

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



Chromalox®
PRECISION HEAT AND CONTROL



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 troubleshooting. 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.

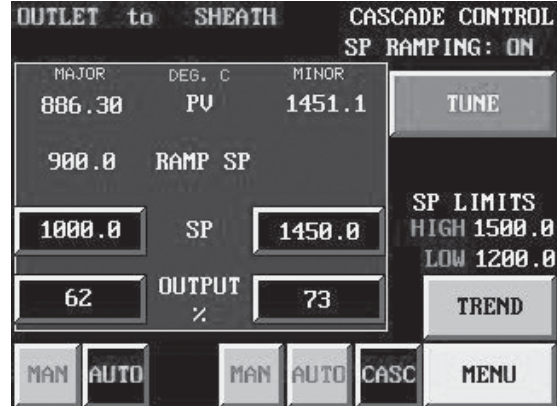
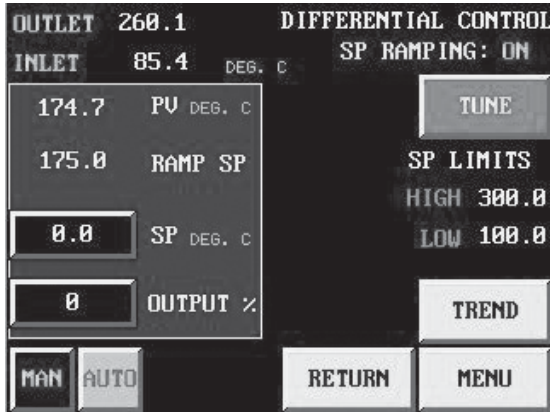
Additional Features

- 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 12 Enclosure Construction
- Operating Environment 32 - 104°F

IntelliPANEL™ 3-Phase SCR Power Control Panel

Smart Control Options

Chromalox understands your need for temperature sensing that meets application requirements. In addition to a "smart" display, IntelliPANEL provides smart control options. IntelliPANEL offers four selectable control algorithms: Single-Loop PID, Differential, Cascade Process to Sheath, Cascade Outlet to Sheath, and an input for a customer supplied 4-20 mA remote command signal. These options include selectable manual or auto-tuning.

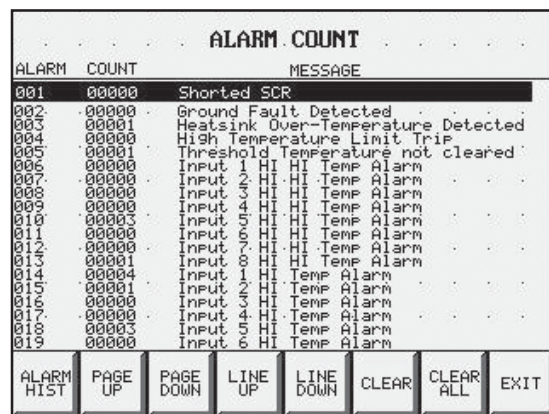


Security

IntelliPANEL offers four levels of security with user-defined numeric passwords: Manager, Engineer, Supervisor, and Maintenance.

Monitoring and Alarming

The IntelliPANEL system has the ability to monitor up to eight temperature inputs for any one of four conditions: HI-HI, HI, LO, and LO-LO alarms. Additionally, each alarm can be programmed as either latching or non-latching, and can be mapped to any or all of the four alarm outputs. All IntelliPANEL alarms are identified and logged with time/date stamp, count, and action taken.



Status Panel Board

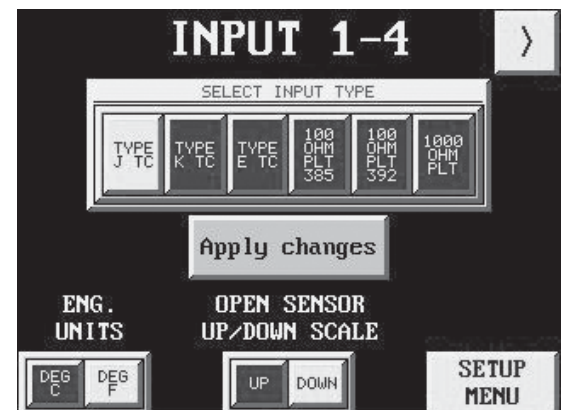
In addition, to the temperature alarms, there are eight status indicators for key system elements. These indicators include Alarm Input 1 (or Purge Alarm), Alarm Input 2, Ground Fault, Disconnect Switch Status, Breaker Status, Heatsink Over-Temp, SCR Status, Hand / Off / Auto Status, and High Limit status.

A pop-up System Master Screen is automatically displayed any time a shutdown event occurs within the system. The shutdown conditions are listed on the System Master and the event(s) that caused the shutdown are indicated by flashing red text.



Sensor Inputs

IntelliPANEL offers eight temperature inputs which can be programmed for thermocouple or RTD sensor types. Temperature inputs in the IntelliPANEL system are configured in groups of four. Thermocouple inputs can be configured as: J, K, or E thermocouples. RTD inputs can be configured as either 100 ohm Platinum 385, or 100 ohm 392, or 1000 ohm. The IntelliPANEL System supports both Celsius and Fahrenheit units of indication along with Up-Scale or Down-Scale sensor burnout.



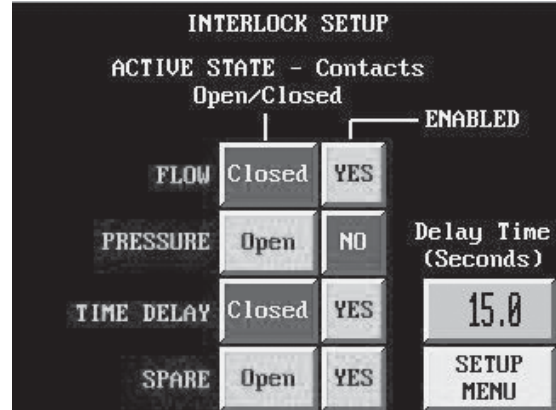
Tagging

All eight temperature inputs have text identification fields that allow the user to name the sensors for ease of recognition. The character fields are each 20 characters long and will accept alpha-numeric data.

IntelliPANEL™ 3-Phase SCR Power Control Panel

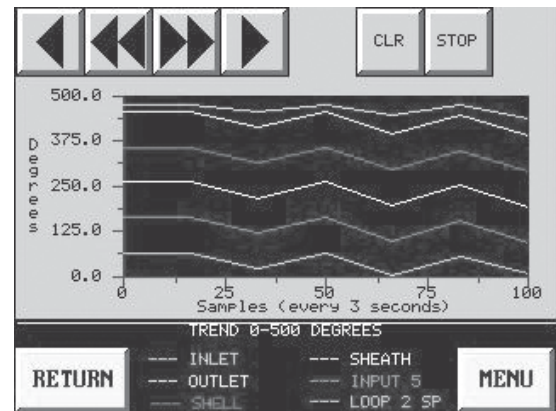
Interlocks

IntelliPANEL offers four programmable process interlocks with a text identification feature. The interlocks can be programmed for flow, pressure, Time Delay or any variable required for your process. All interlocks can be Enabled or Disabled and can be programmed for an Open / Closed logic state.



Trending

IntelliPANEL offers two virtual trending monitors. The six pen temperature trending monitor is a visual indication of your system status: cabinet temperature, ambient temperature, heater inlet/outlet temperatures, heater shell temperature, and process set-point. Additionally, IntelliPANEL trends system ground fault leakage.



Real-Time Process Indicators

IntelliPANEL offers Continuous Built-In Monitoring on Heater Duty Cycle, Power in Kilowatts, Kilowatt/Hr, Element Resistance, Time/Temperature, Ground Fault Monitoring, Volts/Phase, and Amps/Phase,

HEATER STATUS		
AMPS	VOLTS	DUTY CYCLE
A 74.3	A-B 477	47
B 73.1	B-C 478	
C 71.8	C-A 480	POWER KW
		79.5
UNBALANCED CURRENT ALARM SETPOINT		
CURRENT UNBALANCE L1-L2	10.0	
CURRENT UNBALANCE L1-L3		
CURRENT UNBALANCE L2-L3		

Buttons: MENU, RESISTANCE

intelliPANEL™ 3-Phase SCR Power Control Panel

Specifications

INPUTS:

4-channel RTD input module

Input Ranges

Type Pt100 -200.0/850.0°C, -328/1562°F
Type Pt1000 -200.0/595.0°C, -328/1103°F
Type jPt100 -38.0/450.0°C, -36/842°F

RTD Excitation Current 200 μ A

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 \pm 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 -1.3VDC to +3.8VDC

Common Mode

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

Input Impedance 5M

Absolute Maximum

Ratings Fault-protected inputs to \pm 50 VDC

Update Rate 4 channels per scan

Open Circuit Protection Upscale or Downscale

Display Resolution \pm 0.1°C or \pm 0.1°F

Cold Junction Compensation Automatic

Conversion Time 270ms per channel

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

Linearity Error

(End to End) \pm 1°C maximum, \pm 0.5°C typical

Maximum

Inaccuracy \pm 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 6-240VAC, 47-63Hz, 6-27 VDC

Maximum Voltage 264VAC, 30VDC

Maximum Current 2A/point

Maximum Leakage Current 0.1mA @ 246VAC

Smallest Recommended Load 5mA @ 5VDC

Relay Operating Cycles:

Voltage and Type of Load	Load Current	
	1A	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

IntelliPANEL™ 3-Phase SCR Power Control Panel

Ordering Information

Model IntelliPANEL Series 1

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

Panel Configuration

Real Time Process Indicators:

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

Operational Features

Global Alarm Display, Alarm Setup, Mapping & Configuration
Interlock Status Display, Interlock Setup & Configuration
Real Time Trending (Six Pens), Heater Graphics
RS-485 MODBUS™ Communications
Eight Sensor Inputs Selectable in Groups of Four J, K, E Thermocouples or RTD's, Loop ID / Tagging, Hand / Off / Auto Selection, Language Selection Option,
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 ⁴
02	100 Amp	MXPCII-3-02-1-1-L0-F01-0	4		72"H x 36"W x 12"D
03	150 Amp	MXPCII-3-04-1-1-L0-F01-0	4		72"H x 36"W x 12"D
06	200 Amp	MXPCII-3-06-1-1-L0-F02-0	4		72"H x 36"W x 12"D
08	300 Amp	MXPCII-3-08-1-1-L0-F03-0	4		72"H x 36"W x 12"D
10	400 Amp	MXPCII-3-10-1-1-L0-F04-0	4		72"H x 36"W x 12"D
12 ¹	550 Amp	MXPCII-3-12-1-1-L0-F05-0	8		60.06"H x 60.06"W x 12.06"D
14 ¹	650 Amp	MXPCII-3-14-1-1-L0-F06-0	8		60.06"H x 60.06"W x 12.06"D
15 ¹	800 Amp	(2)MXPCII-3-10-1-1-L0-F04-0	12		72.06"H x 72.06"W x 12.06"D
16 ¹	1000 Amp	(2)MXPCII-3-12-1-1-L0-F05-0	12		72.06"H x 72.06"W x 12.06"D
17 ¹	1200 Amp	(2)MXPCII-3-14-1-1-L0-F06-0	12		72.06"H x 72.06"W x 12.06"D

Code Voltage²

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 Chromalox Model 1600-11130 1/16 DIN High Limit Controller (Sheath)
2	Two Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (One Sheath, One Shell)
3	Two Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (Two Sheath)
4	Three Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (Two Sheath, One Shell)
5	Three Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (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 3-Pole Contactor 60 Amp Rating
1(*)	Industrial 3-Pole Contactor 25 Amp Rating	6(*)	Industrial 3-Pole Contactor 70 Amp Rating
2(*)	Industrial 3-Pole Contactor 35 Amp Rating	7(*)	Industrial 3-Pole Contactor 80 Amp Rating
3(*)	Industrial 3-Pole Contactor 40 Amp Rating	8(*)	Industrial 3-Pole Contactor 110 Amp Rating
4(*)	Industrial 3-Pole Contactor 50 Amp Rating		

Code Load Fusing Option (Thermal Magnetic Circuit Breakers)³

9000	None	9060(*)	60 Amps/per Circuit
9025(*)	25 Amps/per Circuit	9070(*)	70 Amps/per Circuit
9030(*)	30 Amps/per Circuit	9080(*)	80 Amps/per Circuit
9035(*)	35 Amps/per Circuit	9090(*)	90 Amps/per Circuit
9040(*)	40 Amps/per Circuit	9100(*)	100 Amps/per Circuit
9045(*)	45 Amps/per Circuit	9110(*)	110 Amps/per Circuit
9050(*)	50 Amps/per Circuit		

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

Technical Notes:

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

²Consult factory for 575 Vac Applications and Pricing

³Select Load Circuit Protection Option to be 125% Minimum of Actual Load Current

⁴Ventilated NEMA 12 Enclosure Derates Enclosure to NEMA 1.

*Specify quantity of circuits

IntelliPANEL™ 3-Phase SCR Power Control Panel

Ordering Information

Model IntelliPANEL Series 1

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

Panel Configuration

Real Time Process Indicators:

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

Operational Features

Global Alarm Display, Alarm Setup, Mapping & Configuration
Interlock Status Display, Interlock Setup & Configuration
Real Time Trending (Six Pens), Heater Graphics
RS-485 MODBUS™ Communications
Eight Sensor Inputs Selectable in Groups of Four J, K, E Thermocouples or RTD's, Loop ID / Tagging, Hand / Off / Auto Selection, Language Selection Option,
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 ^{1,4}
02	100 Amp	MXPCIII-3-02-1-1-L0-F01-0	4	60"H x 48"W x 12"D
03	150 Amp	MXPCIII-3-04-1-1-L0-F01-0	4	60"H x 48"W x 12"D
06	200 Amp	MXPCIII-3-06-1-1-L0-F02-0	4	60"H x 48"W x 12"D
08	300 Amp	MXPCIII-3-08-1-1-L0-F03-0	4	60"H x 48"W x 12"D
10	400 Amp	MXPCIII-3-10-1-1-L0-F04-0	4	60"H x 48"W x 12"D
12	550 Amp	MXPCIII-3-12-1-1-L0-F05-0	8	72.06"H x 60.06"W x 12.06"D
14	650 Amp	MXPCIII-3-14-1-1-L0-F06-0	8	72.06"H x 60.06"W x 12.06"D
15	800 Amp	(2)MXPCIII-3-10-1-1-L0-F04-0	16	84.12"H x 112"W x 14.12"D
16	1000 Amp	(2)MXPCIII-3-12-1-1-L0-F05-0	16	84.12"H x 112"W x 14.12"D
17	1200 Amp	(2)MXPCIII-3-14-1-1-L0-F06-0	16	84.12"H x 112"W x 14.12"D

Code Voltage²

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 Chromalox Model 1600-11130 1/16 DIN High Limit Controller (Sheath)
2	Two Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (One Sheath, One Shell)
3	Two Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (Two Sheath)
4	Three Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (Two Sheath, One Shell)
5	Three Chromalox Model 1600-11130 1/16 DIN High Limit Controllers (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 3-Pole Contactor 60 Amp Rating
1(*)	Industrial 3-Pole Contactor 25 Amp Rating	6(*)	Industrial 3-Pole Contactor 70 Amp Rating
2(*)	Industrial 3-Pole Contactor 35 Amp Rating	7(*)	Industrial 3-Pole Contactor 80 Amp Rating
3(*)	Industrial 3-Pole Contactor 40 Amp Rating	8(*)	Industrial 3-Pole Contactor 110 Amp Rating
4(*)	Industrial 3-Pole Contactor 50 Amp Rating		

Code Load Fusing Option (Thermal Magnetic Circuit Breakers)³

9000	None	9060(*)	60 Amps/per Circuit
9025(*)	25 Amps/per Circuit	9070(*)	70 Amps/per Circuit
9030(*)	30 Amps/per Circuit	9080(*)	80 Amps/per Circuit
9035(*)	35 Amps/per Circuit	9090(*)	90 Amps/per Circuit
9040(*)	40 Amps/per Circuit	9100(*)	100 Amps/per Circuit
9045(*)	45 Amps/per Circuit	9110(*)	110 Amps/per Circuit
9050(*)	50 Amps/per Circuit		

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

Technical Notes:

¹Enclosures are Floor Mount Designs

²Consult factory for 575 Vac Applications and Pricing

³Select Load Circuit Protection Option to be 125% Minimum of Actual Load Current

⁴Ventilated NEMA 12 Enclosure Derates Enclosure to NEMA 1.

*Specify quantity of circuits

PK329-1

PDSINPL

NOVEMBER 2004