

## IntelliPanel

### 3-Phase SCR Power Control Panel

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



#### Description

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

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

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

#### Additional Features

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

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

### Specifications

#### INPUTS:

##### 4-channel RTD input module

##### Input Ranges

Type Pt100 .....-200.0/850.0°C, -328/1562°F

Type Pt1000 .....-200.0/595.0°C, -328/1103°F

Type iPt100 .....-38.0/450.0°C, -36/842°F

RTD Excitation Current ..... 200 µA

Notch Filter .....>50 db notches at 50/60 Hz

Maximum Setting Time ..... 100 ms  
(full-scale step input)

Common Mode Range ..... 0-5 VDC

##### Absolute Maximum

Ratings ..... Fault protected inputs to ±50 VDC

Sampling Rate ..... 140 ms per channel

#### Notes:

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

#### 4-Channel Thermocouple Input Module

##### Input Ranges

Type J .....-190 to 760°C (-310 to 1400°F)

Type E .....-210 to 1000°C (-346 to 1832°F)

Type K .....-150 to 1372°C (-238 to 2502°F)

#### General Specifications

Number of Channels ..... 4, differential

Common Mode Range .....-1.3 VDC to +3.8 VDC

##### Common Mode

Rejection ..... 100dB min. @ VDC 50/60Hz.

Input Impedance ..... 5M

##### Absolute Maximum

Ratings ..... Fault-protected inputs to ±50 VDC

Update Rate ..... 4 channels per scan

Open Circuit Protection .... Upscale or Downscale

Display Resolution ..... ±0.1°C or ±0.1°F

Cold Junction Compensation .....Automatic

Conversion Time ..... 270ms per channel

Warm-Up Time .....30 minutes typically ± 1°C  
repeatability

#### Linearity Error

(End to End) .....±1°C maximum, ±0.5°C typical

Maximum Inaccuracy .....±3°C (excluding  
thermocouple error)

#### Linearity Error

(All Input Ranges) ..... 0.05% @ 0-60°C;

Typical: .....0.03% @ 25°C

#### Notes:

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

#### Permissive Digital Inputs:

All..... Dry contact or triac rated  
for 120 VAC at 20 mA

#### Relay Output Specifications

##### Output Voltage

Range ..... 6-240 VAC, 47-63Hz, 6-27 VDC

Maximum Voltage ..... 264 VAC, 30 VDC

Maximum Current ..... 2 A/point

##### Maximum Leakage

Current ..... 0.1mA @ 246 VAC

Smallest Recommended Load ..5mA @ 5 VDC

#### Relay Operating Cycles:

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

#### Touch Screen Display:

Screen Size .....5.7 in. dia.

Resolution .....320 x 240

Touch Grid ..... 8 x 6

#### Communications:

Protocol .....ModBus Slave

Physical .....RS-422 4 wire

RS-485 2 wire

Baud Rate .....2.4, 4.8, 9.6, 19.2, 38.4 Kbaud

Stop Bits ..... 1 or 2

Parity ..... odd, even, none

On Delay .....5, 10, 20 ms.

Address.....1 – 128

Max. network distance .....4000 feet

Max. number of devices .....32 per network

Max. baud rate .....38.4 Kbaud

Max. driver load ..... 62 ohms

Driver voltage..... ±1.5V minimum

No load current ..... 80mA

Max. current.....100mA (62 ohms)

Isolation resistance .....>1014 ohms/7pF

Voltage withstand ..... 1.2KVrms/1s,  
1.0KVrms/1 minute

Termination ..... Dipswitch selectable

Bias resistors ..... Dipswitch selectable

RS485/RS422 Operation .....Dipswitch  
selectable

Connections ..... Plug in removable terminals  
for field termination

#### CONTROL AND ALARM

Control Modes: ..... Single Loop PID

Differential PID

Cascade PID/PID

#### PID Parameters:

Proportional Band ..... 20 to 2000 degrees

Reset.....0.61 to 60 repeats per minute

Rate ..... 0 to 99.99 seconds

Reset Windup Limit .....100% fixed

Rate Limit .....X10 fixed

Manual Output ..... 0 to 100%, 1% steps

Control Setpoint.... full range, 0.1 deg. setting

Setpoint Limits..... high and low  
full range, 0.1° setting

Alarm Setpoint.....full range, 1° Setting

Alarm Deadband ..... 0 to 50.0, 0.1° Setting

Ramp to Setpoint..... 0 to 2000° per minute,  
1° setting

Time delay on interlock.... 0 to 9999 seconds,  
1 second settable

#### Ground Fault Monitor

Trip setting range ..... 6 to 600 mA

Current indication ..... 0- 100% of trip set point

Password: ..... 4 levels settable

Time: ..... 24 Hr. clock hrs/min format

Date: ..... mon/day/yr format

#### Power Train Components

##### Main Disconnect

Switch ..... load rated shunt trip

I<sup>2</sup>T Fusing .....> 125% load with 100 kaic

Load Circuit Breakers .....>125% load rated  
with 25 kaic

Contactors (if supplied) ..... load rated

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

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

**Technical Notes:**

<sup>1</sup>Enclosure for codes 12, 14, 15, 16, and 17 are Floor-Mount Designs

<sup>2</sup>Consult Factory for 575/600 VAC Applications and Pricing

<sup>3</sup>NEMA 12 available with additional venting measures. Consult factory.

\*Specify Quantity of Circuits

**Model IntelliPANEL Series 1**

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

**Panel Configuration**

**Real Time Process Indicators:**

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

**Operational Features**

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

**Selectable Control Setups:**

Single Loop  
Differential

**Cascade:**

Outlet and Sheath  
Process and Sheath

Remote 4-20mA Command  
Signal

**Code Current @ 40°C (104°F) Ambient**

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

**Code Voltage<sup>2</sup>**

1	208 VAC
2	240 VAC
3	380 VAC
4	400 VAC
5	415 VAC
6	480 VAC

**Code Sensor Options**

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

**Code Overtemperature Controller Options**

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

**Code Communications Option**

0	None
1	RS485 / 422 MODBUS™

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

0	None	5(*)	Industrial Three-Pole Contactor 60 Amp Rating
1(*)	Industrial Three-Pole Contactor 25 Amp Rating	6(*)	Industrial Three-Pole Contactor 70 Amp Rating
2(*)	Industrial Three-Pole Contactor 35 Amp Rating	7(*)	Industrial Three-Pole Contactor 80 Amp Rating
3(*)	Industrial Three-Pole Contactor 40 Amp Rating	8(*)	Industrial Three-Pole Contactor 110 Amp Rating
4(*)	Industrial Three-Pole Contactor 50 Amp Rating		

**Code Load Fusing Option (Thermal Magnetic Circuit Breakers)<sup>3</sup>**

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

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

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

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

**Technical Notes:**

<sup>1</sup>Enclosure for codes 12, 14, 15, 16, and 17 are Floor-Mount Designs

<sup>2</sup>Consult Factory for 575/600 VAC Applications and Pricing

<sup>3</sup>Ventilated NEMA 12 Enclosure Derates Enclosure to NEMA 1.

\* Specify Quantity of Circuits

**Model IntelliPANEL Series 1**

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

**Panel Configuration**

**Real Time Process Indicators:**

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

**Operational Features**

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

**Selectable Control Setups:**

Single Loop  
Differential

**Cascade:**

Outlet and Sheath  
Process and Sheath

Remote 4-20mA Command  
Signal

**Code Current @ 40°C (104°F) Ambient**

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

**Code Voltage<sup>2</sup>**

1	208 VAC
2	240 VAC
3	380 VAC
4	400 VAC
5	415 VAC
6	480 VAC

**Code Sensor Options**

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

**Code Overtemperature Controller Options**

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

**Code Communications Option**

0	None
1	RS485 / 422 MODBUS™

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

0	None	5(*)	Industrial Three-Pole Contactor 60 Amp Rating
1(*)	Industrial Three-Pole Contactor 25 Amp Rating	6(*)	Industrial Three-Pole Contactor 70 Amp Rating
2(*)	Industrial Three-Pole Contactor 35 Amp Rating	7(*)	Industrial Three-Pole Contactor 80 Amp Rating
3(*)	Industrial Three-Pole Contactor 40 Amp Rating	8(*)	Industrial Three-Pole Contactor 110 Amp Rating
4(*)	Industrial Three-Pole Contactor 50 Amp Rating		

**Code Load Fusing Option (Thermal Magnetic Circuit Breakers)<sup>3</sup>**

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

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