

CPS6000-M2

-48V DC Power System

Model H5694720

Features

- **High power density** – 500A and 1,000A systems @ -48V
- **Compact 23" frame mounted system** - 42" or 84" frameworks
- **Front access design** – offers easy maintenance and installation
- **NEBS level 3 compliance** – meets or exceeds all relevant GR1089, GR63 and UL specifications
- **Modular family of plug-and-play rectifiers and ringers**
- **Comprehensive Battery monitoring and control functions:**
 - Battery disconnect contactor option
 - Battery recharge current limit / control
 - Battery temperature monitoring
 - Mid String voltage monitor and alarm
 - Thermal compensation
- **Comprehensive DC Distribution Options:**
 - TPS, TPL, GMT fuse protection
 - Bullet Breakers from 0-250A
 - Large Circuit Breakers (GJ style to 400A)
- **Millennium II Controller with Remote Peripheral Monitoring and extensive I/O alarms**
- **Remote monitoring capability – via Ethernet LAN access**
- **Local monitoring capability – via Ethernet Craft Port**
- **SNMP support**
- **Web page server**
- **Optional Modem**



Description

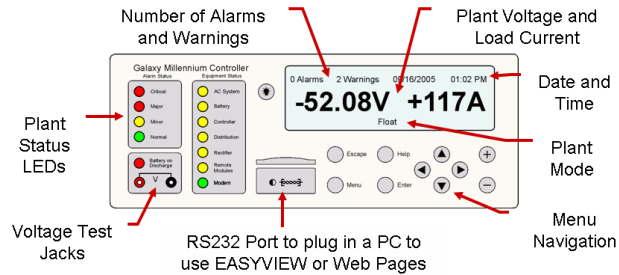
The 48V CPS6000-M2 Power Plant is a 23 inch wide, front access, frame mounted battery plant. The system integrates the QS series rectifiers and ringers, dc distribution options, battery connections and the Galaxy Millennium II controller in 500A and 1000A capacity systems. The system operates directly 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.

Applications

The 48V CPS6000-M2 is ideally suited for small central office (CO) applications and high end huts and vaults.

Millennium II advanced digital power room monitor and control system

- Local Control panel on distribution door
- Web based Control panel for local and remote (LAN) access.
- Ethernet interface – TCP/IP, FTP, Telnet, SMTP support and HTTP (web serving capability)
- DHCP Server
- 19 alarm relays
- User configurable relays and alarm severity
- Ringer support
- Multiple Security Access Levels
 - User – Read Only
 - Super User – Read/Write
 - Administrator – Read/Write (password & SW upgrades)
- Advanced Battery management
- Battery testing
- Contactor (load and battery) management
- History, Statistics and Trend logs



Local Control Panel

Web Based Control Panel

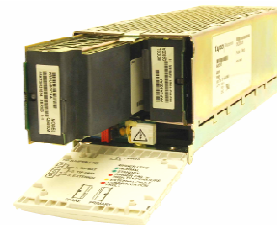
QS-Series Rectifiers

QS-series rectifiers are high efficiency, hot pluggable ac to dc modules with a constant power output provide better handling of telecom loads and battery recharge requirements. Rectifiers are available in blocks of 15, 20, 25, 30, 40 and 50A.



QS-Series Ringers

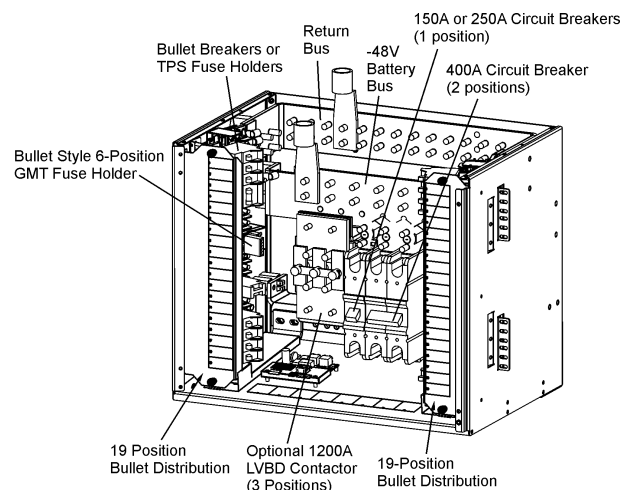
QS820A Ringers convert -48Vdc to a 100VA ringing power output with configurable ac voltage, ac frequency, and dc offset. The ringing output can be either Redundant (1+1 ringer module) or non-redundant (1 ringer module). The QS820M ringer chassis is hot pluggable into a rectifier slot and includes the same fans as the rectifier modules.



DC Distribution and Battery Termination

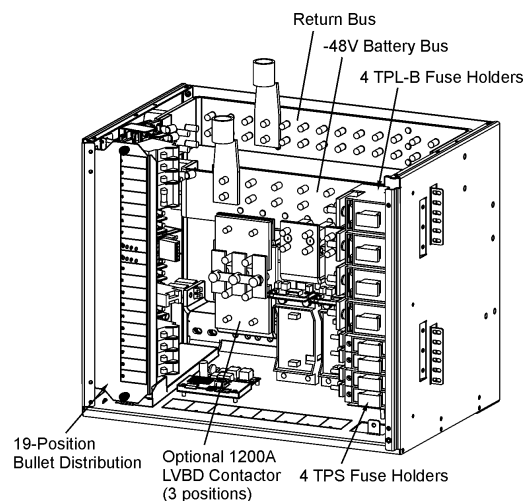
Group 660 Option

- 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



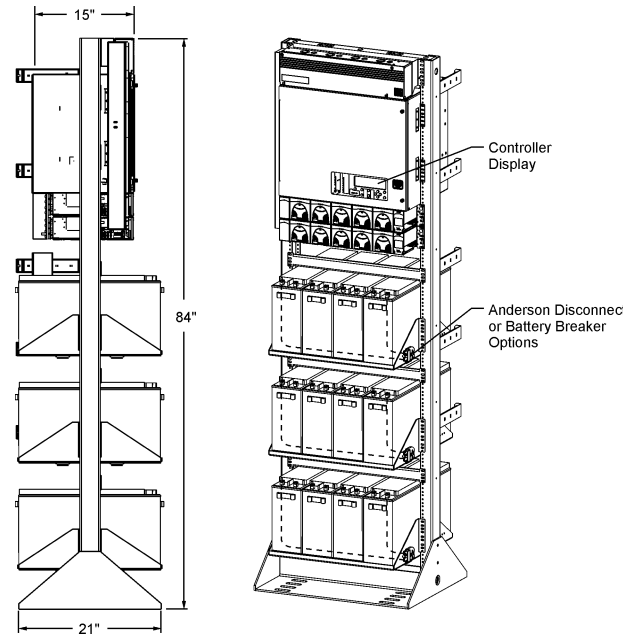
Battery Options and Monitoring Features

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/Reconnect Contactor (LVBD)



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 |
| 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 Ambient Temperature | -5 to 45 °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. | |


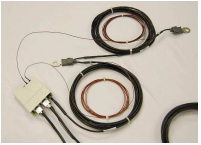
Ordering Information

To configure and order a frame, identify the required group numbers and Lineage Power will assign an ordering code for that configuration. The following Table lists some comcodes already assigned.

| Comcoded Configuration | | |
|------------------------|-------------------------------|---|
| Comcode | H5694720 Group Numbers | Description |
| CC109126744 | 103, 256, 660, (2) 600M, 600R | 7 ft frame, 4 rectifier shelves, Millennium II Controller, Two TPL-C fuse blocks with shunt monitoring and 38 bullet positions. |
| CC109126752 | 103, 256, 661, (2) 600M | 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. |
| CC109126728 | 103, 255, 660, (2) 600M, 600R | 7 ft frame, 2 rectifier shelves, Millennium II Controller, Two TPL-C fuse blocks with shunt monitoring and 38 bullet positions. |
| CC109126736 | 103, 255, 661, (2) 600M | 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. |
| CC109143590 | 103, 255, 660, 600W | 7 ft frame, 2 rectifier shelves, Millennium II Controller, and 54 bullet positions. |
| CC109143582 | 103, 256, 660, 600W | 7 ft frame, 4 rectifier shelves, Millennium II Controller, and 54 bullet positions. |

| H5694720 Group | Description | Rack Spaces |
|--|---|-------------|
| Frameworks | | |
| 102 | 42 inch tall framework | 22U |
| 103 | 7 foot tall light-duty framework (600 lb zone 4, 1200 lb zone 2) | 46U |
| 104 | 7 foot tall heavy-duty framework (1200 lb zone 4, 1800 lb zone 2) | 46U |
| Battery Tray e/w Anderson Disconnects and 2 Gauge Cable | | |
| 440 | Battery Tray on 7U (12.25") spacing for 100AH Batteries | 7U |
| 450 | Battery Tray on 8U (14.00") spacing for 110-150AH Batteries | 8U |
| 470 | Battery Tray on 9U (15.75") spacing for 170AH Batteries | 9U |
| Battery Tray e/w Disconnect Breaker Panel and 2 Gauge Cable | | |
| 441 | Battery Tray on 7U (12.25") spacing for 100AH Batteries | 7U |
| 451 | Battery Tray on 8U (14.00") spacing for 110-150AH Batteries | 8U |
| 471 | Battery Tray on 9U (15.75") spacing for 170AH Batteries | 9U |
| Rectifier Shelves with AC Termination Panel | | |
| 255 | Two 5-position Rectifier Shelves and AC Termination Panel | 17U |
| 256 | Four 5-position Rectifier Shelves and AC Termination Panel | 22U |
| 660 | Distribution Panel e/w Millennium II controller, 38 positions for bullet style Fuse Holders or Breakers, and 8 positions for equipping Group 600_ Breakers, Fuses or Contactors. | -- |
| 661 | Distribution Panel e/w Millennium II controller, 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 Group 600_ Breakers, Fuses or Contactors. (Includes shunt module RPM for monitoring up to 12 shunts on TPS, TPL-B and TPL-C Fuse Holders) | -- |
| The Following Groups ordered for Group 660 or 661 (8 positions Available) | | |
| 600B | 150A KS22012 Circuit Breaker Kit. (no shunt monitoring) | 1-pos |
| 600E | 250A KS22012 Circuit Breaker Kit. (no shunt monitoring) | 1-pos |
| 600G | 400A KS22012 Circuit Breaker Kit. (no shunt monitoring) | 2-pos |
| 600M | TPL-C Fuse Holder and 1500A, 50mV load shunt Kit includes wireset for connecting to shunt RPM | 2-pos |
| 600R | 6 channel shunt module (RPM) for monitoring shunts on Groups 600M. (661 already provides RPMs). (Mounts on distribution door) | no-pos |
| 600T | 1200A Low Voltage Battery Disconnect (LVBD) Contactor. | 3-pos |
| 600W | 16 position bullet-style fuse panel. | 8-pos |





Ordering Information

| Ordering # | Description | | Photo |
|---|--|---|--|
| Rectifiers, Ringers and Accessories | | | |
| 108993531 | QS861A Rectifier | 85-275Vac input, 15A output |  |
| 108986704 | QS862A Rectifier | 85-150Vac input, 25A output 165-275Vac input, 30A output | |
| CC109106440 | QS852A Rectifier | 165-275Vac input, 20A output | |
| CC109121290 | QS853A Rectifier | 165-275Vac input, 25A output | |
| CC109129747 | QS864A Rectifier | 165-275Vac input, 40A output | |
| CC109129755 | QS865A Rectifier | 165-275Vac input, 50A output | |
| 108994273 | QS850 Rectifier Slot Filler | | |
| 108990082 | QS820A Ringer | Up to two Ringers plug into a Ringer Chassis. | |
| 108991262 | QS820M Ringer Chassis | Chassis occupies a single slot in the rectifier shelf (no ringers included) | |
| 847922101 | Ringer Output Cable (connects to Ringer Chassis) | 15-foot cable | |
| CC848804765 | | 150-foot cable | |
| Battery Accessories and Monitoring Equipment | | | |
| CC848806828 | Adapter Plate Kit for mounting a Group 102 ½ height framework on a Unigy battery Stack | |  |
| 108987611 | QS873A Thermal Probe | | |
| 848719795 | 10 ft wire set (thermal probe to controller) | | |
| 848719803 | 5 ft wire set (thermal probe to thermal probe) | | |
| 848719811 | 10 ft wire set (thermal probe to thermal probe) | | |
| 108958422 | ES771A Battery Voltage Monitor Card | | |
| 848719829 | 10 ft wire set (ES771A to thermal probe) | | |
| CC848791517 | 2-1/2 ft wire set (ES771A to thermal probe) | | |
| 848652947 | 10 ft wire set (ES771A to ES771A or controller) | | |
| CC848791500 | 4 ft wire set (ES771A to ES771A or controller) | | |
| Frame Anchor Bolts and Ground Cable | | | |
| 847135688 | (4) 12mm Cap Bolt Floor Anchor | | |
| 848398566 | 32 ft long green 2 gage cable for H-tap or C-tap to aisle ground ring | | |
| 848722203 | 4 ft long green 1/0 gage cable for H-tap or C-tap to aisle ground ring | | |
| Modem Kit | | | |
| 108284639 | BSM5 Modem Kit | | |
| Spares for Millennium II Controller | | | |
| CC109130333 | Millennium II Controller Board (MCR1/MCR2) | | |
| 848741711 | BSL3 Alarm Board (punch down) | | |
| 848749507 | BSL4 Alarm Board (wire wrap) | | |
| 108851338 | BSM5 Modem Board | | |
| 108163601 | BSW1 Data Switch Board | | |
| 847473774 | Easy View Software Package | | |
| 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) | | |

Ordering Information

| Ordering # | Amperage | CB Positions | Min Wire Gage | Photo | |
|---|--|--------------|---------------|---|---|
| Bullet Style Battery Circuit Breakers (Yellow Handle) (Alarms on Mid-trip and in Off position) | | | | | |
| 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 | | |
| Bullet Style Load Circuit Breakers | | | | | |
| 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 | | |
| 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 | | |
| CC848756916 | 2-pole Adapter bus for 100-150A breakers | | |  | |
| CC848756924 | 3-pole Adapter bus for 200-250A breakers | | |  | |
| KS22012 GJ Style Breaker Kits for Field Installation in Center Section | | | | | |
| CC109127635 | 150A Single Pole Breaker | | |  | |
| CC109127627 | 250A Single Pole Breaker | | | | |
| CC109127486 | 400A Two Pole Breaker | | |  | |

Ordering Information

| Ordering # | Amperage | WP-92461 List | Min Wire Gage | Photo |
|--|--|------------------------|---------------|---|
| Bullet Style Fuse Holder and TPS Fuses | | | | |
| 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 | | |  |
| 406976894 | 0.5A | | | |
| 405673146 | 1.33A | | | |
| 405181983 | 2A | | | |
| 406976985 | 3A | | | |
| 406159061 | 5A | | | |
| 405725433 | 7.5A | | | |
| 406159236 | 10A | | | |
| 406473959 | 12A | | | |
| 406700690 | 15A | | | |
| CC109103157 | 6-pos GMT Bullet Fuse Holder | | | |
| 408515823 | Fuse Puller | | | |
| TPL-C Fuse Block for Field Installation in Center Section | | | | |
| CC109129128 | TPL-C Fuse Holder (requires 2-positions) | | | |
| 408472322 | TPL-B Fuse Block Head (converts TPL-C fuse block to TPL-B fuse block) | | | |
| Ordering # | STR Wire GA (Class B) | Flex Wire GA (Class I) | WP-91412 List | Photo |
| Terminal Lugs for Bullet Style Breakers and TPS Fuses (1/4" bolt on 5/8" centers) | | | | |
| 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 | -- | -- | |
| 405347236 | 2/0 | 1/0 | -- | |
| 406021725 | -- | 2/0 | -- | |
| 405348251 | 4/0 | -- | -- | |
| 405347923 | -- | 4/0 | -- | |
| 407890763 | 350 | -- | -- | |
| 407890748 | -- | 350 | -- | |
| 406335141 | 750 | -- | -- | |
| 407890730 | -- | 750 | -- | |



Product Documentation

Additional Information

H5694720: Ordering Guide
CC848802595: Product Manual

Customer Service Contacts

For customers in the United States, Canada, Puerto Rico, and the US Virgin Islands, call 1-800-THE-1PWR (1-800-843-1797). This number is staffed from 7:00 am to 5:00 pm Central Time (zone 6), Monday through Friday, on normal business days. At other times this number contacts an answering service with on-call personnel for out of service emergencies. Services provided through this contact include initiating the spare parts procurement process, ordering documents, product warranty administration, and providing other product and service information.

Customer Training

Lineage Power offers customer training on many Power Systems products. For information call 1-972-284-2163. This number is answered from 8:00 a.m. until 4:30 p.m., Central Time Zone (Zone 6), Monday through Friday.

Downloads and Software

To download the latest product information, product software and software upgrades, visit our web site at <http://www.lineagepower.com/>

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