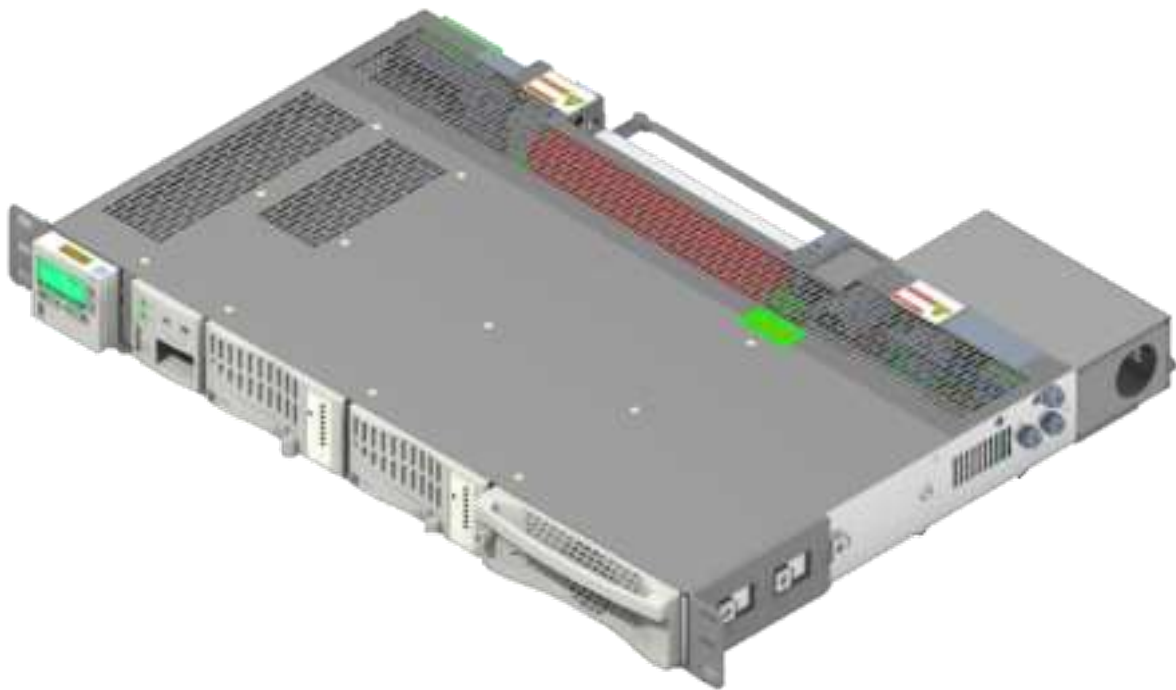


SPS POWER EXPRESS SHELF

Input: 100-120V_{AC} 16-15A, 200-240V_{AC} 9A

Output: 16 x -42 to -57V_{DC} 100VA Per Channel



This equipment is not suitable for use in locations where children are likely to be present.

This equipment is intended only for use in a RESTRICTED ACCESS AREA.

Document: 8600427867P

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Introduction

This manual is intended as a guide in assisting equipment understanding and installation. This configuration of the Slimline Power system (SPS) has one SPS Rectifier module and two Converter modules delivering -42 to -57V_{DC} at 100VA power Per Channel. This shelf has a total of 16 Output DC Channel with each Converter module having 8 Output channel, each output channel can support 100VA with individual LED status. The SPS Power express (PE) shelf takes an input AC voltage of 100-120VAC 15-16A or 200-240V_{AC} 9A which is fed to a single SPS rectifier unit.

The Slimline power system are available in four different configurations with battery/without battery for IEC - C19 or terminal block AC input connector type described in table 1 below. It supports a shelf Alarm card for shelf status and fault indications with a controller. The AC input and DC output connections are available at the rear side of the panel.

The Slimline power system shelf with IEC– C19 AC input measures 44mm (1.73") x 440.7mm (17.35") x 300.22mm (11.82") (H x W x D). The Slimline power system shelf with Terminal block AC input measures 44mm (1.73") x 440.7mm (17.35") x 335.02mm (13.19") (H x W x D).

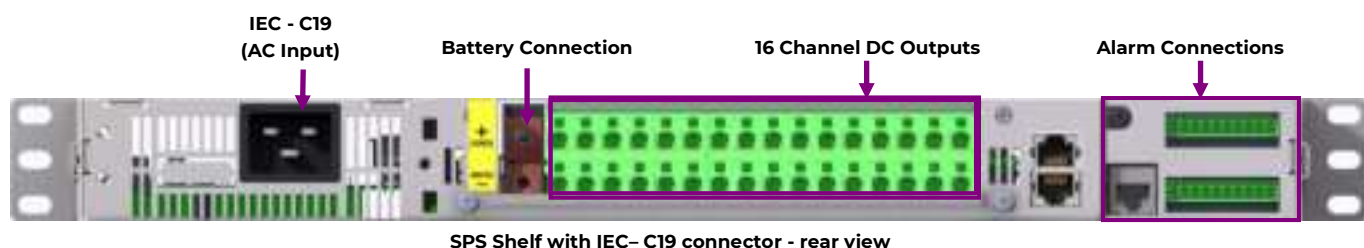
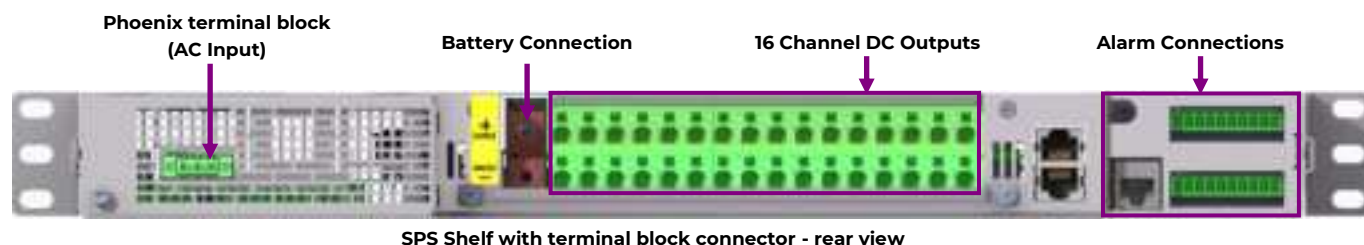
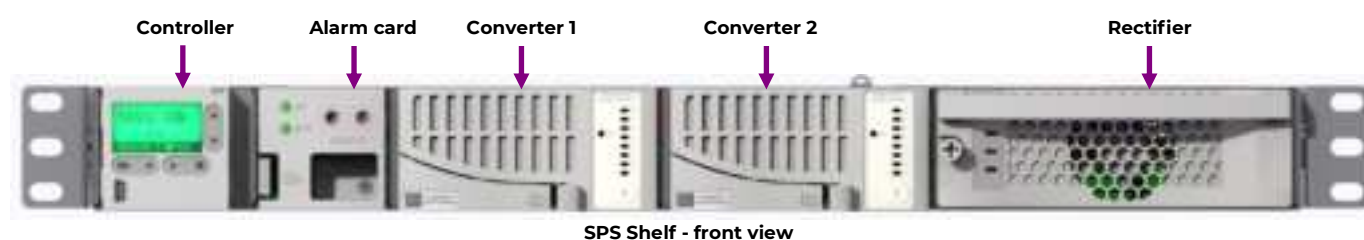


Figure 1: SPS Shelf front and rear view

SPS Shelf variants with Part number	Description
J2007003L301CB	SPS POWER EXPRESS SHELF WITH BATT
J2007003L301C	SPS POWER EXPRESS SHELF NO BATT
J2007003L301AB	SPS POWER EXPRESS IEC-C19 SHELF WITH BATT
J2007003L301A	SPS POWER EXPRESS IEC-C19 SHELF NO BATT

Table 1: SPS Shelf Variants

Mounting Dimensions

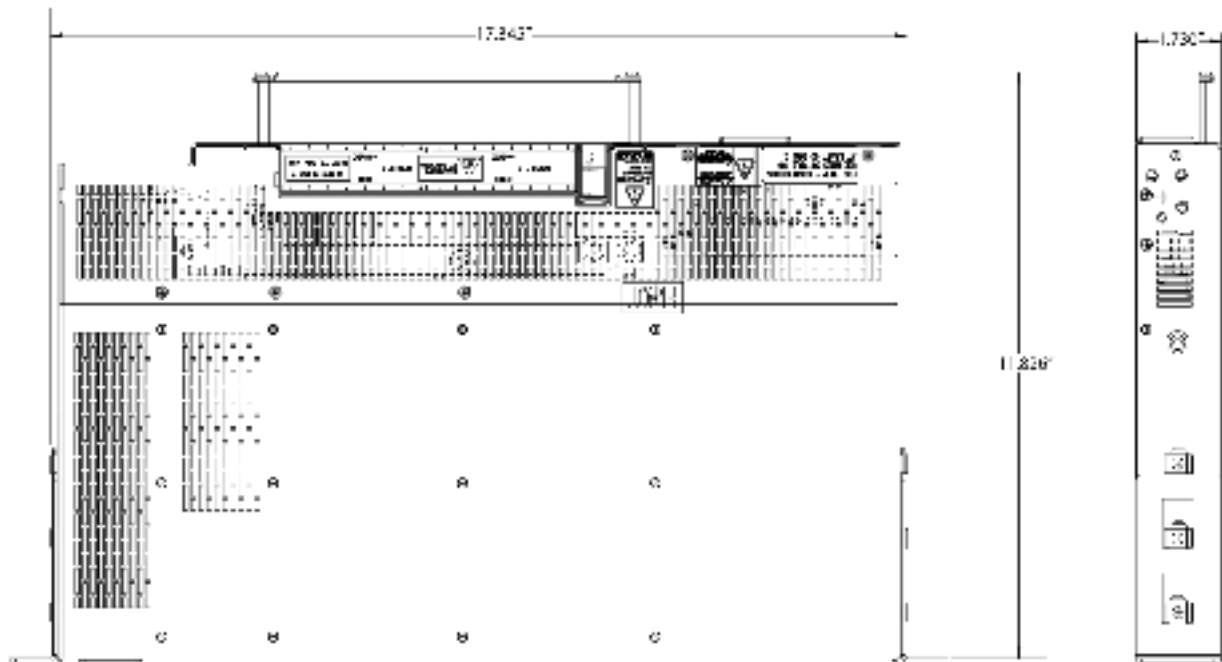


Figure 2: J2007003L301A and J2007003L301AB Dimensions

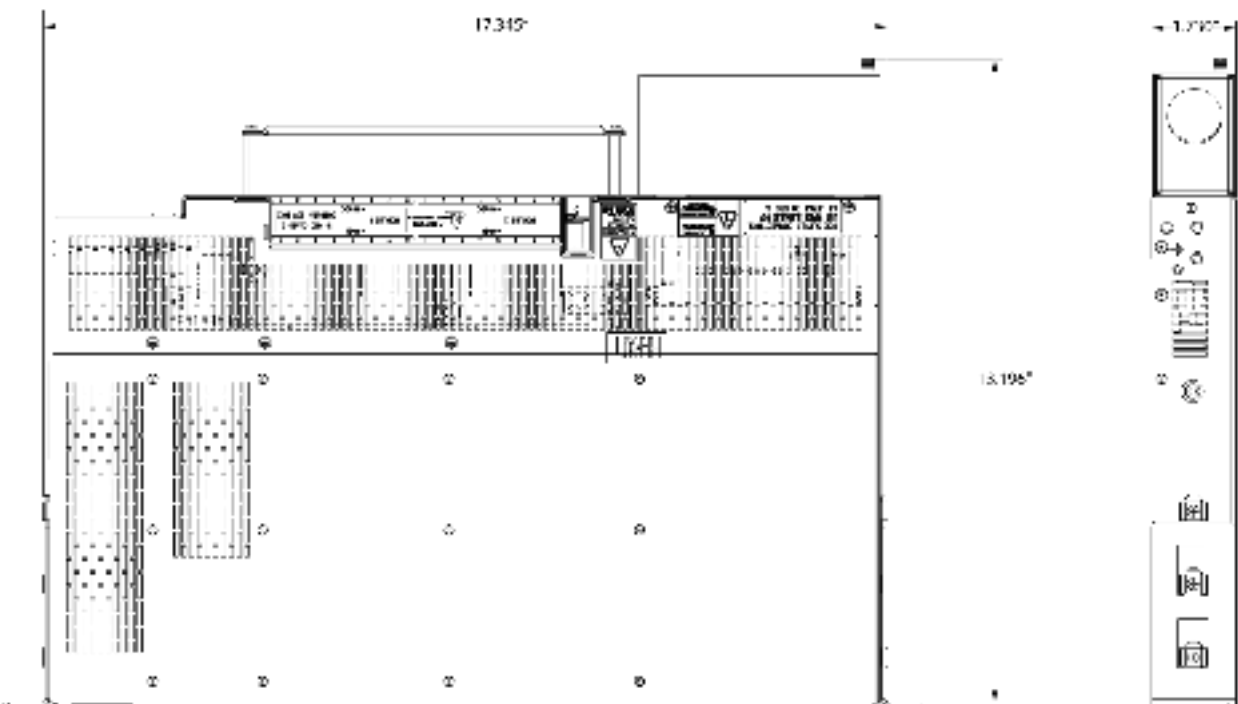


Figure 3: J2007003L301C and J2007003L301CB Dimensions

Customer Care

+1 877 546-3243

Reference Documents

Documents

J2007003L301X-AD

Title

SPS POWER EXPRESS SHELF ASSEMBLY DRAWING

Safety Statements

- Do not install this equipment over combustible surfaces.
- Rules and Regulations - Follow all national and local rules and regulations when making field connections.
- Compression Connectors.
- U. S. or Canada installations - use Listed/Certified compression connectors to terminate Listed/Certified field-wire conductors where required.
- All installations - apply the appropriate connector to the correct size conductor as specified by the connector manufacturer, using only the connector manufacturer's recommended or approved tooling for that connector.
- Electrical Connection Securing: Torque to the values specified on labels or in the product documentation.
- Cable Dress - dress to avoid damage to the conductors and undue stress on the connectors.
- Fuses and Circuit Breakers - Size as required by the National Electric Code (NEC) and/or local codes. Refer to the equipment ratings to assure current does not exceed: Continuous Load (List 1) - 60% of protector rating Maximum Load (List 2 - typically end of discharge) - 80% of protector rating.
- Field-wired Conductors - Follow all National Electric Code (NEC) and local rules and regulations .
- Insulation rating: 90°C minimum; 105°C (minimum) if internal to enclosed equipment cabinets.
- Size AC field-wired conductors with 75°C ampacity (NEC) equal to or greater than their panel board circuit breaker rating.
- Size DC field-wired conductors with 90°C ampacity (NEC) equal to or greater than circuit breaker/fuse rating.
- AC and DC input disconnect/protection - Provide accessible devices to remove input power in an emergency. Alarm Signals - Provide external current limiting protection. Rating 60V, 0.5A unless otherwise noted.
- Grounding - Connect the equipment chassis directly to ground. In enclosed equipment cabinets connect to the cabinet ac service ground bus. In huts, vaults, and central offices connect to the system bonding network.
- Circuit Breakers and Fuses - Use only those specified in the equipment ordering guide.
- GMT Style Fuses - Use only fuses provided with safety cap.

Precautions

- Install, service, and operate equipment only by professional, skilled and qualified personnel who have the necessary knowledge and practical experience with electrical equipment and who understand the hazards that can arise when working on this type of equipment.
- Disconnect batteries from outputs and/or follow safety procedures while working on equipment. Batteries may be connected in parallel with the output of the rectifiers. Turning off the rectifiers will not necessarily remove power from the bus.
- Do not disconnect permanent bonding connections unless all power inputs are disconnected.
- Verify that equipment is properly safety earth grounded before connecting power. High leakage currents may be possible.
- Exercise care and follow all safety warnings and practices when servicing this equipment. Hazardous energy and voltages are present in the unit and on the interface cables that can shock or cause serious injury. When equipped with ringer modules, hazardous voltages will be present on the ringer output connectors.
- Use the following precautions in addition to proper job training and safety procedures:
 - Use only properly insulated tools.
 - Remove all metallic objects (key chains, glasses, rings, watches, or other jewelry).
 - Follow Lock Out Tag Out (LOTO) procedures: customer specified, site specific, or general as appropriate. Disconnect all power input before servicing the equipment. Check for multiple power inputs.
 - Wear safety glasses.
 - Follow Personal Protective Equipment requirements: customer specified, site specific, or general as appropriate.
 - Test circuits before touching.
 - Be aware of potential hazards before servicing equipment.
 - Identify exposed hazardous electrical potentials on connectors, wiring, etc.
 - Avoid contacting circuits when removing or replacing covers.
 - Use a personal ESD strap when accessing or removing electronic components.
- Personnel with electronic medical devices need to be aware that proximity to DC power and distribution systems, including batteries and cables, typically found in telecommunications utility rooms, can affect medical electronic devices, such as pacemakers. Effects decrease with distance.

Equipment Identification

COMPANY LEGAL ENTITY		DATE: YYMMDD
COMPANY ADDRESS		
COMCODE: XXXXXXXXX MODEL: J2007003 L301X		
		
LBXXXXYYLLWWXXXXXX		SERIES 1.0
INPUT: 100-120V~, 16-15A, 50/60Hz	INPUT: 200-240V~, 9A, 50/60Hz	
OUTPUT: 16 X 42-58V==, 1.33Amax/OUTPUT, <100VA/OUTPUT	OUTPUT: 16 X 42-58V==, 1.67Amax/OUTPUT, <100VA/OUTPUT	
PRODUCT OF MEXICO		SAFETY MARKING

Product Label without battery

COMPANY LEGAL ENTITY		DATE: YYMMDD
COMPANY ADDRESS		
COMCODE: XXXXXXXXX MODEL: J2007003 L301X		
		
LBXXXXYYLLWWXXXXXX		SERIES 1.0
INPUT: 100-120V~, 16-15A, 50/60Hz	INPUT: 200-240V~, 9A, 50/60Hz	
BATTERY (OPTIONAL): 42-58 V==, 27.5A	BATTERY (OPTIONAL): 42-58 V==, 27.5A	
OUTPUT: 16 X 42-58V==, 1.33Amax/OUTPUT, <100VA/OUTPUT	OUTPUT: 16 X 42-58V==, 1.67Amax/OUTPUT, <100VA/OUTPUT	
PRODUCT OF MEXICO		SAFETY MARKING

Product Label with battery

Safety Symbols



General caution, warning and Danger



Electrical Shock and Energy Hazard



Hot Surface warning

Information – Tools Required

- Wire cutters and strippers
- Digital meter with an accuracy of $\pm 0.02\%$
- Torque wrench: 0-65 in-lb (0-10 Nm)
- Sockets 5/16", 7/16"
- Cable Crimpers
- Screw drivers (flat-blade and Phillips #1 and #2)

Step 1 – Mount Shelf

1. Position the SPS shelf System mounting ears with the mounting frame.
2. Attach shelf to the frame using three screws on each side (four on each side) - 12-24 (provided).
3. Torque to 35 in-lb (4Nm) - 5/16" socket.
4. Provide 2 inch minimum clearance at back of shelf for converter airflow.

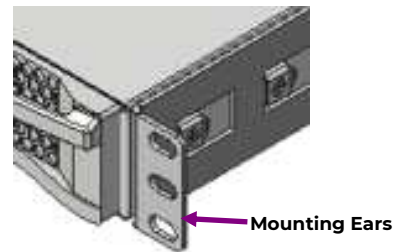


Figure 4: Mounting Shelf

Step 2 – Connect Chassis Ground

1. Lug Landings: #10 double-hole on 5/8-inch center (lugs not provided).
There are two provisions to mount the lug. It can be mounted either in horizontal direction or vertical direction. Refer figure 5 for chassis ground connection.
2. Minimum 10 AWG wire is recommended.
3. Torque to 30 in-lb (3.4Nm) - 5/16" socket.

Some applications may rely on frame mounting screws for shelf ground omitting the chassis ground cable.

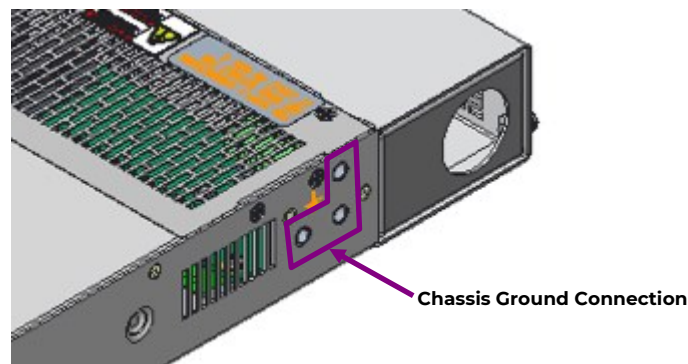


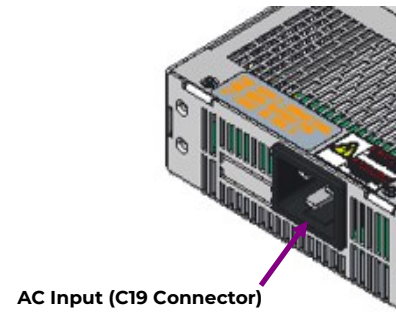
Figure 5: Chassis Ground Connection

Step 3 – Connect AC input

The AC input is provided through a IEC - C19 connector or 3 pin terminal connector based on the configuration of the shelf discussed as below:

For **J2007003L301AB** and **J2007003L301A** Configurations:

- Recommended AC input cable: P049-010.
- Connect the IEC - C19 AC input cable to the C19 connector provided at the rear side of shelf.



AC Input (C19 Connector)

Figure 6: AC Input IEC-C19 Connector

For **J2007003L301CB** and **J2007003L301C** Configurations:

- Use the thumb screw to remove the AC cover provided at the rear side of shelf.
- Route the cable through the hole in the AC cover.
- Wire size recommended is 12 AWG with ferrule.
- Strip wire 3/16"
- Insert wire fully into wire entry of the female 3 pin terminal connector.
- Tighten the screw (1/16" flat screw driver).
- Connect the 3-pin female connector to the AC input terminal of the shelf.
- Mount the AC cover back over the input and tighten the thumb screw.

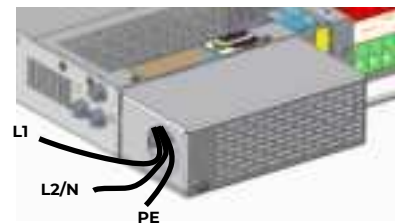


Figure 7: Cable routing through AC cover

AC Input (3-pin terminal connector)

Danger: Turn OFF and lock-out tag-out the AC source before making AC connections. Follow all local and national wiring rules.

Caution: Route AC cables to avoid contact with sharp or rough surfaces that may damage insulation and cause a short circuit.

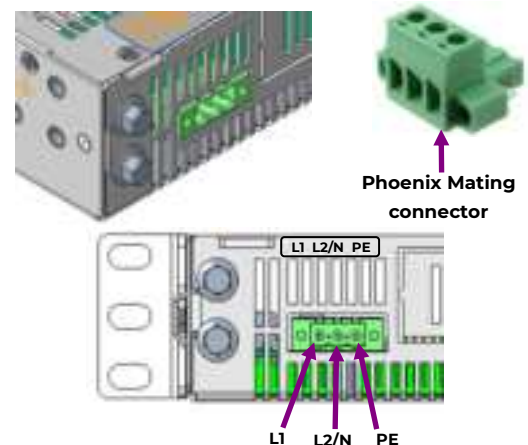


Figure 8: AC Input Terminal block Connector

Step 4 – Connect Battery

(Only applicable for J2007003L301AB and J2007003L301CB)

Recommended Wire size: 10AWG

Recommended Lug landing: YAV10R, Stud size:10

Screw size: 10-32

1. Attach lugs to the wire .
2. Connect the lugs to the bus bar.
3. Torque the screw to 30 in-lb (3.4Nm).

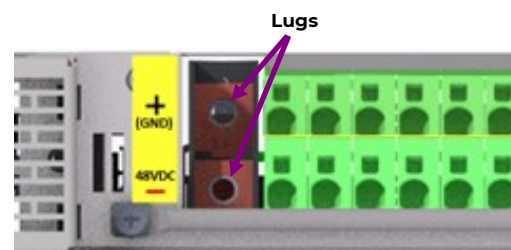


Figure 9: Connect Battery

Step 5 – Connect DC Output

- There are 16 DC terminal Outputs and 16 DC Output Returns - 8 per Power Express Converter Module.
- Strip the output wire 1/2".
- Push the screw driver into release hole (#0 Phillips or 1/8" flat screw driver) at a downward angle.
- Insert wire fully into wire entry.
- Pull wire to verify insertion.

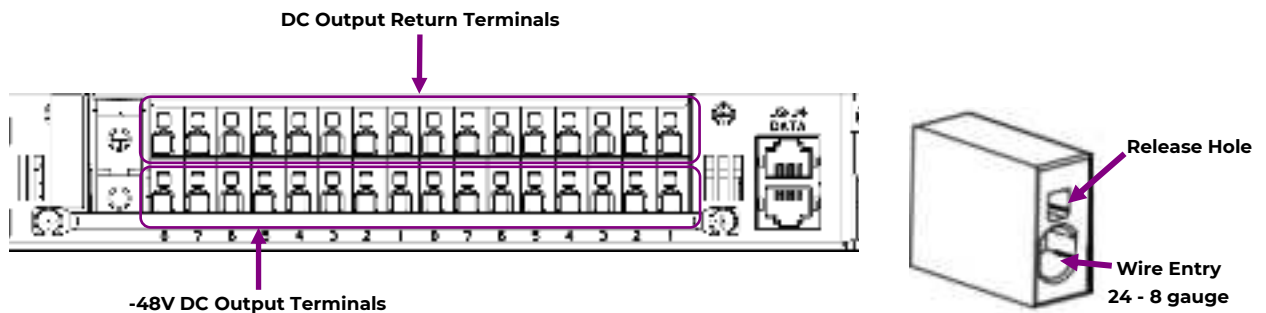


Figure 10: DC Output Connection

Step 6 – Set Controller Jumpers

- LAN port may be temporarily set to Local mode, but must be set to Network mode for remote monitoring.
- Alarm relays may be set to "Open on Alarm" or "Close on Alarm".



Figure 11: Controller Jumpers

Step 7 – Install Controller

- Slide the PS841A_016R_USB_DS controller into the left most slot of the shelf.
- Secure the controller by snapping it firmly to the shelf slot.

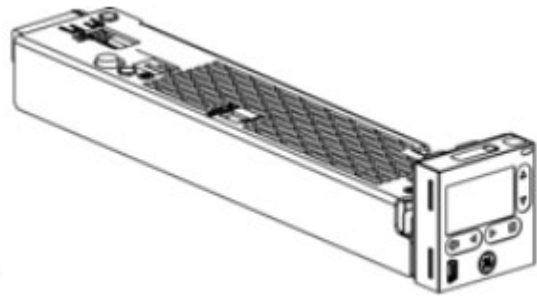


Figure 12: Controller Installation

Step 8 – Install Alarm and LAN Cables

- The Alarm connectors are on the rear side of the shelf.
- Alarm J5 provides LAN - Connect to the Ethernet network.
- ALARM J3 provides data connection for battery temperature and voltage monitor.
- Alarm J1 and J2 have detachable blocks which can be used to Wire to office alarms and signals.
- Connect alarm cables to the 10-pin alarm connector.
- Strip the alarm wire 3/16".
- Insert wire fully into wire entry (28-16 AWG).
- Tighten screw with 1/16" flat screw driver.
- Insert alarm connector into the chassis.

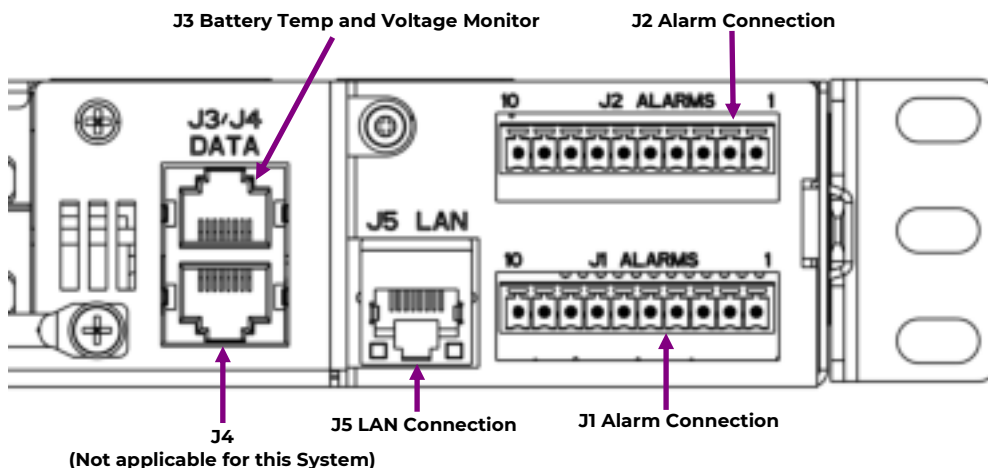


Figure 13: Alarm Connections

Step 9 – Install 1-Wire Battery Temp and Voltage Monitor per Galaxy Pulsar Edge Controller

Quick Start Guide – Optional

Connect 1-Wire Battery Temp and Voltage Monitor to upper DATA connector (J3) of SPS PE shelf.

Step 10 – Install Rectifiers

- Firmly push the rectifier module EP1600-UTEZ RECTIFIER into the rectifier slot.
- Tighten the thumb screw until the rectifier is seated.

NOTE: When installing a rectifier in a powered system the RUN LED on the rectifier will blink until communication with the controller is established.



Figure 14: Rectifier Installation

Step 11 – Verify Shelf ID Setting

- Set Shelf ID to 01 to operate
- Set Shelf ID to 99 to perform Lamp Test.

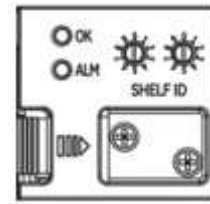


Figure 15: Shelf ID setting

Step 12 – Install Converter Modules

- Verify Module Type - PE 8CKT LMT MODULE (150027362). There are two converter modules to be installed in the converter shelf provided.
- Open the latch of the converter module.
- Insert module into the respective slot of the Shelf.
- Close the latch of the converter module.

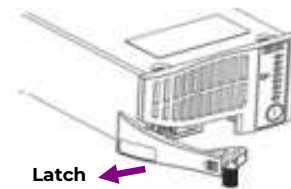


Figure 16: Converter Module Installation

Step 13 – Initial Start Up

- Verify that all AC, DC and Alarm connections are complete and secure.
- Turn on the AC input breakers.
- If there are no alarms, make required adjustments to the default settings on the controller for this installation.

Step 14 – Configure Controller per Galaxy Pulsar Edge Controller Quick Start Guide

Verify and edit controller basic configuration parameters per site engineering instructions.

Information: Alarm Card (LEDs and Alarm)

Shelf LEDs and Alarms

Condition	Shelf LED		Shelf Alarm
	OK	ALM	
Class 2 Circuit On	G	OFF	-
Class 2 Circuit OFF	G	OFF	-
Class 2 Circuit Overcurrent/shorted	OFF	Y	Alarm
Class 2 Circuit Fail (1 or more)	OFF	R	Alarm
Input Voltage Very Low	OFF	OFF	Alarm
Input Voltage Out of Range	OFF	Y BLINK	Alarm
Reversed Input Polarity	OFF	R BLINK Y BLINK	Alarm
Alarm Card Fail	OFF	R	Alarm
Internal Shelf Comm Fault ³	OFF	G	Alarm
GP Comm Fault	OFF	R BLINK	Alarm

Table 2: Shelf LED and Alarm

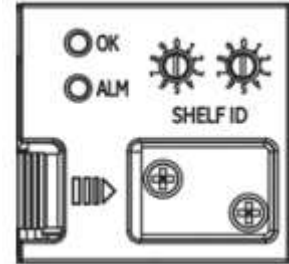


Figure 17: Alarm Card

Information: Converter Module LEDs

Module LEDs

Condition	Module OK LED		Module Circuit LEDs ² 1-8
	Priority ¹	LED	
Circuit - On		G	G
Circuit - OFF		G	OFF
Circuit - ON - Overcurrent	3	Y	Y
Circuit Fail	1	R	R
Comm Fault - Alarm Card	4	R BLINK	Per circuit Condition
Module Fail	1	R	OFF
Input Voltage Out of Range	2	Y BLINK	OFF
Input Voltage Very Low or Reversed Polarity		OFF	OFF

Table 3: Module LED Status

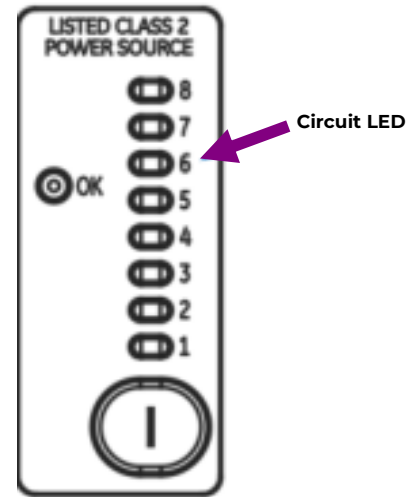


Figure 18: Module LEDs

¹ OK LED indicates the highest LED priority. Priority 1 is highest.

² Each Circuit LED indicates the Condition of its Circuit, independently of the other Circuits.

³ Internal Shelf Comm Fault is the loss of communication between the alarm card and 1 or more modules. Possible causes: module removal and module internal failure.

Replace the module or remove and replaced the Alarm Card to clear the alarm.

Information: Circuit ON/OFF and Load Detection

Circuit ON: Output is powered unless over loaded (power exceeds 100VA). Overloads are retested every 4 sec.

Circuit OFF: Output is unpowered.

Circuit Load Detection:

Circuits are scanned for loads upon module power up and upon manual scan.

Circuits with loads are turned ON, circuits without loads are turned OFF.

Circuit ON/OFF status is only set by scans and Manual Circuit ON/OFF actions. The last action determines the ON/OFF state of each circuit.

The only automatic change in circuit ON/OFF status occurs upon module power up.

Information: Manual Module Operations

Manually Scan Circuit Loads: Press and release the Button - no interruption of power to ON circuits.

Manual Circuit ON/OFF:

1. Press and hold the Button to enter the manual mode hold until the OK LED turns OFF and back ON (2 seconds)
2. Tap the Button repeatedly until the desired Circuit LED blinks.

Circuit ON - LED ON with brief blink OFF

Circuit OFF - LED OFF with brief blink ON

3. Press and hold the Button to toggle the circuit ON/OFF hold until the OK LED turns OFF and back ON (2 seconds)
4. Repeat from step 2 to operate another circuit.
5. Automatic operation is restored after a few seconds of Button inactivity.

The OK LED is turned OFF when the button is pressed. It returns to ON when the button is released or after the button is held for 2 seconds.

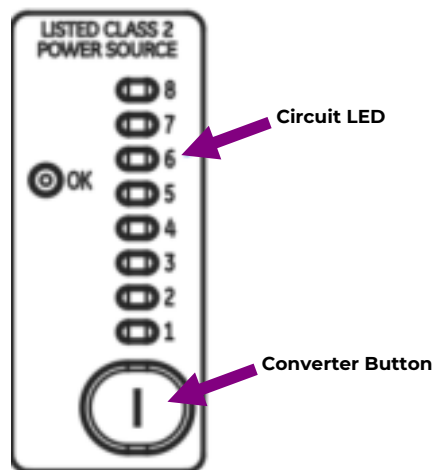


Figure 19 Module LEDs & Button

Information: Fault Detection

Circuit ON: Output is powered unless over loaded (power exceeds 100VA). Overloads are retested every 4 sec.

Circuit OFF: Output is unpowered.

Circuit Load Detection:

Circuits are scanned for loads upon module power up and upon manual scan.

Circuits with loads are turned ON, circuits without loads are turned OFF.

Circuit ON/OFF status is only set by scans and Manual Circuit ON/OFF actions. The last action determines the ON/OFF state of each circuit. The only automatic change in circuit ON/OFF status occurs upon module power up.

Information: Alarm Connections

Alarm connections are on the rear of the shelf - J1 is Alarm Outputs and J2 is Alarm Inputs. Change alarm descriptions via LAN port (Web pages) or Craft port (EasyView2) when required.

Connector	J1 - Controller Variants		
Pin	015R_D (5 Relays), 016R_DS (6Relays)	3C3R 3 Inputs, 3 Relays,	9C0R_USB 9 Inputs, no Relays
1	Output: R3 = Rtn	Input: PBT/TR	Input: Door Open
2	Output: R2 = Rtn	Input: Hi Ext. Temp.	Input: Surge Protect Fail
3	Output: R1 = Rtn ²	Output: R1 = Rtn	Input: Door 2 Open
4	Output: PMN Rtn	Output: PMN Rtn	Input: Ext DC Fail Major
5	Output: PMJ Rtn	Output: PMJ Rtn	Input: Ext DC Fail Minor
6	Output: R3 = ACF	Input: RTNS	Input: Returns
7	Output: R2 = RFA	Input: Cust. Alrm 1	Input: Retrieve Genera- tor
8	Output: R1 = BD	Output: R1 = BD	Input: Battery Fail
9	Output: PMN	Output: PMN	Input: Air Conditioner Fail
10	Output: PMJ	Output: PMJ	Input: External Fan Fail

Table 4: J1 Alarm Connections

¹Only with 6 relay controllers (...6R...).

²Returns for R1 and R4 are bridged. Other returns are isolated.

Connector	J2
Pin	All Controllers
1	Input: SPD Fail
2	—
3	Input: AUX MAJ
4	Input: Air Cond. Fail
5	Input: Door Open
6	-48V
7	-48V
8	-48V
9	Output: R4 = FAJ ¹
10	Output: R4 = Rtn ^{1,2}

Table 5: J2 Alarm Connections

Information – Rectifier Basic Information

Rectifier		Input		Recommended AC Breaker	Output		
Single phase, hot-pluggable, fan-cooled		Vac	A	A	Float Vdc	W	A
CC109165610	EP1600-UTEZ: 1600W	100 - 120	15	20	48 - 58	1200	24
		200 - 240	7.5	10	48 - 58	1600	32

Table 6: Rectifier and Plant Data

Note: Output Current at 54.5V. Outputs are power limited, not current limited.

Information – Converter Module Basic Information

Converter		Input		Recommended	Per Output		
		Vdc	A	A	Vdc	VA	A
150027362	PE 8CKT LMT	-40 to -60	20	25	-42 to -58	100	2.38 Max

Table 7: Converter Data

Note: Each converter provide 8 outputs

Spare List

Power Modules

Ordering code	Description	Application
CC109165610	EP1600-UTEZ RECTIFIER	48 - 58V, 24A AC/DC Rectifier Module
150027362	PE 8CKT LMT MODULE	-48V unregulated Converter Module

Controller Modules

150038227	SPS841A_0I6R_USB_DS CONTROLLER	Controller
150027361	PE ALARM CARD	Controller Alarm Card

Ship Loose Material

Ordering code	Description	Application
CC408578578	SCREW MCH #10-32 HEX HEX SL CONE LCK STEEL ZINC-CLEAR	Module Mounting Provisions
CC408577571	SCREW TAP #12-24 HEX WSH HEX SL STEEL ZINC-CLEAR	Module Mounting Provisions
450026710	TB 1850741 FRONT-MC 1,5/10-ST-3,81 8A 160V 10-POS	10-pin Connector
4600417774P	CONNECTOR 5.08MM PITCH 3POS 16A 300V	3POS AC Input mating connector

Table 8: Spares Listing

Specifications and Applications

Specifications and ordering information are in the Power Express Class 2 Distribution Brochure available at

omnionpower.com

- External Surge Protective Device (SPD) is required on all AC inputs.
- Equipment and subassembly ports:
 1. are suitable for connection to intra-building or unexposed wiring or cabling
 2. can be connected to shielded intra-building cabling grounded at both ends.
- Grounding / Bonding Network – Connect to an Isolated Ground Plane (Isolated Bonding Network) or an Integrated Ground Plane (Mesh Bonding Network or Common Bonding Network).
- Installation Environment - Install in Network Telecommunication Facilities, OSP, or where NEC applies.
- Battery return may be either Isolated DC return (DC-I) or Common DC return (DC-C).
- External Surge Protective Devices (SPDs) - are required on all AC inputs. Equipment Safety is Approved in IEC 60664-1 Installation Category II environments.
- DC Returns - Isolated DC return (DC-I) or Common DC return (DC-C).

Change History (excludes grammar & clarifications)

Revision	Date	Description of the change
1.0	12/22/2021	Initial Release
2.0	02/03/2022	Changed lug size in step 4, Added part number for AC input cable in step 3.
2.1	05/22/2024	Updated as per OmniOn template

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