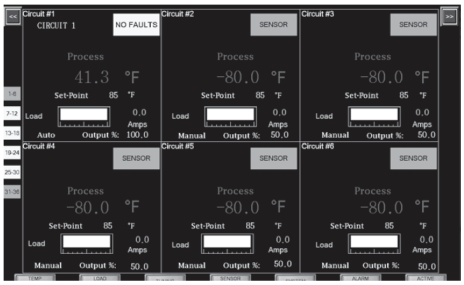
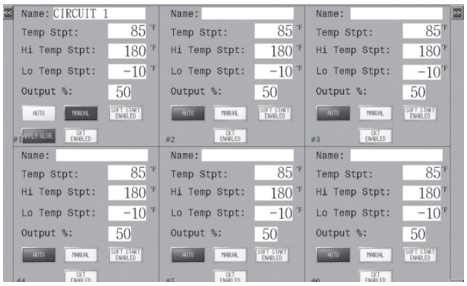
IntelliTrace

CIP BASE
CIP-EXT EXTENSION PANEL

Commercial Heat Tracing Control Panel for Ordinary Areas

- 10” or 7” Touch Screen HMI
- Up to 50 Amps/Circuit @ 120 to 480 VAC
- 2 - 48 Circuits, Expandable to 72 Circuits via Extension Panels
- NEMA 4 or NEMA 4X Enclosure
- SCR Control
- 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





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 can be up to 50 Amps 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 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.

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ADVANCED FEATURES

Soft Start Feature

Certain heating cables exhibit inherent current in rush 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 downtime periods, typically during the summer months, it is 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 powerful 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
- Enclosure Heater

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TECHNICAL SPECIFICATIONS

Panel Specifications

Supply Voltage:	280/120 VAC, 3-Phase 4-Wire 240/120 VAC, Single Phase 3-Wire 480/277 VAC, 3-Phase 4-Wire
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, BACnet
Alarms:	Hi/Lo Temp, GFEP – 20 mA to 150 mA, Hi/Lo Current – 0.1 to 50A or off
Input:	100Ω Platinum 3-wire RTD
Output:	SCR, Zero cross fired
Current Maximum:	Up to 50 Amps per 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.
Area Classifications:	Ordinary Areas

IntelliTrace CIP BASE

Commercial Heat Tracing Control Panel for Ordinary Areas

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

Model **Product Description**

CIP CIP IntelliTrace Line/Ambient Sensing Heat Trace Panels are designed for Commercial Applications in Non-Hazardous Areas. The CIP series offers the following standard features: NEMA 4 Steel Enclosure, 10" (7" for2 and 4 Loop Models) HMI Controller rated up to 50A per Circuit @ 120 - 480 VAC at 104°F (40°C) (Expandable to Seventy-Two Circuits), Common Alarm Output, Operator Interface, PID SCR Power, Main Circuit Breaker/ Disconnect, Hand/Off/Auto Operation Breaker for Instrument Power Included, Current Monitoring, 30 mA Ground Fault Equipment Protection, Thermostat Controlled Enclosure Heater, Heater Power & RTD Terminal Blocks, ModBus RTU/RS485 or TCP/Ethernet Communications, Lockout Capable Breakers, UL & cUL Third Party Compliance. Additional features & options available, please see below for more details or the Data Sheet.

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

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

Code	Cable Load Circuit Breaker Rating (Select Breaker Amperage and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V Breakers)
0	None
1	15A Thermal Magnetic
2	20A Thermal Magnetic
3	30A Thermal Magnetic
4	40A Thermal Magnetic
5	50A Thermal Magnetic

Code	Main Circuit Breaker	Typical Voltage
0	None	None
1	30A Thermal Magnetic	277/480V 3P
2	50A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
3	70A Thermal Magnetic	277/480V 3P
4	80A Thermal Magnetic	120/240V 1P
5	100A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 1P
6	125A Thermal Magnetic	277/480V 3P
7	150A Thermal Magnetic	120/208V 3P
8	175A Thermal Magnetic	120/240V 1P, 277/480V 3P
9	225A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
X	Other (Consult Sales for assistance)	

Code	Enclosure Heater (Anti-Condensation Heater Required at a Minimum)
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (Needed for 0°F, -18°C Minimum Ambient Temperature)
3	Thermostat Controlled Enclosure Heater (Needed for -40°F/°C Minimum Ambient Temperature)

Code	Panel Options *(Price is per ckt, multiply adder times number of ckt's for total adder, Enclosure size will increase with this option)	Code	Panel Options
0	None	5	Panel Light (on separate breaker)
1	HMI Sunshield (Required if the Panel is located Outdoors)	A	Floor Stand Kit
2	Panel Weathershield	B	SCCR 65 kAIC* (Replace Breakers with Fuses)
3	Copper Ground Bar	X	Other/Custom Features (Consult Sales for assistance)
4	Loss of Power Relay		

Code	Number of 100 Ohm RTD Sensor Inputs (must be multiple of 6, up to 48 inputs, MAX. 3 RTD's/heater ckt.)	Code	Number of 100 Ohm RTD Sensor Inputs
1	6 (Select if Ambient Sensing panel)	6	36
2	12	7	42
3	18	8	48
4	24	X	Other(Consult Sales for assistance)
5	30		

Code	Communications
1	Standard: ModBus RTU/RS485 or Modbus TCP/Ethernet
2	ModBus TCP/Wireless
3	BACnet
X	Other(Consult Sales for assistance)

Code	Temperature Sensing Solutions
1	Standard Wired Sensing
2	ETI Internal Snow Switch (SnowOwl, GIT-1, SIT-6E)
3	Chromalox Smart T&M Sensor Input (CS-ASM, CS-PSM, CS-GSM)

Code	Enclosure (Size determined by Table 1)
1	NEMA 4 Steel, Wall-Mount Enclosure 30 X 30 X 12
2	NEMA 4 Steel, Wall-Mount Enclosure 42 X 36 X 12
3	NEMA 4 Steel, Wall-Mount Enclosure 60 X 36 X 12
4	NEMA 4 Steel, Wall-Mount Enclosure 60 X 36 X 16
5	NEMA 4 Steel, Wall-Mount Enclosure 72 X 36 X 12
6	NEMA 4 Steel, Floor-Mount Enclosure 62 X 48 X 18
7	NEMA 4 Steel, Free Standing Enclosure 84 X 40 X 18
8	NEMA 4 Steel, Free Standing Enclosure 90 X 48 X 20
A	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 30 X 30 X 12
B	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 42 X 36 X 12
C	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 60 X 36 X 12
D	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 60 X 36 X 16
E	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 72 X 36 X 12
F	NEMA 4X 304 Stainless Steel, Floor-Mount Enclosure 62 X 48 X 18
G	NEMA 4X 304 Stainless Steel, Free Standing Enclosure 84 X 40 X 18
H	NEMA 4X 304 Stainless Steel, Free Standing Enclosure 90 X 48 X 20

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

IntelliTrace CIP-EXT EXTENSION PANEL

Commercial Heat Tracing Control Panel for Ordinary Areas

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

Model **Product Description**

CIP-EXT CIP-EXT series Intelligent Line/Ambient Sensing Heat Trace Extension Panel. Designed for Commercial Applications in Non-Hazardous areas. Intended to be used with a CIP Heat Trace Main Panel to increase circuit service. CIP-EXT series offers the following standard features: NEMA 4 Steel Enclosure, PID SCR Power Controller Rated up to 50A per Circuit @ 120 - 480 VAC at 104°F (40°C) Ambient, Two to Forty-Eight Circuits, Common Alarm Output, Main Circuit Breaker/Disconnect, Hand/Off/Auto Operation, Current Monitoring, 30 mA Ground Fault Equipment protection, Thermostat Controlled Enclosure Heater, Heater Power & RTD Terminal Blocks, ModBus Communication back to CIP Main Panel, UL & cUL Third Party Compliance. Additional features & options available, please see below for more details or the Data Sheet.

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

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

Code	Cable Load Circuit Breaker Rating (Select Breaker Amperage and *1P/2P to Select Breaker Voltage 1(1P)=15A, 120V Breakers)
0	None
1	15A Thermal Magnetic
2	20A Thermal Magnetic
3	30A Thermal Magnetic
4	40A Thermal Magnetic
5	50A Thermal Magnetic

Code	Main Circuit Breaker	Typical Voltage
0	None	None
1	30A Thermal Magnetic	277/480V 3P
2	50A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
3	70A Thermal Magnetic	277/480V 3P
4	80A Thermal Magnetic	120/240V 1P
5	100A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 1P
6	125A Thermal Magnetic	277/480V 3P
7	150A Thermal Magnetic	120/208V 3P
8	175A Thermal Magnetic	120/240V 1P, 277/480V 3P
9	225A Thermal Magnetic	120/208V 3P, 120/240V 1P, 277/480V 3P
X	Other (Consult Sales for assistance)	

Code	Enclosure Heater (Anti-Condensation Heater Required at a Minimum)
1	Thermostat Controlled Enclosure Heater (Anti-Condensation Heater)
2	Thermostat Controlled Enclosure Heater (Needed for 0°F, -18°C Minimum Ambient Temperature)
3	Thermostat Controlled Enclosure Heater (Needed for -40°F/°C Minimum Ambient Temperature)

Code	Panel Options *(Price is per ckt, multiply adder times number of ckt's for total adder, Enclosure size will increase with this option)	Code	
0	None	**5**	Panel Light (on separate breaker)
2	Panel Weathershield	**A**	Floor Stand Kit
3	Copper Ground Bar	**B**	SCCR 65 kAIC* (Replace Breaker with Fuses)
4	Loss of Power Relay	**X**	Other/Custom Features (Consult Sales for assistance)

Code	Number of 100 Ohm RTD Sensor Inputs (must be multiple of 6, up to 48 inputs, MAX. 3 RTD's/heater ckt.)	Code	
0	None	**5**	30
1	6 (Select if Ambient Sensing panel)	**6**	36
2	12	**7**	42
3	18	**8**	48
4	24	**X**	Other (Consult Sales for assitance)

Code	Communications
9	Standard: MODBUS RTU/RS-485 (Communication with Main Panel)

Code	Temperature Sensing Solutions
1	Standard Wired Sensing
2	ETI Internal Snow Switch (SnowOwl, GIT-1, SIT-6E)
3	Chromalox Smart T&M Sensor Input (CS-ASM, CS-PSM, CS-GSM)

Code	Enclosure (Size determined by Table 1)
1	NEMA 4 Steel, Wall-Mount Enclosure 30 X 30 X 12
2	NEMA 4 Steel, Wall-Mount Enclosure 42 X 36 X 12
3	NEMA 4 Steel, Wall-Mount Enclosure 60 X 36 X 12
4	NEMA 4 Steel, Wall-Mount Enclosure 60 X 36 X 16
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6	NEMA 4 Steel, Floor-Mount Enclosure 62 X 48 X 18
7	NEMA 4 Steel, Free Standing Enclosure 84 X 40 X 18
8	NEMA 4 Steel, Free Standing Enclosure 90 X 48 X 20
A	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 30 X 30 X 12
B	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 42 X 36 X 12
C	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 60 X 36 X 12
D	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 60 X 36 X 16
E	NEMA 4X 304 Stainless Steel, Wall-Mount Enclosure 72 X 36 X 12
F	NEMA 4X 304 Stainless Steel, Floor-Mount Enclosure 62 X 48 X 18
G	NEMA 4X 304 Stainless Steel, Free Standing Enclosure 84 X 40 X 18
H	NEMA 4X 304 Stainless Steel, Free Standing Enclosure 90 X 48 X 20

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

IntelliTrace

CIP BASE CIP-EXT EXTENSION PANEL

Commercial Heat Tracing Control Panel for Ordinary Areas

Technical Notes

1. If additional RTD Inputs are needed. Please consult Sales.
2. Refer to PK563 for Installation & Operation details.
3. Standard Panel Short Circuit Current Rating (SCCR) is 5kAIC. Consult Sales if a different rating is needed.
4. See CIP-EXT to increase circuits up to 8 circuits for 2-4 Circuit Panels & up to 72 Circuits for 6-48 Circuit Panels.
5. 6-48 Circuit Extension Panels can not be added to 2-4 Circuit Main Panels but 2-4 Circuit Extension Panels can be added to 6-48 Circuit Main Panels (up to 72 Circuits).

Table 1: Enclosure Size Selection

Table 1: IntelliTrace Panels Enclosure Size Selection - H x W x D in.		
Panel Size # of Circuits - Poles	**Single RTDM per Panel**	**Single RTD per Circuit**
2-1P	30x30x12	30x30x12
2-2P	30x30x12	30x30x12
4-1P	30x30x12	30x30x12
4-2P	30x30x12	30x30x12
6-1P	30x30x12	30x30x12
6-2P	30x30x12	30x30x12
12-1P	42x36x12	42x36x12
12-2P	42x36x12	42x36x12
18-1P	42x36x12	60x36x12
18-2P	60x36x12	60x36x12
24-1P	42x36x12	60x36x12
24-2P	60x36x16	60x36x16
30-1P	60x36x12	60x36x12
30-2P	60x36x16	62x48x18
36-1P	60x36x12	72x36x12
36-2P	60x36x16	62x48x18
42-1P	60x36x16	62x48x18
42-2P	84x40x18	90x48x20
48-1P	60x36x16	62x48x18
48-2P	84x40x18	90x48x20

Note: Table 1 is a general guideline for Enclosure Size Selection. Adding certain options could cause enclosure size to differ. If Panel dimensions are critical Consult Factory for exact selection.

Model Number Note:

An "X" in the Panel Model Number indicates the design has deviated from standard order table parameters and is considered custom. Consult Sales for pricing and feasibility. Custom options may include special tagging, labeling, materials, venting, cooling, indications, alarms, or third-party approvals. Please note that custom panels typically require additional lead time for engineering, procurement, manufacturing, and quality assurance testing.

Spare/Replacement Parts for CIP & CIP-EXT

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

Accessories for CIP & CIP-EXT

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