

GPS4827 Power System

-48V DC Medium Power Plant

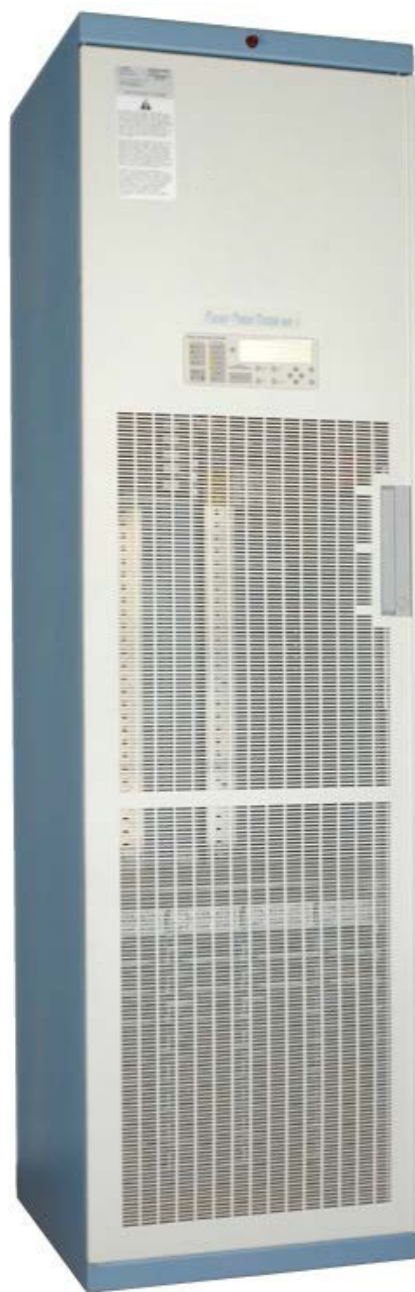


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GPS4827 Power System

-48V DC Medium Power Plant

Overview

The GPS4827 capitalizes on the product strengths found in the GPS4848 and Infinity product families by infusing the highly efficient Infinity TEZ rectifier platform and the time tested distribution found in the GPS4848 to create the GPS4827 Power System. Utilizing the 1RU 50A or 75A 48v rectifiers; a fully equipped bay equipped with 9 rectifier shelves provides for up to 2700A of current while allowing for 48 inches of DC distribution. For centralized power applications providing bulk power output the GPS4827 can deliver up to 4800A utilizing 16 rectifier shelves. With this increased density, a single bay GPS4827 system provides power and distribution for most small, medium, and even some large power applications .

A GPS4827 power system with a Pulsar Plus Controller is limited to a single cabinet. Systems using the Millennium II Controller allow for expansion up to three cabinets.

System Options

The GPS4827 system can configured as a distributed power system combining power rectification and DC distribution into one cabinet, or as a centralized power plant with bulk power output.

Features

- Distributed power plant with up to 147kW power per plant
- Centralized power plant with up to 261kW power
- AC inputs ranges: 110-120 Vac (Low), 200-277 Vac (High)
- AC power options
 - AC circuit breakers
 - Terminal strip connections
- Rectifier shelves can be spread across multiple bays
- Cabinet (in.): 24x24x84 standard, 27x30x84 (wide)

Infinity Rectifier Family

The Infinity TEZ rectifier series offers modules for use in -48V applications.

Rectifier:

- NE050AC48ATEZ Rectifier, 50A/48V Output
- NE075AC48ATEZ Rectifier, 75A/48V Output

Galaxy Millennium II & Pulsar Plus Controllers

The Galaxy Millennium II controller combines sophisticated power monitoring and remote management. This flagship controller simplifies operations and maintenance while lowering administrative costs supporting up to 72 rectifiers. Remote peripheral modules can support over 500 monitoring points for OmniOn Power or third party devices. Ethernet, SNMP, Modbus RTU, and TL1 provide integration with power engineering and NOC workflow.

As an economical alternative with similar remote monitoring capabilities, the 4827 can be equipped with the Pulsar Controller. Designed to monitor and control system components including rectifiers, converters and distribution modules via a multi-drop RS485 digital communications bus. System status, parameters settings and alarm thresholds can be viewed and configured from the controller's front panel or local/remote PC interface.

Applications

- Telecommunications Networks
- Cable Networks
- Indoor/Outdoor Wireless
- Routers/Switches
- Fiber in the Loop
- DC Power Transmission
- Data Networks

Infinity TEZ Power Rectifiers – Key Building Block for GPS4827 Systems

- Compact - 1RU x 4 across form factor providing high power density
- Plug and Play with automatic ID - installation of the rectifier in a shelf connected to a compatible system controller initializes all set up parameters and IDs shelf position automatically. No adjustments are needed. Product identifications, serial numbers and software versions are provided in the embedded inventory report page.



- Extended service life – parallel operation with automatic digital load sharing ensures that parallel units are not unduly stressed even when a unit fails or is removed.
- Monitoring / control – the built in microprocessor controls and monitors all critical
- rectifier functions and communicates with the system controller using the built in Galaxy Protocol serial interface.
- Fail safe performance – hot insertion capabilities allow for rectifier replacement without system shutdown; soft start and inrush current protection prevent nuisance tripping of upstream breakers. Equipped with true 48V back-bias, full communications are retained when AC is removed.

Advantages

- Now available with either 50 or 75 Amp high efficient rectifiers
- Galaxy Millennium II or Galaxy Pulsar Plus controller options
- Multiple AC input choices including:
 - 1Φ 120/240 Vac
 - 3Φ 240 Vac
 - 480Y/277 Vac phase to neutral operation
 - 3Φ 208 Vac

Features

- Developed for Extended temperature range
- Redundant fan cooling
- 1U height, hi power density
- Front panel LED indicators
- Wide range AC input
- 48V back bias
- Hot pluggable
- Digital load sharing over robust RS485 communications
- RoHS compliant

Power Rectifier Specifications

MODEL	ORDERING NUMBER
NE050AC48ATEZ	CC109158878
NE075AC48ATEZ	CC109163473
NE075AC48ATEZ+	1600248701A

INPUT	NE050AC48ATEZ	NE075AC48ATEZ/NE075AC48ATEZ+
Voltage Range	95-275Vac (95-140 Low, 175-275 High)	95-305Vac (95-140 Low, 175-305 High)
Input Current	15A @ 100-120Vac 12A @ 200-277Vac	15 @ 100-120Vac 22A @ 200-277Vac
Input Frequency	45 – 66Hz	45 – 66Hz
Power Factor	0.98 at >50% load	0.98 at >50% load
Efficiency	>95% (Peak 96%)	>95% (97% for 48ATEZ+)
Total Harmonic Distortion	<5% @loads over 50%	<5% @loads over 50%

OUTPUT	NE050AC48ATEZ	NE075AC48ATEZ/NE075AC48ATEZ+
Voltage Adjust Range	42-58Vdc	42-58Vdc
Voltage Nominal	54.5V	54.5V
Regulation (with controller)	±0.05% typical	±0.05% typical
Ripple	100mVrms	100mVrms
Output Current		
High-Line	50A @ 54.5V (57A @ 48V)	75A @ 54.5V (82A @ 48V)
Low-Line	22A @ 54.5V	22A @ 54.5V
High-Line in legacy shelf	50A @ 54.5V	
Heat Dissipation @ max out 1	158W / 539 BTU/hr	249W / 850 BTU/hr
Watts per cubic inch	24W	34W

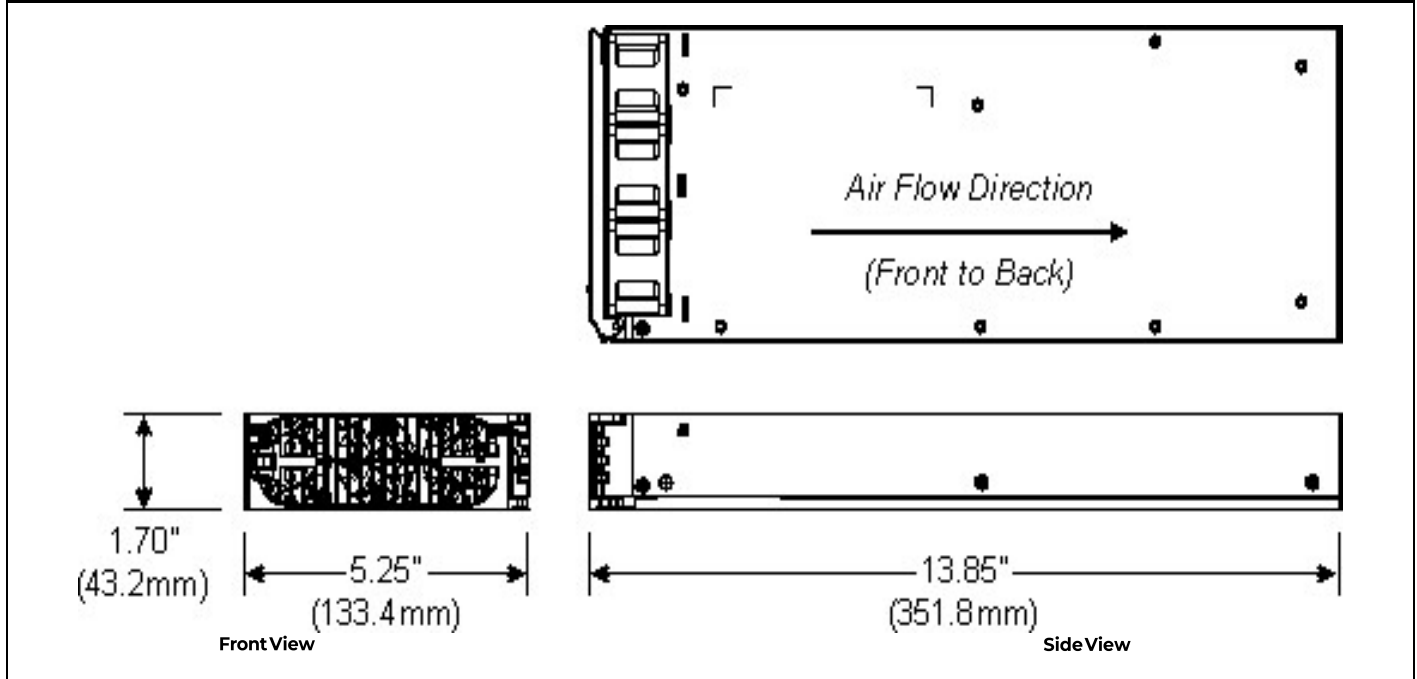
ENVIRONMENTAL	
Operating Temperature	-40°C to +75°C (-40 to 167°F)
Storage Temperature	-40°C to +85°C (-40 to 185°F)
Humidity	< 95% non-condensing
Altitude	4000M (altitudes above 2000M, peak operating temp. de-rates 0.656°C/100M 4000M peak temperature rating is 62°C)

MECHANICAL	
Length (inch/mm)	13.85 / 352
Width (inch/mm)	5.23 / 133
Height (inch/mm)	1.63 / 42
Weight (lb/Kg)	5.05 / 2.2

SAFETY AND STANDARDS COMPLIANCE	NE050AC48ATEZ / NE075AC48ATEZ
NEBs Level 3	Evaluated by Independent NRTL Test Lab to Telcordia GR63-CORE and GR1089-CORE [Level 3]
Safety	CE Mark to Low Voltage Directive 2006/95/EC and EMC Directive 2004/108/E (Rectifiers only) UL 60950-1, 2nd Ed. Recognized CSA C22.2 No. 60950-1-07, 2nd Ed. + A1:2001 (MOD)
RoHS	Compliant to RoHS EU Directive 2002/95/EC; RoHS 6/6
EMC	European Directive 2004/108/EC; EN55022, Class A; EN55024; FCC, Class A; GR1089-CORE
ESD	EN61000-4-2, Level 4

Power Rectifier Specifications (continued)

OUTLINE DRAWING



Controller Options

Pulsar Plus

The Pulsar Plus family of controllers provides system monitoring and control features for the Infinity power rectifiers. This controller monitors and controls the system components including rectifiers, converters, and distribution modules via a multi-drop RS485 digital communications bus. Basic system status, parameters, settings, and alarm thresholds can be viewed and configured from the controller's front panel display. Full functionality access, assignment and configuration all available functionality, along with monitoring and mapping of alarm inputs and output relays can be performed from a laptop computer connected to a local RS-232 port. or remote access connection via Ethernet port through a network connection. An optional modem is also available.



This controller utilizes standard network management protocols allowing for advanced network supervision. Web server functionality is included within the controller.

Key Features

Standard Battery Management Features

- Float/boost mode control
 - Manual boost
 - Manual timed boost locally, T1.317, and remotely initiated
 - Auto boost terminated by time or current
- Battery discharge testing
 - Manual (local/remote)
 - Periodic
 - Plant Battery Test (PBT) input driven
 - Configurable threshold or 20% algorithm
 - Graphical discharge data
 - Rectifiers on-line during test
- Slope thermal compensation
 - High temperature
 - Low temperature
 - Step temperature
 - STC Enable/Disable, low temperature Enable/Disable
 - Configurable mV/°C slopes
- State of charge indication
- High temperature disconnect setting
- Reserve-time prediction

- Recharge current limit
- Emergency Power-Off input

Integrated Monitoring Inputs/Outputs

- System plant voltage (accuracy $\pm 0.04\%$, resolution 0.01V)
- One system shunt (accuracy $\pm 0.5\%$ full scale, resolution 1A)
 - Battery or load
 - Mounted in the return side of DC bus
- Up to 15 binary inputs
 - 6 inputs close/open to battery
 - 9 input close/open to return
 - User assignable
- Up to 7 Form-C output alarms (60VDC @ .5A)
 - User assignable
- 1-Wire™ bus devices
 - Up to 16 temperature probes (QS873)
 - Up to 6 mid-string monitors (ES771)

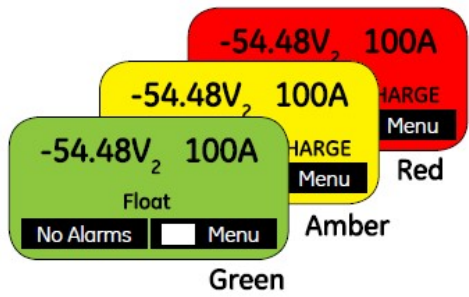
Key Features (continued)

Remote Access and Features

- Integrated 10/100Base-T Ethernet Network
 - TCP/IP (IPv6 and IPv4 compatible)
 - SNMP (V3, V2c, V1) for management
 - SMTP for email
 - Telnet/SSH command line interface
 - DHCP for plug-n-play
 - FTPS for rapid backup and upgrades
 - HTTPS for standard web pages and browsers
 - Shielded RJ-45 interface referenced to chassis ground
- Password protected security levels: User, Super-User, Administrator for all access
- Ground-referenced RS232 system port
- ANSI T1.317 command-line interface
- Modem access support
 - Remote via external modem
 - Callback security
- EasyView2, Windows-based GUI software for local terminal or Modem access
- Optional 1U Display with context alarm indicating backlight feature
- Supporting the following Protocols:
 - SNMP V3
 - SSL
 - SSH
- ECO Priority controls and features
 - Advanced generator controls to help minimize fuel consumption for off grid applications
 - ECO Energy Management allowing for non-ECO sources outputs to be minimized while ECO resources are available
 - Source and load trend logging
- Monitor and control of more than 60 connected devices
 - Robust RS485 system bus
- Standard and user defined alarms
 - Alarm test
 - Assignable alarm severity: Critical, Major, Minor, Warning, and record only
 - 10 alarm relays (7 user assigned)
- Rectifier management features
 - Automatic rectifier restart
 - Active Rectifier Management ARM (energy efficiency)
 - Remote rectifier (on/off)
 - Reserve Operation
 - Automatic rectifier sequence control
 - N + X redundancy check
- Multiple Low Voltage Load and Low Voltage Battery Disconnect thresholds (3)
- Configuration, statistics, and history
 - All stored in non-volatile memory
 - Remote/local backup and restore of configuration data
- Industry standard defaults
 - Customer specific configurations available
- Remote/local software upgrade
- Basic, busy hour, and trend statistics
- Detailed event history
- User defined events and derived channels

Standard System Features

Pulsar Plus Specifications

GENERAL		
Operating Voltage	±48 Vdc (Range: ±18 to ±60 Vdc)	
Input Power	Less than 7W	
Operating Temperature Range	-40°C to +75°C (-40°F to 167°F)	
Operating Relative Humidity	0 - 95% (non-condensing)	
Storage Temperature Range	-40°C to +85°C (-40°F to 185°F)	
Physical Specifications	Sizes vary by packaging option	
Display	8-line by 40-character with alarm context sensitive backlit LCD	

SAFETY AND STANDARDS COMPLIANCE	
NEBs	Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 and GR1089-CORE, Issue 5
Safety	ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014
RoHS	Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6
EMC	European Directive 2004/108/EC; EN55022 Class A, EN55024; FCC, Class A; GR1089-CORE, Issue 5

AGENCY CERTIFICATIONS	
NEBs Level 3	Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 and GR1089-CORE, Issue 5
EMC	European Directive 2004/108/EC; EN55032, (CISPR22) Class A, EN55024 (CISPR24)
Safety	ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014

Galaxy Millennium* II

Galaxy Millennium II is our primary controller designed to meet the needs of the most advanced power systems. Building on the Galaxy Millennium platform, the Galaxy Millennium II delivers state-of-the-art performance by combining sophisticated control, monitoring, and remote network access previously on three separate circuit packs into a single integrated unit. The controller has been designed to simplify plant administrative and surveillance routines as well as reduce operating, provisioning, and personnel expenses. Configuration of the Galaxy Millennium II can be performed via menu based front panel display, a local terminal or remote modem using EasyView2, or through a local or remote network connection utilizing standard web browsers or network protocols. In addition to its standard integrated monitoring capabilities, this controller offers extensive external monitoring using bay interface cards (BICs), distribution control cards, and remote peripheral monitoring modules (RPMs) designed for various inputs and transducers. Additional external relay contacts are also available. The Galaxy Millennium II, with integrated network access, allows for advanced network supervision using standard network management protocols and available network management software.



Key Features

Remote Access and Features

- Integrated 10/100Base-T Ethernet Network
 - TCP/IP (IPv6 and IPv4 compatible)
 - SNMP (V3, V2c, V1) for management - SMTP for email
 - Telnet/SSH for command line interface
 - TL-1
 - DHCP for network plug-n-play
 - FTP/SFTP for rapid backup and upgrades
 - HTTP/HTTPS for standard web pages and browsers
 - Standard shielded RJ-45 interface referenced to chassis ground
- MODBUS Communications protocol
- Optional Data switch
 - Connections to 3 standard RS-232 devices for pass-through and alarm management
 - BSN extension to provide 3 additional
- Configurable RS-232/485 port for remote via TL1/X.25
- EasyView2, Windows-based software for configuration and reporting through local terminal or Modem connections
- Multiple password-protected security levels:

Standard System Features

- Monitoring and control of up to 85 RS485 serial

connected devices

- Maximum of 85 serial switch mode rectifiers
- Maximum of 32 bay interface cards (BICs)
- Maximum of 16 serial converters
- Standard and custom User Defined system alarms
 - Alarm cut-off
 - Alarm test
 - Multiple-level alarm severity: Critical, Major, Minor, Warning, and record-only
- Standard rectifier management features
 - Automatic rectifier restart
 - Reserve engine transfer
 - Adaptive Rectifier Management (ARM)/ Energy Efficiency
 - Remote rectifier (on/off) control
 - Automatic rectifier sequence control
 - N + X redundancy check
- Low Voltage Load and Low Voltage Battery Disconnect Options (3)

Key Features (continued)

- Various levels of configuration, statistics, and history
 - All stored in non-volatile memory
 - Remote and local backup and restore of configuration data
- Remote and local software upgrade
- Basic, busy hour, and trend statistics kept
- Detailed history kept
- Maintenance reminders
- Inventory management
- User defined events and derived channels
- Hardware DIP switch access control

Standard Battery Management Features

- Float/boost mode control
 - Manual front panel boost
 - Manual timed boost locally, T1.317, and remotely initiated
 - External timed boost
 - Battery thermal protect module (BTP)
 - Auto boost terminated by time or current
- Battery discharge testing
 - Manual (local/remote)
 - Periodic
 - Plant Battery Test (PBT) input driven
- Slope thermal compensation
 - High temperature compensation
 - Low temperature compensation
 - Step temperature
 - STC Enable/Disable, low temperature Enable/Disable
 - Configurable mV/°C adjustment
- High temperature disconnect/step setting
- Sophisticated reserve-time prediction
 - User configurable system reserve low alarm during normal operation
 - User configurable reserve time low alarm
- Recharge current limit

- Integrated “At Rate Calculator” for estimation purposes
- Battery discharge trace data
- Emergency Power-Off Input
- Lithium battery fail input

Features Integrated Outputs

- Traditional office alarm interface with 19 Form-C alarm outputs (60VDC @.3A)
 - Standard default assignments: Power Critical-Audio, Power Critical-Visual, Power Critical- External, Power Major-Audio, Power Major-Visual, Power Major-External, Power Minor- Audio, Power Minor-Visual, Power Minor-External, Major Fuse (MJF), Minor Fuse (MNF), Battery On Discharge (BD), AC Fail (ACF), Rectifier Fail, High Voltage (HV), Very Low Voltage (VLV), Controller Fail, User Relay 1, User Relay 2
 - 16 Form-Cs are user assignable
- 1 1/3A Auxiliary Battery Supply (ABS) Output

Key Features (continued)

Remote Peripheral Monitoring & Control

- Modular monitor and control growth options for up to 95 monitoring modules optimized for DC voltage and shunt monitoring, binary input detection, temperature monitoring, external transducer monitoring
- Additional Form-C relay output control available
- Devices managed and powered by the controller via one twisted-pair cable over distances of 300m or more
- Daisy-chain connections from module to module reduce installation costs and cable congestion
- Modules can be located near monitored source
- Various panels for rack- mounting available

Enhanced Battery Management Features

- Battery discharge test options including periodic and manual tests(local/ remote) with configurable thresholds or 20% discharge algorithm
- State of charge indication
- Rectifiers on-line during test(minimize risk to service)
- Discharge data stored in non-volatile memory. Graphical data available
- Accurate battery reserve time calculations that factor in battery specific parameters, plant voltage, load, temperature, number of battery strings and number of cells per string
- Thermal compensation (STC) and recharge current limit to maximize battery life

Extensive Plant and Monitoring Statistics

- Real-time data and historical statistics help analyze critical performance parameters
- Statistics for planning preventive or corrective maintenance before serious problems occur

Derived Channels

- 32 derived channels enable arithmetic and Boolean operations to be performed on measured values to allow customer specific parameters such as output power to be calculated and managed

Rectifier Management

- Energy Efficiency, provides ability to automatically shutdown selected rectifiers during low plant loads maintaining maximum battery plant efficiency without sacrificing reliability
- Provides Reserve Operation feature for maintaining designated number of rectifiers on during Engine runs as well as proper sequencing for generators
- Provides ability to transfer rectifiers (TR1-TR4) on in certain sequences for return of AC

Galaxy Millennium II Specifications

GENERAL	
Operating Voltage	± 48Vdc (Range: ± 18 to ± 60Vdc)
Input Power	36W (depending on options)
Operating Temperature Range	-40°C to +75°C (-40 to 167°F)
Storage Temperature Range	-40°C to +85°C (-40 to 185°F)
Operating Relative Humidity	0 - 95% (non-condensing)
Physical Specifications	9.24" H x 20.76" W x 2.14" D
Display	8-line by 40-character backlit LCD

SAFETY AND STANDARDS COMPLIANCE	
NEBs	Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 and GR1089-CORE, Issue 5
Safety	ANSI/UL* 62368-1 and CAN/CSA† C22.2 No. 62368-1 Recognized, DIN VDE‡ 0868-1/A11:2017 (EN62368-1:2014/A11:2017)
RoHS	Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6
EMC	European Directive 2004/108/EC; EN55022, Class A, EN55024; FCC, Class A; GR1089-CORE, Issue 5

AGENCY CERTIFICATIONS	
NEBs	Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 and GR1089-CORE, Issue 6 (including level 3 testing)
EMC (Emissions)	European Directive 2014/30/EU; EN55022, (CISPR22) Class B, EN55035 (CISPR24)
Safety	ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014

Ordering Information – GPS4827 Galaxy Power System

The GPS4827 system can be deployed with capacity of up to 4800 amps in a single cabinet or expanded over multiple cabinets to 5400 amps. Designed for either internal input AC breakers or terminal strip terminations, rectifier shelves can be spread across multiple bays to maximize distribution availability and provide modular growth. In applications needing additional distribution, two more bays can be added and dedicated exclusively for distribution. For greater flexibility and working space, the 4827 may be equipped with a larger 36 inch wide distribution bay to accommodate large cable termination and egress.



Key Features

- AC input applications
 - 1Φ 120 Vac L-N
 - 3Φ 208/240 Vac L-L
 - 480Y/277 Vac 3Φ L-N
- Full featured control and monitoring capability with the flagship Galaxy Millennium II or Pulsar Plus controller
- DC distributed configuration at up to 2700 amp capacity per bay or 5400 amp system capacity for multiple bays
- DC centralized configuration at up to 4800 amp capacity per bay
- TE Rectifier efficiency

Additional Information

REFERENCE DOCUMENT	TITLE
H5694827	GPS4827 Ordering Guide
10832736	GPS Installation Guide
108994645	Millennium II Controller Product Manual
107570517	Galaxy Remote Peripheral Monitoring System Product Manual (167790063)
CC848815341	Pulsar Plus Controller Family Product Manual

4827 System Specifications

CABINET SIZE		
	Standard	Wide
Height	84.0 inches (2,134mm)	84.0 inches (2,134mm)
Weight	23.6 inches (600mm)	29.6 inches (752mm)
Depth	23.6 inches (600mm)	26.7 inches (678mm)

THERMAL	NE050AC48ATEZ	NE07AC48ATEZ
12 rectifiers	1,896W (6468 BTU/hr)	2988W (10,200 BTU/hr)
24 rectifiers	3792W (12,936 BTU/hr)	5976W (20,400 BTU/hr)
36 rectifiers	5688W (19,404 BTU/hr)	8964W (30,600 BTU/hr)
64 rectifiers	10,112 W (34,496 BTU/hr)	15,936 W (54,400 BTU/hr)

AGENCY CERTIFICATIONS	
UL	Canada/US UL60950/UL1801
EMI/EMC	CISPR class A conducted and radiated
NEBS Level 3	GPS4827: Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 & GR1089, Issue 5. Pending

ENVIRONMENTAL	
Operating Temperature Range	0°C to +43°C (32°F to 113°F)
Operating Relative Humidity	< 95% non-condensing
Storage Temperature Range	-40°C to +85°C (-40 to 185°F)
EMC	FCC and CISPR22 (EN55022) Class A
Immunity	GR1089, EN55024

4827 System Specifications

OUTLINE DRAWING



Standard Cabinet

Wide Width Cabinet

AC Input Specifications – GPS4827 with either 50A or 75A Rectifiers

												# OF BUS JUMPER KIT TO BRIDGE 2 RECTIFIER INPUTS WITH SINGLE CB		
CONVERT PH/PH TO PH/N *	AC PNL	INPUT (PER CIRCUIT)	EXTERNAL CB	CONDUIT	PH/N LEAD	EG LEAD								
ORDERING CODE		VOLTAGE	CURRENT	QTY	SIZE	QTY	SIZE	QTY	SIZE	QTY	SIZE	CC408641204		
NA	G031	208/240V	152A	1	3P 200A	1	1.5/2	3	3/0	1	6			
848233862		480 (277V)	74.8A		3P/4W 100A			4	2					
NA	G032	208/240V	152A	2	3P 200A	2	1.5/2	6	3/0	2	6			
848698783		480 (277V)	74.8A		3P/4W 100A			8	2					
	G036	208/240V	22A	12	2P 30A	2	1.5/2	24	6	2	6			
						3			8	3	8			
			44A	6	2P 60A	4			1	10	4			10
						3				12	6			3
		277V	18.7A	12	1P 25/30A	2	1.5	24	6	2	6			
						3			8	3	8			
			37.4A	6	1P 25A	4			1	10	4		10	
						3				12	6		3	
	G037	208/240V	22A	24	2P 30A	3	2	48	6	3	6			
						4	1.5		8	4	8			
			44A	12	2P 60A	6	1		24	6	6		10	
						3	2		48	6	3		6	
		277V	18.7A	24	1P 25/30A	4	1.5	8		4	8			
						6	1	24		6	6		10	
			37.4A	12	1P 50A	4	2	72		6	4		6	
						9	1		8	9	8			
	G038	208/240V	22A	36	2P 30A	4	2	72	6	4	6			
			44A	18	2P 60A	9	1		36	6	9		10	
		277V	18.7A	36	1P 25/30A	4	2	36	6	4	6			
			37.4A	18	1P 50A	9	1		8	9	8			
	G040	208/240V	22A	64	2P 30A	8	2	128	6	4	6			

*Select the ORDERING CODE with the associated AC Group panel to change the AC input from Phase/Phase to Phase/Neutral

#Select this ORDERING CODE and quantity associated with the AC Terminal Strip Group code to convert from 1 rectifier to 1 CB to 2 rectifiers to 1 CB
Both kits listed are shipped loose and are applied in the field at time of installation









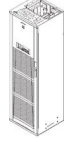
Step 1A: Select Power Bays

-48V Primary (Control) Bays With Millennium Controller For 50A Or 75A Rectifiers

OUTPUT	ORDERING CODE	MODEL	AC INPUT	PHOTO
 Up to 1800A	150041629	GPS 4827 Primary Bay, Millennium II controller, Bulk feed to Circuit Breakers 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt. Note: 480V bulk input solutions require 848698783 neutral strapping kit. H5694827G005, G011, G032	 2 AC Feeds 12 Circuit Breakers	 Vertical Distribution Space Available 56"
 Up to 1800A	150041631	GPS 4827 Primary Bay, Millennium II controller, terminal strip feed 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt H5694827G005, G011, G037	 24 AC Feeds	 Vertical Distribution Space Available 56"
 Up to 2700A	150041632	GPS 4827 Primary Bay, Millennium II controller, terminal strip feed 208/240V/277V AC input for up to 36 NE050/NE075 rectifiers, battery shunt H5694827G005, G011, G038	 36 AC Feeds	 Vertical Distribution Space Available 50"
 Up to 2700A	150043905	GPS 4827 Primary Bay, Millennium II controller, terminal strip feed 208/240V/277V AC input for up to 36 NE050/NE075 rectifiers, 2000A Low Voltage Battery Disconnect H5694827G005, G011, G038, G039	 36 AC Feeds	 Vertical Distribution Space Available 41"
 Up to 4800A	1600483222A	GPS 4827 Primary Bay, Millennium II controller w/ Radius, terminal strip feed 208/240V/277V AC input for up to 64 NE075 rectifiers, bulk DC output H5694827G010, G014, G017, G040W	 64 AC Feeds	 Wide Bay, Bulk Cable DC Output

Step 1A: Select Power Bays (continued)










-48V Primary (Control) Bays With Pulsar Plus Controller For 50A Or 75A Rectifiers

OUTPUT	ORDERING CODE	MODEL	AC INPUT	PHOTO
 Up to 1800A	150041644	GPS 4827 Primary Bay, Pulsar controller, Bulkfeed to Circuit Breakers 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt. Note: 480V bulk input solutions require 848698783 neutral strapping kit. H5694827G005, G012, G032	 2 AC Feeds 12 Circuit Breakers	 Vertical Distribution Space Available 56"
 Up to 1800A	150041636	GPS 4827 Primary Bay, Pulsar controller, terminalstrip feed 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt H5694827G005, G012, G037	 24 AC Feeds	 Vertical Distribution Space Available 56"
 Up to 2700A	150041637	GPS 4827 Primary Bay, Pulsar controller, terminalstrip feed 208/240V/277V AC input for up to 36 NE050/NE075 rectifiers, battery shunt H5694827G005, G012, G038	 36 AC Feeds	 Vertical Distribution Space Available 50"

Step 1B: Select Power Bays (continued)

Supplemental Bays For Use With -48V Primary (Control) Bays For 50A Or 75A








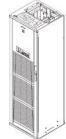


Rectifiers (Millennium 2 Controller Only)

OUTPUT	ORDERING CODE	MODEL	AC INPUT	PHOTO
 Up to 900A	150041645	GPS 4827 Supplemental Bay, no controller, terminal strip feed 208/240V/277V AC input for up to 12 NE050/NE075 rectifiers, battery shunt. Requires External tie bar kit, see step H5694827G006, G036	 12 AC Feeds	 Vertical Distribution Space Available 62"
 Up to 1800A	150041633	GPS 4827 Supplemental Bay, no controller, Bulk feed to Circuit Breakers 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt. Note: 480V bulk input solutions require 848698783 neutral strapping kit. H5694827G006, G032	 2 AC Feeds 12 Circuit Breakers	 Vertical Distribution Space Available 56"
 Up to 1800A	150041634	GPS 4827 Supplemental Bay, no controller, terminal strip feed 208/240V/277V AC input for up to 24 NE050/NE075 rectifiers, battery shunt. Requires External tie bar kit, see step 8 H5694827G006, G037	 24 AC Feeds	 Vertical Distribution Space Available 56"

Step 1B: Select Power Bays (continued)

Supplemental Bays For Use With -48V Primary (Control) Bays For 50A Or 75A





Rectifiers (continued) (Millennium 2 Controller Only)

OUTPUT	ORDERING CODE	MODEL	AC INPUT	PHOTO
 Up to 900A	150041643	GPS 4827 Supplemental Bay, no controller, Bulk feed to Circuit Breakers 208/240V/277VAC input for up to 12 NE050/NE075 rectifiers, battery shunt, used with CC109167672. Requires External tie bar kit, see step 8 Note: 480V bulk input solutions require 848233862 neutral strapping kit. H5694827G006, G031	 1 AC Feeds 12 Circuit Breakers	 Vertical Distribution Space Available 62"
 Up to 2700A	150041635	GPS 4827 Supplemental Bay, no controller, terminal strip feed 208/240V/277V AC input for up to 36 NE050/NE075 rectifiers, battery shunt. Requires External tie bar kit, see step 8 H5694827G006, G038	 36 AC Feeds	 Vertical Distribution Space Available 50"
	150041646	GPS 4827 Centralized Architecture, Supplemental STANDARD Bay, distribution only. Vertical Distribution Space 72.0". No Controller. Can be used with any primary bay selected. Requires External tie bar kit, see step 8 H5694827G006	Distribution Only Bay	 Vertical Distribution Space Available 72"
	CC109167615	GPS 4848 Centralized Architecture, Supplemental WIDE Bay, distribution only. Vertical Distribution Space 72.0". No Controller. Can be used with any primary bay selected. Requires External tie bar kit, see step 8 H569434 G2, 18C, 430, 33	Distribution Only Bay	 Vertical Distribution Space Available 72"

Additional Kits

ORDERING CODE	MODEL
CC408641204	Kit to Field-Connect terminal blocks to provide one feed for two rectifiers. Used with Groups G037, G038
848233862	Kit to Field -Convert AC CB input from Phs-Phs to Phs-N (order one kit with G031)
848698783	Kit to Field -Convert AC CB input from Phs-Phs to Phs-N (order one kit with G032)

Step 2: Select Rectifier

OUTPUT	ORDERING CODE	MODEL	PHOTO
 50A	CC109158878	95 - 145Vac input, 48V, 22A output (max. 25A @48V) 175 - 275Vac input, 48V, 50A output (max. 57A @48V) 145 - 175 linear output increase from 22A to 50A NE050AC48ATEZ	
 75A	CC109163473	95 - 145Vac input, 48V, 22A output (max. 25A@48V) 175 - 305Vac input, 48V, 75A output (max. 82A@48V) 145 - 175 linear output increase from 22A to 75A NE075AC48ATEZ	

Step 3: Select Field Installed Distribution Panels

Field Installed DC Distribution Panels

North America: Cabinet groups G005 or G006 (std); G008 or G009 (wide)






ORDERING CODE	GROUP CODE	PANEL DESCRIPTION	VERTICAL SPACE	ED83143-31 GROUPS
108907791	43A	6 Position 125A-800A circuit breaker panel	12"	1
108907858	42A	3 Position 125A-600A circuit breaker panel	6"	2
108907973	48A	5 Position 125A-800A circuit breaker panel	9"	5
108966342	97A	14 Position 3A-200A bullet breaker panel	6"	16
108985847	98A	22 position 3A-200A bullet breaker panel	9"	17
108907999	52A	10 position 3A-60A TPS fuse panel	6"	53
108966359	54A	5 position 70A-225A TPL-B fuse panel	9"	54
CC109121472	59A	2 position 300A-800A TPL-B,C fuse panel	6"	72
108985235	58	6 position 1-7.5A GMT fuse panel	0	58
108908278	-	Low voltage load disconnect option (order when needing LVLD to a distribution load panel)	-	FA
150045382	-	Return bus for ED groups 1,2,5,21,54,55	-	GC
150045383	-	Return bus for ED groups 11,12,15,16,17,22,53,71	-	GD
	G094A	2 Position 600-1200A NH4 Fuse Panel	12	

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 CODE	AMPERAGE	CB POSITIONS (POLES)	MIN WIRE GAUGE	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	2	
407998269	90	1	2	
407998277	100	1	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 two per breaker			
848745662	3-pole adapter bus kit (includes bus for 5/16" hole lug on 1" centers and hardware), order two per breaker			

Step 4: Select Distribution Components (continued)

Large Circuit Breaker Kits



ORDERING CODE	AMERAGE	CB POSITIONS (POLES)	MIN WIRE GAUGE	PHOTO
108908187	125	1	2	
108908179	150	1	1/0	
108908195	175	1	2/0	
848671889	200	1	4/0	
108908203	225	1	4/0	
848670287	250	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	
08984782	800	4	4 x 4/0	

Large TPL Fuses


ORDERING CODE	AMERAGE	MAX # WIRES PER POSITION	MIN WIRE GAUGE	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 4: Select Distribution Components (continued)


Bullet Style Fuse Holder and TPS Fuses

ORDERING CODE	AMERAGE	WP-92461 LIST	MIN WIRE GAUGE	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

ORDERING CODE	AMERAGE	WP-92461 LIST	MIN WIRE GAUGE	PHOTO
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			

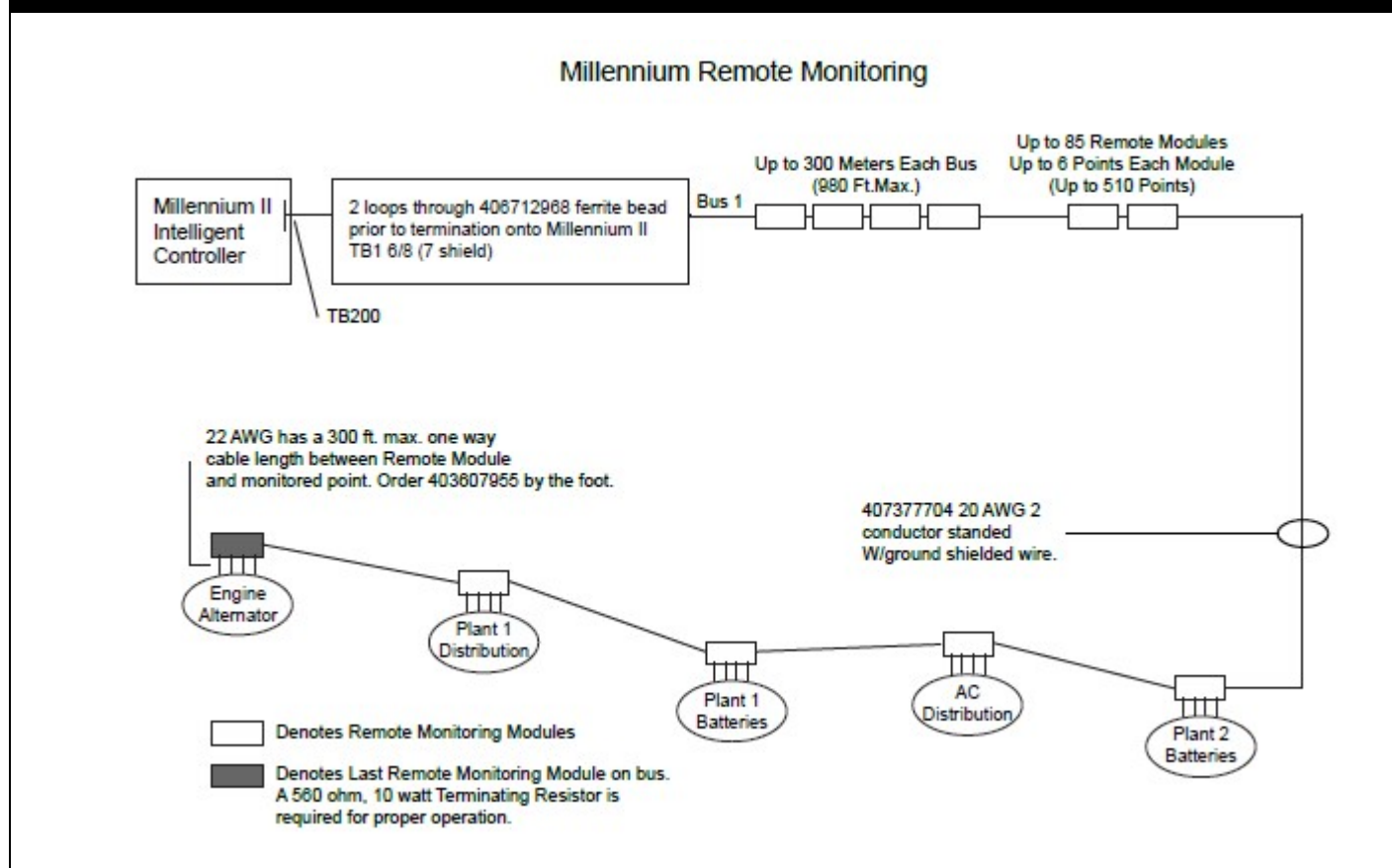
Step 5: Select Remote Peripheral Monitoring Options (Millennium 2 Controller Only)

ORDERING CODE	MODULES	# INPUTS	# TEMP	PHOTO
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 Materials

ORDERING CODE	DESCRIPTION	PHOTO
407377704	Connecting Cable for RPMs (Order by foot)	
848535332	Blue panel for mounting 6 modules above a GPS cabinet	
848412367	White panel for mounting 6 modules in a 23-inch frame inside GPS bay	
847307410	12' Cable to be used with Temperature Probes	
847917879	½" Diameter Ring Terminal Temperature Probe (Cable Required)	
848528881	5/16" Diameter Ring Terminal Temperature Probe (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)	
108984477	23" grey panel, 6 RPM mounting panel for Lorain plants	

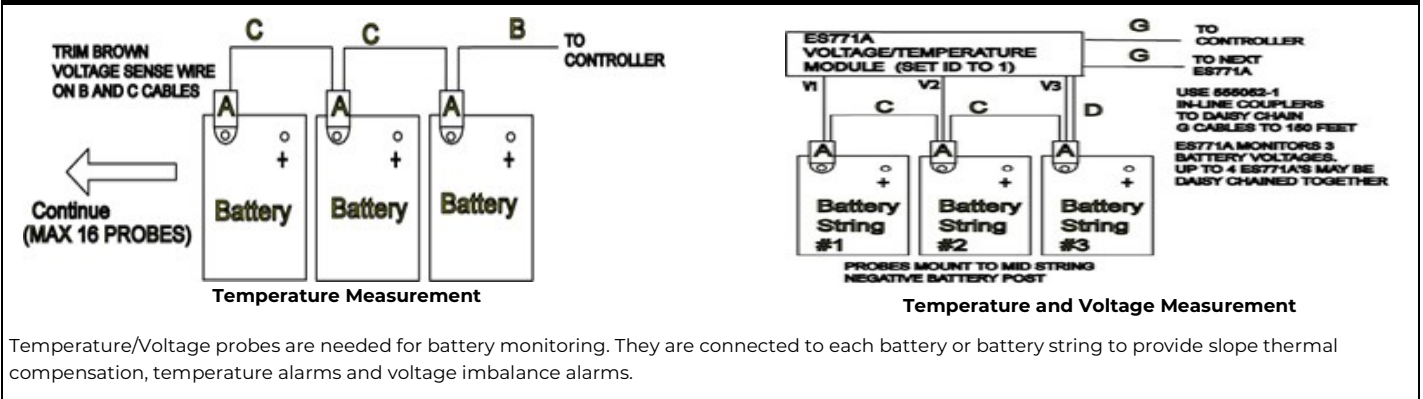
OUTLINE DRAWING



Battery Monitoring


ORDERING CODE	DESCRIPTION	PHOTO
CC109142980	QS873A Thermal Probe (A)	
CC848817024	10 ft wire set (B: thermal probe to controller)	
CC109157434	20 ft wire set (B: thermal probe to controller)	
CC848822560	1 ft wire set (C: thermal probe to thermal probe)	
848719803	5 ft wire set (C: thermal probe to thermal probe)	
CC848822321	10 ft wire set (C: thermal probe to thermal probe)	
850027334	20 ft wire set (C: thermal probe to thermal probe)	
108958422	ES771A Battery Voltage Monitor Card	
CC848791517	2-1/2 ft wire set (D: ES771A to thermal probe)	
108984477	23" grey panel, 6 RPM mounting panel for Lorain plants	
CC848797290	6 ft wire set (D: ES771A to thermal probe)	
848719829	10 ft wire set (D: ES771A to thermal probe)	
CC848791500	4 ft wire set (G: ES771A to ES771A or controller)	
848652947	10 ft wire set (G: ES771A to ES771A or controller)	
555052-1	In-Line Coupler	

OUTLINE DRAWING







Step 6: Select Optional AC Monitoring Equipment (Millennium 2 Controller Only)


Configured Panels

ORDERING CODE	DESCRIPTION	PHOTO
CC408646005	3P/3W 208/240V Line to Line, 10x12x14 box provides current, voltage, and power	
CC408646046	3P/3W 480V Line to Line, 10x12x14 box provides current, voltage, and power	
CC408646054	3P/4W 208V Line to Neutral, 10x12x14 box provides current, voltage, and power	

Transducers

ORDERING CODE	DESCRIPTION	PHOTO
CC408645808	1-phase AC Current Transducer (Built-in CT; 150A max current; 350 kcmil max conductor size)	
CC408645816	1-phase AC Voltage Transducer 120V	
CC408645824	1-phase AC Voltage Transducer 208/240V	
CC408644537	3-phase AC Voltage Transducer 208/240V Line to Line	
CC408645741	3-phase AC Voltage Transducer 208/240V Line to Neutral (120V)	
CC408645832	3-phase AC Voltage Transducer 480V Line to Line	
CC408645840	3-phase AC Current Transducer	

Current Transformers (Required for Configured Panels and Current Transducers)

ORDERING CODE	DESCRIPTION	PHOTO
CC408645857	Current Transformer, 200A primary, 5A secondary, 4 in inside diameter	
408524862	Current Transformer, 400A primary, 5A secondary, 4 in inside diameter	
CC408645865	Current Transformer, 600A primary, 5A secondary, 6 in inside diameter	
CC408645873	Current Transformer, 800A primary, 5A secondary, 6 in inside diameter	
CC408645881	Current Transformer, 1000A primary, 5A secondary, 8 in inside diameter	
CC408645898	Current Transformer, 1200A primary, 5A secondary, 8 in inside diameter	

Miscellaneous

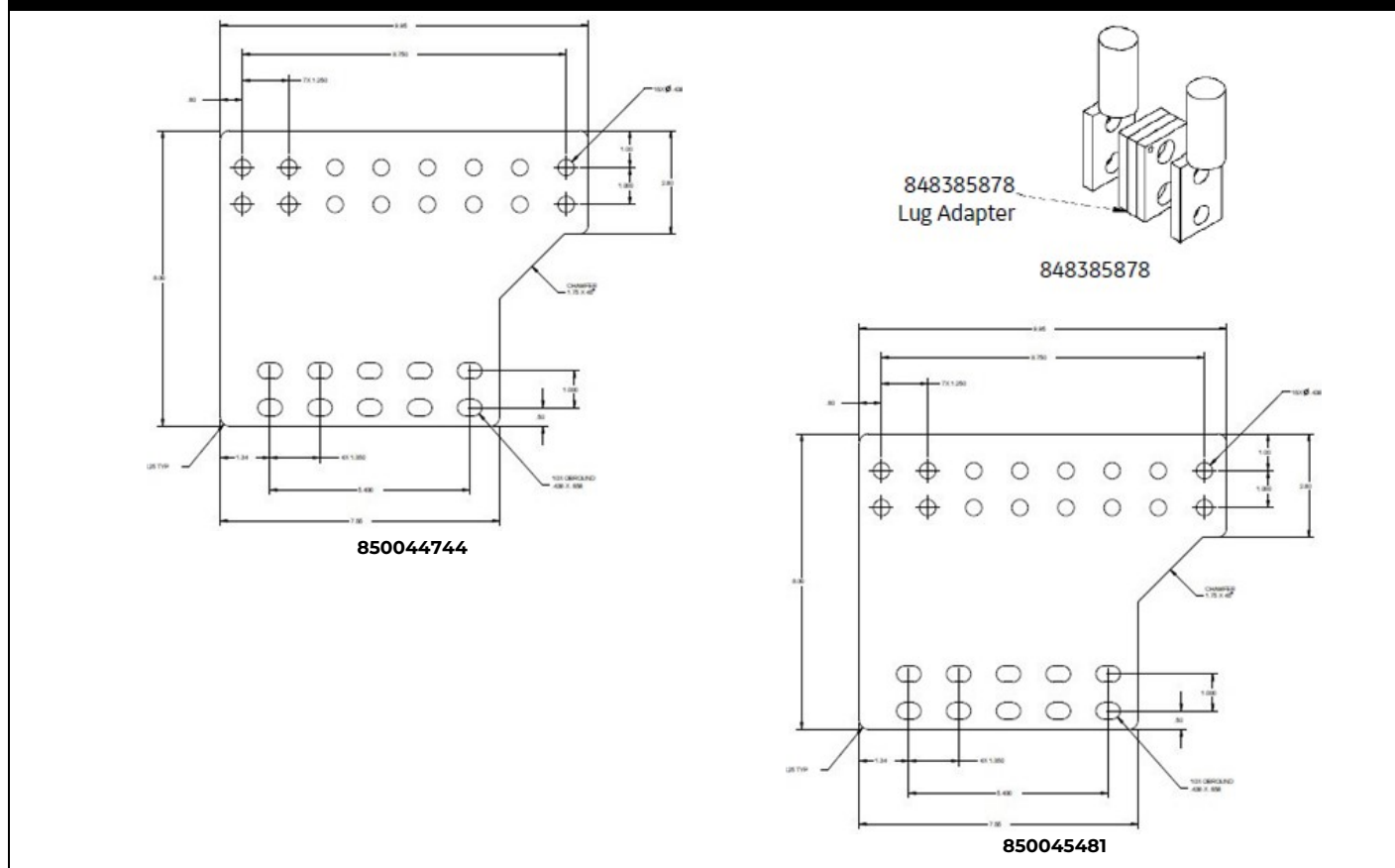
ORDERING CODE	DESCRIPTION
CC408645907	Barrier terminal block to extend the CT secondary leads beyond their 12 ft factory length. Use 12 AWG THHN wire in conduit.
CC408645915	Bud Industries Wall Box (12H x 10W x 8D) w/captive screw cover & internal mounting panel. For mounting transducers

Step 7: Select Battery Termination Options

Order optional termination bar if standard 8 positions may be exceeded

ORDERING CODE	DESCRIPTION
850044744	Optional bus bar that provides 16 output terminations (includes one bus). Use for either battery or return applications.
848385878	Optional adapter that allows two lugs to be stacked and connected at one location. (Provides one adapter)
850045481	Optional bus bar that provides 10 – 750MCM cables wide barrel back to back. (Provides one bus). Use for either battery or return applications.

OUTLINE DRAWING



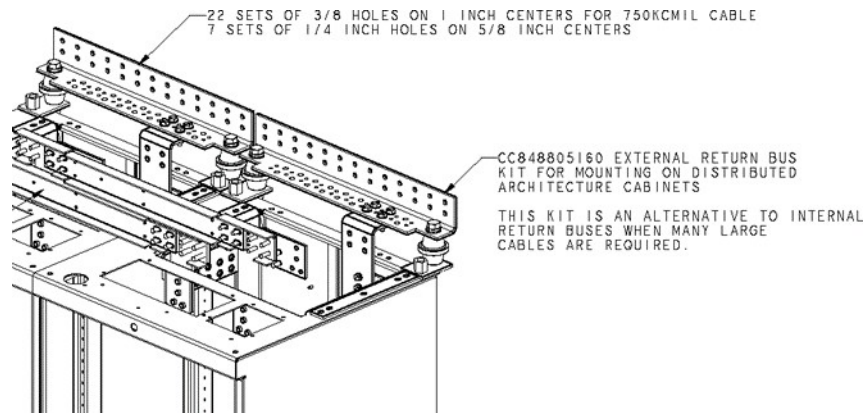
Step 8: Select Optional Return Bus Bars

Standard Architecture 600mm Bays

ORDERING CODE	DESCRIPTION
CC848805160	External Return Bus Kit: Option for termination of all distribution return cables. 1 per cabinet, rated at 2700 Amps. The external return bus kit is an alternative to internal return buses when many large cables are required.
150047508	45 degree External Return Bus Kit: Option for termination of all distribution return cables. 1 per cabinet, rated at 2700 Amps. The external return bus kit is an alternative to internal return buses when many large cables are required.
150023060	External Tie Bar Kit: Used when adding supplemental bay(s). 1 per cabinet, rated at 1800 Amps. Use with system where interbay current does not exceed 1800 Amps.
150022833	External Tie Bar Kit: Used when adding supplemental bay(s). 1 per cabinet, rated at 5000 Amps. Use with system where interbay current may exceed 1800 Amps.

Step 8: Select Optional Return Bus Bars (continued)

OUTLINE DRAWING



Reliability

- Distributed fault tolerance
- Proven field performance
- Controller continuity Intelligence

Intelligence

- Industry leading controller features
- Ethernet with variety of protocols for remote access
- Laptop connectivity with intuitive web Interface
- Centralized network management

Investment Protection

- Module Compatibility
- Flexible Upgrade Options

On Time Delivery

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

Training

OmniOn 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

OmniOn 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

OmniOn 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.

For full warranty terms and conditions please visit

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