

# GPS 4812/24 Galaxy Power System

-48V DC Medium Power Plant



- Medium power applications requiring 1-phase or 3-phase 240 Vac input
- Streamlined system control and monitoring
- 6,400 Amp capacity
- Efficiency approaching 97%

## Overview

The industry standard for DC energy systems, the GPS 4812/24 is the first choice to meet dc power requirements of medium datacenter and central office applications. The Lineage Power GPS provides output capacities up to 6,400A in an integrated, multi-cabinet configuration; 1,600A in a full height single cabinet; or 800A in a half height cabinet for mounting above VRLA batteries. True 3-phase 3-wire rectifiers operate on commercial 208/240Vac or 480Vac. The Galaxy Millennium II controller provides detailed system management and flexible control of Lineage and third party equipment. GPS is installed and supported by the most experienced services team in the world.

## Bay Options

The system can be deployed with capacity of up to 1,600 Amps in a single cabinet which can scale to 6,400 Amps in a multi-cabinet configuration. A single Millennium II controller links all components of the system, while intelligently interacting with the smart grid.

## 596 Rectifiers

The Lineage Power 596A2 and 596D rectifiers integrate proven technology with superior control features in a compact, cost effective solution. These single-phase rectifiers deliver intrinsic phase balancing and superior power factor while lowering installation costs.

## Galaxy Millennium II Controller

The Galaxy Millennium II controller combines sophisticated power monitoring and remote management. This flagship controller simplifies operations and maintenance while lowering administrative costs. Remote peripheral modules support over 500 monitoring points for Lineage or third party devices. Ethernet, SNMP, and TL1 provide integration with power engineering and NOC workflow.

## Benefits

### Reliability

- Delivers decades of service
- High availability architecture
- NEBS level 3 certified

### Intelligence

- Industry leading controller features
- Ethernet interface for remote access
- Centralized network management

### Investment Protection

- Backward compatibility
- Flexible upgrade options
- Seamless integration with ferro plants

### On Time Delivery

- Standard building blocks
- 4 - 6 week availability
- 24/7 support

### Total Efficiency

The Lineage Power Total Efficiency™ (TE) architecture reduces energy loss and lowers cooling costs by 50-70%. TE products will prioritize sustainable energy sources like solar, wind, water and fuel cells over traditional utility grid or diesel generator sources – and they will intelligently respond to smart grid information to reduce consumption during peak demand periods. Active Rectifier Management (ARM) and Battery Charging Optimization (BCO) features increase efficiency on current and legacy power infrastructures. The Total Efficiency architecture addresses issues end-to-end based on our proven experience and expertise in batteries, power distribution, DC energy systems, AC-DC power supplies, and DC-DC board mounted power to deliver a solution that is more safe, reliable and energy efficient than alternatives from our competitors.

## Specifications

Input	
Nominal Input Voltage - 596A2 - 596D	208/220/240 Vac, 2-wire plus ground 208/220/240 Vac, 2-wire plus ground
Input Current - 596A2 - 596D	14.0A @ 240 Vac Nominal 27.2 A @ 240 Vac Nominal
Input Voltage Range (per phase-phase): - 596A2 - 596D	176 Vac to 264 Vac 176 Vac to 264 Vac
Input Frequency Range	47-63 Hz
Power Factor	>0.98 from 50% to 110% load
Total Harmonic Distortion	<5%

Output	
Voltage Nominal	-48 Vdc
Voltage Adjust Range	-42 Vdc to -60 Vdc
Output Current (system maximum)	6,400A
Regulation (line and load range)	±0.5%
Ripple	<100 mVrms
Psophometric Noise	<2 mV

Environmental Specifications	
Operating Temperature	0°C to +50°C (32°F to 122°F)
Storage Temperature	-40°C to +85°C (-40 to 185 °F)
Operating Relative Humidity	5-95% non-condensing
Input Frequency Range	47-63 Hz
Power Derating	2% per °C from +65°C to +75°C
Altitude	4000M max

Mechanical	
Height (cabinet only) (cabinet with link bus-bar)	82.7 in. (2,100 mm) 88.2 in. (2,240 mm)
Width (cabinet only) (cabinet with link bus-bar)	23.6 in. (600 mm) 23.6 in. (600 mm)
Depth (cabinet only) (cabinet with link bus-bar)	19.7 in. (500 mm) 19.7 in. (500 mm)
Weight for 84.0" cabinet (approximate)	551 lb (250 kg)

Safety and Standards Compliance	
NEBS	Evaluated by independent test lab with NRTL status to Telcordia GR63 and GR1089 (including level 3 testing)
Safety	UL Listed (US and Canada): UL Subject 1801 with applicable sections of UL1950/CSA3 950 Applicable sections of IEC950/EN60950 CE mark meets 72/23/EEC and 93/68/EEC directives
RoHS	Compliant to RoHS EU Directive 2002/95/EC
EMC	FCC and EN 55022, Class B; FCC, Class B
ESD	EN61000-4-2, Level 4



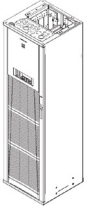


### AC Input Specifications

AC Input Recommendations						
For Group	Nameplate Rating	Breaker Size	Breaker Qty	Conduit Qty & Size	Wire Size	Ground Wire
72F	1 AC Feed at 120A	150A	(1) 3-Pole	(1) 1 ½"	(3) 1/0 GA	(1) 6 GA
172F	2 AC Feeds at 114A	150A	(2) 3-Pole	(2) 1 ½"	(6) 1/0 GA	(2) 6 GA
77F	12 AC Feeds at 20A	25A	(12) 2-Pole	(1) 2"	(24) 6 GA	(1) 8 GA
	12 AC Feeds at 20A	25A	(12) 2-Pole	(2) 1 ½"	(24) 8 GA	(2) 8 GA
	12 AC Feeds at 20A	25A or 30A	(12) 2-Pole	(12) ¾"	(24) 10 GA	(12) 8 GA
	12 AC Feeds at 20A	25A	(12) 2-Pole	(3) ¾"	(24) 10 GA	(3) 8 GA
	12 AC Feeds at 20A	30A	(12) 2-Pole	(3) 1"	(24) 8 GA	(3) 8 GA
177F	12 AC Feeds at 33A	40A or 45A	(12) 2-Pole	(12) ¾"	(24) 8 GA	(12) 8 GA
	12 AC Feeds at 33A	40A or 45A	(12) 2-Pole	(3) 1 ½"	(24) 6 GA	(3) 8 GA

### Cabinet Specifications

Thermal	596A2	596D
4 Rectifiers	1,152W (3,932 BTU/hr)	2,288W (7,812 BTU/hr)
8 Rectifiers	2,304W (7,864 BTU/hr)	4,576W (15,624 BTU/hr)
12 Rectifiers	3,456W (11,796 BTU/hr)	6,864W (23,436 BTU/hr)
16 Rectifiers	4,608W (15,728 BTU/hr)	9,152W (31,248 BTU/hr)



## Step 1: Select the Power Bays – 50A 596A2 Rectifiers

-48V Distributed Architecture 3,200A Maximum Output Power per Plant					
Output	Ordering Code	Model	AC Input		Picture
	CC109154464	GPS 4812 Full Height <b>Control Bay</b> , Millennium II controller, bulk feed 208-240V AC input for up to twelve 596A2 rectifiers, battery shunt			
<b>600A</b>	Weight: 476 lbs	H569436 G-5, 15, 72F, 85F	1 AC Feed 12 Circuit Breakers		Vertical Distribution Available: 39"
	CC109145166	GPS 4812 Full Height <b>Control Bay</b> , Millennium II controller, terminal strip feed 208-240V AC input for up to twelve 596A2 rectifiers, battery shunt			
<b>600A</b>	Weight: 463 lbs	H569436 G-5, 15, 77F, 85F	12 AC Feeds Terminal Strip		Vertical Distribution Available: 42"
	CC109154472	GPS 4812 Full Height <b>Supplemental Bay</b> , bulk feed 208-240V AC input for up to twelve 596A2 rectifiers, battery shunt			
<b>600A</b>	Weight: 470 lbs	H569-436 G-5, 16F, 72F, 85F	1 AC Feed 12 Circuit Breakers		Vertical Distribution Available: 39"
	108785874	GPS 4812 Full Height <b>Supplemental Bay</b> , terminal strip feed 208-240V AC input for up to twelve 596A2 rectifiers, battery shunt, battery bus bar extender			
<b>600A</b>	Weight: 457 lbs	H569-436 G-5, 16F, 77F, 85F	12 AC Feeds Terminal Strip		Vertical Distribution Available: 42"

## Step 1: Select the Power Bays – 100A 596D Rectifiers

-48V Distributed Architecture 6,400A Maximum Output Power per Plant					
Output	Ordering Code	Model	AC Input		Picture
	108992995	GPS 4812 Full Height <b>Control Bay</b> , Millennium II controller, bulk feed 208-240V AC input for up to twelve 596D rectifiers, battery shunt			
<b>1,200A</b>	Weight: 556 lbs	H569436 G-5, 15, 172F, 85F	2 AC Feeds 12 Circuit Breakers		Vertical Distribution Available: 39"
	108989686	GPS 4812 Full Height <b>Control Bay</b> , Millennium II controller, terminal strip feed 208-240V AC input for up to twelve 596D rectifiers, battery shunt			
<b>1,200A</b>	Weight: 543 lbs	H569436 G-5, 15, 177F, 85F	12 AC Feeds Terminal Strip		Vertical Distribution Available: 39"
	CC109143335	GPS 4812 Full Height <b>Supplemental Bay</b> , bulk feed 208-240V AC input for up to twelve 596D rectifiers, battery shunt			
<b>1,200A</b>	Weight: 550 lbs	H569-436 G-5, 16F, 172F, 88F	2 AC Feeds 12 Circuit Breakers		Vertical Distribution Available: 39"
	CC109154480	GPS 4812 Full Height <b>Supplemental Bay</b> , terminal strip feed 208-240V AC input for up to twelve 596D rectifiers, battery shunt			
<b>1,200A</b>	Weight: 537 lbs	H569-436 G-5, 16F, 177F, 85F	12 AC Feeds Terminal Strip		Vertical Distribution Available: 42"

## Step 2: Select Rectifiers

Rectifiers				Picture
Output	Ordering Code	Model		
<b>-48V</b>	108796400	50 amp, 48VDC output, 240VAC input Rectifier	<b>240Vac</b>	
<b>50A</b>		596A2		
<b>-48V</b>	108962895	100 amp, 48VDC output, 240VAC input Rectifier	<b>240Vac</b>	
<b>100A</b>		596D		
	Ordering Code	Model		
	408507762	Spare Rectifier Fan Assembly [(1) required for each rectifier]		

## Step 3: Select Field Installed Distribution Panels

Field Installed Distribution Panels			
Ordering Code	Panel Description	Vertical Space (in.)	Internal Return Bars (Dist Arch Only)
108971474	6 Position 125A-800A Circuit Breaker Panel	12	108908070
108971318	3 Position 125A-600A Circuit Breaker Panel	6	108908070
108971417	5 Position 125A-800A Circuit Breaker Panel	9	108908070
108971532	10 Position 3A-100A Bullet Breaker Panel	6	108908104
108971680	14 Position 3A-200A Bullet Breaker Panel	6	108908104
108987678	22 Position 3A-200A Bullet Breaker Panel	9	108908104
108970872	10 Position 3A-60A TPS Fuse Panel	6	108908104
108986746	5 Position 70A-225A TPL-B Fuse Panel	9	108908070
CC109133113	2 Position 70A-600A TPL Fuse Panel	6	108908070
108985235	6 Position 1A-15A GMT Fuse Panel	0	NA
108908278	Low Voltage Load Disconnect Option		
108908070	Return Bus for panels in like shaded lines		
108908104	Return Bus for panels in like shades lines		

## Step 4: Select Distribution Components

**Note:** Plug in, and bolt in distribution components are listed below. These must be selected to match the distribution panels selected in Step 3.





Bullet Style Load Circuit Breakers				
Ordering #	Amperage	CB Positions (Poles)	Min Wire Gage	Photo
407998137	3	1	10	
407998145	5	1	10	
407998152	10	1	10	
407998160	15	1	10	
407998178	16	1	10	
407998186	20	1	10	
407998194	25	1	10	
407998202	30	1	10	
408213486	40	1	8	
407998210	45	1	8	
407998228	50	1	6	
407998236	60	1	6	
407998244	70	1	2	
407998251	80	1 (+1 vacant)	2	
407998269	90	1 (+1 vacant)	2	
CC848808551	100	2	2	
408185353	125	2	2	
408185346	150	2	1/0	
408564941	200	3	2/0	
408535752	250	3	4/0	
848631479	2-pole adapter bus kit (includes bus for 1/4" hole lug on 5/8" centers and hardware), order one per breaker			
848745662	3-pole adapter bus kit (includes bus for 5/16" hole lug on 1" centers and hardware), order one per breaker			



## Step 4: Select Distribution Components (cont.)

**Note:** Plug in, and bolt in distribution components are listed below. These must be selected to match the distribution panels selected in Step 3.

Snap-On Style Load Circuit Breakers				
Ordering #	Amperage	CB Positions (Poles)	Min Wire Gage	Photo
407098417	3	1	10	
407098425	5	1	10	
407098433	10	1	10	
407098458	15	1	10	
407098474	20	1	10	
407098482	25	1	10	
407098490	30	1	10	
407245448	40	1	10	
407098516	45	1	8	
407098524	50	1	8	
407098532	60	2	6	
407098540	70	2	6	
407098557	80	2	4	
407098565	90	2	4	
407098573	100	2	2	

Large Circuit Breaker Kits				
Ordering #	Amperage	CB Positions (Poles)	Min Wire Gage	Photo
108908187	125	1	2	
108908179	150	1	1/0	
108908195	175	1	2/0	
108908203	225	1	4/0	
108908211	300	2	2 x 4/0	
108908237	400	2	2 x 4/0	
108908229	500	3	3 x 4/0	
108908252	600	3	3 x 4/0	
108984782	800	4	4 x 4/0	


## Step 4: Select Distribution Components (cont.)

**Note:** Plug in, and bolt in distribution components are listed below. These must be selected to match the distribution panels selected in Step 4.



Bullet Style Fuse Holder and TPS Fuses				
Ordering #	Amperage	WP-92461 List	Min Wire Gage	Photo
406700567	3	100	10	
406700583	5	101	10	
406700591	6	102	10	
406700609	10	103	10	
406700617	15	104	10	
406700625	20	105	10	
406700633	25	106	10	
406700641	30	107	10	
406700658	40	108	10	
406700674	50	109	8	
406700682	60	110	6	
406700690	70	111	6	
402328926	0.18 Alarm Fuse			
408548944	Bullet Fuse Holder, TFD-101-011-09 (Alarms on Blown Fuse or Fuse Head Removal)			
CC408617410	Bullet Fuse Holder, TFD-101-011-10 (Alarms on Blown Fuse Only)			
GMT Fuses				
405006222	0.25A			
406976894	0.5A			
405673146	1.33A			
405181983	2A			
406976985	3A			
406159061	5A			
405725433	7.5A			
406159236	10A			
406473959	15A			
408515823	Fuse Puller			

## Step 4: Select Distribution Components (cont.)

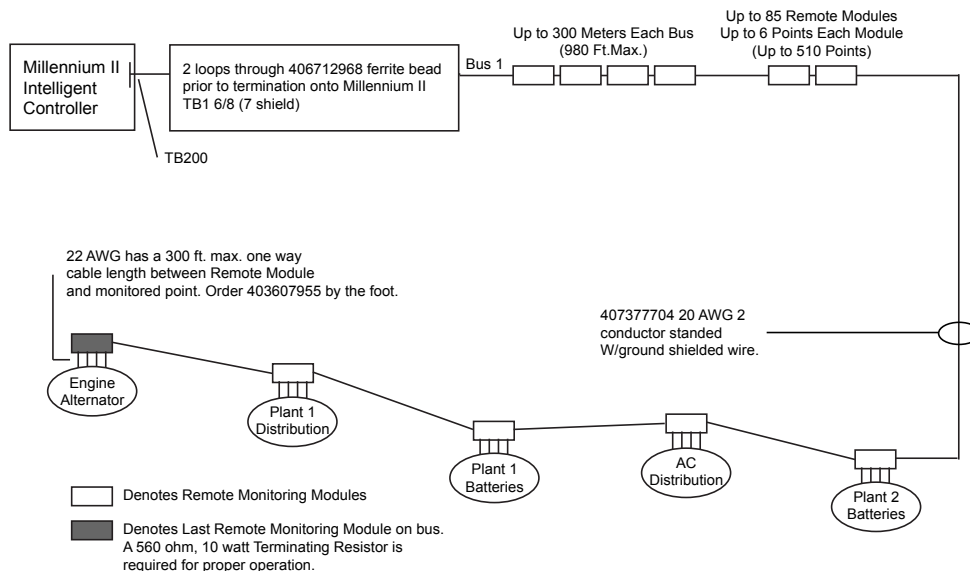
**Note:** Plug in, and bolt in distribution components are listed below. These must be selected to match the distribution panels selected in Step 4.

Large TPL Fuses				
Ordering #	Amperage	Max # wires per position	Min Wire Gage	Photo
408472322	70-250A Fuse Holder Head (only required for 2 Position 70A-600A TPL Fuse Panel)			
402328926	0.18A Alarm Fuse			
406794776	70	3	6	
408239648	80	3	4	
406794784	100	3	2	
406925685	125	3	2	
406794792	150	3	1/0	
406794818	200	3	4/0	
406794982	225	3	4/0	
406794842	250	3	4/0	
406794867	300	3	2 x 4/0	
406794875	400	3	2 x 4/0	
406794883	500	3	2 x 4/0	
406794891	600	3	3 x 4/0	

## Step 5: Select Remote Peripheral Monitoring Options

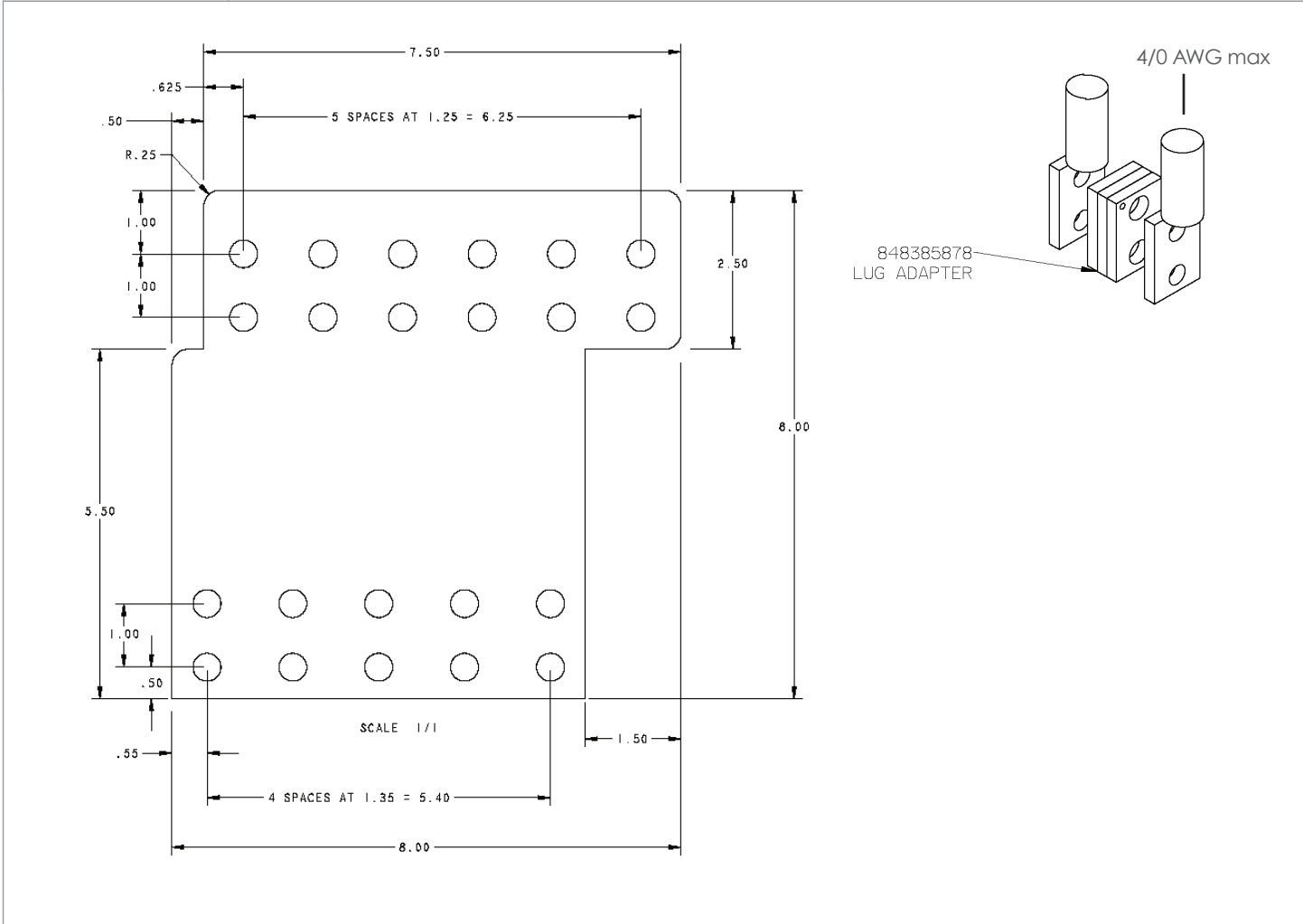
Ordering #	Description			Photo
Ordering #	Modules	# Inputs	# Temp	
108469461	J85501G1L21 RPM Shunt Monitoring (221F)	6	1	
108469479	J85501G1L22 RPM Voltage 0-200VDC (221D)	6	1	
108469495	J85501G1L23 RPM Transducers (221J)	6	1	
108298431	J85501G1L24 RPM Voltage 0-3VDC (221A)	6	1	
108298498	J85501G1L25 RPM Voltage 0-16VDC (221B)	6	1	
108469503	J85501G1L26 RPM Voltage 0-70VDC (221C)	6	1	
108298449	J85501G1L27 RPM Binary (222A)	6	1	
108483538	J85501G1L28 RPM Temperature (223T)	0	7	
108298456	J85501G1L9 RPM Control Relay (214A)	3	0	
Supporting Material				
407377704	Connecting Cable for RPMs (Order by foot)			
848285854	Panel for mounting 6 modules on the top of a GPS cabinet			
848412367	White panel for mounting 6 modules in a 23-inch frame			
847307410	12' cable used with temperature probes (RPM)			
847917879	½" ring terminal temperature probe used with RPM temperature channel (cable required)			
848528881	5/16" ring terminal temperature probe used with RPM temperature channel (cable required)			
405298308	Termination Resistor (1 per bus)			
406712968	Ferrite Bead (1 per bus)			
403607955	Monitor Channel cable KS13385 22AWG stranded pair, R&Bk (order by the foot)			

### Millennium Remote Monitoring



## Step 6: Select Battery Termination Options

Distributed Architecture	
Ordering #	Description
848702536	Optional bus bar that provides 12 output terminations. (Two required per cabinet)
848385878	Optional adapter that allows two lugs to be stacked and connected at one location. (Provides one adapter)

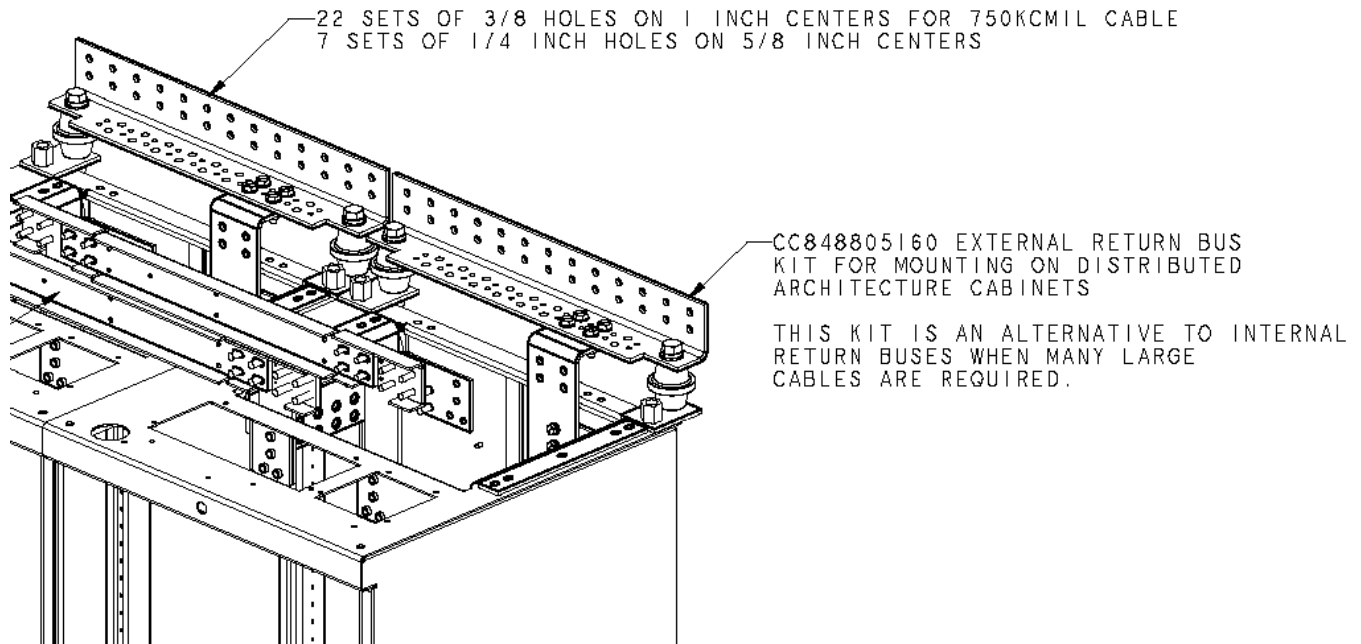


## Step 7: Select Return Bus Bars

### Distributed Architecture

Ordering #	Description
CC848805160	External Return Bus Kit for Mounting on Distributed Architecture Cabinets, 1 per cabinet

Only required if internal return bus bars were not ordered in Step 3. The external return bus kit is an alternative to internal return buses when many large cables are required. Please contact Lineage Power for additional options for external return bus bars.



Notes:

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## Additional Information

### Product Documentation

H569436	Ordering Guide A copy of the appropriate installation manuals below ship with each system.
108313057	Galaxy Power System 4812/24 Product Manual
108327362	Installation Guide for Galaxy Power Systems

### Management Visibility

Galaxy Manager™ software is the centralized visibility and control component of a comprehensive power management system designed to meet engineering, operations and maintenance needs. The Galaxy Manager client-server architecture enables remote access to system controllers across the power network.

- Dashboard display with one-click access to management information database
- Trend analysis
- Scheduled or on demand reports
- Fault, configuration, asset, and performance management

### Training

Lineage Power offers on-site and classroom training options based on certification curriculum. Technical training can be tailored to individual customer needs. Training enables customers and partners to more effectively manage and support the power infrastructure. We have built our training program on practical learning objectives that are relevant to specific technologies or infrastructure design objectives.

### Service & Support

Lineage Power field service and support personnel are trusted advisors to our customers – always available to answer questions and help with any project, large or small. Our certified professional services team consists of experts in every aspect of power conversion with the resources and experience to handle large turnkey projects along with custom approaches to complex challenges. Proven systems engineering and installation best practices are designed to safely deliver results that exceed our customers' expectations.

### Warranty

Lineage Power is committed to providing quality products and solutions. We have developed a comprehensive warranty that protects you and provides a simple way to get your products repaired or replaced as soon as possible.

The GPS comes with a two year hardware warranty. For full warranty terms and conditions please go to [www.lineagepower.com/warranty](http://www.lineagepower.com/warranty).

## Contact Us

For more information, call Lineage Power toll free at **877-LINEAGE (877-546-3243)**, or +1 972 244 9288 and visit us on the Web at [lineagepower.com](http://lineagepower.com)

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