

ORDERING GUIDE

CPS6000 Plant Systems

-48V DC Rack Power Solution



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CPS6000 Plant Systems

-48V DC Rack Power Solution

Overview

The 48V CPS6000-M2 Power Plant is a 23 inch wide, front access, frame mounted battery plant. The system integrates the QS series rectifiers and ringers, extensive dc distribution options, battery connections and the Galaxy Millennium II controller in 500A and 1000A capacity systems. The system operates directly from commercial power in 208/220/240Vac single phase @ 50/60Hz. 110Vac operation is also available with some rectifiers. AC connects to a terminal block panel at the top of the system.

- Rack systems up to 1000 Amps
- 15" depth, ideal for limited spaces
- 96% efficiency
- Rectifier commonality with CPS6000 OSP systems
- Deployed in small central offices, hut/ vault, and large customer premise applications
- Available battery trays for stand alone deployment

Shelf / System Options

CPS6000 Plant is a -48Vdc rack mounted power system that includes high density rectifier shelves and extensive distributions shelves with the QS series rectifiers and ringers found in the CPS6000 product line. The CPS6000 Plant Power System can be configured in both 42" and 84" tall 23" wide racks with optional battery trays.

Rectifier/Ringer Options

The CPS6000 has a wide range of rectifiers from 15A to 50A with input voltages both in 120V and 208/240V nominal for worldwide application. The entire line of rectifiers is designed for operation in the temperature range -40C to +75C. The CPS6000 is also available with the ringer module for 100VA ring voltage generation with true 1+1 redundancy for reliable remote terminal deployment.

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 ABB or third party devices. Ethernet, SNMP, and TL1 provide integration with power engineering and NOC workflow



Benefits

Rack Based Power System

- Vertical Airflow
- Comprehensive distribution options
- Optional battery trays for complete power rack solution

Intelligence

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

Investment Protection

- Rectifier commonality with CPS6000 shelf

On Time Delivery

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

Total Efficiency

The ABB 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 competitive alternatives.

CPS6000 QS-TE Rectifiers



The CPS6000 rectifiers are designed to operate in harsh temperature environments converting AC power to DC power. Integrated into the CPS6000 Power System, the Total Efficiency (TM) QS Series Rectifiers provide a battery reserve system with battery management features such as slope thermal compensation, low-voltage disconnect, battery high temperature alarm and shorted cell detection.

Applications

- OSP Cabinets
- DSL Equipment
- Customer Premise
- Indoor/outdoor wireless
- Fiber in the loop
- Digital Loop Carrier
- Data networks
- PBX

Key Features

- Extended temp range
- Redundant fan cooling
- Front panel LED indicators
- 2U height, minimized depth
- Analog load sharing
- Constant Power Operation
- Hot pluggable
- RoHS compliant

Input/Output

| Ordering Code | Rectifier Model Number | Nominal Output Current | Input Voltage* | Input Amps | Output Power** | Heat Dissipation |
|---------------|--|------------------------|----------------|------------|----------------|------------------|
| CC109158176 | QS860ATEZ Rectifier | 10A | 85-150Vac | 5.0A | 545 W | 184 BTU |
| | | 10A | 165-275Vac | 2.8A | 545 W | 162 BTU |
| CC109158168 | QS861ATEZ Rectifier | 15A | 85-150Vac | 7.3A | 818 W | 210 BTU |
| | | 15A | 165-275Vac | 4.2A | 818 W | 162 BTU |
| CC109158184 | QS862ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362W | 339 BTU |
| | | 25A | 165-275Vac | 6.9A | 1363 W | 245 BTU |
| CC109161758 | QS863ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 30A | 165-275Vac | 8.3A | 1635 W | 318 BTU |
| CC109158151 | QS864ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 40A | 165-275Vac | 11.1A | 2180 W | 424 BTU |
| CC109149340 | QS865ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 50A | 165-275Vac | 14.0A | 2725 W | 614 BTU |
| CC848902841 | CPS6000 Insulating Rectifier Slot Filler | | | | | |
| 150019315 | QS-Blank Rectifier Chassis | | | | | |

*Operating frequency range 45-66Hz

**Nominal Output voltage is 54.5Vdc

| Environmental | |
|-----------------------|--------------------------------|
| Operating Temperature | -40°C to +75°C (-40 to 167 °F) |
| Storage Temperature | -40°C to +85°C (-40 to 185 °F) |
| Power Derating | > +55°C |
| Relative Humidity | 0 to 95% non-condensing |
| Altitude | 4000m max |
| Audible Noise | < 60dBA |

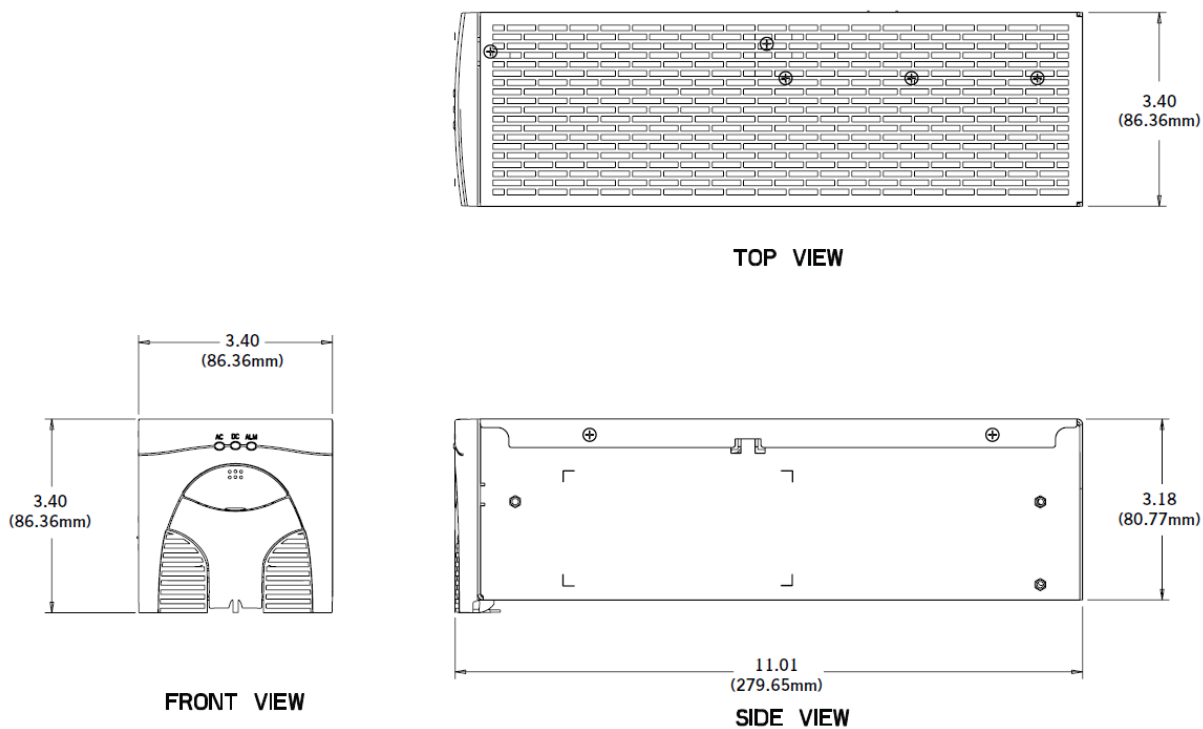
| Specifications | |
|---------------------------|---|
| Operating Voltage Range | 42-58 Vdc |
| Boost Voltage | 48-58 Vdc |
| Operating Frequency | 45-66Hz |
| Output Voltage Regulation | +/- 0.5% |
| Output Ripple Noise | 250mV |
| Psophometric Noise | 2 mV |
| Power Factor | >0.95 for >50% loads |
| Total Harmonic Distortion | <5% at full load for QS863/QS864/QS865 <10% at full load for QS860/QS861/QS862 |

| Mechanical | |
|--------------------|------------|
| Length (in. / mm) | 11.2 / 285 |
| Width (in. / mm) | 3.4 / 87 |
| Height (in. / mm) | 3.4 / 87 |
| Weight (lbs. / kg) | 5.75 / 2.6 |

| Safety and Compliance | |
|-----------------------|--|
| NEBs | Evaluated by independent NRTL test lab to Telcordia GR63 and GR1089-CORE, Issue 4NEBs Level 3 Certified Zone 4 rated (all floor) |
| Safety | UL 609501-1 Recognized CSA C22.2 No. 60950-1-03 Certified |
| RoHS | Compliant to RoHS Directive 2011/65/EU and amended Directive (EU) 2015/863. |
| EMC | FCC and EN 55022 Class B, FCC Class B |
| ESD | EN61000-4-2 Level 4 |

Dimensions

Outline Drawing



Galaxy Millennium™ II Controller



Galaxy Millennium II is our flagship 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. The ABB Galaxy Manager network management software can be used to meet power system engineering, operations and maintenance needs. Via the World Wide Web, users gain access to live data and information logged into Galaxy Manager's centralized server from each monitored system controller across the power network.

Applications

- Infinity NE-M
- CPS6000-M2
- GPS 4848/100
- Galaxy Vector controller upgrades
- GPS 4812/24
- GPS 2424
- Stand-alone monitoring applications
- Galaxy Millennium upgrades & replacements

Key Features

Remote Access and Features

- Integrated 10/100Base-T Ethernet Network capability
 - TCP/IP
 - SNMP Version 2c for remote management
 - SMTP for email
 - Telnet for remote command line interface
 - TL-1
 - DHCP for network plug-n-play
 - FTP for rapid backup and upgrades
 - HTTP for standard and custom web pages for standard browsers
- Compatible with Galaxy Manager and other standard network management packages
- Standard shielded RJ-45 interface referenced to chassis ground
- Optional Dataswitch
 - Connections to 3 standard RS-232 devices for pass-through and alarm management
 - BSN extension to provide 3 additional RS-232 serial connections

Key Features (continue)

- 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: User, Super-User, Administrator for all access

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)
- 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
 - 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
 - mV/°C adjustments
- 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

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

Features (continue)

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

Specifications

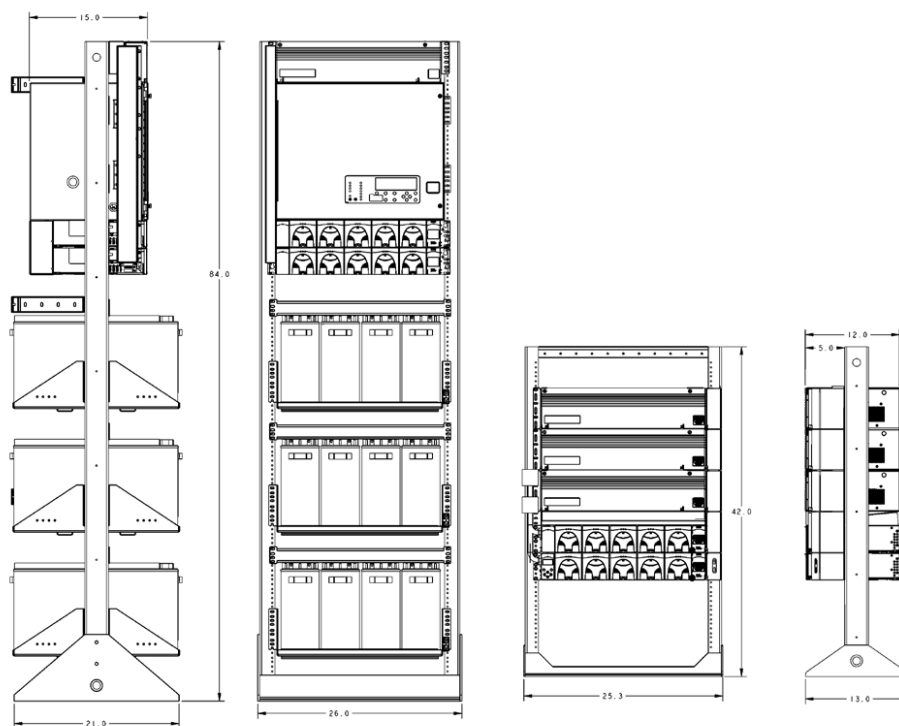
| General | |
|-----------------------------|--|
| Operating Voltage | ± 24Vdc, ± 48Vdc (Range: ± 18 to ±60Vdc) |
| Input Power | 36W (depending on |
| Operating Temperature Range | -40°C to +75°C (-40 to 167°F) |
| Storage Temperature Range | -40°C to +85°C (-40 to |
| Operating Relative Humidity | 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 |

| Agency Certifications | |
|-----------------------|--|
| NEBs | Evaluated by independent NRTL test lab to Telcordia GR63, Issue 3 and GR1089-CORE, Issue 5 (including level 3 testing) |
| EMC (Emissions) | FCC and EN 55022, Class B; FCC, Class B; GR1089-CORE, Issue 5 |
| Safety | UL Listed Component as Part of GPS Power System |

Specifications

| AC Input | |
|---|--|
| Input Distribution | Terminal Block connection per rectifier protected by 20A breaker or fuse at AC service panel. |
| Wire Size | 10 AWG minimum for individual feeds. |
| DC Output | |
| System Voltage | -48V |
| Output Current | 15A - 1000A |
| Low-Voltage Disconnect | 39 to 50 Vdc |
| Low-Voltage Reconnect | 39 to 55 Vdc |
| Mechanical | |
| Height | 17 to 22RU 23" rack mount systems |
| Width (with mounting ears) | 23 inches (584mm) |
| Depth | 15 inches (381mm) |
| Weight | 70lbs to 300lbs for rack mounted systems with optional battery trays included |
| Safety / Standards Compliance | |
| Safety Agency Approvals | Underwriters Laboratories (UL) Listed per Subject Letter 1801: Power Distribution Center for Communications Equipment, and cUL Certified (CSA 22.2 950): Safety of Information Technology Equipment VDE licensed to VDE0805/EN60950 Rectifiers are individually UL Recognized (UL1950), cUL Certified (CSA 22.2 234) or evaluated to EN60950 by an EC Notified Body, as appropriate. |
| European Economic Community Directives | EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC as amended by Marking Directive 93/68/EEC |
| Radiated and Conducted Emissions | FCC Part 15, Class A EN55022 (CISPR22), Class A |
| Harmonics | EN61000-3-2 (IEC61000-3-2) |
| Voltage Fluctuations | EN61000-3-3 (IEC61000-3-3) |
| Electromagnetic Immunity | Meets Telcordia GR-1089-CORE |
| Electrostatic Discharge | EN61000-4-2 Level 3 |
| RF Immunity | IEC61000-4-3 Level 3, 10 V/m |
| EFT | IEC61000-4-4 Level 3, No Error; Level 4, No Damage |
| Surge | IEC 61000-4-5 Level 3, No Error; Level 4, No Damage |
| Conducted Immunity | IEC 61000-4-6 Level 3, 10V |
| Voltage Dips, Interruptions, and Variations | IEC 61000-4-11 |
| Environmental | |
| Operating Temperature | -40°C to +75°C |
| Altitude | -200 to 13,000 feet (-61 to 3962 meters) See Note 1 |
| Humidity | 10% to 95% non-condensing |
| Audible Noise | < 60 dBA |
| Earthquake Rating | Zone 4, upper floors |
| Note 1: For altitudes above 5000 feet, derate the temperature by 3.6 °F per 1000 feet. For altitudes above 1524 meters, derate the temperature by 0.656 degrees Celsius per 100 meters. | |

Outline Drawing



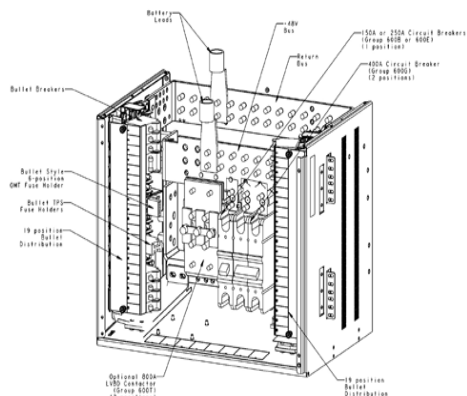
Additional Information

Product Documentation

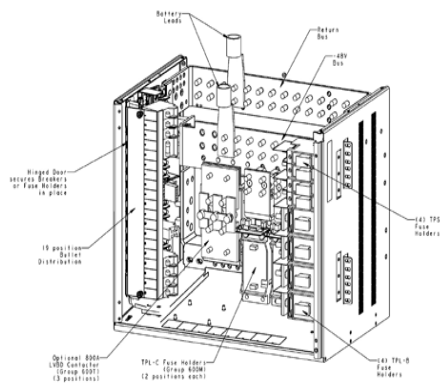
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Millennium II Frame-Mounted Battery Plant Manual
Galaxy Millennium II Controller

DC Distribution and Battery Termination



GROUP 660 DISTRIBUTION/MILLENNIUM II CONTROLLER



GROUP 661 DISTRIBUTION/MILLENNIUM II CONTROLLER

Group 660 Option

- Two 19 position bullet distribution panels.
- 12 pair of battery landings for battery cables.
- 8 position center section for optional:
 - Low Voltage Battery Disconnect (LVBD)
 - GJ type circuit breakers with 25mV shunts
 - TPL-C fuse blocks with 1500A, 50mV shunts.
 - 16 position bullet panel

Group 661 Option

- One 19 position bullet distribution panel.
- One fuse panel equipped with 4 TPS fuses with 100A, 50mV shunts and 4 TPL-B fuses with 600A, 50mV shunts.
- RPM shunt monitoring for fuse panel and up to 4 center TPL-C fuse blocks
- 12 pair of battery landings for battery cables.
- 8 position center section for optional:
 - Low Voltage Battery Disconnect (LVBD)
 - GJ type circuit breakers with 25mV shunts
 - TPL-C fuse blocks with 1500A, 50mV shunts.
 - 16 position bullet panel

Battery Options and Monitoring Features

Battery Options

- Designed for operation with Flooded, VRLA, NiCad, Nickel metal Hydrid and Lithium batteries.
- Half-height systems mount on Unigy II batteries, Full Height systems may be equipped with battery trays.
- Battery trays available for up to 170Ahr batteries with Anderson PowerPole® connectors or circuit breaker disconnects.

Battery Monitoring Features

- Open String (OS) Alarms
- Emergency Power Off (EPO) for disconnecting batteries from the system
- Temperature/voltage probes (up to 16) used in Battery Management options
 - Slope Thermal Compensation
 - Battery High Temp Disconnect
 - Mid-String Voltage Monitoring
- Battery Discharge Test
- Battery Shunt
- Low Voltage Battery Disconnect (LVBD)

CPS6000 Plant Systems with Millennium II Controller - H5694720 Group Code Identification

| Framework | | |
|--------------|--------------------------|-----------------------|
| Group Number | Type | Available Rack Spaces |
| G102 | 42" tall framework | 22U |
| G103 | 7' tall light-duty frame | 46U |
| G104 | 7' tall heavy-duty frame | 46U |

| Battery Tray Options | |
|--|-------------|
| Group Number | Description |
| Battery Tray e/w Anderson Disconnect 2 gauge cables | |

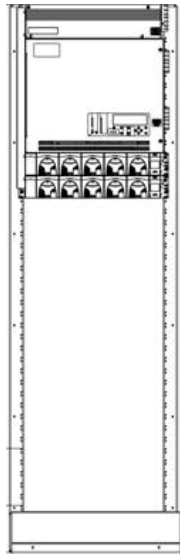
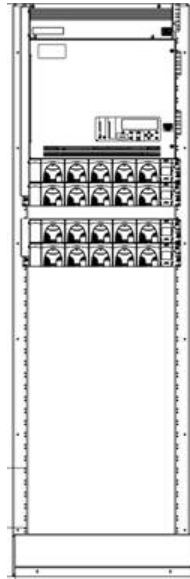
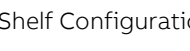
| | |
|------|--|
| G440 | Battery tray mounted on 7U (12.25") spacing for 100AH batteries |
| G450 | Battery tray mounted on 8U (14.00") spacing for 110 or 150AH batteries |
| G470 | Battery tray mounted on 9U (15.75") spacing for 170AH batteries |

| | |
|---|--|
| Battery Tray e/w disconnect breaker panel and 2 gauge cable (disconnect breakers ordered separately) | |
| G441 | Battery tray mounted on 7U (12.25") spacing for 100AH batteries |
| G450 | Battery tray mounted on 8U (14.00") spacing for 110 or 150AH batteries |
| G470 | Battery tray mounted on 9U (15.75") spacing for 170AH batteries |

| Rectifier shelves with AC Connection | | | |
|--|-------------|--|-----------------|
| Group Number | Rack spaces | Description | System Ampacity |
| Shelves with AC terminal strip at top of system | | | |
| G255 | 17U | Two 5-position rectifier shelves and space for one G660 or G661 distribution panels | 500A |
| G256 | 22U | Four 5-position rectifier shelves and space for one G660 or G661 distribution panels | 1000A |


| Distribution panels | | |
|--|---|--------------------------------------|
| Group Number | DC panel description | Panel current rating |
| G660 | Distribution panel e/w Millennium II Controller. Distribution includes 38 positions for bullet style fuse holders or breakers and 8 positions for equipping list 600. Breakers, fuse holders and contactor | 800A (charge)1000A (discharge) |
| G661 | Distribution panel e/w Millennium II Controller. Distribution includes 19 positions for bullet style fuse holders or breakers, 4 TPL -B 0-250A fuse holders with load shunts, 4 TPS 0-70A fuse holders with load shunts, and 8 positions for equipping list 600. Breakers, fuse holders and contactor. (Includes shunt module (RPMs) for monitoring up to 12 shunts on TPS, TPL-B and TPL-C holders) | 800A (charge)1000A (discharge) |
| The following groups can be ordered with G660 or G661 (8 positions available) | | |
| G660B | 150A KS22012 circuit breaker kit. (Breaker e/w 25mV shunt and wiring to connect to shunt RPM) | Requires 1 position |
| G600E | 250A KS22012 circuit breaker kit. (Breaker e/w 25mV shunt and wiring to connect to shunt RPM) | Requires 1 position |
| G600G | 400A KS22012 circuit breaker kit. (Breaker e/w 25mV shunt and wiring to connect to shunt RPM) | Requires 2 positions |
| G600M | Fuse block for TPL-C 300A-600A Fuse and 1500A, 50mV load monitoring shunt. Kit includes wireset for connecting to shunt RPM. | Requires 2 positions |
| G600R | 6 channel shunt module (RPM) for monitoring shunts of group 600 large distribution in a group 660 panel. (G661 already includes 2 shunt RPMs) (Mounts on door of distribution) | Requires no positions |
| G660T | 800A low voltage battery disconnect (LVBD) contactor | Requires 3 positions |
| G660W | 16 position bullet distribution panel | Requires 8 positions |

Step 1: Select CPS6000 Plant System

| Output | Ordering Code | Model | Picture | |
|-------------|---------------|---|--|--|
| -48V | CC109126744 | 7 ft frame, 4 rectifier shelves, Millennium II Controller, Two TPL-Cfuse blocks with shunt monitoring and 38 bullet positions. |  | |
| | | H5694720, 103, 256, 660, (2) 600M, 600R | | |
| -48V | CC109126752 | 7 ft frame, 4 rectifier shelves, Millennium II Controller, Two TPL-C fuse blocks, four TPL-B fuse blocks, four TPS fuse blocks all with shunt monitoring and 19 bullet positions. | | |
| | | H5694720, 103, 256, 661, (2) 600M | | |
| -48V | CC109126728 | 7 ft frame, 2 rectifier shelves, Millennium II Controller, Two TPL-Cfuse blocks with shunt monitoring and 38 bullet positions. | | |
| | | H5694720, 103, 255, 660, (2) 600M, 600R | | |
| -48V | CC109126736 | 7 ft frame, 2 rectifier shelves, Millennium II Controller, Two TPL-C fuse blocks, four TPL-B fuse blocks, four TPS fuse blocks all with shunt monitoring and 19 bullet positions. | | |
| | | H5694720, 103, 255, 661, (2) 600M | | |
| -48V | CC109143590 | 7 ft frame, 2 rectifier shelves, Millennium II Controller, and 54 bullet positions. | | <p>2 Shelf Configuration</p>  |
| | | H5694720, 103, 255, 660, 600W | | |
| -48V | CC109143582 | 7 ft frame, 4 rectifier shelves, Millennium II Controller, and 54 bullet positions. | | |
| | | H5694720, 103, 256, 660, 600W | | |
| -48V | CC109138475 | 7 ft frame, 2 rectifier shelves, Millennium II Controller, and 54 bullet positions. | | |
| | | H5694720, 103, 256, 660 | | |
| -48V | CC109147195 | 7 ft frame, 4 rectifier shelves, Millennium II Controller, and 54 bullet positions. | <p>4 Shelf Configuration</p>  | |
| | | H5694720, 104, 255, 660, 600W, G424 (3) | | |
| -48V | CC109151593 | 7 ft frame, 2 rectifier shelves, Millennium II Controller, and 54 bullet positions. | | |
| | | H5694720, 103, 255, 660 | | |

Step 2: Select Rectifiers and Ringers

| Ordering Code | Rectifier Model Number | Nominal Output Current | Input Voltage* | Input Amps | Output Power** | Heat Dissipation |
|---------------|--|------------------------|----------------|------------|----------------|------------------|
| CC109158176 | QS860ATEZ Rectifier | 10A | 85-150Vac | 5.0A | 545 W | 184 BTU |
| | | 10A | 165-275Vac | 2.8A | 545 W | 162 BTU |
| CC109158168 | QS861ATEZ Rectifier | 15A | 85-150Vac | 7.3A | 818 W | 210 BTU |
| | | 15A | 165-275Vac | 4.2A | 818 W | 162 BTU |
| CC109158184 | QS862ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362W | 339 BTU |
| | | 25A | 165-275Vac | 6.9A | 1363 W | 245 BTU |
| CC109161758 | QS863ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 30A | 165-275Vac | 8.3A | 1635 W | 318 BTU |
| CC109158151 | QS864ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 40A | 165-275Vac | 11.1A | 2180 W | 424 BTU |
| CC109149340 | QS865ATEZ Rectifier | 25A | 85-150Vac | 12.0A | 1362 W | 339 BTU |
| | | 50A | 165-275Vac | 14.0A | 2725 W | 614 BTU |
| CC848902841 | CPS6000 Insulating Rectifier Slot Filler | | | | | |
| 150019315 | QS-Blank Rectifier Chassis | | | | | |

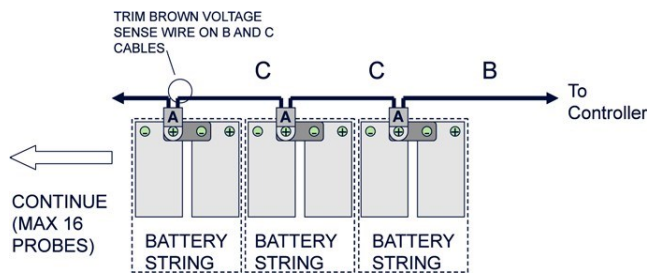
| Ordering Code | Description | Photo |
|---------------|---|---|
| | Output Current | |
| | Input Voltage | |
| | Input Amperage | |
| 108990082 | QS820A Ringer |  |
| | 1 or 2 Ringers plug into Ringer Chassis. | |
| 108991337 | QS820A Ringer Kit | |
| | Chassis occupies a single slot in the rectifier shelf (includes 1 ringer) | |
| 847922101 | Ringer Output Cable | |
| | (connects to Ringer Chassis) | |
| | 15-foot cable | |
| CC848804765 | | |
| | 150-foot cable | |

Ringers convert -48Vdc to a 100VA ringing power output with configurable ac voltage, ac frequency, and dc offset. The ringing output can be either Redundant (1+1 ringer module) or non-redundant (1 ringer module). The QS820M ringer chassis mounts in the rightmost available power slot.

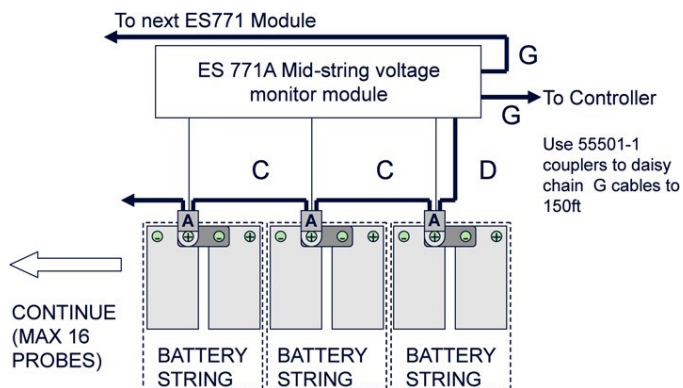
Step 3: Select Battery Monitoring

| Ordering Code | Description | Photo |
|---------------|--|-------|
| CC848806828 | Adapter plate kit for mounting a Group 102 ½ height framework on a Unigy battery stack | |
| 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) | |
| 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 (for extending item G above) | |

Temperature/Voltage probes are needed for battery monitoring. They are connected to each battery or battery string to provide slope thermal compensation, temperature alarms and voltage imbalance alarms.





Temperature Measurement



Temperature and Voltage Measurement

Step 4: Select Distribution Components

Note: CPS6000 Plant Systems support plug-in (bullet style) breakers or fuse modules. Larger breakers can be 2 or even 3 poles. The multi- pole breakers MUST be used with the appropriate multi-pole adapter to parallel the poles for proper operation.

| Bullet Style Battery Circuit Breakers (Yellow Handle) (Alarms on Mid-trip and in Off position) | | | | |
|--|----------|--------------|----------------|---|
| Ordering Code | Amperage | CB Positions | Min Wire Gauge | Photo |
| CC408574370 | 50 | 1 | 8 |  |
| 408560123 | 60 | 1 | 6 | |
| CC408574387 | 70 | 1 | 6 | |
| CC408574395 | 100 | 1 | 2 | |
| CC408574404 | 125 | 2 | 2 |  |
| CC408574412 | 150 | 2 | 1/0 | |
| CC408574420 | 200 | 2 | 2/0 | |

Step 4: Select Distribution Components (continue)


Note: CPS6000 Plant Systems support plug-in (bullet style) breakers or fuse modules. Larger breakers can be 2 or even 3 poles. The multi-pole breakers MUST be used with the appropriate multi-pole adapter to parallel the poles for proper operation



| 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 | |
| 408573975 | 225 | 3 | 4/0 | |
| 408535752 | 250 | 3 | 4/0 | |
| 850021775 | 2-pole Adapter bus for 100-150A breakers; used for 3/8" on 1" Lugs (order 2 per 2 pole breaker to accommodate load and return lugs) | | | |
| 850021955 | 3-pole Adapter bus for 200-250A breakers; Centered Connection (order 2 per 3 pole breaker to accommodate load and return lugs) | | | |

Step 4: Select Distribution Components (continue)



| Bullet Style Fuse Holder and TPS Fuses | | | | |
|--|---|---------------|----------------|-------|
| Ordering Code | Amperage | 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) | | | |
| Bullet Style GMT Fuse Holder and GMT Fuses | | | | |
| 405006222 | 0.25A | | | |
| 3150439 | 0.5A | | | |
| 405673146 | 1.33A | | | |
| 405181983 | 2A | | | |
| 406976985 | 3A | | | |
| 406159061 | 5A | | | |
| 405725433 | 7.5A | | | |
| 406159236 | 10A | | | |
| 407845197 | 12A | | | |
| 406473959 | 15A | | | |
| CC109103157 | 6-pos GMT Bullet Fuse Holder (Requires 2 bullet postions) | | | |
| 408515823 | Fuse Puller | | | |
| 402099436 | Dummy Fuse | | | |

Step 4: Select Distribution Components (continue)

| Large TPL Fuses | | | | |
|-----------------|---------------------------------|------------------------|----------------|---|
| Ordering Code | Amperage | Max#wires per position | Min Wire Gauge | Photo |
| CC109158762 | TPL-C Fuse Holder 90D Shunt Kit | | | |
| 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 | |

| KS22012 GJ Style Breaker Kits for Field Installation of Group 617 / 614 Distributions | | |
|---|--------------------------|---|
| Ordering Code | Description | Photo |
| CC109127635 | 150A Single Pole Breaker | |
| CC109127627 | 250A Single Pole Breaker | |
| CC109127486 | 400A Two Pole Breaker |  |
| CC109151767 | 600A Three Pole Breaker |  |

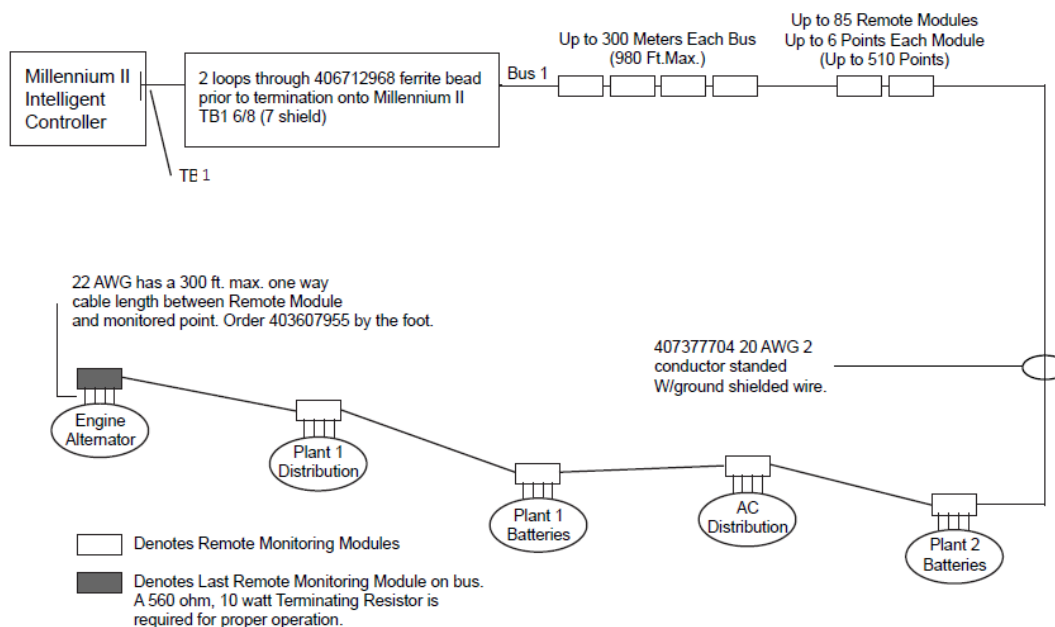
Step 4: Select Distribution Components (continue)

| Terminal Lugs for Bullet Style Breakers and TPS Fuses (1/4" bolt on 5/8" centers) | | | | Photo |
|---|-----------------------|------------------------|---------------|---|
| Ordering Code | STR Wire GA (Class B) | Flex Wire GA (Class I) | WP-91412 List | |
| 406021626 | 8 | 8 | 75 |  |
| 405347519 | 6 | 6 | 3 | |
| 405347576 | 4 | 4 | 5 | |
| 405348202 | 2 | - | 54 | |
| 405347683 | - | 2 | 8 | |
| Terminal Lugs for Battery and Large Breakers (3/8" bolt on 1" centers) | | | |  |
| 406338665 | 2 | - | - | |
| 405348228 | 1/0 | - | - | |
| 405348236 | 2/0 | 1/0 | - | |
| 406021725 | - | 2/0 | - | |
| 405348251 | 4/0 | - | - | |
| 405347923 | - | 4/0 | - | |
| 407890763 | 350 | - | - | |
| 407890748 | - | 350 | - | |
| 406335141 | 750 | - | - | |
| 407890730 | - | 750 | - | |

Step 5: Select Remote Peripheral Monitoring Options

| Ordering Code | Description | | | Photo |
|---------------------|---|---------|--------|-------|
| 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) | | | |
| 848535332 | Blue panel for mounting 6 modules above a GPS cabinet | | | |
| 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) | | | |

Millennium Remote Monitoring



Step 6: Select Additional Options

| Ordering Code | Description |
|--|--|
| Frame Anchor Bolts and Ground Cable | |
| 847135688 | (4) 12mm Cap Bolt Floor Anchor |
| CC848784677 | 4 ft long green 1/0 gage cable for H-tap or C-tap to aisle ground ring |
| Bus Bar Kit | |
| CC109163515 | Back-feed Bus Bar Kit |

Step 7: Select Modem Kit Option

| Ordering Code | Description |
|---------------|----------------|
| 108284639 | BSM5 Modem Kit |

Step 8: Spares for Millennium II Controller

| Ordering Code | Description |
|---------------|---------------------------------|
| 848741711 | BSL3 Alarm Board (punch down) |
| 848749507 | BSL4 Alarm Board (wire wrap) |
| 108851338 | BSM5 Modem Board |
| 406530725 | 1-1/3 A fuse (GMT) |
| 406204230 | 3 A fuse (GMT) |
| 405298308 | Terminating Resistor for RPM |
| 406712968 | 406712968 Inductor Bead for RPM |
| 407377704 | RPM Cable (ordered by the foot) |

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

ABB 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

ABB 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

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