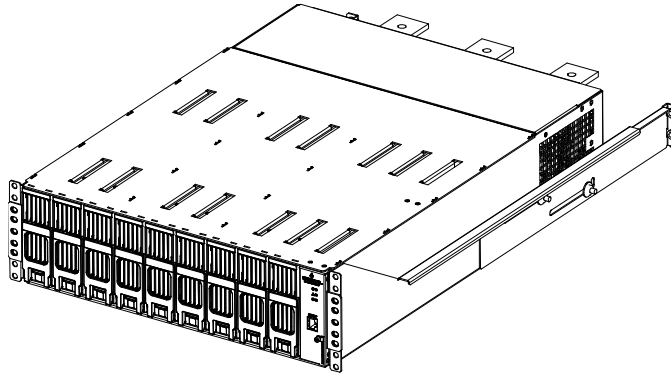


SYSTEM OVERVIEW

Description: The NetSure™ PSS12/2000-19BC and PSS12/2200-19BC Bulk Output Module Mounting Assembly is a complete integrated power system containing rectifiers, BBU's (Battery Backup Units), intelligent control, and monitoring. The NetSure™ PSS12/2000-19B and PSS12/2200-19B Bulk Output Module Mounting Assemblies are companion expansion assemblies.

A system consists of the following components.

Note: *The installation may consist of one (1) main module mounting assembly and up to two (2) expansion module mounting assemblies, or all main module mounting assemblies. In installations with one main module mounting assembly and up to two expansion module mounting assemblies, all module mounting assemblies are on one DC bus and are controlled by a single SCC controller. A common CAN bus is shared across all module mounting assemblies and all rectifiers load share and all rectifiers are load managed via the SCC. In installations with all main module mounting assemblies, each module mounting assembly is on a separate DC bus and each module mounting assembly is controlled by (contains) a separate SCC controller. A separate CAN bus exists per module mounting assembly, rectifiers load share per module mounting assembly, and rectifiers are load managed via an SCC per module mounting assembly.*



- **Main Module Mounting Assembly (N+1 Redundant)**

The main module mounting assembly houses up to nine (9) modules, plus the SCC controller. Modules can be a combination of rectifier modules and BBU (Battery Backup Unit) modules, depending on the AC input configuration. See “List Descriptions” starting on page 9 for restrictions.

SCC (System Control Card) Controller: The controller provides power system control, monitoring functions, and local/remote alarm functions. The controller also provides data acquisition, system alarm management, and advanced battery management. The controller provides an Ethernet port for remote access. It also comes with SNMP capability for remote system management. Operation of the SCC controller requires a master upstream supervisory and control unit, such as the Avocent UMG, connected to the system's Ethernet port and utilizing an SNMP interface. Refer to the SCC Controller Instructions (UM1M520HNA) for more information.

Note: *The rectifier and BBU modules will continue to operate if the SCC controller fails. The rectifier and BBU modules will work if the system is powered up without an SCC controller; however, an SCC controller is required to get any monitoring/status information from the system. The application should be designed with an SCC controller.*

- **Expansion Module Mounting Assembly (N+1 Redundant)**

Each expansion module mounting assembly houses up to nine (9) modules. Modules can be a combination of rectifier modules and BBU (Battery Backup Unit) modules, depending on the AC input configuration. See “List Descriptions” starting on page 9 for restrictions.

- **Rectifier Modules**

The system may contain rectifier modules, which provide load power. Refer to the Rectifier Instructions (UM1R123000) for more information.

- **BBU (Battery Backup Unit) Modules**

The system may contain BBU modules, which provide power during AC utility failures, and can provide additional power on demand. Each BBU module is equipped with a rectifier / charger, a lithium-ion battery pack, and a 12 VDC converter. The BBU module is designed to provide 3 kW of 12 VDC power for a minimum of 90 seconds, per module. Refer to the BBU Instructions (UM1B123000) for more information.

General Specifications

See detailed specifications on page 48.

Family:	NetSure™
System Spec. No.:	588706000
System Model:	PSS12/2000-19BC (Main), PSS12/2200-19BC (Main), PSS12/2000-19B (Expansion), PSS12/2200-19B (Expansion)
System AC Input Ratings:	<p><u>List 1, 11:</u> 200 VAC / 208 VAC / 240 VAC nominal, 49 A / 47 A / 41 A, 1-Phase, 50 Hz / 60 Hz. Three feeds. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 2, 12:</u> 200 VAC / 208 VAC / 240 VAC nominal, 28 A / 27 A / 23.5 A, 3-Phase, 50 Hz / 60 Hz. Three feeds. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 3, 13:</u></p> <p>240 VAC / 415 VAC (4-Wire + PE) nominal, 13.7 A, 50 Hz / 60 Hz. Three feeds. Operating range is 216 VAC to 256VAC.</p> <p>277 VAC / 480 VAC (4-Wire + PE) nominal, 12 A, 50 Hz / 60 Hz. Three feeds. Operating range is 235 VAC to 310 VAC.</p> <p><u>List 4, 14:</u> 200 VAC / 208 VAC / 240 VAC nominal, 17 A / 16.5 A / 14.6 A, 1-Phase, 50 Hz / 60 Hz. Three feeds. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 5, 7, 15, 17:</u> 200 VAC / 208 VAC / 240 VAC nominal, 30 A / 29 A / 25 A, 3-Phase, 50 Hz / 60 Hz. One feed. Operating range is 176 VAC to 264 VAC.</p>

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	<p><u>List 6, 8, 16, 18:</u></p> <p>240 VAC / 415 VAC (4-Wire + PE) nominal, 14.6 A, 50 Hz / 60Hz. One feed. Operating range is 216 VAC to 256 VAC.</p> <p>277 VAC / 480 VAC (4-Wire + PE) nominal, 13 A, 50 Hz / 60 Hz. One feed. Operating range is 235 VAC to 310 VAC.</p> <p><u>List 9, 19:</u> 208 VAC / 240 VAC nominal, 48 A / 41.5 A, 3-Phase, 50 Hz / 60 Hz. One feed. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 21, 31:</u> 200 VAC / 208 VAC / 240 VAC nominal, 44.3 A / 42.5 A / 37.7 A, 3-Phase, 50 Hz / 60 Hz. One feed. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 22, 32:</u></p> <p>240 VAC / 415 VAC (4-Wire + PE) nominal, 27.7 A, 50 Hz / 60Hz. One feed. Operating range is 216 VAC to 256 VAC.</p> <p>277 VAC / 480 VAC (4-Wire + PE) nominal, 24 A, 50 Hz / 60 Hz. One feed. Operating range is 235 VAC to 310 VAC.</p> <p><u>List 23, 33:</u> 208 VAC nominal, 24 A, 3-Phase Y, 50 Hz / 60 Hz. Two feeds. Operating range is 176 VAC to 264 VAC.</p> <p><u>List 24:</u> 277 VAC / 480 VAC (4-Wire + PE) nominal, 39 A, 50 Hz / 60 Hz. One feed. Operating range is 235 VAC to 310 VAC.</p> <p><u>List 25 and 35:</u> 230 VAC/400 VAC or 240 VAC/415 VAC (4-Wire + PE) nominal, 30 A, 50 Hz / 60 Hz. One feed. Operating range is 235 VAC to 310 VAC.</p> <p><u>List 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 23, 25, 31, 32, 33, 35:</u> Acceptable input frequency range is 45 Hz to 65 Hz.</p>
System DC Output Ratings:	<p>+12 VDC to +13 VDC, 2000 A to 1816 A @ 45C (except Lists 9, 19, 25, 35)</p> <p>+12 VDC to +13 VDC, 2200 A to 2000 A @ 45C (List 24)</p>
1R123000 Rectifier Rating:	See UM1R123000.
1R123300 Rectifier Rating:	See UM1R123000.
1B123000 BBU Rating:	See UM1B123000.
System Agency Approval:	UL 60950 Recognized ("c UR"), CE Mark.
Framework Type:	19" Rack Mounting in an IT Rack (see "Overall Dimensions" on page 50), a mounting kit is available for mounting in a standard OCP rack.
Mounting Width:	482.6 mm (19 inches), nominal
Mounting Depth:	656 mm (25.8 inches)
Access:	Front for Operation Front and Rear for Installation and Maintenance
Expansion Assembly Available:	up to Two (2)
Control:	Microprocessor
Color:	<u>Module Mounting Assembly:</u> Plated Steel <u>Module Faceplates:</u> Black
Environment:	-10 °C to +45 °C (+14 °F to +113 °F)

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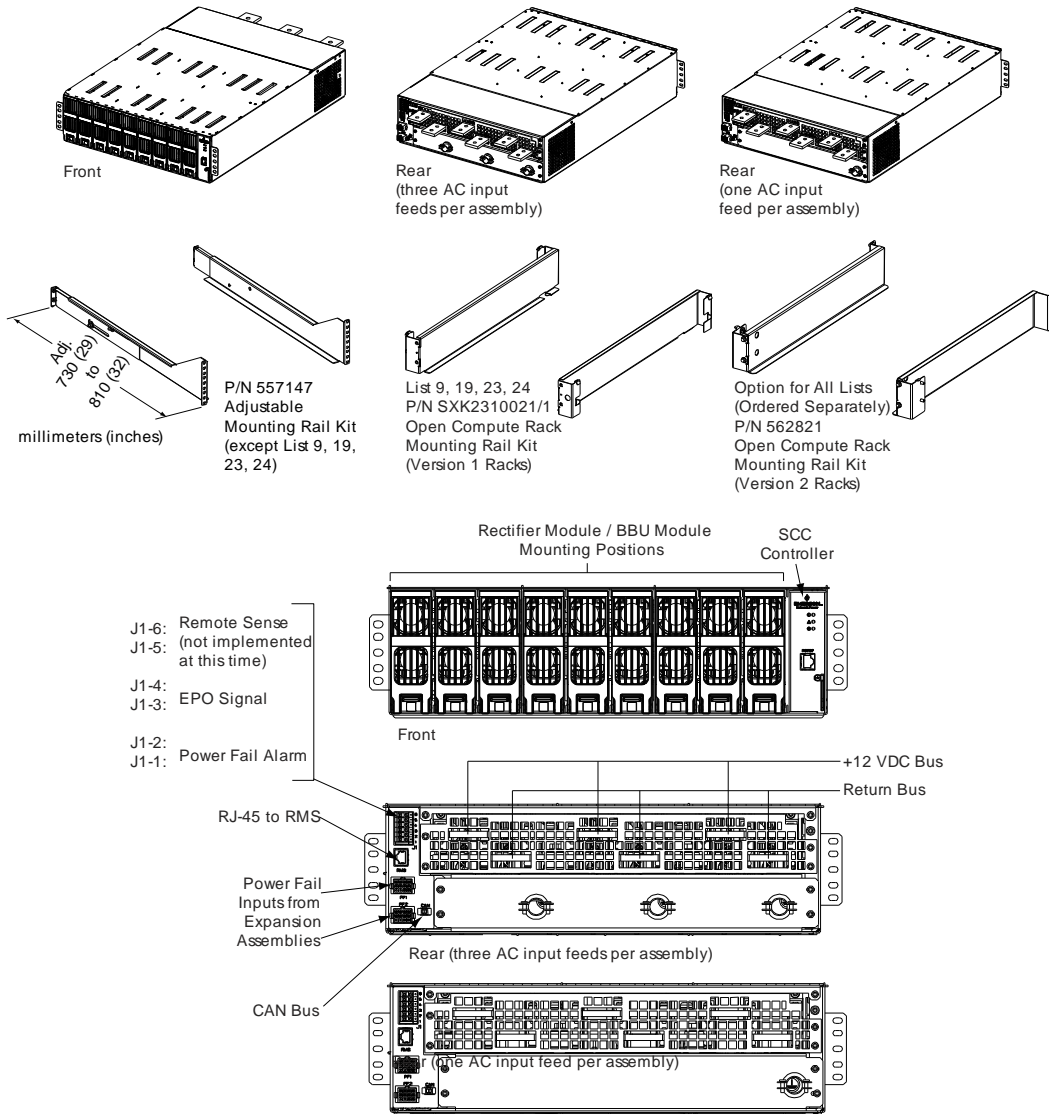
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MAIN COMPONENTS ILLUSTRATION

Main Module Mounting Assembly (List 1, 2, 3, 4, 5, 6, 7, 8, 9, 21, 22, 23, 24, 25)

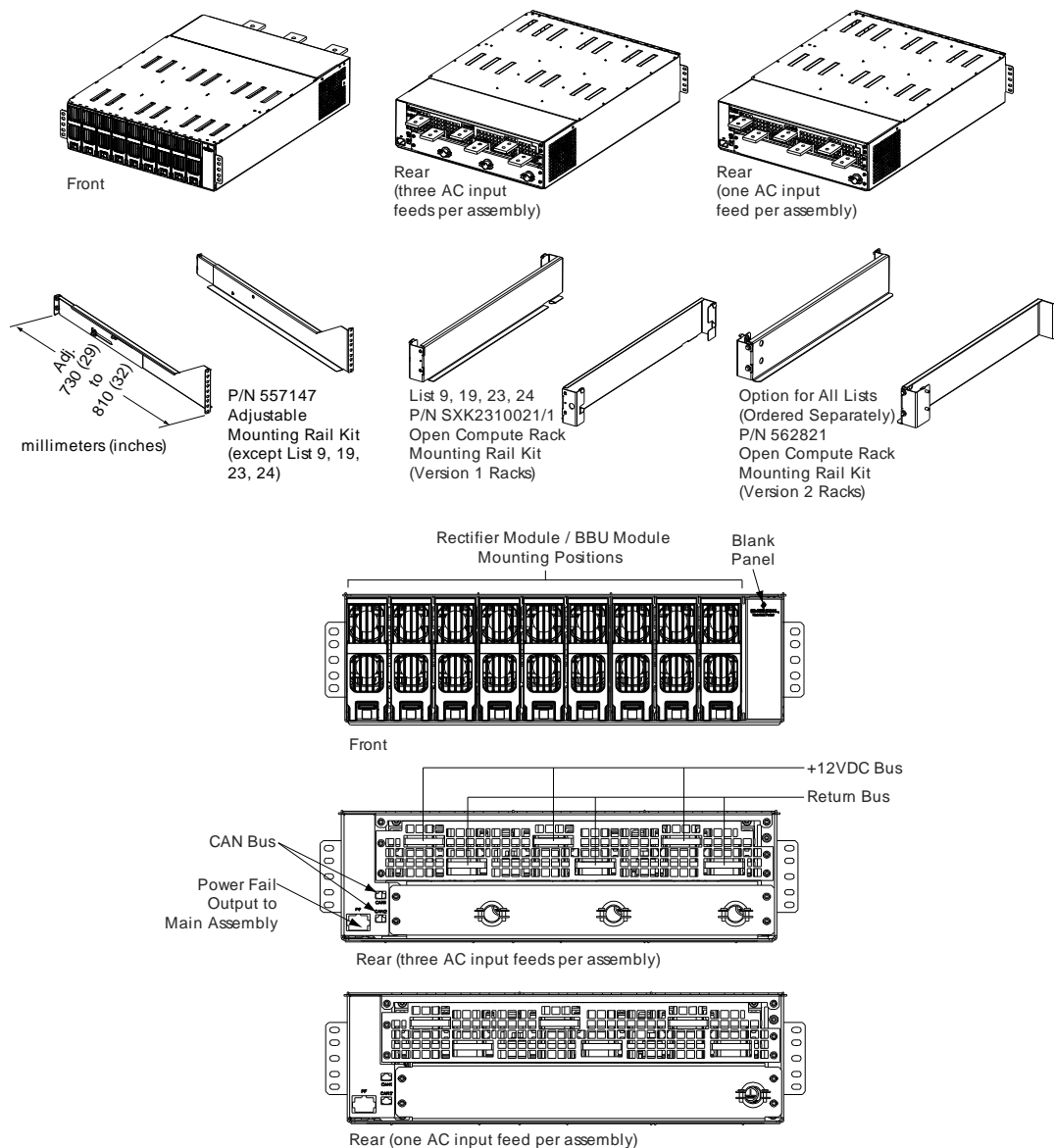
List	Description	AC Input	AC Feeds per Module Mounting Assembly
1	2000 A Main Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 1-Phase	3
2	2000 A Main Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 3-Phase	3
3	2000 A Main Module Mounting Assembly	240 VAC / 415 VAC, 4-Wire + PE 277 VAC / 480 VAC, 4-Wire + PE	3
4	2000 A Main Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 1-Phase	3
5, 7, 21	2000 A Main Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 3-Phase	1
6, 8, 22	2000 A Main Module Mounting Assembly	240 VAC / 415 VAC, 4-Wire + PE 277 VAC / 480 VAC, 4-Wire + PE	1
9	2000 A Main Module Mounting Assembly	208 VAC / 240 VAC, 3-Phase	1
23	2000 A Main Module Mounting Assembly	208 VAC, 3-Phase Y	2
24	2200 A Main Module Mounting Assembly	277 VAC / 480 VAC, 4-Wire + PE	1
25	2200 A Main Module Mounting Assembly	230 VAC/400 VAC OR 240 VAC/415 VAC, 4-Wire + PE	1



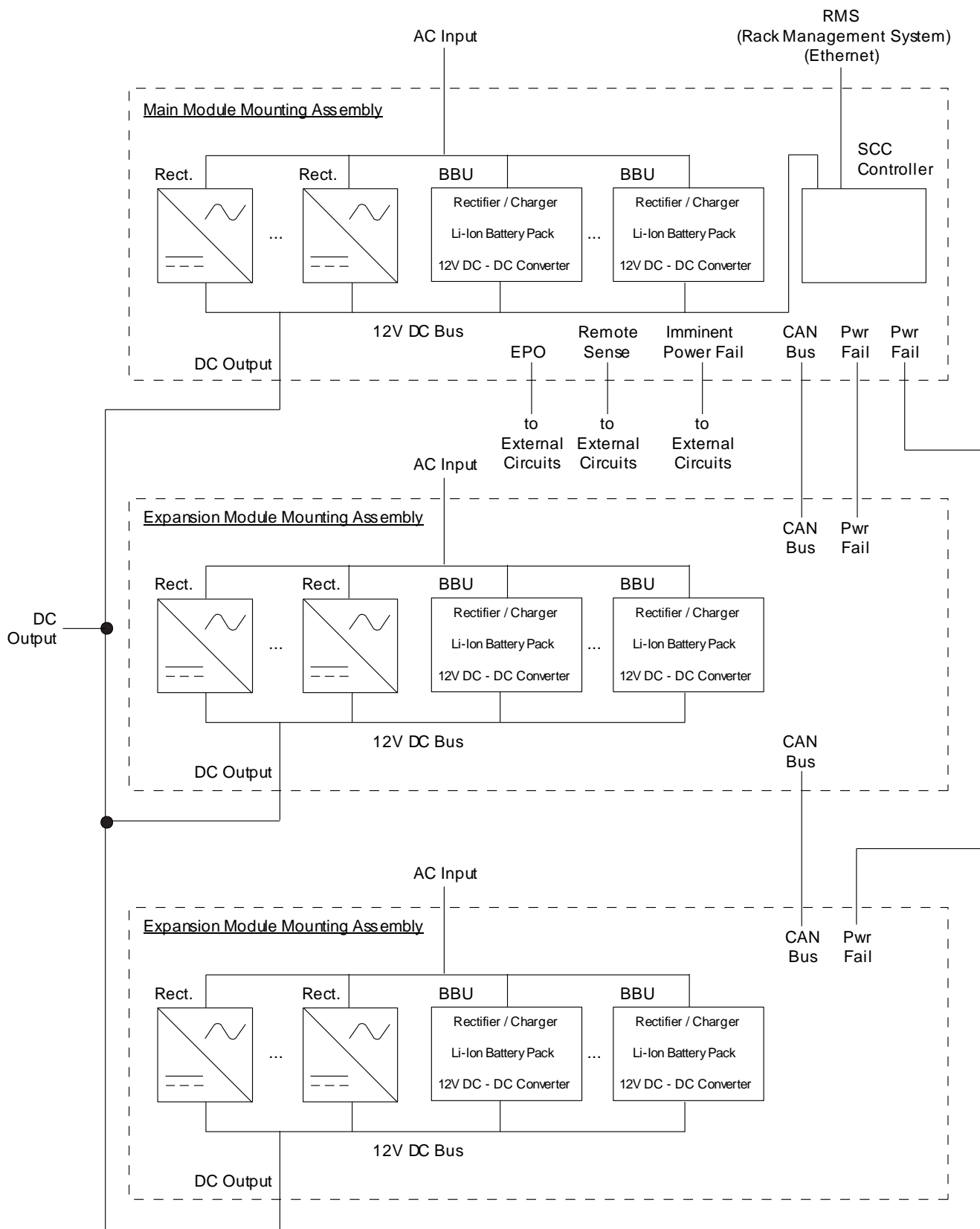
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Expansion Module Mounting Assembly (List 11, 12, 13, 14, 15, 16, 17, 18, 19, 31, 32, 33, 35)

List	Description	AC Input	AC Feeds per Module Mounting Assembly
11	2000 A Expansion Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 1-Phase	3
12	2000 A Expansion Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 3-Phase	3
13	2000 A Expansion Module Mounting Assembly	240 VAC / 415 VAC, 4-Wire + PE 277 VAC / 480 VAC, 4-Wire + PE	3
14	2000 A Expansion Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 1-Phase	3
15, 17, 31	2000 A Expansion Module Mounting Assembly	200 VAC / 208 VAC / 240 VAC, 3-Phase	1
16, 18, 32	2000 A Expansion Module Mounting Assembly	240 VAC / 415 VAC, 4-Wire + PE 277 VAC / 480 VAC, 4-Wire + PE	1
19	2000 A Expansion Module Mounting Assembly	208 VAC / 240 VAC, 3-Phase	1
33	2000 A Expansion Module Mounting Assembly	208 VAC, 3-Phase Y	2
35	2200 A Expansion Module Mounting Assembly	230 VAC/400 VAC OR 240 VAC/415 VAC, 4-Wire + PE	1



ONE LINE DIAGRAM



LIST DESCRIPTIONS

List Numbers

List 1: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 1-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 2: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 3: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feeds. Each feed supplies three (3) module mounting positions.

- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 4: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 1-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 4, 14 Module Mounting Assembly” on page 31 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 5: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 5, 15 Module Mounting Assembly” on page 33 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 6: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 6, 16 Module Mounting Assembly” on page 35 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 7: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 7, 17 Module Mounting Assembly” on page 37 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 6) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.

- 7) Order DC output lugs per Table 1.
- 8) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 8: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 8, 18 Module Mounting Assembly” on page 38 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 9: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1325 amps (15.9kW maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.

Restrictions

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

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List 11: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 1-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 12: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 13: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 14: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for three (3) 200 VAC / 208 VAC / 240 VAC, 1-Phase AC input feeds. Each feed supplies three (3) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 4, 14 Module Mounting Assembly” on page 31 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 15: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 5, 15 Module Mounting Assembly” on page 33 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

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List 16: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides AC input terminal blocks for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 6, 16 Module Mounting Assembly” on page 35 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 17: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 7, 17 Module Mounting Assembly” on page 37 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 18: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 9000 watts (750 amps maximum at 12 VDC).
- ◆ Accepts up to a total of three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.

- ◆ Provides an AC input line cord and plug for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 8, 18 Module Mounting Assembly” on page 38 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to three (3) rectifier modules and six (6) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 19: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1325 amps (15.9kW maximum at 12 VDC).
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes Open Compute rack mounting rail kit P/N SXK2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to nine (9) total of a combination of rectifier modules and/or BBU modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 21: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1000 amps (12kW maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 21, 31 Module Mounting Assembly” on page 40 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 22: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1000 amps (12kW maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 22, 32 Module Mounting Assembly” on page 41 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 23: Main Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1333 amps (16kW maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of six (6) rectifier modules and three (3) BBU (Battery Backup Unit) modules.
- ◆ Provides two AC input line cords and plugs for two (2) 208 VAC, 3-Phase Y AC input feeds. First feed supplies rectifier modules in positions 1, 2, and 3 and BBU modules in positions 4, 5, and 6. Second feed supplies rectifier modules in positions 7, 8, and 9.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 23, 33 Module Mounting Assembly” on page 42 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to six (6) rectifier modules and three (3) BBU (Battery Backup Unit) modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 24: Main Module Mounting Assembly

Features

- ◆ Provides a 2200 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier modules.
- ◆ Provides an AC input line cord and plug for one (1) 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.

Restrictions

Spec. No. 1R123000 and 1R123300 rectifiers can be used in this module mounting assembly. Rectifiers 1R123000 and 1R123300 should NOT be mixed when the shelf is fed from a 3-phase input. The reason is that mixing the two rectifier types will result in unbalanced line currents.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) rectifier modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 25: Main Module Mounting Assembly

Features

- ◆ Maximum rectifier output current at 12VDC is 1588 amps.
- ◆ Rectifier output power is limited to a maximum of 19 kW. Maximum input current is 30 A. Maximum output power per Line to Neutral AC feed is 6352 W or the rating of the power/cord combination would be exceeded.
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU modules.
- ◆ Provides an AC input line cord and plug for one (1) 230 VAC/400 VAC or 240 VAC/415 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.
- ◆ With CE mark but not UL listed.

Ordering Notes

- 1) Order as required.
- 2) Order the SCC controller P/N [1M520HNA](#) (see page 21).
- 3) Order up to nine (9) rectifier modules.
- 4) Order DC output lugs per Table 1.
- 5) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 31: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1000 amps (12kW maximum at 12 VDC).
- ◆ Accepts up to a total of four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 200 VAC / 208 VAC / 240 VAC, 3-Phase AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 21, 31 Module Mounting Assembly” on page 40 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 32: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC expansion module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1000 amps (12kW maximum at 12 VDC).
- ◆ Accepts up to a total of four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- ◆ Provides an AC input line cord and plug for one (1) 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes adjustable mounting rail kit P/N 557147. Optional Open Compute rack mounting rail kit for version 2 racks available.

Restrictions

Up to two (2) expansion module mounting assemblies can be interconnected to a main module mounting assembly.

Modules must be populated as shown in “AC Input Connections, List 22, 32 Module Mounting Assembly” on page 41 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to four (4) rectifier modules and five (5) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 33: Expansion Module Mounting Assembly

Features

- ◆ Provides a 2000 A @ 12 VDC main module mounting assembly (N+1 redundant).
- ◆ Maximum rectifier capacity is 1333 amps (16kW maximum at 12 VDC).
- ◆ Accepts the SCC controller.
- ◆ Accepts up to a total of six (6) rectifier modules and three (3) BBU (Battery Backup Unit) modules.
- ◆ Provides two AC input line cords and plugs for two (2) 208 VAC, 3-Phase Y AC input feeds. First feed supplies rectifier modules in positions 1, 2, and 3 and BBU modules in positions 4, 5, and 6. Second feed supplies rectifier modules in positions 7, 8, and 9.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.

Restrictions

Modules must be populated as shown in “AC Input Connections, List 23, 33 Module Mounting Assembly” on page 42 for equal AC power phase sharing.

Only Spec. No. 1R123000 rectifiers can be used in this module mounting assembly.

Ordering Notes

- 1) Order as required.
- 2) Order up to six (6) rectifier modules and three (3) BBU (Battery Backup Unit) modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

List 35: Expansion Module Mounting Assembly

Features

- ◆ Maximum rectifier output current at 12VDC is 1588 amps.
- ◆ Rectifier output power is limited to a maximum of 19 kW. Maximum input current is 30 A. Maximum output power per Line to Neutral AC feed is 6352 W or the rating of the power/cord combination would be exceeded.
- ◆ Accepts up to a total of nine (9) rectifier and/or BBU modules.
- ◆ Provides an AC input line cord and plug for one (1) 230 VAC/400 VAC or 240 VAC/415 VAC, 4-Wire + PE AC input feed. This feed supplies all nine (9) module mounting positions.
- ◆ Includes Open Compute rack mounting rail kit P/N SXX2310021/1 for version 1 racks. Optional Open Compute rack mounting rail kit for version 2 racks available.
- ◆ Includes Open Compute Rack shipping support bracket P/N 561578.
- ◆ With CE mark but not UL listed.

Ordering Notes

- 1) Order as required.
- 2) Order up to nine (9) rectifier modules.
- 3) Order DC output lugs per Table 1.
- 4) Order optional Open Compute rack mounting rail kit for version 2 racks P/N 562821, if required.

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ACCESSORY DESCRIPTIONS

SCC Controller, P/N 1M520HNA

Features

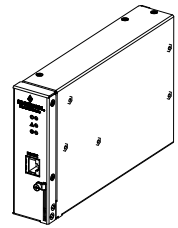
- ◆ Provides one (1) Model M520H, Spec. No. 1M520HNA, SCC Controller.
- ◆ Factory programmed.
- ◆ Refer to the SCC Controller Instructions (UM1M520HNA) for more information.

Restrictions

For use in main module mounting assemblies.

Ordering Notes

- 1) Order one P/N 1M520HNA for each main module mounting assembly.



Rectifier Module, P/N 1R123000

Features

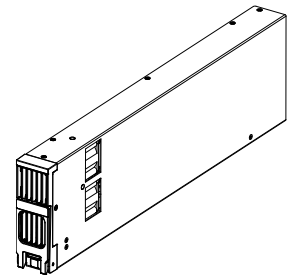
- ◆ Provides one (1) Model R12-3000, Spec. No. 1R123000, 3000 watt / +12 volt rectifier module.
- ◆ Refer to the rectifier Instructions (UM1R123000) for more information.

Restrictions

For use in main and expansion module mounting assemblies.

Ordering Notes

- 1) Order by P/N 1R123000 as required.



Rectifier Module, P/N 1R123300

Features

- ◆ Provides one (1) Model R12-3300, Spec. No. 1R123300, 3300 watt / +12 volt rectifier module.
- ◆ Refer to the rectifier Instructions (UM1R123000) for more information.

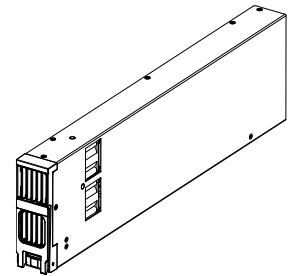
Restrictions

For use in main and expansion module mounting assemblies.

For use in List 24 only.

Ordering Notes

- 1) Order by P/N 1R123300 as required.



BBU (Battery Backup Unit) Module, P/N 1B123000

Features

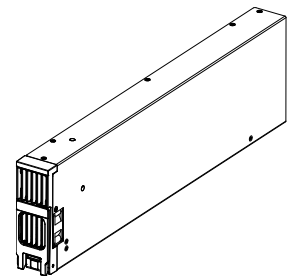
- ◆ Provides one (1) Model B12-3000, Spec. No. 1B123000, BBU module.
- ◆ Each BBU module is equipped with a rectifier / charger, a lithium-ion battery pack, and a 12V DC converter
- ◆ Refer to the BBU Instructions (UM1B123000) for more information.

Restrictions

For use in main and expansion module mounting assemblies.

Ordering Notes

- 1) Order by P/N 1B123000 as required.



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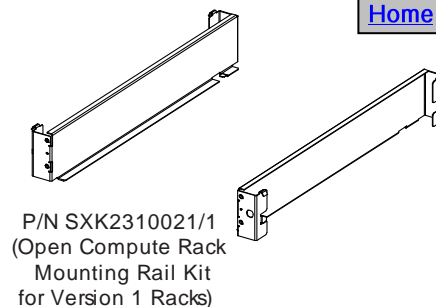
Open Compute Rack Mounting Rails, P/N SXXK2310021/1

Features

- ◆ Provides an Open Compute rack mounting rail kit for version 1 racks.

Ordering Notes

- 1) Furnished with List 9, 19, 23, and 24.



Open Compute Rack Mounting Rails, P/N 562821

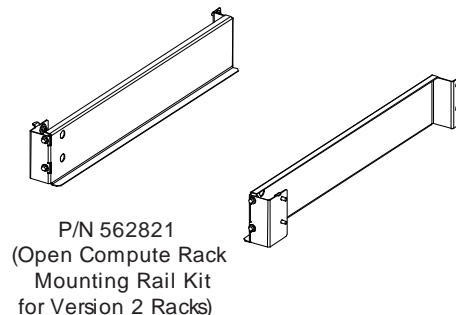
Features

- ◆ Provides an Open Compute rack mounting rail kit for version 2 racks.

Ordering Notes

- 1) Order as required.

Note: Will be provided in addition to the standard mounting rail furnished with each List option.



Open Compute Rack Shipping Support Bracket, P/N 561578

Features

- ◆ Provides an Open Compute Rack shipping support bracket which allows a List 9, 19, 23, 24 module mounting assembly to be installed in an Open Compute Rack and then shipped with rectifier modules installed.

Restrictions

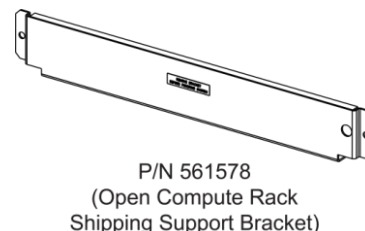
For use with List 9, 19, 23, 24.

Can only be used to ship rectifier modules pre-installed in a module mounting assembly which is installed in an Open Compute Rack. BBU modules cannot be shipped installed in a module mounting assembly.

Remove shipping support bracket before powering system.

Ordering Notes

- 1) Furnished with List 9, 19, 23, and 24.



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Standard DC Output Crimp Lugs

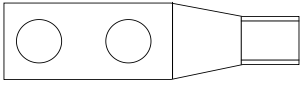
Lead Size	Part Number	
4/0 AWG	245347400	
250 kcmil	245347500	
300 kcmil	245347600	
350 kcmil	245347700	
400 kcmil	245347800	
500 kcmil	245347900	
600 kcmil	245348000	
750 kcmil	245348100	

Table 1
Crimp Lug
Two-Hole, 11 mm (0.433 inch) Bolt Clearance Holes, 25.4 mm (1 inch) Centers

User Replaceable Components

Ordering Notes

- Refer to Table 2 for user replaceable components.

Item	Part Number
Rectifier Module	1R123000
Rectifier Module	1R123300 (List 24 only)
BBU Module	1B123000
SCC Controller	1M520HNA (must have a software configuration file matching that of the original being replaced)

Table 2
User Replaceable Components

User Replaceable Cables

Ordering Notes

- System cables are factory provided, as required. For replacements, refer to Table 3.

Item	Part Number
Can Bus Cable (Main Module Mounting Assembly to Expansion Module Mounting Assembly) (Expansion Module Mounting Assembly to Expansion Module Mounting Assembly)	557463
Power Fail Cable (Main Module Mounting Assembly to Expansion Module Mounting Assembly)	557553

Table 3
User Replaceable Cables

RECOMMENDED WIRING SIZES, BRANCH CIRCUIT PROTECTION, CRIMP LUGS, AND WIRING ILLUSTRATIONS

System Frame Grounding Requirements

For system frame grounding requirements, refer to the current edition of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC), applicable local codes, and your specific site requirements. For operation in countries where the NEC is not recognized, follow applicable codes.

A customer's frame grounding network lead can be attached to the rear of each module mounting assembly as shown in Figure 1. Provision is made for installing a lead with a one-hole lug that has an M4 bolt clearance hole. Recommended wire size is 10 AWG (6 mm²).

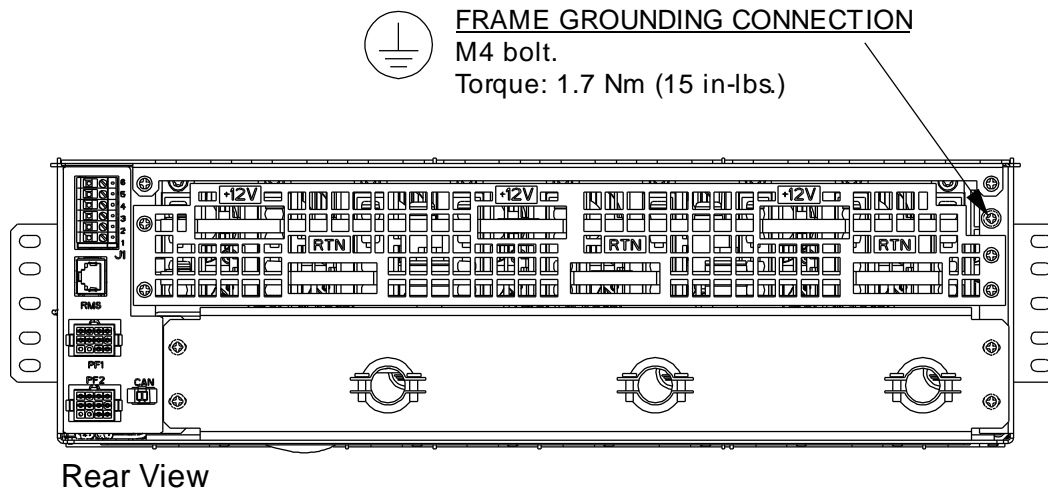


Figure 1

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AC Input Connections

List 1, 11 Module Mounting Assembly

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, single phase, three (3) feeds per module mounting assembly. Each feed supplies three (3) module mounting positions.

List 1, 11 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 4 for recommended wire sizes and branch circuit protection. Refer also to Figure 2.

AC INPUT TO LIST 1, 11 MODULE MOUNTING ASSEMBLY (Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, Single Phase) Each Module Mounting Assembly Requires Three (3) AC Feeds, One (1) Feed per Three (3) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45 °C Ambient Temperature
			Wire ^{(3) (4) (5)}
200 VAC	49 A	70 A	6 AWG
208 VAC	47 A	60 A ⁽⁶⁾	6 AWG
240 VAC	41 A	60 A ⁽⁶⁾	6 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

⁵ THHN 90 °C Wire.

⁶ The maximum overcurrent protection device is 70 A.

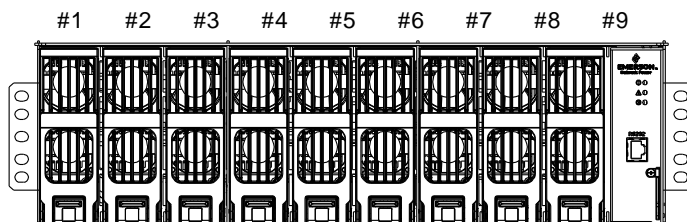
Table 4

List 1, 11 Module Mounting Assembly AC Input Connections Illustration

[Home](#)

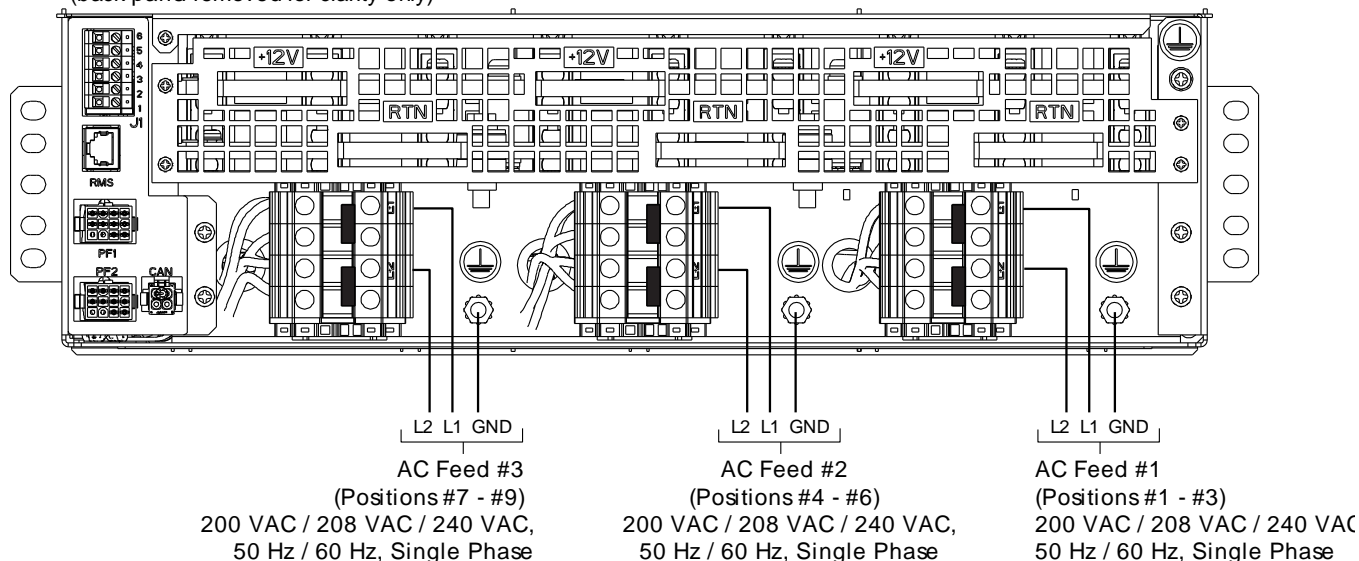
AC Input Connections, 588706000 List 1, 11
Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, Single Phase, 3 Feeds per Module Mounting Assembly
(1 Feed per 3 Module Positions)

Rectifier Module / BBU Module
Mounting Positions



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)
(back panel removed for clarity only)



AC INPUT

Wire Size Capacity:
16 to 4AWG.

Torque:
2.5 to 3.0 Nm (22.1 to 26.5 in-lbs.)



FRAME GROUND CONNECTION

One M4 stud and hardware.
Torque: 1.7 Nm (15 in-lbs.)

Figure 2

[Home](#)

List 2, 12 Module Mounting Assembly

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-phase, three (3) feeds per module mounting assembly. Each feed supplies three (3) module mounting positions.

List 2, 12 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 5 for recommended wire sizes and branch circuit protection. Refer also to Figure 3.

AC INPUT TO LIST 2, 12 MODULE MOUNTING ASSEMBLY (Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase) Each Module Mounting Assembly Requires Three (3) AC Feeds, One (1) Feed per Three (3) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45°C Ambient Temperature
			Wire ^{(3) (4) (5)}
200 VAC	28 A	35 A ⁽⁶⁾	8 AWG
208 VAC	27 A	35 A ⁽⁶⁾	8 AWG
240 VAC	23.5 A	30 A	10 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

⁵ THHN 90 °C Wire.

⁶ The maximum overcurrent protection device is 50 A.

Table 5

List 2, 12 Module Mounting Assembly AC Input Connections Illustration

[Home](#)

AC Input Connections, 588706000 List 2, 12
Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase, 3 Feeds per Module Mounting Assembly
(1 Feed per 3 Module Positions)

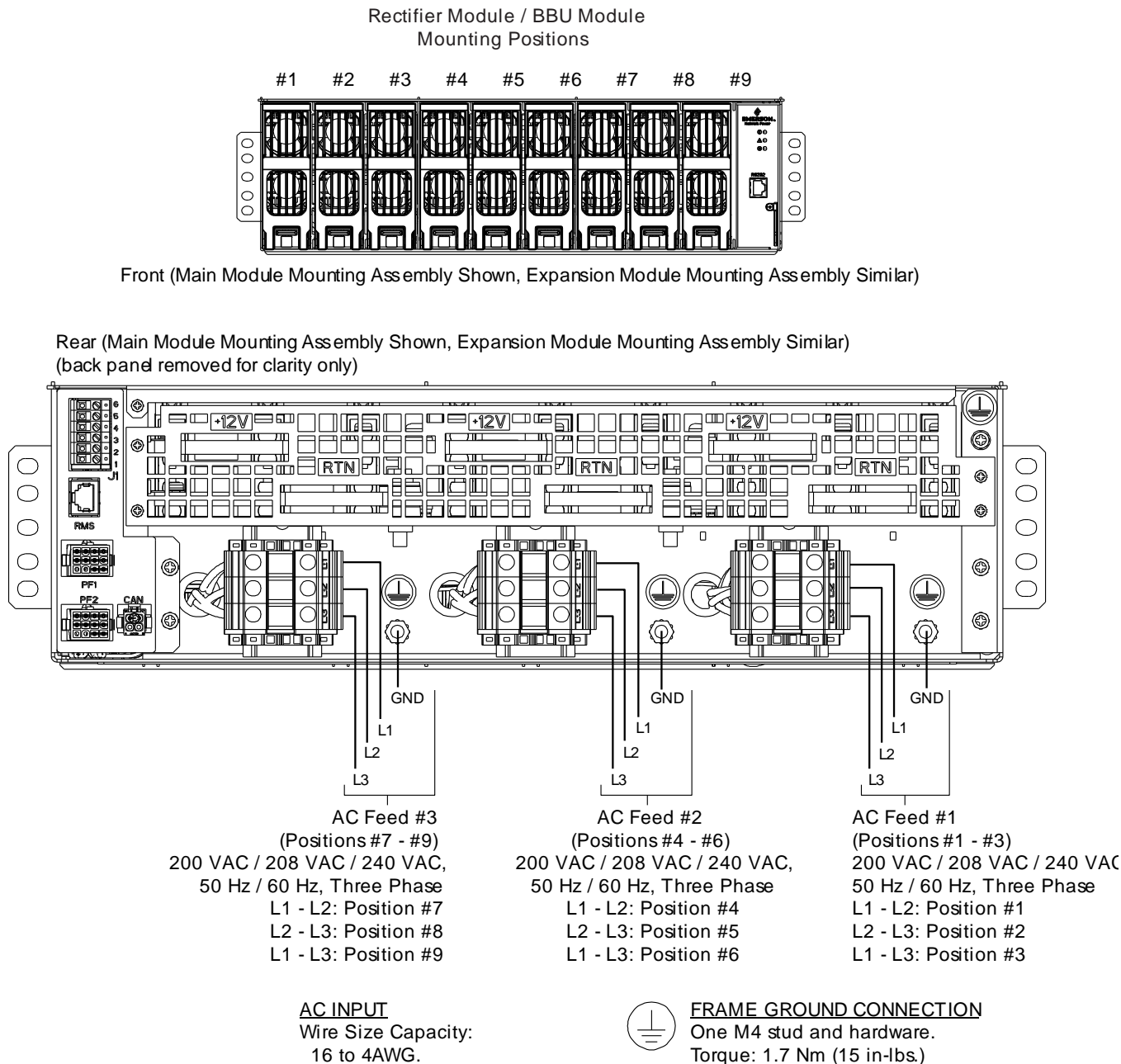


Figure 3

[Home](#)

List 3, 13 Module Mounting Assembly

Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-wire + PE, 50 Hz / 60 Hz, three (3) feeds per module mounting assembly. Each feed supplies three (3) module mounting positions.

List 3, 13 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 6 for recommended wire sizes and branch circuit protection. Refer also to Figure 4.

AC INPUT TO LIST 3, 13 MODULE MOUNTING ASSEMBLY (Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz) Each Module Mounting Assembly Requires Three (3) AC Feeds, One (1) Feed per Three (3) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45 °C Ambient Temperature
			Wire ^{(3) (4) (5)}
240 VAC / 415 VAC	13.7 A	20 A	12 AWG
277 VAC / 480 VAC	12 A	15 A	14 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

⁵ THHN 90 °C Wire.

Table 6

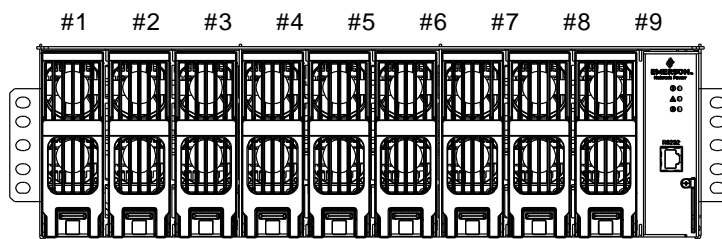
List 3, 13 Module Mounting Assembly AC Input Connections Illustration

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AC Input Connections, 588706000 List 3, 13

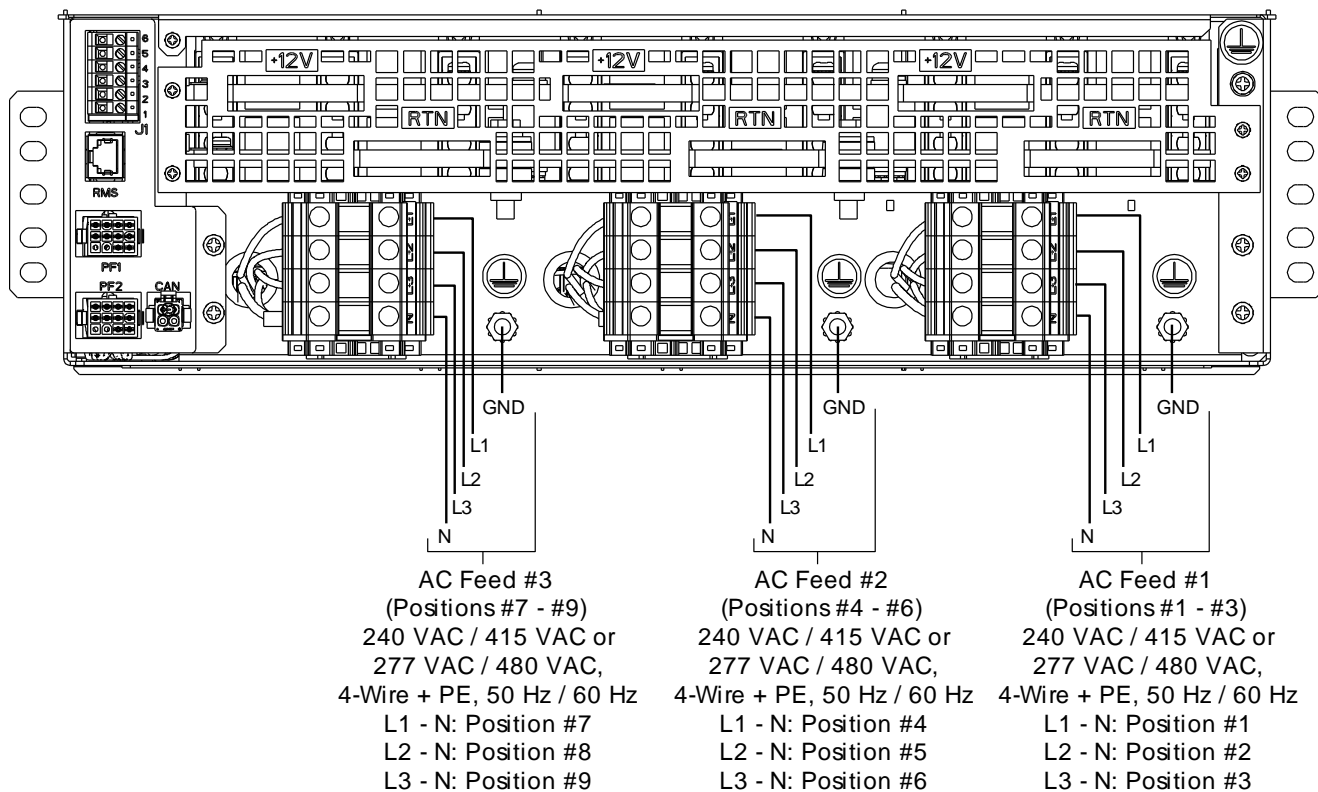
Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz, 1 Feed per Module Mounting Asser
(1 Feed per 3 Module Positions)

**Rectifier Module / BBU Module
Mounting Positions**



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)
(back panel removed for clarity only)



AC INPUT

Wire Size Capacity:
16 to 4AWG.

Torque:
2.5 to 3.0 Nm (22.1 to 26.5 in-lbs.)



FRAME GROUND CONNECTION

One M4 stud and hardware.
Torque: 1.7 Nm (15 in-lbs.)

Figure 4

[Home](#)

List 4, 14 Module Mounting Assembly

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, single phase, three (3) feeds per module mounting assembly. Each feed supplies three (3) module mounting positions.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 5. DO NOT populate slots in any other arrangement than what is shown in Figure 5. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 4, 14 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 7 for recommended wire sizes and branch circuit protection. Refer also to Figure 5.

AC INPUT TO LIST 4, 14 MODULE MOUNTING ASSEMBLY (Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, Single Phase) Each Module Mounting Assembly Requires Three (3) AC Feeds, One (1) Feed per Three (3) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45 °C Ambient Temperature
			Wire ^{(3) (4) (5)}
200 VAC	17 A	25 A ⁽⁶⁾	10 AWG
208 VAC	16.5 A	25 A ⁽⁶⁾	10 AWG
240 VAC	14.6 A	20 A	12 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

⁵ THHN 90 °C Wire.

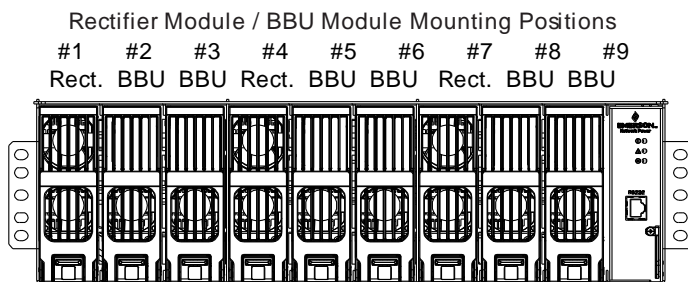
⁶ The maximum overcurrent protection device is 30 A.

Table 7

List 4, 14 Module Mounting Assembly AC Input Connections Illustration

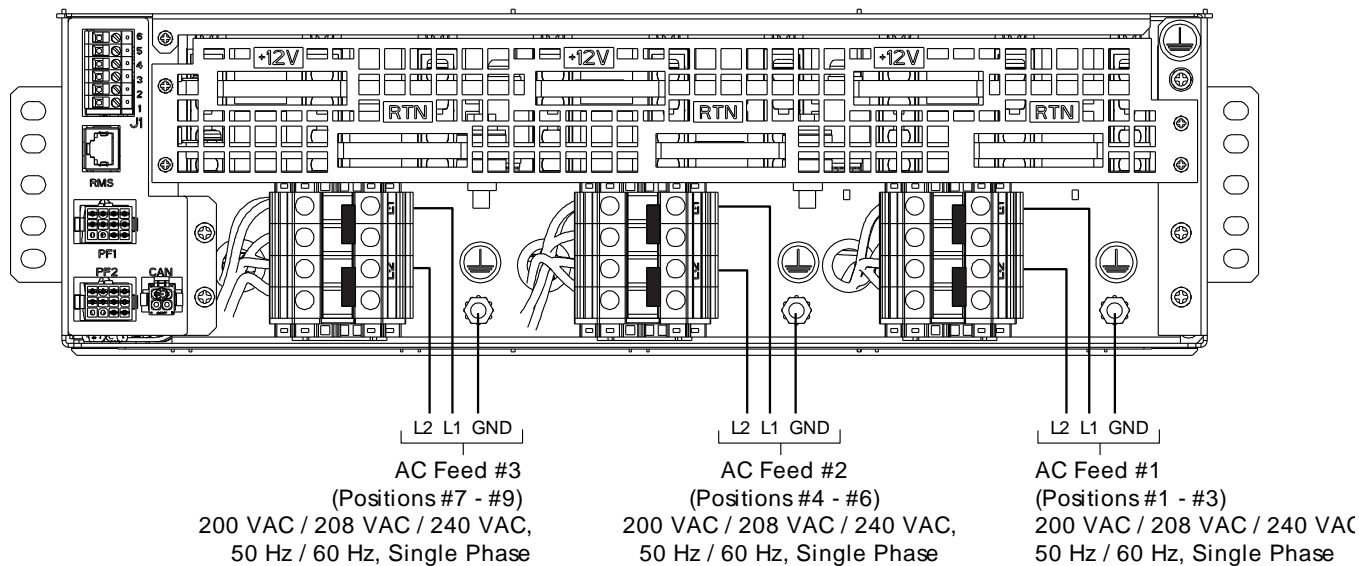
[Home](#)

AC Input Connections, 588706000 List 4, 14
Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, Single Phase, 3 Feeds per Module Mounting Assembly
(1 Feed per 3 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)
(back panel removed for clarity only)



AC INPUT

Wire Size Capacity:

16 to 4AWG.

Torque:

2.5 to 3.0 Nm (22.1 to 26.5 in-lbs.)



FRAME GROUND CONNECTION

One M4 stud and hardware.

Torque: 1.7 Nm (15 in-lbs.)

Figure 5

[Home](#)

List 5, 15 Module Mounting Assembly

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-phase, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 6. DO NOT populate slots in any other arrangement than what is shown in Figure 6. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 5, 15 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 8 for recommended wire sizes and branch circuit protection. Refer also to Figure 6.

AC INPUT TO LIST 5, 15 MODULE MOUNTING ASSEMBLY (Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase) Each Module Mounting Assembly Requires One (1) AC Feed, One (1) Feed per Nine (9) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45 °C Ambient Temperature
			Wire ^{(3) (4) (5)}
200 VAC	30 A	40 A ⁽⁶⁾	8 AWG
208 VAC	29 A	40 A ⁽⁶⁾	8 AWG
240 VAC	25 A	35 A	8 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

⁵ THHN 90 °C Wire.

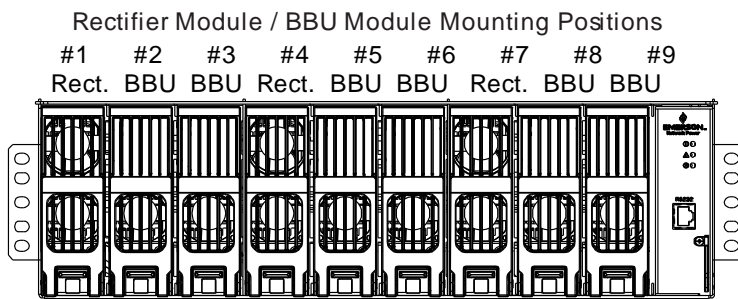
⁶ The maximum overcurrent protection device is 50 A.

Table 8

List 5, 15 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 5, 15

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase, 1 Feed per Module Mounting Assembly
(1 Feed per 9 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)
(back panel removed for clarity only)

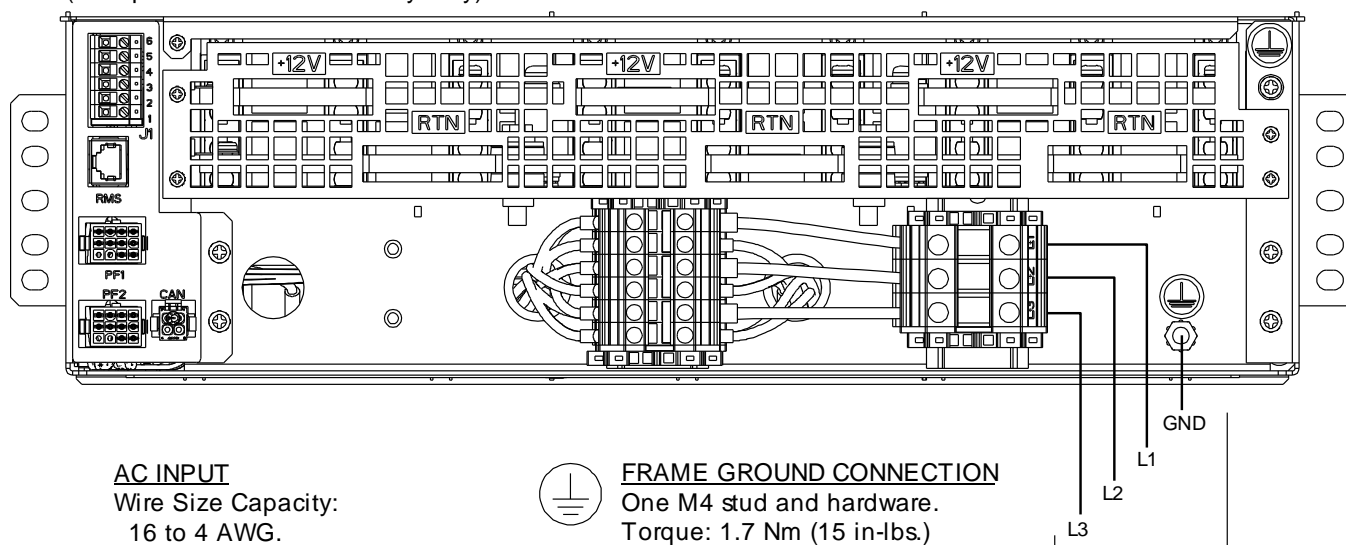


Figure 6

[Home](#)

List 6, 16 Module Mounting Assembly

Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-wire + PE, 50 Hz / 60 Hz, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 7. DO NOT populate slots in any other arrangement than what is shown in Figure 7. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 6, 16 Module Mounting Assembly Recommended AC Input Branch Circuit Protection and Wire Size

Refer to Table 9 for recommended wire sizes and branch circuit protection. Refer also to Figure 7.

AC INPUT TO LIST 6, 16 MODULE MOUNTING ASSEMBLY (Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz) Each Module Mounting Assembly Requires One (1) AC Feed, One (1) Feed per Nine (9) Module Mounting Positions			
Input Voltage	Input Current ⁽¹⁾	Recm. Overcurrent Protection ⁽²⁾	45 °C Ambient Temperature
			Wire ^{(3) (4) (5)}
240 VAC / 415 VAC	14.6 A	20 A	12 AWG
277 VAC / 480 VAC	13 A	20 A	12 AWG

¹ Input current based on rectifier modules installed in the module mounting assembly.

² The AC input branch circuit protective device should be of the time-delay or high inrush type.

³ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized, follow applicable codes.

⁴ Equipment grounding conductors must be provided with the AC input conductors supplied to the module mounting assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

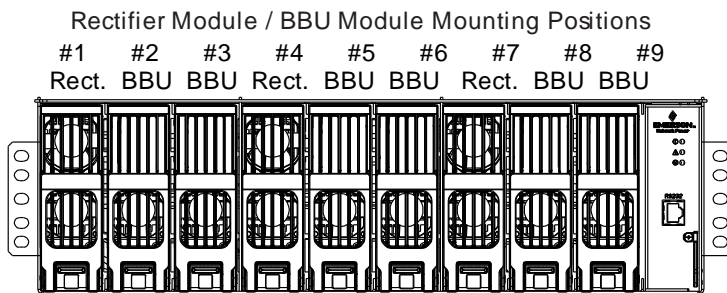
⁵ THHN 90 °C Wire.

Table 9

List 6, 16 Module Mounting Assembly AC Input Connections Illustration

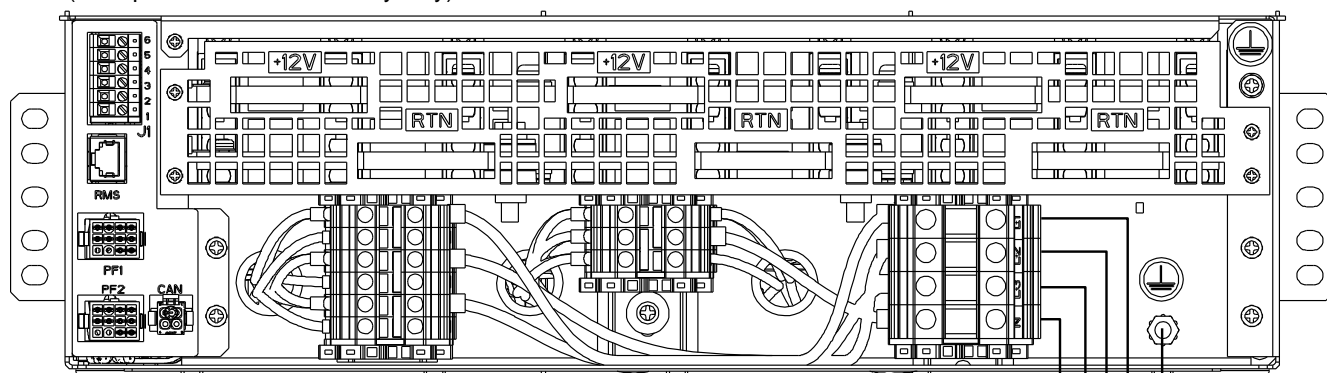
AC Input Connections, 588706000 List 6, 16

Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz, 1 Feed per Module Mounting Asser
(1 Feed per 9 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)
(back panel removed for clarity only)



AC INPUT

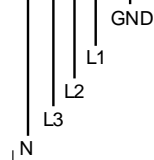
Wire Size Capacity:
16 to 4AWG.

Torque:
2.5 to 3.0 Nm (22.1 to 26.5 in-lbs.)



FRAME GROUND CONNECTION

One M4 stud and hardware.
Torque: 1.7 Nm (15 in-lbs.)



AC Feed #1
(Positions #1 - #9)

240 VAC / 415 VAC or 277 VAC / 480 VAC
4-Wire + PE, 50 Hz / 60 Hz

L1 - N: Position #1 - #3

L2 - N: Position #4 - #6

L3 - N: Position #7 - #9

Figure 7

[Home](#)

List 7, 17 Module Mounting Assembly

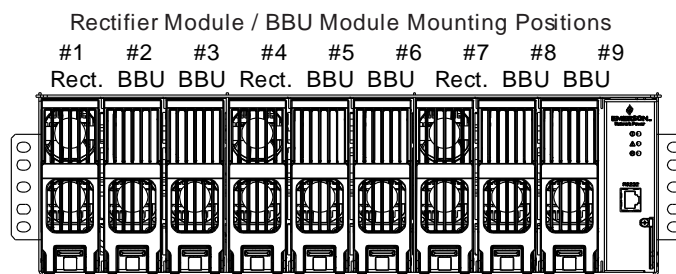
Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-phase, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 30 A.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 8. DO NOT populate slots in any other arrangement than what is shown in Figure 8. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 7, 17 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 7, 17

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase, 1 Feed per Module Mounting Assem
(1 Feed per 9 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Simi

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

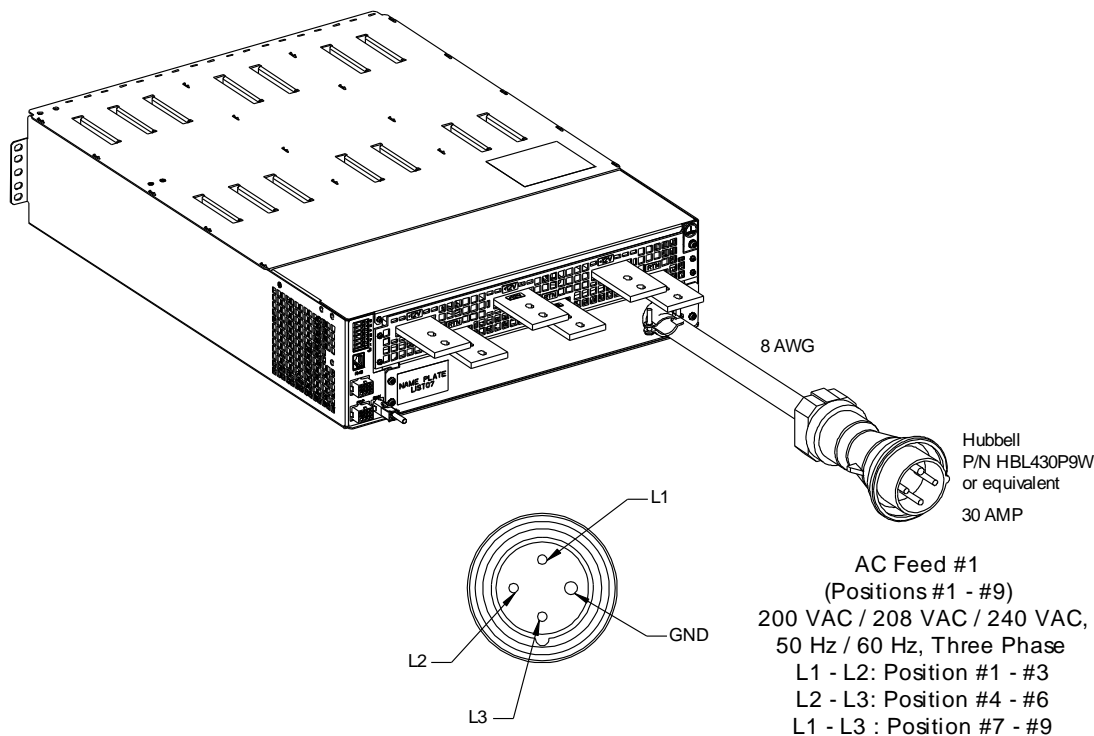


Figure 8

List 8, 18 Module Mounting Assembly

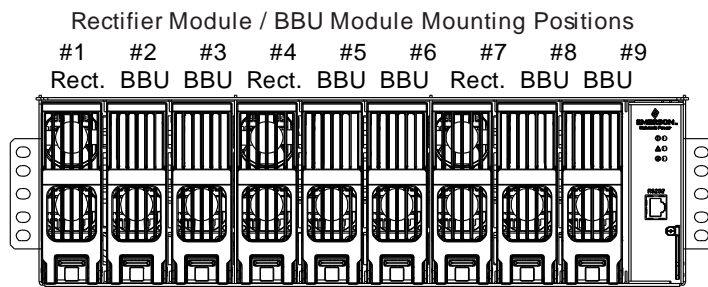
Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-wire + PE, 50 Hz / 60 Hz, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 20 A.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 9. DO NOT populate slots in any other arrangement than what is shown in Figure 9. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 8, 18 Module Mounting Assembly AC Input Connections Illustration

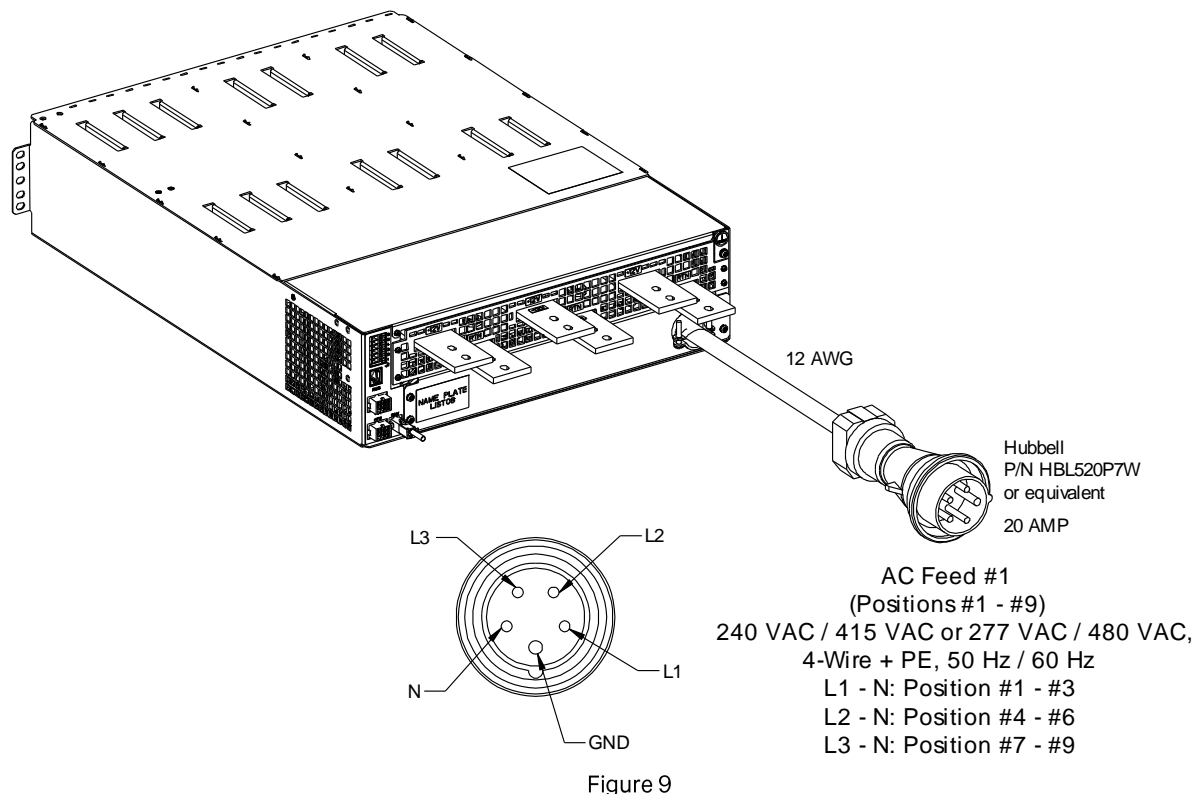
AC Input Connections, 588706000 List 8, 18

Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz, 1 Feed per Module Mounting Ass
(1 Feed per 9 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)



List 9, 19 Module Mounting Assembly

Nominal 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-phase, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 60 A.

List 9, 19 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 9, 19

Nominal 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase, 1 Feed per Module Mounting Assembly
(1 Feed per 9 Module Positions)

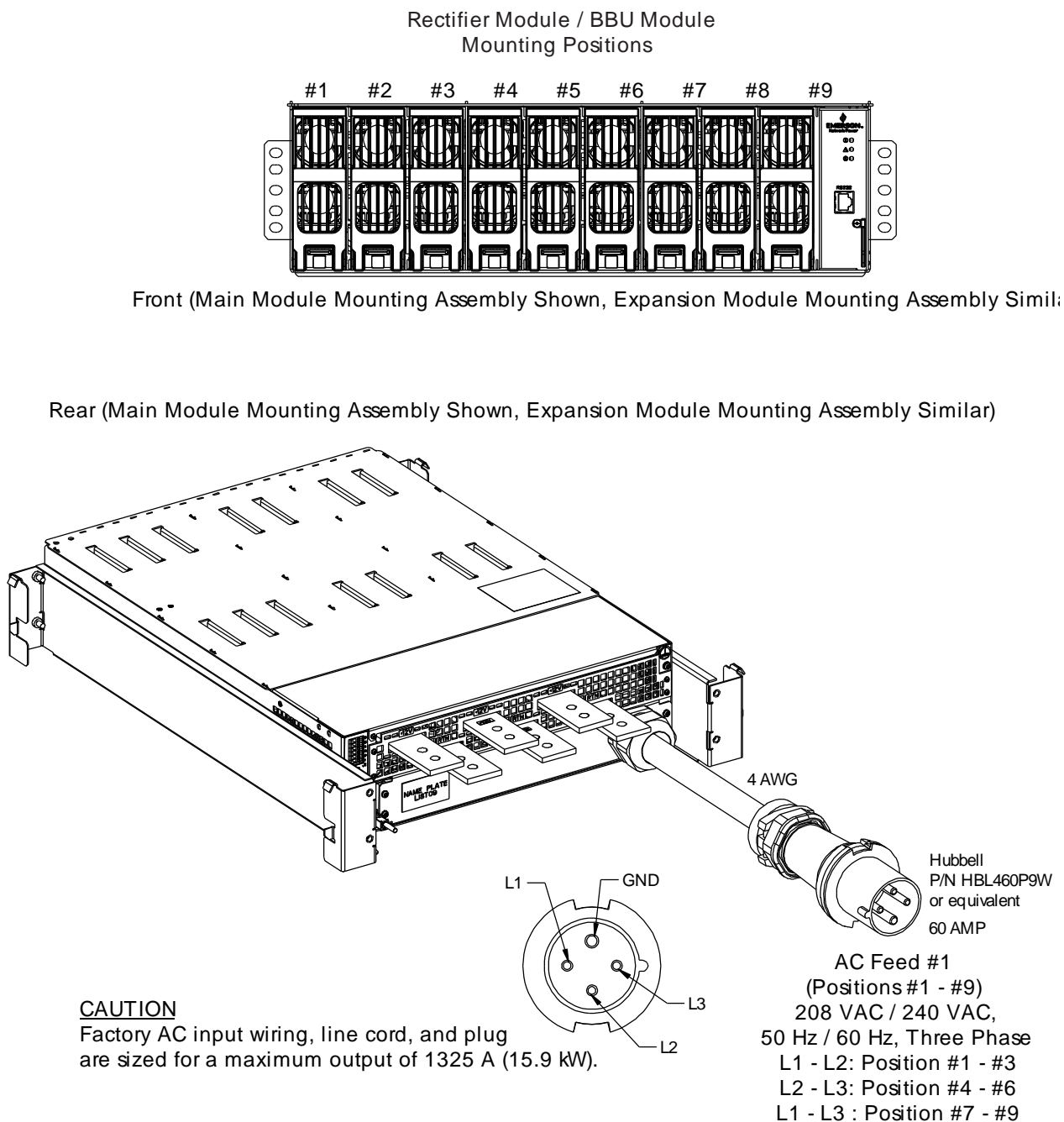


Figure 10

List 21, 31 Module Mounting Assembly

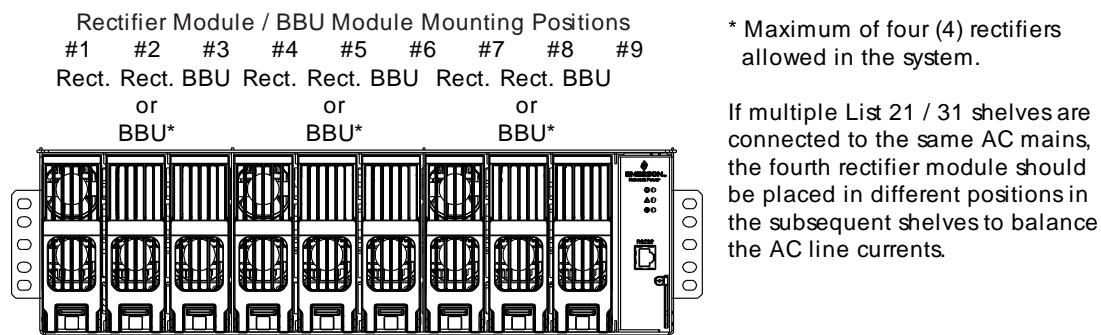
Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-phase, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 60 A.

Caution: AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 11. DO NOT populate slots in any other arrangement than what is shown in Figure 11. Failure to follow this requirement could result in tripping of AC input protection devices.

List 21, 31 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 21, 31

Nominal 200 VAC / 208 VAC / 240 VAC, 50 Hz / 60 Hz, 3-Phase, 1 Feed per Module Mounting Assem
(1 Feed per 9 Module Positions)



Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

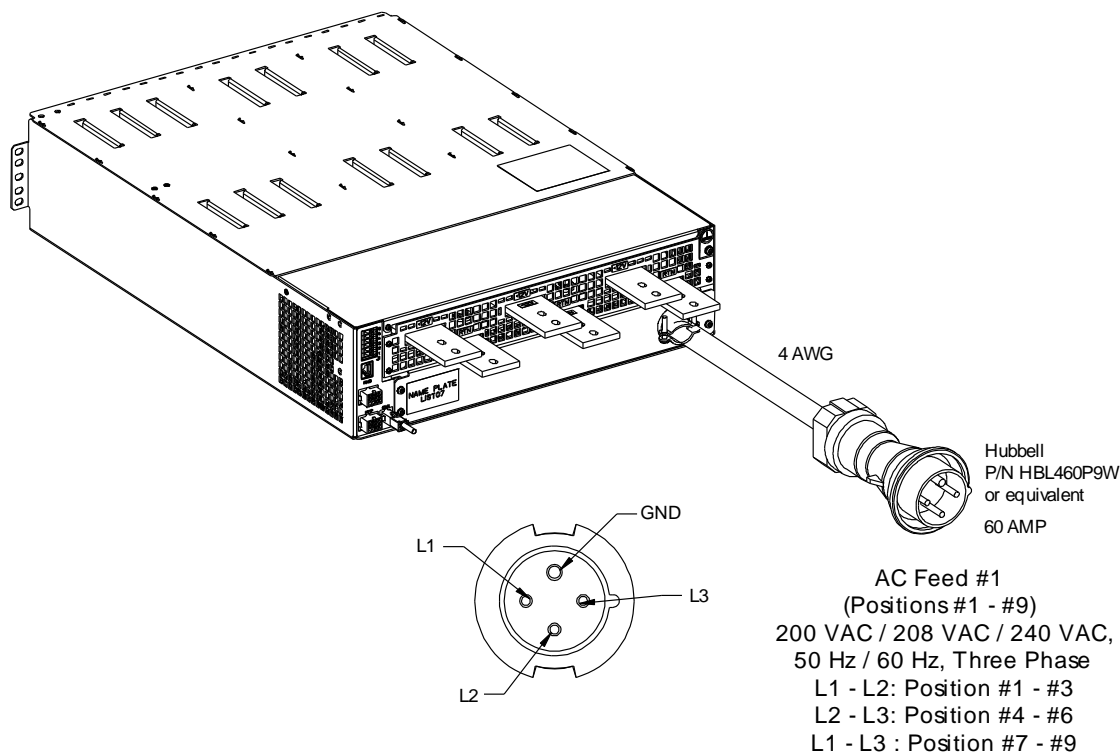


Figure 11

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List 22, 32 Module Mounting Assembly

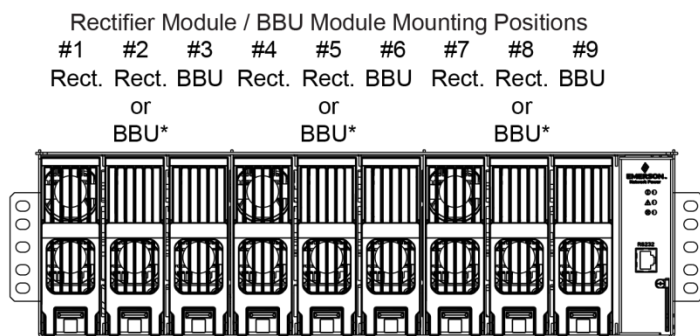
Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-wire + PE, 50 Hz / 60 Hz, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 30 A.

Caution: *AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 12. DO NOT populate slots in any other arrangement than what is shown in Figure 12. Failure to follow this requirement could result in tripping of AC input protection devices.*

List 22, 32 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 22, 32

Nominal 240 VAC / 415 VAC or 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz, 1 Feed per Module Mounting Assembly (1 Feed per 9 Module Positions)



* Maximum of four (4) rectifiers allowed in the system.

If multiple List 22 / 32 shelves are connected to the same AC mains, the fourth rectifier module should be placed in different positions in the subsequent shelves to balance the AC line currents.

Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

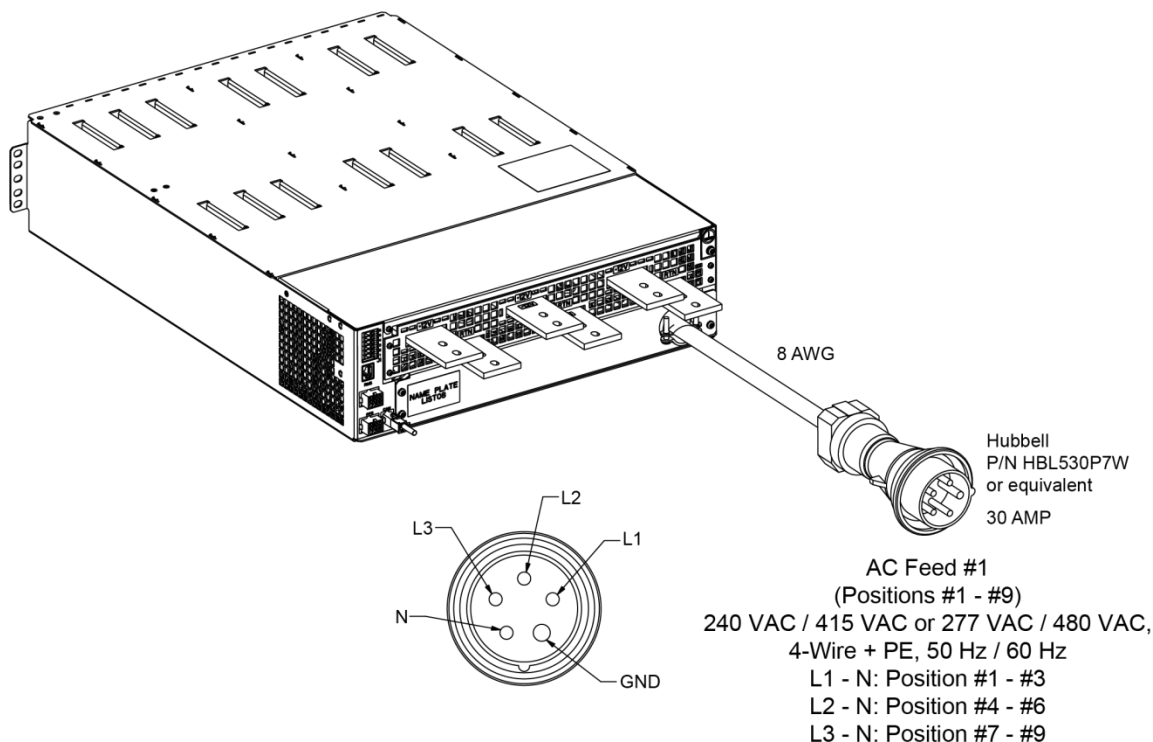


Figure 12

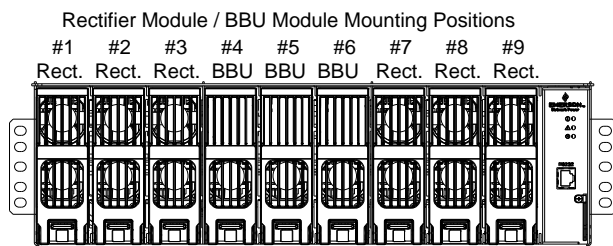
List 23, 33 Module Mounting Assembly

Nominal 208 VAC, 50 Hz / 60 Hz, 3-phase Y, two (2) feeds per module mounting assembly. First feed supplies rectifier modules in positions 1, 2, and 3 and BBU modules in positions 4, 5, and 6. Second feed supplies rectifier modules in positions 7, 8, and 9. Two AC input line cords are factory provided and connected. Recommended overcurrent protective device is 30 A.

Caution: AC input sized for module mounting assembly population of rectifier and BBU modules as shown in Figure 13. DO NOT populate slots in any other arrangement than what is shown in Figure 13. Failure to follow this requirement could result in tripping of AC input protection devices.

List 23, 33 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 23, 33
Nominal 208 VAC, 50 Hz / 60 Hz, 3-Phase Y, 2 Feeds per Module Mounting Assembly
(1 Feed per 3 Module Positions for Rectifiers and 3 Module Positions for BBUs,
1 Feed per 3 Module Positions for Rectifiers)



* Maximum of four (4) rectifiers

If multiple List 23 / 33 shelves are connected to the same AC mains, the fourth rectifier module should be placed in different positions in the subsequent shelves to balance the AC line currents.

Front (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

Rear (Main Module Mounting Assembly Shown, Expansion Module Mounting Assembly Similar)

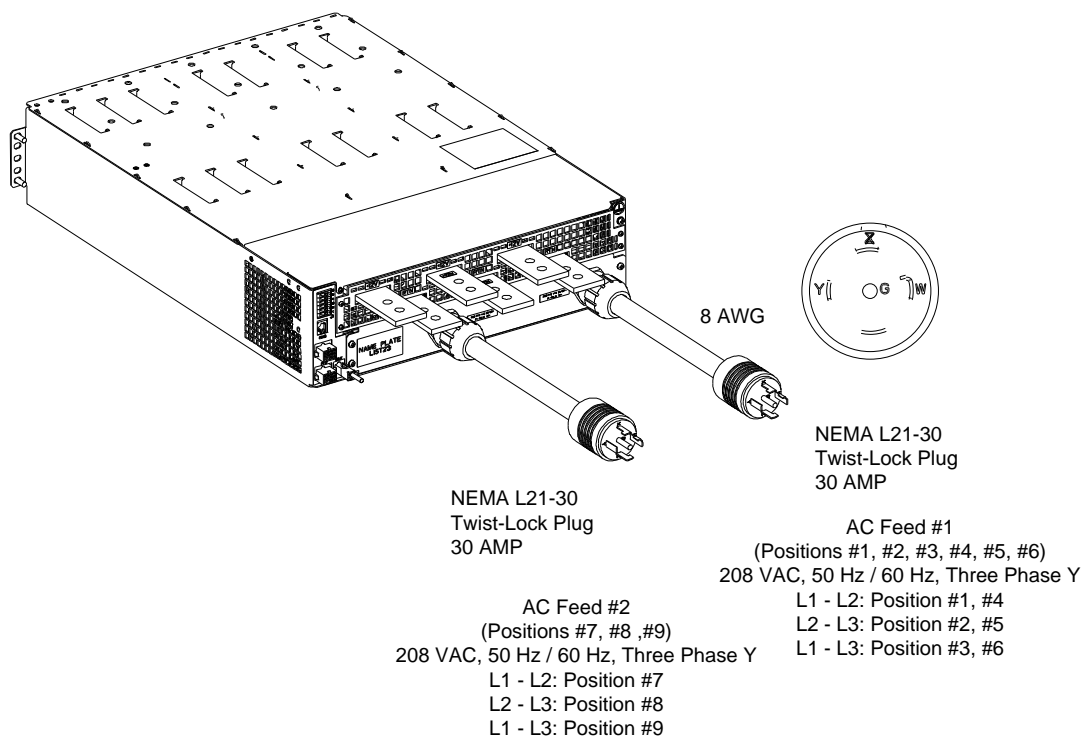


Figure 13

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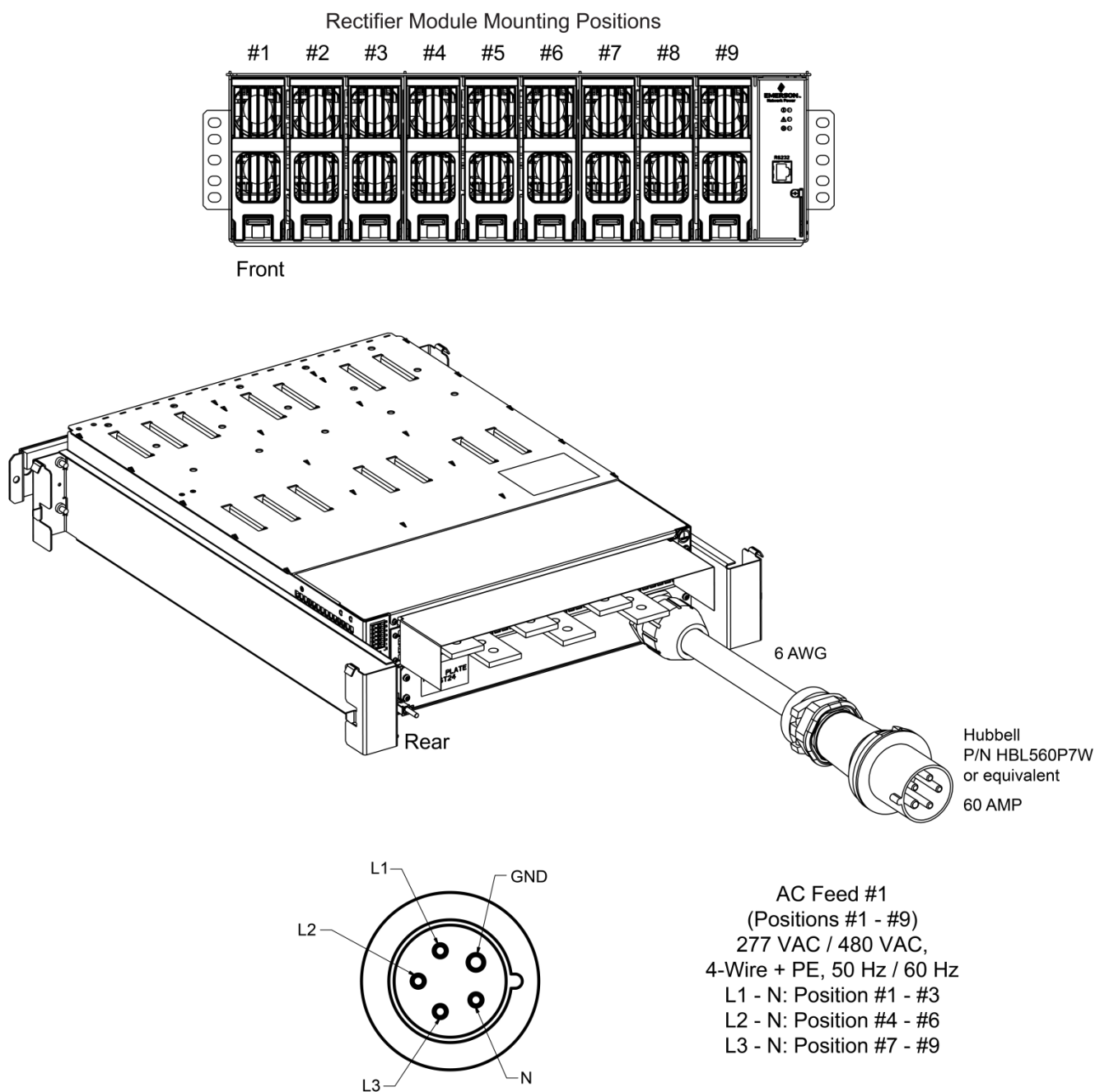
List 24 Module Mounting Assembly

Nominal 277 VAC / 480 VAC, 4-wire + PE, 50 Hz / 60 Hz, one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. An AC input line cord is factory provided and connected. Recommended overcurrent protective device is 60 A.

List 24 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 24

Nominal 277 VAC / 480 VAC, 4-Wire + PE, 50 Hz / 60 Hz, 1 Feed per Module Mounting Assembly
(1 Feed per 9 Module Positions)



List 25, 35 Module Mounting Assembly

Nominal 230 VAC/400 VAC or 240 VAC/415 VAC (4-Wire + PE), one (1) feed per module mounting assembly. This feed supplies all nine (9) module mounting positions. Recommended overcurrent protective device is 30 A.

List 25, 35 Module Mounting Assembly AC Input Connections Illustration

AC Input Connections, 588706000 List 25, 35

Nominal 230 VAC/400 VAC or 240 VAC/415 VAC (4-Wire + PE), 1 Feed per Module Mounting Assembly

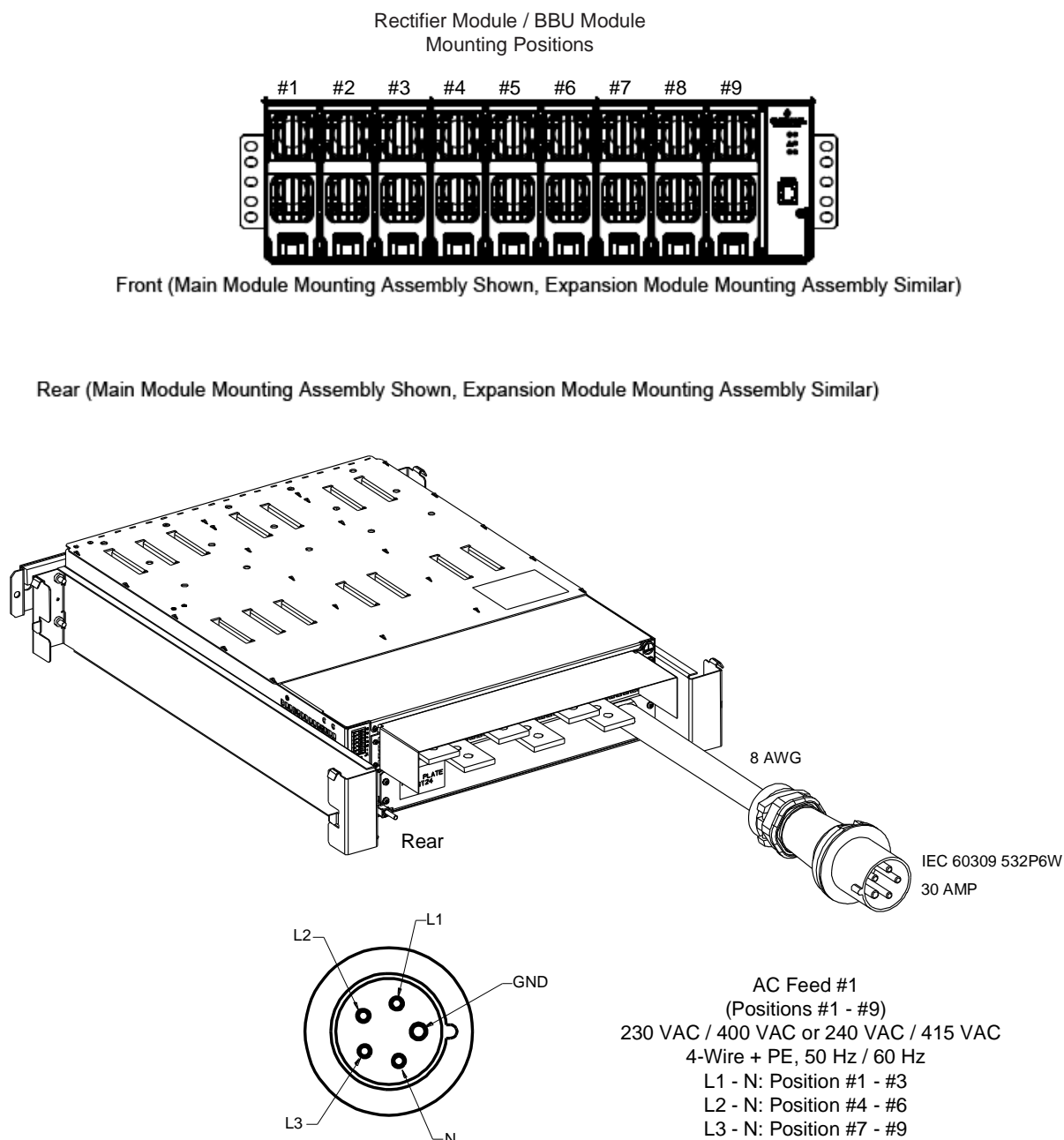


Figure 15

DC Load Distribution (Bulk Output from Module Mounting Assemblies)

Note: The system is intended to be negative pole grounded (+12 VDC). Field provide a properly sized DC power return wire to earth reference from the GND/RETURN busbar to Earth. Recommended wire size is 2/0 AWG.

Note: The installation may consist of one (1) main module mounting assembly and up to two (2) expansion module mounting assemblies, or all main module mounting assemblies. In installations with one main module mounting assembly and up to two expansion module mounting assemblies, all module mounting assemblies are on one DC bus and are controlled by a single SCC controller. A common CAN bus is shared across all module mounting assemblies and all rectifiers load share and all rectifiers are load managed via the SCC. In installations with all main module mounting assemblies, each module mounting assembly is on a separate DC bus and each module mounting assembly is controlled by (contains) a separate SCC controller. A separate CAN bus exists per module mounting assembly, rectifiers load share per module mounting assembly, and rectifiers are load managed via an SCC per module mounting assembly.

Recommended +12 VDC Output Wire Sizes and Lugs

+12 VDC output wire size and lug requirements are determined by site requirements. For lug selection; refer to the following.

- +12 VDC and GND / Return output busbars are designed to accommodate the lugs listed in Table 1. Refer also to Figure 16.
- For other available lugs and hardware, refer to drawings 031110100 through 031110300.

DC Output Connections Illustration

+12V DC OUTPUT CONNECTIONS

List 1, 2, 3, 9, 11, 12, 13, 19, 23, 24:

11 mm (0.433") Clearance Holes
on 25.4 mm (1") Centers

List 4, 5, 6, 7, 8, 14, 15, 16, 17, 18, 21, 22, 31, 32:
7.10 mm x 10.3 mm (0.281" x 0.406") Slots
on 25.4 mm (1") Centers

(Customer must order or supply
lugs and lug mounting hardware.)

Maximum Lug Width: 1".

Torque: 80 in-lbs.

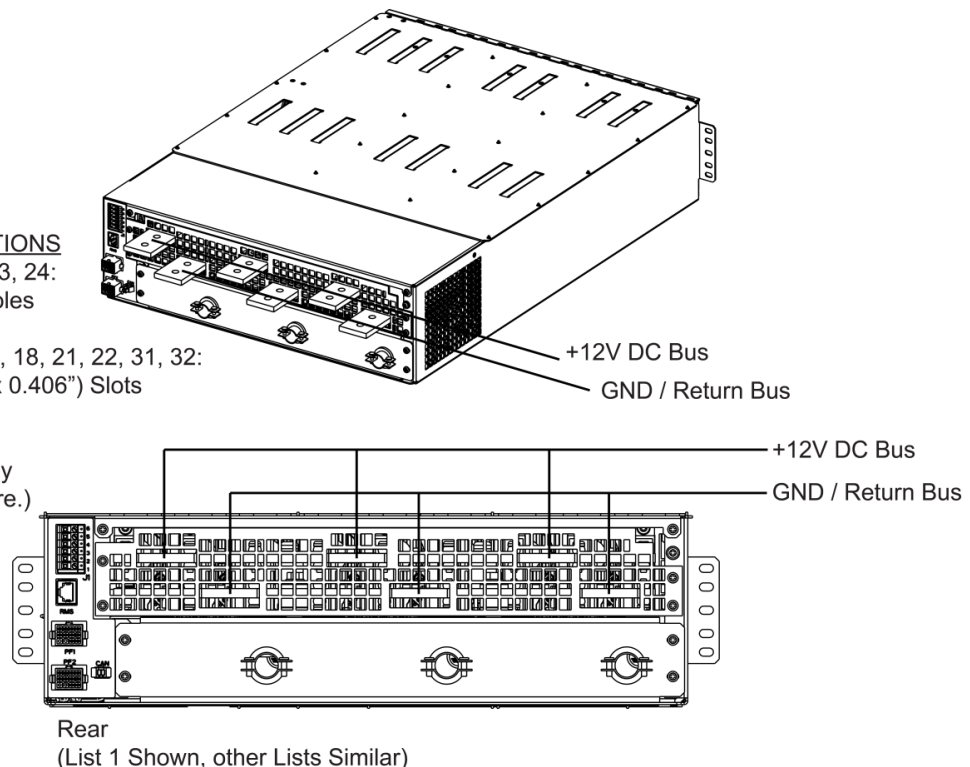


Figure 16

External Alarm, Reference, Monitoring Connections

Recommended External Alarm, Reference, Monitoring, and Control Wire Sizes

Recommended wire size is 22 AWG for loop lengths up to 200 ft. and 18-20 AWG for loop lengths over 200 ft.

External Alarm, Reference, Monitoring, and Control Connections Illustration

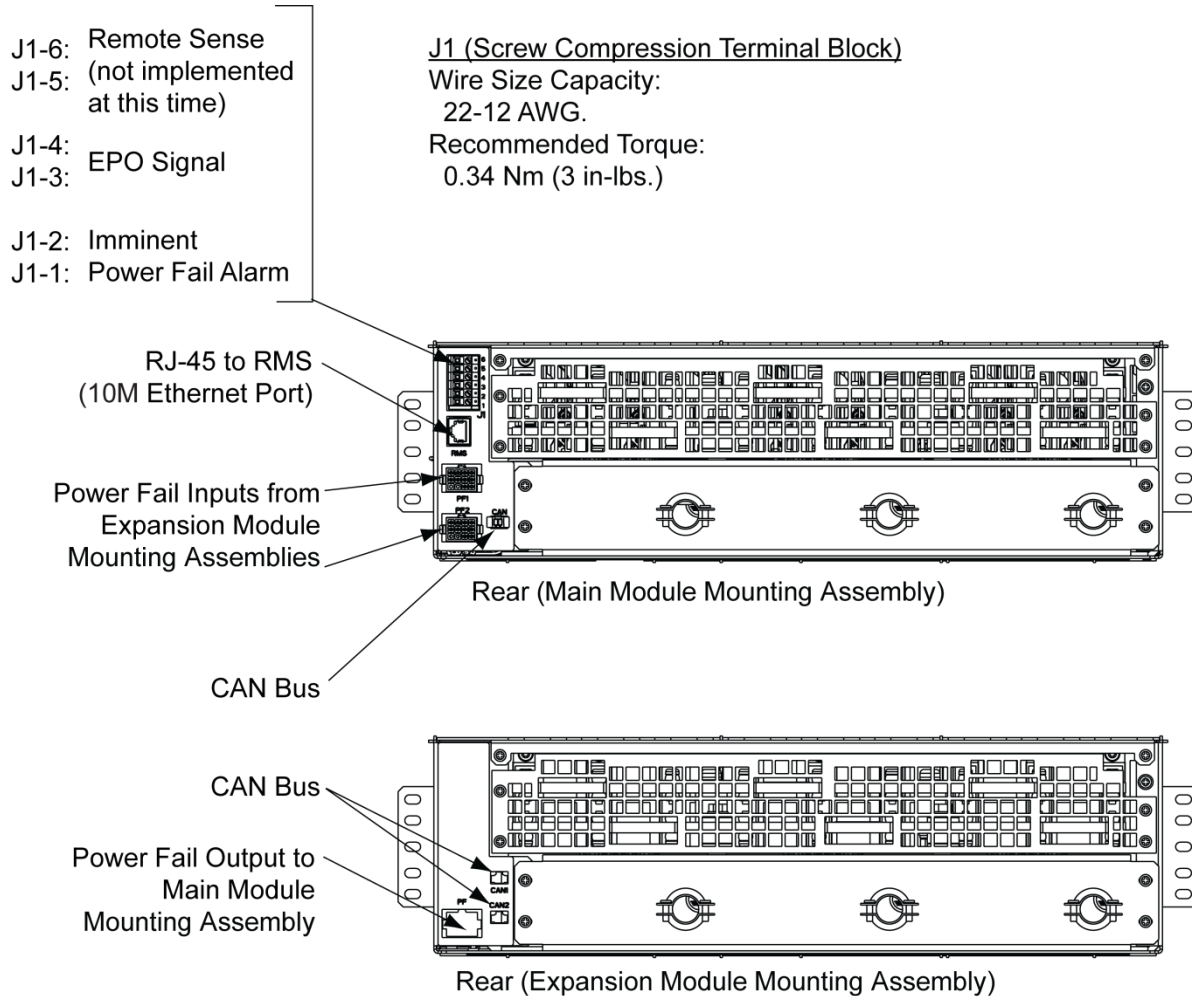


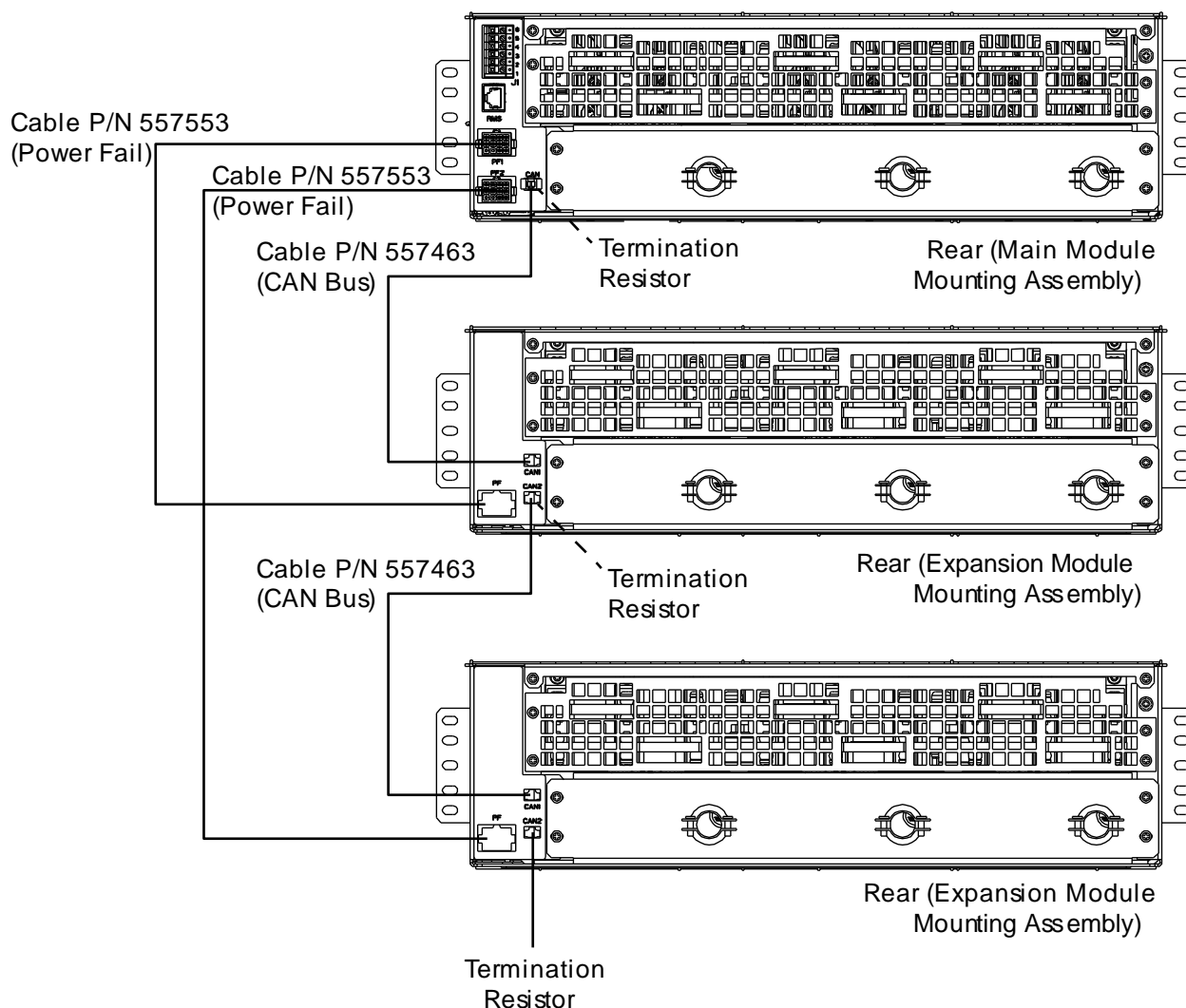
Figure 17

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System Cable Connections Illustration

Note: The installation may consist of one (1) main module mounting assembly and up to two (2) expansion module mounting assemblies, or all main module mounting assemblies. In installations with one main module mounting assembly and up to two expansion module mounting assemblies, all module mounting assemblies are on one DC bus and are controlled by a single SCC controller. A common CAN bus is shared across all module mounting assemblies and all rectifiers load share and all rectifiers are load managed via the SCC. In installations with all main module mounting assemblies, each module mounting assembly is on a separate DC bus and each module mounting assembly is controlled by (contains) a separate SCC controller. A separate CAN bus exists per module mounting assembly, rectifiers load share per module mounting assembly, and rectifiers are load managed via an SCC per module mounting assembly.

Note: These connections are not to be made between multiple main module mounting assemblies (containing SCC controllers).



SPECIFICATIONS

1. SYSTEM

1.1 System DC Output Ratings

1.1.1 See page 2.

1.2 System AC Input Ratings

1.2.1 See page 2.

1.3 System Environmental Ratings

1.3.1 **Operating Ambient Temperature Range:** -10 °C to +45 °C (+14 °F to +113 °F), except when used with BBU modules. (Refer to UM1B123000 when used with BBU modules for temperature rating.)

1.3.2 **Storage Ambient Temperature Range:** -40 °C to +85 °C (-40 °F to +185 °F), except when used with BBU modules. (Refer to UM1B123000 when used with BBU modules for temperature rating.)

1.3.3 **Relative Humidity:** This power system is capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

1.3.4 **Altitude:** This power system is capable of operating in an altitude range of -200 feet to 10,000 feet. The maximum operating ambient temperature should be de-rated by 3 °C per 1000 feet above 6000 feet.

1.3.5 **Ventilation Requirements:** The rectifier and BBU modules are fan cooled and utilize front to back forced ventilation. The power system must be mounted so ventilating openings are not blocked and temperature of the air entering the power system does not exceed the operating ambient temperature range stated above.

1.3.6 **Audible Noise:** ≤ 71.4 dB(A), at 25 °C (measurement made at 1 m distances in front of the system at maximum fan speed).

Note: Testing was performed by forcing the fans at Full Speed through an SCC controller. This simulated the fan speed at Full Load.

1.3.7 **Surge Protection:** Compliance with EN61000-4-5 Installation Class 4, and capable of withstanding surges per ANSI/IEEE C 62.41 1999 Category B3 across the input terminals.

Note: This level of protection is a widely used standard for telecommunications and data center power equipment. As with all such equipment, it is the end user's responsibility to provide an adequately sized Surge Suppression Device (Type 1) at the commercial power service entrance of the building that reduces all incoming surges to levels below the classes/categories stated for the equipment.

1.3.8 **EMI:** EN 300 386, Class A and FCC Part 15, Class A.

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- 1.3.9 **Mounting:** This product is intended only for installation in a restricted access location on or above a non-combustible surface.

This product must be located in a controlled environment with access to crafts persons only.

This product is intended for installation in data centers or network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

This product is intended to be installed in a data center facility and be connected to a MESH-bonding network (MESH-BN) or to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

This system is suitable for installation as part of the Common Bonding Network (CBN) or a data center building MESH-bonding network (MESH-BN).

Rectifier module, BBU module, and module mounting assembly ventilating openings must not be blocked and temperature of air entering these must not exceed the rated operating ambient temperature range.

Clearance requirements are:

- a) Recommended minimum space clearance for the front of each system is 80 mm (3 inches).
- b) Recommended minimum space clearance for the rear of each system is 80 mm (3 inches).

1.4 Physical

- 1.4.1 **Form Factor:** 19" Rack, EIA-310-D Compliant. Requires P/N 547147 adjustable mounting rail kit or P/N SXK2310021/1 Open Compute rack mounting rail kit for version 1 racks or optional P/N 562821 Open Compute rack mounting rail kit for version 2 racks.

1.5 System Compliance Information

- 1.5.1 **Safety Compliance:** This unit meets the requirements of UL 60950-1, Standard for Information Technology Equipment, and is UL Recognized as a power supply for use in Telephone, Electronic Data Processing or Information Processing Equipment.
- 1.5.2 CE Mark: EN 60950-1; CE Mark in accordance with the Low-Voltage Directive 2014/35/EU and the EMC Directive, 2014/30/EU including amendments by the CE Marking Directive, 93/68/EEC.
- 1.5.3 The system is RoHS compliant (pending) and REACH compliant (pending).

1.6 Local Controls and Indicators

- 1.6.1 **SCC Controller:** Refer to the SCC Controller Instructions (UM1M520HNA).
- 1.6.2 **Rectifier Module:** Refer to the Rectifier Instructions (UM1R123000).
- 1.6.3 **BBU Module:** Refer to the BBU Instructions (UM1B123000).

2. SCC CONTROLLER

For SCC Controller specifications, refer to the SCC Controller Instructions (UM1M520HNA).

3. RECTIFIER MODULE

For rectifier module specifications, refer to the Rectifier Instructions (UM1R123000).

4. BBU MODULE

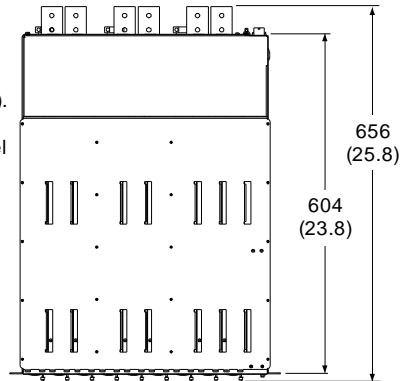
For BBU module specifications, refer to the BBU Instructions (UM1B123000).

MECHANICAL SPECIFICATIONS

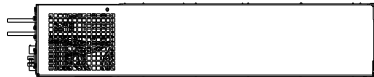
Overall Dimensions

Notes:

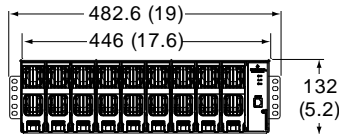
1. All dimensions are in millimeters (inches).
2. Finish:
Module Mounting Assembly: Plated Steel
Module Faceplates: Black



Top View



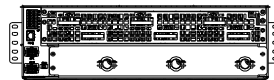
Left Side View



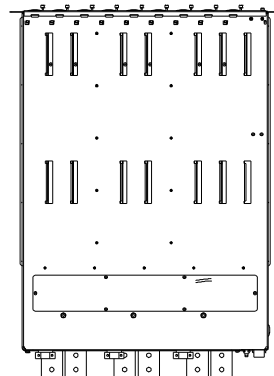
Front View



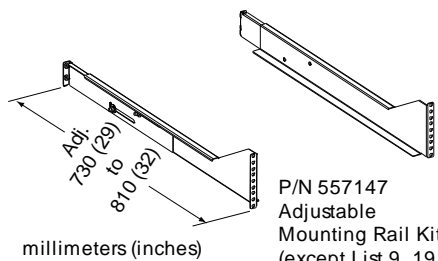
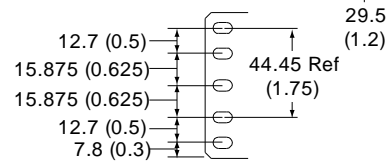
Right Side View



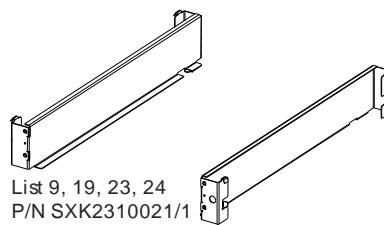
Rear View



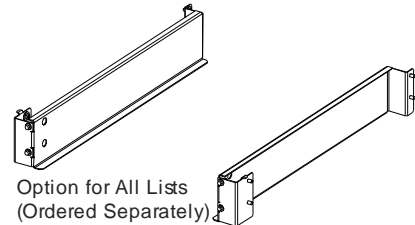
Bottom View



P/N 557147
Adjustable
Mounting Rail Kit
(except List 9, 19,
23, 24)



List 9, 19, 23, 24
P/N SXK2310021/1
Open Compute Rack
Mounting Rail Kit
(Version 1 Racks)



Option for All Lists
(Ordered Separately)
P/N 562821
Open Compute Rack
Mounting Rail Kit
(Version 2 Racks)

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Weights

List Number or Part Number	Net Weight, each
Module Mounting Assembly	
58870600001	17.46 kg (38.5 lbs)
58870600002	
58870600003	
58870600004	
58870600005	
58870600006	
58870600011	
58870600012	
58870600013	
58870600014	
58870600015	
58870600016	
58870600007	24.58 kg (54.2 lbs)
58870600008	
58870600009	
58870600017	
58870600018	
58870600019	
58870600021	
58870600022	
58870600023	
58870600024	
58870600025	
58870600031	
58870600032	
58870600033	
58870600035	
Rectifier Module	
1R123000 and 1R123300	3.0 kg (6.6 lbs)
BBU Module	
1B123000	4.13 kg (9.1 lbs)
SCC Controller	
1M520HNA	0.68 kg (1.5 lbs)

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RELATED DOCUMENTATION

System Installation and User Instructions:	UM588706000
SCC Controller Instructions:	UM1M520HNA
Rectifier Instructions:	UM1R123000
BBU Instructions:	UM1B123000
Main Schematic Diagrams:	SD588706000 (System)
Main Wiring Diagrams:	T588706000 (System)
Lug Detail Drawings	031110100 031110200 031110300

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REVISION RECORD

Revision	Change Number (ECO)	Description of Change	Date	Approved
A	LLP220676	New	07/28/2014	John Jasko
B	LLP221325	Adding List 21, 22, 31, 32.	12/19/2014	John Jasko
C	LLP221896	Adding List 23.	06/11/2015	John Jasko
D	LLP222115	Updates for RRM104523S.	08/03/2015	John Jasko
E	LLP222254	Updates for PWR00844N.	09/10/2015	John Jasko
F	LLP222896	P/N 562821 optional Open Compute rack mounting rail kit for version 2 racks added.	05/09/2016	John Jasko
G	LLP223507	Adding List 33.	12/15/2016	Mitch Emata
H	LLP223777	Adding List 25 and 35.	04/25/2017	Mitch Emata Mike Smith Apr 28, 2017 Joe Piwovar May 17, 2017

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