30 30	10 10	5 9	3/8 3/16	3-11/16 12	7 7	AR-715 AR-719	ss	269640 269659	2.5 2.5	AR-715KC AR-719KC	NS NS	273770 273797	2.5 2.5	AR-715P AR-719P	NS NS	272081 269923	2.5 2.5
Three Pl	hase	AR-3									With Knob C	over			With Pilot I	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 C	over			With Pilot I	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.

CHROMALOX-

ectromechanic & Thermostats

AR-LT & AR-EP Non-Indicating Temperature Controllers

AR-LT



- AR-LT Weather Resistant Enclosure
- AR-EP Explosion-Proof Enclosure
- Bulb & Capillary
- Sensitive, Long-Lasting, Snap Action Mechanism

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



CHROMALOX





See table below for Bulb Dimensions

Ordering Information

Temn	An	np.	Βι	ılb Dir	n. (In.)	Can	Watertight	AR-L & Wea	T ther-Resis	stant	AR-EP Explosion Proof			
Range (°F)	120- 277V	480V	Style	Dia.	Lgth.	Lgth. (Ft.)	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
	20	10	9	3/16	12	7	AR-716LT	NS	299815	5	AR-719EP	NS	299479	5

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.
- Thermowells (CPW_) and Universal Compression fitting (CCF) for all AR thermostats must be C. ordered separately.
- D. Pilot Duty rating, 125 VA for 125 Vac, 250 VA for 250 277 Vac.

CHROMALOX -

H-181

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





Side View

All Dimensions in Inches (mm) See table below for Bulb Dimensions

CHROMALOX

Temp. Range Amp. 120¹-**Bulb Dimensions (In.)** Cap Lath Wt. (Lbs.) (°F) 277V Style Dia. Lath Model Stock PCN 3/8 4-1/4 ARC-215 s 278213 2.5 60-250 30 5 7 2.5 2.5 200-550 30 5 3/8 3-1/4 7 ARC-515 s s 278230 30 9 11-3/16 278256 200-550 3/16 ARC-519 300-700 30 5 3/8 3-11/16 ARC-715 s 299612 2.5 7 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.

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



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.



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

Woll	D	imensions (in.)				14/4
Material	0.D.	L	I.D.	Model	Stock	PCN	(Lbs.)
For AR, I	BCT and	400 Series	Thermos	tats			
Steel Steel Steel	1/2 1/2 1/2	12 24 36	0.43 0.43 0.43	CPWS-12 CPWS-24 CPWS-36	S S NS	265981 265990 266001	1 1 1
MONEL ®	1/2	12	0.43	CPWM-12	S	266044	1
SST SST SST	1/2 1/2 1/2	12 24 36	0.43 0.43 0.43	CPWSS-12 CPWSS-24 CPWSS-36	S S NS	266010 266028 266036	1 1 1
Quartz	1/2	18	0.375	CPWQ-18	NS	269958	1
Stock	Status:	S = stock	NS = nor	n-stock			

Compression Fittings

Use With	Material	NPT Size	Model	Stock	PCN	Wt. (Lbs.)
AR, BCT & 400 Series AR, BCT & 400 Series	300 Series SST 300 Series SST	3/8-18 1/2-14	CCF-25D CCF-25E	S S	266351 266360	0.1 0.1
Stock Status: S = s	stock AS = assembly	y stock	NS = non-stock			

ECTROMECHANIC/ & THERMOSTATS

CHROMALOX-

H-183

BCT Indicating Temperature Controller

BCT-800

BCT-820E

- 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



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



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BCT Indicating Temperature Controller (cont'd.)

Dimensions BCT-800







w/All Dimensions in Inches (mm)

Ordering Information

Ordering In	nforma	ition							See table be	low for	Bulb Dime	ensions
					General Purpose	Enclosu	re (NEMA 1))	Explosion Proof Er	iclosure	(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
			10									

Stock Status: S = stock NS = non-stock 1. Dual switch models.

Other Note -

§Teflon[®] sleeved stainless steel. Α.

-ECTROMECHANIC/ & THERMOSTATS

CHROMALOX -

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.

Dimensions



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





All Dimensions in Inches (mm)

Specifications and Ordering Information

Model	PCN	Temperature Range (°F)	Volts	Max. Amps	Sensor Length (Ft.)	Stock
GNIT-5 GNIT-12	360946 360954	30 - 220 30 - 220	120/240 120/240	25 25	5 12	S S
Stock Sta	atus: S = stock	NS = non-stoc	k			



PIT Non-Indicating Temperature Controllers

PIT (Rain Tight)

- Compact Size
- Explosion Resistant and Raintight Applications
- 0 150°F and 100 250°F Temperature Range
- Single Phase, 120 277 Vac
- Bulb & Capillary

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.

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,

Groups E, F and G applications. External adjusting knob and tin-plated copper bulb and capillary.

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.

ELECTROMECHANICA & THERMOSTATS

CHROMALOX-





Ordering Information — PIT Rain-Tight and Explosion-Proof

Temp.	Amp.	Bulb Dime	nsions (In.)	Nominal				
(°F)	120- 277V	Diameter	Lgth.	(°F)	Model	Stock	PCN	(Lbs.
Rain-Tight	Gaske	eted Enclosu	ire					
0 - 150 100 - 250	22 22	0.290 0.290	2-1/2 2-1/2	6 6	PIT-15 PIT-25	S S	140610 140628	2.5 2.5
Explosion-	Proof	Enclosure ¹						
0 - 150 100 - 250	22 22	0.290 0.290	2-1/2 2-1/2	6 6	PIT-15EP PIT-25EP	S S	140943 140951	2.5 2.5
Stock S 1. F H Other N A. C B. S C. F	PIT-EP's lazardo lotes - Capillan See ord Pilot dut	S = STOCK s are UL listed bus Locations - y length is 10 ering informa y rating, 125	NS = non-sto d for use in C ' with 1/16" D tion table abo VA for 120 - 2	ilass I, Grou ia. ove for Bulk 277 Vac.	up D and Class	s II, Gro v dimens	ups E, F and sions.	d G
PIT Prote	ective	Wells						
Well		Dimensio	ns (In.)					\W/ 1

Well		Dimens	ions (In.)					14/4
Material	C	D	E	I.D.	Model	Stock	PCN	(Lbs.)
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				

Sensing Bulbs for PIT and PIT-EP



All Dimensions in Inches (mm)

Protective Wells

PIT



CHROMALOX

B100 / E100 NEMA 4X

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







Description

B121 / E121 NEMA 7

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.

Applications • E100

- NEMA 4X Line or Pipe Sensing
- B100 NEMA 4X Ambient Air Sensing
- E121/122/ NEMA 7 Line or Pipe Sensing 122P
- B121 NEMA 7 Ambient Air Sensing

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"

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.

(B100, B121) Length 2-11/16", OD 9/16"



H-189

B100 & E100 Heat Trace/Freeze Protection Thermostats *(cont'd.)*

Dimensions

E100 Heat Trace, NEMA 4X Line and Pipe Sensing



E121/122 Heat Trace, NEMA 7 and 9 Line and Pipe Sensing



B100 Freeze Protection, NEMA 4X Ambient Sensing



B121 Freeze Protection, NEMA 7 and 9 Ambient Sensing



nection

CHROMALOX

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 E121 E122 E122P	Single Output Single Output Dual Output, Dual Setpoint Dual Output, Common Setpoint	4X 4X,7,9 4X,7,9 4X,7,9	S S NS NS	305322 384112 305349 305357
Freeze Protection Direct Mount 15 - 140°F (-10 to +60°C)	B100 B121	Single Output Single Output	4X 4X,7,9	S S	305365 384104

H-190

CONTROLS

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



51°

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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.



CONTROLS

17000 & 18000 Cartridge and Immersion Temperature Controllers (cont'd.) Cartridge (Model 17000)

Coupling Head (Model 18000)



All Dimensions in Inches (mm)

Ordering Information

	Contact	Max. A	mps AC	Dimens (In.	sions .)					
Temperature Range (°F)	Temp. Rise	120V	240V	A	В	Material	Model	Stock	PCN	Wt. (Lbs.)
Cartridge Typ	e									
-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 Hea	ad Imme	rsion T	уре							
-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										
Importar	nt: Conn Obta	iect 0.1	μt capa radio sι	citor acro	es swite e.	ch leads on all 240 Vac a	application	IS.		

LECTROMECHANICAL & THERMOSTATS



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.

Ξ.

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

Contact Approximate Temperature Range and Factory Setting Tolerance Operation on Temp. Description Rise Model Stock PCN Adjustable 50-300°F ± 5F° or 3% of setting 11-030000-000 s 305293 Opens low temperature value (whichever is greater) 50-600°F ± 10F° or 3% of setting 11-030002-000 s Adjustable, high Opens 305314 temperature value (whichever is greater) 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

Strip Heaters



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 SBKT-2 SBKT-3	53°F 75°F 120°F	38°F 60°F 106°F	S S S	386011 386020 386038
Stock Statu	IS: S = stock NS =	= non-stock		

& THERMOSTATS



H-195

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.

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 Notes	Status: S = stock s - 1. CH cannot be	NS = non-stock	or.		



Dimensions



All Dimensions in Inches (mm)

CHROMALOX

H-196

FL

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

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

Dimensions





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.

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(65)

Side View



Specifications and Ordering Information

	Temn Bange	۱	Voltage/Curre	ent		\W+		
Model	(°F)	120V	240V	277V	Stock	PCN	(Lbs.)	
WR-80	40 - 80	25A	22A	18A	S	263177	1	
WR-90	20 - 90	25A	22A	18A	S	263185	1	
Stock Statu	Stock Status: S = stock NS = non-stock							
Note - 1.	Note – 1. Pilot Duty rating, 125 VA for 120 - 277 Vac.							





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.

Dimensions In. (mm)





This thermostat has a snap action, double

pole-double throw switch operated by a bimet-

al 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

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.

and a 3/4"NPT plug.

Specifications and Ordering Information

Model	Temperature Range	Current	Voltage	Weight	Approvals	PCN
EPETD-8D	50-90°F 10-32℃	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

H-198

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

4-3 (121

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	Maximum Rating (Amps AC)					
Service	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 ac-cumulation 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

			Voltag	e/Current, I	Resistive	Voltag	e/Current, I	nductive			
Model	Туре	Temp. Range (°F)	120V	240V	277V	120V	240V	277V	Stock	PCN	Wt. (Lbs.)
WCRT-100	SPDT	40-100	22A	22A	18A	16A	12A	10A	S	223589	1
Stock Status:	Stock Status: S = stock NS = non-stock										



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

THERMOSTATS

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



Specifications and Ordering Information

				V	oltage/Cur			\\/+		
Model	Туре	Temp. Range (°F)	24V	120V	208V	240V	277V	Stock	PCN	(Lbs.)
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							



HGR Magnetic Contactors

- Mercury Displacement Type
- Quiet Operation
- Hermetically Sealed Mercury Contacts
- 2 or 3-Pole, 35 120 Amps



Description

HGR Open Type

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.

H 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

		Am	pere Rati	ing Per P	Pole		Open Type (without Enclosure) ²						
Poles	120V	208V	240V	277V	480V	600V	Holding Coil ¹ VA	Model	Stock	PCN	Wt. (Lbs.)		
2 3 3 3 3 3 3 3	35 35 50 60 80 100 150	35 35 50 60 80 100 140	35 35 50 60 80 100 135	35 35 50 60 80 100 130	35 35 50 60 80 100 120	35 35 50 - - -	13.2 27.6 21.0 27.6 82.8 84.0 86.9	HGR-235 HGR-335 HGR-350 HGR-360 HGR-380 HGR-3100 HGR-3150	NS S S S S S S S S S S S S S S S S S S	240100 240119 240127 240135 240143 240151 240160	2 3 3 6 7 7		
Sto No 1. 2.	Stock Status: S = stock NS = non-stock Notes — 1. 120 Vac coils. 2. UL Listed.												

CHROMALOX-





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 ther-

mostat. Some models are available from stock with and without enclosures.

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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









lering Information	Amps ner	Holding Coil	Hold Coil	Fia	Dim	Dimensions (In.)			Alternate			Wt	
	Pole	Voltage*	VA	No.	А	В	C	Model	Part Number	Stock	PCN	(Lbs.)	
	Conta	ctor Only											
	40 75 120	120 120 120	6 10 19	1 1	4 4.12	2.50 3.88 5.25	3 3.81	CONT-04000 CONT-07500	8640-70002 8640-70003 8640-70001	S S	305390 305402 305410	1 2	
	NEMA	VEMA 1. General Purpose Enclosure											
	40 75	120 120	6 10	2 2	8.75 12.69	5.00 7.81	4.00 6.31	CONT-04010 CONT-07510		S S	305429 305437	5 8	
	NEMA	4, Weath	er Proc	f Enclo	sure			<u>.</u>					
	40 75 120	120 120 120	6 10 19	3 3 3	7.87 12 20	5.91 12 16	4.72 6 8	CONT-04040 CONT-07540 CONT-12040		NS NS NS	305453 305461 305470	8 12 15	
	NEMA	7, Explos	sion Pro	of Enc	losure			^					
	40 75 120	120 120 120	6 10 19	4 4 4	8 12 18	8 12 18	6 8 8	CONT-04070 CONT-07570 CONT-12070		NS NS NS	305488 305496 305509	60 65 70	
	s	tock Statu	us:	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

PERIPHERALS

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.

Dimensions

E1 General

Purpose Enclosure



Features

· Positive Action Switch requires manual reset

• 25 Amps Cutout Contact at 277V maximum.

For higher voltages or currents, use an

to re-energize the heater

external contactor.

· Pilot light indicates heater ON.

All Dimensions in Inches (mm)

CHROMALOX



Specifications and Ordering Information

				Material		E1	General	Purpose		E2 Moisture Resistant/Explosion Proof				
input Volts	Watts	W/In ²	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	
Sto	Stock Status: S = stock NS = non-stock													



Connection Head

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



Junction Fittings



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.

CHROMALOX-

MGO Thermocouples

Ordering Information

CODE	Thermoc	ouple Alloy		M	lin Temp	. °F	Max Temp	°F			
J	Iron/Cons	stantan			32		700				
Ť	Copper/C	onstantan			-32 -328		400				
É	Chromel/	Constantan			32		800				
	CODE	Number o	of Elements	6							
	S D	Une (Sing Two (Dual	lle) l)								
	Ī	CODE	Sheath D	iameter	r						
		A	1/16"								
		C B	1/8" 3/16"								
		Ĕ	1/4"								
		F	3/8"	Shoot	h Matori	al					Thermocounte Type
			2	304 St	tainless S	aı Steel = Gei	neral Purpo	se. Good	Corrosio	n Resistance	J. K. T. E
			3	316 St	tainless S	Steel = Su	perior Corro	sion Resi	stance	T	J, K, T, E
			4		el 600 = t		Corrosion R	esistance	at Hign	Temperatures	J, K,
				G	Groun	ided					
				Ũ	Ungro	ounded	م من ما ما م		t O h .		
				E	CODE		allable on	n hent T	1eter Sne /Ce PBO	eatn) BE I ENGTH – Hot I eg + Cold I eg)	
					XXX	XXX =	Probe Lena	th in Inch	es		
						CODE	Fraction	n of an in	ch Probe	e Lengths	
						A	None				
						В С	1/4 1/2"				
						Ē	3/4"				
							CODE	Sheath	Bend an	nd Angle	
							2XX	45° She	ath Bend	d XX = Length in inches from Probe Tip to s	tart of bend (Hot Leg)
							3XX	90° She	ath Bend	d XX = Length in inches from Probe Tip to s	tart of bend (Hot Leg)
									Juncti	on Fitting	
								J3	1/2" x	1/2" NPT 316 Stainless Steel Hex Nipple	
								и	(For C	onnection Head or Replacement Probe)	Hay Nippla
								J4	(Conn	ection Head Use Only)	пех мірріе
								J5	Stainle	ess Steel transition Joint (400°F Max) with s	pring style strain relief
								30	with s	pring style strain relief	
								J7	Stainle	ess steel transition fitting without strain relie	ef Sheath
								30	(Not a	vailable on 1/16" Diameter Sheath)	Silcati
								JC	1/2" N	PT Fixed Bushing 316 Stainless Steel	
									CODE	Lead-Wire Type & Connection Head Ontions	Thermocouple Types
									NA	None	J.K.T.E
									F1	Fiberglass insulation-solid conductor	Ĵ,Ŕ,Ť
									F2 F3	Fiberglass insulation-solid conductor (lexible an	steel overbraid) J,K
									F4	Fiberglass insulation-stranded conductor	J,K
									F6	Fiberglass insulation-stranded conductor (nexion Fiberglass insulation-stranded conductor (stainle	e annor) 5,K ess steel overbraid)J
									T1 T2	Teflon insulation-solid conductor	J,K,T
									T3	Teflon insulation-stranded conductor	J,K
									T4 H1	Teflon insulation-stranded conductor (flexible and Cast Aluminum Connection Head with Terminal F	nor) J,K Block IKTE
									H2	Flip Top Aluminum Connection Head w/Terminal	Block J,K,T,E
									H4 H5	Explosion Proof 316 SS Conn. Head w/Terminal 316 Stainless Steel Connection Head with Termin	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/1	erminal Block J,K,T,E
J	S	Ē	2	Ú-	012	A	000-	J5	Т3	C	ontinued on Next Page
H-200											

MGO Thermocouples

Ordering Information (continued)



Bend Dimensions







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

H-207
MGO Thermocouples

J1 Junction Fitting



J6 Junction Fitting



J7 Junction Fitting



J8 Junction Fitting



J3 Junction Fitting (Fixed)



J4 Junction Fitting (Spring Loaded)



JC Junction Fitting (Fixed)



CHROMALOX

H-208

MGO Thermocouples



CHROMALOX-

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

SENSORS

H-209

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

Dimensions (Crimped Junction)



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.





*NOTE: Hot leg minimum dimension is 2 inches.



Plastics Industry Thermocouples

Ordering Information

CODE	Thermo	couple Al	loy		Mir	n Temp. °F	Μ	ax Temp °F	:				
JP	Iron/Co	nstantan				32		700					
KP TP	Chrome	el/Alumel /Constanta	n			32 -328		1600 400					
	CODE	Numher	of Flement	8		520		400					
	S	One (Sir	nale)	,									
	Ď	Two (Di	ial)										
		CODE	Sheath D	liameter									
		В	1/8" (N	lot Availab	le in Dual E	lements)							
		G	3/16" 1/4"										
		-	CODE	Sheath I	Material								
			2	304 Stai	nless Steel	= General P	urpose. G	ood Corros	sion Resis	stance			
			3	316 Stai	nless Steel	= Superior	Corrosion	Resistance	9				
				CODE	Junction	Note: Ro	ound Tip S	Standard					
				G	Grounde	d							
				U	CODE		ENCTU	Max Long	+h 120")	(On Por		PEIENCTH - Hotlog · Coldlog)	
								th in Inches		(UII DEI		be Lendin = not Leg + colu Leg)	
						CODE	Fractio	nn of an Inc	, h Prohe	l enaths	**		
						A	None			Longine	•		
						В	1/4"						
						CF	1/2" 3/4"						
						Ī		Sheath	Bend And	le and	Lenath**		
							000	None		,			
							2XX	45° She	ath Bend	XX = Le	ength in incl	hes from probe tip to start of bend (Hot Leg).	
							377	90 Sile	atri Berio	$\lambda \lambda = L \theta$	engun in inci na	nes from probe lip to start of bend (Hot Leg).	
								.12	Crimne	on Fittin >d	iiy		
								J9	7/16" I	D Singl	e slot sprin	g loaded bayonet fitting (3/16" Diameter Sheatl	n Only)
								1	CODE	Lead-V	Vire Type		Thermocouple Types
									NA	None		O - l'id durater	J, K, T
									F1 F2	Fiberg	lass insulatio	on - Solid conductor on - Solid conductor - flexible armor	J, K, T J. K. T
									F3	Fiberg	lass insulatio	on - Solid conductor - stainless steel overbraid	J, K
									F4	Fiberg	lass insulatio	on - Stranded conductor	J, K
									F6	Fiberg	lass insulatio	on - Stranded conductor - stainless steel overbraid	J, K
									T1	Teflon	insulation -	Solid conductor	J, K, T
									T2 T2	Teflon	insulation -	Solid conductor - flexible armor Stranded conductor	J, K, T
									T4	Teflon	insulation -	Stranded conductor - flexible armor	J, K
										CODE	E Lead L	ength "F" Dimension	
										XXX	XXX =	Lead Length in Inches	
											CODE	Termination Options	Thermocouple Types
											01	None	J, K, T
											02	Leads stripped 2 inches with spade lugs	J, K, T 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 By	Connector J, K, T
											00	Standard thermocouple jack*	J, K, T J. K. T
											08	Standard thermocouple plug with mating connect	or* J, K, T
											09	Standard thermocouple jack with mating connected	or* J, K, T
											11	Miniature thermocouple jack*	J, K J. K
											12	Miniature thermocouple plug with mating connect	or J, K
											13	Miniature thermocouple jack with mating connec	tor J, K
												*Plugs & jacks 500° maximum temperatures, Single ele	ment thermocuples only
JP	S	C	3	U-	012	Α	000-	J9	Т3	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"

– H-211

SENSORS

Adjustable Depth Sensors



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





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

Adjustable Depth Sensors

Ordering Information

Adju	stable Deptl	pth Sensor							
COD	E Sensor	iensor Type							
S	Spring	(Applicable	e Leadwire	Type Codes:	F3, F4, F6, T3)				
C	Condui	t (Applicab	ole Leadwire	Type Codes	: F2, F5, T2, T4)				
	CODE	Thermoc	couple Alloy	1	Min Temp F.	Max Temp F.			
	J	Iron/Con	stantan		32	700			
	K	Chromel	/Alumel		32	1600			
	Т	Copper/C	Constantan		-328	400			
		CODE	Lead W	ire Type			Thermocouple Types		
		F4	Fibergla	ss Insulatior	n - Stranded Conductor		J, K		
		F6	Fibergla	ss Insulatior	n - Stranded Conductor -	Stainless Steel Overbraid	J, K, T		
		T3	Teflon I	nsulation - S	tranded Conductor		J, K, T		
			CODE	Lead Len	gth "F" Dimension				
			XXX	XXX = Lea	ad 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 s	spade lugs	J,K,T		
				04	Leads stripped 2" with "	/2" NPT Bx connector	J,K,T		
				05	Leads stripped 2" with s	pade lugs & 1/2" NPT Bx connector	J,K,T		
				06	Standard thermocouple	plug*	J,K,T		
				U/	Standard thermocouple	Jack^	J,K,I		
				00	Standard thermocouple	izek with mating connector*	J,K,I I K T		
				10	Miniature thermocounle	Jack with mating connector	J,K,T		
				11	Miniature thermocouple	aiack*	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			
					T				
ა	J	F0-	030	UZ	Typical Wouel Numb	ei			



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

CODE	Thermoc	ouple Alloy		Min Temp F.	Max Temp F.					
J	Iron/Con	stantan		32	700					
ĸ	Chromel	/Alumel		32	1600					
Т	Copper/C	Constantan		-328	400					
	CODE	Lead Ler	ngth "F" Dim	ension, Lead V	/ire is Fiberglass Insulation Stranded Conducto	r - Stainless Steel Overbraid				
	XXX	X XXX = Lead Length in Inches								
		CODE	Hole Siz	Hole Size						
		C	3/16"							
		F	3/8"							
			CODE	Termination	Options	Thermocouple Types				
			01	None		J,K,T				
			02	Leads stripp	ed 2"	J,K,T				
			03	Leads stripp	ed 2" with spade lugs	J,K,T				
			04	Leads stripp	ed 2" with 1/2" NPT Bx connector	J,K,T				
				05	Leads stripp	ed 2" with spade lugs & 1/2" NPT Bx connector	J,K,T			
			06	Standard the	rmocouple plug*	J,K,T				
			07	Standard the	rmocouple jack*	J,K,T				
				08	Standard the	rmocouple plug with mating connector*	J,K,T			
			09	Standard the	rmocouple jack with mating connector*	J,K,T				
			10	Miniature the	ermocouple plug*	J,K				
			11	Miniature the	ermocouple jack*	J,K				
			12	Miniature the	ermocouple plug with mating connector*	J,K				
				13	Miniature the	ermocouple jack with mating connector*	J,K			
				* Plugs and	Jacks 500°F maximum temperature					
				0	•					
J	036	C	02	Typical Mod	el Number					

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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	Thermoo	couple Alloy	/	Min Temp	F. Max Temp F.	
J	Iron/Con	istantan		32	700	
K	Chromel	l/Alumel		32	1600	
Т	Copper/(Constantan		-328	400	
1	CODE	Lead Wi	re Type			Thermocouple Types
	F4	Fiberglas	s insulation	- Stranded	conductor	J,K
	F6	Fiberglas	s insulation	- Stranded	conductor - stainless steel overbraid	J,K,T
	T3	Teflon in	sulation - Stranded conductor			J,K,T
		CODE	Lead Ler	ngth "F" Dim	iension	
		XXX	XXX = Le	ead Length ir	1 Inches	
		1	CODE	Bolt Typ	e	
			F	Fixed		
			R	Rotate S	wivel	
				CODE	Termination Options	Thermocouple Type
				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	
J	F6	036	R	02	Typical Model Number	



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

COD	DE	Thermoo	couple Allo	by I	Vin Temp F.	Max Temp F.	
J		Iron/Con	istantan		32	700	
K		Chromel	/Alumel		32	1600	
Т		Copper/C	Constantan	I	-328	400	
		CODE	Thermocouple Types				
		F4	Fibergla	ass insulati	on - Stranded	conductor	J,K
		F6	Fibergla	ass insulati	on - Stranded	conductor - stainless steel overbraid	J,K,T
		Т3	Teflon i	nsulation -	Stranded con	ductor	J,K,T
			CODE	Lead Le	ngth "F" Dime	ension	
			XXX	XXX = L	ead Length in	inches	
				CODE	Plate Size)	
				Α	1" x 1"		
				В	3/4" x 1"		
				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*	Ĵ,Ŕ
					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	
, ,		F6	036	A		Tynical Model Number	

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CONTROLS

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

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-12— Cast Iron



PR-18 — Aluminum w/Snap-Lock

3.3"

4.7"





E di uta



PR-14 — Aluminum

w/Screw Cover & Chain

CONTROLS

PR RTD Probes with Connection Head (cont'd.)

Ordering Information

CODE	Assembly Typ	e							
PR-11 PR-12 PR-14 PR-18 PR-19	304SS Steel T Cast Iron Con Aluminum Co Aluminum Co Subminiature	ransition with 36 ir nection Head with s nnection Head with nnection Head with Aluminated Connec	nch Leadwire Screw Top Screw Top and (Snap Lock ction Head with S	Chain Screw Top					
	CODE	RTD Type							
	2-100	3-Wire, 10	3-Wire, 100 OHM, Platinum RTD						
		CODE	O.D. Sheat	th Dimensions					
		116 18 316 14	1/16 Inch 1/8 Inch 3/16 Inch 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							
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





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								
	Α	1/2 NPT Outside, 1/2 NPT Inside								
		CODE	"B" Dim	ension						
		XXX	XXX = L	ength in Inches						
			CODE	Fraction of an inch						
			Α	None						
			В	1/4"						
			Ç	1/2"						
				3/4						
BUTW	Α	012	Α	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



Ordering Information STANDARD THERMOWELLS

CODE	EXTERNAL T	HREADDING	
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

Typical Model Number



U4 1/2-

3/4-260S-



Ordering Information

LAGGING EXTENTION THERMOWELLS

CODE	EXTERNA	L THREADDING	
1/2-260L 3/4-260L	1/2" NPT 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



CHROMALOX-

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

H-223

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.



			Commor	n Rang	e (°F)
Model	Sensor	Insulation	Junction	Min	Max
RBF185M-HT	RTD	Fiberglass		-100	900
		Sheath L	eg Lengths		
	Code	Hot	Cold		
	304	3"	4"		
	306	3"	6"		
	308	3"	8"		
		Code	Mounting Pad	ls	
		18RD	Fits All Pipe Si	izes*	
			Code	Connection Head	S
			31SB/C 49SB/C 91SB/C 93SB/C 94SB/C	Aluminum Flip top Aluminum 316L Stainless St Aluminum 316L Stainless St	n Head Gel Gel
RBF-185M-HT	304	18RD	31SB/C		
*Mounting pads con	form to pipe wit	h pipe clamps	† Rep	places RBF185M-HT	0304-18RD-71SB/C

CHROMALOX

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

0	Approval Agency				
Connection Head	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	

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.

0	•	TC	
Ord	erino	Into	rmation

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

CHROMALOX-

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



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





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.



Туре	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
К	TJ120-CASS-18U-6-GG/C (C700KU)	0104-12120	C700KU	293552

1/8 NPT Compression Fitting	PCN
SSLK-18-TEFLON/C	308718

1/4 NPT Compression Fitting	PCN
SSLK-18-14-TEFLON/C	308726

CHROMALOX

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

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	Assembly Type				
BT-000 CF-000 BT-090 CF-090	Straight Probe Straight Probe 90° Angle Prob 90° Angle Prob	with a Spring Loaded B with a Brass 1/8 NPT C e with a Spring Loaded e with a Brass 1/8 NPT	ayonet Fitting ompression Fittir Bayonet Fitting Compression Fitt	ng		
	CODE	Sensor Type				
	RTD	3-WIRE, 100	OHM, PLATINUM	I RTD		
		CODE	Insertion	Length (Inches)		
		2-1/4 3-1/2	Bayonet S Bayonet S	tyle Only tyle Only		
		2 4	CF Style O CF Style O)nly)nly		
			CODE	End Termination		
			1/C 2/C	SPADE LUGS 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

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

spade lugs.



		Ø			~
2.	OST standard	;	3.	NHXH	

ceramic

connector

(to 1200°F)

thermocouple

connector

(to 425°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	XCIB-(1)-3-3-(2)/C	2	3
XCIB-(1)-1-2-(2)/C	4	2	XCIB-(1)-3-4-(2)/C	3	1
XCIB-(1)-1-3-(2)/C		3	XCIB-(1)-4-1-(2)/C		1
XCIB-(1)-1-4-(2)/C		4	XCIB-(1)-4-2-(2)/C		2
XCIB-(1)-2-1-(2)/C		1	XCIB-(1)-4-3-(2)/C] 4	3
XCIB-(1)-2-2-(2)/C	2	2	XCIB-(1)-4-4-(2)/C		4
XCIB-(1)-2-3-(2)/C	2	3	XCIB-(1)-5-1-(2)/C		1
XCIB-(1)-2-4-(2)/C		4	XCIB-(1)-5-2-(2)/C	_	2
XCIB-(1)-3-1-(2)/C	0	1	XCIB-(1)-5-3-(2)/C	5	3
XCIB-(1)-3-2-(2)/C	3	2	XCIB-(1)-5-4-(2)/C		4
Note – 1. Specify thermocouple type:					
2. Specify length in feet (3 or 10 Ft. standard)					

CHROMALOX-

H-229

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	Thermo	couple Wi	ire				
	CODE	Wire Gauge					
	20 24	20 Gaug 24 Gaug	ge Wire ge Wire				
		CODE	Thermo	couple All	oy		
		J K	Iron/Co Chroma	nstantan I/Alumel	stantan Alumel		
			CODE	Insulati	on		
			F B T	Fibergla Fibergla Teflon Ir	ss Insulat ss Insulat isulation	ion ion - Stainless Steel Overbraid	
				CODE	Conduc	tor	
				S T	Solid Strande	d	
					CODE	Length	
					xxx	XXX = Length in Feet	
TCW-	20	J	F	S-	100	Typical Model Number	
TCW-	20	J	F	S-	CODE XXX 100	Length XXX = Length in Feet 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)

CHROMALOX

Description	Length (Ft.)	Model	Stock	PCN	Wt. (lbs.)	
3-wire, 16 gauge CU, Polyvinyl, twisted,	50	3 Cu-PALP-TW-16-50	S	308144	3	
shielded, covered in polyvinyl Temp. range 215° F	200	3 Cu-PALP-TW-16-50	S	308152	11	
Stock Status: S = stock NS = non-stock						



Accessories

1/2-14 NPS

- Connectors
- Fittings
- · Adapters



D)

Material

Galvanized Steel



Part Number

PC4387-1



Quick Detatch Adapters

7/8"	Stainless Steel Plated Steel
I-1/4" ∣-1/2"	Plated Steel
-1/2"	
1/2	Plated Steel
2"	Plated Steel
2-1/2"	Plated Steel
3-1/4"	Plated Steel
4"	Plated Steel
	2" 2-1/2" 3-1/4" 4"

1/8 - 27 NPT

- 3/8"

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	Mini	5/8"	3/4"	5/16"
Connector	Standard	1"	15/16"	1/2"
Female	Mini	5/8"	3/4"	5/16"
Connector	Standard	1"	15/16"	1/2"



Click Here for Quote!

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



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®		
 Specify calibration: J, K, T or E. Specify length: 36 or 72 inches. 					

<u>5SC</u>

5TC

Insulation

Lengths

- 30 and 36" AWG Wires with PFA Teflon $^{\ensuremath{\mathbb{B}}}$

• PFA Teflon[®] or Glass Braid

Stocked in 36 and 72"

• 20, 24, 30 and 36" AWG Wires

- 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 collibration: LK Tex E					

1. Specify calibration: J, K, T or E.

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

SA1

- Self-Adhesive Backing, Standard 36" Length
- Better than 0.3 Second Response Time
- Rated to 350°F Long Term

leflon [®]	is a	registered	trademark	c of L	JuPont

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



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H-232

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)

RTD 800 Precision RTD Probes

- 100 Ohm Platinum RTD Sensors
- 36" Teflon[®] Insulated 3-Wire Leads
- Standard with Subminiature MTP Series Connector





120

CHROMALOX

Specifications and Ordering Information

1 5	8 9					
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 — Addition	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-BTD-80	3-Wire	80				

3-Wire

Description

SA1-RTD-120

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
<5/8"→	RTD-805/C	-50 to 230°C	Gas & Air	339207
5/16"> < 1/2" •	RTD-830/C	-50 to 230°C	Flat Surface	339215
	RTD-850/C	-50 to 230°C	Threaded Tip	339223
1-1/2" 1/8" Diameter 0.15" Diameter Hole (2 ea)	RTD-860/C	-200 to 230°C	Gas & Air	339231

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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







OTP — Thermocouple and RTD Connectors



MTP — Subminiature 3-Prong Connectors





NHX — Extra Heavy Duty **High Temperature Ceramic Connectors**





MPJ - Miniature Panel Jacks





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 Female Connectors	, U, Includes UPJ

CODE	Connectors				
NHX OST OTP UPJ SMP MTP SHX MPJ	Extra Heavy D Standard 2-Pi Thermocouple Universal Pan Subminiature Subminiature Subminiature Miniature Pan	leavy Duty / High Temperature Ceramic (1200°F) Ird 2-Pin ocouple or RTD 3-Pin sal Panel Jack for 2-Pin niature 2-Pin niature 3-Pin niature High Temperature Ceramic (1200°F) 2-Pin or Socket ure Panel Jack for 2-Pin			
	CODE	Thermocouple Type or Uncompensated			
	J K E T U	J-Iron Const K-Chromel A E-Chromel C T-Copper Co U-Uncomper	J-Iron Constantan (Black) K-Chromel Alumel (Yellow) E-Chromel Constantan (Purple) T-Copper Constantan (Blue) U-Uncompensated for RTDs (White)		
		CODE	Connector Junction Type		
		M/C F/C	Male Connection Female Connection		
ОТР	-E	-M/C	Typical Model Number		

CHROMALOX-

H-235

SENSORS