



# SPS +24V Slimline Converter Shelf

Models: J2007003L064 Stackable J2007003L065 Stand-alone



SPS Stackable System - example

The L064 converter shelf provides four +24V outputs. The shelf is powered by adjacent SPS Stackable rectifier shelves. Install below initial SPS rectifier shelf J2007003L051C (with controller).



Stand-alone shelf - L065

Shown with separately ordered controller

The L065 converter shelf provides four +24V outputs and a controller for cabled connection to any -48V DC power system.

No vertical spacing is required. Provide 2 inch minimum clearance at back of shelf for converter airflow. Refer to *Slimline Power System Brochure* for details and accessories.

## Tools required:

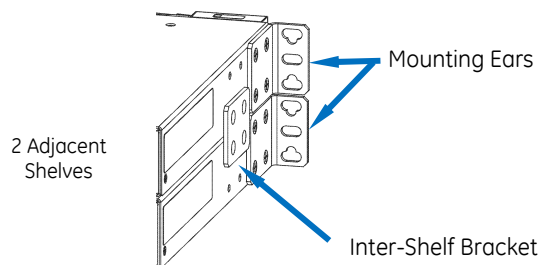
Wire cutters and strippers  
Cable crimpers

Torque wrench - 0-65 in-lb (0-10Nm)  
Sockets - 5/16", 7/16, etc.

Screwdrivers - Phillips #1 and #2, Flat small

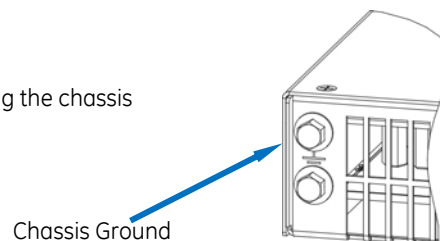
### Step 1 - Mount Shelf

1. Reposition mounting ears as required - 4 screws each. Torque to 25 in-lb (2.8Nm) - Phillips screwdriver.
2. Install Inter-Shelf brackets between adjacent shelves (optional). Torque to 25 in-lb (2.8Nm) - Phillips screwdriver.
3. Attach shelf to the frame using a minimum of four screws (two on each side) - 12-24 (provided). Torque to 35 in-lb (4Nm) - 5/16" socket.



### Step 2 - Connect Chassis Ground

Lug Landings: #10 double-hole on 5/8-inch center (lugs not provided)  
Some applications may rely on frame mounting screws for shelf ground omitting the chassis ground cable.  
Minimum 10 AWG wire is recommended.  
Torque 10-32 screws to 30 in-lb (3.4Nm) - 5/16" socket.



### Step 3 - Connect -48V DC Input

Connections are under rear covers.

#### Bus Connection - to adjacent shelf (L064)

Install inter-shelf buses joining -48V and RETURN outputs of adjacent shelves.  
Torque to 65 in-lb (7.3 Nm)

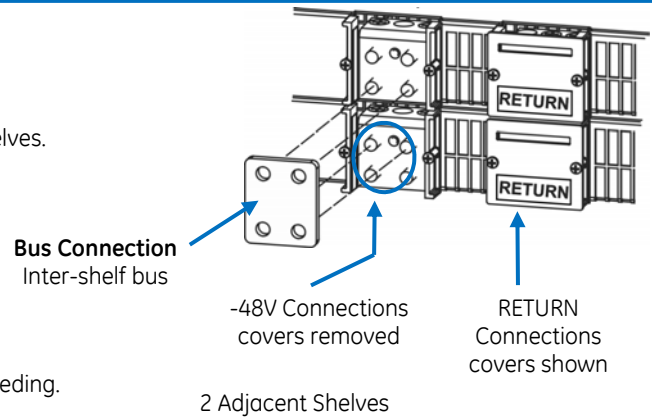
#### Cable Connection (L065)

Lug Landings - 2 x 1/4" on 5/8" center, 0.7" (18mm) max. tongue width.

Connect cables with suitable lugs to -48V and RETURN.

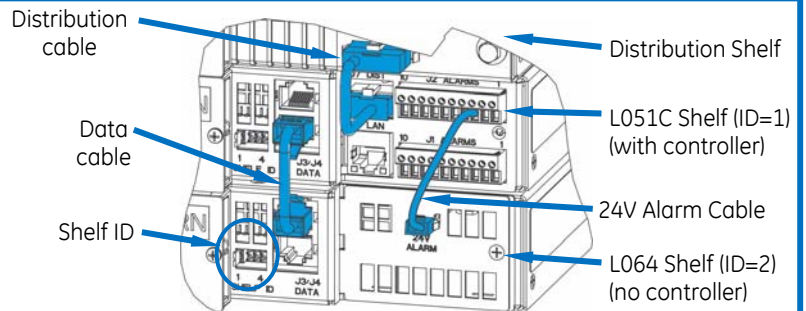
Torque to 65 in-lb (7.3 Nm)

**Caution:** Verify battery voltage and polarity with a voltmeter before proceeding.



### Step 4 - Connect Shelf to Shelf Cables (L064)

1. Install Data cables between adjacent power shelves - J3-4.
2. Install -24V Alarm Cable (provided) from 24V Alarm Connector to J2 pin 3 (Aux Major) on the SPS shelf with controller.  
(The controller on the L051C shelf is configured to recognize this alarm in step 12.)



### Step 5 - Set Shelf ID Jumpers (L064)

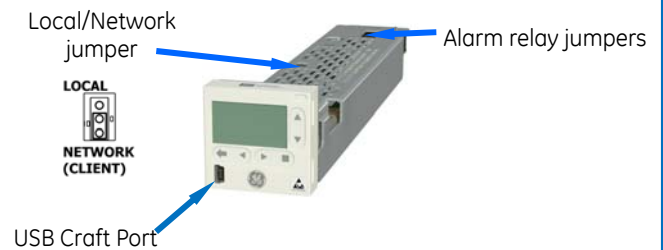
A maximum of 4 Rectifier and Converter shelves can be interconnected. Each shelf must have a unique ID.

Top Shelf	2nd Shelf	3rd Shelf	4th Shelf
set to 1	set to 2	set to 3	set to 4

### Step 6 - Set Controller Jumpers and Install (L065)

- 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"

1. Set LAN and Alarm Relay jumpers
2. Slide controller into slot in L065 shelf.
3. Secure controller: Controllers with display snap into the shelf; controllers without display have a thumb screw.
4. Slide controller into slot in L051C shelf.

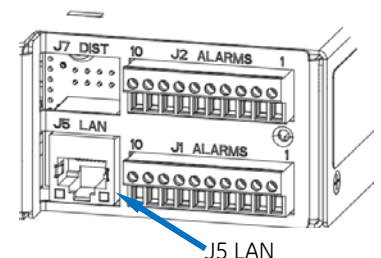


### Step 7 - Install Alarm and LAN Cables (L065)

Connectors are on rear.

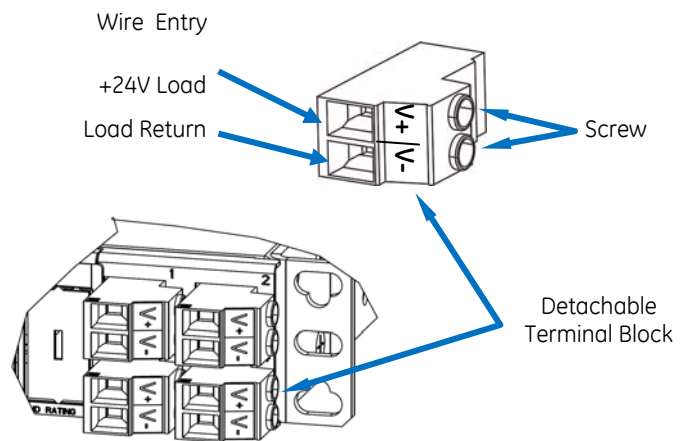
J1-2 Alarms - detachable block - Wire to office alarms and signals.  
See *Information: Alarm Connections*.

J5 LAN - Connect to Ethernet network.



### Step 8 - Connect Circuit Breaker Loads

1. Verify that breaker is OFF or not installed.
2. Remove detachable terminal block
3. Insert load and load return wires  
Strip 0.4 in (10 mm) 8 AWG (6 mm<sup>2</sup>) max.
4. Torque to 6.5 in-lb (0.75 Nm).
5. Pull wires to verify.
6. Insert detachable terminal block fully.

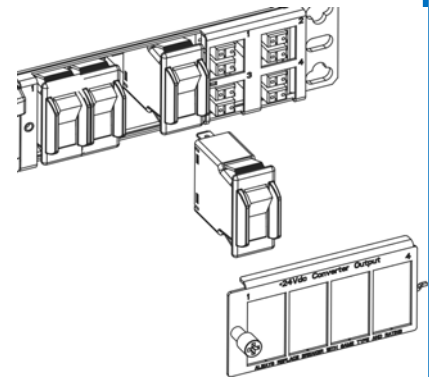


### Step 9 - Install Breakers

Install breakers into positions as specified in Site Engineering Instructions.

Use only breakers specified in the *Slimline Power System Brochure* - 30A max..

1. Remove Cover (thumb screw).
2. Verify that each Breaker is OFF.
3. Insert each Breaker fully into its position — oriented with ON position at top.
4. Remove cover knockouts for installed positions.
5. Replace Cover (thumb screw).
6. Turn each Breaker ON.



### Step 10 - Install Converters

Firmly push the converter into the converter slot.  
Tighten the thumb screw until the converter is seated.

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



### Step 11 - Initial Start Up

Verify that all DC and Alarm connections are complete and secure.

If there are no alarms, make required adjustments to the default settings on the controller for this installation.

### Step 12 - Configure Controller per Galaxy Pulsar Edge Controller Quick Start Guide


1. Verify and edit controller basic configuration parameters per site engineering instructions.
2. Configure Converter Alarm Inputs and Outputs per site engineering instructions - see *Information: Controller - Configure Alarm Inputs and Outputs*.  
NOTE: L064 - Configure +24V Alarm Input on the L051C shelf .



### Information: Controller Default Voltage Settings and Ranges

Parameter	Range	Default
Converter Internal Selective High Output Voltage Shutdown	25.0 to 30.0V	<b>29.0</b>
High Output Voltage Major Alarm	25.0 to 30.0V	<b>28.5</b>
High Output Voltage Minor Alarm	24.0 to 30.0V	<b>27.0</b>
Output Voltage Set-Point	23.0 to 27.2V	<b>26.0</b>
Low Voltage Alarm	20.0 to 27.0V	<b>23.0</b>

### Information: Converter Options

Converter		Input DC		Output DC	
		Voltage	Current <sup>3</sup>	Voltage	Current
	EP0300DC24TEZ	48Vdc	9A max	24Vdc	11A

### Information: Alarm Connections

See the *Slimline Power System Brochure* for details.

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			J2 - All Controllers
Pin \ Controller	015R_D (5 Relays) 016R_DS (6Relays)	3C3R 3 Inputs, 3 Relays,	9C0R_USB 9 Inputs, no Relays	All
1	Output: R3 = Rtn	Input: PBT/TR	Input: Door Open	Input: SPD Fail
2	Output: R2 = Rtn	Input: Hi Ext. Temp.	Input: Surge Protect Fail	--
3	Output: R1 = Rtn <sup>2</sup>	Output: R1 = Rtn	Input: Door 2 Open	Input: AUX MAJ
4	Output: PMN Rtn	Output: PMN Rtn	Input: Ext DC Fail Major	Input: Air Cond. Fail
5	Output: PMJ Rtn	Output: PMJ Rtn	Input: Ext DC Fail Minor	Input: Door Open
6	Output: R3 = ACF	Input: RTNS	Input: Returns	-48V
7	Output: R2 = RFA	Input: Cust. Alrm 1	Input: Retrieve Generator	-48V
8	Output: R1 = BD	Output: R1 = BD	Input: Battery Fail	-48V
9	Output: PMN	Output: PMN	Input: Air Conditioner Fail	Output: R4 = FAJ <sup>1</sup>
10	Output: PMJ	Output: PMJ	Input: External Fan Fail	Output: R4 = Rtn <sup>1,2</sup>

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

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



## Information: Controller - Configure Alarm Inputs and Outputs

This section shows only basic configuration for Converters .  
Additional configuration items may be included site engineering instructions.

### Converter Alarm Outputs

1. Select the Settings tab > Converters to set alarm thresholds, severity and relays on J1 connector.
2. Select the drop down arrow next to the LED field and select ALM to activate the ALM LED for that alarm condition.

Alarm	Severity	Relay	LED	Threshold
Converter High Voltage Major	MAJ			28.5
Converter High Voltage Minor	MN			27
Converter Very Low Voltage	MAJ	R1	ALM	23
Multiple Converter Fail	MAJ	R2		2
Converter Redundancy Loss	MAJ	R2		1
Converter Fail	MAJ	R2		
Converter Distribution Fuse	MAJ	R3		
Converter ID Conflict	MAJ			
Converter Fan Minor	MN	R2		

Factory Defaults shown

### Converter Alarm Inputs (L064)

1. Select the Settings tab > Programming > Auxiliary Inputs Converters to configure the +24V Alarm Input.
2. Select "Click to Edit Assoc. Alarm" select button to the right of J2.3.
3. Select the drop down arrow next to the LED field and select ALM to activate the ALM LED for that alarm condition.
4. Select the drop down arrow next to the Relay field and select ALM to activate the ALM Relay for that alarm condition.
5. Edit the Descriptions as instructed.
6. Select Submit to save.

REF	Alarm Assignment	Alarm Criteria *	Click to Edit Assoc. Alarm
Internal (I001)	FAJ1	CLOSED	
J2.1 (A006)	AUX3	CLOSED	
J2.2 (A002)	OSA1	CLOSED	
J2.3 (A003)	AMJ	CLOSED	
J2.4 (A004)	AUX1	CLOSED	
J2.5 (A005)	AUX2	CLOSED	

\* Alarm Criteria / Polarity

- Input (I001) is dedicated to internal distribution alarm and provides a contact closure to the non-grounded side of the dc bus (-48V)
- Inputs to J2 are contact Closures or Opens to the non-grounded side of the dc bus (-48V)
- Inputs to J1 are Dry, no voltage, contact Closures or Opens to a common return on J1.6.

Alarm Assignment ALM1

Remote Interface Description: Auxiliary Major  
Front Panel Display Description: Auxiliary Major

Severity: MAJ  
Relay:   
LED:   
Submit Assignment

Factory Defaults shown

## Specifications and Application

- Specifications and ordering information are in the Slimline Power System Brochure available at [www.gecriticalpower.com](http://www.gecriticalpower.com)
- 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).

## Reference Documents

These documents are available at [www.gecriticalpower.com](http://www.gecriticalpower.com).

Document	Title
850035894	Galaxy Pulsar Edge Quick Start Guide
CC848836981	Pulsar Edge Controller Family Product Manual
	Slimline Power System Brochure



## 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.
  - 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.
- Circuit Breakers and Fuses
  - Use only those specified in the equipment ordering guide.
  - Size as required by the National Electric Code (NEC) and/or local codes.  
Safety Tested Limits - 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.
  - GMT Style Fuses - Use only fuses provided with safety caps.
- 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.
- 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.

## 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.



## Notes



## Notes

