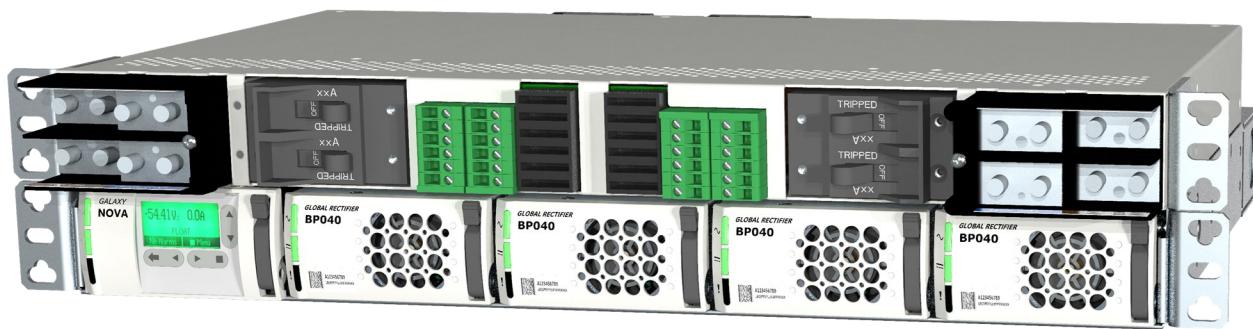


## BPS-Flex Stackable Plants

Low Profile -48V<sub>DC</sub> Rack Mounted Power System



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## Ordering Guide Revision Updates

Rev.	CHANGES/NOTES	DATE
1.0	Preliminary Release	05/22/2023
2.0	Updated Descriptions on shelves, added Snapak® breaker list, updated to OmniOn Power	09/21/2023
2.1	Updated As per OmniOn Power™ template	10/31/2023
3.0	Added 4 new system codes. Added IEC input shelves and initial rectifier shelves. Added AC input adapters and IEC cables	3/5/2024
3.1	Updated description of "AC Input adapters"	04/24/2025

## BPS-Flex Specifications

The OmniOn Power™ BPS-Flex is a -48V voltage power system based around the compact 1RU BP040 rectifier in a 19" rack mount bulk output shelf. BPS-Flex is configurable with a single rectifier shelf and one primary distribution panel and/or additional supplemental distribution panels (Pictured: 2 Circuit Breaker Load & 12 GMT Fuses with 2 Batter Breaker Inputs). The primary distribution panel can be configured with an optional low voltage battery disconnect. Options for GMT Fuses, Snapak Breakers, and Bullet Breaker outputs.



Input	MIN	TYPICAL	MAX
<b>Voltage Range</b>			
• <b>High-Line</b>	175VAC	220VAC	265VAC
• <b>Low-Line</b>	85VAC	110VAC	140VAC
<b>Frequency</b>	45Hz	60Hz	66Hz
<b>Power Factor</b>	98%	99.5%	99.8%
<b>Total Harmonic Distortion</b>			5%

Primary Output	
<b>Nominal Voltage</b>	-48Vdc
<b>Output Rating</b>	150A
<b>Vo Setpoint (Factory)</b>	-54.5Vdc±1%
<b>Vo Range</b>	-42Vdc to -58Vdc
<b>Regulation</b>	±0.5%

Mechanical	
<b>Height (in./mm)</b>	3.5 / 89 (Base system with one power shelves and one distribution)
<b>Width (in./mm)</b>	19 / 484 (System Only - No Frame)
<b>Depth (in./mm)</b>	12.1 / 307 (No AC Cover); 13.65 / 349 (with AC cover)
<b>Weight (Lb/Kg)</b>	14 / 6.35 (Base System with one power shelves and one distribution)

Environmental	
<b>Operating Temperature</b>	-40°C to +65°C (-40°F to 149°F)
<b>Storage Temperature</b>	-40°C to +85°C (-40°F to 185°F)
<b>Relative Humidity</b>	95% max, non-condensing
<b>Altitude</b>	4000M (for altitudes above 2000M, peak operating temperature de-rates 0.656°C /100M; 4000M peak temperature rating is 62°C)

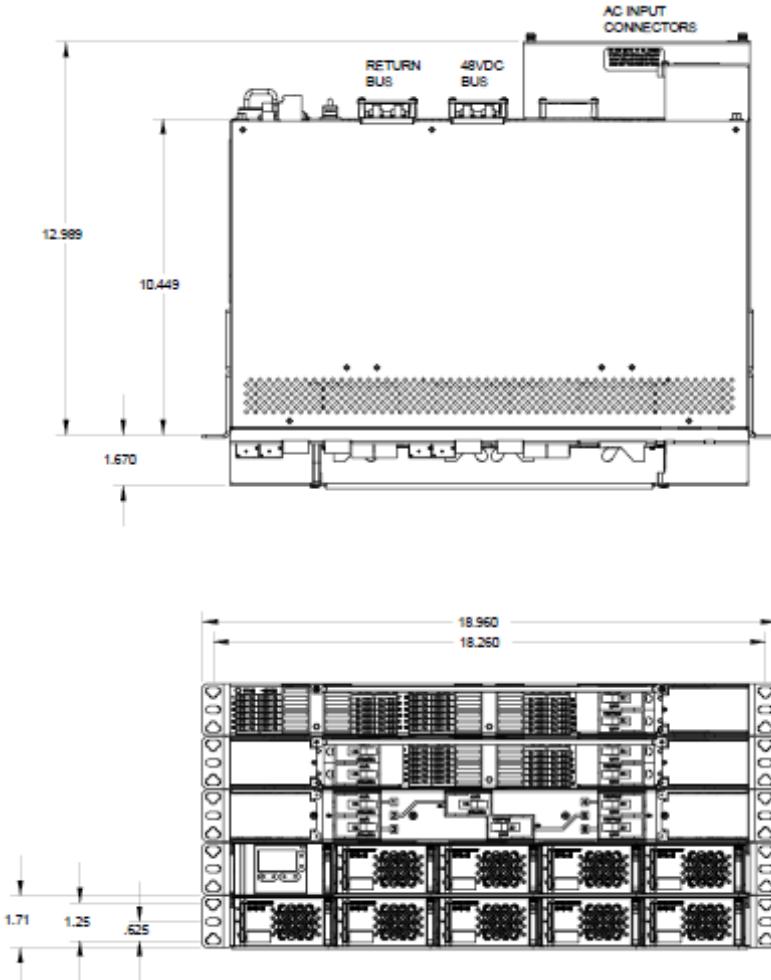
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## BPS-Flex Specifications (continued)

Safety And Standards Compliance	
<b>NEBS</b>	Evaluated by independent NRTL test lab to Telcordia GR63-CORE & GR1089-CORE Issue 6 [Level 3]
<b>Safety</b>	ANSI/UL62368-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014
<b>RoHS</b>	Compliant to RoHS EU Directive 2002/95/EC RoHS 6/6
<b>EMC</b>	European Directive 2014/30/EU; EN55032, Class A; EN55035; FCC, Class A; GR1089-CORE Issue 6

Agency Certifications	
<b>CSA / UL</b>	ANSI/UL60950-1-2014 and CAN/CSA C22.2 No. 60950-1-07, Second Edition + A2:2014 (MOD), dated October 14, 2014
<b>EMI/EMC</b>	European Directive 2014/30/EU; EN55032 (CISPR22) Class A; EN55035 (CISPR24)
<b>NEBS Level 3</b>	GR1089-CORE, Issue 6 Special equipment room cooling may be needed heat dissipation exceeds values of GR-63 Table 4-5

## Drawings



## BP040 Rectifier

- Compact – 1RU form factor providing high power density (42 W/in<sup>3</sup>)
- Shallow depth to allow for systems to be installed in ETSI depth applications where plant depth is a concern.
- Plug and Play-installation of the rectifier in a shelf connected to a compatible system controller initializes all set up parameters automatically. No adjustments are needed.
- Extended service life – parallel operation with automatic 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 converter replacement without system shutdown; soft start and inrush current protection prevent nuisance tripping of upstream breakers.



## Applications

- Telecommunications Networks
- Digital Subscriber Line (DSL)
- Indoor/Outdoor Wireless
- Routers/Switches
- Fiber in the Loop
- Transmission
- Data Networks
- Distributed Antenna Systems

## Key Features

- Extended temperature range
- Front panel LED indicators
- 1U height, hi power density
- 240/230/208/120V<sub>AC</sub> Input
- Digital load sharing
- Hot pluggable
- RoHS compliant

## Rectifier Specifications

Input	BP040AC48TEZ
<b>Voltage Range</b>	95-265V <sub>AC</sub>
<b>Input Current</b>	13.2-11A @ 100-120V <sub>AC</sub> 10.7-8.9A @ 200-240V <sub>AC</sub>
<b>Input Frequency</b>	45 – 66Hz
<b>Power Factor</b>	0.98 at >50% load
<b>Efficiency</b>	> 96% (Peak 96.2%)
<b>Total Harmonic Distortion</b>	<5% @ loads over 50%

Output	BP040AC48TEZ
<b>Voltage Adjust Range</b>	42-58V <sub>DC</sub>
<b>Voltage Nominal</b>	54.5V
<b>Regulation (with controller)</b>	±0.05%
<b>Ripple</b>	100mVrms
<b>Output Current</b>	41.7A @ 48V (Maximum) • <b>High-Line</b> 37A @ 54.5V • <b>Low-Line</b> 22A @ 54.5V
<b>Heat Dissipation @max output</b>	70W / 238 BTU/hr.

## Pulsar Edge Controller

The OmniOn Power™ SPS Pulsar Edge controller delivers large system intelligence in a small system form factor. This family of controllers functions as network interface cards (NIC) and as a full-featured battery plant controller. Its thin modular plug-in form factor minimizes shelf space consumption allowing maximum power module and distribution capabilities.

The controller is used to manage battery plants in telecommunications and data networks or as an interface in bulk power applications in data centers and enterprise applications. Ethernet connectivity with SNMP facilitates remote network management. Optional 1U display version allows convenient access to all controller functions without requiring external cable connections. The display also features alarm context sensitive backlighting for at-a-glance system status.

As a battery plant controller, it provides a complete set of features to monitor and control rectifiers, batteries, and distribution. A flexible set of configurable inputs allow the Pulsar Edge controller to monitor a wide variety of system equipment and incorporate appropriate state information enabling a centralized point of management.

The controller utilizes standard network management protocols allowing for advanced network supervision. OmniOn Power™ 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.



## Applications

- Telecommunications networks
- Data Networks
- Digital subscriber line (DSL)
- Indoor/outdoor wireless
- Routers/switches
- Fiber in the loop
- Transmission
- PBX

## Key Features

### Remote Access and Features

- Integrated 10/100Base-T Ethernet Network
  - TCP/IP
  - SNMP V3 for management
  - SMTP for email
  - Telnet for command line interface
  - DHCP for plug-n-play
  - FTP for rapid backup and upgrades
  - HTTP for standard web pages and browsers
  - Compatible with Galaxy Manager and other management packages
  - 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
  - Call back security
- EasyView2, Windows-based GUI software for local terminal or Modem access
- Optional 1U display with alarm indicating backlight feature

### Standard System Features

- Monitor and control of more than 40 connected devices
  - Maximum of 32 rectifiers
  - Maximum of 6 distribution control cards
  - Robust RS485 system bus
- Standard and user defined alarms
  - Alarm test
  - Assignable alarm severity: Critical, Major, Minor, Warning, and record-only
- Rectifier management features
  - Automatic rectifier restart
  - Adaptive Rectifier Management (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 (4)

- 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 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  $\pm 0.5\%$ , resolution 0.01V)
- One system shunt (accuracy  $\pm 1\%$  full scale, resolution 1A)
  - Battery or load
  - Mounted in the return side of DC bus
- Up to 15 binary inputs
  - Six inputs close/open to battery
  - 9 input close/open to return (number is dependent upon number of output alarms)
  - User assignable
- Up to 6 user assignable Form-C output alarms (50VDC @.3A)
- 1-Wire\* bus devices
  - Up to 16 temperature probes (QS873)
  - Up to 6 mid-string monitors (ES771)

### Galaxy Manager Compatible

- Centralized web server and database with multiple user access to live or managed data with drill down to problem details
- Monitor and control of more than 40 connected devices
- Management information from polling or alarms received from alarm traps from multiple sites are available on one screen via the inter/intranet
- Trend user selected data over time
- Automatic or manual report generation
- Standard engineering tools like reserve time calculators and cable voltage drop analyzer

General	
<b>Operating Voltage</b>	$\pm 24$ Vdc, $\pm 48$ Vdc (Range: $\pm 18$ to $\pm 60$ Vdc)
<b>Input Power</b>	Less than 7W
<b>Operating Temperature Range</b>	-40°C to +70°C (-40°F to 167°F)
<b>Operating Relative Humidity</b>	0 - 95% (non-condensing)
<b>Storage Temperature Range</b>	-40°C to +85°C (-40°F to 185°F)
<b>Physical Specifications</b>	1.75 in. H, 0.75 in. W, 8.00 in. D; 0.5lb
<b>Display</b>	8-line by 40-character backlit LCD
<b>EMC</b>	FCC/EN55032 Class A, CISPR32 Level A

Agency Certifications	
<b>Electrostatic Discharge</b>	EN 61000-4-2 level 4
<b>Radiated Emissions</b>	FCC, Class A; EN 55032, Class A
<b>Safety</b>	UL Listed Component as Part of CPL or SPS Power System

## Step 1: Select Base Power System - BPS-Flex

### BPS-Flex

The below list contains BPS-Flex plants, supplemental distribution modules and rectifier shelves. Systems can be purchased complete or assembled together in the field as customers prefer. Systems are 19" rack mountable with output capacity dependent on the distribution panel solution chosen as show in the system table shown.

Ordering Code	Description	Feature	Qty
1600481917A 	150A BPS-Flex Power system equipped with 1 power shelf, 4 Bullet Breaker & 12 GMT distribution with rear bulk battery inputs, and an Edge controller slot BPS48-2U-AC5-PS4-4DC12BR	Plug-in Breakers GMT Positions Battery Input AC Input	4 12 2 Bulk Rear Ind Term Block
1600481918A 	150A BPS-Flex Power system equipped with 1 power shelf, 4 Bullet Breaker & 12 GMT distribution with rear bulk battery inputs, LVBD, and an Edge controller slot BPS48-2U-AC5-PS4-4DC12BR-LVBD	Plug-in Breakers GMT Positions Battery Input AC Input	4 12 2 Bulk Rear LVD Ind Term Block
1600481919A 	150A BPS-Flex Power system equipped with 1 power shelf, 8 Bullet Breaker & 12 GMT distribution with rear bulk battery inputs, LVBD, and an Edge controller slot BPS48-3U-AC5-PS4-8DC12BR-LVBD	Plug-in Breakers GMT Positions Battery Input AC Input	8 12 2 Bulk Rear LVD Ind Term Block
1600481915A 	150A BPS-Flex Power system equipped with 1 power shelf, 8 Snapak Breaker distribution with 2 front breaker battery inputs, LVBD, and an Edge controller slot BPS48-2U-AC5-PS4-8DCB-LVBD	Snapak Breakers GMT Positions Battery Input AC Input	8 0 2 Breaker Front Ind Term Block
1600482710A 	150A BPS-Flex Power system equipped with 1 power shelf, 2 Bullet Breaker & 12GMT distribution with 2 front battery breaker inputs, and an Edge controller slot BPS48-2U-AC5-PS4-2DC12B	Plug-in Breakers GMT Positions Battery Input AC Input	2 12 2 Breaker Front Ind Term Block
1600481916A 	150A BPS-Flex Power system equipped with 1 power shelf, 2 Bullet Breaker & 12GMT distribution with 2 front battery breaker inputs, LVBD, and an Edge controller slot BPS48-2U-AC5-PS4-2DC12B-LVBD	Plug-in Breakers GMT Positions Battery Input AC Input	2 12 2 Breaker Front Ind Term Block
1600481921A 	150A BPS-Flex Power system equipped with 1 power shelf, 6 Bullet Breaker distribution with rear bulk battery inputs, and an Edge controller slot BPS48-2U-AC5-PS4-6DCBR	Plug-in Breakers GMT Positions Battery Input AC Input	6 0 2 Bulk Rear Ind Term Block

## Step 1: Select Base Power System - BPS-Flex (continued)

<b>Ordering Code</b>	<b>Description</b>	<b>Feature</b>	<b>Qty</b>
1600481920A  -48V	150A BPS-Flex Power system equipped with 1 power shelf, 6 Bullet Breaker distribution with rear bulk battery inputs, LVBD, and an Edge controller slot  BPS48-2U-AC5-PS4-6DCBR-LVBD	Plug-in Breakers	6
		GMT Positions	0
		Battery Input	2 Bulk Rear LVD
		AC Input	Ind Term Block
1600483143A  -48V	150A BPS-Flex Power system equipped with 1 power shelf, 2 Bullet Breaker & 12 GMT distribution with 2 front breaker battery inputs, LVBD, and an Edge controller slot  BPS48-2U-AC3-PS4-2DC12B-LVBD	Plug-in Breakers	2
		GMT Positions	12
		Battery Input	2 Breaker Front
		AC Input	Ind9 IEC C19
1600483436A  -48V	150A BPS-Flex Power system equipped with 1 power shelf, 4 Bullet Breaker & 12 GMT distribution with rear bulk battery inputs, LVBD, and an Edge controller slot  BPS48-2U-AC3-PS4-4DC12BR-LVBD	Plug-in Breakers	4
		GMT Positions	12
		Battery Input	2 Bulk Rear LVD
		AC Input	Ind9 IEC C19
1600483437A  -48V	160A BPS-Flex Power system equipped with 1 power shelf, 4 Bullet Breaker & 12 GMT distribution and an Edge controller slot (No Battery Input)  BPS48-2U-AC3-PS4-4DC12	Plug-in Breakers	4
		GMT Positions	12
		Battery Input	None
		AC Input	Ind9 IEC C19





## Step 1D: Select Controller - BPS-Flex

Ordering Code	Description	Feature	Type	Qty	Picture
1600481780A	Pulsar Edge Controller equipped with 6 Relay Output preprogrammed to Verizon Wireless Alarm configuration . Controller has Display, SNMPV3, IPV6 and Secure Protocol interface.  BPS841A_0I6R_DS	Outputs	Form-C	6	
		Inputs	Close to Battery	4	
		Local Connect		RS232	
		Remote Connect		RJ-45	

## Step 1E: AC Input Adapters

Ordering Code	Description	Picture
1600483880A	BPS AC5 6 TO 2 AC INPUT ADAPTER KIT  Kit includes 1 adapter for 19" or 23" shelves (Input for 8 or 6AWG)	
1600483882A	BPS AC5 6 TO 3 AC INPUT ADAPTER KIT  Kit includes 1 adapter for 19" or 23" to convert 5 or 6 inputs to 3 inputs (Input for 10 to 8AWG)	

## Step 1F: IEC Input Cables

Ordering Code	Description	Picture
8600481880P	SJT Cord, 12AWG, 8ft (Min.), 3 conductors, 105°C Termination: Shelf End IEC C19 /C21 Other End: NEMA 5-20P, 20A, 125V	
8600481881P	SJT Cord, 12AWG, 8ft (Min.), 3 conductors, 105°C Termination: Shelf End IEC C19 /C21 Other End: NEMA 6-20P, 20A, 250V	
8600481882P	SJT Cord, 12AWG, 8ft (Min.), 3 conductors, 105°C Termination: Shelf End IEC C19 /C21 Other End: NEMA L6-20P, 20A, 250V	





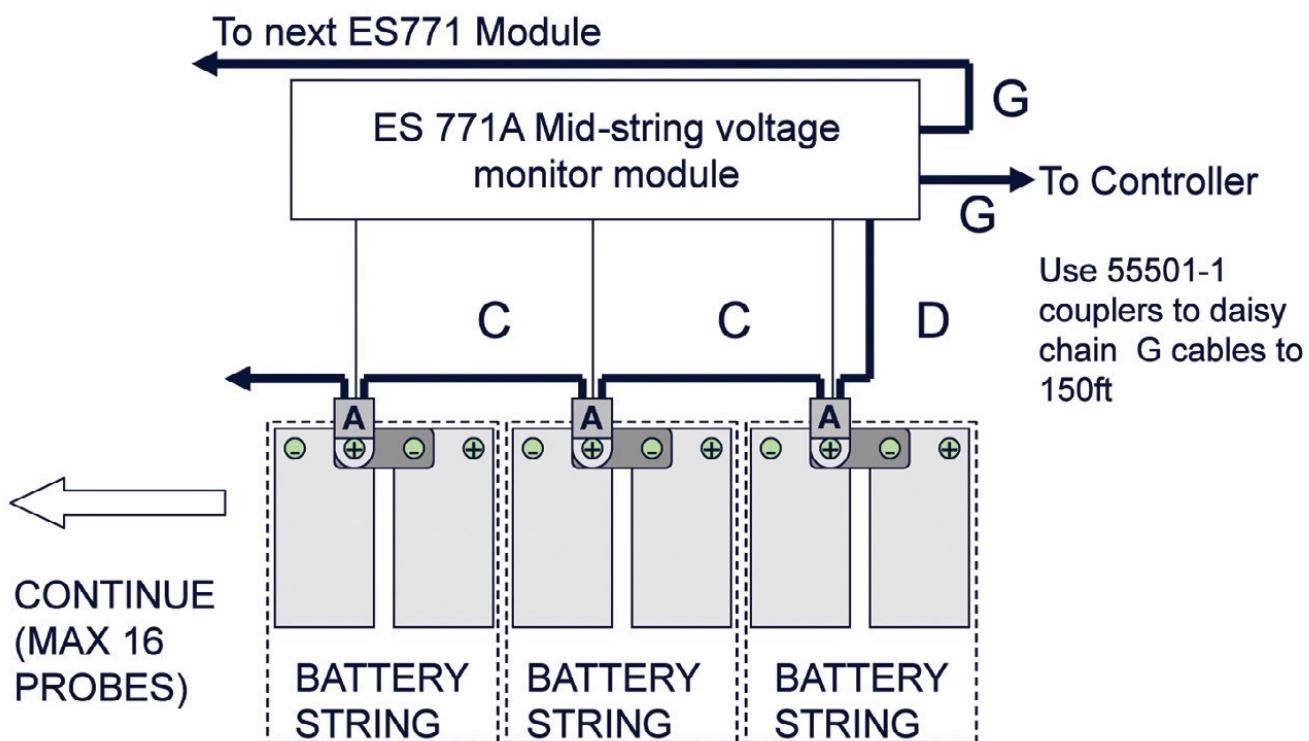
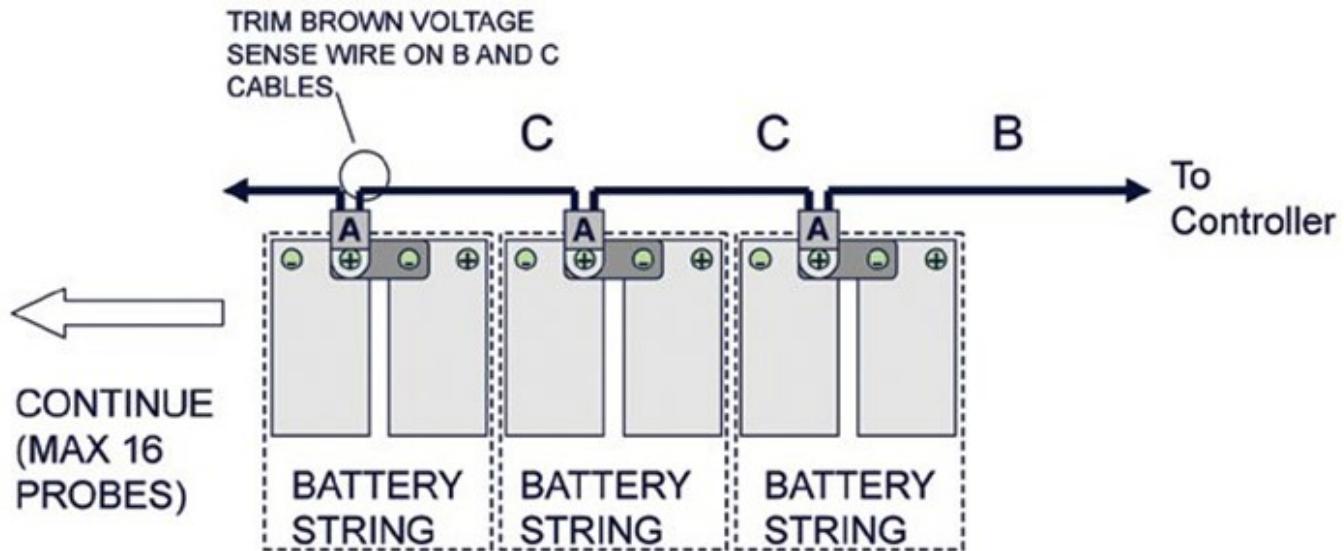
## Step 4: Select Alarm Output and Input Cables

<b>Ordering Code</b>	<b>Description</b>	<b>Picture</b>
CC848890153	5ft Auxiliary output alarm cable for Pulsar Edge Controller	
CC848865980	15ft Auxiliary output alarm cable for Pulsar Edge Controller	
CC848817651	50ft Auxiliary output alarm cable for Pulsar Edge Controller	
CC848890203	5ft Auxiliary input alarm cable for Pulsar Edge Controller	
CC848853614	15ft alarm input cable for Pulsar Edge Controller	
CC848890211	50ft alarm input cable for Pulsar Edge Controller	

## Step 5: Select Battery Monitoring

<b>Ordering Code</b>	<b>Description</b>	<b>Application</b>	<b>Picture</b>
CC109142980	QS873A Thermal Probe	(A)	
150026698	QS873B Ambient Probe	(A)	
CC848817024	10 ft wire set	(B: thermal probe to controller)	
CC109157434	20 ft wire set	(B: thermal probe to controller)	
850052679	40 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)	
7000253598A	30 ft wire set	(C: thermal probe to thermal probe)	
8600089209P	40 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)	
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	(G: extension coupler)	
Temperature probes are needed for battery monitoring, and are connected to each battery or battery string to provide slope thermal compensation and temperature alarms.			

## Step 6: Select Battery Monitoring (continued)



## Additional Information

### Product Documentation for BPS-Flex

Ordering Code	Description
BPS-Flex-Systems	BPS-Flex Configuration drawing
CC848836981	User Guide for the Galaxy Pulsar Edge System Controller
850042636	Edge Supplement
850033855	1U Stackable Dist Shelf J2013001

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