AMETEK®
PROGRAMMABLE POWER

Sorensen™

HPX SERIES POWER RACKS

Engineered Solutions Group (ESG)

About AMETEK

AMETEK Programmable Power, Inc., a Division of AMETEK, Inc., is a global leader in the design and manufacture of precision, programmable power supplies for R&D, test and measurement, process control, power bus simulation and power conditioning applications across diverse industrial segments. From bench top supplies to rack-mounted industrial power subsystems, AMETEK Programmable Power is the proud manufacturer of Elgar, Sorensen, California Instruments and Power Ten brand power supplies.

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Date and Revision

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Important Safety Instructions

Before applying power to the system, verify that your product is configured properly for your particular application.

 WARNING	**Hazardous voltages may be present when covers are removed. Qualified personnel must use extreme caution when servicing this equipment. Circuit boards, test points, and output voltages also may be floating above (below) chassis ground.**
 WARNING	**The equipment used contains ESD sensitive ports. When installing equipment, follow ESD Safety Procedures. Electrostatic discharges might cause damage to the equipment.**

Only *qualified personnel* who have been trained with hazards in power supplies, should perform installation and servicing.

Ensure that the AC power line ground is connected properly to the Power Rack input connector or chassis. Similarly, other power ground lines including those to application and maintenance equipment *must* be grounded properly for both personnel and equipment safety.

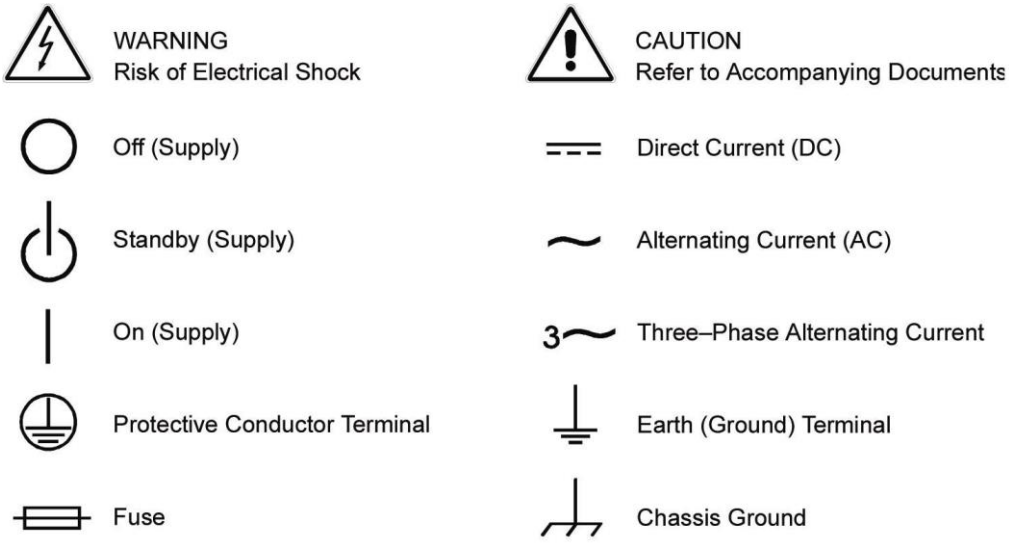
Always ensure that facility AC input power is de-energized prior to connecting or disconnecting any cable.

In normal operation, the operator does not have access to hazardous voltages within the chassis. However, depending on the user's application configuration, **HIGH VOLTAGES HAZARDOUS TO HUMAN SAFETY** may be normally generated on the output terminals. The customer/user must ensure that the output power lines are labeled properly as to the safety hazards and that any inadvertent contact with hazardous voltages is eliminated.

Guard against risks of electrical shock during open cover checks by not touching any portion of the electrical circuits. Even when power is off, capacitors may retain an electrical charge. Use safety glasses during open cover checks to avoid personal injury by any sudden component failure.

Neither AMETEK Programmable Power Inc., San Diego, California, USA, nor any of the subsidiary sales organizations can accept any responsibility for personnel, material or inconsequential injury, loss or damage that results from improper use of the equipment and accessories.

SAFETY SYMBOLS



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Product Family: HPX SERIES POWER RACKS

Warranty Period: One Year

WARRANTY TERMS

AMETEK Programmable Power, Inc. ("AMETEK"), provides this written warranty covering the Product stated above, and if the Buyer discovers and notifies AMETEK in writing of any defect in material or workmanship within the applicable warranty period stated above, then AMETEK may, at its option: repair or replace the Product; or issue a credit note for the defective Product; or provide the Buyer with replacement parts for the Product.

The Buyer will, at its expense, return the defective Product or parts thereof to AMETEK in accordance with the return procedure specified below. AMETEK will, at its expense, deliver the repaired or replaced Product or parts to the Buyer. Any warranty of AMETEK will not apply if the Buyer is in default under the Purchase Order Agreement or where the Product or any part thereof:

- is damaged by misuse, accident, negligence or failure to maintain the same as specified or required by AMETEK;
- is damaged by modifications, alterations or attachments thereto which are not authorized by AMETEK;
- is installed or operated contrary to the instructions of AMETEK;
- is opened, modified or disassembled in any way without AMETEK's consent; or
- is used in combination with items, articles or materials not authorized by AMETEK.

The Buyer may not assert any claim that the Products are not in conformity with any warranty until the Buyer has made all payments to AMETEK provided for in the Purchase Order Agreement.

PRODUCT RETURN PROCEDURE

1. Request a Return Material Authorization (RMA) number from the repair facility (**must be done in the country in which it was purchased**):
   - **In the USA**, contact the AMETEK Repair Department prior to the return of the product to AMETEK for repair:

     Telephone: 800-733-5427, ext. 2295 or ext. 2463 (toll free North America)
     858-450-0085, ext. 2295 or ext. 2463 (direct)
   - **Outside the United States**, contact the nearest Authorized Service Center (ASC). A full listing can be found either through your local distributor or our website, www.programmablepower.com, by clicking Support and going to the Service Centers tab.
2. When requesting an RMA, have the following information ready:
   - Model number
   - Serial number
   - Description of the problem

NOTE: Unauthorized returns will not be accepted and will be returned at the shipper's expense.

NOTE: A returned product found upon inspection by AMETEK, to be in specification is subject to an evaluation fee and applicable freight charges.

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SECTION 1
SYSTEM OVERVIEW

1.1 INTRODUCTION

The HPX Power Rack is a single channel DC power source capable of delivering up to 150KW, in a single bay rack, or 240KW in a dual bay rack. Each rack includes a heavy-duty cabinet with lifting eye bolts and swivel wheels for cabinet mobility.

A wide range HPS Power Racks, with varying voltage and current combinations, are available with up to 1000V and 6000A. Figures 1-1 and 1-2 show currently available voltage, current, and power combinations and the rack sizes for each system.

Rack Size	24U	24U	24U	35U	35U	40U	40U	40U
Power	**45kW**	**60kW**	**75kW**	**90kW**	**105kW**	**120kW**	**135kW**	**150kW**
1000V	45A	60A	75A	90A	105A	120A	135A	150A
800V	56A	75A	94A	112A	131A	150A	168A	187A
600V	75A	100A	125A	150A	175A	200A	225A	250A
500V	90A	120A	150A	180A	210A	240A	270A	300A
400V	114A	152A	190A	228A	266A	304A	342A	380A
330V	135A	180A	225A	270A	315A	360A	405A	450A
300V	150A	200A	250A	300A	350A	400A	450A	500A
250V	180A	240A	300A	360A	420A	480A	540A	600A
200V	225A	300A	375A	450A	525A	600A	675A	750A
160V	282A	376A	470A	564A	658A	752A	846A	940A
100V	450A	600A	750A	900A	1050A	1200A	1350A	1500A
80V	564A	752A	940A	1128A	1316A	1504A	1692A	1880A
60V	750A	1000A	1250A	1500A	1750A	2000A	2250A	2500A
50V	900A	1200A	1500A	1800A	2100A	2400A	2700A	3000A
40V	1125A	1500A	1875A	2250A	2625A	3000A	3375A	3750A
30V	1503A	2004A	2505A	3006A	3507A	4008A	4509A	5010A
20V	2250A	3000A	3750A	4500A	5250A	6000A	Cons. Fact	Cons. Fact
Power	**36kW**	**48kW**	**60kW**					
15V	2403A	3204A	4005A					
10V	3600A	4800A	6000A					

Table 1 - HPX Single Bay Racks, Power and Size Combinations

Rack Size	2 x 36U	2 x 36U	2 x 36U
Power	**180kW**	**210kW**	**240kW**
1000V	180A	210A	240A
800V	224A	262A	300A
600V	300A	350A	400A
500V	360A	420A	480A
400V	456A	532A	608A
330V	540A	630A	720A
300V	600A	700A	800A
250V	720A	840A	960A
200V	900A	1050A	1200A
160V	1128A	1316A	1504A
100V	1800A	2100A	2400A
80V	2256A	2632A	3008A
60V	3000A	3500A	4000A
50V	3600A	4200A	4800A
40V	4500A	5250A	6000A
30V	6000A	Cons. Fact	Cons. Fact
20V	Cons. Fact	Cons. Fact	Cons. Fact

Table 2 - HPX Dual Bay Racks, Power and Size Combinations

1.2 DC POWER SOURCES

Each HPX Power Rack contains a single SGI Model DC Power source. The SGI unit is the master controller. Three or more slave units are also contained in the HPX Power Rack depending upon power model selection. SGE Model DC Power sources are used as slave units.

All power supply outputs are connected in parallel. The SGI front panel will display total system voltage and total system current.

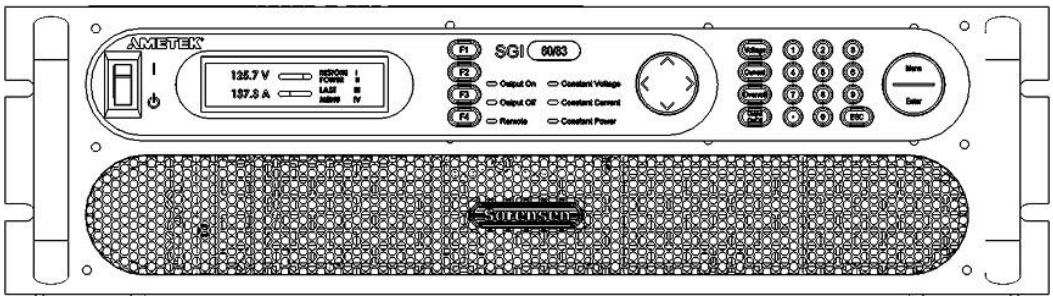


Figure 1-1 - SGI Power Supply Front View

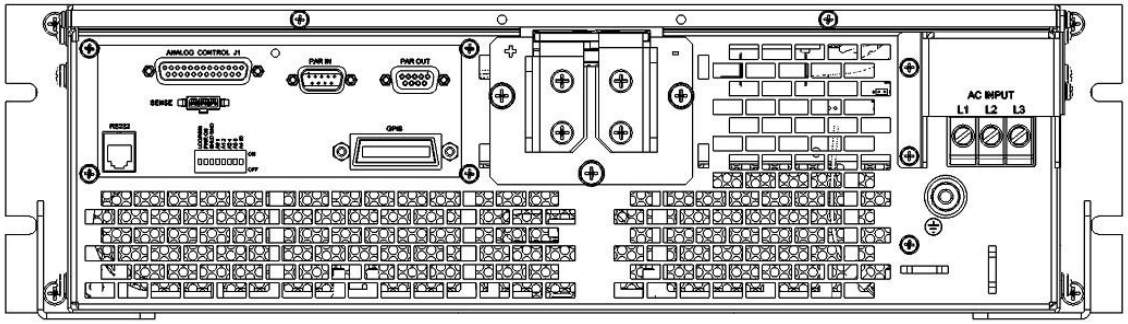


Figure 1-2 - SGI Power Supply Rear View

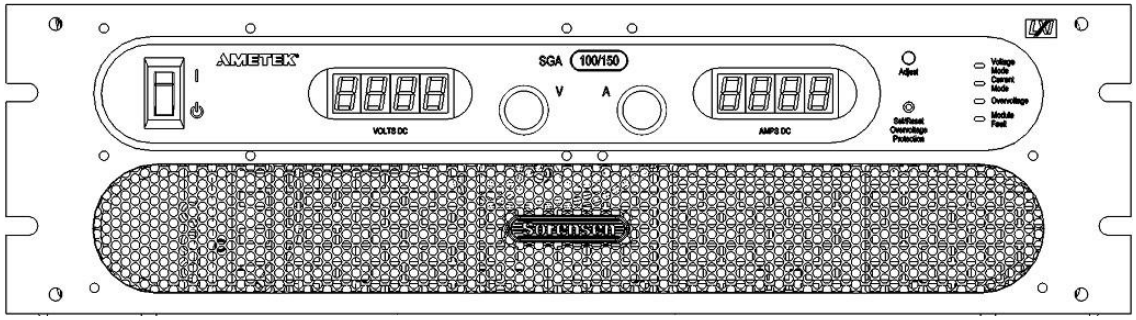


Figure 1-3 - SGA Power Supply Front View

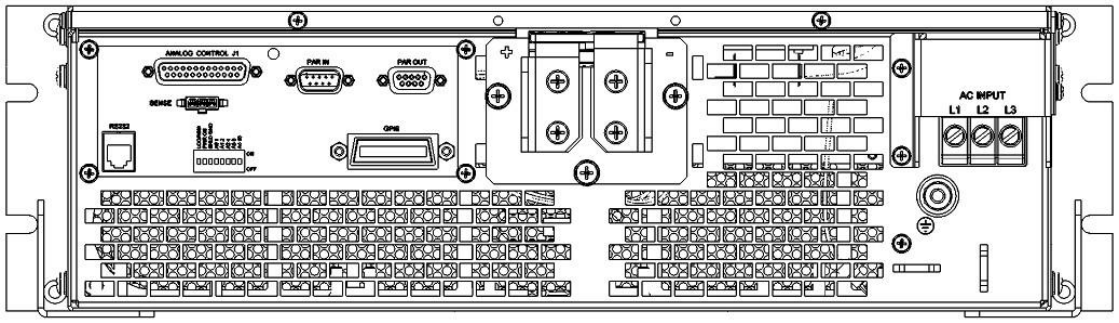
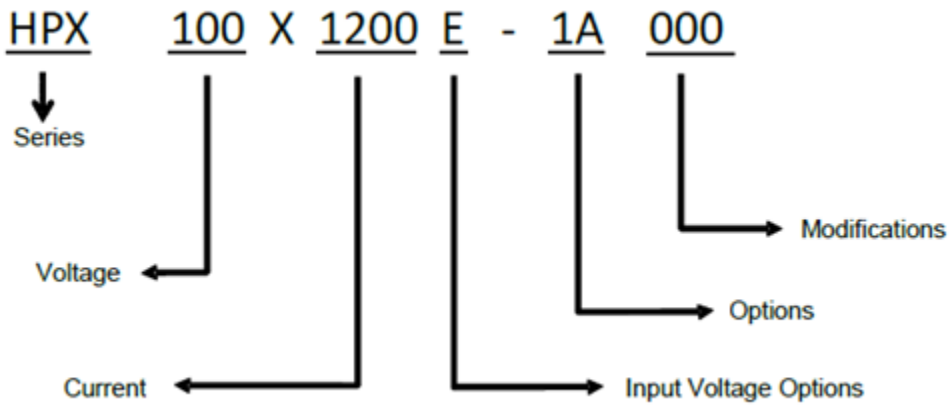


Figure 1-4 - SGA Power Supply Rear View

1.3 HPX POWER RACK PART NUMBERING



Options and Modifications	
Input Voltage Options	
E (Standard)	Input Voltage 440/480VAC L-L ±10% (396-528VAC L-L)
D (Option)	Input Voltage 380/400VAC L-L ±10% (342-440VAC L-L)
C (Option)	Input Voltage 440/480VAC L-L ±10% (187-253VAC L-L, power levels up to 75KW)
Options	
0A	No Options
1A	IEEE-488.2 + RS232C (RS-232 comes standard)
1C	Ethernet + RS-232
1D	Isolated Analog Control
1E	AC input circuit breaker & EPO switch w/ local & remote trip of AC breaker
1F	Extended warranty
1G	CE Mark
1H	Series Diodes
AB	Calibration Certificate (with Test Data) for all SG Power Supplies in the Rack
2A	Combined Options, 1A + 1D
2B	Combined Options, 1C + AB
2G	Combined Options, 1C + 1D
3A	Combined Options, 1C + 1E + AB
Modifications	
000	No Modifications
001	Replace SGE power supply in position PS3 with SGI (same as master)

Table 3 - HPX Power Rack Part Number Options & Modifications

1.4 ELECTRICAL SPECIFICATIONS

Consult standard SG manual for detailed SG specifications.

AC Input:

Line Voltage:

440/480 VAC ± 10% (396-528 VAC) (Standard)
208/220 VAC ± 10% (187-242 VAC) (Optional for ≤75KW)
380/400 VAC ± 10% (342-440 VAC) (Optional)

Frequency:

47 to 63 Hz

Phases:

3-Phase, 3-Wire plus ground
Not phase rotation sensitive, Neutral not used

Power Factor:

0.9 Typical

Efficiency:

87% Typical at full load, nominal line for 40V-1000V models
85% Typical at full load, nominal line for 10V-30V models

Load Regulation:

Voltage:

0.02% of maximum output voltage for 40V-1000V models
0.05% of maximum output voltage for 40V-30V models

Current:

0.01% of maximum output current

Other:

Transient Response:

Recovers within 1ms to ±0.75% of full-scale output for a 50% to 100% or 100% to 50% load change

Down Programming:

With full load, the output will program from 100% to 10% in less than 10 seconds

Voltage Stability:

±0.05% of set point after 30-min. warm-up > 8hrs. with fixed line, load, and temperature at sense points

Temperature Coefficient:

0.02%/°C of max voltage rating for voltage set point, typical
0.03%/°C of max current rating for current set point, typical

1.5 MECHANICAL SPECIFICATIONS

Rack Dimensions:

Rack Size	Height	Width	Depth
24U	49.5"	24.0"	36.0"
35U	73.0"	24.0"	36.0"
40U	80.0"	24.0"	36.0"
2 x 36U	73.0"	48.0"	36.0"

Table 4 - Rack Dimensions

1.6 ENVIRONMENTAL SPECIFICATIONS

Cooling:

Internal fans in all power supplies, w/ additional fans in racks about 60kW. Vents from front to rear <60kW.

Humidity:

95% maximum, non-condensing, 0 to 50°C, 45°C maximum wet-bulb temperature

Operating Temperature:

0 to 50°C

Storage Temperature:

-25° to 65°C

Altitude:

Operating full power available up to 5,000ft. (1524m)

1.7 CIRCUIT BREAKER / EPO SWITCH OPTION

Option 1E provides onboard circuit protection as well as an Emergency Power Off (EPO) push-button switch. An appropriate sized circuit breaker is located on the lower front of the rack and the EPO switch is located on the upper front. The figure below is a depiction of a 24U rack with the circuit breaker and the EPO switch.

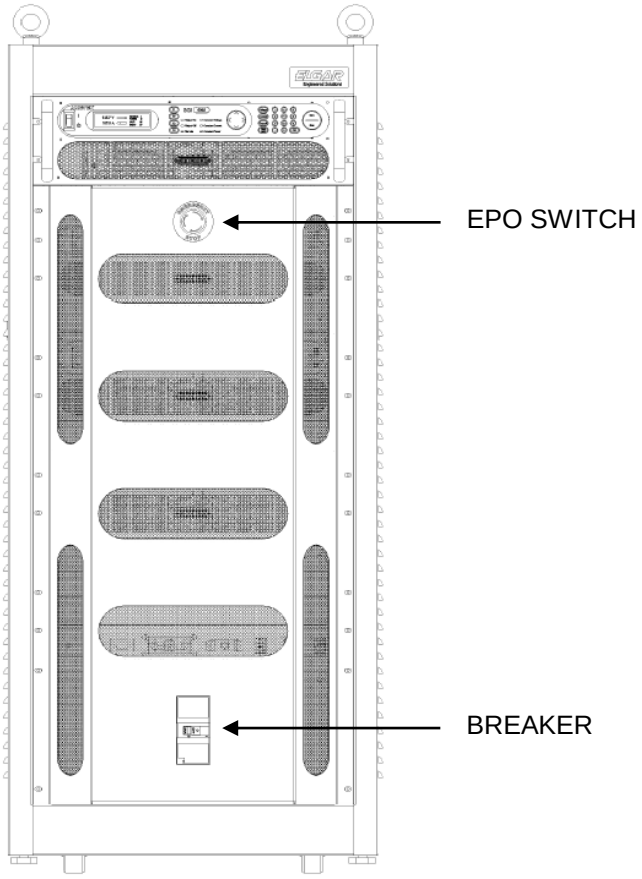


Figure 1-5 - 24U Rack w/ Circuit Breaker & EPO Switch Option

When the circuit breaker is placed to the ON position and the EPO switch in the non-activated position (pulled out), 24VDC is routed to a solenoid to hold the breaker in the ON position. When 24VDC is removed from the solenoid, or an overcurrent situation arises, the circuit breaker trips and removes AC power from the power supplies.

The EPO push-button switch removes 24VDC from the circuit breaker solenoid when it is activated (depressed). 24VDC is also removed when pins 3 and 4 are open on connector J6 of the I/O Panel. Pins 3 and 4 must be closed, either a jumper or contact closure, to allow the circuit breaker to latch in the ON position.

Figure 1-6 - Emergency Power Off (EPO) Switch

SECTION 2
SYSTEM INSTALLATION

This section provides specific information on system connections and installation requirements.

2.1 UNPACKING AND INSPECTION

The HPX Power Rack is crated for shipping. Remove the rack from the crate. Any cabling or other hardware required for operation, along with all software licenses and other documentation, may be shipped in a separate package from the Power Rack.

After unpacking the Power Supply Rack and the associated package, inspect the contents for any obvious physical damage. If damage has occurred, contact the shipper of the hardware. If replacement parts are required, contact Ametek Customer Service at 1-800-733-5427, ext. 2295 or 858-450-0085, ext. 2295.

2.2 ENVIRONMENTAL REQUIREMENTS

2.2.1 Airflow

Position the cabinet to allow unrestricted airflow to all air inlets and outlets.

2.2.2 Temperatures

The maximum ambient temperature for the Power Supply Rack to meet full power specifications is 50°C. The ambient temperature range for normal operation is 0–50°C. The storage temperature range is –25°C to 65°C.

2.2.3 Humidity

The non-condensing humidity range is 0 to 85% at 25°C, de-rated to 50% at 40°C.

2.3 CONNECTIONS

Connections to the Power Supply Rack are made through the rear AC input panel/DC output panel, and I/O panel. The I/O panel contains communication and sense connectors.

2.3.1 TB1 – AC Input Terminal Block

The HPX Power Rack requires connection to Facility AC Power. The requirements are dependent upon the power rack part number. Refer to the product ID label and section 1.3 (part numbering) for proper input power requirements.

Power connections are accessible by removing the AC input and DC Output Strain Relief Panel located on the lower rear of the rack cabinet. Strain reliefs are provided to secure power connection to the rack.

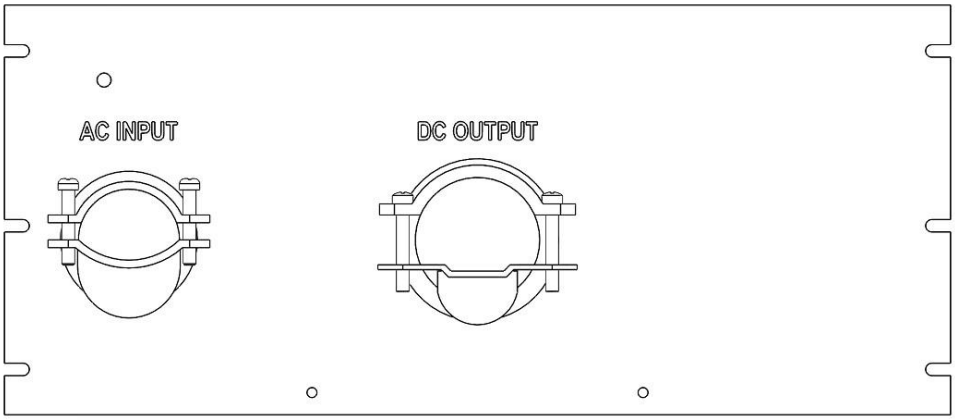


Figure 2-1 - HPX AC Input & DC Output Strain Relief Panel

AC Power Input Interface (TB1) is a Marathon Terminal Block PN: 1433553CH (AMETEK PN: 893-179-10). The terminal block is rated at 335A and accepts input wire range of 400mcm - 6 AWG. The customer must provide connection to the AC input Interface. Ensure that power lines to the power rack meet the National Electric Code standards or the appropriate local codes.

Note: Terminal Block 1433553CH Line Side Torque requirement: 275 in-lbs (31.1 N.m.)

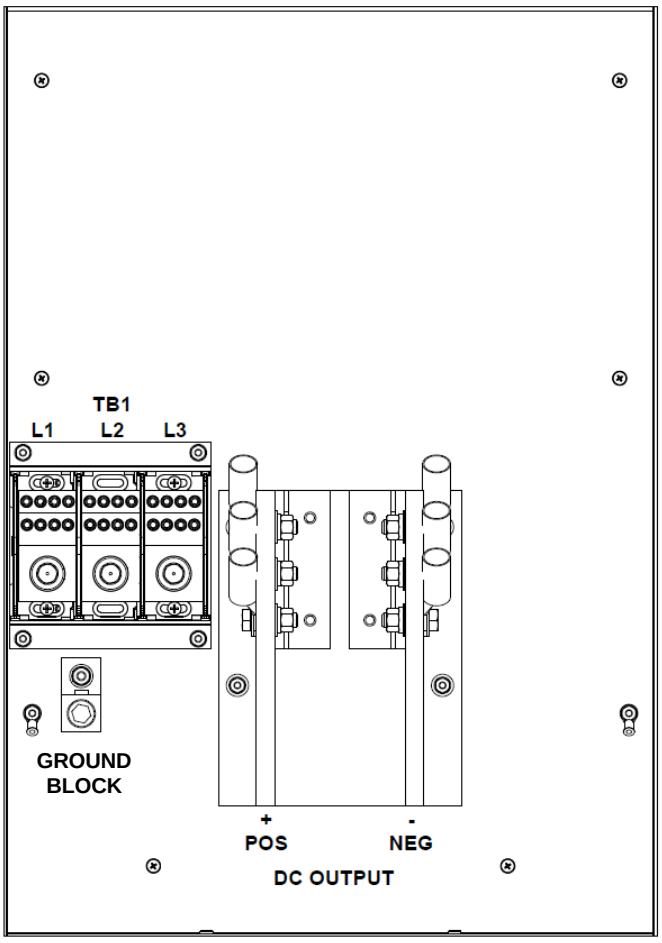


Figure 2-2 - Power Distribution Tray: Bus Bar Output

2.3.2 DC Output Connections

The HPX DC Output Interface is dependent upon the maximum available output current for the power rack. Refer to the table below for DC output connection type. Ensure that power lines from the power rack meet the National Electric Code standards or the appropriate local codes.

DC Output Current	Connection Interface	Torque Requirement	MFR/PN	Wire Range	Wire Terminal
Up to 299A	Terminal Block	275 in-lbs.	Marathon 1432553	400 kcmil - 6 AWG	Ferrules
300 to 399A	Terminal Block	375 in-lbs.	Marathon 1332585CH	400 kcmil - 2 AWG	Ferrules
400 to 2500A	Bus Bars	275 in-lbs.	Ametek 5551533-01R	-	½" Ring Lugs

Table 5 - DC Output Connections

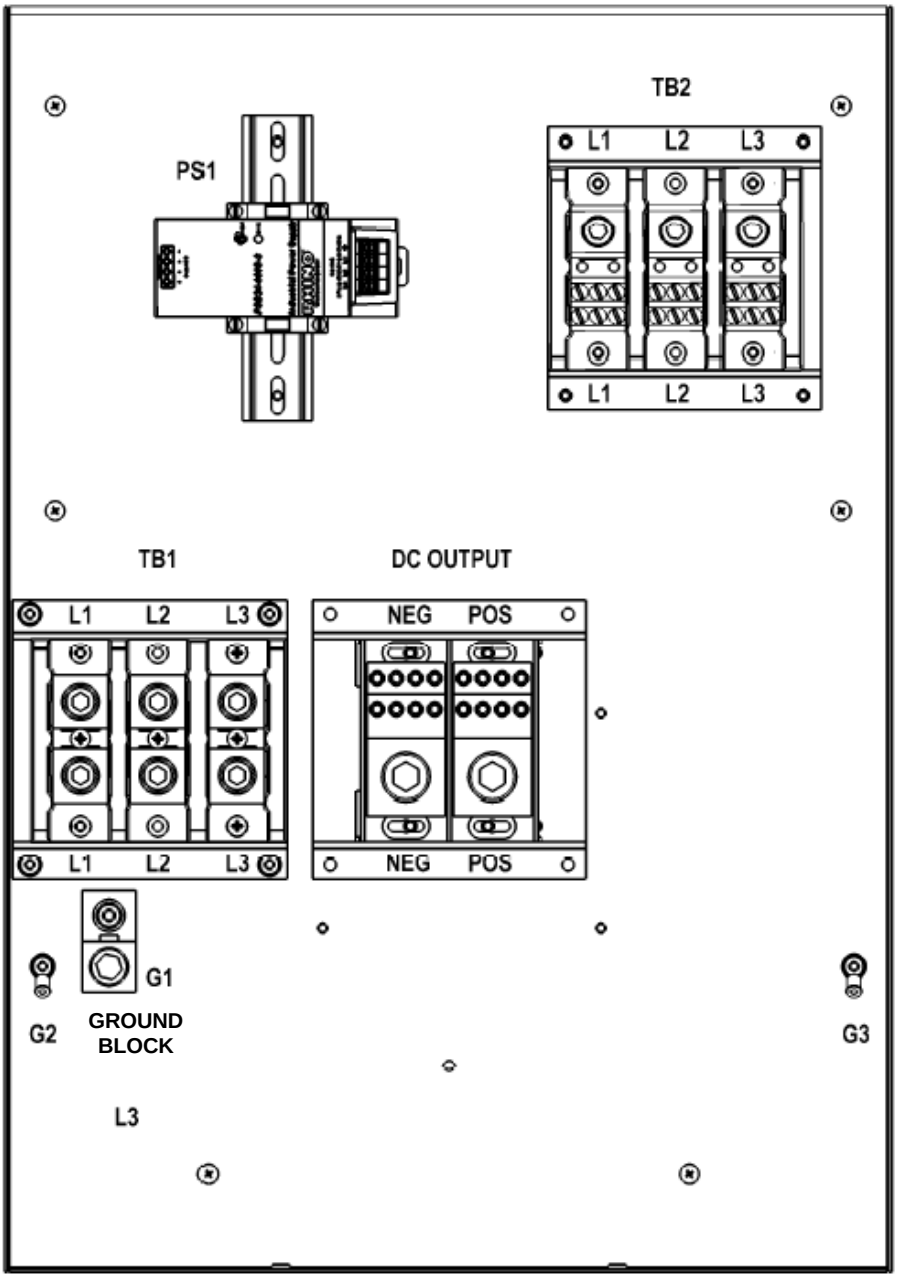


Figure 2-3 - Power Distribution Tray: Terminal Block Output

Note: Tray above is shown with the Circuit Breaker option.

2.3.3 I/O Panel Connections

The HPX I/O Panel is representative of the standard SGI rear panel interfaces. The SGI rear panel interfaces are extended to the HPX I/O panel using one-to-one cabling. A common I/O Panel is shown in detail in the figure below. Note that not all racks have all the options shown.

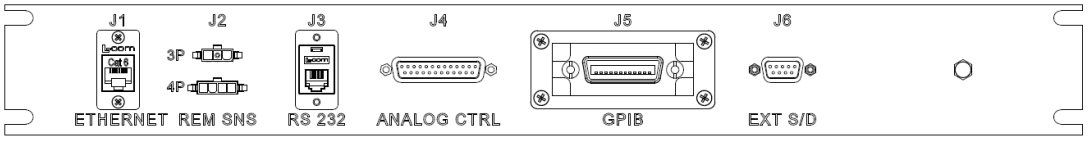


Figure 2-4 - HPX I/O Panel

Connector Definitions:

- J1 Ethernet Connector – Ethernet connector for remote digital control
- J2 Remote Sense Connector – Input connector for remote sensing of voltage at the load to compensate for line drop in load cables. A 3-pin connector is provided on racks with DC output voltage up to 800V. A 4-pin connector is provided on racks with voltage of 1000V.

Mating connector: Molex 39-01-4031 (AMETEK PN: 856-390-03)

Pin	Reference	Functional Description
1	S+	Remote Sense – Positive
2	S-	Remote Sense – Negative (to 600V)
3	S-	Remote Sense – Negative (800V)

Table 6 - Pinout ofJ2 Remote Sense Connector (3-Pin)

Mating connector: Molex 39-01-4040 (AMETEK PN: 856-390-40)

Pin	Reference	Functional Description
1	S+	Remote Sense – Positive
2	Not Used	
3	Not Used	
4	S-	Remote Sense - Negative

Table 7 - Pinout of J2 Remote Sense Connector (4-Pin)

- J3 RS-232 Connector – RS-232 connector for remote digital control. The connector accepts a standard RJ-12 connector. See section 3.2 of SG Series Programming Manual – IEEE/RS232 Configuration and Remote Programming for details.

- J4 Analog Control – Remote Analog Interface connector for programming and monitoring signals of output, status indication, and remote shutdown signals. The connector accepts a standard 25 pin d-sub connector. Pinout details below reflects standard SGI pinout:

Pin	Reference	Electrical Parameters	Functional Description
1	ISO ON/OFF	Zin ~ 6 kΩ in series with anode of opto-isolator LED	Isolated remote control input for output on/off with an applied AC/DC voltage source. A positive (+) 6-120 VDC or an AC input of 12- 240 VAC will enable (turn-on) the output of the supply. This control input is optically isolated from the output power negative terminal of the power supply (up to 500 VDC). Signal return is Pin J1-2 (ISO RTN). See Section 3.13.
2	ISO RTN	-	Isolated signal return for on/off control using Pins J1-1 and J1-14. Optically isolated from the output power negative terminal of the power supply (up to 500 VDC).
3	REM OV SET	Zin ~ 20 kΩ	Control input for remote programming of the overvoltage protection: 0.25-5.5 VDC = 5-110% of full-scale output voltage. Reset of an OVP condition is possible by applying an 10.5-13.3 VDC signal for 7 seconds. Signal return is Pin J1-6 (COM). Circuit is electrically connected to the output power negative terminal. See Section 3.12.
4	VP RTN	Zin ~ 10 kΩ	Voltage programming signal return to be used with Pins J1-9, J1-15 or J1-21; also, must be externally connected to Pin J1-6 (COM) signal return when voltage programming is utilized. Circuit is electrically connected to the output power negative terminal.
5	ON/OFF	Zin ~ 10 kΩ pull-up to 15VDC	Remote control input for output on/off: switch/relay contact closure or direct short-circuit from this terminal to Pin J1-6 (COM) signal return will enable (turn-on) the output of the supply; remote circuit must sink up to 1.5 mA from 15 VDC to enable. Circuit is electrically connected to the output power negative terminal. See Section 3.13.
6	COM *	-	Signal return. Internally connected to Pin J1-24. Circuit is electrically connected to the output power negative terminal.
7	I MON	Zout ~ 100 Ω	Monitor signal for output current: 0-10 VDC = 0-100% of full-scale output current. Minimum recommended load resistance is 100 kΩ. Circuit return is Pin J1-6 (COM). Circuit is electrically connected to the output power negative terminal.
8	V SET	Zout ~ 100 Ω	Monitor signal for front panel voltage potentiometer setpoint: 0-5 VDC = 0-100% of full-scale setpoint. Minimum recommended load resistance is 100 kΩ. Signal return is Pin J1-6 (COM). Circuit is electrically connected to the

			output power negative terminal.
9	VP 5V	Zin ~ 10 kΩ	Control input for remote voltage programming using a voltage source: 0-5 VDC = 0-100% of full-scale output voltage. Do not exceed an input of 13.3 VDC. Signal return is Pin J1-4 or Pin J1-20 (VP RTN). Circuit is electrically connected to the output power negative terminal. See Section 3.11.
10	IP 5V	Zin ~ 10 kΩ	Remote control input for current programming using a voltage source: 0-5 VDC = 0-100% of full-scale output current. Do not exceed an input of 13.3 VDC. Signal return is Pin J1-23 or Pin J1-25 (IP RTN). Circuit is electrically connected to the output power negative terminal. See Section 3.10.
11	ISET **	Zout ~ 100 Ω	Monitor signal for front panel current potentiometer setpoint: 0-5 VDC = 0-100% of full-scale setpoint. Minimum recommended load resistance is 100 k□□ Signal return is Pin J1-6 (COM). Circuit is electrically connected to the output power negative terminal.
12	Not Used		
13	Not Used		
14	ISO TTL/CMOS	Zin ~ 900 Ω in series with anode of opto-isolator LED	Isolated remote control input for output on/off with a logic signal: a logic-high, 5 VDC TTL/CMOS signal will enable (turn-on) the output of the supply, and a logic-low signal disables (turns off) the output. This control input is optically isolated from the output power negative terminal of the power supply (up to 500 VDC). Signal return is Pin J1-2 (ISO RTN). See Section 3.13.
15	VP 10V	Zin ~ 20 kΩ	Remote control input for voltage programming using a voltage source: 0-10 VDC = 0-100% of full-scale output voltage. Do not exceed an input of 25 VDC. Signal return is Pin J1-4 or Pin J1-20 (VP RTN). Circuit is electrically connected to the output power negative terminal. See Section 3.11.
16	IP 10V	Zin ~ 20 kΩ	Remote control input for current programming using a voltage source: 0-10 VDC = 0-100% of full-scale output current. Do not exceed an input of 25 VDC. Signal return is Pin J1-4 or Pin J1-20 (VP RTN). Circuit is electrically connected to the output power negative terminal. See Section 3.10.
17	FAULT	Zout ~ 1 kΩ	Output signal for indicating a fault state: a logic-high state (approximately +10 VDC) indicates a fault has occurred in a power module, such as overtemperature, undervoltage of AC input, or converter failure; front panel Fault LED will also be lit. Signal return is Pin J1-6 (COM). Circuit is electrically connected to the output power negative terminal.
18	S/D FAULT	Zout ~ 100 Ω	Output signal for shutdown/fault state: a logic-high state indicates shutdown produced by an OVP condition, Power-On-Reset (POR), remote disable, or housekeeping supply fault. An 8 VDC minimum output signal is provided into a load of 10 kΩ load. Signal return is Pin J1-6 (COM). Circuit is electrically connected to the output power negative terminal. See Section 3.13.3.
19	V MON	Zout ~ 100 Ω	Monitor signal for output voltage: 0-10 VDC = 0-100% of full-scale output voltage. Minimum recommended load resistance is 100 kΩ. Circuit return Pin J1-6 (COM). Circuit is electrically connected to the output power

			negative terminal.
20	VP RTN	Zin ~ 10 kΩ	Voltage programming signal return to be used with Pins J1-9, J1-15 or J1-21; also must be externally connected to Pin J1-6 (COM) signal return when voltage programming is utilized. Circuit is electrically connected to the output power negative terminal.
21	VP RES **	1mA current source with compliance voltage of ~ 10.8 V	Current source of 1 mA for remote voltage programming using a resistance connected to signal return Pin J1-4 or Pin J1-20 (VP RTN): 0-5 kΩ = 0-100% of full-scale output voltage. Circuit is electrically connected to the output power negative terminal. See Section 3.11.
22	IP RES **	1mA current source with compliance voltage of ~ 10.8 V	Current source of 1 mA for remote current programming using a resistance connected to signal return Pin J1-23 or Pin J1-25 (IP RTN): 0- 5 kΩ = 0-100% of full-scale output current. Circuit is electrically connected to the output power negative terminal.
23	IP RTN	Zin ~ 10 kΩ	Current programming signal return which is to be used with Pins J1-10, J1-16 or J1-22; also, must be externally connected to Pin J1-6 (COM) signal return when current programming is utilized. Circuit is electrically connected to the output power negative terminal.
24	COM **	-	Signal return. Internally connected to Pin J1-6. Circuit is electrically connected to the output power negative terminal.
25	IP RTN	Zin ~ 10 kΩ	Current programming signal return which is to be used with Pins J1-10, J1-16 or J1-22; also must be externally connected to Pin J1-6 (COM) signal return when current programming is utilized. Circuit is electrically connected to the output power negative terminal.

* Remote Isolated Analog Interface control option: the control signal return is isolated from the output negative terminal.

** Signals not available w/ Remote Isolated Analog Interface control option

Table 8 - Pinout of J4 Analog Control Connector

- J5 GPIB – GPIB connector for remote digital control. The connector accepts a standard GPIB connector. See section 3 of SG Series Programming Manual – IEEE 488.2 GPIB / RS232 Configuration and Remote Programming for details.

- J6 EXT S/D – External (remote) shutdown connector. The connector accepts a standard 9-pin D-sub connector. This connector is only available on power racks with the circuit breaker and EPO Option.

Pin	Reference	Functional Description
1	Not Used	-
2	Not Used	-
3	AC Trip	Contact closure (short) required for operation
4		
5-9	Not Used	-

Note 1: An open across pins 3 and 4 will trip the AC circuit breaker.

Table 9 - Pinout of J6 External Shutdown

2.4 HPX POWER RACK DRAWINGS

Figure 2-1 and 2-2 show the front and rear view of a typical HPX Power Rack.

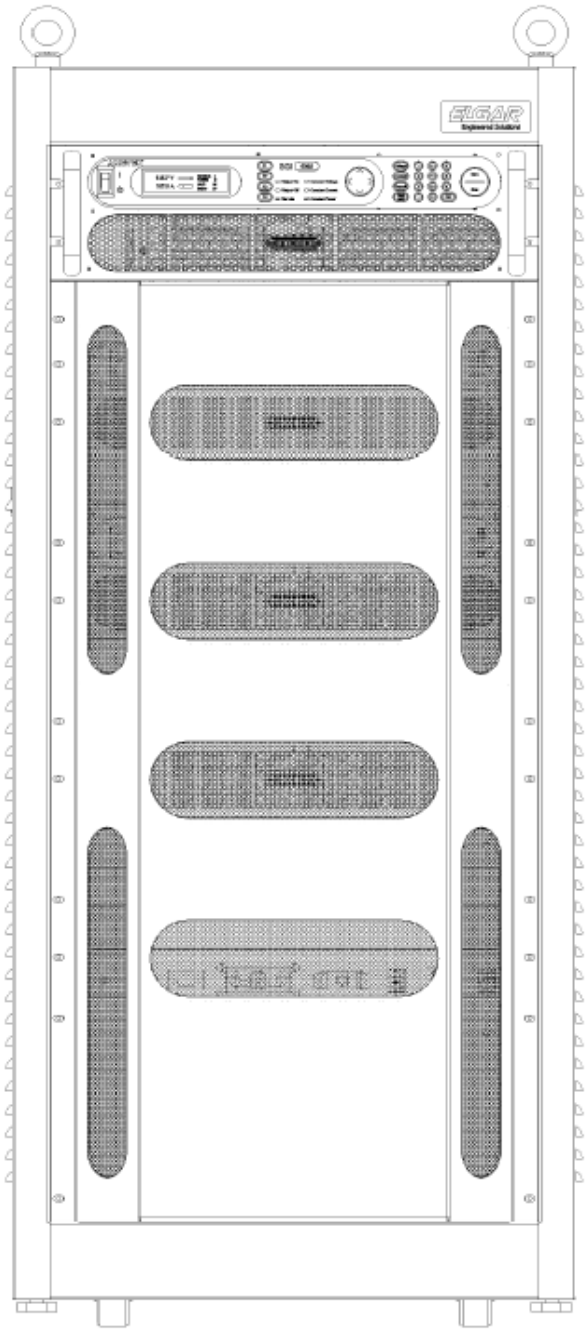


Figure 2-5 - 24U HPX Power Rack, Front View

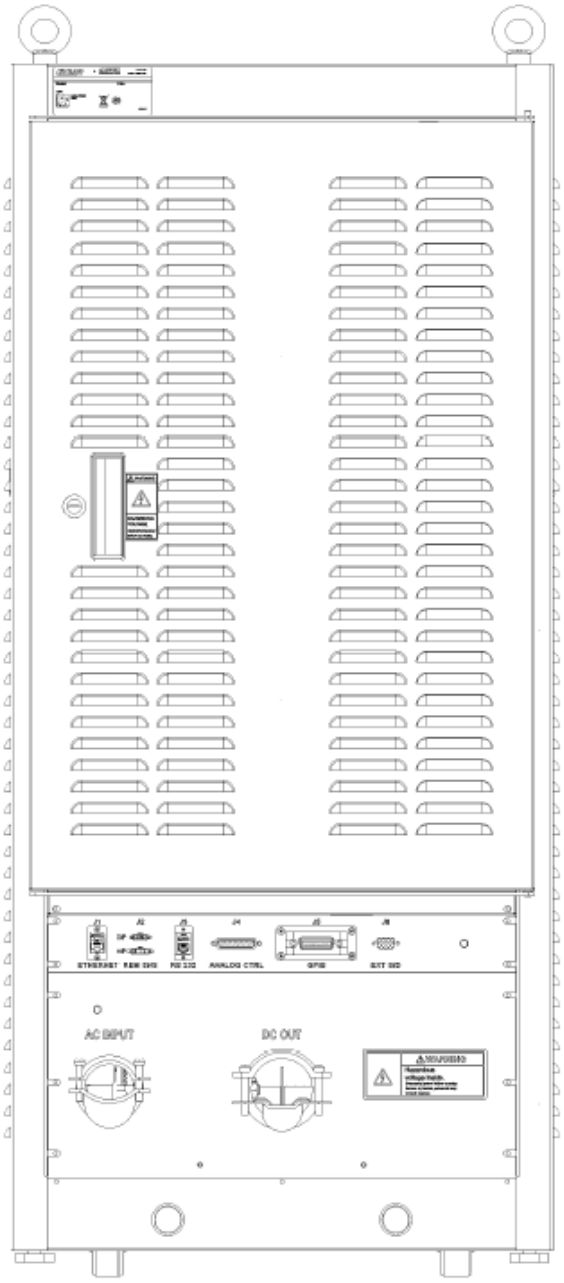


Figure 2-6 - 24U HPX Power Rack, Rear View

SECTION 3
REFERENCE DOCUMENTS

3.1 LIST OF REFERENCE DOCUMENTS

The following can be downloaded from
http://www.sorensen.com/products/SG/SG_Downloads.htm

Manuals		
	SGA	SGI
Operations Manual	03/18/2015 (6.8Mb) M550129-01 revAG	03/17/2015 (7.2Mb) M550221-01 revAA
Operations Manual (Japanese)	4/6/06 (3.0MB)	4/6/06 (898KB)
Programming: Ethernet, IEEE, RS232 Rev L	04/20/15 (3.8Mb)	04/20/15 (3.8Mb)
SGA Liquid Cooled User Manual	05/21/2014 (644Kb) revD	
Data Sheet		
SG Series Data Sheet	12/04/2015 (2.2Mb)	
SG Series Water Cooled Data Sheet	9/9/2011 (670KB)	
Technical Notes		
DLM/DCS/SGA/SGI SRQ Generation	10/21/2008 (74KB)	
Support Documents		
SGA / SGI FAQs	01/04/2010 (836KB)	
Application Notes		
Load Line Drop Regulation Test	5/13/2009 (44KB)	
Communication Verification GPIB	5/13/2008 (215KB)	
Communication Verification RS232	5/13/2008 (457KB)	
Communication Verification Ethernet	5/13/2008 (792KB)	

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