

# Controls

## MaxPac II

### Three Phase, 2-Leg SCR Power Pak

- 120-600 VAC @ 100-1200 Amp

User Adjustable Firing Modes Include:

- On/Off Control Inputs:  
120VAC, 240VAC, 5-32 VDC Dry Contact Closure
- Proportional Zero Cross or DOT Firing Power Control

Inputs:

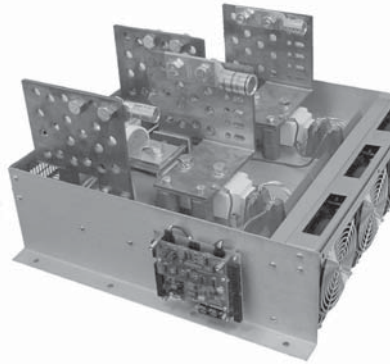
4-20mA, 0-5 VDC, 1-5 VDC, 0-10 VDC

Remote Manual Adjust,  
Remote Auto Manual Switch

- Flexible I/O Power Wiring
- Built-In Power Distribution
- Shorted SCR Detection (Option)
- Easy Customer Interface
- Remote Stop
- Electronically Protected with Temperature Warning and Shutdown System
- Compact Size and Construction
- Touch-Safe (Option on 100 to 650 Amp Models)
- dv/dt Transient Voltage Protection
- MOV Protection
- Single or Three Cycle Resolution (Jumper selectable)

#### Applications

- Resistive Heaters
- Electric Ovens
- Furnaces
- Kilns
- Environmental Chambers



**Touch Safe Design**  
Shown without cover

#### Description

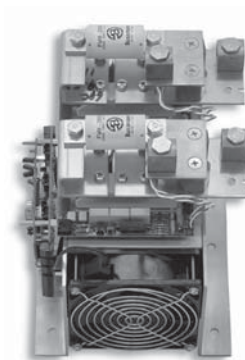
The MaxPac Series is specifically designed for the OEM market. The plug-in options, flexible I/O power wiring, space saving footprint, optional lug kits, I<sup>2</sup>t fusing and universal approvals make it an excellent candidate for your product.

The MaxPac II is a Solid State, highly versatile power pak with optional plug-in Shorted SCR Detection Boards. Firing modes can be switched between On/Off and proportional Zero Cross or DOT Firing power control at any time based on process needs.

Chromalox's exclusive DOT (Demand Oriented Transfer) firing switches the fewest number of cycles to provide the most precise zero cross-over control. At 50% output the unit's output alternates between three electrical cycles on and three cycles off. At 51% the output continues with three cycles on / three cycles off and gradually integrates three extra "on" cycle for the additional one percent. With the exception of phase angle firing, DOT firing is the most precise method of SCR control. DOT firing is preferred in many applications because phase angle firing creates unwanted RFI. DOT is excellent for applications where consistent heater/process temperature control is critical.

#### Mechanical Features

- LED Indication of Firing
- Customer Control Connections are made on a Plug-In Screw Type Terminal Block
- Optional Remote Manual Adjust and Auto/Manual Switch
- Heatsink Mounted Temperature Sensor
- Built-In Power Distribution



**Open Design**

#### Electrical Features

- PIV 1200V Min at 480 VAC  
PIV 1500V Min at 600 VAC
- Isolated Semiconductor Power Blocks are used on all Current Ratings up to 650 Amps

#### Safety Features

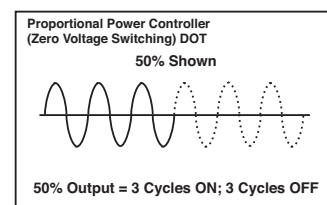
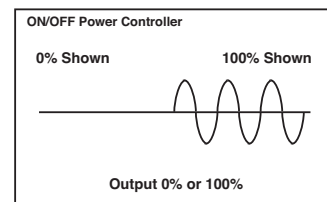
##### Personnel Safety

- Ground Potential Heat Sink up to 650 Amps
- SCR to Heat Sink Isolation up to 650 Amps
- Touch-Safe Option
- UL 508 Listed for units 650 Amps and under
- CE Approval for all units with line filters required.

##### Equipment/Process Safety

- Input to Output Isolation
- dv/dt Transient Voltage Protection
- Optional I<sup>2</sup>t Fusing
- Remote Stop
- Optional Shorted SCR Detection

#### Wave Form Cycle Rate



# Controls

## MaxPac II

### Three Phase, 2-Leg SCR Power Pak (cont'd.)

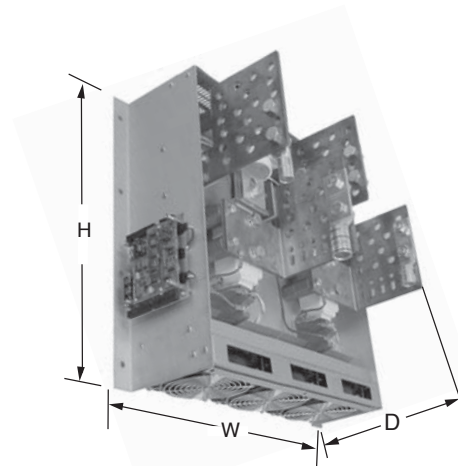
#### Mounting Dimensions

##### MaxPac II Open

	Width	Height	Depth
Amps	W	H	D
100	9	9.75	10
150	9	9.75	10
200	9	9.75	10
300	13	14.75	10
400	16	14.75	11
550	19	17.75	11
650	19	17.75	11
800	27	27	17
1000	27	27	17
1200	27	27	17

##### MaxPac II Closed

	Width	Height	Depth
Amps	W	H	D
100	16	14.75	11.8
150	16	14.75	11.8
200	16	14.75	11.8
300	16	14.75	11.8
400	16	14.75	11.8
550	19	17.75	11.8
650	19	17.75	11.8



#### Ordering Information

Complete the model number using the matrix provided.

Model	SCR Power Pack
<b>MXPC II</b>	3 Phase SCR Power Pack
Code	Control Configuration
<b>5</b>	Proportional Control, DOT Zero-Crossover Firing, Command Input Signals: 4-20mA, 0-5VDC, 1-5VDC (via Modbus RTU/485 only), 0-10VDC, Remote 0-1000 OHM Potentiometer w/Manual Override, Modbus RTU/RS485 Communications. RTD Heat Sink Temperature Sensor with Two Set-Points, Automatic Line Sensing 50/60HZ, Remote Permissive Shutdown Input, Form "C" Dry Contact Alarm Output, Staged Heating w/Digital Calibration Zero / Span Adjustments(4-8mA, 8-12mA,12-16mA,16-20mA(via Modbus RTU/RS485 only), LED Diagnostics: Command Input, Main/Trigger Boards Running, SCR Status per Phase, Diagnostic Kit via Modbus RTU/RS485: Highest Heat Sink Temperature, Last Heat Sink Temperature, Highest and Lowest Ambient Temperature, Line Frequency Monitoring, Third Party Certifications: UL, cUL, CE, DEMKO (650A and below).
Code	Current at 50°C (122°F)
<b>01</b>	100 Amp Open Design
<b>02</b>	100 Amp Touch Safe Design
<b>03</b>	150 Amp OpenDesign
<b>04</b>	150 Amp Touch Safe Design
<b>05</b>	200 Amp OpenDesign
<b>06</b>	200 Amp Touch Safe Design
<b>07</b>	300 Amp OpenDesign
<b>08</b>	300 Amp Touch Safe Design
<b>09</b>	400 Amp OpenDesign
<b>10</b>	400 Amp Touch Safe Design
<b>11</b>	550 Amp OpenDesign
<b>12</b>	550 Amp Touch Safe Design
<b>13</b>	650 Amp OpenDesign
<b>14</b>	650 Amp Touch Safe Design
<b>15</b>	800 Amp OpenDesign
<b>16</b>	1000 Amp OpenDesign
<b>17</b>	1200 Amp OpenDesign
<b>MXPC II-</b>	<b>5 03 (Continued on next page)</b>

**Note:** CE approval, for all units with line filters required. UL Listed for units 650 amps and under.

SCR COMPONENTS

# Controls

## MaxPac II

### Three Phase, 2-Leg SCR Power Pak *(cont'd.)*

#### Ordering Information *(cont'd.)*

Complete the model number using the matrix provided.

Crimp Lug Chart		
Chromalox #	Panduit #	Conductor Size
0135-10002	LCD8-14A-L	#8 AWG
0135-10003	LCD6-14A-L	#6 AWG or #6 Weld
0135-10004	LCD4-14A-L	#4 AWG or #4 Weld
0135-10005	LCD2-56B-Q	#2 AWG
0135-10006	LCD1-56C-E	#1 AWG or #2 Weld
0135-10007	LCD1/0-12-X	#1/0 AWG or #1 Weld
0135-10008	LCD2/0-12-X	#2/0 AWG or #1/0 Weld
0135-10009	LCD3/0-12-X	#3/0 AWG or #2/0 Weld
0135-10010	LCD4/0-12-X	#4/0 AWG or #3/0 Weld
0135-10011	LCD250-12-X	250 MCM or #4/0 Weld
0135-10012	LCD300-12-X	300 MCM
0135-10013	LCD350-12-6	350 MCM
0135-10014	LCD400-12-6	400 MCM
0135-10015	LCD500-12-6	500 MCM

**Model** SCR Power Pack

**MXPC II** 3 Phase SCR Power Pack

**Code** **Line Voltage**

**1** 120 VAC - 480 VAC  
**2** 575/600 VAC

**Code** **Instrument Power (100 Va Required)**

**1** 120 VAC 50/60 Hz  
**2** 230 VAC 50/60 HZ

**Code** **Compression Lug Kits (Open Design up to 300 Amps)**  
For Other Ranges See Crimp Lug Chart

**L0** None  
**L1** 100-150 Amp PAK (#2 - 4/0)/connection  
**L2** 200-300 Amp PAK (1/0 - 500mcm)/connection

**Code** **Fusing Option <sup>(1)</sup>**

**F00** None  
For <500 VAC Applications, Select One  
**F01** 100-150 Amp PAK (200 Amp Fuse)  
**F02** 200 Amp PAK (250 Amp Fuse)  
**F03** 300 Amp PAK (400 Amp Fuse)  
**F04** 400 Amp PAK (500 Amp Fuse)  
**F05** 550 Amp PAK (700 Amp Fuse)  
**F06** 650 Amp PAK (800 Amp Fuse)  
**F07** 800 Amp PAK (1000 Amp Fuse)  
**F08** 1000 Amp PAK (1200 Amp Fuses)  
**F09** 1200 Amp PAK (Two 1000 Amp Fuses)

For 575/600 VAC Applications, Select One <sup>(2)</sup>

**F10** 100 Amp PAK (125 Amp Fuse)  
**F11** 150 Amp PAK (175 Amp Fuse)  
**F12** 200 Amp PAK (250 Amp Fuse)  
**F13** 300 Amp PAK (400 Amp Fuse)  
**F14** 400 Amp PAK (500 Amp Fuse)  
**F15** 550 Amp PAK (700 Amp Fuse)  
**F16** 650 Amp PAK (800 Amp Fuse)  
**F17** 800 Amp PAK (1000 Amp Fuse)  
**F18** 1000 Amp PAK (1200 Amp Fuse)  
**F19** 1200 Amp PAK (Two 1000 Amp Fuses)

**Remote Manual Adjust/Auto Manual Switch**

**0** None  
**1** Pot with 0 - 100% dial and Local/Remote Switch(2) Single Turn 1K $\Omega$  Potentiometer

(cont'd.) **2** **1** **L1** **F01** **1** **Typical Model Number**

- 1) SCR Fusing is for semiconductor protection only, not wire protection.
- 2) Supplied Loose for Customer Mounting.

**Note:**

Storage Temperature 14°F to 158°F (-10°C to 70°C). CE application requires filters.

**Chromalox Part Numbers**

0005-60056 - Line filter, three phase, 440 VAC

0005-60057 - Line filter, 120-230 VAC

Current Rating	Open Design		Closed Design	
	Input Bus	Output Bus	Input Bus	Output Bus
100, 150, 200, 300	1 Crimp Lug / Phase	1 Crimp Lug / Phase	3 / Phase*	3 / Phase*
400	3 / Phase*	10 / Phase*	3 / Phase*	10 / Phase*
550, 650	4 / Phase*	12 / Phase*	4 / Phase*	12 / Phase*
800, 1200	4 / Phase*	12 / Phase*	N/A	N/A

\* Accepts up to this number of NEMA standard lugs (See Crimp Lug Chart)