SYSTEM OVERVIEW

Description: -48 VDC @ up to 12000 Amperes Power System

The NetSure 7100 DC Power System is an integrated power system containing -48 VDC rectifiers or converters, optional +24 VDC converters, intelligent control, metering, monitoring, and distribution.

This power system is designed to power a load while charging a positive grounded battery. This power system is capable of operating in a batteryless installation or off battery for maintenance purposes. The power system is designed for operation with the positive output grounded.

This system consists of the following components.

- **Distribution Cabinet**

  The system always includes a minimum of one distribution cabinet, which provides DC distribution through fuses and/or circuit breakers. The distribution cabinet is factory mounted in a relay rack, on shipping brackets, or in an enclosure as specified when ordered.

  Four different sizes of distribution cabinets are available to accept from one (1) to four (4) distribution panels. A variety of distribution panels are available that provide load distribution, battery distribution, and dual voltage load distribution for use with +24 VDC converters. These distribution panels are configured to accept either bullet nose type circuit breakers and TPS/TLS fuseholders, TPH fuses, TPL-B fuses, or GJ/218 circuit breakers. A bulk output panel is also available.

  The distribution cabinet may be equipped with low voltage load disconnect (LVLD), low voltage battery disconnect (LVBD), and manual battery disconnect.

- **Controller**

  NCU (NetSure Control Unit): The controller provides power system control (including optional low voltage battery disconnect (LVBD) and low voltage load disconnect (LVLD) control), rectifier control (including a charge control function), converter control, metering functions, monitoring functions, and local/remote alarm functions. The controller also supports rectifier temperature compensation if the system is equipped with a temperature probe(s). Temperature probe(s) may also be designated to monitor ambient temperature and/or battery temperature. The controller also provides data acquisition, system alarm management, and advanced battery and energy management. The controller contains a color LCD display and keypad for local access. The controller provides an Ethernet port and comes with comprehensive webpages for remote access. The controller has SNMP v3 capability for remote system management. The controller supports software upgrade via its USB port. Refer to the NCU Controller Instructions (UM1M830BNA) for more information.

- **Module Mounting Assembly (Spec. No. 588705000)**

  The system may contain one or more Spec. No. 588705000 module mounting assemblies, each of which houses up to six (6) 3500 watt rectifier modules or six (6) 3500 watt converter modules.

  - **Rectifier Modules (for use in Spec. No. 588705000)**

    The system may contain 3500 watt rectifier modules; which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Rectifier Instructions (UM1R483500e) for more information.

  - **Converter Modules (for use in Spec. No. 588705000)**

    The system may contain 3500 watt converter modules; which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Converter Instructions (UM1C400483500e) for more information.

- **Module Mounting Assembly (Spec. No. 588705300)**

  The system may contain one or more Spec. No. 588705300 module mounting assemblies, each of which houses 2000 watt rectifier modules and optional +24 VDC, 1500 watt DC-DC converter modules.

  - **Rectifier Modules (for use in Spec. No. 588705300)**

    The system contains 2000 watt rectifier modules; which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Rectifier Instructions (UM1R482000e3) for more information.

- **Optional DC-DC Converter Modules (for use in Spec. No. 588705300)**

  Where +24 VDC load power is also required, 1500 watt DC-DC converter modules are available. Refer to the Converter Instructions (UM1C48241500) for more information.

- **Module Mounting Assembly (Spec. No. 588705400)**

  The system may contain one or more Spec. No. 588705400 module mounting assemblies, each of which houses up to six (6) 3500 watt rectifier modules.

  - **Rectifier Modules (for use in Spec. No. 588705400)**

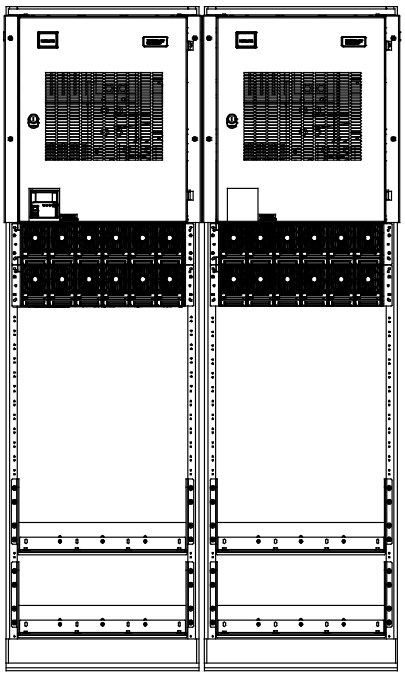
    The system contains 3500 watt rectifier modules; which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Rectifier Instructions (UM1R483500e3) for more information.

- **Module Mounting Assembly (Spec. No. 588705500)**

  The system may contain one or more Spec. No. 588705500 module mounting assemblies, each of which houses up to six (6) 4000 watt rectifier modules.

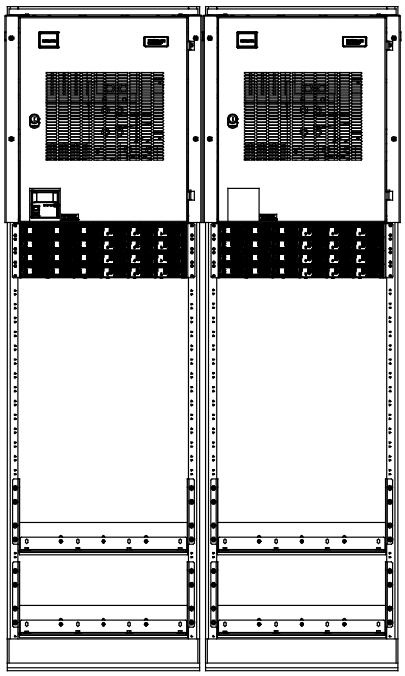
  - **Rectifier Modules (for use in Spec. No. 588705500)**

    The system contains 4000 watt rectifier modules; which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Rectifier Instructions (UM1R483500e) for more information.



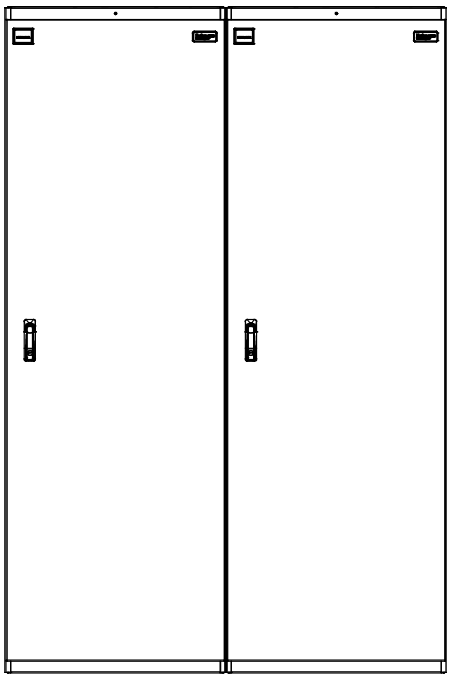
Main Bay Supplemental Bay

(E/W Spec. No. 588705000 or 588705500 Module Mounting Assemblies)



Main Bay Supplemental Bay

(E/W Spec. No. 588705300 or 588705400 Module Mounting Assemblies)



Main Bay Enclosure Supplemental Bay Enclosure

(Installed in an Enclosure)

General Specifications

See detailed specifications on page 229.

Family:	NetSure
System Spec. No.:	582127000
System Model:	7100
System AC Input Voltage:	582127000 List 40, 41: Nominal 208 VAC, 240 VAC, 277 VAC, single phase, 50 Hz / 60 Hz, with an operating range of 176 VAC to 305 VAC. Acceptable input frequency range is 45 Hz to 65 Hz. 582127000 List 42: Nominal 208 VAC, 240 VAC, three-phase (3L+PE), 50 Hz / 60 Hz, with an operating range of 176 VAC to 275 VAC. Acceptable input frequency range is 45 Hz to 65 Hz. 582127000 List 43: Nominal 277/480 VAC, three-phase (3L+N+PE), 50 Hz / 60 Hz, with an operating range of 176/305 VAC to 305/528 VAC. Acceptable input frequency range is 45 Hz to 65 Hz. (For use with 588705000, 588705400, and 588705500 module mounting assemblies.) 582127000 List 100, 101, 102, 103, 203: Nominal 208 VAC, 240 VAC, single phase, 50 Hz / 60 Hz, with an operating range of 176 VAC to 275 VAC. Acceptable input frequency range is 45 Hz to 65 Hz.
System DC Input Voltage:	582127000 List 45, 46, 47: Input voltage range of 260 VDC to 400 VDC (when used with 588705000).
System Output Capacity:	
System:	12000 A maximum distribution and battery charge/discharge capacity, 12000 A maximum rectifier capacity
Bay:	2000 A maximum distribution and battery charge/discharge capacity, 2500 A maximum rectifier capacity (when used with 588705000, 588705400, or 588705500 shelves) 1500 A @ -48 VDC and 520 A @ +24 VDC, maximum (when used with 588705300, except List 100, 101, 102, 103, 203) 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum (when used with List 100, 101, 102, 103, 203)
Distribution Panel:	Refer to the individual distribution panels list descriptions under “List Descriptions (582127000)” starting on page 24.
1R482000e3 Rectifier Rating:	See UM1R482000e3.
1R483500e Rectifier Rating:	See UM1R483500e.
1R483500e3 Rectifier Rating:	See UM1R483500e3.
1R484000e Rectifier Rating:	See UM1R483500e.
1C400483500e Converter Rating:	See UM1C400483500e.
1C48241500 Converter Rating:	See UM1C48241500.
System Agency Approval:	UL 1801 Listed (“c UL”), NEBS

Relay Rack Version:	
Framework Type:	Relay Rack
Mounting Width:	23 Inches, nominal
Mounting Depth:	
Distribution Cabinet:	20.09 Inches
Module Mounting Assembly:	20.09 Inches
Battery Tray:	22.5 Inches
Enclosure Version:	
Framework Type:	Enclosure
Enclosure Width:	28 Inches
Enclosure Depth:	28 Inches
Enclosure Height:	84 Inches
Access:	Front for installation, operation, and maintenance. Rear for supplemental bay expansion, rectifier shelf expansion and battery tray installation.
Supplemental Bay(s) Available:	Six (6)
Control:	Microprocessor
Color:	Enclosure: Textured Dark Gray (P/N 563524) or Textured White (P/N 564881) Distribution Cabinet, Relay Racks and Module Faceplates: Dark Gray Module Mounting Assembly and Module Bodies: Bright Zinc Plating
Environment:	-40 °C to +40 °C (-40 °F to +104 °F)

TABLE OF CONTENTS

MAIN COMPONENTS ILLUSTRATIONS

582127000 (Relay Rack)

COMMON EQUIPMENT

List 1: Main Bay

List 2: 1st Supplemental Bay, In-Line w/ Main Bay

List 3: 3rd through 6th Supplemental Bay, In-Line w/ Main Bay

List 5: 2nd through 6th Supplemental Bay, Remote Location

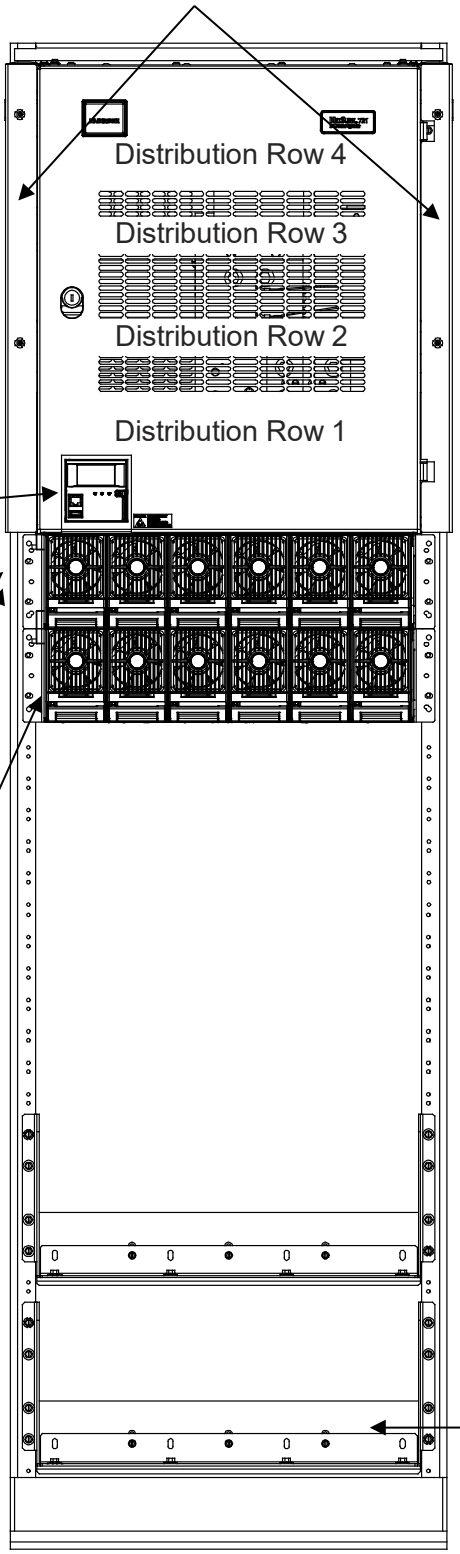
FRONT ACCESS AC TERMINATION ASSEMBLY

List 40: 1 AC Feed per 1 Rectifier (1 to 5 Assemblies), Single Phase

List 41: 1 AC Feed per 2 Rectifiers (1 to 5 Assemblies), Single Phase

List 42: 1 AC Feed per 3 Rectifiers (1 to 5 Assemblies), 3-Phase, 3-Wire

List 43: 1 AC Feed per 3 Rectifiers (1 to 5 Assemblies), 3-Phase, 4-Wire



DISTRIBUTION CABINET
(4-Row Cabinet Shown)
List 24 (4-Row)
List 23 (3-Row)
List 22 (2-Row)
List 21 (1-Row)

Controller (Main Bay)
1M830DNA
SM-DU (Supplemental Bays):
(located behind blank panel)

List 30: Module Mounting Assembly Interface
or
List 38: Module Mounting Assembly Interface

Module Mounting Assembly:
58870500021, 58870500022, 58870500031, 58870500032, or 58870500033
Rectifier Module:
1R483500e
or
Module Mounting Assembly:
58870550001, 58870550002, 58870550003, 58870550004, or 58870550005
Rectifier Module:
1R484000e

DISTRIBUTION PANELS
Single Voltage Distribution Panels
Battery Disconnect Distribution Panels
Return Bar Panel
Bulk Output Panel

BATTERY DISCONNECT CONTACTORS
List CA: 600A
List CB: 1200A
List CC: 2000A

LOW VOLTAGE DISCONNECT OPTIONS
List LB: Low Voltage Battery Disconnect (LVBD)
List LL: Low Voltage Load Disconnect (LVLD)

Other Options

List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover

List 28: DC Conduit Box

List 29: Distribution Cabinet Top Shield

List 31: Module Mounting Assembly Field Expansion Kit

List 90: Battery Shunt, 800A

List 91: Battery Shunt, 2000A

List 92: Battery Shunt, 2500A

List MB: Manual Battery Disconnect

List 93: Optional Battery Tray
or
List 95: Optional Battery Tray

582127000 (Relay Rack)

FRONT ACCESS DC TERMINATION ASSEMBLY
List 45: 1 DC Feed per 1 Converter (1 to 5 Assemblies)
List 46: 1 DC Feed per 2 Converters (2 or 4 Assemblies)
List 47: 1 DC Feed per 3 Converters (1 to 5 Assemblies)

COMMON EQUIPMENT
List 1: Main Bay
List 2: 1st Supplemental Bay, In-Line w/ Main Bay
List 3: 3rd through 6th Supplemental Bay, In-Line w/ Main Bay
List 5: 2nd through 6th Supplemental Bay, Remote Location

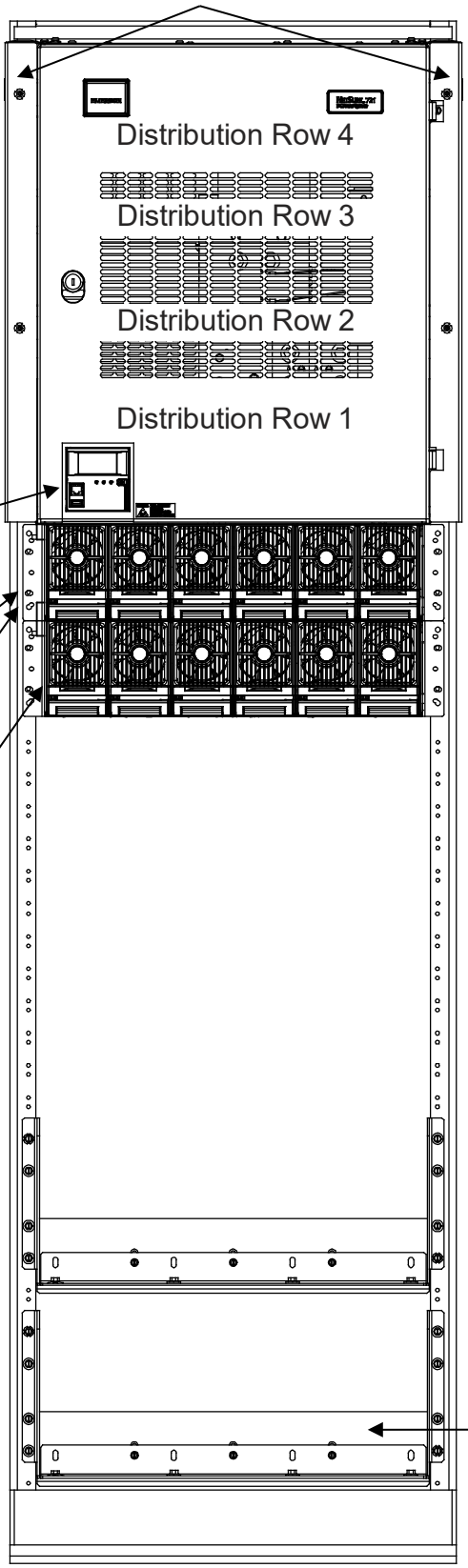
DISTRIBUTION CABINET (4-Row Cabinet Shown)
List 24 (4-Row)
List 23 (3-Row)
List 22 (2-Row)
List 21 (1-Row)

Controller (Main Bay) 1M830DNA
SM-DU (Supplemental Bays): (located behind blank panel)

List 34: Module Mounting Assembly Interface

Module Mounting Assembly: 58870500040, 58870500041, or 58870500042

Converter Module: 1C400483500e



DISTRIBUTION PANELS
Single Voltage Distribution Panels
Battery Disconnect Distribution Panels
Return Bar Panel
Bulk Output Panel

BATTERY DISCONNECT CONTACTORS
List CA: 600A
List CB: 1200A
List CC: 2000A

LOW VOLTAGE DISCONNECT OPTIONS
List LB: Low Voltage Battery Disconnect (LVBD)
List LL: Low Voltage Load Disconnect (LVLD)

Other Options
List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover
List 28: DC Conduit Box
List 29: Distribution Cabinet Top Shield
List 35: Module Mounting Assembly Field Expansion Kit
List 90: Battery Shunt, 800A
List 91: Battery Shunt, 2000A
List 92: Battery Shunt, 2500A
List MB: Manual Battery Disconnect

List 93: Optional Battery Tray
or
List 95: Optional Battery Tray

582127000 (Relay Rack)

COMMON EQUIPMENT

List 1: Main Bay

List 2: 1st Supplemental Bay, In-Line w/ Main Bay

List 3: 3rd through 6th Supplemental Bay, In-Line w/ Main Bay

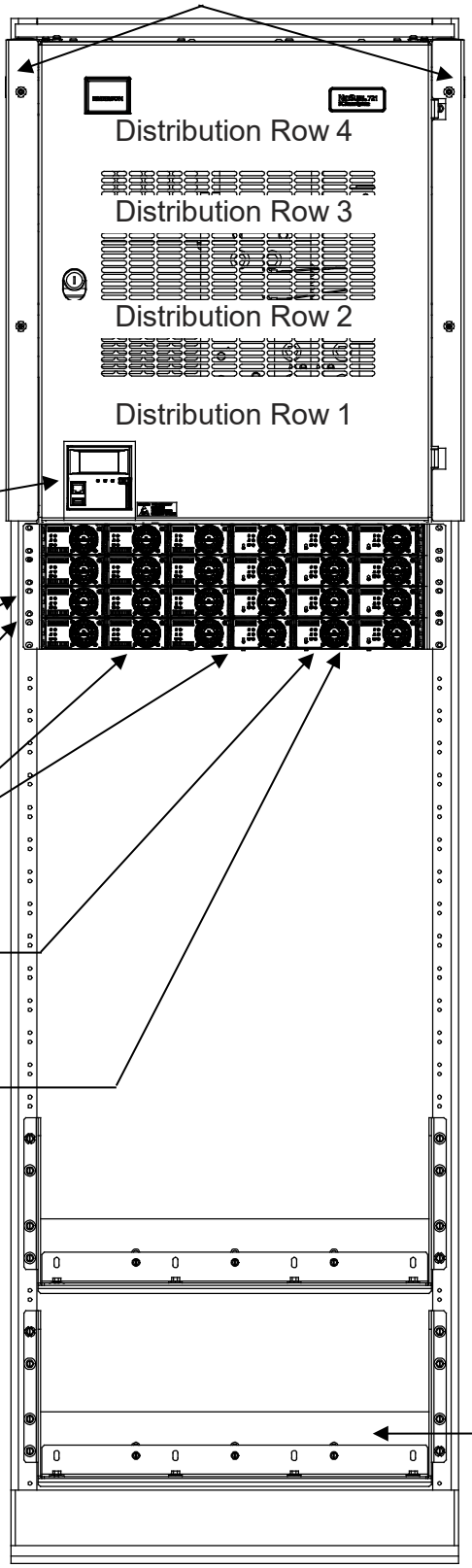
List 5: 2nd through 6th Supplemental Bay, Remote Location

FRONT ACCESS AC TERMINATION ASSEMBLY

List 40: 1 AC Feed per 1 Rectifier (1 to 5 Assemblies), Single Phase

List 41: 1 AC Feed per 2 Rectifiers (1 to 5 Assemblies), Single Phase

List 42: 1 AC Feed per 3 Rectifiers (1 to 5 Assemblies), 3-Phase, 3-Wire



DISTRIBUTION CABINET (4-Row Cabinet Shown)

List 24 (4-Row)

List 23 (3-Row)

List 22 (2-Row)

List 21 (1-Row)

Controller (Main Bay) 1M830DNA

SM-DU (Supplemental Bays): (located behind blank panel)

List 32: Module Mounting Assembly Interface

Module Mounting Assembly: 58870530001, 58870530003

Rectifier Module: 1R482000e3

Optional DC-DC Converter Module: 1C48241500

List 60: DC-DC Converter Option

DISTRIBUTION PANELS

Single Voltage Distribution Panels

Dual Volage Distribution Panels

Battery Disconnect Distribution Panels

Return Bar Panel

Bulk Output Panel

BATTERY DISCONNECT CONTACTORS

List CA: 600A

List CB: 1200A

List CC: 2000A

LOW VOLTAGE DISCONNECT OPTIONS

List LB: Low Voltage Battery Disconnect (LVBD)

List LL: Low Voltage Load Disconnect (LVLD)

Other Options

List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover

List 28: DC Conduit Box

List 29: Distribution Cabinet Top Shield

List 33: Module Mounting Assembly Field Expansion Kit

List 90: Battery Shunt, 800A

List 91: Battery Shunt, 2000A

List 92: Battery Shunt, 2500A

List MB: Manual Battery Disconnect

List 93: Optional Battery Tray

or

List 95: Optional Battery Tray

582127000 (Relay Rack)

COMMON EQUIPMENT

List 1: Main Bay

List 2: 1st Supplemental Bay, In-Line w/ Main Bay

List 3: 3rd and 6th Supplemental Bay, In-Line w/ Main Bay

List 5: 2nd through 6th Supplemental Bay, Remote Location

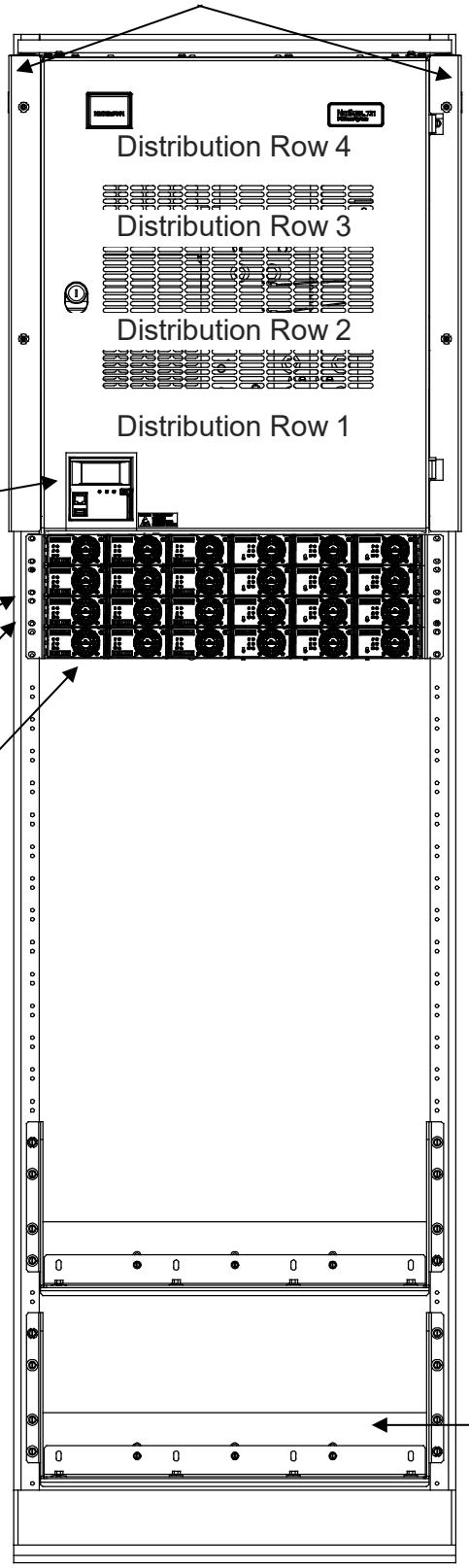
FRONT ACCESS AC TERMINATION ASSEMBLY

List 40: 1 AC Feed per 1 Rectifier (1 to 5 Assemblies), Single Phase

List 41: 1 AC Feed per 2 Rectifiers (1 to 5 Assemblies), Single Phase

List 42: 1 AC Feed per 3 Rectifiers (1 to 5 Assemblies), 3-Phase, 3-Wire

List 43: 1 AC Feed per 3 Rectifiers (1 to 5 Assemblies), 3-Phase, 4-Wire



DISTRIBUTION CABINET (4-Row Cabinet Shown)

List 24 (4-Row)

List 23 (3-Row)

List 22 (2-Row)

List 21 (1-Row)

Controller (Main Bay) 1M830DNA

SM-DU (Supplemental Bays): (located behind blank panel)

List 36: Module Mounting Assembly Interface

Module Mounting Assembly: 58870540001, 58870540002, 58870540003, 558870540004

Rectifier Module: 1R483500e3

DISTRIBUTION PANELS

Single Voltage Distribution Panels

Dual Volage Distribution Panels

Battery Disconnect Distribution Panels

Return Bar Panel

Bulk Output Panel

BATTERY DISCONNECT CONTACTORS

List CA: 600A

List CB: 1200A

List CC: 2000A

LOW VOLTAGE DISCONNECT OPTIONS

List LB: Low Voltage Battery Disconnect (LVBD)

List LL: Low Voltage Load Disconnect (LVLD)

Other Options

List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover

List 28: DC Conduit Box

List 29: Distribution Cabinet Top Shield

List 37: Module Mounting Assembly Field Expansion Kit

List 90: Battery Shunt, 800A

List 91: Battery Shunt, 2000A

List 92: Battery Shunt, 2500A

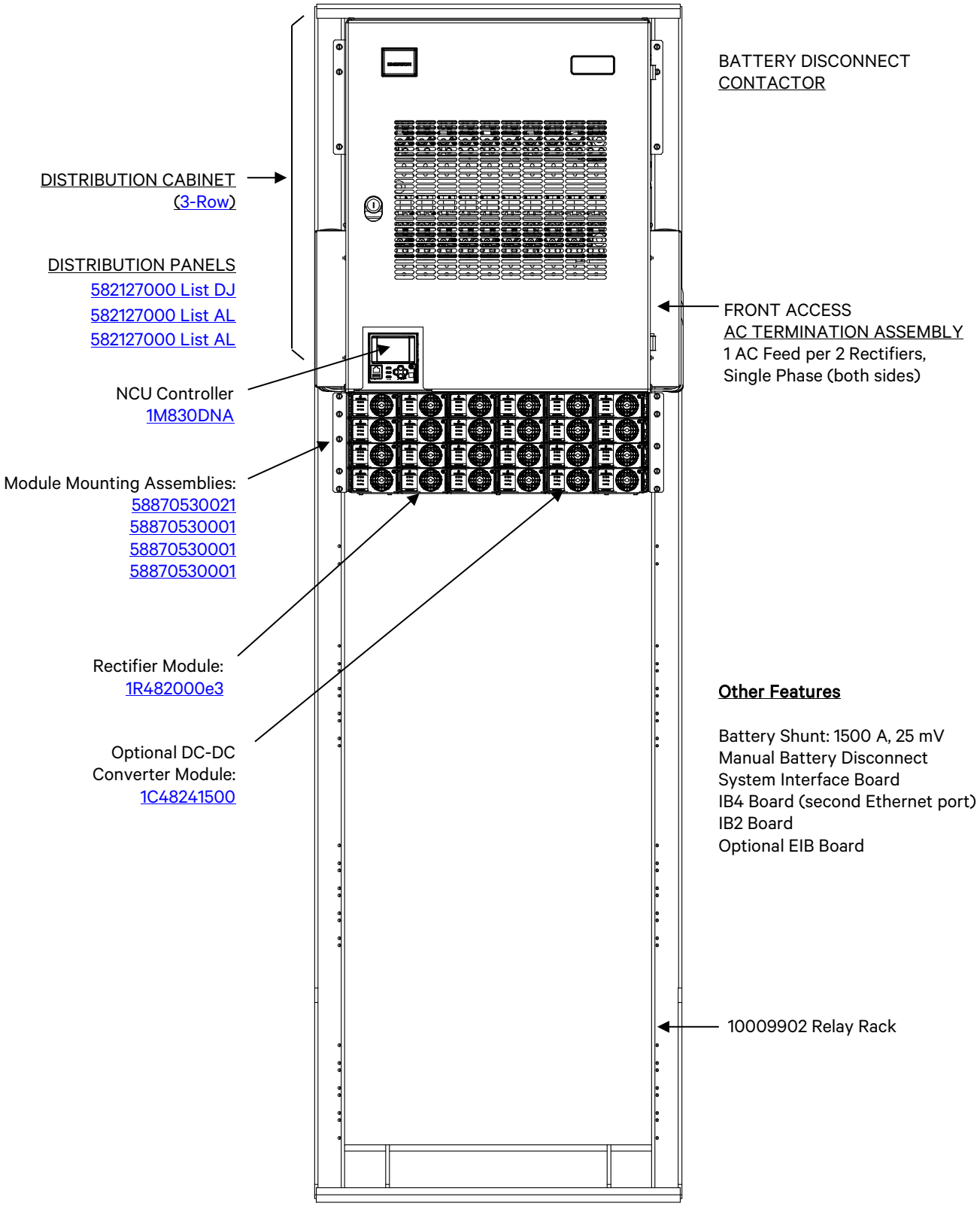
List MB: Manual Battery Disconnect

List 93: Optional Battery Tray

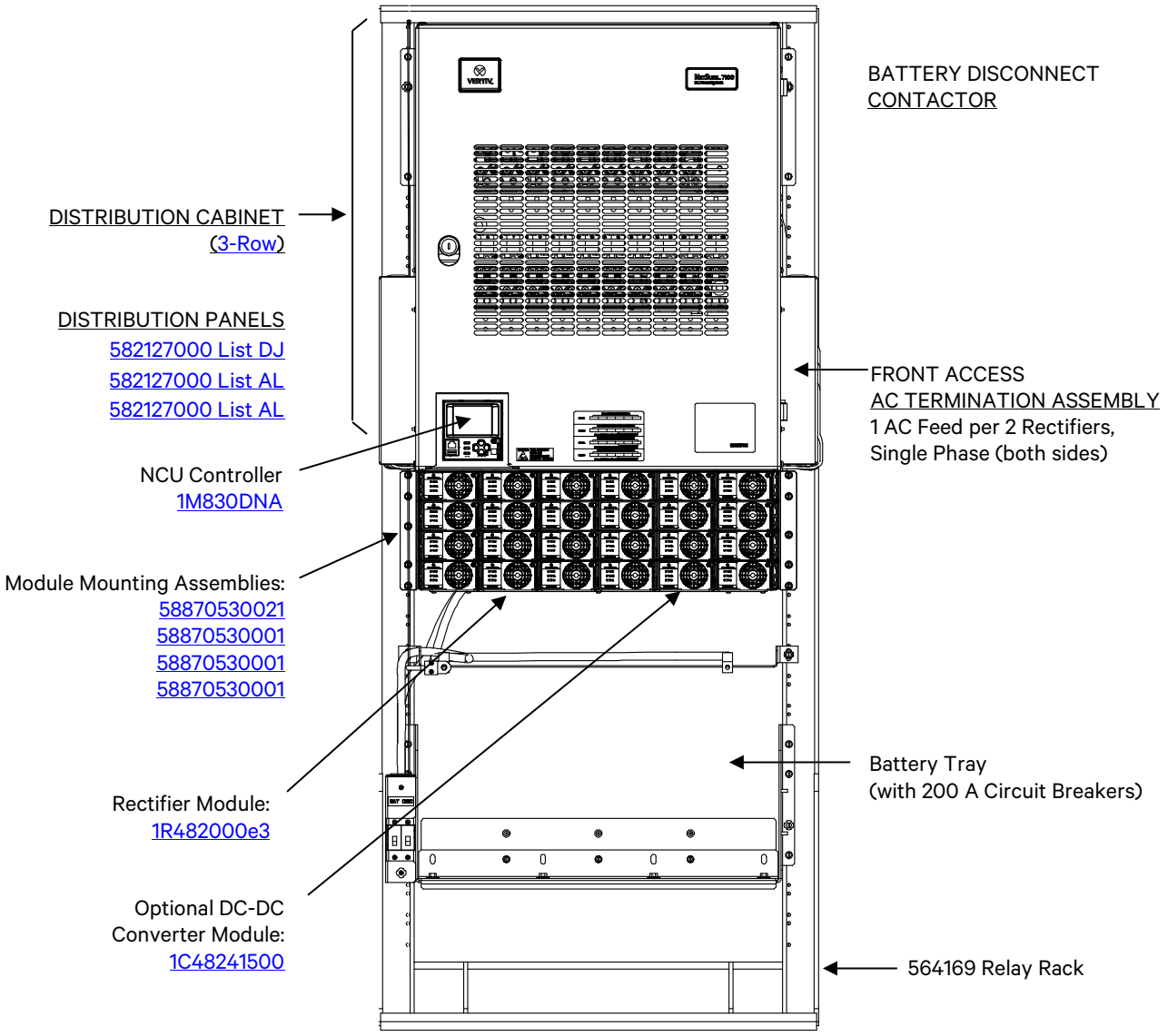
or

List 95: Optional Battery Tray

582127000 List 100 (Relay Rack)



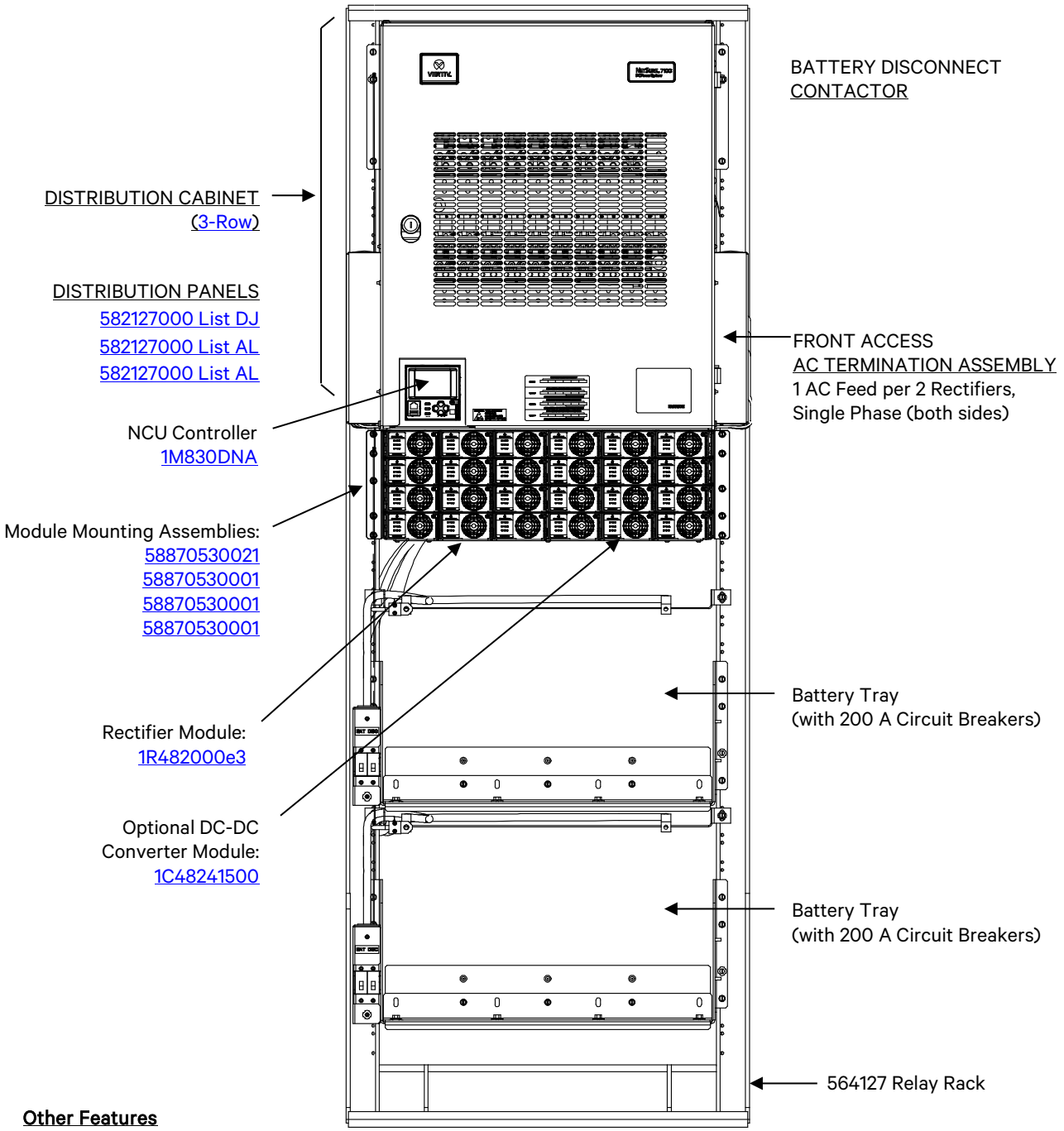
582127000 List 101 (Relay Rack)



Other Features

Battery Shunt: 1500 A, 25 mV
Manual Battery Disconnect
System Interface Board
IB4 Board (second Ethernet port)
IB2 Board
Optional EIB Board

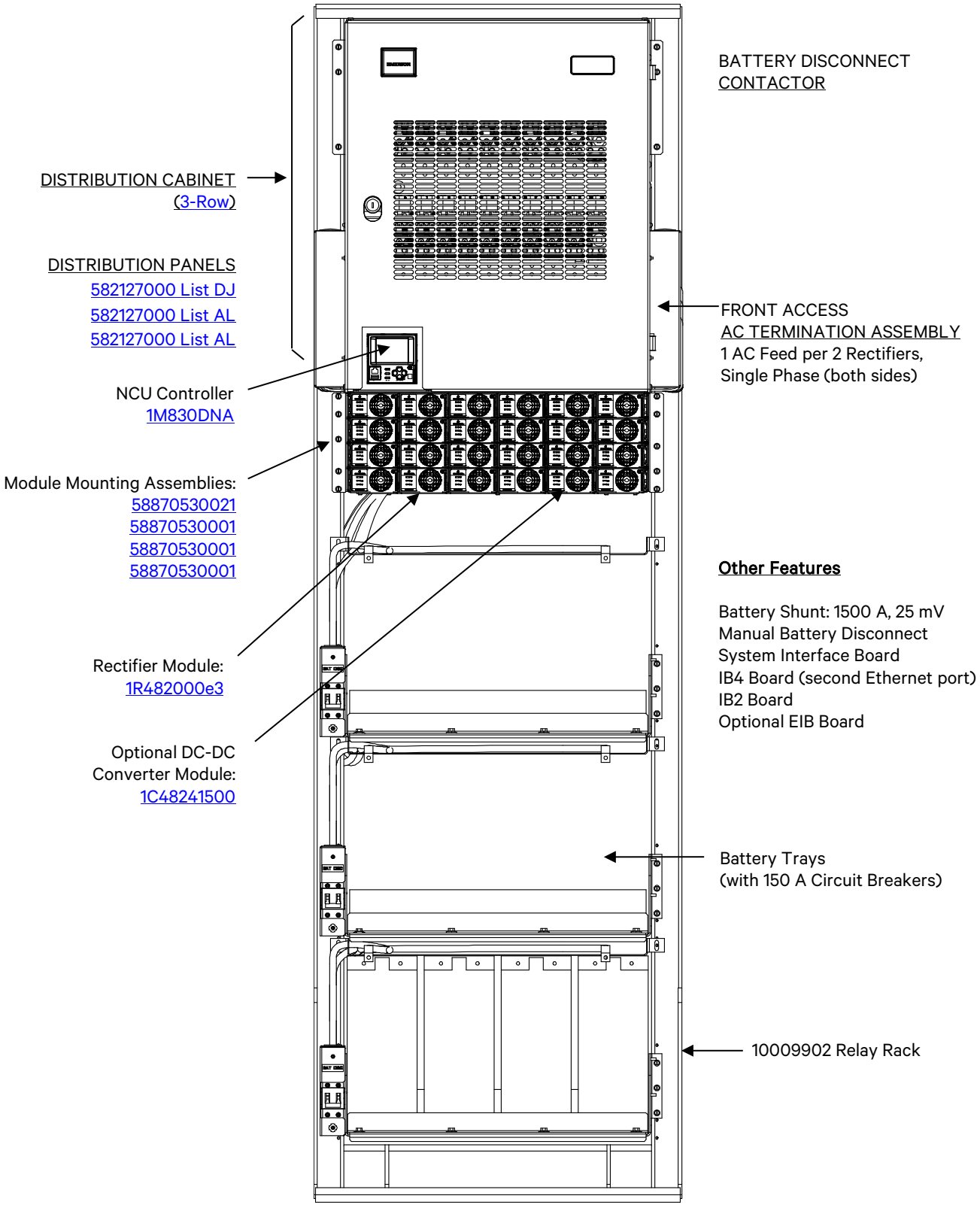
582127000 List 102 (Relay Rack)



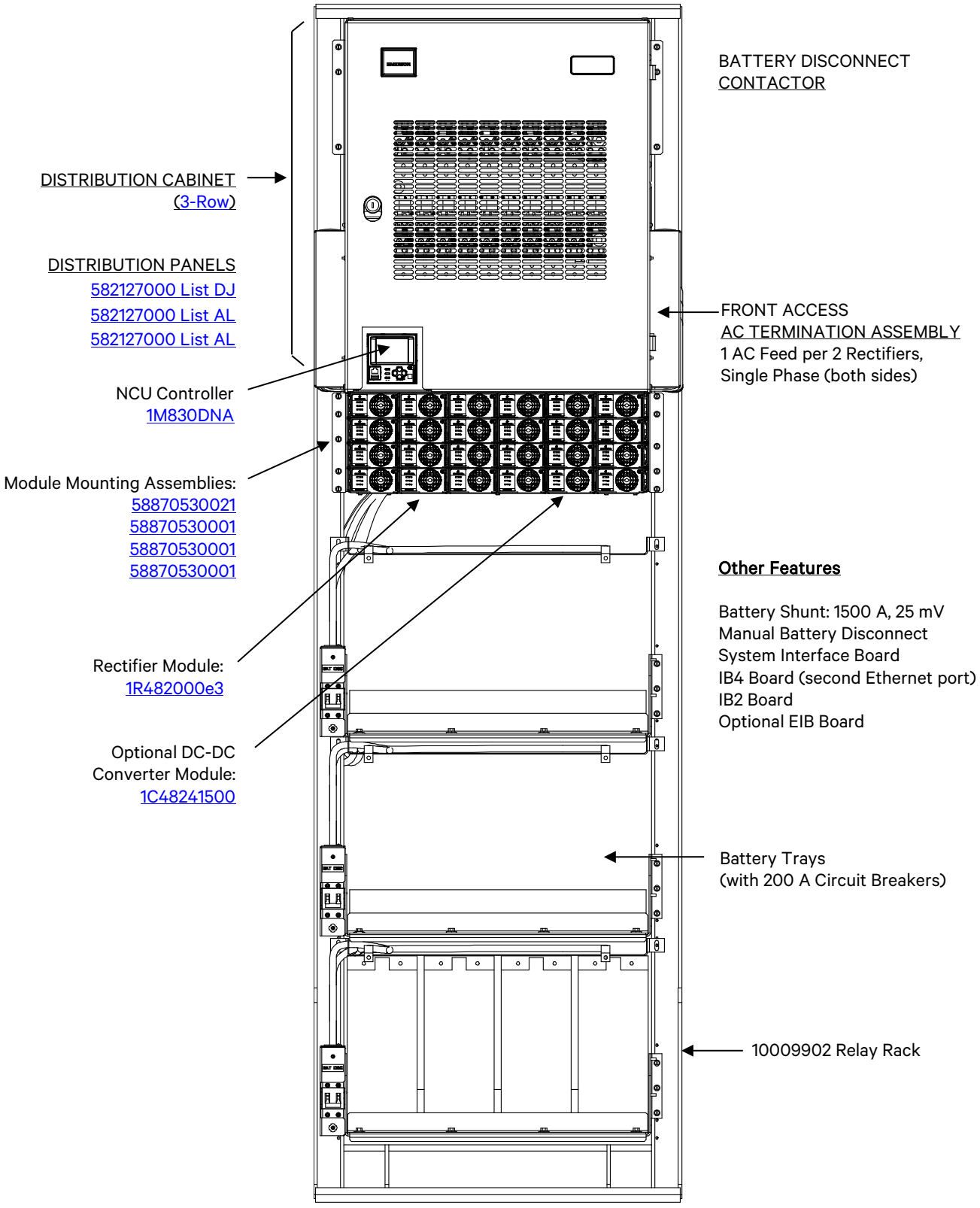
Other Features

Battery Shunt: 1500 A, 25 mV
Manual Battery Disconnect
System Interface Board
IB4 Board (second Ethernet port)
IB2 Board
Optional EIB Board

582127000 List 103 (Relay Rack)



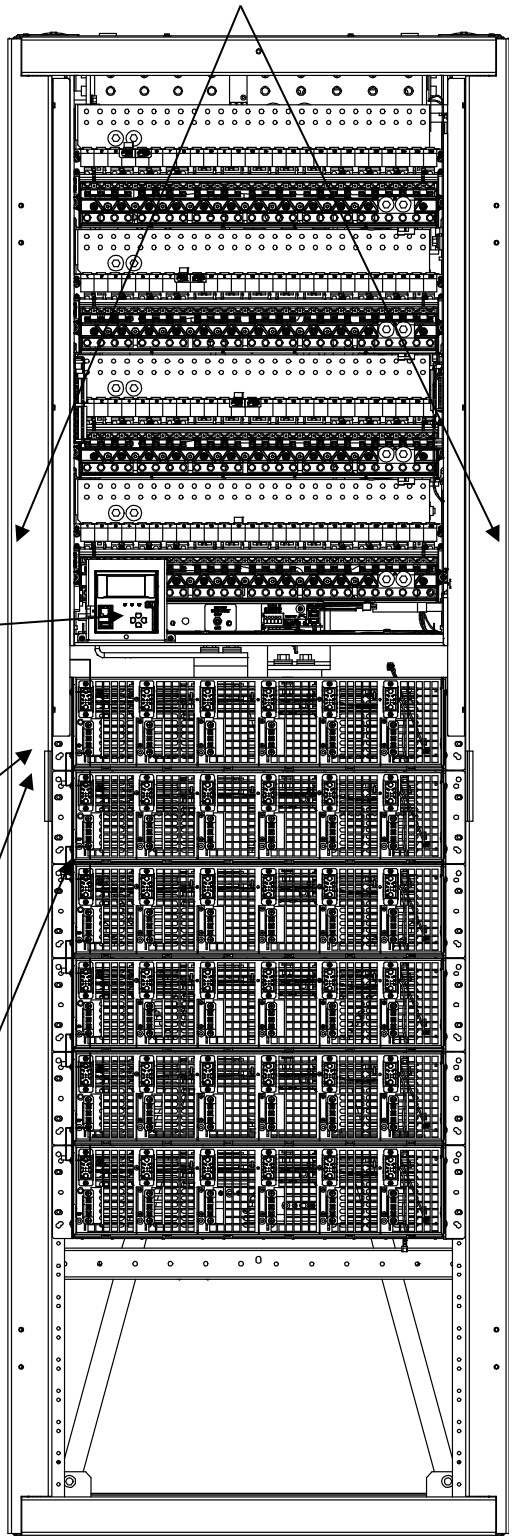
582127000 List 203 (Relay Rack)



582127000 (Enclosure)

COMMON EQUIPMENT
List 1: Main Bay
List 7: 1st Supplemental Bay, In-Line w/ Main Bay
List 8: 3rd and 6th Supplemental Bay, In-Line w/ Main Bay

FRONT ACCESS AC TERMINATION ASSEMBLY (Inside Distribution Cabinet)
List 40: 1 AC Feed per 1 Rectifier (1 to 6 Assemblies), Single Phase
List 41: 1 AC Feed per 2 Rectifiers (1 to 6 Assemblies), Single Phase
List 42: 1 AC Feed per 3 Rectifiers (1 to 6 Assemblies), 3-Phase, 3-Wire
List 43: 1 AC Feed per 3 Rectifiers (1 to 6 Assemblies), 3-Phase, 4-Wire



DISTRIBUTION CABINET (4-Row Cabinet Shown)
List 24 (4-Row)
List 23 (3-Row)

Controller (Main Bay) 1M830DNA
SM-DU (Supplemental Bays): (located behind blank panel)

List 30: Module Mounting Assembly Interface
or
List 38: Module Mounting Assembly Interface

Module Mounting Assembly: 58870500021, 58870500022, 58870500031, 58870500032, or 58870500033
Rectifier Module: 1R483500e
or
Module Mounting Assembly: 58870550001, 58870550002, 58870550003, 58870550004, or 58870550005
Rectifier Module: 1R484000e

DISTRIBUTION PANELS
Single Voltage Distribution Panels
Battery Disconnect Distribution Panels
Return Bar Panel
Bulk Output Panel

BATTERY DISCONNECT CONTACTORS
List CA: 600A
List CB: 1200A
List CC: 2000A

LOW VOLTAGE DISCONNECT OPTIONS
List LB: Low Voltage Battery Disconnect (LVBD)
List LL: Low Voltage Load Disconnect (LVLD)

Other Options
List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover
List 31: Module Mounting Assembly Field Expansion Kit
List 92: Battery Shunt, 2500A
List MB: Manual Battery Disconnect

Enclosure (563524 or 564881)

582127000 (Enclosure)

COMMON EQUIPMENT

List 1: Main Bay

List 7: 1st Supplemental Bay, In-Line w/ Main Bay

List 8: 3rd and 6th Supplemental Bay, In-Line w/ Main Bay

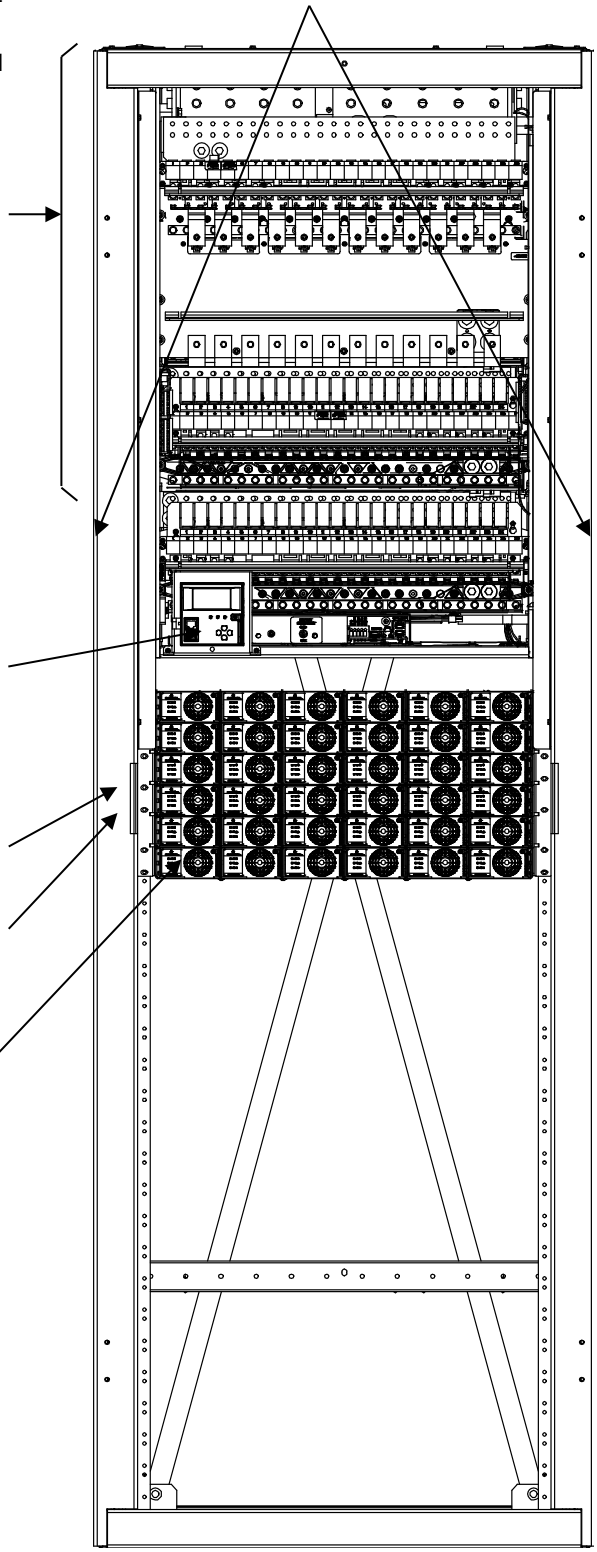
FRONT ACCESS AC TERMINATION ASSEMBLY (Inside Distribution Cabinet)

List 40: 1 AC Feed per 1 Rectifier (1 to 6 Assemblies), Single Phase

List 41: 1 AC Feed per 2 Rectifiers (1 to 6 Assemblies), Single Phase

List 42: 1 AC Feed per 3 Rectifiers (1 to 6 Assemblies), 3-Phase, 3-Wire

List 43: 1 AC Feed per 3 Rectifiers (1 to 6 Assemblies), 3-Phase, 4-Wire



LIST DESCRIPTIONS (582127000)

List Numbers (582127000)

List 1: Main Bay Common Equipment (Power and Distribution), For System Mounted in a Relay Rack, on Shipping Rails, or in an Enclosure

Features

- Provides common equipment for one "power and distribution" bay rated for up to 2000 amperes of distribution. System components factory mounted in a relay rack, on shipping rails, or in an enclosure as specified when ordered.
- Accepts one (1) distribution cabinet (options are 1-row, 2-row, 3-row, or 4-row cabinet). 1-row and 2-row distribution cabinets are only available in the relay rack or shipping rails option.
- Accepts one (1) controller.
- Includes the IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).
- Accepts a second optional IB2 controller interface board. See Restrictions. See page 92.
- Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs).
- Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705400 or 588705500 (including expansion assemblies).
  or
  Accepts up to six (6) module mounting assemblies Spec. No. 588705300 (including expansion assemblies). Relay rack or shipping rails option only.

Restrictions

System components factory mounted in a relay rack, on shipping rails, or in an enclosure as specified when ordered.

Cannot put a system installed in an enclosure next to a system installed in a relay rack.

When the system is equipped with a List 40, 41, 42, 43, 45, 46, or 47 front access input termination assembly, refer to the restrictions under these list descriptions. List 45, 46, 47 available with relay rack option only.

The system can contain a maximum of three (3) Interface Boards, (1) IB2 and (2) EIB or (2) IB2 and (1) EIB.

Cannot include List 93 and List 95 battery tray option if it is to be used in conjunction with a List 2 adjacent supplemental bay.

Ordering Notes

1) Order a relay rack or shipping brackets per "Relay Racks and Shipping Brackets" on page 111 if desired. If required, order relay rack transition plates per "Transition Plates to Mount Relay Rack on Top of GNB Absolyte IIP Batteries" on page 112. A relay rack, shipping rails, or enclosure must be specified when ordered.
2) Order an enclosure per "Enclosure" on page 113 if desired. A relay rack, shipping rails, or enclosure must be specified when ordered.
3) Order one (1) List 21, 22, 23, or 24 distribution cabinet. List 21 and List 22 distribution cabinets are only available in the relay rack or shipping rails option.
   a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Dual Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56. Dual voltage panels are not available in the enclosure option.
   b) Order battery disconnect contactors and low voltage disconnect options as required per "Battery Disconnect Contactors" and "Low Voltage Disconnect Options" starting on page 80.
   c) Order one (1) NCU controller (P/N 1M830DNA).
   d) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
   e) Order the optional EIB controller extended interface board as required (see page 93).
   f) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
   g) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
   h) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
   i) Order a DC conduit box as required per List 28. Not available in the enclosure option.

j) Order a distribution cabinet top shield as required per List 29. Not available in the enclosure option.

k) Order a battery shunt as required per List 90, 91, or 92.

l) Refer to "In-Line Fuse and Resistor Pigtail Kits" on page 93 for in-line resistor pigtails for use with shunt inputs and in-line fuse pigtails for use with battery midpoint inputs connected to an IB2 or EIB.

4) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033). See "Module Mounting Assembly" starting on page 99.)

b) Order rectifier modules as required, P/N 1R483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

5) 1C400483500e Converter Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 34. Order field expansion module mounting assembly(s) per List 35. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500040, 58870500041, 58870500042).

a) Order the front access DC Input Termination Assembly per List 45, 46, or 47 if module mounting assembly 58870500040 ordered (or order module mounting assemblies with terminal blocks; 58870500041, 58870500042. See "Module Mounting Assembly" starting on page 99).

b) Order converter modules as required, P/N 1C400483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

6) 1R482000e3 Rectifier / 1C48241500 Converter Option: Order interface components for module mounting assembly(s) Spec. No. 588705300 as required per List 32. Order field expansion module mounting assembly(s) per List 33. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870530001, 58870530003). Not available in the enclosure option.

a) Order the front access AC Input Termination Assembly per List 40, 41, or 42 if module mounting assembly 58870530001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870530003. See "Module Mounting Assembly" starting on page 99).

b) Order rectifier modules as required, P/N 1R482000e3.

c) Order optional converter interface components per List 60.

d) Order optional DC-DC converter modules as required, P/N 1C48241500.

e) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

7) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See "Module Mounting Assembly" starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

8) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See "Module Mounting Assembly" starting on page 99.)

b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

9) Order battery trays as required per List 93 or List 95. Not available in the shipping rails option.
   a) Order batteries as required per "Batteries" on page 50.
   b) Order "Optional Battery Tray Battery Disconnect Circuit Breaker and Housing Kits" as required.
   c) Order "Optional Battery Tray Front Battery Cover Kits" as required.

List 2: 1st Supplemental Bay Common Equipment (Power and Distribution or Distribution Only), Located In-Line with Main Bay, For System Mounted in a Relay Rack Only

Features

- Provides common equipment for one bussed "power and distribution or distribution only" bay rated for up to 2000 amperes of distribution. Includes interbay power busbars and communications cable. System components factory mounted in a relay rack as specified when ordered.
- Mounts to either left or right side of List 1 Main Bay.
- Accepts one (1) distribution cabinet (options are 3-row or 4-row cabinet).
- Includes SM-DU (provides bay interface to the system controller).
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705300 or 588705400 or 588705500 (including expansion assemblies).

Restrictions

System components factory mounted in a relay rack as specified when ordered. Not available with enclosure or shipping rails.

When the system is equipped with a List 40, 41, 42, 43, 45, 46, or 47 front access input termination assembly, refer to the restrictions under these list descriptions.

Will not accept List 21 and 22 distribution cabinet.
(List 21 and 22 are not provided with connection points for interbay busbars.)

Will not accept List 60 converter interface components.
Will not accept dual voltage distribution panels.

Will not accept List 93 and List 95 battery trays option.

Order maximum of one (1) List 2.

Rear access required for installation of inter-bay busbars.

If low voltage disconnect (List LL) is to be included, the Main Bay (List 1) of the system must also have low voltage disconnect (List LL or List LB).

Ordering Notes

1) Order a relay rack per "Relay Racks and Shipping Brackets" on page 111.
2) Order one (1) List 23 or 24 distribution cabinet.
   a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
   b) Order low voltage disconnect options as required per "Low Voltage Disconnect Options" starting on page 90.
   c) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
   d) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
   e) Order a DC conduit box as required per List 28.
   f) Order a distribution cabinet top shield as required per List 29.
   g) If distribution only, order a bottom rear distribution cabinet cover per List 4.
   h) Order a battery shunt as required per List 90, 91, or 92.
3) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

4) 1C400483500e Converter Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 34. Order field expansion module mounting assembly(s) per List 35. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870500040, 58870500041, 58870500042).

a) Order the front access DC Input Termination Assembly per List 45, 46, or 47 if module mounting assembly 58870500040 ordered (or order module mounting assemblies with terminal blocks; 58870500041, 58870500042. See “Module Mounting Assembly” starting on page 99).

b) Order converter modules as required, P/N 1C400483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

5) 1R482000e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705300 as required per List 32. Order field expansion module mounting assembly(s) per List 33. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870530001, 58870530003).

a) Order the front access AC Input Termination Assembly per List 40, 41, or 42 if module mounting assembly 58870530001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870530003. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R482000e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

6) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

7) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See “Module Mounting Assembly” starting on page 99.)

b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 3: 3rd through 6th Supplemental Bays Common Equipment (Power and Distribution or Distribution Only), Located In-Line with Main Bay, For System Mounted in a Relay Rack Only

Features

- Provides common equipment for one bussed "power and distribution or distribution only" bay rated for up to 2000 amperes of distribution. Includes interbay power busbars and communications cable. System components factory mounted in a relay rack as specified when ordered.
- Mounts to either left or right side of List 2 Supplemental Bay or another List 3 Supplementary bay.
- Accepts one (1) distribution cabinet (options are 3-row or 4-row cabinet).
- Includes SM-DU (provides bay interface to the system controller).
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705300 or 588705400 or 588705500 (including expansion assemblies).

Restrictions

System components factory mounted in a relay rack as specified when ordered. Not available with enclosure or shipping rails.

When the system is equipped with a List 40, 41, 42, 43, 45, 46, or 47 front access input termination assembly, refer to the restrictions under these list descriptions.

Will not accept List 21 and 22 distribution cabinet.
(List 21 and 22 are not provided with connection points for interbay busbars.)

Will not accept List 60 converter interface components.
Will not accept dual voltage distribution panels.

Order maximum of five (5) List 3.

Will not accept List 93 and List 95 battery trays option.

Rear access required for installation of inter-bay busbars.

If low voltage disconnect (List LL) is to be included, the Main Bay (List 1) of the system must also have low voltage disconnect (List LL or List LB).

Ordering Notes

1) Order a relay rack per "Relay Racks and Shipping Brackets" on page 111.
2) Order one (1) List 23 or 24 distribution cabinet.
   a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
   b) Order low voltage disconnect options as required per "Low Voltage Disconnect Options" starting on page 90.
   c) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
   d) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
   e) Order a DC conduit box as required per List 28.
   f) Order a distribution cabinet top shield as required per List 29.
   g) If distribution only, order a bottom rear distribution cabinet cover per List 4.
   h) Order a battery shunt as required per List 90, 91, or 92.
3) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).
   a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033. See "Module Mounting Assembly" starting on page 99).
   b) Order rectifier modules as required, P/N 1R483500e.
   c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.
4) 1C400483500e Converter Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 34. Order field expansion module mounting assembly(s) per List 35. Order module

mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500040, 58870500041, 58870500042).

a) Order the front access DC Input Termination Assembly per List 45, 46, or 47 if module mounting assembly 58870500040 ordered (or order module mounting assemblies with terminal blocks; 58870500041, 58870500042. See "Module Mounting Assembly" starting on page 99).

b) Order converter modules as required, P/N 1C400483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

5) 1R482000e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705300 as required per List 32. Order field expansion module mounting assembly(s) per List 33. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870530001, 58870530003).

a) Order the front access AC Input Termination Assembly per List 40, 41, or 42 if module mounting assembly 58870530001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870530003. See "Module Mounting Assembly" starting on page 99).

b) Order rectifier modules as required, P/N 1R482000e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

6) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See "Module Mounting Assembly" starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

7) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See "Module Mounting Assembly" starting on page 99.)

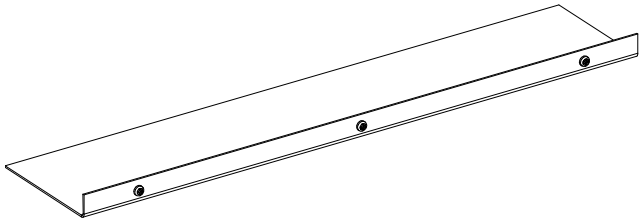
b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 4: Distribution Only Bay Distribution Cabinet Bottom Rear Cover

Features

- Bottom rear cover shield for use when a supplemental bay is configured for "distribution only" (no module mounting assembly).



Restrictions

Module mounting assembly(s) cannot be mounted in a bay when List 4 is installed.

Ordering Notes

1) Order when a supplemental distribution bay is configured for "distribution only" (no module mounting assembly).

List 5: 2nd through 6th Supplemental Bay Common Equipment (Power and Distribution or Distribution Only), Located Remote from Main Bay

Features

- Provides common equipment for one remote "power and distribution or distribution only" bay rated for up to 2000 amperes of distribution. Includes interbay communications cabling. System components factory mounted in a relay rack, on shipping rails, or in an enclosure as specified when ordered.
- Accepts one (1) distribution cabinet (options are 1-row, 2-row, 3-row, or 4-row cabinet).
- Includes SM-DU (provides bay interface to the system controller).
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705300 or 588705400 or 588705500 (including expansion assemblies).

Restrictions

System components factory mounted in a relay rack, on shipping rails, or in an enclosure as specified when ordered.

When the system is equipped with a List 40, 41, 42, 43, 45, 46, or 47 front access input termination assembly, refer to the restrictions under these list descriptions.

Will not accept List 60 converter interface components.
Will not accept dual voltage distribution panels.

Order maximum of five (5) List 5 per Power System.

Interbay power cabling is not included, and must be separately provided per site requirements.

If low voltage disconnect (List LL) is to be included, the Main Bay (List 1) of the system must also have low voltage disconnect (List LL or List LB).

Optional battery shunt will not read battery current properly (due to cabling to bays tied to battery input termination bars) and should be disabled. Battery current can be calculated by controller.

Ordering Notes

1) Order a relay rack or shipping brackets per "Relay Racks and Shipping Brackets" on page 111. If required, order relay rack transition plates per "Transition Plates to Mount Relay Rack on Top of GNB Absolyte IIP Batteries" on page 112. A relay rack, shipping rails, or enclosure must specified when ordered.
2) Order an enclosure per "Enclosure" on page 113 if desired. A relay rack, shipping rails, or enclosure must specified when ordered.
3) Order one (1) List 21, 22, 23, or 24 distribution cabinet.
   a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
   b) Order low voltage disconnect options as required per "Low Voltage Disconnect Options" starting on page 90.
   c) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
   d) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
   e) Order a DC conduit box as required per List 28.
   f) Order a distribution cabinet top shield as required per List 29.
   g) If distribution only, order a bottom rear distribution cabinet cover per List 4.
   h) Order a battery shunt as required per List 90, 91, or 92.
4) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).
   a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033. See "Module Mounting Assembly" starting on page 99).
   b) Order rectifier modules as required, P/N 1R483500e.
   c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.
5) 1C400483500e Converter Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 34. Order field expansion module mounting assembly(s) per List 35. Order module

mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870500040, 58870500041, 58870500042).

a) Order the front access DC Input Termination Assembly per List 45, 46, or 47 if module mounting assembly 58870500040 ordered (or order module mounting assemblies with terminal blocks; 58870500041, 58870500042. See “Module Mounting Assembly” starting on page 99).

b) Order converter modules as required, P/N 1C400483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

6) 1R482000e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705300 as required per List 32. Order field expansion module mounting assembly(s) per List 33. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870530001, 58870530003).

a) Order the front access AC Input Termination Assembly per List 40, 41, or 42 if module mounting assembly 58870530001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870530003. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R482000e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

7) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

8) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See “Module Mounting Assembly” starting on page 99.)

b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

9) Order battery trays as required per List 93 or List 95.

a) Order batteries as required per “Batteries” under ACCESSORY DESCRIPTIONS.

b) Order “Optional Battery Tray Battery Disconnect Circuit Breaker and Housing Kits” as required.

c) Order “Optional Battery Tray Front Battery Cover Kits” as required.

List 7: 1st Supplemental Bay Common Equipment (Power and Distribution or Distribution Only), Located In-Line with Main Bay, Enclosure Mounted Option Only

Features

- Provides common equipment for one bussed "power and distribution or distribution only" bay rated for up to 2000 amperes of distribution. Includes interbay power busbars and communications cable. System components factory mounted in an enclosure as specified when ordered.
- Mounts to either left or right side of List 1 Main Bay.
- Accepts one (1) distribution cabinet (options are 3-row or 4-row cabinet).
- Includes SM-DU (provides bay interface to the system controller).
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705400 or 588705500 (including expansion assemblies).
- Includes enclosure joining kit P/N 563677.

Restrictions

System components factory mounted in an enclosure as specified when ordered.

Cannot put List 7 system next to a system in a relay rack.

When the system is equipped with a List 40, 41, 42, or 43 front access input termination assembly, refer to the restrictions under these list descriptions.

Will not accept List 21 and 22 distribution cabinet.
(List 21 and 22 are not provided with connection points for interbay busbars.)

Will not accept List 93 and List 95 battery trays option.

Rear access required for installation of inter-bay busbars.

If low voltage disconnect (List LL) is to be included, the Main Bay (List 1) of the system must also have low voltage disconnect (List LL or List LB).

Ordering Notes

1) Order an enclosure and enclosure options per "Enclosure" on page 113.
2) Order one (1) List 23 or 24 distribution cabinet.
   a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
   b) Order low voltage disconnect options as required per "Low Voltage Disconnect Options" starting on page 90.
   c) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
   d) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
   e) Order a battery shunt as required per List 90, 91, or 92.
3) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).
   a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033. See "Module Mounting Assembly" starting on page 99).
   b) Order rectifier modules as required, P/N 1R483500e.
   c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.
4) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).
   a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See "Module Mounting Assembly" starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

5) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See "Module Mounting Assembly" starting on page 99.)

b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 8: 3rd through 6th Supplemental Bay Common Equipment (Power and Distribution or Distribution Only), Located In-Line with Main Bay, Enclosure Mounted Option Only

Features

- Provides common equipment for one bussed "power and distribution or distribution only" bay rated for up to 2000 amperes of distribution. Includes interbay power busbars and communications cable. System components factory mounted in an enclosure as specified when ordered.
- Mounts to either left or right side of List 2 Supplemental Bay.
- Accepts one (1) distribution cabinet (options are 3-row or 4-row cabinet).
- Includes SM-DU (provides bay interface to the system controller).
- Accepts up to six (6) module mounting assemblies Spec. No. 588705000 or 588705400 or 588705500 (including expansion assemblies).
- Includes enclosure joining kit P/N 563677.

Restrictions

System components factory mounted in an enclosure as specified when ordered.

Cannot put List 8 system next to a system in a relay rack.

When the system is equipped with a List 40, 41, 42, or 43 front access input termination assembly, refer to the restrictions under these list descriptions.

Will not accept List 21 and 22 distribution cabinet.
(List 21 and 22 are not provided with connection points for interbay busbars.)

Will not accept List 93 and List 95 battery tray option.

Rear access required for installation of inter-bay busbars.

If low voltage disconnect (List LL) is to be included, the Main Bay (List 1) of the system must also have low voltage disconnect (List LL or List LB).

Ordering Notes

1) Order an enclosure and enclosure options per "Enclosure" on page 113.

2) Order one (1) List 23 or 24 distribution cabinet.

a) Order up to four (4) (per the capacity of the distribution cabinet ordered) distribution panels, battery disconnect panels, return bar panel, and/or bulk output panel as required per "Single Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.

b) Order battery disconnect contactors and low voltage disconnect options as required per "Battery Disconnect Contactors" and "Low Voltage Disconnect Options" starting on page 80.

c) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.

d) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.

e) Order a battery shunt as required per List 90, 91, or 92.

3) 1R483500e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705000 as required per List 30. Order field expansion module mounting assembly(s) per List 31. Order module mounting

assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870500021 ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870500022, 58870500031, 58870500032, 58870500033. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

4) 1R483500e3 Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705400 as required per List 36. Order field expansion module mounting assembly(s) per List 37. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870540001 ordered (or order module mounting assemblies that accommodate AC input cable assemblies or line cords; 58870540002, 58870540003, 58870540004. See “Module Mounting Assembly” starting on page 99).

b) Order rectifier modules as required, P/N 1R483500e3.

c) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

5) 1R484000e Rectifier Option: Order interface components for module mounting assembly(s) Spec. No. 588705500 as required per List 38. Order field expansion module mounting assembly(s) per List 39. Order module mounting assembly(s) as required. See “Module Mounting Assembly” starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

a) Order the front access AC Input Termination Assembly per List 40, 41, 42, or 43 if module mounting assembly 58870550001ordered (or order module mounting assemblies with AC line cords or terminal blocks; 58870550002, 58870550003, 58870550004, 58870550005). See “Module Mounting Assembly” starting on page 99.)

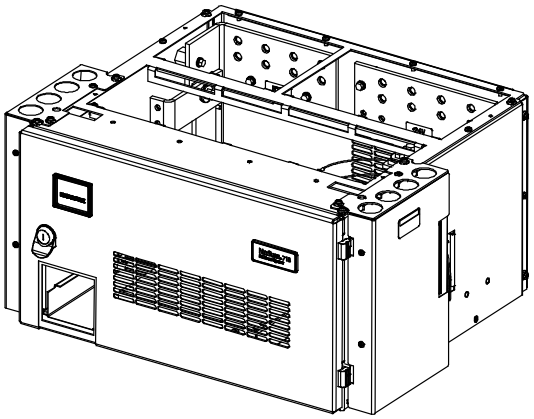
b) Order rectifier modules as required, P/N 1R484000e.

c) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 21: One-Row Distribution Cabinet, For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Accepts one (1) distribution panel.
- Rated for up to 600 amperes of distribution.



Restrictions

System mounted in a relay rack or on shipping rails only.

For use in List 1 and List 5 bays.

Cannot be ordered with List 1 if it is to be used with a List 2.

Not available for List 2 and List 3 bays (no interbay busbar landings available).

Battery disconnect panels cannot be ordered for use in a List 21.

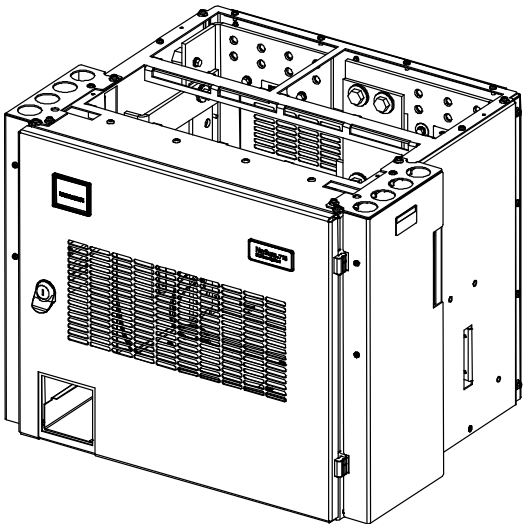
Ordering Notes

1) Order one (1) distribution panel as required per "Single Voltage Distribution Panel", "Dual Voltage Distribution Panel", and "Bulk Output Panel" starting on page 56.
2) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
3) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
4) Order battery contactor, battery shunt, and low voltage disconnect options as required.

List 22: Two-Row Distribution Cabinet, For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Accepts up to two (2) total distribution panels, battery disconnect distribution panels, and/or return bar panel.
- Rated for up to 1200 amperes of distribution.



Restrictions

System mounted in a relay rack or on shipping rails only.

For use in List 1 and List 5 bays.

Cannot be ordered with List 1 if it is to be used with a List 2.

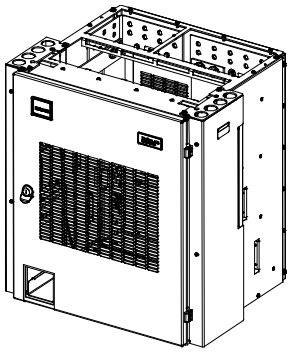
Not available for List 2 and List 3 bays (no interbay busbar landings available).

The List LL Low Voltage Load Disconnect (LVLD) option cannot be installed in the field for systems that are not equipped with any LVLD's from the factory. Field replacement of factory installed LVLD contactors is still available.

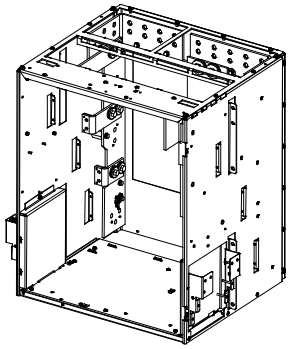
Ordering Notes

1) Order up to two (2) distribution panels as required per "Single Voltage Distribution Panel", "Dual Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
2) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
3) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
4) Order battery contactor, battery shunt, and low voltage disconnect options as required.

List 23: Three-Row Distribution Cabinet, For System Mounted in a Relay Rack, on Shipping Rails, or in an Enclosure



Relay Rack Installation



Cabinet Installation

Features

- Accepts up to three (3) total distribution panels, battery disconnect distribution panels, and/or return bar panel.
- Rated for up to 1800 amperes of distribution.

Restrictions

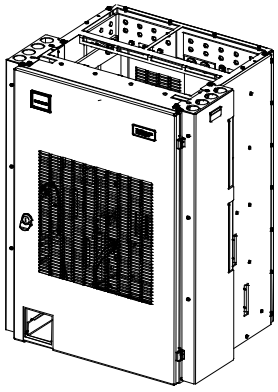
For use in List 1, List 2, List 3, List 5, List 7 and List 8.

The List LL Low Voltage Load Disconnect (LVLD) option cannot be installed in the field for systems that are not equipped with any LVLD's from the factory. Field replacement of factory installed LVLD contactors is still available.

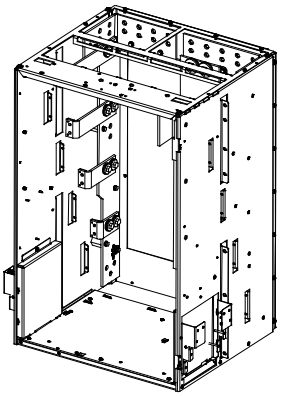
Ordering Notes

1) Order up to three (3) distribution panels as required per "Single Voltage Distribution Panel", "Dual Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
2) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
3) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
4) Order battery contactor, battery shunt, and low voltage disconnect options as required.

List 24: Four-Row Distribution Cabinet, For System Mounted in a Relay Rack, on Shipping Rails, or in an Enclosure



Relay Rack Installation



Cabinet Installation

Features

- Accepts up to four (4) total distribution panels, battery disconnect distribution panels, and/or return bar panel.
- Rated for up to 2000 amperes of distribution.

Restrictions

For use in List 1, List 2, List 3, List 5, List 7 and List 8.

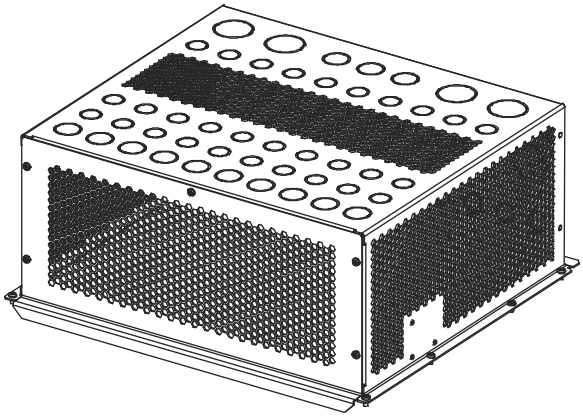
The List LL Low Voltage Load Disconnect (LVLD) option cannot be installed in the field for systems that are not equipped with any LVLD's from the factory. Field replacement of factory installed LVLD contactors is still available.

Ordering Notes

1) Order up to four (4) distribution panels as required per "Single Voltage Distribution Panel", "Dual Voltage Distribution Panel", "Battery Disconnect Distribution Panel", "Return Bar Panel", and "Bulk Output Panel" starting on page 56.
2) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
3) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
4) Order battery contactor, battery shunt, and low voltage disconnect options as required.

List 28: DC Conduit Box, For System Mounted in a Relay Rack Only

Features



- Provides a metal box on top of the DC distribution cabinet so that all DC load cabling and battery cabling can be routed through conduit.

Note: *List 28 DC conduit box is mounted on top of the distribution cabinet underneath the relay rack's top brace.*

Restrictions

Not for use with systems mounted in an enclosure.

Factory installed on top of bay.

Cannot be used with front access AC or DC termination assemblies (List 40, 41, 42, 43, 45, 46, 47).

The maximum current through the distribution cabinet is 600A and the maximum current through a single distribution panel is 400A.

Only available for use with bullet distribution panels installed in distribution cabinet.

CANNOT be used when either load or battery LVD is installed in distribution cabinet.

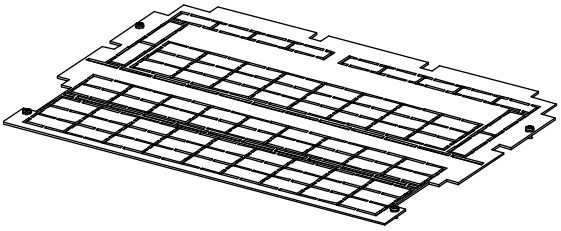
CANNOT be used with List 21 (one row distribution cabinet).

Ordering Notes

1) Order as required.

List 29: Top Shield for Distribution Cabinet, For System Mounted in a Relay Rack Only

Features



- Plastic shield covers all wiring access openings in top of distribution cabinet. Individual cutouts can be removed for wiring as required for specific installation.

Restrictions

Not for use with systems mounted in an enclosure.

Ordering Notes

1) Where closed top cover is required, order one (1) List 29 for each List 21, 22, 23, and 24 ordered.

List 30: Module Mounting Assembly Interface Components (for Spec. No. 58870500021, 58870500022, 58870500031, 58870500032, 58870500033)

Features

- Provides components to add one (1) to five (5) (relay rack mounted option) or one (1) to six (6) (enclosure mounted option) module mounting assembly(s) (Spec. No. 58870500021, 58870500022, 58870500031, 58870500032, 58870500033) to a Main or Supplemental Bay.
- Refer to "Module Mounting Assembly" starting on page 99 for module mounting assembly information.

Restrictions

Includes 'module mounting assembly-to-power system/distribution cabinet' interconnect components only. The module mounting assembly(s) must be ordered separately (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033).

Relay Rack Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of five (5) module mounting assemblies (see List 31 for expansion assemblies).

Enclosure Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of six (6) module mounting assemblies (see List 31 for expansion assemblies).

Ordering Notes

1) Order one (1) List 30 per module mounting assembly(s) Spec. No. 588705000 to be installed in the bay with these interconnect components and specify the number of rows in the distribution cabinet so correct busbars can be provided.
2) Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500021, 58870500022, 58870500031, 58870500032, 58870500033). (58870500021 required when List 40, 41, 42 or 43 ordered with the system.)
3) Order rectifier modules as required per P/N 1R483500e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 31: Module Mounting Assembly Field Expansion Kit (for Spec. No. 58870500022, 58870500031, 58870500032, 58870500033), For System Mounted in a Relay Rack or Enclosure

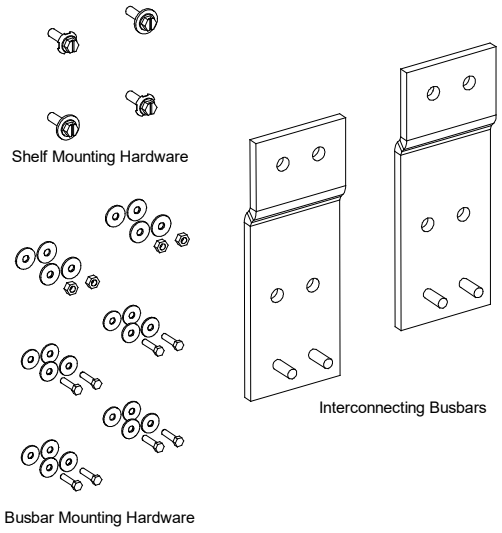
Features

- Provides busbars and mounting hardware to tie the DC output busbars in a field installed module mounting assembly Spec. No. 58870500022, 58870500031, 58870500032, 58870500033 to the system's DC busbars or between two (2) module expansion assemblies.

Restrictions

Maximum of two (2) List 31 per bay (total number of shelves in a bay cannot exceed six, maximum of ten shelves (60 rectifiers) per multi-bay system).

AC inputs MUST be wired directly to the expansion assembly(s).



Ordering Notes

1) Order List 31 for a module mounting assembly Spec. No. 588705000 to be added in the field.
2) Order a module mounting assembly as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500022, 58870500031, 58870500032, 58870500033).
3) Order rectifier modules as required per P/N 1R483500e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 32: Module Mounting Assembly Interface Components (for Spec. No. 588705300), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides components to add one (1) to five (5) module mounting assembly(s) (Spec. No. 588705300) to a Main or Supplemental Bay.
- Refer to "Module Mounting Assembly" starting on page 99 for module mounting assembly information.

Restrictions

Not for use with systems mounted in an enclosure.

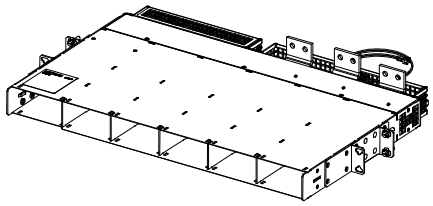
Includes 'module mounting assembly-to-power system/distribution cabinet' interconnect components only. The module mounting assembly(s) must be ordered separately. Refer to List 60 if converters are to be used in the module mounting assembly (main bay only).

Each bay (when used with a List 40, 41, or 42) can be equipped with a maximum of five (5) module mounting assemblies (see List 33 for expansion assemblies).

Ordering Notes

1) Order one (1) List 32 per module mounting assembly(s) Spec. No. 588705300 to be installed in the bay with these interconnect components (one to five) and specify the number of rows in the distribution cabinet so correct busbars can be provided.
2) Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870530001, 58870530003). (58870530001 required when List 40, 41, or 42 ordered with the system.)
3) Order rectifier modules as required per P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500 (Main Bay Only). Requires List 60 to be installed in Main Bay.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

List 33: Module Mounting Assembly Field Expansion Kit (for Spec. No. 58870530003), For System Mounted in a Relay Rack or on Shipping Rails Only



Features

- Provides a field expansion module mounting assembly Spec. No. 58870530003.

Restrictions

Not for use with systems mounted in an enclosure.

Maximum of two (2) List 33 per bay (total number of shelves in a bay cannot exceed six, maximum of ten shelves (60 total rectifiers plus converters) per multi-bay system).

AC inputs MUST be wired directly to the expansion assembly(s).

Ordering Notes

1) Order List 33 for a module mounting assembly Spec. No. 58870530003 to be added in the field.
2) Order rectifier modules as required per P/N 1R482000e3.
3) Order optional DC-DC converter modules as required, P/N 1C48241500 (Main Bay Only). Requires List 60 to be installed in Main Bay.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
5) Order Rectifier AC Input Cable Assemblies per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107 or order Rectifier AC Input Line Cords per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108.

List 34: Module Mounting Assembly Interface Components (for Spec. No. 58870500040, 58870500041, 58870500042), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides components to add one (1) to five (5) module mounting assembly(s) (Spec. No. 58870500040, 58870500041, 58870500042) to a Main or Supplemental Bay.
- Refer to "Module Mounting Assembly" starting on page 99 for module mounting assembly information.

Restrictions

Not for use with systems mounted in an enclosure.

Includes 'module mounting assembly-to-power system/distribution cabinet' interconnect components only. The module mounting assembly(s) must be ordered separately (choices are 58870500040, 58870500041, 58870500042).

Each bay (when used with a List 45 or 47) can be equipped with a maximum of five (5) module mounting assemblies (see List 35 for expansion assemblies).

Each bay (when used with a List 46) can be equipped with either two (2) or four (4) module mounting assemblies (see List 35 for expansion assemblies).

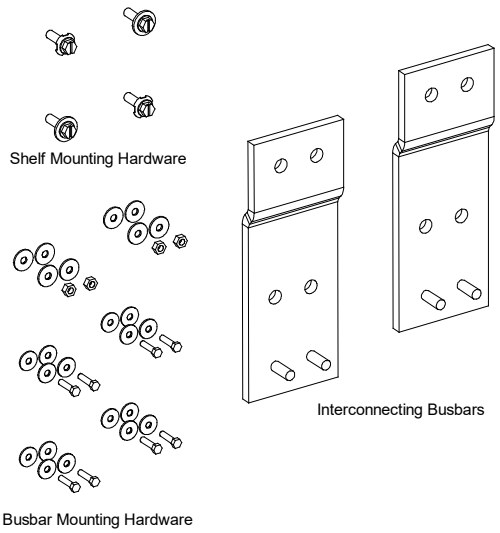
Ordering Notes

1) Order one (1) List 34 per module mounting assembly(s) Spec. No. 588705000 to be installed in the bay with these interconnect components (one to five) and specify the number of rows in the distribution cabinet so correct busbars can be provided.
2) Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500040, 58870500041, 58870500042). (58870500040 required when List 45, 46, or 47 ordered with the system.)
3) Order converter modules as required, P/N 1C400483500e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 35: Module Mounting Assembly Field Expansion Kit (for Spec. No. 58870500041, 58870500042), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides busbars and mounting hardware to tie the DC output busbars in a field installed module mounting assembly Spec. No. 58870500041, 58870500042 to the system's DC busbars or between two (2) module expansion assemblies.



Restrictions

Not for use with systems mounted in an enclosure.

Maximum of two (2) List 35 per bay (total number of shelves in a bay cannot exceed six, maximum of ten shelves (60 converters) per multi-bay system).

DC inputs MUST be wired directly to the expansion assembly(s).

Ordering Notes

1) Order List 35 for a module mounting assembly Spec. No. 588705000 to be added in the field.
2) Order a module mounting assembly as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870500041, 58870500042).
3) Order converter modules as required, P/N 1C400483500e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 36: Module Mounting Assembly Interface Components (for Spec. No. 588705400)

Features

- Provides components to add one (1) to five (5) (relay rack mounted option) or one (1) to six (6) (enclosure mounted option) module mounting assembly(s) (Spec. No. 588705400) to a Main or Supplemental Bay.
- Refer to "Module Mounting Assembly" starting on page 99 for module mounting assembly information.

Restrictions

Includes 'module mounting assembly-to-power system/distribution cabinet' interconnect components only. The module mounting assembly(s) must be ordered separately.

Relay Rack Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of five (5) module mounting assemblies (see List 37 for expansion assemblies).

Enclosure Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of six (6) module mounting assemblies (see List 37 for expansion assemblies).

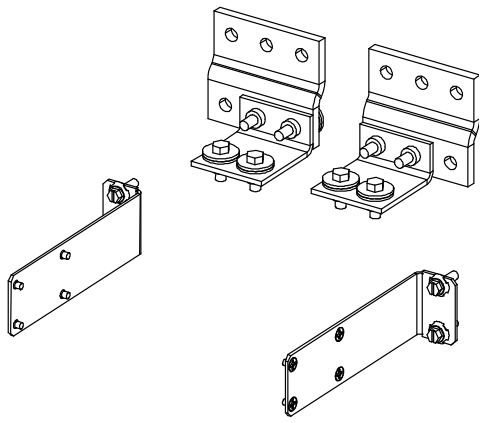
Ordering Notes

1) Order one (1) List 36 per module mounting assembly(s) Spec. No. 588705400 to be installed in the bay with these interconnect components and specify the number of rows in the distribution cabinet so correct busbars can be provided.
2) Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870540001, 58870540002, 58870540003, 58870540004). (58870540001 required when List 40, 41, 42 or 43 ordered with the system.)
3) Order rectifier modules as required per P/N 1R483500e3.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

List 37: Module Mounting Assembly Field Expansion Kit (for Spec. No. 588705400)

Features

- Provides busbars and mounting hardware to tie the DC output busbars in a field installed module mounting assembly Spec. No. 588705400 to the system's DC busbars or between two (2) module expansion assemblies.



Restrictions

Maximum of two (2) List 37 per bay (total number of shelves in a bay cannot exceed six, maximum of ten shelves (60 rectifiers) per multi-bay system).

AC inputs MUST be wired directly to the expansion assembly(s).

Ordering Notes

1) Order List 37 for a module mounting assembly Spec. No. 588705400 to be added in the field.
2) Order a module mounting assembly as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870540002, 58870540003, 58870540004).
3) Order rectifier modules as required per P/N 1R483500e3.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
5) Order Rectifier AC Input Cable Assemblies per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107 or order Rectifier AC Input Line Cords per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108.

List 38: Module Mounting Assembly Interface Components (for Spec. No. 58870550001, 58870550002, 58870550003, 58870550004, 58870550005)

Features

- Provides components to add one (1) to five (5) (relay rack mounted option) or one (1) to six (6) (enclosure mounted option) module mounting assembly(s) (Spec. No. 58870550001, 58870550002, 58870550003, 58870550004, 58870550005) to a Main or Supplemental Bay.
- Refer to "Module Mounting Assembly" starting on page 99 for module mounting assembly information.

Restrictions

Includes 'module mounting assembly-to-power system/distribution cabinet' interconnect components only. The module mounting assembly(s) must be ordered separately (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005).

Relay Rack Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of five (5) module mounting assemblies (see List 39 for expansion assemblies).

Enclosure Mounted Option: Each bay (when used with a List 40, 41, 42 or 43) can be equipped with a maximum of six (6) module mounting assemblies (see List 39 for expansion assemblies).

Ordering Notes

1) Order one (1) List 38 per module mounting assembly(s) Spec. No. 588705500 to be installed in the bay with these interconnect components and specify the number of rows in the distribution cabinet so correct busbars can be provided.
2) Order module mounting assembly(s) as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870550001, 58870550002, 58870550003, 58870550004, 58870550005). (58870550001 required when List 40, 41, 42 or 43 ordered with the system.)
5) Order rectifier modules as required per P/N 1R484000e.
6) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 39: Module Mounting Assembly Field Expansion Kit (for Spec. No. 58870550002, 58870550003, 58870550004, 58870550005), For System Mounted in a Relay Rack or Enclosure

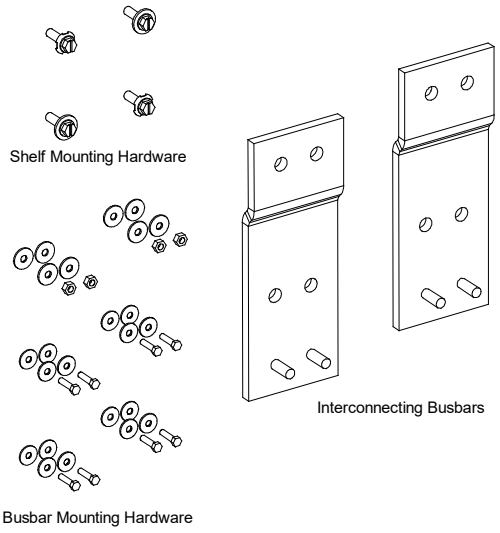
Features

- Provides busbars and mounting hardware to tie the DC output busbars in a field installed module mounting assembly Spec. No. 58870550002, 58870550003, 58870550004, 58870550005 to the system's DC busbars or between two (2) module expansion assemblies.

Restrictions

Maximum of two (2) List 39 per bay (total number of shelves in a bay cannot exceed six, maximum of ten shelves (60 rectifiers) per multi-bay system).

AC inputs MUST be wired directly to the expansion assembly(s).



Ordering Notes

1) Order List 39 for a module mounting assembly Spec. No. 588705500 to be added in the field.
2) Order a module mounting assembly as required. See "Module Mounting Assembly" starting on page 99 (choices are 58870550002, 58870550003, 58870550004, 58870550005).
3) Order rectifier modules as required per P/N 1R484000e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

List 40: Front Access AC Input Termination Assembly (1 AC Feed per 1 Rectifier, Single Phase)

Features

- Provides AC input terminal blocks for connection of single phase 208 VAC, 240 VAC, 277 VAC input feeds for all rectifier positions in the bay. One (1) AC input feed required per one (1) rectifier position. Refer to "AC Input Connections to AC Input Termination Assembly List 40 Illustration when Used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 1 Rectifier, Single Phase)" on page 148 for specific wiring details.

Restrictions

For use with 58870500021 or 58870530001 or 58870540001 or 58870550001 module mounting assemblies only.

To be used with a maximum of five module mounting assemblies for relay rack, maximum of six module mounting assemblies for enclosure.

588705300 only rated for 208 VAC, 240 VAC.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 40. If a field expansion module mounting assembly is added to the system, AC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 40, 41, 42, or 43 for each bay (or order module mounting assemblies with AC input line cords, AC input cable assemblies, or AC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 41: Front Access AC Input Termination Assembly (1 AC Feed per 2 Rectifiers, Single Phase)

Features

- Provides AC input terminal blocks for connection of single phase 208 VAC, 240 VAC, 277 VAC input feeds for all rectifier positions in the bay. One (1) AC input feed required per two (2) rectifier positions. Refer to "AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with Five (5) Shelves Installed" on page 149 for specific wiring details.

Restrictions

For use with 58870500021 or 58870530001 or 58870540001 or 58870550001 module mounting assemblies only.

To be used with a maximum of five module mounting assemblies for relay rack, maximum of six module mounting assemblies for enclosure.

588705300 only rated for 208 VAC, 240 VAC.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 41. If a field expansion module mounting assembly is added to the system, AC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 40, 41, 42, or 43 for each bay (or order module mounting assemblies with AC input line cords, AC input cable assemblies, or AC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 42: Front Access AC Input Termination Assembly (1 AC Feed per 3 Rectifiers, 3-Phase)

Features

- Provides AC input terminal blocks for connection of three phase 208 VAC, 240 VAC input feeds for all rectifier positions in the bay. One (1) AC input feed required per three (3) rectifier positions. Refer to "AC Input Connections to AC Input Termination Assembly List 42 Illustration when used with 588705000 or 588705300 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC) (1 Feed per 3 Rectifiers, Three Phase)" on page 154 for specific wiring details.

Note: The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

Restrictions

For use with 58870500021 or 58870530001 or 58870540001 or 58870550001 module mounting assemblies only.

To be used with a maximum of five module mounting assemblies for relay rack, maximum of six module mounting assemblies for enclosure.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 42. If a field expansion module mounting assembly is added to the system, AC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 40, 41, 42, or 43 for each bay (or order module mounting assemblies with AC input line cords, AC input cable assemblies, or AC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 43: Front Access AC Input Termination Assembly (1 AC Feed per 3 Rectifiers, 3-Phase)

Features

- Provides AC input terminal blocks for connection of three phase 277/480 VAC input feeds for all rectifier positions in the bay. One (1) AC input feed required per three (3) rectifier positions. Refer to "AC Input Connections to AC Input Termination Assembly List 43 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 277/480 VAC) (1 Feed per 3 Rectifiers, Three Phase)" on page 155 for specific wiring details.

Note: The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases.

Restrictions

For use with 58870500021 or 58870540001 or 58870550001 module mounting assemblies only.

To be used with a maximum of five module mounting assemblies for relay rack, maximum of six module mounting assemblies for enclosure.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 43. If a field expansion module mounting assembly is added to the system, AC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 40, 41, 42, or 43 for each bay (or order module mounting assemblies with AC input line cords, AC input cable assemblies, or AC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 45: Front Access DC Input Termination Assembly (1 DC Feed per 1 Converter, 1 to 5 Module Mounting Assemblies), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides DC input terminal blocks for connection of 400 volts DC input feeds for all converter positions in the bay. One (1) DC input feed required per one (1) converter position. Refer to "400V DC Input Connections to DC Input Termination Assembly List 45, 46, 47 Illustration when used with 588705000 Module Mounting Assemblies with Converters" on page 170 for specific wiring details.

Restrictions

Not for use with systems mounted in an enclosure.

For use with 58870500040 module mounting assembly only.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 45. If a field expansion module mounting assembly is added to the system, DC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 45, 46, or 47 for each bay (or order module mounting assemblies with DC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 46: Front Access DC Input Termination Assembly (1 DC Feed per 2 Converters, 2 or 4 Assemblies), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides DC input terminal blocks for connection of 400 volts DC input feeds for all converter positions in the bay. One (1) DC input feed required per two (2) converter positions. Refer to "400V DC Input Connections to DC Input Termination Assembly List 45, 46, 47 Illustration when used with 588705000 Module Mounting Assemblies with Converters" on page 170 for specific wiring details.

Restrictions

Not for use with systems mounted in an enclosure.

For use with 58870500040 module mounting assembly only.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 46. If a field expansion module mounting assembly is added to the system, DC inputs MUST be wired directly to the assembly.

List 46 can only be used with either two (2) or four (4) module mounting assemblies.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 45, 46, or 47 for each bay (or order module mounting assemblies with DC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 47: Front Access DC Input Termination Assembly (1 DC Feed per 3 Converters, 1 to 5 Module Mounting Assemblies), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides DC input terminal blocks for connection of 400 volts DC input feeds for all converter positions in the bay. One (1) DC input feed required per three (3) converter positions. Refer to "400V DC Input Connections to DC Input Termination Assembly List 45, 46, 47 Illustration when used with 588705000 Module Mounting Assemblies with Converters" on page 170 for specific wiring details.

Restrictions

Not for use with systems mounted in an enclosure.

For use with 58870500040 module mounting assembly only.

Factory installed only.

For initial installation only. Initial module mounting assemblies are factory wired to List 47. If a field expansion module mounting assembly is added to the system, DC inputs MUST be wired directly to the assembly.

Cannot be used with the DC conduit box (List 28).

Ordering Notes

1) Order either List 45, 46, or 47 for each bay (or order module mounting assemblies with DC input terminal blocks). See "Module Mounting Assembly" starting on page 99.

List 60: Converter Interface Components (for Spec. No. 588705300), For System Mounted in a Relay Rack or on Shipping Rails Only

Features

- Provides components to interface converters in Spec. No. 588705300 module mounting assemblies to the distribution cabinet.

Restrictions

Not for use with systems mounted in an enclosure.

Must be used in systems equipped with Spec. No. 588705300 module mounting assemblies.

Must be installed in main bay **only**.

If the system does not include a dual voltage distribution panel, the converter power cabling will be provided as ship-loose material.

Ordering Notes

1) Order List 60 as required. Quantity of List 60 must equal the quantity of module mounting assembly(s) Spec. No. 588705300 installed in the bay with a maximum of four (4) List 60. Note that if five (5) assemblies are in the bay, the quantity of List 60 is still four (4).
2) Specify the number of module mounting assembly(s) Spec. No. 588705300 installed in the bay (one to five) so correct busbars can be provided.
3) Order up to three (3) converter modules, P/N 1C48241500, per module mounting assembly. Each List 60 allows the three right-most shelf positions (when viewed from the front) to accept either converter or rectifier modules.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

List 90: Optional Battery Shunt, 800 A

Features

- Provides an 800 A battery shunt.

Restrictions

For use with List 21 only.

Cannot be used with low voltage load disconnect (LVLD) in a List 21.

Ordering Notes

1) Order as required.

List 91: Optional Battery Shunt, 2000 A

Features

- Provides a 2000 A battery shunt.

Restrictions

For use with List 22 only.

Ordering Notes

1) Order as required.

List 92: Optional Battery Shunt, 2500 A

Features

- Provides a 2500 A battery shunt.

Restrictions

For use with List 23 and 24 only. Not for use with List 5.

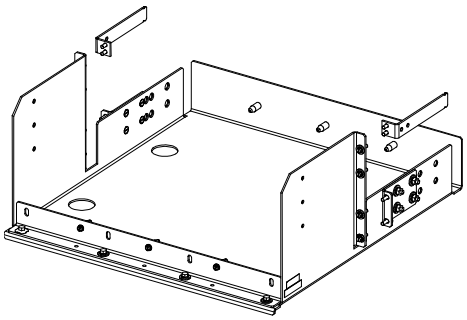
Ordering Notes

1) Order as required.

List 93: Optional Battery Tray, Pre-Cabled, For System Mounted in a Relay Rack Only, 22.5" Deep

Features

- Each List 93 provides one (1) battery tray factory mounted in the 23" wide system relay rack specified when ordered. Each battery tray holds four (4) 12 V front terminal valve regulated lead acid (VRLA) batteries. Battery cabling is factory provided and connected to the system's main busbars. Batteries are configured as one (1) 48 VDC string per tray.
- Battery trays can be ordered with or without a battery disconnect circuit breaker. When a circuit breaker is ordered, it is provided in the -48 VDC lead of each battery string (1 circuit breaker per tray).
- Battery tray dimensions are 21.3" wide X 22.5" deep. Refer to "List 93 (Battery Tray)" under *PHYSICAL SIZE INFORMATION* for a typical battery tray arrangement.
- Battery spacers included.



Restrictions

Designed to accommodate the batteries listed under "*Batteries*" in the ACCESSORY DESCRIPTIONS section.

A single battery tray must mount at bottom of relay rack. Multiple battery trays must mount starting at bottom of relay rack and working upward. Factory spaces battery trays 6RU, 7RU, or 8RU apart as determined by battery selected. If no battery selected, factory spaces battery trays 8RU apart. Spacing can be increased above that required for the battery selected up to a maximum of 8RU.

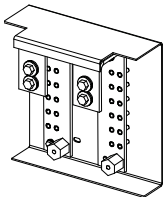
Cable size for each tray is 2 AWG for optional battery disconnect circuit breaker selected up to 150 A and 1/0 AWG for circuit breaker selected over 150 A or if circuit breaker is not selected.

Maximum number of List 93 per relay rack is four (4).

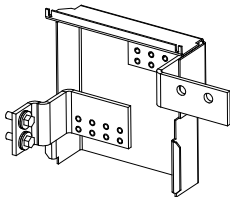
Not a stand-alone battery system. Must be used as part of a power system that includes a List 1 (or List 5) with a List 21, 22, 23, or 24.

Ordering Notes

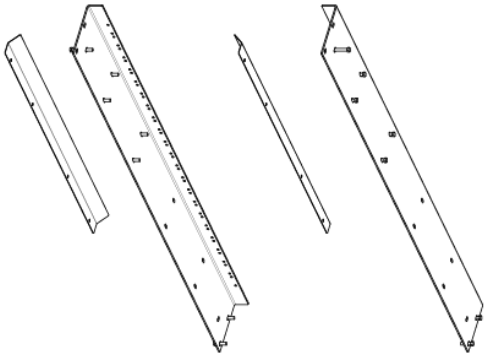
1) Order up to four (4) battery trays per relay rack, as required.
2) Order battery tray mounting kit P/N 565004 for use with enclosure P/N 563524 and P/N 564881.
3) Order battery cable termination kit, one per bay. P/N 553584 for use with List 21, P/N 555478 for use with Lists 22, 23 and 24.
4) Order batteries separately. See "*Batteries*" in the ACCESSORY DESCRIPTIONS section. Battery cables and lugs factory provided and connected.
5) If optional battery tray battery disconnect circuit breaker is desired, order per "*Optional Battery Tray Battery Disconnect Circuit Breaker and Housing Kits*" in the ACCESSORY DESCRIPTIONS section. You can order either optional battery tray battery disconnect circuit breaker or optional battery tray Anderson battery connector kit, not both.
6) If optional battery tray Anderson battery connector kit is desired, order per "*Optional Battery Tray Anderson Battery Connector Kit*" in the ACCESSORY DESCRIPTIONS section. You can order either optional battery tray battery disconnect circuit breaker or optional battery tray Anderson battery connector kit, not both.
7) If optional battery tray front battery cover is desired, order per "*Optional Battery Tray Front Battery Cover Kits*" in the ACCESSORY DESCRIPTIONS section.



P/N 553584



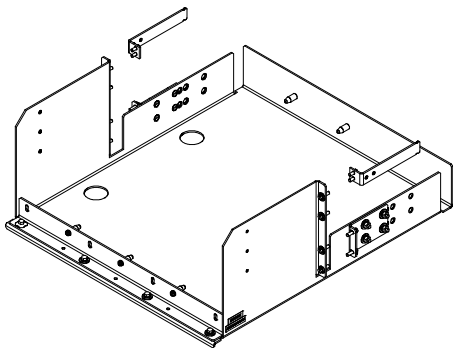
P/N 555478



P/N 565004

List 95: Optional Battery Tray, Pre-Cabled, For System Mounted in a Relay Rack Only, 24.79" Deep

Features



- Each List 95 provides one (1) battery tray factory mounted in the 23" wide system relay rack specified when ordered. Each battery tray holds four (4) 12 V front terminal valve regulated lead acid (VRLA) batteries. Battery cabling is factory provided and connected to the system's main busbars. Batteries are configured as one (1) 48 VDC string per tray.
- Battery trays can be ordered with or without a battery disconnect circuit breaker. When a circuit breaker is ordered, it is provided in the -48 VDC lead of each battery string (1 circuit breaker per tray).
- Battery tray dimensions are 21.3" wide X 24.79" deep. Refer to "List 95 (Battery Tray)" under *PHYSICAL SIZE INFORMATION* for a typical battery tray arrangement.
- Battery spacers included.

Restrictions

Designed to accommodate the batteries listed under "*Batteries*" in the ACCESSORY DESCRIPTIONS section.

A single battery tray must mount at bottom of relay rack. Multiple battery trays must mount starting at bottom of relay rack and working upward. Factory spaces battery trays 6RU, 7RU, or 8RU apart as determined by battery selected. If no battery selected, factory spaces battery trays 8RU apart. Spacing can be increased above that required for the battery selected up to a maximum of 8RU.

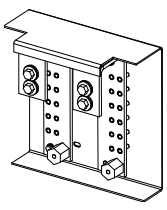
Cable size for each tray is 2 AWG for optional battery disconnect circuit breaker selected up to 150 A and 1/0 AWG for circuit breaker selected over 150 A or if circuit breaker is not selected.

Maximum number of List 95 per relay rack is four (4).

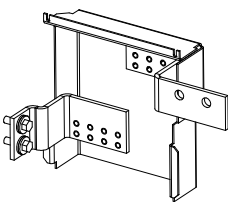
Not a stand-alone battery system. Must be used as part of a power system that includes a List 1 (or List 5) with a List 21, 22, 23, or 24.

Ordering Notes

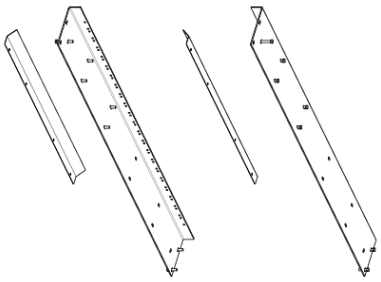
1) Order up to four (4) battery trays per relay rack, as required.
2) Order battery tray mounting kit P/N 565004 for use with enclosure P/N 563524 and P/N 564881.
3) Order battery cable termination kit, one per bay. P/N 553584 for use with List 21, P/N 555478 for use with Lists 22, 23 and 24.
4) Order batteries separately. See "*Batteries*" in the ACCESSORY DESCRIPTIONS section. Battery cables and lugs factory provided and connected.
5) If optional battery tray battery disconnect circuit breaker is desired, order per "*Optional Battery Tray Battery Disconnect Circuit Breaker and Housing Kits*" in the ACCESSORY DESCRIPTIONS section. You can order either optional battery tray battery disconnect circuit breaker or optional battery tray Anderson battery connector kit, not both.
6) If optional battery tray Anderson battery connector kit is desired, order per "*Optional Battery Tray Anderson Battery Connector Kit*" in the ACCESSORY DESCRIPTIONS section. You can order either optional battery tray battery disconnect circuit breaker or optional battery tray Anderson battery connector kit, not both.
7) If optional battery tray front battery cover is desired, order per "*Optional Battery Tray Front Battery Cover Kits*" in the ACCESSORY DESCRIPTIONS section.



553584



555478



565004

Batteries

Restrictions

For use in List 93 and List 95 battery trays.

Ordering Notes

1) Order batteries from Table 1a, as required for List 93.

Manufacturer*	Manufacturer P/N	P/N (12 V Module)	Capacity (A-Hr)	Dimension W x L x H (Inches) (per 12 V Module)	Min Tray Spacing (RU)	Weight (lb) (per 12V Module)	Lug Kit 2 AWG	Lug Kit 1/0 AWG
C&D	TEL12-160F	140456	157	5.0 x 22.0 x 11.10	7	116.8	528236	528237
C&D	TEL12-180F	--	181	5.0 x 22.0 x 12.60	8	132.3	528236	528237
C&D	TEL12-210F	554579	202	5.0 x 22.0 x 12.60	8	132.3	528236	528237
Deka	12AVR-150ET	122018	150	4.90 x 22.00 x 11.75	8	115	528234	528235
Deka	12AVR-170ET	541381	170	4.90 x 22.0 x 12.60	8	120	528234	528235
Deka	HT170ET	--	164	4.93 x 22.17 x 12.58	8	118	528234	528235
Enersys	12V155FS	122010	155	4.90 x 22.10 x 11.10	7	106.9	528234	528235
Enersys	12V170FS	--	170	4.90 x 22.10 x 11.10	7	112	528234	528235
Enersys	SBS 170F	--	170	4.92 x 22.10 x 11.10	7	116	528234	528235
Enersys	SBS 190F	--	190	4.90 x 22.10 x 12.40	8	132	528234	528235
FIAMM	12FAT100	--	100	4.96 x 21.97 x 9.06	6	95	528234	528235
FIAMM	12FAT155	--	155	4.96 x 21.97 x 12.64	8	129	528234	528235
FIAMM	12FAT180	--	100	4.96 x 21.97 x 12.64	8	134	528234	528235
Northstar	NSB155FT RED	--	155	4.90 x 22.0 x 11.00	7	101	528234	528235
Northstar	NSB170FT RED	126111	170	4.90 x 22.00 x 12.60	8	116	528234	528235
Northstar	NSB190FT RED	--	190	4.90 x 22.00 x 12.60	8	123	528234	528235
Northstar	NSB155FT HT	--	154	4.90 x 22.00 x 11.0	7	117	528234	528235
Northstar	NSB170FT HT	--	174	4.90 x 22.00 x 12.60	8	121	528234	528235
Northstar	NSB190FT HT	--	190	4.90 x 22.00 x 12.60	8	132	528234	528235
GS Yuasa	PYL12V160FT	--	160	4.90 x 21.90 x 11.0	7	116.2	528234	528235
GS Yuasa	PYL12V185FT	--	185	4.90 x 21.90 x 12.50	7	133.8	528234	528235

* *See* Battery Manufacturer Information

Table 1a
Batteries and Battery Lug Kits for List 93

2) Order batteries from Table 1b, as required for List 95.

Manufacturer*	Manufacturer P/N	P/N (12 V Module)	Capacity (A-Hr)	Dimension W x L x H (Inches) (per 12 V Module)	Min Tray Spacing (RU)	Weight (lb) (per 12V Module)	Lug Kit 2 AWG	Lug Kit 1/0 AWG
Deka	12AVR-200ET	--	200	4.97 x 24.3 x 12.74	8	151	528234	528235
Deka	HT200ET	--	200	4.97 x 24.15 x 12.74	8	151	528234	528235

* *See* Battery Manufacturer Information

Table 1b
Batteries and Battery Lug Kits for List 95

Optional Battery Tray Battery Disconnect Circuit Breaker and Housing Kits

Features

- Provides a battery disconnect circuit breaker housing factory mounted on the left or right side of the List 93 and List 95 battery trays. Selected circuit breaker factory installed and wired.

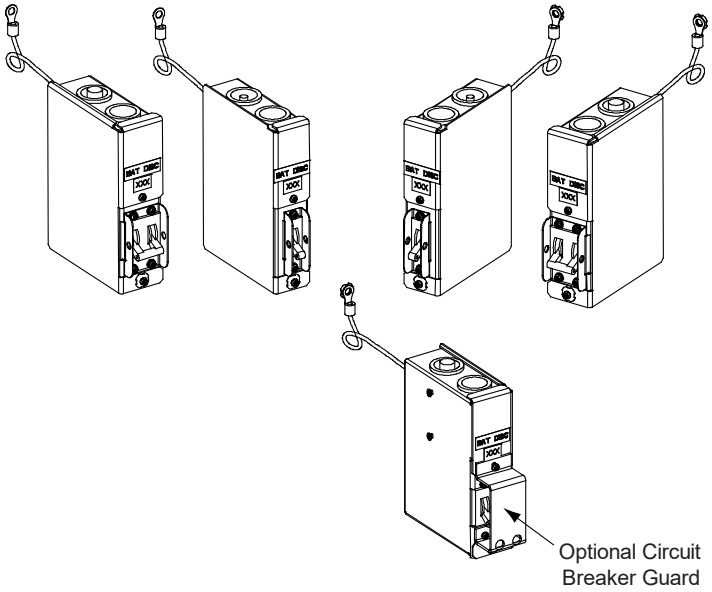
Restrictions

For use in List 93 and List 95 battery trays.

Factory wires battery trays with 2 AWG cables for battery disconnect circuit breaker selected up to 150 A and 1/0 AWG cables for circuit breaker selected over 150 A.

Ordering Notes

1) For each battery tray, order one (1) circuit breaker from Table 2.
2) For each double-pole circuit breaker ordered, order an optional circuit breaker guard P/N 548014, if desired, to block front access to circuit breaker handle.



3) For each battery tray ordered, order one (1) battery circuit breaker housing kit from Table 3.

Ampere Rating	P/N Electrical/Mechanical Trip[1] (Black Handle)	No. of Poles
50	256694300	1-Pole
60	256694700	
70	256695100	
75	256695500	
100	256695900	
125	100762	2-Pole
150	100763	
200	121810	

Circuit Breaker Alarm Operation:
[1] Provides an alarm during an electrical or manual trip condition.

Table 2
Battery Tray Battery Disconnect Circuit Breakers

Part Number	Description
559813	Single Pole, Right Side Mounted
559814	Single Pole, Left Side Mounted
559815	Double Pole, Right Side Mounted
559816	Double Pole, Left Side Mounted

Table 3
Battery Tray Battery Disconnect Circuit Breaker Housing Kits

Optional Battery Tray Front Battery Cover Kits

Features

- Provides a front battery cover to the List 93 and List 95 battery trays.

Restrictions

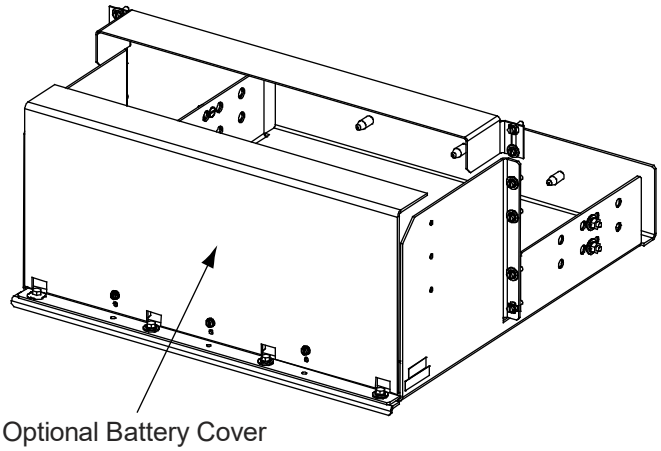
For use in List 93 and List 95 battery trays.

Ordering Notes

1) Order one (1) kit per tray from Table 4, as required.

Part Number	Height
562128	8U
562053	7U
562145	6U

Table 4



Optional Battery Tray Anderson Battery Connector Kit

Features

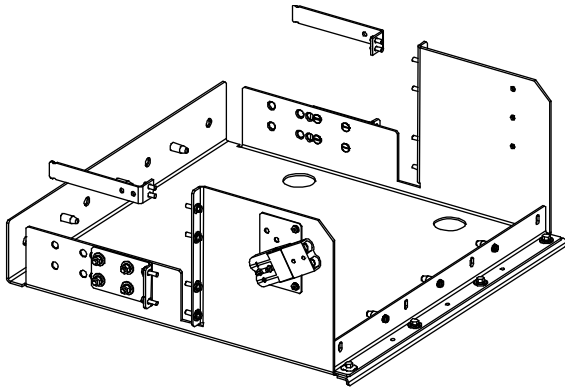
- Provides an Anderson battery connector (SB 120) factory mounted on the left or right side of the List 93 and List 95 battery trays.

Restrictions

For use in List 93 and List 95 battery trays.

Ordering Notes

1) For each battery tray, order one (1) Anderson battery tray connector kit P/N 563297.



List 100: Power and Distribution Bay (Fully Configured)

Features

- Provides a "power and distribution" bay rated for 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum.
- This is a preconfigured power system which is orderable by specifying one List number. This power system is preconfigured as follows. See also "582127000 List 100 (Relay Rack)" on page 17.

  All system components mounted in a 7' x 23" seismic Zone-4 rated relay rack.

  Includes a 3-row distribution cabinet.

  Includes one (1) List DJ distribution panel in the top row.

  Includes two (2) List AL distribution panels in the lower two rows.

  Includes the NCU controller (with custom configuration).

  Includes a battery disconnect contactor providing low voltage and manual battery disconnect.

  Includes a system interface board which provides manual battery disconnect, system voltage test points, two (2) temperature inputs, two (2) battery CB/Fuse alarm inputs, and a CAN interface connector.

  Includes one (1) IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).

  Accepts a second optional IB2 controller interface board. See page 92.

  Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs). See page 93.

  Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.

  Includes three (3) 556155 temperature probes.

  Includes the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

  Includes one (1) rectifier only shelf (six positions accept rectifiers only).

  Includes three (3) rectifier/converter shelves (three positions accept rectifiers only, three positions accept rectifiers or converters).

  Includes front access AC input termination assemblies with two rectifiers per AC feed, single phase.
- This system includes separate installation and user manuals specific to its configuration. Refer to IM582127000100 and UM582127000100.

Ordering Notes

1) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
2) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
3) Order rectifier modules as required, P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
6) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
7) Order the optional EIB controller extended interface board as required (see page 93).
8) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
9) For a field installed battery tray, order P/N 563206.
10) Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables. Refer to "Special Application Rectifier Bus Landing Point Kit P/N 563686" on page 130.
11) A generator input circuit breaker kit P/N 564219 is available. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

List 101: Power and Distribution Bay (Fully Configured with One Battery Tray)

Features

- Provides a "power and distribution" bay rated for 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum.
- This is a preconfigured power system which is orderable by specifying one List number. This power system is preconfigured as follows. See also "582127000 List 101 (Relay Rack)" on page 18.

  All system components mounted in a 5' x 23" seismic Zone-4 rated relay rack.

  Includes a 3-row distribution cabinet.

  Includes one (1) List DJ distribution panel in the top row.

  Includes two (2) List AL distribution panels in the lower two rows.

  Includes a battery disconnect contactor providing low voltage and manual battery disconnect.

  Includes the NCU controller with custom configuration.

  Includes a system interface board which provides manual battery disconnect, system voltage test points, two (2) temperature inputs, two (2) battery CB/Fuse alarm inputs, and a CAN interface connector.

  Includes one (1) IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).

  Accepts a second optional IB2 controller interface board. See page 92.

  Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs). See page 93.

  Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.

  Includes three (3) 556155 temperature probes.

  Includes the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

  Includes one (1) rectifier only shelf (six positions accept rectifiers only).

  Includes three (3) rectifier/converter shelves (three positions accept rectifiers only, three positions accept rectifiers or converters).

  Includes front access AC input termination assemblies with two rectifiers per AC feed, single phase.

  Includes one (1) battery tray with 200 A disconnect circuit breakers.
- This system includes separate installation and user manuals specific to its configuration. Refer to IM582127000100 and UM582127000100.

Ordering Notes

1) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
2) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
3) Order rectifier modules as required, P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
6) Order batteries as required per "Batteries" on page 50. Three (3) P/N 562674 battery trays provided.
7) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
8) Order the optional EIB controller extended interface board as required (see page 93).
9) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
10) Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables. Refer to "Special Application Rectifier Bus Landing Point Kit P/N 563686" on page 130.
11) A generator input circuit breaker kit P/N 564219 is available. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

List 102: Power and Distribution Bay (Fully Configured with Two Battery Trays)

Features

- Provides a "power and distribution" bay rated for 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum.
- This is a preconfigured power system which is orderable by specifying one List number. This power system is preconfigured as follows. See also "582127000 List 102 (Relay Rack)" on page 19.

  All system components mounted in a 6' x 23" seismic Zone-4 rated relay rack.

  Includes a 3-row distribution cabinet.

  Includes one (1) List DJ distribution panel in the top row.

  Includes two (2) List AL distribution panels in the lower two rows.

  Includes a battery disconnect contactor providing low voltage and manual battery disconnect.

  Includes the NCU controller with custom configuration.

  Includes a system interface board which provides manual battery disconnect, system voltage test points, two (2) temperature inputs, two (2) battery CB/Fuse alarm inputs, and a CAN interface connector.

  Includes one (1) IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).

  Accepts a second optional IB2 controller interface board. See page 92.

  Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs). See page 93.

  Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.

  Includes three (3) 556155 temperature probes.

  Includes the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

  Includes one (1) rectifier only shelf (six positions accept rectifiers only).

  Includes three (3) rectifier/converter shelves (three positions accept rectifiers only, three positions accept rectifiers or converters).

  Includes front access AC input termination assemblies with two rectifiers per AC feed, single phase.

  Includes two (2) battery trays with 200 A disconnect circuit breakers.
- This system includes separate installation and user manuals specific to its configuration. Refer to IM582127000100 and UM582127000100.

Ordering Notes

1) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
2) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
3) Order rectifier modules as required, P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
6) Order batteries as required per "Batteries" on page 50. Three (3) P/N 562674 battery trays provided.
7) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
8) Order the optional EIB controller extended interface board as required (see page 93.).
9) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
10) Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables. Refer to "Special Application Rectifier Bus Landing Point Kit P/N 563686" on page 130.
11) A generator input circuit breaker kit P/N 564219 is available. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

List 103: Power and Distribution Bay (Fully Configured with Three Battery Trays)

Features

- Provides a "power and distribution" bay rated for 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum.
- This is a preconfigured power system which is orderable by specifying one List number. This power system is preconfigured as follows. See also "582127000 List 103 (Relay Rack)" on page 20.

  All system components mounted in a 7' x 23" seismic Zone-4 rated relay rack.

  Includes a 3-row distribution cabinet.

  Includes one (1) List DJ distribution panel in the top row.

  Includes two (2) List AL distribution panels in the lower two rows.

  Includes a battery disconnect contactor providing low voltage and manual battery disconnect.

  Includes the NCU controller with custom configuration.

  Includes a system interface board which provides manual battery disconnect, system voltage test points, two (2) temperature inputs, two (2) battery CB/Fuse alarm inputs, and a CAN interface connector.

  Includes one (1) IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).

  Accepts a second optional IB2 controller interface board. See page 92.

  Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs). See page 93.

  Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.

  Includes three (3) 556155 temperature probes.

  Includes the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

  Includes one (1) rectifier only shelf (six positions accept rectifiers only).

  Includes three (3) rectifier/converter shelves (three positions accept rectifiers only, three positions accept rectifiers or converters).

  Includes front access AC input termination assemblies with two rectifiers per AC feed, single phase.

  Includes three (3) battery trays with 150 A disconnect circuit breakers.
- This system includes separate installation and user manuals specific to its configuration. Refer to IM582127000100 and UM582127000100.

Ordering Notes

1) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
2) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
3) Order rectifier modules as required, P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
6) Order batteries as required per "Batteries" on page 50. Three (3) P/N 562674 battery trays provided.
7) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
8) Order the optional EIB controller extended interface board as required (see page 93.).
9) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
10) Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables. Refer to "Special Application Rectifier Bus Landing Point Kit P/N 563686" on page 130.
11) A generator input circuit breaker kit P/N 564219 is available. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

List 203: Power and Distribution Bay (Fully Configured with Three Battery Trays)

Features

- Provides a "power and distribution" bay rated for 1000 A @ -48 VDC and 500 A @ +24 VDC, maximum.
- This is a preconfigured power system which is orderable by specifying one List number. This power system is preconfigured as follows. See also "582127000 List 103 (Relay Rack)" on page 20.

  All system components mounted in a 7' x 23" seismic Zone-4 rated relay rack.

  Includes a 3-row distribution cabinet.

  Includes one (1) List DJ distribution panel in the top row.

  Includes two (2) List AL distribution panels in the lower two rows.

  Includes a battery disconnect contactor providing low voltage and manual battery disconnect.

  Includes the NCU controller with custom configuration.

  Includes a system interface board which provides manual battery disconnect, system voltage test points, two (2) temperature inputs, two (2) battery CB/Fuse alarm inputs, and a CAN interface connector.

  Includes one (1) IB2 controller interface board (provides eight (8) programmable form C- relay outputs, eight (8) programmable binary inputs, and two (2) temperature inputs).

  Accepts a second optional IB2 controller interface board. See page 92.

  Accepts the optional EIB controller extended interface board (provides five (5) programmable form-C relay outputs, two (2) temperature inputs, three (3) shunt inputs. and eight (8) battery midpoint inputs). See page 93.

  Accepts a second optional EIB controller extended interface board. See Restrictions. See page 93.

  Includes three (3) 556155 temperature probes.

  Includes the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

  Includes one (1) rectifier only shelf (six positions accept rectifiers only).

  Includes three (3) rectifier/converter shelves (three positions accept rectifiers only, three positions accept rectifiers or converters).

  Includes front access AC input termination assemblies with two rectifiers per AC feed, single phase.

  Includes three (3) battery trays with 200 A disconnect circuit breakers.
- This system includes separate installation and user manuals specific to its configuration. Refer to IM582127000100 and UM582127000100.

Ordering Notes

1) Order fuses and/or circuit breakers as required per "Distribution Devices" starting on page 119.
2) Order input and load distribution lugs, lug adapters, and lug hardware kits as required per "Recommended Wire Sizes, Branch Circuit Protection, Crimp Lugs, and Wiring Illustrations" starting on page 132.
3) Order rectifier modules as required, P/N 1R482000e3.
4) Order optional DC-DC converter modules as required, P/N 1C48241500.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.
6) Order batteries as required per "Batteries" on page 50. Three (3) P/N 562674 battery trays provided.
7) Order optional second IB2 controller interface board as required. See Restrictions. See page 92.
8) Order the optional EIB controller extended interface board as required (see page 93.).
9) Order optional second EIB controller interface board as required. See Restrictions. See page 93.
10) Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables. Refer to "Special Application Rectifier Bus Landing Point Kit P/N 563686" on page 130.
11) A generator input circuit breaker kit P/N 564219 is available. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system.

Single Voltage Distribution Panels

List AC: -48 VDC Distribution Panel (with Return Busbar) and
List AD: -48 VDC Distribution Panel (without Return Busbar),
(4) GJ/218 Circuit Breaker Positions

Features

- (4) -48 VDC Load Distribution Circuit Breaker Mounting Positions:
  100 A to 800 A GJ/218 Type Circuit Breakers.
- List AC includes a return busbar; List AD does not include a return busbar.
- 600 A Maximum Capacity.
  Maximum current rating of each landing point is 360 A.

Restrictions

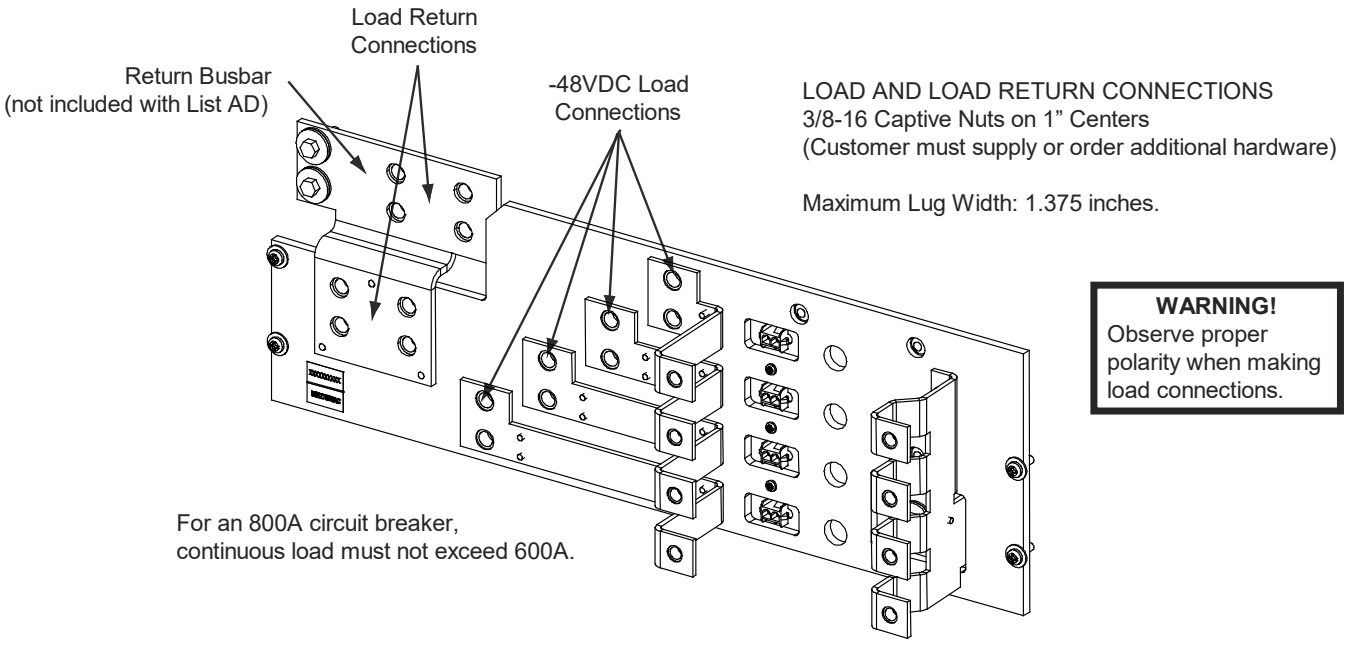
Can be installed in any bus row 1-4 of a 1-, 2-, 3-, or 4-row distribution cabinet.

Maximum lug width, 1.375 inches.

For an 800 A circuit breaker, continuous load must not exceed 600 A.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) List AD: To terminate load returns within the distribution cabinet, order List GA as required.
4) Order circuit breakers and associated jumper kits as required per Table 15.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5A for List AC or Table 5B for List AD.



List AE: -48 VDC Distribution Panel,
(2) TPH Fuse Positions (without Shunts) (without Return Busbar)

Features

- (2) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 600 A TPH Type Fuses.
- Does NOT include shunts.
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

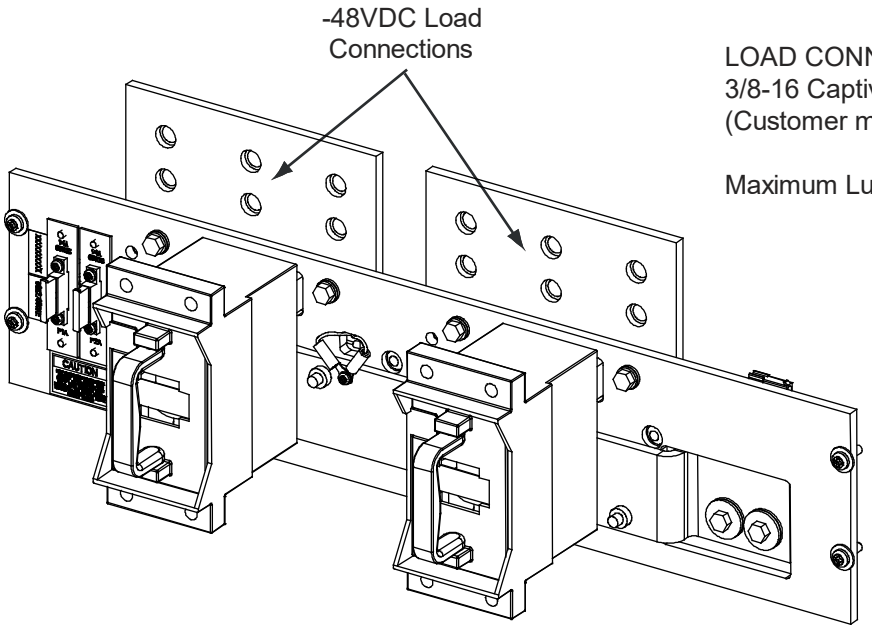
Restrictions

Cannot be installed in row 1 (bottom row) of a system with a List 2, 3, 5, or 6 (supplemental bay).

Maximum lug width, 1.88 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



LOAD CONNECTIONS
3/8-16 Captive Nuts on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.88 inches.

WARNING!
Observe proper polarity when making load connections.

List AF: -48 VDC Distribution Panel,
(2) TPH Fuse Positions (with Shunts) (without Return Busbar)

Features

- (2) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 600 A TPH Type Fuses.
- Includes shunts, 800 A / 25 mV. Each shunt is equipped with 10' jumpers for connection to monitoring device. If the system is equipped with an SM-DU+, the leads are trimmed and connected to the SM-DU+ (internal to the distribution cabinet).
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

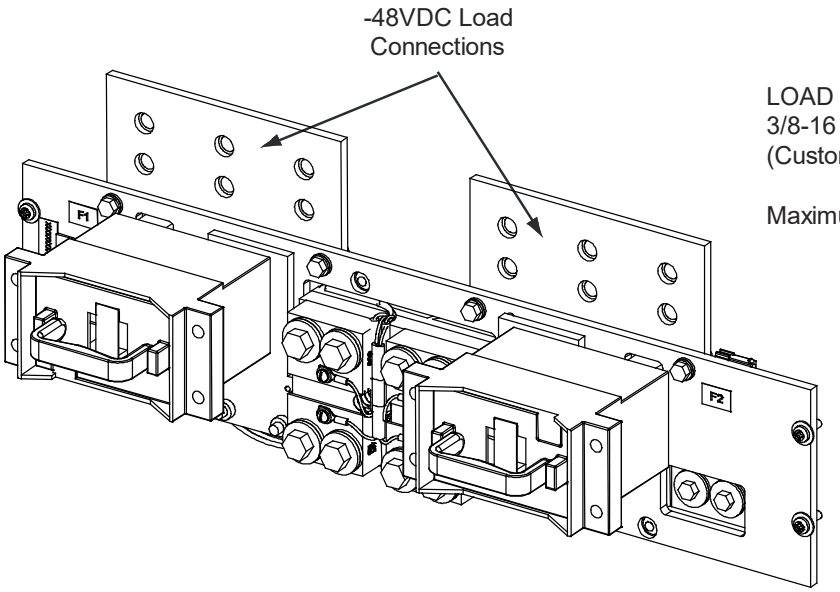
Restrictions

Can be installed in any row 1-4 of a 1-, 2-, 3-, or 4-row distribution cabinet.

Maximum lug width, 1.88 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



LOAD CONNECTIONS
3/8-16 Captive Nuts on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.88 inches.

WARNING!
Observe proper polarity when making load connections.

List AG: -48 VDC Distribution Panel,
(4) TPH Fuse Positions (without Shunts) (without Return Busbar)

Features

- (4) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 400 A TPH Type Fuses.
- Does NOT include shunts.
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

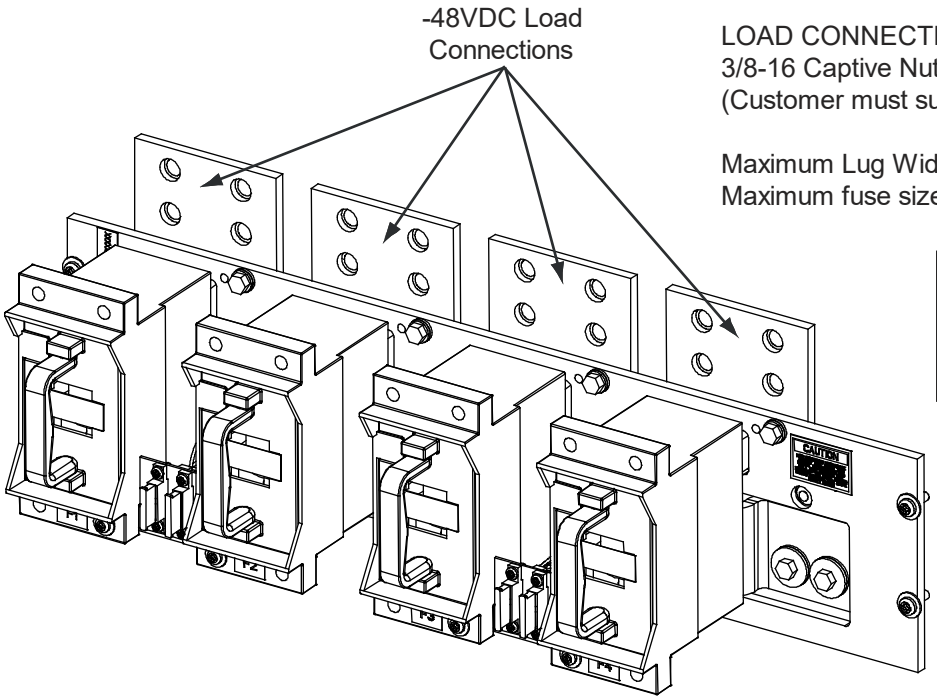
Restrictions

Cannot be installed in row 1 (bottom row) of a system with a List 2, 3, 5, or 6 (supplemental bay).

Maximum lug width, 1.75 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



List AH: -48 VDC Distribution Panel,
(4) TPH Fuse Positions (with Shunts) (without Return Busbar)

Features

- (4) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 400 A TPH Type Fuses.
- Includes shunts, 600 A / 25 mV. Each shunt is equipped with 10' jumpers for connection to monitoring device. If the system is equipped with an SM-DU+, the leads are trimmed and connected to the SM-DU+ (internal to the distribution cabinet).
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

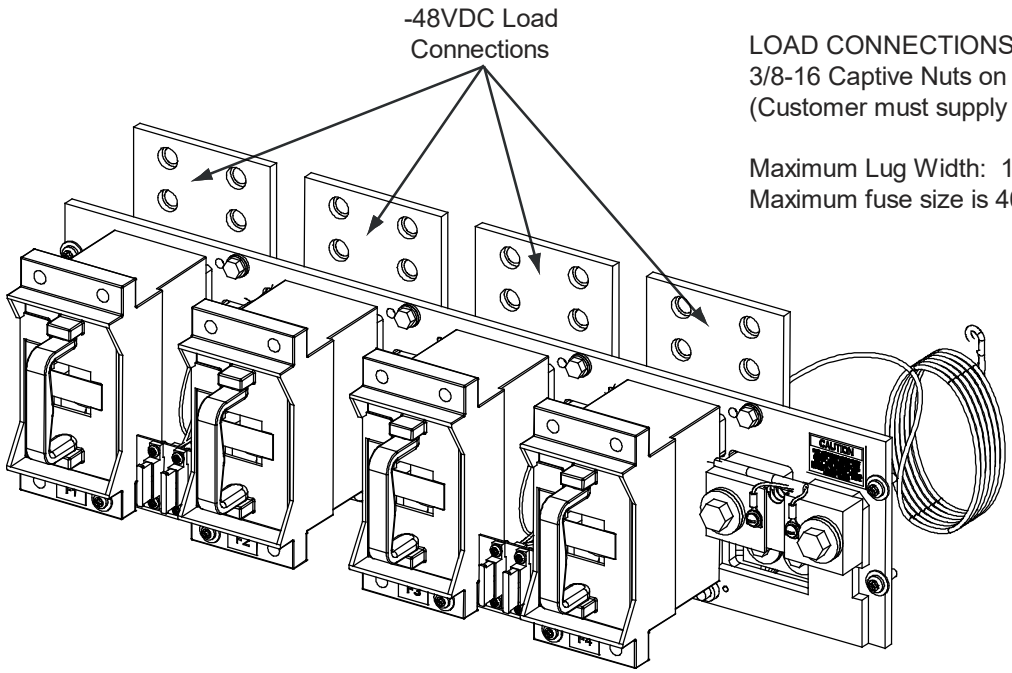
Restrictions

Cannot be installed in row 1 (bottom row) of a system with a List 2, 3, 5, or 6 (supplemental bay).

Maximum lug width, 1.75 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



LOAD CONNECTIONS
3/8-16 Captive Nuts on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.75 inches.
Maximum fuse size is 400A.

WARNING!
Observe proper polarity when making load connections.

List AJ: -48 VDC Distribution Panel,
(4) TPL-B Fuse Positions (without Shunts) (without Return Busbar)

Features

- (4) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 250 A TPL-B Type Fuses.
- Does NOT include shunts.
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

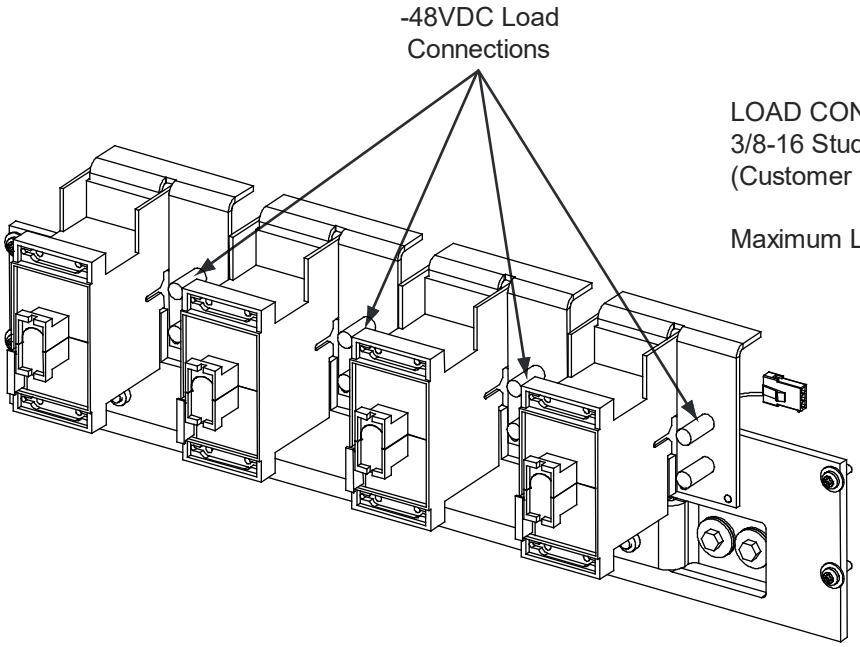
Restrictions

Can be installed in any row 1-4 of a 1-, 2-, 3-, or 4-row distribution cabinet.

Maximum lug width, 1.50 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 17. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548185) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (nuts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



LOAD CONNECTIONS
3/8-16 Studs on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.5 inches.

WARNING!
Observe proper polarity when making load connections.

List AK: -48 VDC Distribution Panel,
(4) TPL-B Fuse Positions (with Shunts) (without Return Busbar)

Features

- (4) -48 VDC Distribution Fuse Mounting Positions:
  70 A to 250 A TPL-B Type Fuses.
- Includes shunts, 300 A / 25 mV. Each shunt is equipped with 10' jumpers for connection to monitoring device. If the system is equipped with an SM-DU+, the leads are trimmed and connected to the SM-DU+ (internal to the distribution cabinet).
- Does NOT include a return busbar.
- 600 A Maximum Capacity.

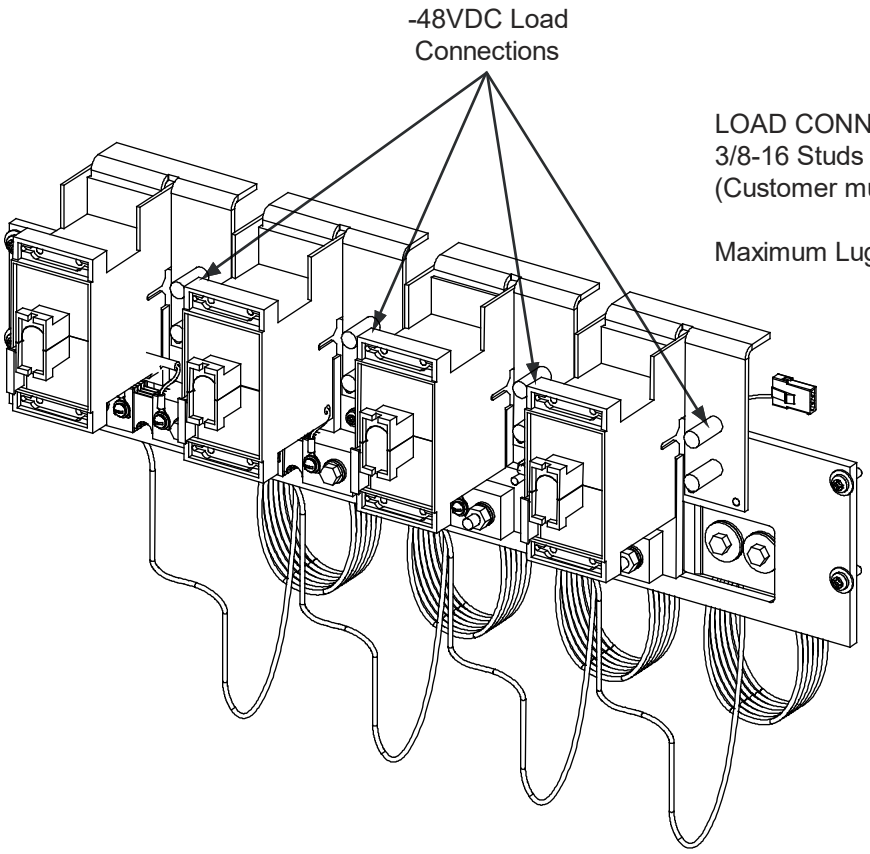
Restrictions

Can be installed in any row 1-4 of a 1-, 2-, 3-, or 4-row distribution cabinet.

Maximum lug width, 1.50 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) To terminate load returns within the distribution cabinet, order List GA as required.
4) Order fuses as required per Table 17. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
6) Order lug hardware kit (P/N 548185) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (nuts, flat washers, and lock washers), enough for eight (8) lug landing points.
7) Order return and load bus bar assemblies per Table 5B.



LOAD CONNECTIONS
3/8-16 Studs on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.5 inches.

WARNING!
Observe proper polarity when making load connections.

List AL: -48 VDC Distribution Panel (with Return Busbar) and
List AN: -48 V Distribution Panel (without Return Busbar)
(26) Bullet/TPS/TLS Circuit Breaker/Fuse Positions

Features

- (26) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers, or accepts
  "Optional Bullet Nose Type 6-Position GMT Distribution Fuse Block (P/N 549017)".
- List AL includes a return busbar; List AN does not include a return busbar.
- 600 A Maximum Capacity.

Restrictions

Can be installed in any row 1-4 of a 1-, 2-, 3-, or 4-row distribution cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

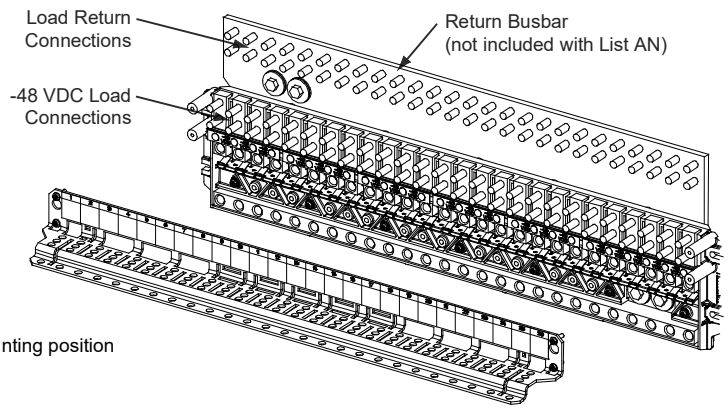
Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL per panel as required.
3) List AN: To terminate load returns within the distribution cabinet, order List GA as required.
4) Order circuit breakers as required per Table 11 or Table 12.
5) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
6) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
7) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
8) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
9) Order return and load bus bar assemblies per Table 5C for List AL or Table 5D for List AN.

LOAD AND LOAD RETURN CONNECTIONS
1/4-20 Studs on 5/8" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 0.625 inches.

WARNING!
Observe proper polarity when making load connections.



Caution: A 100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.

List AM: -48 VDC Distribution Panel (with Return Busbar) and
List AP: -48 VDC Distribution Panel (without Return Busbar)
(12) GJ/218 Circuit Breaker Positions

Features

- (12) -48 VDC Load Distribution Circuit Breaker Mounting Positions:
  100 A to 800 A GJ/218 Type Circuit Breakers.
- Includes a return busbar
- 1600 A Maximum Capacity.
  Maximum current rating of each landing point is 360 A.

Restrictions

Unless otherwise specified circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

Can be installed in any two adjacent bus rows 1-2, 2-3, or 3-4 of a 2-, 3-, or 4-row distribution cabinet.

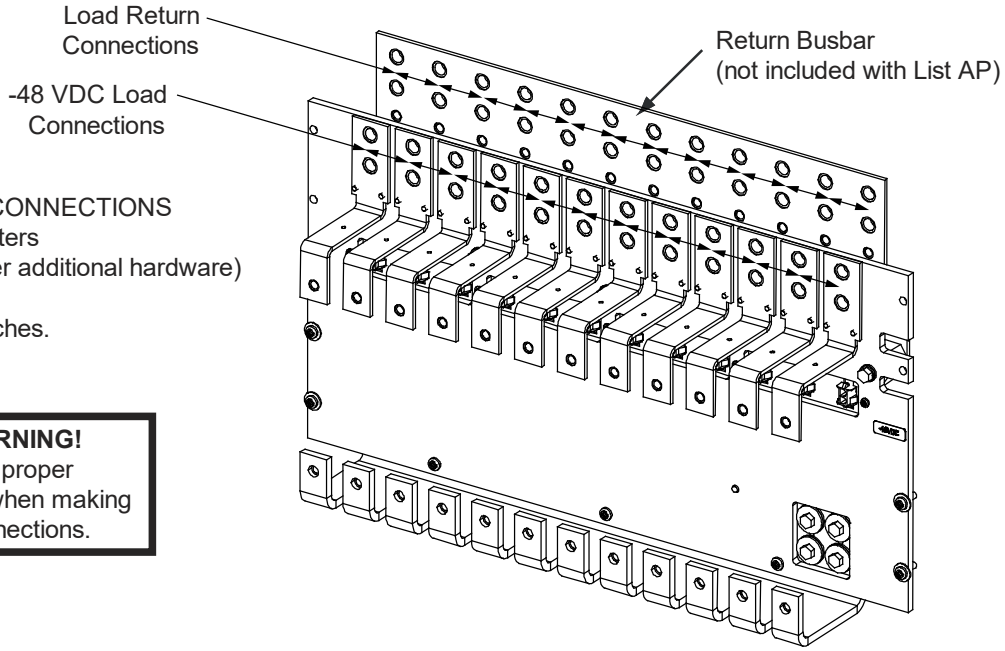
List LL is not available in any row if the system is equipped with one or more List EA, List AM, or List AP.

Maximum lug width, 1.375 inches.

For an 800 A circuit breaker, continuous load must not exceed 600 A.

Ordering Notes

1) Specify rows for panel location(s) (each List AM and AP requires two rows).
2) Order circuit breakers and associated jumper kits as required per Table 15.
3) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
4) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
5) Order return and load bus bar assemblies per Table 5E for List AM or Table 5F for List AP.



LOAD AND LOAD RETURN CONNECTIONS
3/8-16 Captive Nuts on 1" Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.375 inches.

WARNING!
Observe proper polarity when making load connections.

Dual Voltage Distribution Panels

List DE: -48 VDC / +24 VDC Distribution Panel,
(22) -48 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar) and
(4) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)

Features

- (22) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  (4) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 1-, 2-, 3-, or 4-row distribution cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

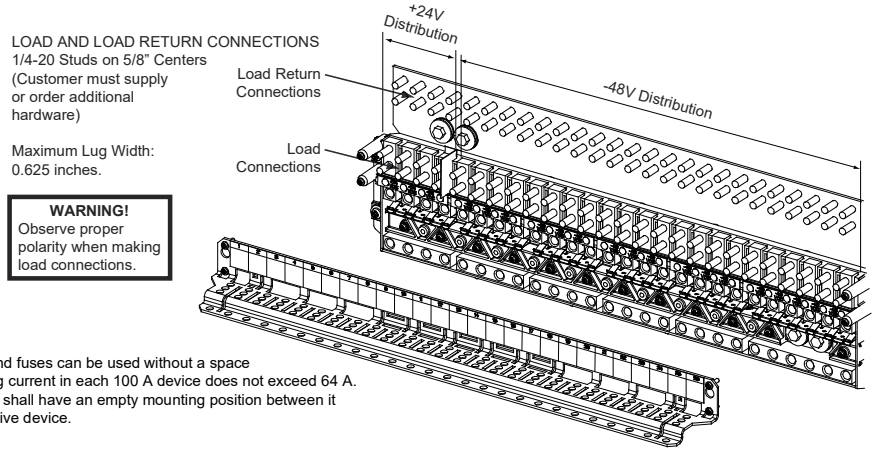
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL (for 48 V positions) as required.
3) Order circuit breakers as required per Table 11 or Table 12.
4) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
6) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
7) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
8) Order return and load bus bar assemblies per Table 5C.



**List DF: -48 VDC / +24 VDC Distribution Panel,
(18) -48 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar) and
(8) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)**

Features

- (18) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  (8) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 1-, 2-, 3-, or 4-row distribution cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

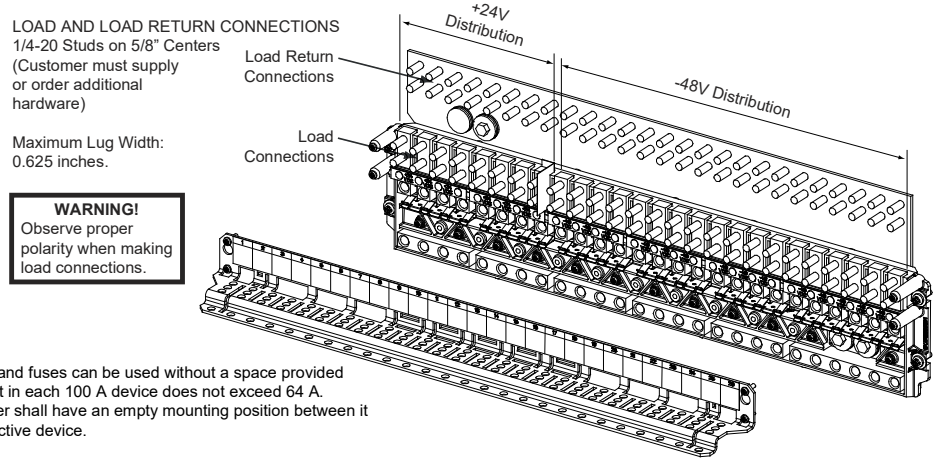
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL (for 48 V positions) as required.
3) Order circuit breakers as required per Table 11 or Table 12.
4) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
6) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
7) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
8) Order return and load bus bar assemblies per Table 5C.



Caution: 100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.

**List DG: -48 VDC / +24 VDC Distribution Panel,
(14) -48 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar) and
(12) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)**

Features

- (14) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  (12) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 1-, 2-, 3-, or 4-row distribution cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

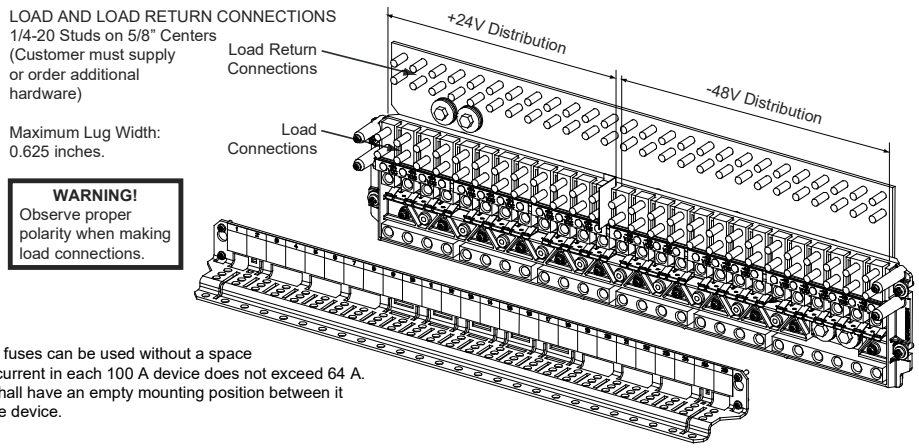
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL (for 48 V positions) as required.
3) Order circuit breakers as required per Table 11 or Table 12.
4) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
6) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
7) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
8) Order return and load bus bar assemblies per Table 5C.



**List DH: -48 VDC / +24 VDC Distribution Panel,
(10) -48 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar) and
(16) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)**

Features

- (10) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  (16) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 1-, 2-, 3-, or 4-row distribution cabinet.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

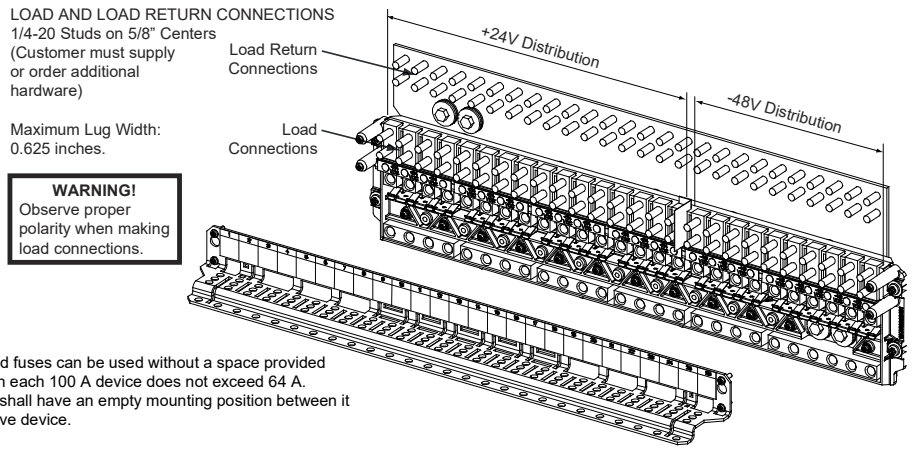
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL (for 48 V positions) as required.
3) Order circuit breakers as required per Table 11 or Table 12.
4) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
6) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
7) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
8) Order return and load bus bar assemblies per Table 5C.



List DJ: -48 VDC / +24 VDC Distribution Panel,
(6) -48 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar) and
(20) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)

Features

- (6) -48 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  (20) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 1-, 2-, 3-, or 4-row distribution cabinet with the following exception: cannot be installed in row 1 when an LVD contactor is installed in row 1.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

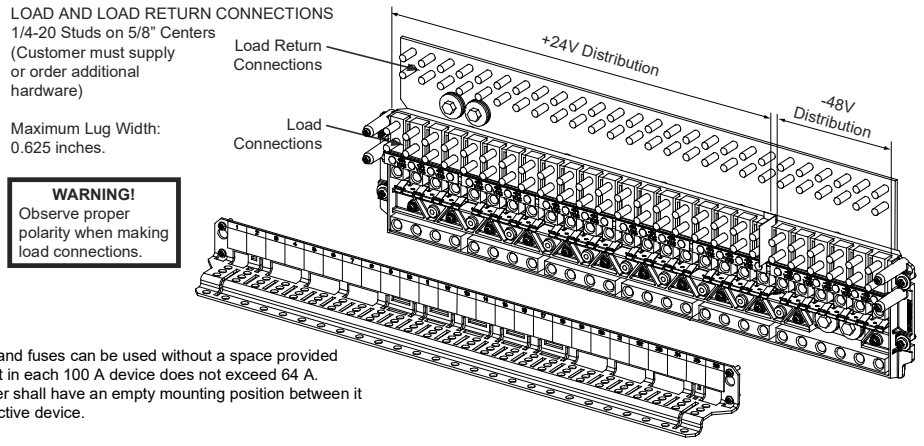
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order low voltage load disconnect List LL (for 48 V positions) as required.
3) Order circuit breakers as required per Table 11 or Table 12.
4) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
5) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
6) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
7) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
8) Order return and load bus bar assemblies per Table 5C.



List DK: -48 VDC / +24 VDC Distribution Panel,
(26) +24 VDC Bullet/TPS/TLS Circuit Breaker/Fuse Positions (with Return Busbar)

Features

- (26) +24 VDC Load Distribution Fuse / Circuit Breaker Mounting Positions:
  3 A to 100 A TPS/TLS Type Fuses,
  1 A to 300 A Bullet Nose Type Circuit Breakers.
- Includes a return busbar.
- 500 A Maximum +24 V Distribution Capacity.
  If reconfigured in the field; 600 A Maximum Total Capacity:
  600 A Maximum -48 VDC Distribution Capacity.
  500 A Maximum +24 VDC Distribution Capacity.

Restrictions

Cannot be used in a supplemental bay.

Limit two (2) dual voltage distribution panels per power system. If two dual voltage distribution panels are ordered, they must be mounted in adjacent rows. Maximum subsystem current capacity of the second panel is 255 A based on the cables that are provided to connect it to the first panel.

Can be installed in any row of a 2-, 3-, or 4-row distribution cabinet. Not for use in List 21.

Unless otherwise specified fuses and/or circuit breakers are mounted from left to right, starting with the highest capacity and working to the lowest capacity.

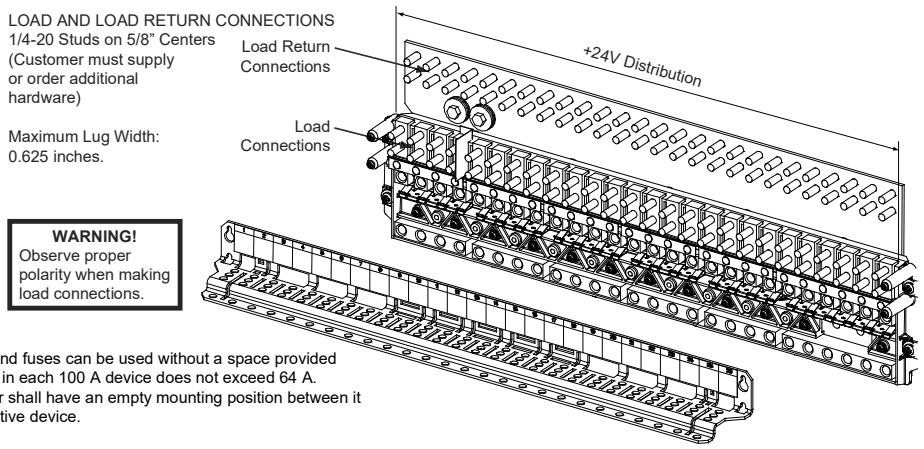
125 A, 150 A, 175 A, and 200 A circuit breakers occupy two mounting positions.
225 A, 250 A, and 300 A circuit breakers occupy three mounting positions.

Caution: ***100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.***

Maximum lug width, 0.625 inches.

Ordering Notes

1) Specify row for panel location(s).
2) Order circuit breakers as required per Table 11 or Table 12.
3) Order fuses as required per Table 13. Also order one (1) P/N 117201 bullet nose type fuseholder per fuse ordered. Order replacement alarm fuses (18/100 A) per Table 18.
4) Order 6-position GMT fuse block P/N 549017 and fuses per Table 14 as required.
5) Order load lugs (two hole, 1/4" bolt clearance hole, 5/8" centers) as required for each distribution position per Table 51.
6) Order lug hardware kit (P/N 541084) as required. Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware (nuts, flat washers, and lock washers), enough for sixteen (16) lug landing points.
7) Order return and load bus bar assemblies per Table 5G.



Caution: 100 A circuit breakers and fuses can be used without a space provided the continuous operating current in each 100 A device does not exceed 64 A. A 175 A or greater circuit breaker shall have an empty mounting position between it and any other overcurrent protective device.

Battery Disconnect Distribution Panels

List BC: Battery Disconnect Distribution Panel (with Return Busbar) and
List BD: Battery Disconnect Distribution Panel (without Return Busbar),
(4) GJ/218 Circuit Breaker Battery Disconnect Positions

Features

- (4) -48 VDC Battery Disconnect Circuit Breaker Mounting Positions:
  100 A to 800 A GJ/218 Type Circuit Breakers.
- List BC Includes a return busbar; List BD does not include a return busbar.
- 600 A Maximum Capacity.
  Maximum current rating of each landing point is 360 A.

Restrictions

Cannot be used with List 21.

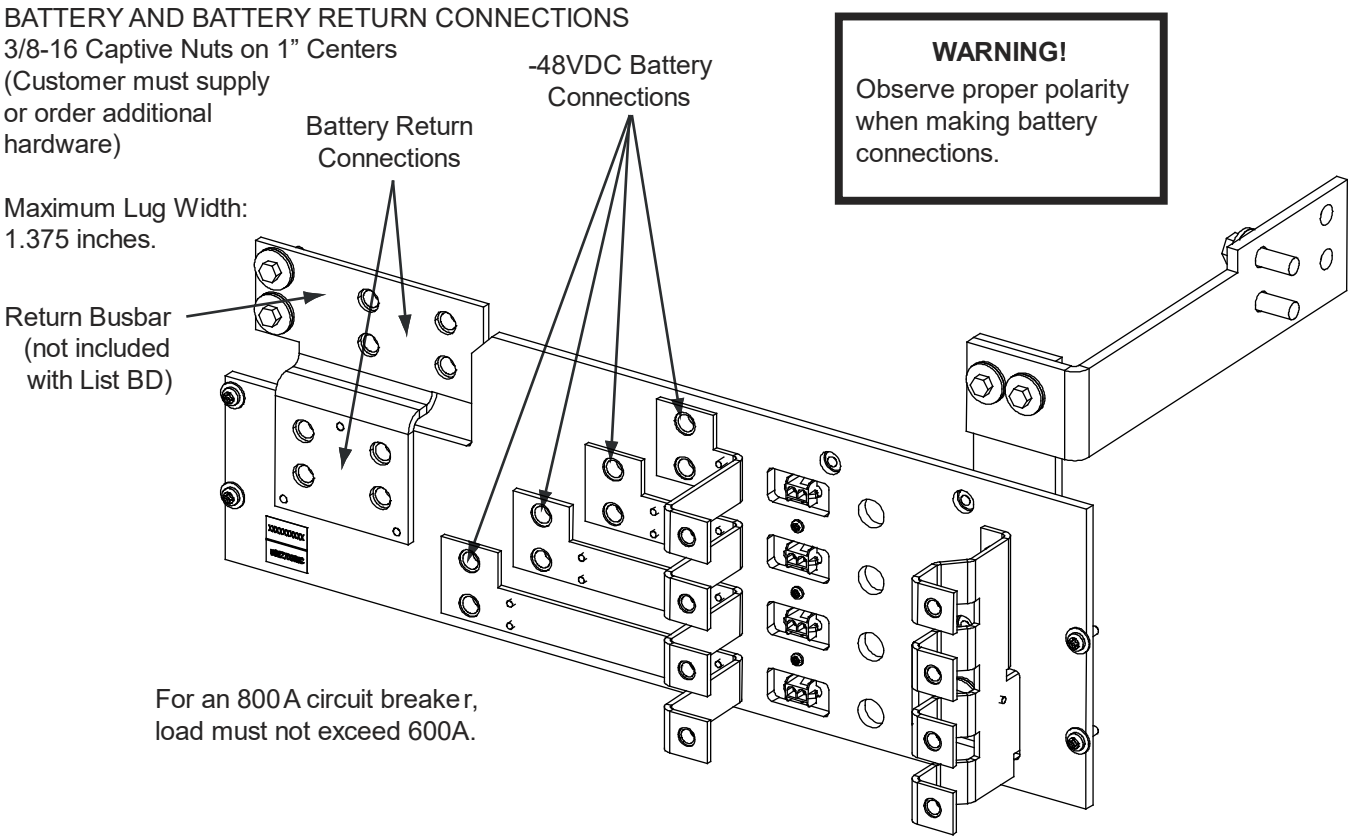
Must be installed in top row only (limit one battery disconnect panel per distribution cabinet).

Maximum lug width, 1.375 inches.

For an 800 A circuit breaker, load must not exceed 600 A.

Ordering Notes

1) Order circuit breakers and associated jumper kits as required per Table 15.
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) Order return and load bus bar assemblies per Table 5H for List BC. No return or load bus bars required for List BD.



List BE: Battery Disconnect Distribution Panel,
(2) TPH Fuse Battery Disconnect Position (without Shunts) (without Return Busbar)

Features

- (2) -48 VDC Battery Disconnect Fuse Mounting Positions:
  70 A to 600 A TPH Type Fuses.
- Does NOT include shunts.
- Does NOT include a return busbar.
- 1200 A Maximum Capacity.

Restrictions

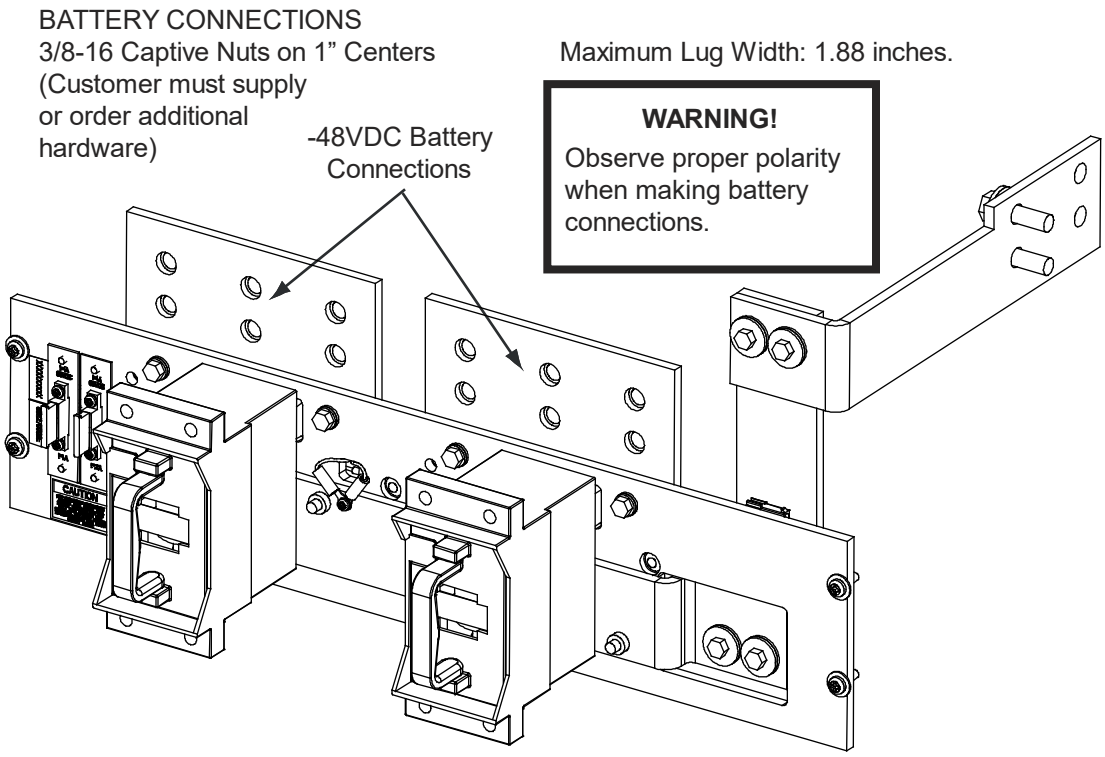
Cannot be used with List 21.

Must be installed in top row only (limit one battery disconnect panel per distribution cabinet).

Maximum lug width, 1.88 inches.

Ordering Notes

1) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) No return or load bus bars required.



List BF: Battery Disconnect Distribution Panel,
(2) TPH Fuse Battery Disconnect Positions (with Shunts) (without Return Busbar)

Features

- (2) -48 VDC Battery Disconnect Fuse Mounting Positions:
  70 A to 600 A TPH Type Fuses.
- Includes shunts, 800 A / 25 mV. Each shunt is equipped with 10' jumpers for connection to monitoring device. If the system is equipped with an SM-DU+, the leads are trimmed and connected to the SM-DU+ (internal to the distribution cabinet).
- Does NOT include a return busbar.
- 1200 A Maximum Capacity.

Restrictions

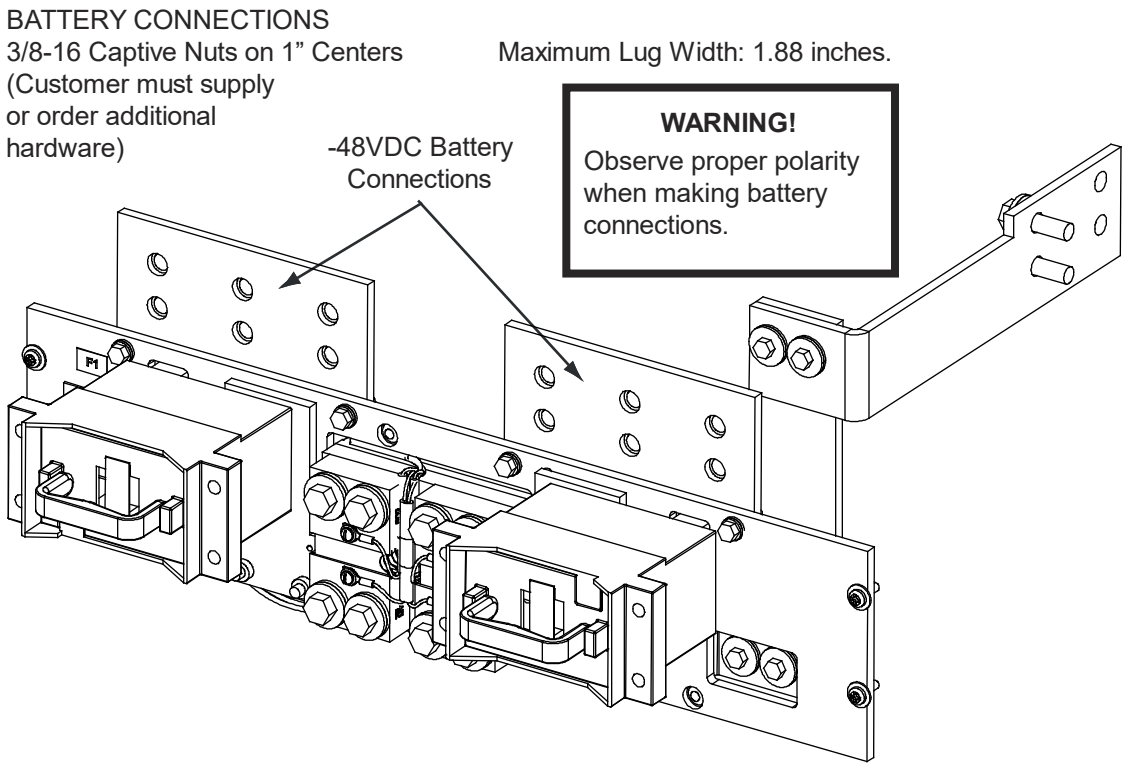
Cannot be used with List 21.

Must be installed in top row only (limit one battery disconnect panel per distribution cabinet).

Maximum lug width, 1.88 inches.

Ordering Notes

1) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) No return or load bus bars required.



List BG: Battery Disconnect Distribution Panel,
(4) TPH Fuse Battery Disconnect Positions (without Shunts) (without Return Busbar)

Features

- (4) -48 VDC Battery Disconnect Fuse Mounting Positions:
  70 A to 400 A TPH Type Fuses.
- Does NOT include shunts.
- Does NOT include a return busbar.
- 1200 A Maximum Capacity.

Restrictions

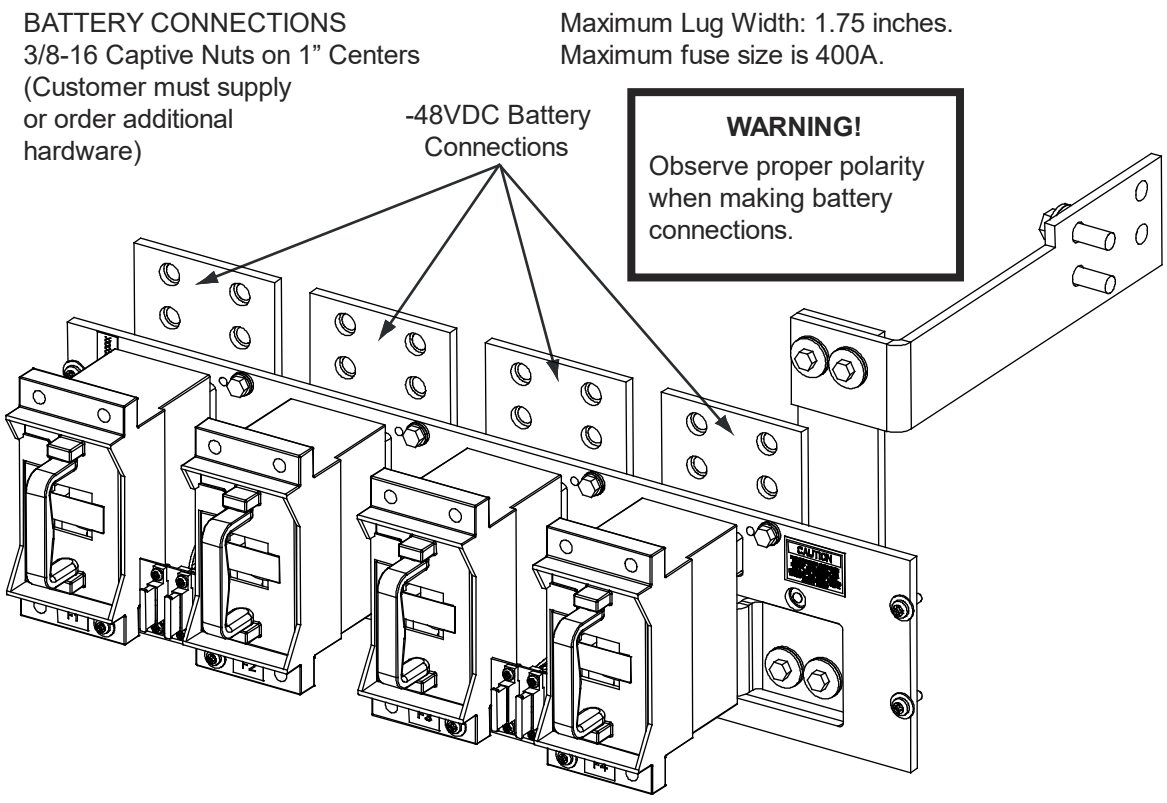
Cannot be used with List 21.

Must be installed in top row only (limit one battery disconnect panel per distribution cabinet).

Maximum lug width, 1.75 inches.

Ordering Notes

1) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) No return or load bus bars required.



List BH: Battery Disconnect Distribution Panel,
(4) TPH Fuse Battery Disconnect Positions (with Shunts) (without Return Busbar)

Features

- (4) -48 VDC Battery Disconnect Fuse Mounting Positions:
  70 A to 400 A TPH Type Fuses.
- Includes shunts, 600 A / 25 mV. Each shunt is equipped with 10' jumpers for connection to monitoring device. If the system is equipped with an SM-DU+, the leads are trimmed and connected to the SM-DU+ (internal to the distribution cabinet).
- Does NOT include a return busbar.
- 1200 A Maximum Capacity.

Restrictions

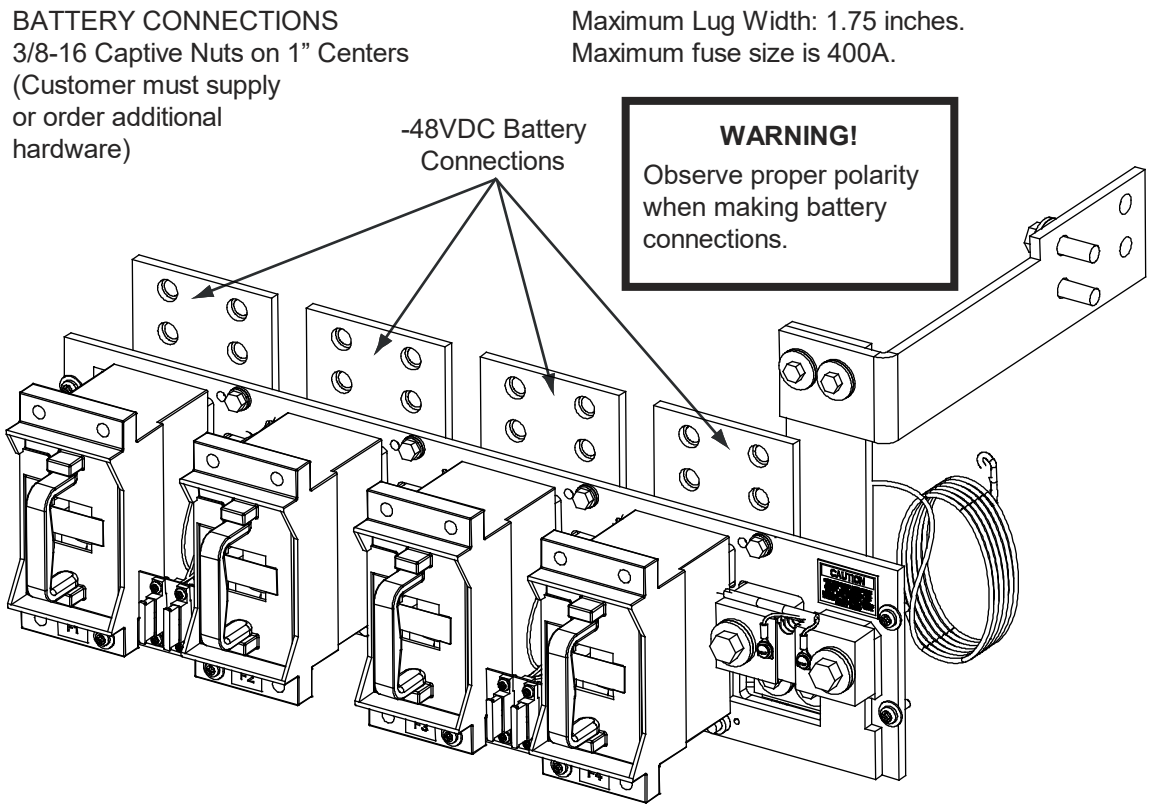
Cannot be used with List 21.

Must be installed in top row only (limit one battery disconnect panel per distribution cabinet).

Maximum lug width, 1.75 inches.

Ordering Notes

1) Order fuses as required per Table 16. Order replacement alarm fuses (1/4 A) per Table 18.
2) Order load lugs (two hole, 3/8" bolt clearance hole, 1" centers) as required for each distribution position per Table 52.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) No return or load bus bars required.



Return Bar Panel

List GA: Return Bar Panel

Features

- Return bar panel for use with distribution panels when internal load returns are required.
- 1200 A Maximum Capacity.

Restrictions

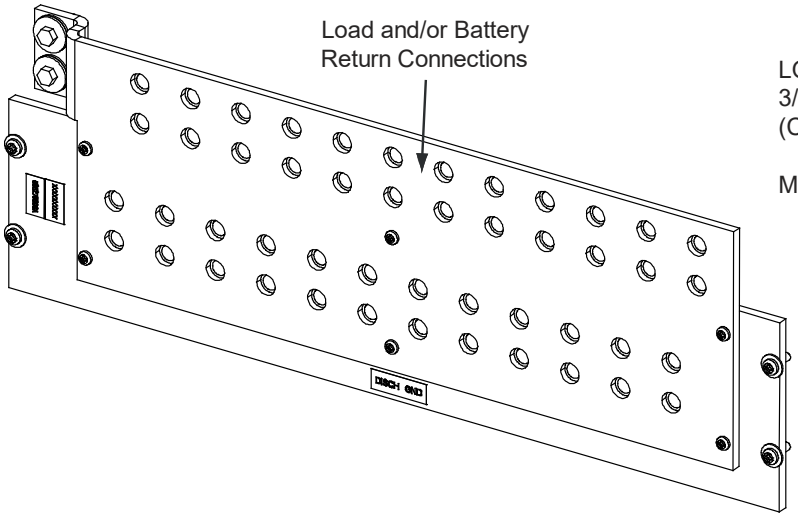
Cannot be used in a 1- row distribution cabinet.

Can be installed in any row 1-4 of a 2-, 3-, or 4-row distribution cabinet.

Maximum lug width, 1.38 inches.

Ordering Notes

1) Specify row for panel location(s).
2) To terminate load and/or battery returns within the distribution cabinet, order List GA as required.
3) Order lug hardware kit (P/N 548184) as required. Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware (bolts, flat washers, and lock washers), enough for eight (8) lug landing points.
4) Order return and load bus bar assemblies per Table 5I.



LOAD AND/OR BATTERY RETURN CONNECTIONS
3/8-16 Captive Nuts on 1” Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 1.38 inches.

Bulk Output Panel

List EA: Bulk Output Panel

Features

- Provides a bulk output panel with five (5) landing points per polarity.
- 1600 A Maximum Capacity.

Restrictions

Not available with List 21 (1-row cabinet).

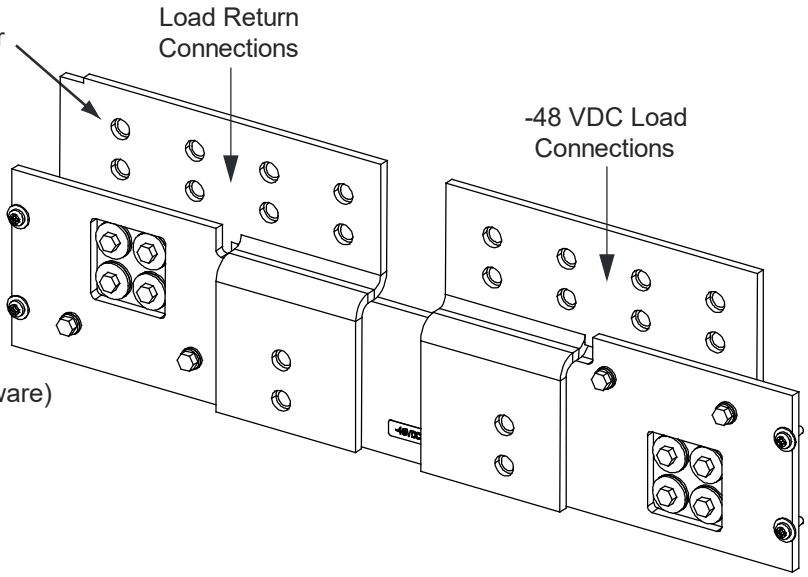
List LL is not available in any row if the system is equipped with one or more List EA, List AM, or List AP.

Maximum lug width, 2.0 inches.

Ordering Notes

1) Order as required.
2) Specify row for panel location(s).
3) Order return and load bus bar assemblies per Table 5J.

WARNING!
Observe proper polarity when making load connections.



LOAD AND LOAD RETURN CONNECTIONS
3/8-16 Captive Nuts on 1” Centers
(Customer must supply or order additional hardware)

Maximum Lug Width: 2.0 inches.

DU Panel List	DU Cabinet Size	Panel Installed in Row	Return Bar	Load Bar	
				W/O LVD	W/LVD
AC	1 Row	1	60022287 ASS'Y (548271 Bus Bar)	Included in DU Cabinet	Included in DU Cabinet
	2 Row	2	60022299 ASS'Y (548273 Bus Bar)	60022304 ASS'Y (561773 Bus Bar)	60022462 ASS'Y (561988 Bus Bar)
		1	60022287 ASS'Y (548271 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	3 Row	3	60022300 ASS'Y (548274 Bus Bar)	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		2	60022288 ASS'Y (548272 Bus Bar)	60022303 ASS'Y (561881 Bus Bar)	60022461 ASS'Y (561878 Bus Bar)
		1	60022287 ASS'Y (548271 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	4 Row	4	60022300 ASS'Y (548274 Bus Bar)	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		3	60022299 ASS'Y (548273 Bus Bar)	60022304 ASS'Y (561773 Bus Bar)	60022463 ASS'Y (561509 Bus Bar)
		2	60022288 ASS'Y (548272 Bus Bar)	60022302 ASS'Y (561772 Bus Bar)	60022460 ASS'Y (561508 Bus Bar)
		1	60022287 ASS'Y (548271 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)

Table 5A

DU Panel List	DU Cabinet Size	Panel Installed in Row	Return Bar	Load Bar	
				W/O LVD	W/LVD
AD,AE,AF,AG, AH,AJ,AK	1 Row	1	No connection. No Bus Bar Req'd.	Included in DU Cabinet	Included in DU Cabinet
	2 Row	2	No connection. No Bus Bar Req'd.	60022304 ASS'Y (561773 Bus Bar)	60022462 ASS'Y (561988 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	3 Row	3	No connection. No Bus Bar Req'd.	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		2	No connection. No Bus Bar Req'd.	60022303 ASS'Y (561881 Bus Bar)	60022461 ASS'Y (561878 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	4 Row	4	No connection. No Bus Bar Req'd.	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		3	No connection. No Bus Bar Req'd.	60022304 ASS'Y (561773 Bus Bar)	60022463 ASS'Y (561509 Bus Bar)
		2	No connection. No Bus Bar Req'd.	60022302 ASS'Y (561772 Bus Bar)	60022460 ASS'Y (561508 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)

Table 5B

DU Panel List	DU Cabinet Size	Panel Installed in Row	Return Bar	Load Bar	
				W/O LVD	W/LVD
AL,DE,DF,DG, DH,DJ	1 Row	1	548271 Bus Bar	Included in DU Cabinet	Included in DU Cabinet
	2 Row	2	562507 ASS'Y (562501 Bus Bar)	60022304 ASS'Y (561773 Bus Bar)	60022462 ASS'Y (561988 Bus Bar)
		1	562434 ASS'Y (561804 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	3 Row	3	562432 ASS'Y (561802 Bus Bar)	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		2	562433 ASS'Y (561803 Bus Bar)	60022303 ASS'Y (561881 Bus Bar)	60022461 ASS'Y (561878 Bus Bar)
		1	562434 ASS'Y (561804 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	4 Row	4	562432 ASS'Y (561802 Bus Bar)	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		3	562435 ASS'Y (562352 Bus Bar)	60022304 ASS'Y (561773 Bus Bar)	60022463 ASS'Y (561509 Bus Bar)
		2	562433 ASS'Y (561803 Bus Bar)	60022302 ASS'Y (561772 Bus Bar)	60022460 ASS'Y (561508 Bus Bar)
		1	562434 ASS'Y (561804 Bus Bar)	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)

Table 5C

DU Panel List	DU Cabinet Size	Panel Installed in Row	Return Bar	Load Bar	
				W/O LVD	W/LVD
AN	1 Row	1	No connection. No Bus Bar Req'd.	Included in DU Cabinet	Included in DU Cabinet
	2 Row	2	No connection. No Bus Bar Req'd.	60022304 ASS'Y (561773 Bus Bar)	60022462 ASS'Y (561988 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	3 Row	3	No connection. No Bus Bar Req'd.	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		2	No connection. No Bus Bar Req'd.	60022303 ASS'Y (561881 Bus Bar)	60022461 ASS'Y (561878 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)
	4 Row	4	No connection. No Bus Bar Req'd.	60022306 ASS'Y (561774 Bus Bar)	60022464 ASS'Y (561510 Bus Bar)
		3	No connection. No Bus Bar Req'd.	60022304 ASS'Y (561773 Bus Bar)	60022463 ASS'Y (561509 Bus Bar)
		2	No connection. No Bus Bar Req'd.	60022302 ASS'Y (561772 Bus Bar)	60022460 ASS'Y (561508 Bus Bar)
		1	No connection. No Bus Bar Req'd.	60022301 ASS'Y (562822 Bus Bar)	60022459 ASS'Y (548351 Bus Bar)

Table 5D

DU Panel List	DU Cabinet Size	Panel Installed in Rows	Return Bar	Load Bar	
				W/O LVD	W/LVD
AM	2 Row	2	562449 ASS'Y (562406 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available
	3 Row	3	562448 ASS'Y (5624405 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		2	No connection. No Bus Bar Req'd.	562447 ASS'Y (562404 Bus Bar)	Not Available
		2	562451 ASS'Y (562436 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available
	4 Row	4	562444 ASS'Y (5624401 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		3	No connection. No Bus Bar Req'd.	562441 ASS'Y (562398 Bus Bar)	Not Available
		3	562445 ASS'Y (5624402 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		2	No connection. No Bus Bar Req'd.	562442 ASS'Y (562399 Bus Bar)	Not Available
		2	562446 ASS'Y (562403 Bus Bar)	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available

Table 5E

DU Panel List	DU Cabinet Size	Panel Installed in	Return Bar	Load Bar	
				W/O LVD	W/LVD
AP	2 Row	2	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available
	3 Row	3	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		2	No connection. No Bus Bar Req'd.	562447 ASS'Y (562404 Bus Bar)	Not Available
		2	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available
	4 Row	4	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		3	No connection. No Bus Bar Req'd.	562441 ASS'Y (562398 Bus Bar)	Not Available
		3	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		2	No connection. No Bus Bar Req'd.	562442 ASS'Y (562399 Bus Bar)	Not Available
		2	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.	Not Available
		1	No connection. No Bus Bar Req'd.	562443 ASS'Y (562400 Bus Bar)	Not Available

Table 5F

DU Panel List	DU Cabinet Size	Panel Installed in	Return Bar	Load Bar	
				W/O LVD	W/LVD
DK	2 Row	2	562507 ASS'Y (562501 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	562434 ASS'Y (561804Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
	3 Row	3	562432 ASS'Y (561802 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		2	562433 ASS'Y (561803 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	562434 ASS'Y (561804 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
	4 Row	4	562432 ASS'Y (561802 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		3	562435 ASS'Y (562352 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		2	562433 ASS'Y (561803 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	562434 ASS'Y (561804 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.

Table 5G

DU Panel List	DU Cabinet Size	Panel Installed in	Return Bar	Load Bar	
				W/O LVD	W/LVD
BC	2 Row	2	60022299 ASS'Y (548273 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	Not Available		
	3 Row	3	60022300 ASS'Y (548274 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		2	Not Available		
		1	Not Available		
	4 Row	4	60022300 ASS'Y (548274 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		3	Not Available		
		2	Not Available		
		1	Not Available		

Table 5H

DU Panel List	DU Cabinet Size	Panel Installed in	Return Bar	Load Bar	
				W/O LVD	W/LVD
GA	2 Row	2	60022299 ASS'Y (548273 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	60022287 ASS'Y (548271 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
	3 Row	3	60022300 ASS'Y (548274 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		2	60022288 ASS'Y (548272 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	60022287 ASS'Y (548271 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
	4 Row	4	60022300 ASS'Y (548274 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		3	60022299 ASS'Y (548273 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		2	60022288 ASS'Y (548272 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.
		1	60022287 ASS'Y (548271 Bus Bar)	No connection. No Bus Bar Req'd.	No connection. No Bus Bar Req'd.

Table 5I

DU Panel List	DU Cabinet Size	Panel Installed in	Return Bar	Load Bar	
				W/O LVD	W/LVD
EA	2 Row	2	562470 ASS'Y (562454 Bus Bar)	562474 ASS'Y (562458 Bus Bar)	Not Available
		1	562472 ASS'Y (562456 Bus Bar)	562476 ASS'Y (562460 Bus Bar)	Not Available
	3 Row	3	562469 ASS'Y (562453 Bus Bar)	562473 ASS'Y (562457 Bus Bar)	Not Available
		2	562477 ASS'Y (562468 Bus Bar)	562452 ASS'Y (562864 Bus Bar)	Not Available
		1	562472 ASS'Y (562456 Bus Bar)	562476 ASS'Y (562460 Bus Bar)	Not Available
	4 Row	4	562469 ASS'Y (562453 Bus Bar)	562473 ASS'Y (562457 Bus Bar)	Not Available
		3	562470 ASS'Y (562454 Bus Bar)	562474 ASS'Y (562458 Bus Bar)	Not Available
		2	562471 ASS'Y (562455 Bus Bar)	562475 ASS'Y (562459 Bus Bar)	Not Available
		1	562472 ASS'Y (562456 Bus Bar)	562476 ASS'Y (562460 Bus Bar)	Not Available

Table 5J

Battery Disconnect Contactors

List CA: 600 A Battery Disconnect Contactor

Features

- Provides a battery disconnect contactor which is mounted within the main bay distribution cabinet.

Restrictions

Main bay only.

Must be used with List LB, MB, or both.

For use with List 21 only.

Can only use LVLD or LVBD on List 21, not both.

Ordering Notes

1) Order as required.

List CB: 1200 A Battery Disconnect Contactor

Features

- Provides a battery disconnect contactor which is mounted within the main bay distribution cabinet.

Restrictions

Main bay only.

Must be used with List LB, MB, or both.

For use with List 22, 23, or 24 only.

If used in List 23 or 24, system capacity is reduced to 1200 A.

Ordering Notes

1) Order as required.

List CC: 2000 A Battery Disconnect Contactor

Features

- Provides a battery disconnect contactor which is mounted within the main bay distribution cabinet.

Restrictions

Main bay only.

Must be used with List LB, MB, or both.

For use with List 22, 23, or 24 only.

Ordering Notes

1) Order as required.

Low Voltage Disconnect Options

List LB: Low Voltage Battery Disconnect (LVBD)

Features

- Adds Low Voltage Battery Disconnect (LVBD) to the system.
- Adds LVD Driver circuit card P/N 563696 or LVD Driver Lite circuit card P/N 547873 to the main bay distribution cabinet.

Restrictions

Must be used with List CA, CB, or CC.

Installed in main bay only.

Ordering Notes

1) Order if low voltage battery disconnect (LVBD) is required.
2) Can be combined with manual battery disconnect (List MB) if required.

List LL: Low Voltage Load Disconnect (LVLD)

Features

- Adds low voltage load disconnect (LVLD) to a distribution panel.
- Adds LVD Driver circuit card P/N 563696 (main bay) / 563718 (supplemental bay) or LVD Driver Lite circuit card P/N 547873 (main bay) / 547874 (supplemental bay) to a distribution cabinet, one per distribution cabinet.

Restrictions

Must be used with List AA through AL, AN, DA through DJ. Not available with Lists AM, AP, DK or EA.

In a List 22, List 23, List 24; the List LL Low Voltage Load Disconnect (LVLD) option cannot be installed in the field for systems that are not equipped with any LVLD's from the factory. Field replacement of factory installed LVLD contactors is still available.

Cannot use List LL in row 1 if row 1 is equipped with List DJ.

Capacity is reduced to 500 amps for any row equipped with List LL.

Ordering Notes

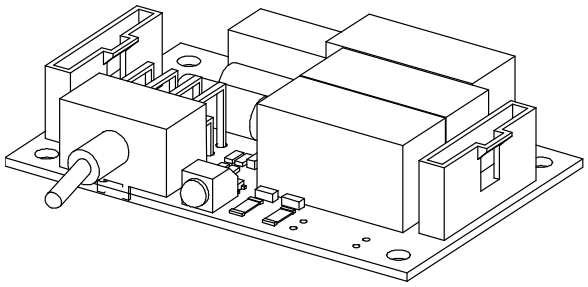
1) Order low voltage load disconnect (LVLD) per load distribution panel (one per row) as required. Specify by row.

Manual Battery Disconnect Option

List MB: Manual Battery Disconnect

Features

- Adds manual battery disconnect to the system.
- Adds manual disconnect circuit card P/N 540973 to the system.



Restrictions

Must be used with List CA, CB, or CC.

Installed in main bay only.

If this option is to be used as a Maintenance Battery Disconnect only, at least one rectifier requires to be active and providing voltage to the system for proper operation.

Ordering Notes

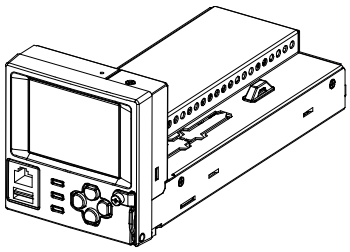
1) Order if manual battery disconnect is required.
2) Can be combined with low voltage battery disconnect (List LB) if required.

ACCESSORY DESCRIPTIONS

Controller

NCU (NetSure Control Unit) Controller, P/N 1M830DNA

Features



- Provides one (1) Model M830DNA, Spec. No. 1M830DNA system controller.
- Factory programmed with the configuration file required for the system configuration ordered.

  Note: *For custom NCU configurations, contact Vertiv.*

Restrictions

Only one (1) controller per power system is required.

Mounts in the main bay (List 1) distribution cabinet.

Cannot be installed in a List 2, List 3, List 5, List 7, or List 8 supplemental bay.

Cannot be used with DC-DC Converter Modules P/N 1C400483500e.

The system can contain only three (3) Interface Boards, (1) IB2 and (2) EIB or (2) EIB and (1) IB2.

Ordering Notes

1) Order one (1) controller (P/N 1M830DNA) per power system.
2) If the NCU Controller (1M830DNA) is ordered, order a "2nd Ethernet Port Add-On Kit" P/N 559252 if required. For retrofitting into older bays, order "2nd Ethernet Port Retrofit Kit" P/N 559251.
3) Order the optional second IB2 controller interface board as required. See Restrictions. See page 92.
4) Order the optional EIB controller extended interface board as required (see page 93).
5) Order the optional second EIB extended interface board as required. See page. See page 93.
6) Order optional SM-DU+ Shunt Monitoring (P/N 548078) for any fuse panel with shunts (Lists AF, AH, AK, BF, or BH) or any GJ/218 panels (Lists AC, AD, BC, BD, AM, or AP) that are equipped with shunted breakers. (The SM-DU+ is factory-wired to the shunts.)
7) Order optional temperature probes for ambient and battery temperature monitoring, as required. The temperature probe(s) may also be used for the battery charge temperature compensation feature and BTRM (Battery Thermal Runaway Management). Refer to "Optional Temperature Probes" for additional information.
8) Order optional SM-Temp Temperature Concentrator (Supervisory Module for Temperature Probes) as desired (shipped loose) (see page 96).

   Note: *A system can have up to (8) SM-Temp modules (each of which can accept up to eight temperature probes) that can be used in the power system for ambient and battery monitoring.*

9) Ordering an NCU for replacing an NCU or as a spare NCU.

   If the NCU is to be used as a replacement in a specific system it should be ordered with the same configuration file as the original NCU controller. This is identified by a six digit number. If the controller part number ends with a six digit number, for example, 1M830BNA559242, the configuration file number is the last six characters. If the part number does not have these characters, the configuration file number can be found on the controller nameplate – "Programmed with Configuration File ######". The controller may also have a Unique Identification Number (UIN). This number indicates that certain parameters were set at the factory to match the controller to the options selected with the power plant (such as low voltage disconnect, load and battery shunt ratings, etc.). If the controller has a UIN, the plant will have shipped with a USB drive labelled with the UIN. The UIN label may also be located near the controller slot in the system. If the controller has a UIN, provide this UIN number, along with the configuration number, when ordering so that the new controller will match that of the original controller shipped with the system. The user manual provided with the controller provides instructions for replacing and programming the controller. It is important to follow these instructions carefully. The user manual also provides instructions for saving certain controller files that are created when changes are made to the system after leaving the factory. These files can be programmed into the replacement controller so it can match the latest saved state of the original controller.

   If the NCU is being ordered as a spare part for any of a group of power plants, the same procedure can be followed. If the replacement controller's configuration does not match that of the original controller, the original files can be retrieved from the USB drive shipped with the plant, if available. If the USB drive is not available, contact the factory or technical assistance center to obtain a copy of the original configuration file (all package) so it can be programmed into the new controller.

The NCU programming files are unique to the NCU. Files from an SCU+ or ACU+ are not compatible with the NCU and MUST NOT BE loaded into an NCU.

NCU Controller 2nd Ethernet Port Kits

NCU Controller 2nd Ethernet Port Add-On Kit, P/N 559252

Features

- Provides the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

Restrictions

For use only with NCU controller, not the ACU+ controller. Factory installed in a main bay if initially ordered with the power system. Field installable only into a main bay if initially ordered with the NCU controller.

Not for use in List 100, 101, 102, 103, 203.

Ordering Notes

1) If a second Ethernet port is required, order kit P/N 559252. For field upgrade of systems originally configured with the ACU+ controller, order kit P/N 559251. The field upgrade must also include the NCU controller replacing the ACU+ controller.

NCU Controller 2nd Ethernet Port Retrofit Kit, P/N 559251

Features

- Provides a complete control module assembly that allows an IB4 board to be connected to the NCU in an older main bay.
- Provides the IB4 board with a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to your Local Area Network (LAN).

Restrictions

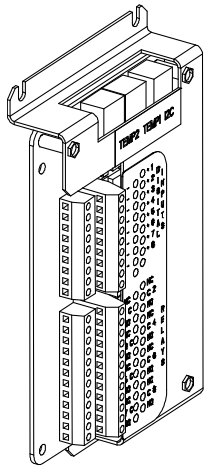
Field installable only into a main bay if initially ordered with the ACU+ controller. The field upgrade must also include the NCU controller replacing the ACU+ controller.

Not for use in List 100, 101, 102, 103, 203.

Ordering Notes

1) For field upgrade of systems originally configured with the ACU+ controller, order kit P/N 559251. The field upgrade must also include the NCU controller replacing the ACU+ controller.

Optional Second IB2 (Controller Interface Board), P/N 555286 or MA4C5U31



Features

- Provides connections for up to two (2) temperature probes.
- Provides connections for the eight (8) programmable form C- relay outputs located on the board.
- Provides connections for the eight (8) programmable binary digital inputs located on the board.

Note: *An IB2 (Controller Interface Board) is factory provided with the system. The IB2 provides eight (8) programmable form C- relay outputs, eight (8) programmable binary digital inputs and two (2) temperature inputs.*

Restrictions

A second IB2 or EIB controller interface board requires an NCU not an ACU+. The system can contain only three (3) interface boards, (1) IB2 and (2) EIB or (2) IB2 and (1) EIB.

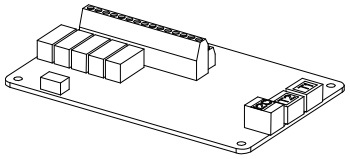
Must be installed in the main bay.

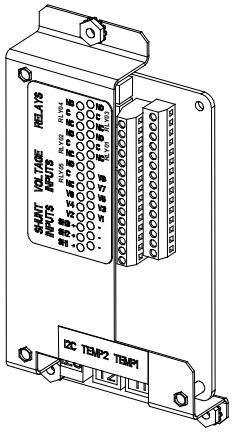
Ordering Notes

1) Order a second optional IB2 Interface Board Assembly (P/N 555286 for List 1 or MA4C5U31 for Lists 100, 101, 102, 103 and 203) per system as required. Also, order up to two (2) additional temperature probes, as desired.

2) Refer to “In-Line Fuse and Resistor Pigtail Kits” on page 93 for in-line resistor pigtails for use with shunt inputs and in-line fuse for sure with battery midpoint inputs.

Optional EIB-1 and EIB-2 (Controller Extended Interface Board), P/N 548120 and MA455U41





Features

- Provides connections for up to two (2) temperature probes.
- Provides connections for the five (5) programmable form C- relay outputs located on the board.
- Provides connections for the three (3) shunt inputs located on the board. Shunts must be installed in the hot (-48V) bus.
- Provides connections for the eight (8) battery midpoint inputs located on the board.

Restrictions

The system can contain only three (3) interface boards, (1) IB2 and (2) EIB or (2) IB2 and (1) EIB.

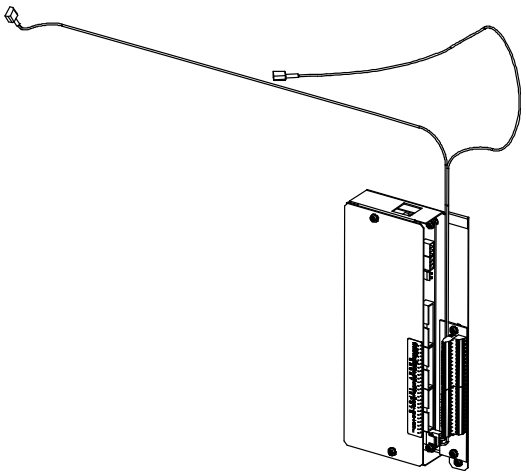
Note: *A second IB2 or EIB controller interface board requires an NCU not an ACU+.*

The Optional Second EIB must be installed in the main bay.

Ordering Notes

1) Order by P/N 548120 (all Lists except List 100, 101, 102, 103, 203) or P/N MA455U41 (List 100, 101, 102, 103, 203) as required. Must be ordered if ordering converters. Also order up to two (2) additional temperature probes, as desired. See “Optional Temperature Probes”.
2) Refer to “In-Line Fuse and Resistor Pigtail Kits” on page 93 for in-line resistor pigtails for use with shunt inputs and in-line fuse pigtails for use with battery midpoint inputs.

Optional SM-DU+ Shunt Monitoring, P/N 548078



Features

- Provides twenty-five (25) shunt monitoring inputs. Shunts must be installed in the hot (-48V) bus.

Ordering Notes

1) Order optional SM-DU+ Shunt Monitoring for any fuse panel with shunts (Lists AF, AH, AK, BF, or BH) or any GJ/218 panels (Lists AC, AD, BC, BD, AM, or AP) that are equipped with shunted breakers. (The SM-DU+ is factory-wired to the shunts.) Order by P/N 548078 as required.
2) Refer to “In-Line Fuse and Resistor Pigtail Kits” on page 93 for in-line resistor pigtails for use with shunt inputs and in-line fuse pigtails for use with battery midpoint inputs.

In-Line Fuse and Resistor Pigtail Kits

In-line fuse kits should be used for connecting to battery or bus potentials for use with the digital inputs on the IB2 Interface Board and the battery midpoint/block voltage inputs on the EIB Extended Interface Board. In-line resistor kits should be used for connecting to shunts for use with the EIB Extended Interface Board and SMDU+ Shunt Interface Board.

1 A In-Line Fuse Pigtail Kit, P/N 431300200

Features

- In-line fuse pigtail kit with 3/8” ring lug.

Ordering Notes

1) Order Kit P/N 431300200, as required.

1 A In-Line Fuse Pigtail Kit, P/N 431300300

Features

- In-line fuse pigtail kit with 5/16" ring lug.

Ordering Notes

1) Order Kit P/N 431300300, as required.

1 A In-Line Fuse Pigtail Kit, P/N 535135

Features

- In-line fuse pigtail kit with a splice connector, 3/8" ring lug, and 1/4" ring lug.

Ordering Notes

1) Order Kit P/N 535135, as required.

49.9 Ohm In-Line Resistor Pigtail Kit, P/N 424227900

Features

- In-line resistor pigtail kit with 3/8" ring lug.

Ordering Notes

1) Order Kit P/N 424227900, as required.

49.9 Ohm In-Line Resistor Pigtail Kit, P/N 424228000

Features

- In-line resistor pigtail kit with a splice connector.

Ordering Notes

1) Order Kit P/N 424228000, as required.

49.9 Ohm In-Line Resistor Pigtail Kit, P/N 424228100

Features

- In-line resistor pigtail kit with 5/16" ring lug.

Ordering Notes

1) Order Kit P/N 424228100, as required.

Optional Temperature Probes

Features

- Up to two (2) temperature probes can be connected to each IB2 (Controller Interface Board). Up to two (2) temperature probes can be connected to each EIB (Controller Extended Interface Board). Up to two (2) temperature probes can be connected to the System Interface Board (List 100, 101, 102, 103, and 203 only). Any combination of the temperature probes can be programmed to monitor ambient temperature and/or battery temperature. A temperature probe set to monitor battery temperature can also be used for the rectifier battery charge temperature compensation feature, or the battery charge temperature compensation feature can be programmed to use the average or highest value of all battery temperature probes. The battery charge temperature compensation feature allows the controller to automatically increase or decrease the output voltage of the system to maintain battery float current as battery temperature decreases or increases, respectively. Battery life can be extended when an optimum charge voltage to the battery with respect to temperature is maintained. A temperature probe set to monitor battery temperature can also be used for the BTRM (Battery Thermal Runaway Management) feature. The BTRM feature lowers output voltage when a high temperature condition exists to control against battery thermal runaway.
- The temperature sensor end of the probe contains a tab with a 5/16" clearance hole for mounting.
- Temperature probes can also be used with the optional SM-Temp Temperature Concentrator.

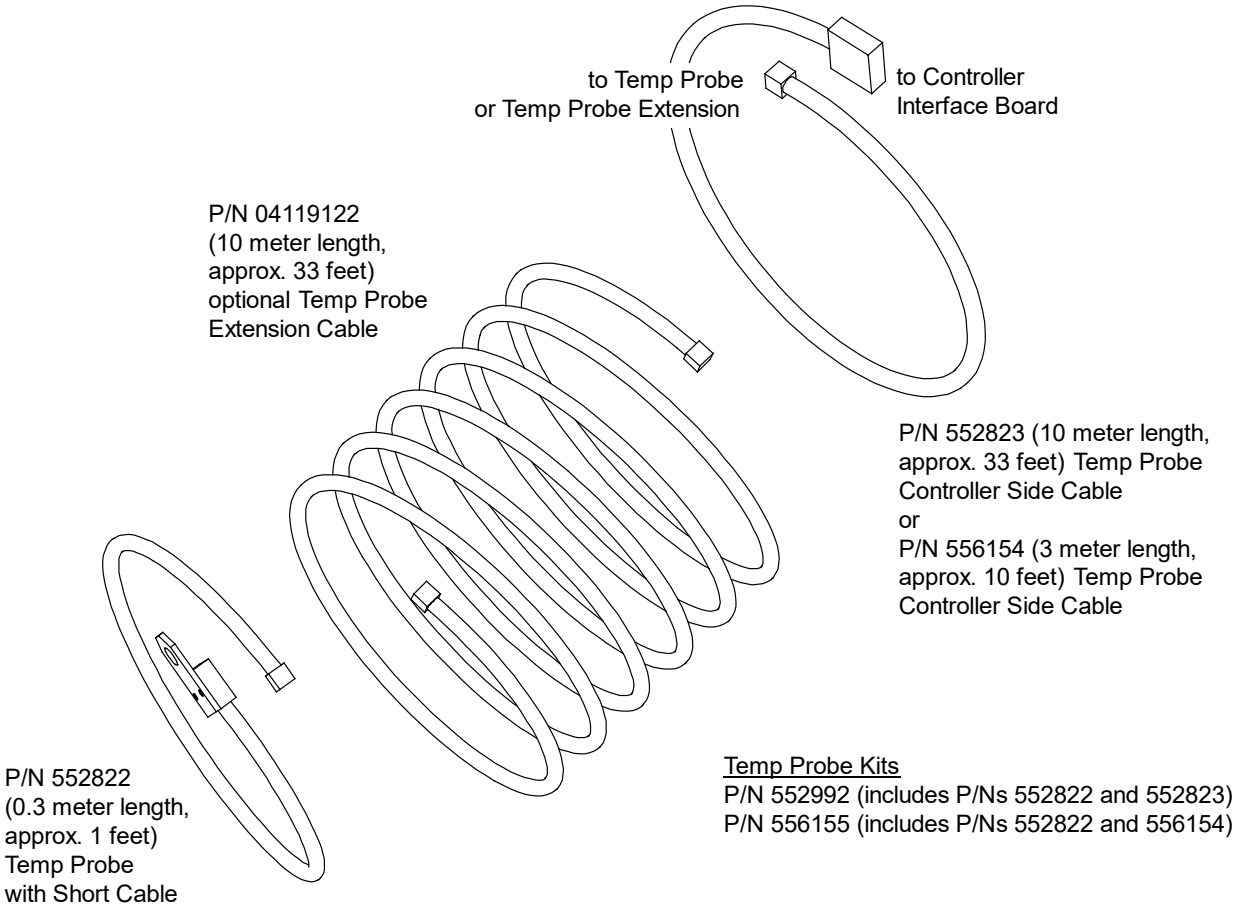
Restrictions

A temperature probe programmed to monitor battery temperature should be mounted on the negative post of a battery cell to sense battery temperature. A temperature probe used for battery charge temperature compensation or BTRM (Battery Thermal Runaway Management) should also be mounted on the negative post of a battery cell. A temperature probe

programmed to monitor ambient temperature should be mounted in a convenient location, away from direct sources of heat or cold.

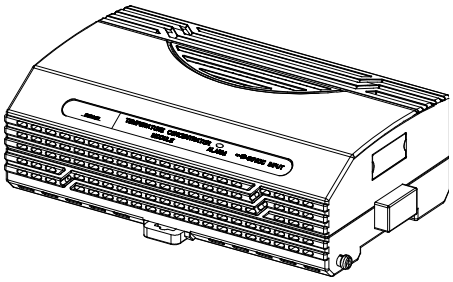
Ordering Notes

1) Order temperature probes as required. Note that each temperature probe consists of two or three pieces which plug together to make a complete probe (see the following illustration). For a complete temperature probe, order one (1) P/N 552992 (10.3 meters) or one (1) P/N 556155 (3.3 meters). If additional length is required, order temperature probe extension cable P/N 04119122 (10 meters).
2) If more probes are desired, order one or more SM-Temp Temperature Concentrator, P/N 547490. See SM-Temp Temperature Concentrator.



Optional SM-Temp Temperature Concentrator, P/N 547490

Features



- Allows for multiple temperature probes to be used for ambient temperature monitoring, battery temperature monitoring, temperature compensation, and/or BTRM (Battery Thermal Runaway Management).
- Provides (8) temperature probe inputs per SM-Temp unit.
- Can cascade up to (8) SM-Temp units, connecting up to sixty-four (64) temperature probes.
- The SM-Temp Concentrator is connected at the end of the Controller's CAN Bus. Via the CAN Bus, the controller reads each temperature probe from each SM-Temp Concentrator.
- Refer to the SM-Temp Temperature Concentrator Instructions (UM547490) for more information.

Restrictions

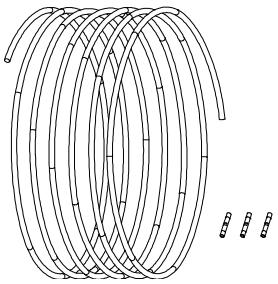
Requires ACU+ version 3.02 or later when SM-Temp is connected into the ACU+ CAN Bus.

Ordering Notes

1) Order SM-Temp Temperature Concentrator, P/N 547490, as required.
2) Order up to (8) temperature probes for each concentrator. See "Optional Temperature Probe" above.
3) Order one (1) SM-Temp CAN Bus Interface Cable, P/N 562868, to connect the SM-Temp into the controller's CAN bus.
4) Order SM-Temp jumpers (P/N 552888) to interconnect SM-Temp units, as required. See "SM-Temp Jumpers, P/N 552888" on page 96.

SM-Temp Jumpers, P/N 552888

Features



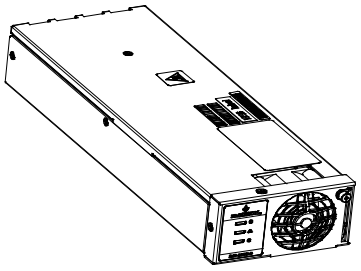
- Provides 20' of 18 AWG solid red / black twisted pair cable and three (3) wire splices for connecting the CAN bus of multiple SM-Temp modules together.

Ordering Notes

1) Order P/N 552888 as required.

Rectifiers

Rectifier Module, P/N 1R483500e3



Features

- Provides one (1) Model R48-3500e3, Spec. No. 1R483500e3, 3500 watt / -48 volt rectifier module.
- Refer to the Rectifier Instructions (UM1R483500e3) for more information.

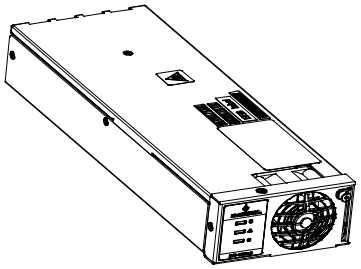
Restrictions

For use in Spec. No. 588705400 module mounting assembly.

Ordering Notes

1) Order by P/N 1R483500e3 as required. Each Spec. No. 588705400 module mounting assembly holds up to six (6) rectifier modules.

Rectifier Module, P/N 1R482000e3



Features

- Provides one (1) Model R48-2000e3, Spec. No. 1R482000e3, 2000 watt / -48 volt rectifier module.
- Refer to the Rectifier Instructions (UM1R482000e3) for more information.

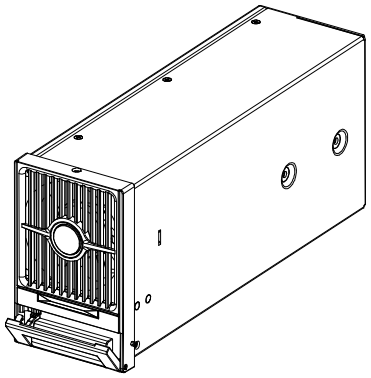
Restrictions

For use in Spec. No. 588705300 module mounting assembly.

Ordering Notes

1) Order by P/N 1R482000e3 as required. Each Spec. No. 588705300 module mounting assembly holds up to six (6) rectifier modules.

Rectifier Module, P/N 1R483500e



Features

- Provides one (1) Model R48-3500e, Spec. No. 1R483500e, 3500 watt / -48 volt rectifier module.
- Refer to the Rectifier Instructions (UM1R483500e) for more information.

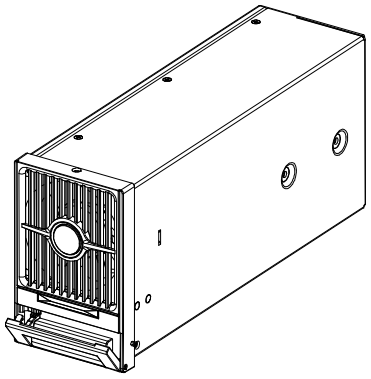
Restrictions

For use in Spec. No. 588705000 module mounting assembly Lists 21, 22, 31, 32, 33.

Ordering Notes

1) Order by P/N 1R483500e as required. Each Spec. No. 588705000 module mounting assembly holds up to six (6) rectifier modules.

Rectifier Module, P/N 1R484000e



Features

- Provides one (1) Model R48-4000e, Spec. No. 1R484000e, 4000 watt / -48 volt rectifier module.
- Refer to the Rectifier Instructions (UM1R483500e) for more information.

Restrictions

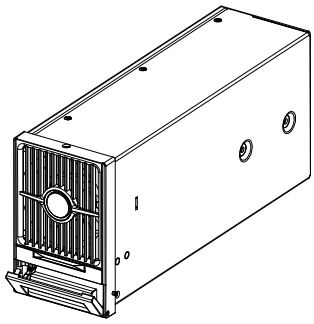
For use in Spec. No. 588705500 module mounting assembly Lists 01, 02, 03, 04, 05.

Ordering Notes

1) Order by P/N 1R484000e as required. Each Spec. No. 588705500 module mounting assembly holds up to six (6) rectifier modules.

Converters

DC-DC Converter Module, P/N 1C400483500e



Features

- Provides one (1) Model C400/48-3500e, Spec. No. 1C400483500e, 3500 watt / 400 V to -48 V DC-DC converter module.
- Refer to the Converter Instructions (UM1C400483500e) for more information.

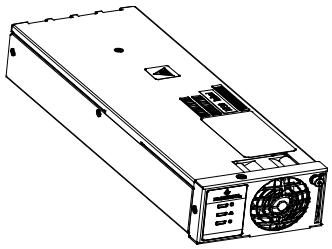
Restrictions

For use in Spec. No. 588705000 module mounting assembly Lists 40, 41, 42.

Ordering Notes

1) Order by P/N 1C400483500e as required. Each Spec. No. 588705000 module mounting assembly holds up to six (6) converter modules.

DC-DC Converter Module, P/N 1C48241500



Features

- Provides one (1) Model C48/24-1500, Spec. No. 1C48241500, 1500 watt / -48 V to +24 V converter module.
- Refer to the Converter Instructions (UM1C48241500) for more information.

Restrictions

For use in Spec. No. 588705300 module mounting assembly.

Converters can be installed in main bay only.

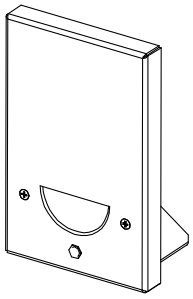
Must be used with List 60.

Ordering Notes

1) Order by P/N 1C48241500 as required. Each Spec. No. 588705300 module mounting assembly holds up to three (3) converter modules (far right three mounting positions as viewed from the front).

Module Mounting Position Blank Cover Panels

Module Mounting Position Blank Cover Panel, P/N 21140440



Features

- Covers one (1) unused module mounting position.

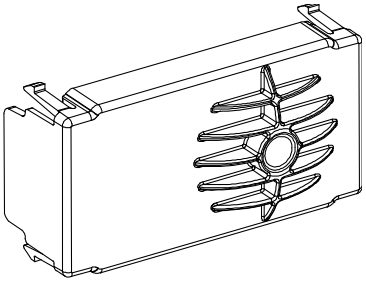
Restrictions

For use in Spec. No. 588705000 and 588705500 module mounting assembly.

Ordering Notes

1) Order by P/N 21140440 as required. Order a module mounting position blank cover panel for each empty module mounting position in the system, as desired.

Module Mounting Position Blank Cover Panel, P/N SXA1100035/1



Features

- Covers one (1) unused module mounting position.

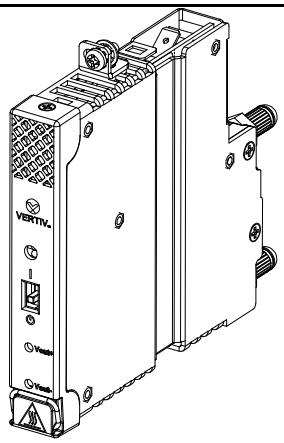
Restrictions

For use in Spec. No. 588705300 and 588705400 module mounting assemblies.

Ordering Notes

1) Order by P/N SXA1100035/1 as required. Order a module mounting position blank cover panel for each empty module mounting position in the system, as desired.

Optional eSure™ Power Extend Converter



Features

- The eSure Power Extend Converter (Model C48/58-1000B, Spec. No. 1C48581000B) is a compact DC/DC converter unit which offers efficient power conversion. It operates from a nominal -48 VDC source to provide regulated -58 VDC to the load for continuous operation to end of battery discharge. Refer to UM565050 and IM565391 for further information.

Restrictions

Only install the power extend converter into a -48 VDC distribution position. Non-repairable damage will occur if the power extend converter is plugged into a +24 VDC distribution position.

Ordering Notes

1) To add an eSure Power Extend Converter to a 582127000 List AA (24-position bullet) distribution panel or List DA, DB, DC, DD (21-position bullet dual voltage) distribution panel or 582127000 List DE, DF, DG, DH, DJ, DK (26-position bullet dual voltage) distribution panel; refer to the material list in the eSure Power Extend Converter Calculator (link provided below).
2) To add an eSure Power Extend Converter to a 582127000, 58212700100, 582127000101, 582127000102, 582127000103, 582127000203 List AL (26-position bullet) distribution panel; refer to the material list in the eSure Power Extend Converter Calculator (link provided below).

https://www.vertiv.com/en-us/products-catalog/critical-power/dc-power-systems/esure-power-extend-converter-c4858-1000/#/downloads

Module Mounting Assembly

588705000 List 21:
Rectifier Module Mounting Assembly, 208 VAC / 240 VAC / 277 VAC Input, No AC Input Terminal Blocks (Factory Input Wiring Only)

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500021 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- NO terminal blocks provided for AC input connections.

Restrictions

Module mounting assembly inputs MUST be factory wired into power system. For use with Lists 40, 41, 42 and 43 front access AC input termination assemblies.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required per P/N 1R483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 22:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC Input, Single-Phase, AC Input Line Cords

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500022 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with individual rectifier module single-phase AC input feeds (one AC input branch circuit per rectifier module, six AC input branch circuits per module mounting assembly).
- Factory wired AC input line cords equipped with NEMA L6-30P twist-lock plugs provided. (Six per shelf, each 7.5' long, 12/3 AWG.)

Ordering Notes

1) Order as required.
2) Order rectifier modules as required per P/N 1R483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 31:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC, 277 VAC Input, Single-Phase, Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500031 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with individual rectifier module single-phase AC input feeds (one AC input branch circuit per rectifier module, six AC input branch circuits per module mounting assembly).
- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required per P/N 1R483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 32:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC Input, Three-Phase , Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500032 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to line, evenly distributed across the phases.
- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier modules in groups of three per P/N 1R483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 33:
Rectifier Module Mounting Assembly, 277/480 VAC Input, Three-Phase, Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500033 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to neutral, evenly distributed across the phases.
- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier module P/N 1R483500e only.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 40:
Converter Module Mounting Assembly, 400V DC Input, No DC Input Terminal Blocks (Factory Input Wiring Only)

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500040 module mounting assembly.
- This module mounting assembly holds up to six (6) converter modules.
- NO terminal blocks provided for DC input connections.

Restrictions

Module mounting assembly inputs MUST be factory wired into power system. For use with Lists 45, 46 and 47 front access DC input termination assemblies.

Ordering Notes

1) Order as required.
2) Order converter modules as required per P/N 1C400483500e.

3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 41:
Converter Module Mounting Assembly, 400V DC Input, Rear Mount DC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500041 module mounting assembly.
- This module mounting assembly holds up to six (6) converter modules.
- This module mounting assembly is equipped with individual converter module DC input feeds (one DC input branch circuit per converter module, six DC input branch circuits per module mounting assembly).
- Terminal blocks provided for DC input connections.

Restrictions

DC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order converter modules as required per P/N 1C400483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705000 List 42:
Converter Module Mounting Assembly, 400V DC Input, Rear Mount DC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870500042 module mounting assembly.
- This module mounting assembly holds up to six (6) converter modules.
- This module mounting assembly is equipped with two (2) DC input circuits. Each input circuit powers three (3) converter modules.
- Terminal blocks provided for DC input connections.

Restrictions

DC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order converter modules as required per P/N 1C400483500e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705300 List 01:
Module Mounting Assembly Configured with Rectifier and -48 VDC to +24 VDC Converter Module Mounting Positions, 208 VAC, 240 VAC Input, No Rear Covers, and Factory Input Wiring Only

Features

- Provides one (1) Model PSS48/250-23C, Spec. No. 58870530001 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.
- No output busbar cover assembly and input cover assembly provided. Rear covers will be provided as part of the factory configured system.

Restrictions

Module mounting assembly inputs MUST be factory wired into power system. For use with Lists 40, 41, and 42 front access AC input termination assemblies.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R482000e3.

3) Order converter modules as required, P/N 1C48241500.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705300 List 03:
Module Mounting Assembly Configured with Rectifier and -48 VDC to +24 VDC Converter Module Mounting Positions, 208 VAC, 240 VAC Input, Single Phase, Rear Covers, and Rear Mount Molex Input Connectors

Features

- Provides one (1) Model PSS48/250-23C, Spec. No. 58870530003 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.
- Output busbar and input cover assemblies provided. Input cover assembly is provided with rear input Molex connectors factory wired to the rectifier mounting positions.

  Note: *Three (3) rectifier input Molex connectors furnished and factory wired to provide three (3) rectifier input feeds to the assembly. First rectifier input feeds rectifier mounting positions #1 and #2. Second rectifier input feeds rectifier mounting positions #3 and #4. Third rectifier input feeds rectifier mounting positions #5 and #6.*

Restrictions

AC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R482000e3.
3) Order converter modules as required, P/N 1C48241500.
4) Order rectifier AC input cable assemblies per “588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies” on page 107 or order rectifier AC input line cords per “588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords” on page 108.
5) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705400 List 01:
Rectifier Module Mounting Assembly, 208 VAC / 240 VAC / 277 VAC Input, No Rear Covers, and Factory Input Wiring Only

Features

- Provides one (1) Model PSS4850-1/23, Spec. No. 58870540001 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.
- No output busbar cover assembly and input cover assembly provided. Rear covers will be provided as part of the factory configured system.

Restrictions

Module mounting assembly inputs MUST be factory wired into power system. For use with Lists 40, 41, 42 and 43 front access AC input termination assemblies.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R483500e3.
3) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705400 List 02:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC, 277 VAC Input, Single-Phase, Rear Covers, and Rear Mount Molex Input Connectors

Features

- Provides one (1) Model PSS4850-1/23, Spec. No. 58870540002 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.

- This module mounting assembly is equipped with individual rectifier module single-phase AC input feeds (one AC input branch circuit per rectifier module, six AC input branch circuits per module mounting assembly).
- Output busbar and input cover assemblies provided. Input cover assembly is provided with rear input Molex connectors factory wired to the rectifier mounting positions.

Restrictions

AC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R483500e3.
3) Order Rectifier AC Input Cable Assemblies per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107 or order Rectifier AC Input Line Cords per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705400 List 03:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC Input, Three-Phase, Rear Covers, and Rear Mount Molex Input Connectors

Features

- Provides one (1) Model PSS4850-1/23, Spec. No. 58870540003 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to line, evenly distributed across the phases.
- Output busbar and input cover assemblies provided. Input cover assembly is provided with rear input Molex connectors factory wired to the rectifier mounting positions.

Restrictions

AC inputs MUST be wired directly to the shelf.

To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R483500e3.
3) Order Rectifier AC Input Line Cords per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705400 List 04:
Rectifier Module Mounting Assembly, 277/480 VAC Input, Three-Phase, Rear Covers, and Rear Mount Molex Input Connectors

Features

- Provides one (1) Model PSS4850-1/23, Spec. No. 58870540004 module mounting assembly.
- This module mounting assembly holds up to six (6) modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to neutral, evenly distributed across the phases.
- Output busbar and input cover assemblies provided. Input cover assembly is provided with rear input Molex connectors factory wired to the rectifier mounting positions.

Restrictions

AC inputs MUST be wired directly to the shelf.

To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier modules as required, P/N 1R483500e3.
3) Order Rectifier AC Input Line Cords per "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108.
4) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

588705500 List 01:
Rectifier Module Mounting Assembly, 208 VAC / 240 VAC / 277 VAC Input, No AC Input Terminal Blocks (Factory Input Wiring Only)

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870550001 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- NO terminal blocks provided for AC input connections.

Restrictions

Module mounting assembly inputs MUST be factory wired into power system. For use with Lists 40, 41, 42 and 43 front access AC input termination assemblies.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required per P/N 1R484000e.
4) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705500 List 02:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC Input, Single-Phase, AC Input Line Cords

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870550002 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with individual rectifier module single-phase AC input feeds (one AC input branch circuit per rectifier module, six AC input branch circuits per module mounting assembly).
- Factory wired AC input line cords equipped with NEMA L6-30P twist-lock plugs provided. (Six per shelf, each 7.5' long, 12/3 AWG.)

Ordering Notes

4) Order as required.
5) Order rectifier modules as required per P/N 1R484000e.
6) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705500 List 03:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC, 277 VAC Input, Single-Phase, Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870550003 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with individual rectifier module single-phase AC input feeds (one AC input branch circuit per rectifier module, six AC input branch circuits per module mounting assembly).

- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

Ordering Notes

1) Order as required.
2) Order rectifier modules as required per P/N 1R484000e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705500 List 04:
Rectifier Module Mounting Assembly, 208 VAC, 240 VAC Input, Three-Phase , Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870550004 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to line, evenly distributed across the phases.
- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier modules in groups of three per P/N 1R484000e.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705500 List 05:
Rectifier Module Mounting Assembly, 277/480 VAC Input, Three-Phase, Rear Mount AC Input Terminal Blocks

Features

- Provides one (1) Model PSS4850-23GV, Spec. No. 58870550005 module mounting assembly.
- This module mounting assembly holds up to six (6) rectifier modules.
- This module mounting assembly is equipped with two (2) three-phase AC input circuits. Each input circuit powers three (3) single-phase rectifier modules, each connected from line to neutral, evenly distributed across the phases.
- Terminal blocks provided for AC input connections.

Restrictions

AC inputs MUST be wired directly to the shelf.

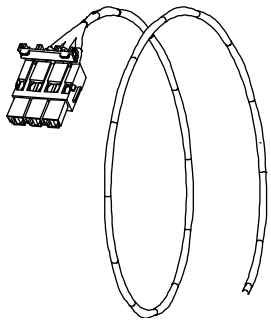
To maintain phase balance, rectifier modules should be installed in groups of three (all three on left and/or all three on right).

Ordering Notes

1) Order as required.
2) Order rectifier module P/N 1R484000e only.
3) Order a module mounting position blank cover panel, P/N 21140440, for each empty module mounting position in the system, as desired.

588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies

Rectifier AC Input Cable Assembly, P/N 535232



Features

- One (1) 30" long, 8 AWG (2L+PE), input cable assembly that is terminated on one end with a Molex plug which mates with the input receptacle on a module mounting assembly, and not terminated on the remaining end.

Restrictions

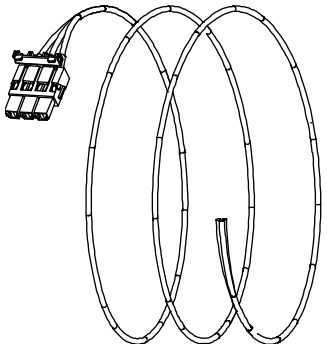
For use with 588705300 List 03 and 588705400 List 02.

Rated for 30 A.

Ordering Notes

1) Order input cable assemblies as required.

Rectifier AC Input Cable Assembly, P/N 547898



Features

- One (1) 6' long, 8 AWG (2L+PE), input cable assembly that is terminated on one end with a Molex plug which mates with the input receptacle on a module mounting assembly, and not terminated on the remaining end.

Restrictions

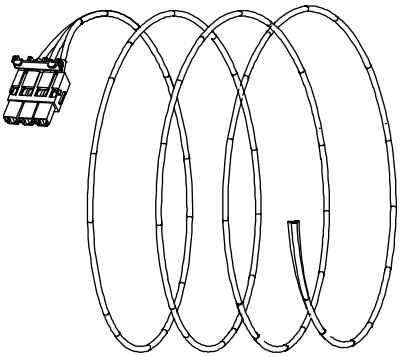
For use with 588705300 List 03 and 588705400 List 02.

Rated for 30 A.

Ordering Notes

1) Order input cable assemblies as required.

Rectifier AC Input Cable Assembly, P/N 553202



Features

- One (1) 12' long, 8 AWG (2L+PE), AC input cable assembly that is terminated on one end with a Molex plug which mates with the input receptacle on a module mounting assembly, and not terminated on the remaining end.

Restrictions

For use with 588705300 List 03 and 588705400 List 02.

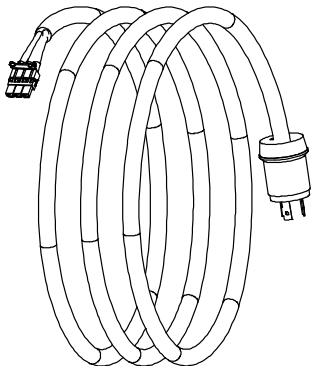
Rated for 30 A.

Ordering Notes

1) Order input cable assemblies as required.

588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords

Rectifier AC Input Line Cord, P/N 540946



Features

- One (1) 14’ long, 8 AWG (2L+PE), AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on a module mounting assembly, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

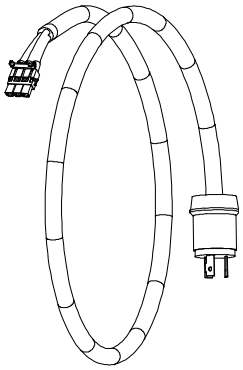
For use with 588705300 List 03 and 588705400 List 02.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC). (Size external overcurrent protection per plug rating. Refer to American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). For operation in countries where the NEC is not recognized, follow applicable codes.

Ordering Notes

1) Order AC input line cords as required.

Rectifier AC Input Line Cord, P/N 545616



Features

- One (1) 6’ long, 8 AWG (2L+PE), AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on a module mounting assembly, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

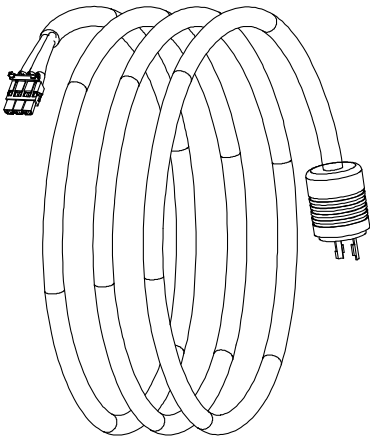
For use with 588705300 List 03 and 588705400 List 02.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC). (Size external overcurrent protection per plug rating. Refer to American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). For operation in countries where the NEC is not recognized, follow applicable codes.

Ordering Notes

1) Order AC input line cords as required.

Rectifier AC Input Line Cord, P/N 545252



Features

- One (1) 14’ long, 8 AWG (L+N+PE), AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on a module mounting assembly, and terminated on the remaining end with a NEMA L5-30P twist-lock plug.

Restrictions

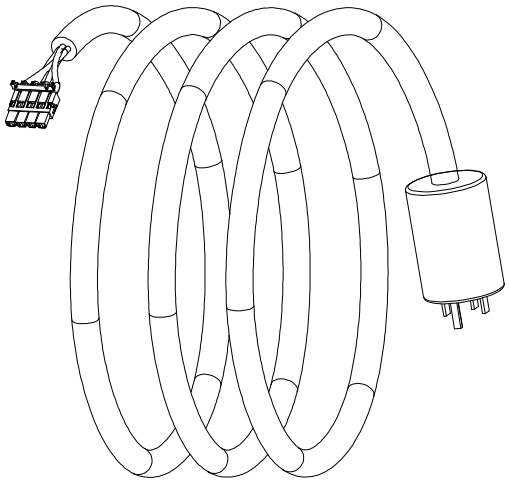
For use with 588705300 List 03.

For 120 VAC only (rated for 30 A at 120 VAC). (Size external overcurrent protection per plug rating. Refer to American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). For operation in countries where the NEC is not recognized, follow applicable codes.

Ordering Notes

1) Order AC input line cords as required.

Rectifier AC Input Line Cord, P/N 562046



Features

- One (1) 13' long, 8 AWG (3L+PE), AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on a module mounting assembly, and terminated on the remaining end with a NEMA 15-50P plug.

Restrictions

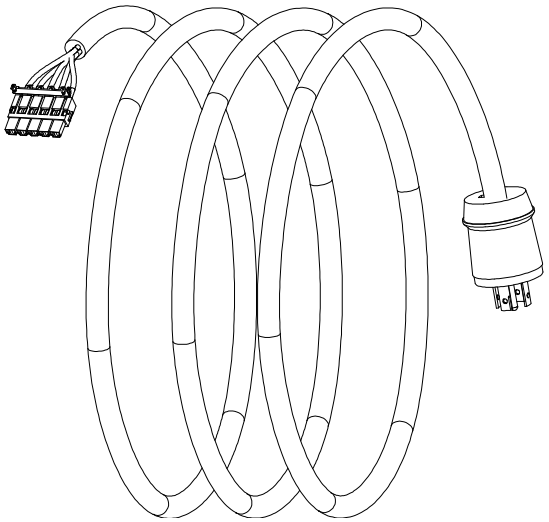
For use with 588705400 List 03.

For 208 VAC / 240 VAC only (rated for 50 A at 208 VAC / 240 VAC). (Size external overcurrent protection per plug rating. Refer to American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). For operation in countries where the NEC is not recognized, follow applicable codes.

Ordering Notes

1) Order AC input line cords as required.

Rectifier AC Input Line Cord, P/N 562045



Features

- One (1) 13' long, 12 AWG (3L+N+PE), AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on a module mounting assembly, and terminated on the remaining end with a NEMA L22-20P twist-lock plug.

Restrictions

For use with 588705400 List 04.

For 277/480 VAC (3L+N+PE) only (rated for 20 A at 277/480 VAC). (Size external overcurrent protection per plug rating. Refer to American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). For operation in countries where the NEC is not recognized, follow applicable codes.

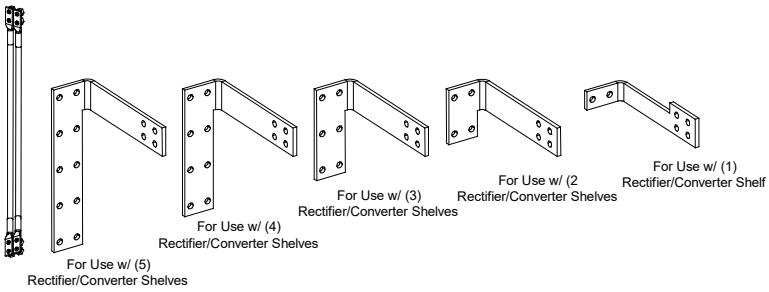
Ordering Notes

1) Order AC input line cords as required.

Converter Interface Components (for Spec. No. 588705300), For System Mounted in a Relay Rack Only

Features

- Provides components to interface converters in Spec. No. 588705300 module mounting assemblies to the distribution cabinet.



Restrictions

Not for use with systems mounted in an enclosure.

Must be used in systems equipped with Spec. No. 588705300 module mounting assemblies.

Must be installed in main bay **only**.

Must be used in conjunction with a dual voltage bus distribution panel.

Ordering Notes

1) Order the components listed in Table 5 to add converter capability to a system in the field that was not originally ordered with the List 60 Converter Option.
2) Order up to three (3) converter modules, P/N 1C48241500, per module mounting assembly.
3) Order a module mounting position blank cover panel, P/N SXA1100035/1, for each empty module mounting position in the system, as desired.

Component	Part Number	Quantity
Converter Jumper	556228	Order one (1) per rectifier/converter assembly in the system, up to a maximum of four (4).
+24 V Busbar	555264 when there are five (5) rectifier/converter assemblies in the system. 555730 when there are four (4) rectifier/converter assemblies in the system. 555733 when there are three (3) rectifier/converter assemblies in the system. 555736 when there are two (2) rectifier/converter assemblies in the system. 555739 when there are one (1) rectifier/converter assemblies in the system.	Order one (1) from the part numbers listed.
1/4-20 x 3/4” Bolt	227640400	Order two (2) per converter jumper ordered.
1/4-20 x 1” Bolt	227640600	Order two (2) per converter jumper ordered.
1/4” Flat Washer	214110100	Order six (6) per converter jumper ordered.
1/4” Lock Washer	215111100	Order four (4) per converter jumper ordered.
1/4-20 Nut	228557100	Order two (2) per converter jumper ordered.

Table 5

Relay Racks and Shipping Brackets

Note: *System components are factory mounted in a relay rack, on shipping rails, or in an enclosure as specified when ordered.*

Features

- The system can be factory mounted to a relay rack or on shipping brackets as specified when ordered.
- Relay racks (except P/N 10009902) are 23" standard mounting with 3" deep uprights.
  P/N 10009902 is 23" standard mounting with 6" deep upright.
- When ordered with shipping brackets, the system is mounted on shipping brackets bolted to a shipping skid. The shipping brackets can mount a system up to 22U high.

Ordering Notes

1) Order from relay racks and shipping brackets listed in Table 6.

Part Number	Size	Available Mounting Positions (1RU = 1-3/4")	Notes
509638 509639	Shipping Brackets	22RU	--
562351	21.625"H x 24.376"W x 15"D	11RU	Seismic (Note 1)
562356	25.656"H x 24.376"W x 15"D	13RU	Seismic (Note 1)
562357	27.406"H x 24.376"W x 15"D	14RU	Seismic (Note 1)
562358	36.156"H x 24.376"W x 15"D	19RU	Seismic (Note 1)
562359	39.656"H x 24.376"W x 15"D	21RU	Seismic (Note 1)
562360	43.156"H x 24.376"W x 15"D	23RU	Seismic (Note 1)
559817	51.906"H x 24.376"W x 15"D	28RU	Welded
564169	60.000"H x 25.800"W x 18"D	31RU	Seismic (Note 1)
562361	71.156"H x 24.376"W x 15"D	39RU	Welded
559818	72.000"H x 24.375"W x 15"D	38RU	Welded
564127	72.000"H x 25.800"W x 18"D	38RU	Seismic (Note 1)
559820	84.000"H x 24.375"W x 15"D	45RU	Welded
10009902	84.000"H x 25.800"W x 18"D	45RU	Seismic (Note 2)
562355	85.750"H x 24.375"W x 15"D	46RU	Welded
559821	90.000"H x 24.375"W x 15"D	48RU	Welded
559822	96.000"H x 24.375"W x 15"D	51RU	Welded

Note 1: *Complies with Bellcore Seismic Zone 4 requirements.*

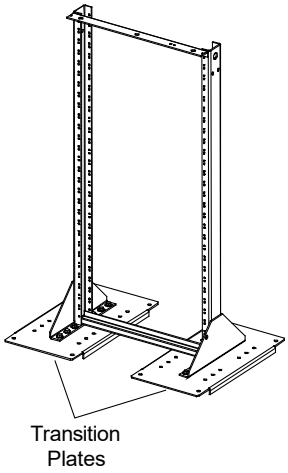
Note 2: *Complies with Bellcore Seismic Zone 4 requirements, per FEA Analysis.*

Table 6
Available Relay Racks and Shipping Brackets

Transition Plates to Mount Relay Rack on Top of GNB Absolyte IIP Batteries

Features

- Transition Plate Kits can be ordered to mount relay rack P/Ns 562356, 562357, 562358, 562359, 562360, or 559817 on top of GNB Absolyte IIP batteries.
- Each kit consists of two transition plates with three hole patterns and hardware (3/8") to mount the plates to the above listed relay racks. Customer must supply hardware to mount the transition plates to the battery.



Restrictions

Used with relay rack P/Ns 562356, 562357, 562358, 562359, 562360, or 559817 only.

Ordering Notes

1) Order P/N 509819 for a Transition Plate Kit to mount relay rack on top of a GNB 3-100A19, GNB 3-100A27, or GNB 3-100A33 battery.
2) Order P/N 514596 for a Transition Plate Kit to mount relay rack on top of a GNB 6-90A09 battery.
3) Order P/N 514880 for a Transition Plate Kit to mount relay rack on top of a GNB 3-100A21, GNB 3-100A25, or GNB 3-100A31 battery.

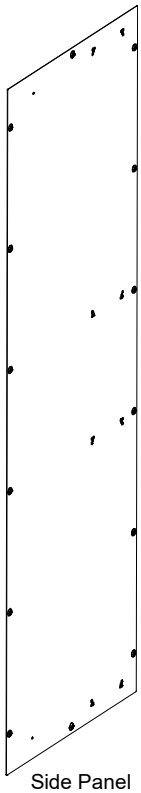
Enclosure and Enclosure Options

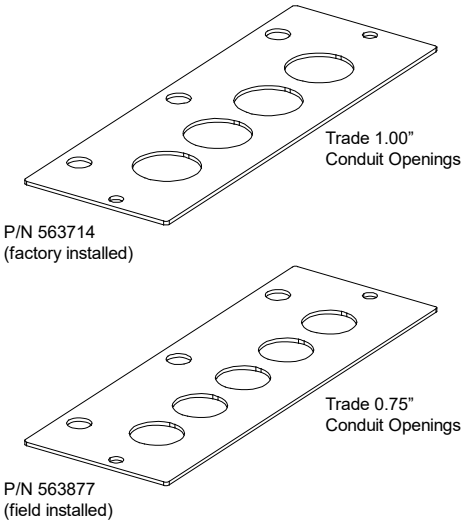
Features

- The system can be factory mounted in an enclosure as specified when ordered.
- Refer to "Enclosure, P/N 563524 or P/N 564881" on page 235 for dimensions.
- Reversible door. Default mounting is right handed.

Ordering Notes

1) Order from available enclosures listed in Table 7.
2) Order enclosure side panels as required. P/N 563666 (dark gray) or P/N 564889 (white) provides one (1) side panel. Side panels are factory installed when ordered.
3) Order an enclosure mounted LED kit as required P/N 563678. Provides a factory installed LED located at the top of the enclosure visible from the front with the door closed. Illuminates red if a major or critical alarm activates.
4) If List 40 AC input assembly is ordered with six (6) rectifier shelves, two (2) P/N 563877 conduit plates will be provided. Each provides five (5) 3/4" conduit openings. Note that each enclosure is factory equipped with two (2) conduit plates that provide four (4) 1" conduit openings.


Side Panel



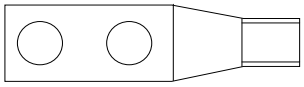
Part Number	Size	Available Mounting Positions (1RU = 1-3/4")	Notes
563524	84"H x 28"W x 28"D	45RU	Dark Gray, Seismic (Note 1)
564881	84"H x 28"W x 28"D	45RU	White, Seismic (Note 1)

Note 1: *Complies with Bellcore Seismic Zone 4 requirements.*

Table 7
Available Enclosures

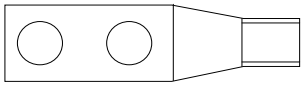
Crimp Lugs

Standard Crimp Lug Tables

Lead Size	Part Number	
14 AWG to 10 AWG	245342300	
8 AWG	245390200	
6 AWG	245346700	
4 AWG	245346800	
2 AWG	245346900	

Lugs should be crimped per lug manufacturer's specifications.

Table 8
Crimp Lug
Two-Hole, 1/4" Bolt Clearance Hole, 5/8" Centers

Lead Size	Part Number	
6 AWG	245349900	
4 AWG	245350000	
2 AWG	245348200	
1/0 AWG	245347100	
2/0 AWG	245347200	
3/0 AWG	245347300	
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	

Lugs should be crimped per lug manufacturer's specifications.

Table 9
Crimp Lug
Two-Hole, 3/8" Bolt Clearance Hole, 1" Centers

Special Application Crimp Lug / Strap Combination Table

Features

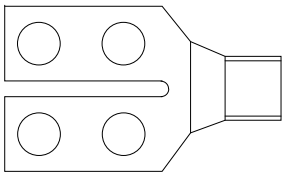
- Straps two fuseholder/circuit breaker wiring positions together, and provides a crimp-type lug which allows distribution wiring up to 350 kcmil size (maximum size of wire to be connected to a single position is 2 AWG). Designed for use with 125 A and larger bullet nose-type circuit breakers or TPS/TLS-type fuses, which require at least two mounting positions.

Restrictions

If used with bullet nose-type circuit breakers or TPS/TLS-type fuses smaller than 125 A, an empty mounting position is required adjacent to the distribution device.

Ordering Notes

1) Specify part number from Table 10 for desired lead size.

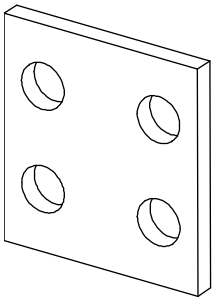
Lead Size	Part Number	
1/0 AWG	245393500	
2/0 AWG	245393600	
3/0 AWG	245393700	
4/0 AWG	245393800	
250 kcmil	514872	
350 kcmil	514873	

Lugs should be crimped per lug manufacturer's specifications.

Table 10
Special Application Crimp Lug / Strap Combination
(Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)

Lug Adapters

Busbar for 125 A, 150 A, and 200 A Bullet Nose Type Circuit Breaker, P/N 520989



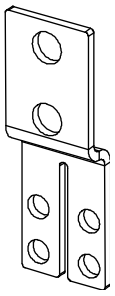
Features

- Provides a busbar that mounts on the two lug landing positions of a 125 A, 150 A, or 200 A bullet nose circuit breaker, and allows for use of one standard two-hole lug having 1/4" bolt clearance holes on 5/8" centers.

Ordering Notes

1) Order one (1) Part No. 520989 per 125 A, 150 A, and 200 A bullet nose circuit breaker ordered, as desired. See also P/Ns 522786 and 534449 in this section.

Busbar for 125 A, 150 A, and 200 A Bullet Nose Type Circuit Breaker, P/N 522786



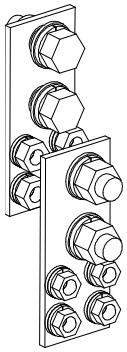
Features

- Provides a busbar that mounts on the two lug landing positions of a 125 A, 150 A, or 200 A bullet nose circuit breaker, and provides a landing for one standard two-hole lug having 3/8" bolt clearance holes on 1" centers.

Ordering Notes

1) Order one (1) Part No. 522786 per 125 A, 150 A, and 200 A bullet nose circuit breaker ordered, as desired. See also P/Ns 520989 and 534449 in this section.

Lug Adapter Busbar Kit for 125 A, 150 A, and 200 A Bullet Nose Type Circuit Breaker, P/N 534449



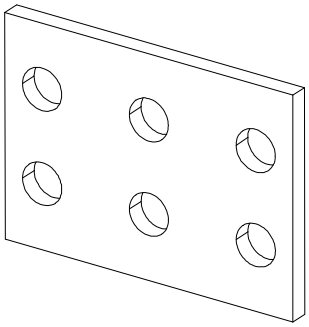
Features

- Includes one (1) busbar that mounts on the two lug landing positions of a 125 A, 150 A, or 200 A bullet nose circuit breaker, and provides a landing for one standard two-hole lug having 3/8" bolt clearance holes on 1" centers. Also includes one (1) busbar that mounts on two landings of the associated ground return bar (if furnished), and provides one landing for a standard two-hole lug having 3/8" bolt clearance holes on 1" centers. All busbar and lug mounting hardware is included.

Ordering Notes

1) Order one (1) Part No. 534449 per 125 A, 150 A, and 200 A bullet nose circuit breaker ordered, as desired. See also P/Ns 520989 and 522786 in this section.

Busbar for 225 A through 300 A Bullet Nose Type Circuit Breaker, P/N 514717



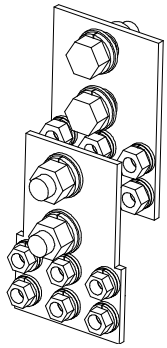
Features

- Provides a busbar that mounts on the three lug landing positions of a 225 A through 300 A bullet nose circuit breaker, and allows for use of a Special Application Crimp Lug / Strap Combination lug listed in Table 10.

Ordering Notes

1) Order one (1) P/N 514717 per 225 A through 300 A bullet nose circuit breaker ordered, as desired (see also Lug Adapter Busbar Kit for 225 A through 300 A Bullet Nose Type Circuit Breaker, P/N 514714 for another option).

Lug Adapter Busbar Kit for 225 A through 300 A Bullet Nose Type Circuit Breaker, P/N 514714



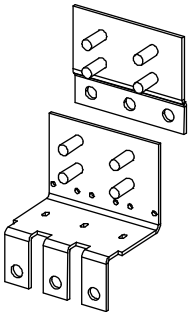
Features

- Includes one (1) busbar that mounts on the three lug landing positions of a 225 A through 300 A bullet nose circuit breaker, and provides one landing for a standard two-hole lug having 3/8" bolt clearance holes on 1" centers. Also includes one (1) busbar that mounts on three landings of the associated ground return bar (if furnished), and provides one landing for a standard two-hole lug having 3/8" bolt clearance Holes on 1" centers. All busbar and lug mounting hardware is included.

Ordering Notes

1) Order one (1) Part No. 514714 per 225 A through 300 A bullet nose circuit breaker ordered, as desired (see also Busbar for 225 A through 300 A Bullet Nose Type Circuit Breaker, P/N 514717 for another option).

Lug Adapter Busbar Kit for 3-Pole GJ/218 Circuit Breaker Installed in a List AM and List AP Distribution Panel, P/N 562888



Features

- Includes one (1) busbar that mounts on the three lug landing positions of a three-pole circuit breaker installed in a List AM or List AP distribution panel and one (1) busbar that mounts on the three landings of the associated ground return bar. These busbars provide two (2) landings for standard two-hole lugs having 3/8" bolt clearance holes on 1" centers.

Restrictions

Maximum lug width, 2.0 inches.

Ordering Notes

1) Order one (1) Part No. 562888 per three-pole GJ/218 circuit breaker ordered for a List AM or List AP Distribution Panel, as desired.

Lug Hardware Kits

1/4-20 Hardware Kit, P/N 541084

Features

- Lug hardware kit provides thirty-two (32) sets of 1/4-20 hardware for bullet nose distribution panels. Kit includes (32) 1/4-20 Nuts, (32) 1/4" Flat Washers, and (32) 1/4" Lock Washers.

Ordering Notes

1) Order Kit P/N 541084, as required.

3/8-16 Hardware Kit, P/N 548184

Features

- Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware for GJ/218 distribution panels, TPH distribution panels, return bar panels, and battery busbars. Kit includes (16) 3/8-16 x 1-1/4" Bolts, (16) 3/8" Flat Washers, and (16) 3/8" Lock Washers.

Ordering Notes

1) Order Kit P/N 548184, as required.

3/8-16 Hardware Kit, P/N 548185

Features

- Lug hardware kit provides sixteen (16) sets of 3/8-16 hardware for TPL-B distribution panels. Kit includes (16) 3/8-16 Nuts, (16) 3/8" Flat Washers, and (16) 3/8" Lock Washers.

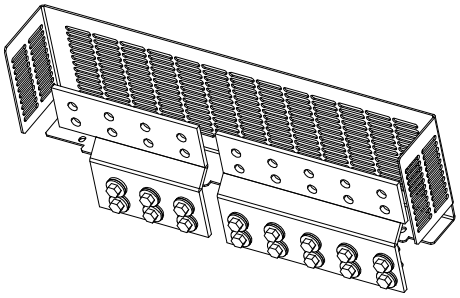
Ordering Notes

1) Order Kit P/N 548185, as required.

Battery Busbar Extension Kit (P/N 562364)

Features

- Provides busbar extension plates and mounting hardware for extending battery busbars through the top of a List 23 and List 24 distribution cabinet. The hot side busbar extension plate (P/N 562363) provides five (5) pairs of clearance holes for 3/8" hardware on 1" centers, and the return side busbar extension plate (P/N 562362) provides four (4) pairs of clearance holes for 3/8" hardware on 1" centers. The hot side allows back-to-back lug landing for up to ten lugs and the return side allows back-to-back lug landing for up to eight lugs. See "Battery Input Illustrations" starting on page 218.



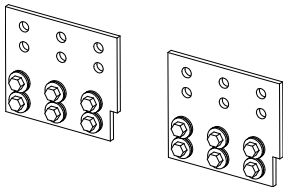
Ordering Notes

1) Order one (1) kit P/N 562364 per List 23 and List 24 distribution cabinet, as required.

Battery Busbar Extension Kit (P/N 554541)

Features

- Provides busbar extension plates and mounting hardware for extending battery busbars through the top of a List 21 (1-Row) and List 22 (2-Row) distribution cabinet. Each busbar extension plate provides three pairs of clearance holes for 3/8" hardware on 1" centers. Allows back-to-back lug landing for up to six lugs per polarity. See "Battery Input Illustrations" on page 218.



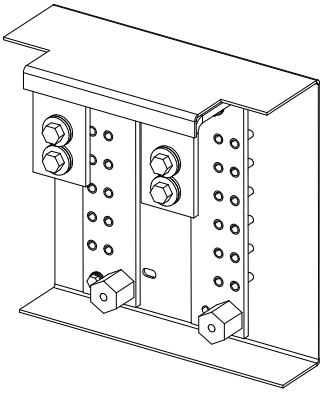
Ordering Notes

1) Order one (1) kit P/N 554541 per List 21 and List 22 distribution cabinet, as required.

Battery Landing Busbar Kit (P/N 553584), For System Mounted in a Relay Rack Only

Features

- Provides a Battery Landing Busbar Kit that attaches to the distribution cabinet's battery busbars and hangs off the back of the cabinet. Six (6) battery landing positions are provided (per polarity) (1/4-20 x 0.875" studs on 0.625" centers). See "Battery Input Illustrations" on page 218.



Restrictions

Not for use with systems mounted in an enclosure.

For use with List 21.

CANNOT be used with List 2 or List 3.

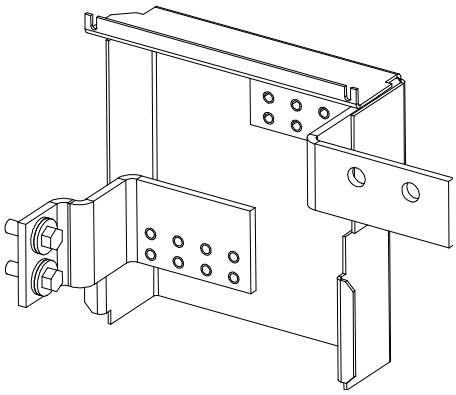
Ordering Notes

1) Order one (1) kit P/N 553584 per bay, as required.

Battery Landing Busbar Kit (P/N 555478), For System Mounted in a Relay Rack Only

Features

- Provides a Battery Landing Busbar Kit that attaches to the distribution cabinet's battery busbars and hangs off the back of the cabinet. Four (4) battery landing positions are provided (per polarity) for connection of up to eight (8) battery leads (back-to-back) (per polarity) (1/4-20 x 0.875" studs on 0.625" centers). See "Battery Input Illustrations" on page 218.



Restrictions

Not for use with systems mounted in an enclosure.

For use with Lists 22, 23, and 24.

CANNOT be used with List 2, List 3, List 7 or List 8.

Ordering Notes

1) Order one (1) kit P/N 555478 per bay, as required.

Distribution Devices

Bullet Nose Type Circuit Breakers and Bullet Nose Type Fuseholders e/w TPS/TLS Fuses

Features

- Each circuit breaker (as listed in Table 11 and Table 12) plugs into one, two, or three mounting position(s) on a distribution panel containing bullet nose type distribution positions.
- A single fuseholder provides for installation of a 3 A to 100 A Bussmann TPS type or Littelfuse TLS type fuse (as listed in Table 13). This fuseholder plugs into a single mounting position on a distribution panel containing bullet nose type distribution positions. This fuseholder provides a GMT-A alarm type fuse, which operates open to provide an alarm indication if the associated distribution fuse opens.

Restrictions

For use in Lists AA, AB, AL, AN, BA, BB, DA, DB, DC, DD, DE, DF, DG, DH, DJ, and DK.

Load should not exceed 80% of device rating.

Install distribution devices from left to right, starting with the highest capacity and working to the lowest capacity.

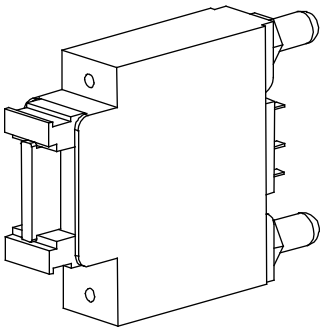
See the distribution panel list descriptions for additional restrictions.

Ordering Notes

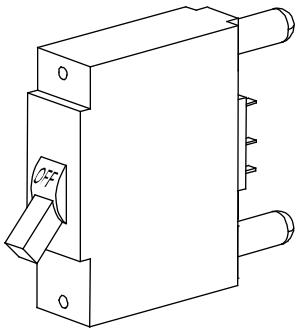
1) Order circuit breakers as required per Table 11 or Table 12.
2) Order fuses as required per Table 13. For each fuse ordered, also order one (1) P/N 117201 bullet nose type fuseholder.
3) See Table 51 for recommended load distribution wire sizes and lugs.
4) When ordering 125 A through 300 A circuit breakers; associated crimp lugs may be ordered from Table 10.

   When ordering 125 A through 200 A circuit breakers; lug adapter busbar P/N 520989, lug adapter busbar P/N 522786, or lug adapter busbar kit P/N 534449 may be ordered per circuit breaker (see Lug Adapters in this section).

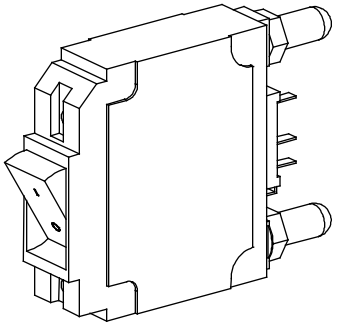
   When ordering 225 A through 300 A circuit breakers; lug adapter busbar P/N 514714 or lug adapter busbar kit 514717 may be ordered per circuit breaker (see Lug Adapters in this section).



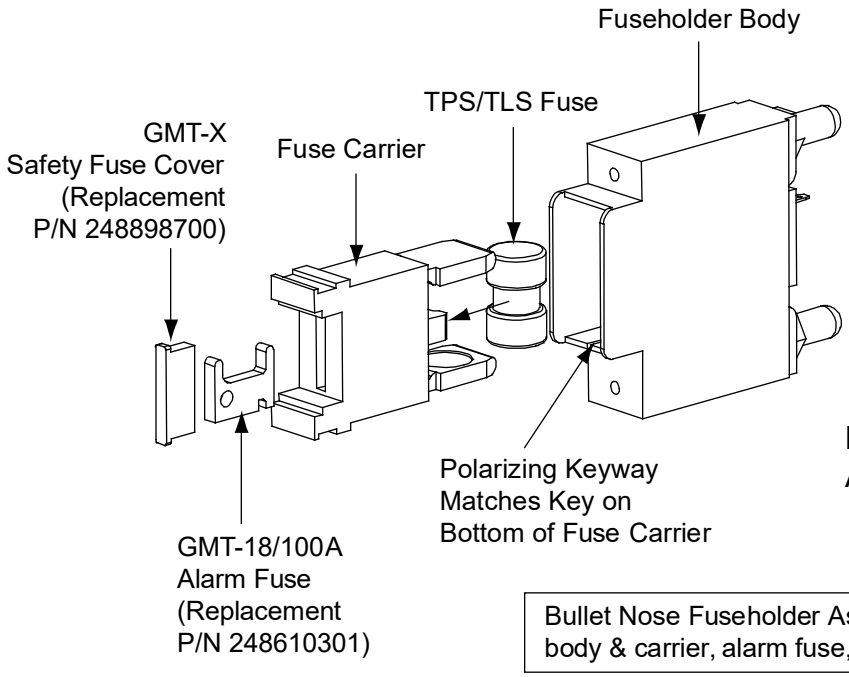
Bullet Nose Fuseholder



Toggle Handle
Bullet Nose Circuit Breaker



Rocker Handle
Bullet Nose Circuit Breaker



Bullet Nose Fuseholder
Assembly Exploded View

Bullet Nose Fuseholder Assembly (P/N 117201) includes body & carrier, alarm fuse, and alarm fuse safety cover.

Ampere Rating	Number of Poles	Number of Mounting Positions Required	Part Number	
			Electrical Trip[1] (White Handle)	Electrical/ Mechanical Trip[2] (Black Handle)
1	1	1	102272	101596
3	1	1	102273	101597
5	1	1	102274	101598
10	1	1	102275	101599
15	1	1	102276	101600
20	1	1	102277	101601
25	1	1	102278	101602
30	1	1	102279	101603
35	1	1	102280	101604
40	1	1	102281	101605
45	1	1	121998	121997
50	1	1	102282	101606
60	1	1	102283	101607
70	1	1	102284	101608
75	1	1	102285	101609
80	1	1	121996	121995
90	1	1	138887	138888
100	1	2	102286	101610
125	2	3	516991	516838
150	2	3	516993	516839
175	2	3	144883	144884
200	2	3	121831	121832
225	3	4	144885	144886
250	3	4	121835	121836
300	3	4	149075	149076
See Table 51 for recommended load distribution wire sizes and lugs.				
When ordering 125 A through 300 A circuit breakers; associated crimp lugs may be ordered from Table 10.				
When ordering 125 A through 200 A circuit breakers; lug adapter busbar kit P/N 520989, 522786, or 534449 may be ordered per circuit breaker (see Lug Adapters in this section).				
When ordering 225 A through 300 A circuit breakers; lug adapter busbar kit P/N 514714 or 514717 may be ordered per circuit breaker (see Lug Adapters in this section).				

Circuit Breaker Alarm Operation:

[1] Provides an alarm during an electrical trip condition only.

[2] Provides an alarm during an electrical or manual trip condition.

Note: *Electrical Trip only circuit breakers are not typically used for battery disconnect circuit breakers.*

Table 11
Toggle Handle Bullet Nose Type Circuit Breakers

Ampere Rating	Number of Poles	Number of Mounting Positions Required	Part Number	
			Electrical Trip[1] (White Handle)	Electrical/ Mechanical Trip[2] (Black Handle)
1	1	1	142856	142878
3	1	1	142857	142879
5	1	1	142858	142880
10	1	1	142859	142881
15	1	1	142861	142882
20	1	1	142862	142883
25	1	1	142863	142884
30	1	1	142864	142885
35	1	1	142865	142886
40	1	1	142866	142887
45	1	1	142867	142888
50	1	1	142868	142889
60	1	1	142869	142890
70	1	1	142870	142891
75	1	1	142871	142892
80	1	1	142872	142901
100	1	2	142873	142902
125	2	3	142874	142903
150	2	3	142875	142904
200	2	3	142876	142905
250	3	4	142877	142906
See Table 51 for recommended load distribution wire sizes and lugs.				
When ordering 125 A through 250 A circuit breakers; associated crimp lugs may be ordered from Table 10.				
When ordering 125 through 200 A circuit breakers; lug adapter busbar kit P/N 520989, 522786, or 534449 may be ordered per circuit breaker (see Lug Adapters in this section).				
When ordering 250 A circuit breakers; lug adapter busbar kit P/N 514714 or 514717 may be ordered per circuit breaker (see Lug Adapters in this section).				

Circuit Breaker Alarm Operation:

[1] Provides an alarm during an electrical trip condition only.

[2] Provides an alarm during an electrical or manual trip condition.

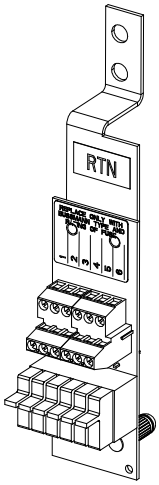
Note: *Electrical Trip only circuit breakers are not typically used for battery disconnect circuit breakers.*

Table 12
Rocker Handle Bullet Nose Circuit Breakers

Ampere Rating	Part Number	Bussmann P/N	Littelfuse P/N
3	248230900	TPS-3	TLS003
5	248231000	TPS-5	TLS005
6	248231200	TPS-6	TLS006
10	248231500	TPS-10	TLS010
15	248231800	TPS-15	TLS015
20	248232100	TPS-20	TLS020
25	248232400	TPS-25	TLS025
30	248232700	TPS-30	TLS030
40	248233300	TPS-40	TLS040
50	248233900	TPS-50	TLS050
60	248234200	TPS-60	TLS060
70	248234500	TPS-70	TLS070
80	118413	--	TLS080
90	118414	--	TLS090
100	118415	--	TLS100
Bullet Nose Type Fuseholder		P/N 117201 (Includes Fuseholder, 18/100 A GMT-A Alarm Fuse, and GMT-X Safety Fuse Cover)	
See Table 51 for recommended load distribution wire sizes and lugs.			

Table 13
Bullet Nose Type Fuseholders and TPS/TLS Fuses

Optional Bullet Nose Type 6-Position GMT Distribution Fuse Block, P/N 550224, (6) GMT Fuse Positions



Features

- Provides six (6) load distribution fuse positions (1/4 A to 15 A GMT alarm-type fuses).
- Single voltage distribution (-48 V or +24 V).
- Mounts in two (2) distribution positions of a “bullet nose” distribution panel.
- Screw clamp type load and load return terminals provided.
- Includes six (6) dummy fuses equipped with safety fuse covers.

Restrictions

Can be used in a List AA, AB, DA, DB, DC, and DD distribution panel only.

Occupies two (2) bullet device mounting positions.

Can only be installed in the 1-2, 3-4, 17-18, 19-20, 21-22, and 23-24 positions of the distribution panel.

Terminal block wire size capacity: 24 AWG to 14 AWG.

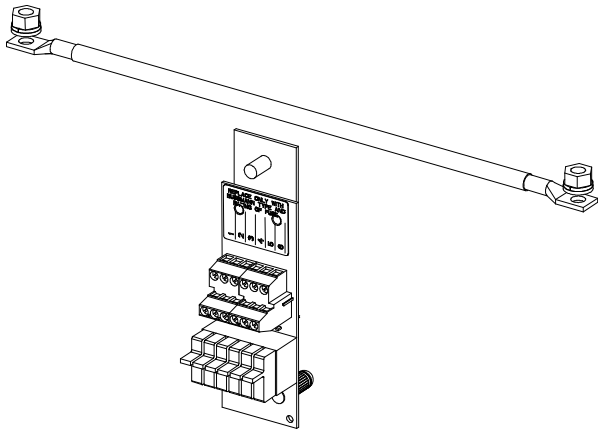
35 A maximum capacity per block.

Maximum GMT fuse size is 15 A.

Ordering Notes

1) Order optional Bullet Nose Type 6-Position GMT Fuse Block (P/N 550224) as required.
2) Order fuses as required per Table 14.

Optional Bullet Nose Type 6-Position GMT Distribution Fuse Block, P/N 549017, (6) GMT Fuse Positions



Features

- Provides six (6) load distribution fuse positions (1/4 A to 15 A GMT alarm-type fuses).
- Single voltage distribution (-48 V or +24 V).
- Mounts in two (2) distribution positions of a “bullet nose” distribution panel.
- Screw clamp type load and load return terminals provided.
- Includes six (6) dummy fuses equipped with safety fuse covers.

Restrictions

Can be used in a List AL, AN, DE, DF, DG, DH, DJ, and DK distribution panel only.

Can only be installed in the 1-2, 3-4, 5-6, 7-8, 15-16, 17-18, 19-20, 21-22, 23-24, and 25-26 positions of the distribution panel.

Occupies two (2) bullet device mounting positions.

Terminal block wire size capacity is 26 AWG to 14 AWG.

35 A maximum capacity per block.

Maximum GMT fuse size is 15 A.

Ordering Notes

1) Order optional Bullet Nose Type 6-Position GMT Fuse Block (P/N 549017) as required. Provides one alarm fuse distribution assembly, ground return link, and hardware.
2) Order fuses as required per Table 14.

GMT Type Load Distribution Fuses

Features

- An optional “Bullet Nose Type 6-Position GMT Distribution Fuse Block, P/N 550224 or 549017” is available for additional load distribution.

Restrictions

When used for power distribution, load should not exceed 80% of device rating, except 10 and 15 amp fuses, for which load should not exceed 70% of device rating.

Ordering Notes

1) Order fuses as required per Table 14.

Ampere Rating	Part Number	Fuse Color
18/100 (GMT-A)	248610301	---
1/4	248610200	VIOLET
1/2	248610300	RED
3/4	248610500	BROWN
1-1/3	248610700	WHITE
2	248610800	ORANGE
3	248610900	BLUE
5	248611000	GREEN
7-1/2	248611300	BLACK-WHITE
10	248611200	RED-WHITE
15	248611500	RED-BLUE
Replacement Safety Fuse Cover (GMT-Y)	102774	---
Replacement Dummy Fuse	248872600	---

Table 14
GMT Fuses

GJ/218 Type Circuit Breakers

Restrictions

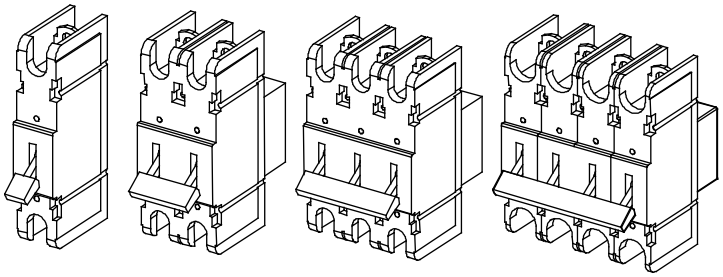
For use in Lists AC, AD, BC, BD, AM, and AP.

Load should not exceed 80% of device rating.

Refer to Table 15 for required distribution row mounting positions.

Ordering Notes

1) Order circuit breakers as required per Table 15.
2) Order a jumper kit as required for each circuit breaker per Table 15.
3) See Table 52 for recommended load distribution wire sizes and lugs.



GJ/218 Circuit Breakers

Ampere Rating	No. of Positions	P/N Electrical/ Mechanical Trip[1] without Internal Shunt	P/N Electrical Trip[2] without Internal Shunt	Breaker Mounting Kit (without Shunt)	P/N Electrical/ Mechanical Trip[1] with Internal Shunt (25 mV @ full rated load)[3]	P/N Electrical Trip[2] with Internal Shunt (25 mV @ full rated load)[3]	Breaker Mounting Kit (with Shunt)
100	1	256621700	256621300	503787	123580	516184	513731
125	1	256621600	256621400	503787	123631	516187	513731
150	1	256621800	256622400	503787	123632	516185	513731
175	1	256621900	256622500	503787	123633	516186	513731
200	1	256622200	256622600	503787	123634	516188	513731
225	1	256622900	256622700	503787	123635	516189	513731
250	1	256623500	256623400	503787	123636	516190	513731
300	2	256625300	103572	513961	550250	550253	554092
400	2	256626200	256626300	513961	550251	550254	554092
600	3	256628200	103571	513957	550252	550255	554093
800	4	121657	121658	554091	--	550249	554094
See Table 52 for recommended load distribution wire sizes and lugs.							

[1, 2] Circuit Breaker Alarm Operation:
- [1] Provides an alarm during an electrical or manual trip condition.
- [2] Provides an alarm during an electrical trip condition only.

[3] Extended shunt leads are 22 AWG stranded wire, approximately 7-10 ft. long from exit point at bottom of distribution cabinet. Each shunt lead is equipped with a 49.9 ohm current limiting resistor. Shunt leads are factory wired to SM-DU+ (if ordered).

Note: *Electrical Trip only circuit breakers are not typically used for battery disconnect circuit breakers.*

Table 15
GJ/218 Circuit Breakers

TPH Type Fuses

Restrictions

For use in Lists AE, AF, AG, AH, BE, BF, BG, and BH.

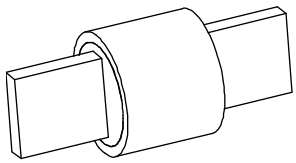
Load should not exceed 80% of device rating.

Ordering Notes

1) Order fuses as required per Table 16.
2) See Table 52 for recommended load distribution wire sizes and lugs.

Ampere Rating	Part Number
70	119437
80	119438
100	119440
150	119581
200	119582
225	119583
250	119584
300	119585
400	119586
500	119587
600	119588
See Table 52 for recommended load distribution wire sizes and lugs.	

Table 16
TPH Fuses



TPH Fuse

TPL-B Type Fuses

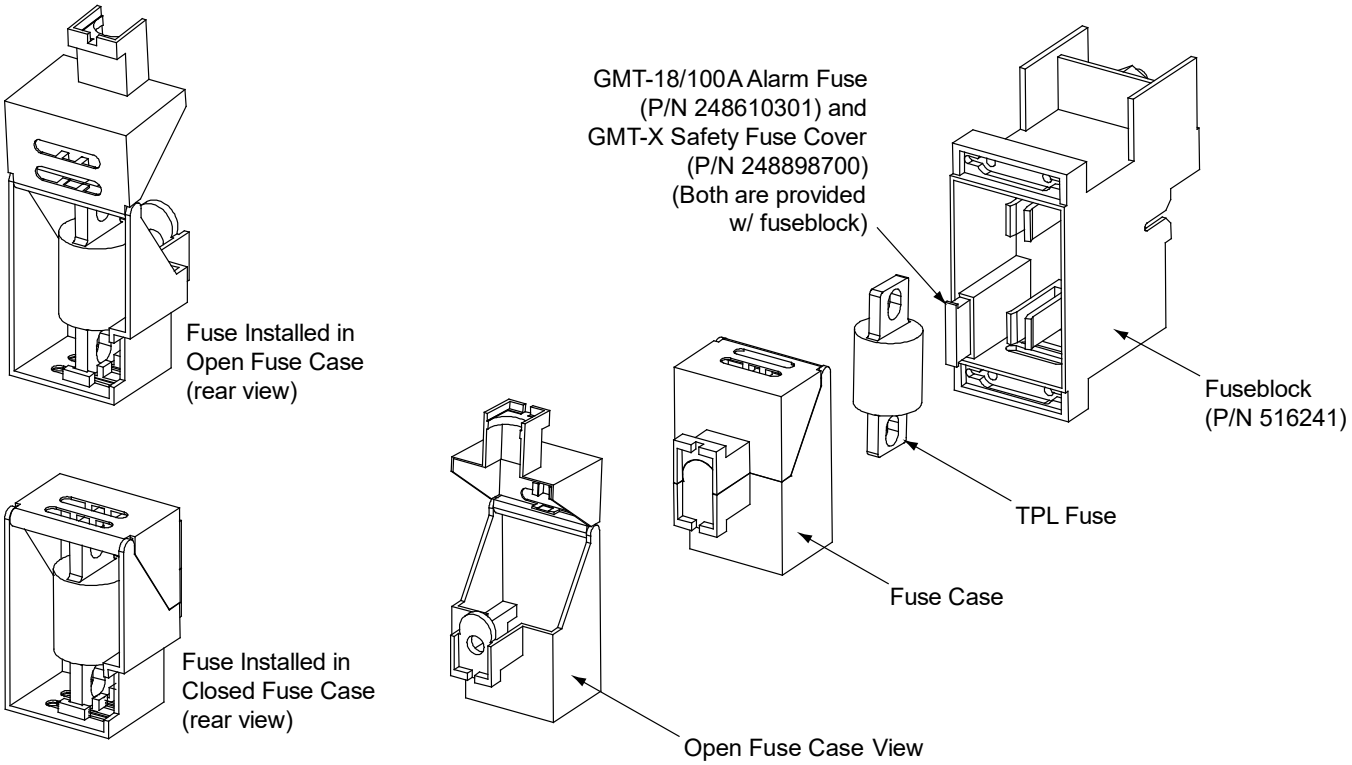
Restrictions

For use in Lists AJ and AK.

Load should not exceed 80% of device rating.

Ordering Notes

1) Order fuses as required per Table 17.
2) See Table 52 for recommended load distribution wire sizes and lugs.



Ampere Rating	Part Number
70	248251500
80	248252000
100	248252600
150	248253300
200	248254000
225	248254500
250	248255000
See Table 52 for recommended load distribution wire sizes and lugs.	

Table 17
TPL-B Fuses

User Replaceable Alarm, Reference, and Control Fuses

Ordering Notes

1) Order replacement fuses as required per Table 18.

Assembly	Desig.	Function	Size (Amperes)	Type	Part No.
Distribution Panel with TPH Fuse Block(s)	FA	Fuse Alarm	1/4	Bussmann GMT	248610200
	--	--	--	Safety Fuse Cover (GMT-X)	248898700
TPS/TLS Fuseholders (P/N 117201)	FA	Fuse Alarm	18/100	Bussmann GMT-A	248610301
	--	--	--	Safety Fuse Cover (GMT-X)	248898700
TPL-B Fuseholders	FA	Fuse Alarm	18/100	Bussmann GMT-A	248610301
	--	--	--	Safety Fuse Cover (GMT-X)	248898700

Table 18
User Replaceable Alarm, Reference, and Control Fuses

User Replaceable Components

Ordering Notes

1) Refer to the following table. Refer to the separate rectifier and converter descriptions in this section for their part numbers.

Item	Part Number
NCU Controller	1M830DNA (Order with appropriate software configuration. See controller user manual for ordering instructions.)
IB4 Second Ethernet Port Board	558076
SM-DU	SMDU
System Interface Board	556166 (all Lists except List 100, 101, 102, 103, 203) 562662 (List 100, 101, 102, 103, 203)
IB2 Interface Board	MA4C5U31
EIB Extended Interface Board	MA455U41
Temp Probe Sensor	552822
SM-DU+ with Shunt Interface Board	548078
LVD Driver Circuit Card	563696 (Main Bay) and 563718 (Supplemental Bay)
LVD Driver Lite Circuit Card	547873 (Main Bay) and 547874 (Supplemental Bay)
Manual Battery Disconnect Circuit Card	540973

Table 19
User Replaceable Components

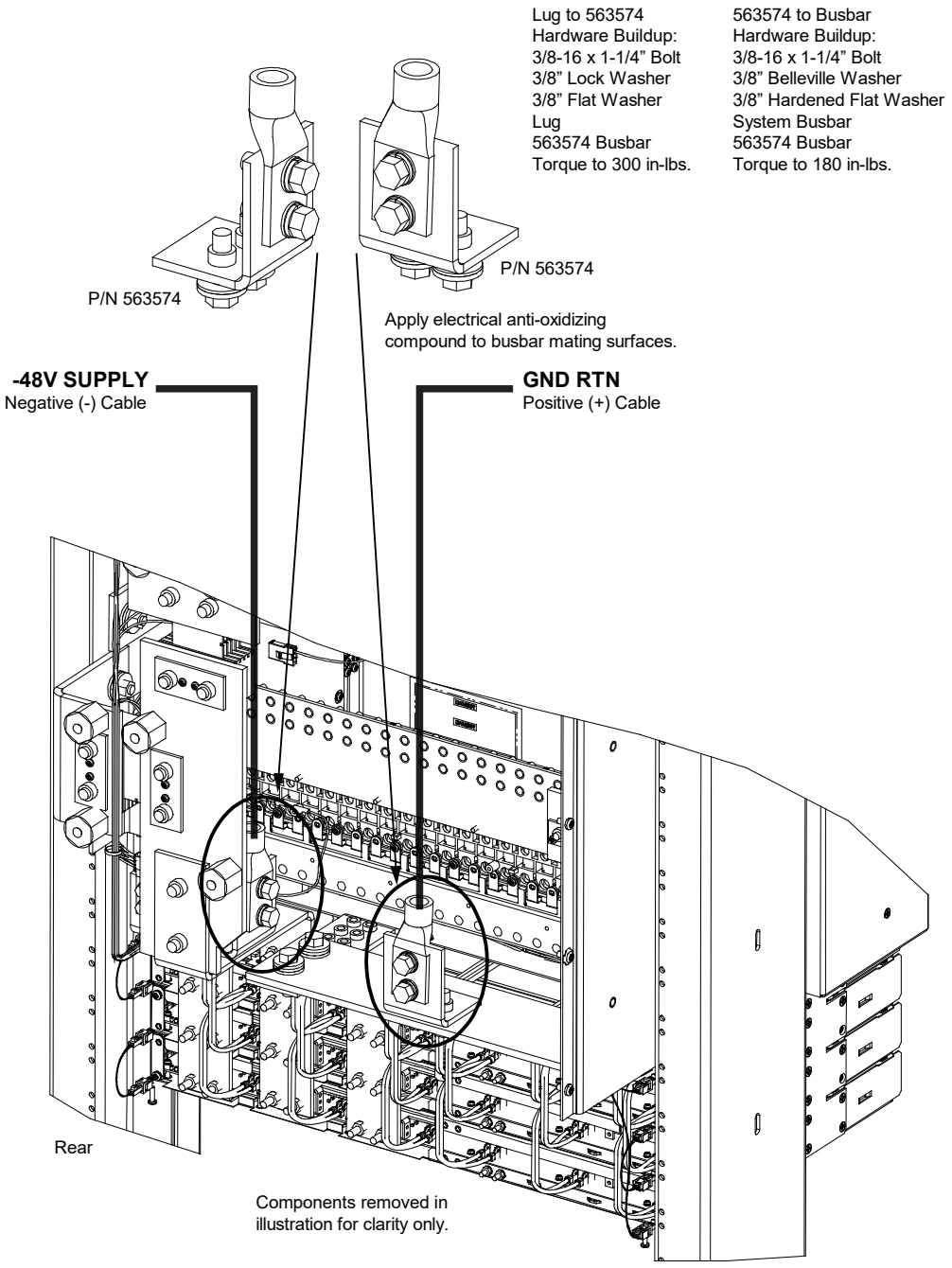
Replacement Bay-to-Bay Interconnect Cable

Ordering Notes

1) For a replacement cable, order P/N 514640
(25' Cat5 communications cable terminated in RJ-45 connectors).

Special Application Rectifier Bus Landing Point Kit P/N 563686

Special application rectifier bus landing point kit P/N 563686 is available for use with List 100, 101, 102, 103, and 203. Kit P/N 563686 includes two (2) P/N 563574 Bus Landing Point Assemblies. When installed, the kit provides rectifier bus landing points for 500 kcmil cables.



Generator Input Circuit Breaker Kit P/N 564219

Kit P/N 564219 is available for use with List 100, 101, 102, 103, and 203. This kit provides the components to install a 400 A circuit breaker to feed the rectifier output bus of the power system through a shunt. A customer connects an external generator output to this circuit breaker which then supplies generator input power to the system. For field installation, refer to IM564219. For wiring a generator to the circuit breaker, refer to Figure 1.

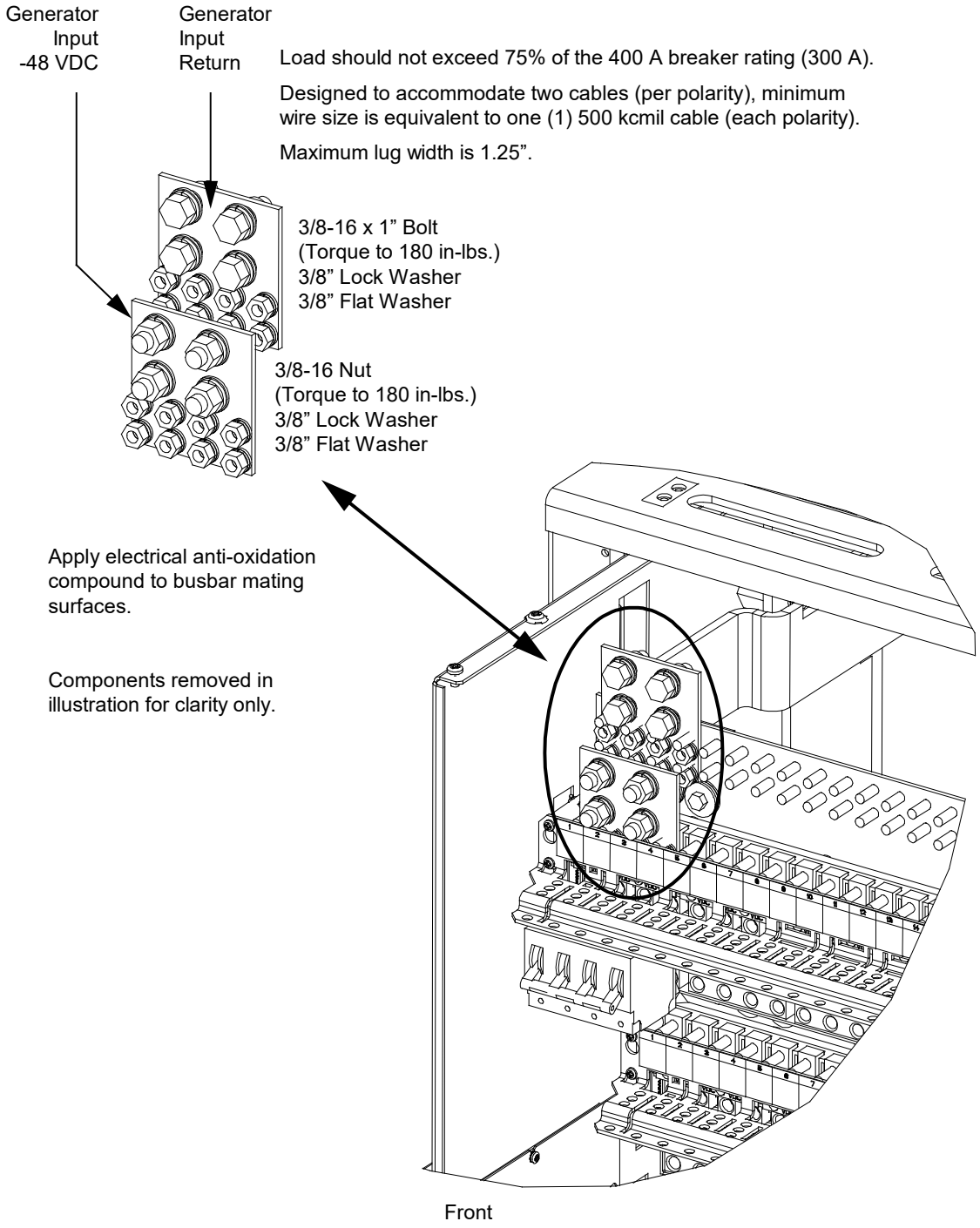


Figure 1
Wiring Input Generator Kit P/N 564219

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

Relay Rack and Enclosure Frame Grounding Requirements

For relay rack and enclosure 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.

A customer's grounding network lead can be attached to the top of each relay rack or enclosure. Provision is made for installing a lead with a two-hole lug that has 1/4" bolt clearance holes on 5/8" centers. Refer to Table 8 for lug selection.

Field Installed Module Mounting Assembly Shelf Frame Grounding Connection

Spec. No. 588705000 and 588705500

Located at the rear of the shelf are terminals for a grounding connection. See Table 20 for recommended frame grounding wire size and Figure 3, Figure 4, Figure 5, Figure 11, Figure 12, Figure 13, Figure 14, or Figure 15 for terminal location.

Frame Ground (FR GND) [1]	
Terminals	**Recommended Wire Size**
Two 10-32 X 3/4" Studs and Hardware	10 AWG

[1] This terminal 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.

[2] For shelf 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.

Table 20
Recommended Frame Grounding Wire Size

Spec. No. 588705300 and 588705400

Located on the rear of the module mounting assembly are terminals for a ground connection (M4 hardware included). See Figure 6, Figure 7, Figure 8, Figure 9.

For module mounting assembly 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.

AC Input Connections

AC Input Branch Circuit Protection and Wire Size Selection for AC Input Termination Assembly List 40, 41, 42, 43 when used with 588705000 Module Mounting Assemblies with Rectifiers

Refer to the following tables for recommended wire sizes and branch circuit protection.

AC Input to **LIST 40** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 1 Rectifier" Single Phase Input Terminations (System with Spec. No. **58870500021** Rectifier Module Assembly)				
Input Voltage	**Input Current** [5]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size** [7] [8] [9]
208 VAC	17.3 A	25 A [2]	10 AWG	3/4"
240 VAC	15.0 A	20 A	12 AWG	1/2"
277 VAC	13.5 A	20 A	12 AWG	1/2"

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

2 Maximum over current protection device is 30 A.

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 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 Input current based on R48-3500e rectifier module.

6 THHN 90°C Wire.

7 System with Four (4) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705000 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for eight (8) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Five (5) factory wired rectifier shelves is the maximum number of shelves available in the relay rack version of the equipment. The sixth rectifier shelf must be an expansion shelf.

9 System with Six (6) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for eight (8) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Six (6) factory wired and installed rectifier shelves are only available with the enclosure version of the equipment and must be used with the five (5) 3/4 inch conduit opening plate option.

Table 21
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 40 "1 AC Feed per 1 Rectifier – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870500021 Rectifier Module Assemblies

AC Input to **List 41** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 2 Rectifiers" Single Phase Input Terminations (System with Spec. No. **58870500021** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [5]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	34.6 A	45 A	8 AWG	3/4" [7] 1" [8] [9]
240 VAC	30.0 A	40 A [2]	8 AWG	3/4" [7] 1" [8] [9]
277 VAC	27.0 A	35 A [2]	8 AWG	3/4" [7] 1" [8] [9]

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

[2] Maximum over current protection device is 60 A.

[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 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] Input current based on R48-3500e rectifier module.

[6] THHN 90°C Wire.

[7] System with Four (4) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[8] System with Five (5) Spec. No. 588705000 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[9] System with Six (6) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

Table 22
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 41 "1 AC Feed per 2 Rectifiers – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870500021 Rectifier Module Assemblies

AC Input to **List 42** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [10] (System with Spec. No. **58870500021** Rectifier Module Assemblies)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	29.3 A	40 A [2]	8 AWG	3/4" [7] 1" [8] [9]
240 VAC	25.5 A	35 A [2]	8 AWG	3/4" [7] 1" [8] [9]

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

2 Maximum over current protection device is 50 A when using only three (3) current carrying conductors per conduit. Maximum over current protection device is 45 A when using six (6) current carrying conductors per conduit.

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 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 Input current based on R48-3500e rectifier module.

6 THHN 90°C Wire.

7 System with Four (4) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for three (3) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705000 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

9 System with Six (6) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

10 The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

Table 23
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 42 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870500021 Rectifier Module Assemblies

AC Input to **List 43** AC Input Termination Assembly (Nominal 277/480 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [10] (System with Spec. No. **58870500021** Rectifier Module Assemblies)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
277/480 VAC	13.5 A	20 A	12 AWG	1/2" [7] 3/4" [8] [9]

[1] 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 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] Input current based on R48-3500e rectifier module.

[6] THHN 90°C Wire.

[7] System with Four (4) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for three (3) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[8] System with Five (5) Spec. No. 588705000 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[9] System with Six (6) Spec. No. 588705000 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[10] The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases. If there is an input phase imbalance, the neutral may be carrying current up to the highest value of the line currents.

Table 24
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 43 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870500021 Rectifier Module Assemblies

AC Input Branch Circuit Protection and Wire Size Selection for AC Input Termination Assembly List 40, 41, 42 when used with 588705300 Module Mounting Assemblies with Rectifiers

Refer to the following tables for recommended wire sizes and branch circuit protection.

AC Input to List 40 AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 1 Rectifier" Single Phase Input Terminations (System with Spec. No. 58870530001 Rectifier Module Assemblies)				
Input Voltage	Input Current [7]	Overcurrent Protection [1]	40 °C Ambient Temperature	
			Wire [2] [3] [4]	Conduit Size [5] [6]
208 VAC	10 A	15 A	14 AWG	3/4"
240 VAC	8.8 A	15 A	14 AWG	3/4"

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

2 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.

3 Equipment grounding conductors must be provided with the AC input conductors supplied to the 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.

4 THHN 90°C Wire.

5 System with Four (4) Spec. No. 588705300 Rectifier Module Assemblies: Conduit sized for twelve (12) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

6 System with Five (5) Spec. No. 588705300 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for twelve (12) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

7 Input current based on R48-2000e3 rectifier module.

Table 25
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 40 "1 AC Feed per 1 Rectifier – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870530001 Rectifier Module Assemblies

AC Input to **List 41** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 2 Rectifiers" Single Phase Input Terminations (System with Spec. No. **58870530001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [8]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [5]	**Conduit Size** [6] [7]
208 VAC	20 A	25 A [2]	10 AWG	3/4"
240 VAC	17.5 A	25 A [2]	10 AWG	3/4"

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

2 Maximum over current protection device is 30 A.

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 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 System with Four (4) Spec. No. 588705300 Rectifier Module Assemblies: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

7 System with Five (5) Spec. No. 588705300 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 Input current based on R48-2000e3 rectifier module.

Table 26
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 41 "1 AC Feed per 2 Rectifiers – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870530001 Rectifier Module Assemblies

AC Input to **List 42** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations (System with Spec. No. **58870530001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [8]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [5]	**Conduit Size**
208 VAC	17.5 A	25 A [2]	10 AWG	1/2" [6] 3/4" [7]
240 VAC	15 A	20 A [2]	12 AWG	1/2" [6] [7]

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

2 Maximum over current protection device is 30 A.

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 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 System with Four (4) Spec. No. 588705300 Rectifier Module Assemblies: Conduit sized for three (3) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

7 System with Five (5) Spec. No. 588705300 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 Input current based on R48-2000e3 rectifier module.

9 The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

Table 27
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 42 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870530001 Rectifier Module Assemblies

AC Input Branch Circuit Protection and Wire Size Selection for AC Input Termination Assembly List 40, 41, 42, 43 when used with 588705400 Module Mounting Assemblies with Rectifiers

Refer to the following tables for recommended wire sizes and branch circuit protection.

AC Input to List 40 AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 1 Rectifier" Single Phase Input Terminations (System with Spec. No. 58870540001 Rectifier Module Assembly)				
Input Voltage	Input Current [5]	Overcurrent Protection [1]	40 °C Ambient Temperature	
			Wire [3] [4] [6]	Conduit Size)
208 VAC	17.9 A	25 A [2]	10 AWG	3/4" [7]
240 VAC	15.5 A	20 A	10 AWG	1" [8] [9]
277 VAC	13.5 A	20 A	10 AWG	1" [8] [9]

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

2 Maximum over current protection device is 30 A @ 40 °C.

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 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 Input current based on R48-3500e3 rectifier module.

6 THHN 90°C Wire.

7 System with Five (5) Spec. No. 588705400 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for eight (8) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705400 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for twelve (12) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Five (5) factory wired rectifier shelves is the maximum number of shelves available in the relay rack version of the equipment. The sixth rectifier shelf must be an expansion shelf.

9 System with Six (6) Spec. No. 588705400 Rectifier Module Assemblies: Conduit sized for twelve (12) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Six (6) factory wired and installed rectifier shelves are only available with the enclosure version of the equipment and must be used with the five (5) 3/4 inch conduit opening plate option.

Table 28
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 40 "1 AC Feed per 1 Rectifier – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870540001 Rectifier Module Assemblies

AC Input to **List 41** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 2 Rectifiers" Single Phase Input Terminations (System with Spec. No. **58870540001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [5]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	35.8 A	45 A	8 AWG	3/4" [7] 1" [8]
240 VAC	31.0 A	40 A [2]	8 AWG	3/4" [7] 1" [8]
277 VAC	27.0 A	35 A [2]	8 AWG	3/4" [7] 1" [8]

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

2 Maximum over current protection device is 45 A @ 40 °C.

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 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 Input current based on R48-3500e3 rectifier module.

6 THHN 90°C Wire.

7 System with Five (5) Spec. No. 588705400 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Six (6) Spec. No. 588705400 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

Table 29
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 41 "1 AC Feed per 2 Rectifiers – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870540001 Rectifier Module Assemblies

AC Input to **List 42** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [9] (System with Spec. No. **58870540001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [5]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size** [7] [8]
208 VAC	31 A	40 A [2]	8 AWG	1"
240 VAC	27 A	35 A [2]	8 AWG	1"

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

2 Maximum over current protection device is 45 A @ 40 °C.

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 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 Input current based on R48-3500e3 rectifier module.

6 THHN 90°C Wire.

7 System with Five (5) Spec. No. 588705400 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Six (6) Spec. No. 588705400 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

9 The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

Table 30
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 42 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870540001 Rectifier Module Assemblies

AC Input to **List 43** AC Input Termination Assembly (Nominal 277/480 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [8] (System with Spec. No. **58870540001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [4]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [2] [3] [5]	**Conduit Size** [6] [7]
277/480 VAC	13.5 A	20 A	12 AWG	3/4"

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

2 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.

3 Equipment grounding conductors must be provided with the AC input conductors supplied to the 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.

4 Input current based on R48-3500e3 rectifier module.

5 THHN 90°C Wire.

6 System with Five (5) Spec. No. 588705400 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors, two (2) neutrals, and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

7 System with Six (6) Spec. No. 588705400 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors, two (2) neutrals, and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases. If there is an input phase imbalance, the neutral may be carrying current up to the highest value of the line currents.

Table 31
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 43 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870540001 Rectifier Module Assemblies

AC Input Branch Circuit Protection and Wire Size Selection for AC Input Termination Assembly List 40, 41, 42, 43 when used with 588705500 Module Mounting Assemblies with Rectifiers

Refer to the following tables for recommended wire sizes and branch circuit protection.

AC Input to LIST 40 AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 1 Rectifier" Single Phase Input Terminations (System with Spec. No. 58870550001 Rectifier Module Assembly)				
Input Voltage	Input Current [5]	Overcurrent Protection [1]	40 °C Ambient Temperature	
			Wire [3] [4] [6]	Conduit Size [7] [8] [9]
208 VAC	20.7 A	30 A	10 AWG	3/4"
240 VAC	17.8 A	25 A [2]	10 AWG	3/4"
277 VAC	15.3 A	20 A	12 AWG	1/2"

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

2 Maximum over current protection device is 30 A @ 40 °C.

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 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 Input current based on R48-4000e rectifier module.

6 THHN 90°C Wire.

7 System with Four (4) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705500 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for eight (8) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Five (5) factory wired rectifier shelves is the maximum number of shelves available in the relay rack version of the equipment. The sixth rectifier shelf must be an expansion shelf.

9 System with Six (6) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for eight (8) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes. Six (6) factory wired and installed rectifier shelves are only available with the enclosure version of the equipment and must be used with the five (5) 3/4 inch conduit opening plate option.

Table 32
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 40 "1 AC Feed per 1 Rectifier – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870550001 Rectifier Module Assemblies

AC Input to **List 41** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 2 Rectifiers" Single Phase Input Terminations (System with Spec. No. **58870550001** Rectifier Module Assemblies)				
Input Voltage	**Input Current** [5]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	41.4 A	60 A	6 AWG	1" [8] [9]
240 VAC	35.6 A	45 A	8 AWG	3/4" [7] 1" [8] [9]
277 VAC	31.0 A	40 A [2]	8 AWG	3/4" [7] 1" [8] [9]

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

2 Maximum over current protection device is 45 A @ 40 °C.

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 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 Input current based on R48-4000e rectifier module.

6 THHN 90°C Wire.

7 System with Four (4) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705500 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

9 System with Six (6) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

Table 33
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 41 "1 AC Feed per 2 Rectifiers – Single Phase" AC Input Termination Assembly,
System with Spec. No. 58870550001 Rectifier Module Assemblies

AC Input to List 42 AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [10] (System with Spec. No. 58870550001 Rectifier Module Assemblies)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	36.0 A	45 A	8 AWG	3/4" [7] 1" [8] [9]
240 VAC	31.0 A	40 A [2]	8 AWG	3/4" [7] 1" [8] [9]

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

2 Maximum over current protection device is 45 A @ 40 °C.

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 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 Input current based on R48-4000e rectifier module.

6 THHN 90°C Wire.

7 System with Four (4) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for three (3) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

8 System with Five (5) Spec. No. 588705500 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

9 System with Six (6) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

10 The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

Table 34
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 42 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870550001 Rectifier Module Assemblies

AC Input to **List 43** AC Input Termination Assembly (Nominal 277/480 VAC, Three Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 3 Rectifiers" 3 Phase Input Terminations [10] (System with Spec. No. **58870550001** Rectifier Module Assemblies)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
277/480 VAC	15.3 A	20 A	12 AWG	1/2" [7] 3/4" [8] [9]

[1] 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 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] Input current based on R48-4000e rectifier module.

[6] THHN 90°C Wire.

[7] System with Four (4) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for three (3) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[8] System with Five (5) Spec. No. 588705500 Rectifier Module Assemblies / Assembly #6 is an Expansion Assembly: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

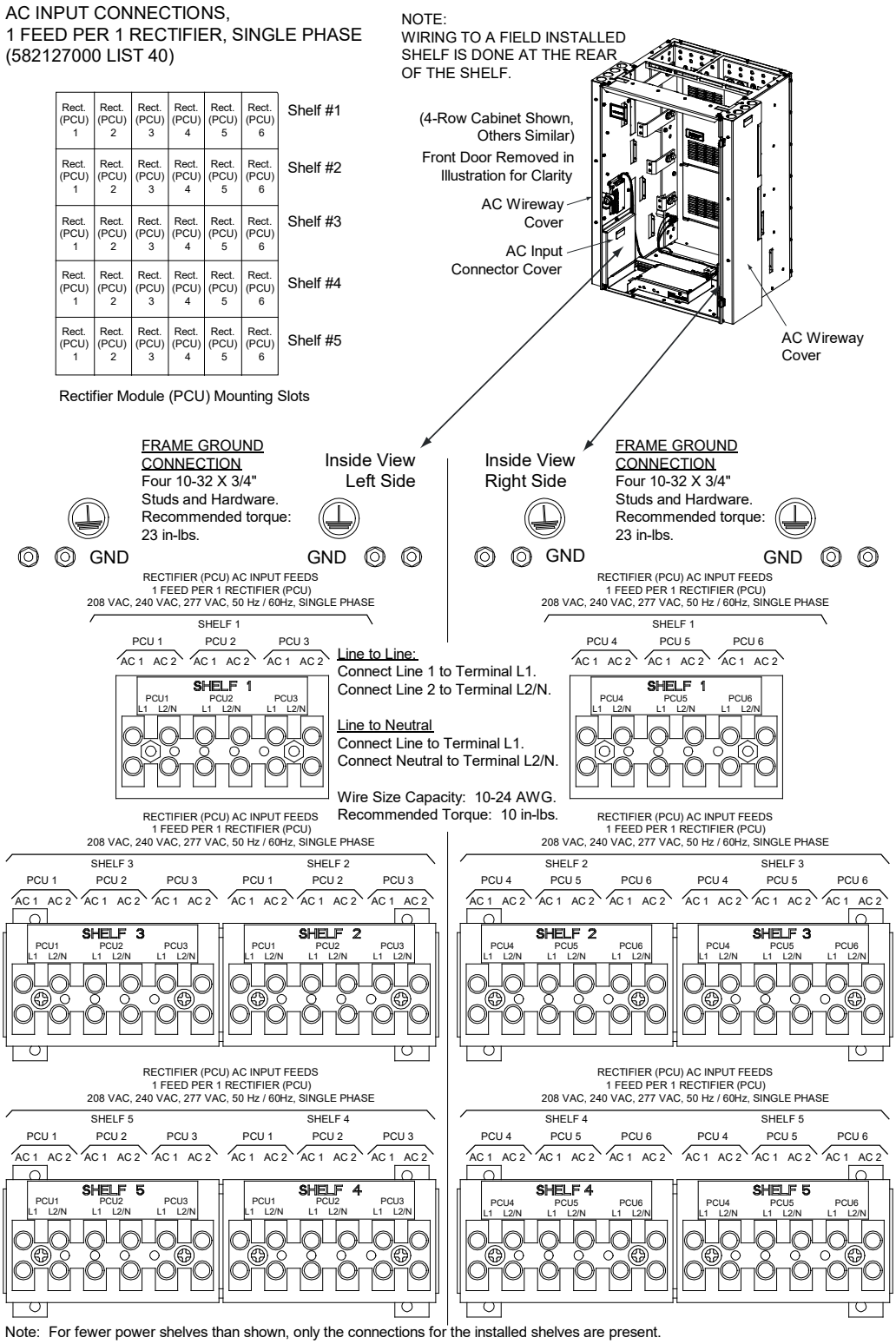
[9] System with Six (6) Spec. No. 588705500 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

[10] The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases. If there is an input phase imbalance, the neutral may be carrying current up to the highest value of the line currents.

Table 35
Recommended AC Input Branch Circuit Protection and Wire Size when Using
List 43 "1 AC Feed per 3 Rectifiers – Three Phase" AC Input Termination Assembly,
System with Spec. No. 58870550001 Rectifier Module Assemblies

AC Input Connections to AC Input Termination Assembly List 40 Illustration when Used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 1 Rectifier, Single Phase)

Installed in a Relay Rack



Note: For fewer power shelves than shown, only the connections for the installed shelves are present.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with Five (5) Shelves Installed

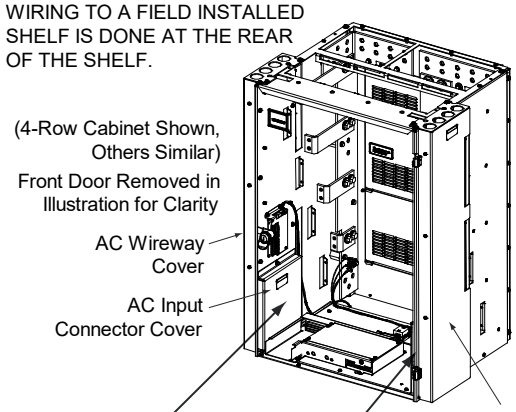
Installed in a Relay Rack

AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Five (5) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.



FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

GND GND

Inside View Right Side

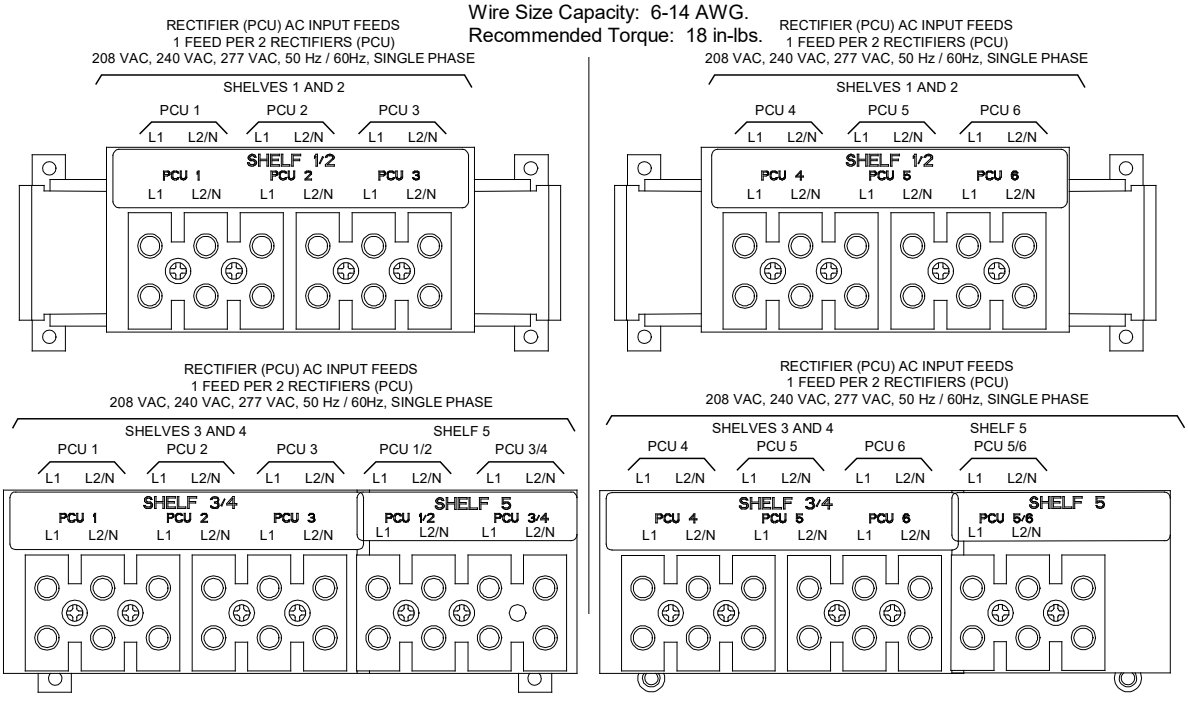
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

GND GND

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.

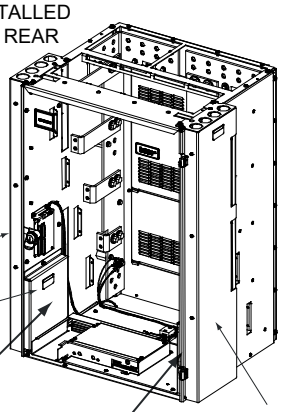


AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with Four (4) Shelves Installed

Installed in a Relay Rack

AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Four (4) Shelves Installed

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

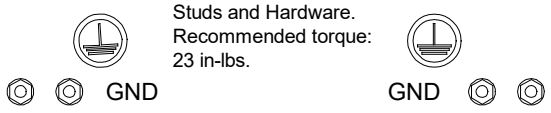


Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4

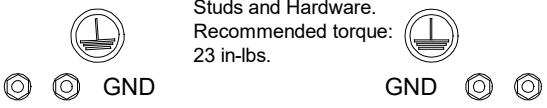
Rectifier Module (PCU) Mounting Slots

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side



Inside View Right Side

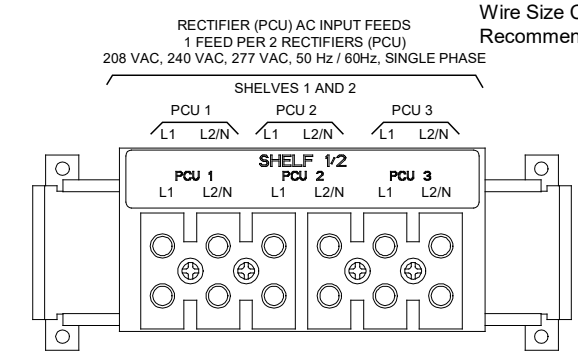


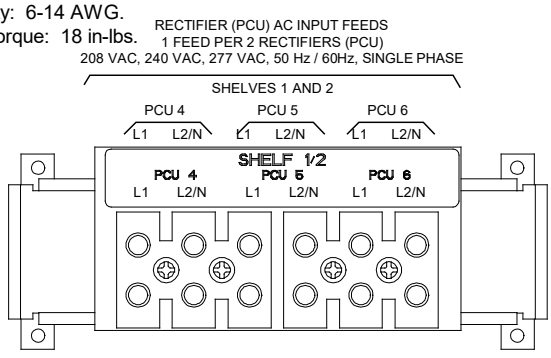
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

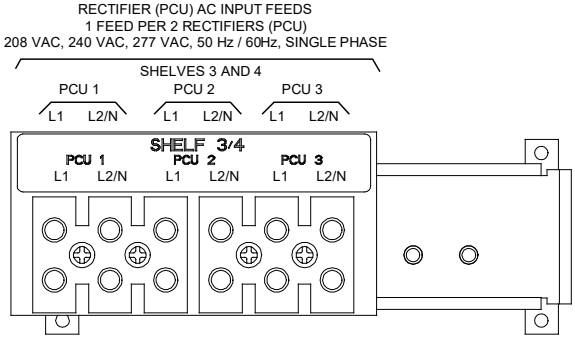
Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

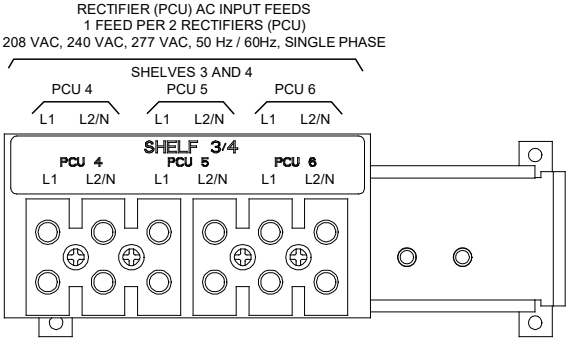
Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.







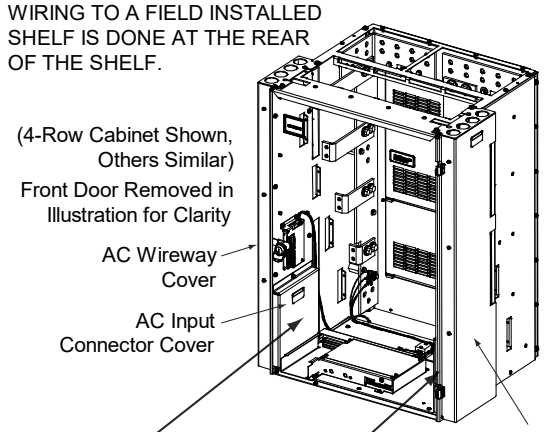


AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with Three (3) Shelves Installed

Installed in a Relay Rack

AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Three (3) Shelves Installed

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.



Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3

Rectifier Module (PCU) Mounting Slots

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

GND GND

Inside View Right Side

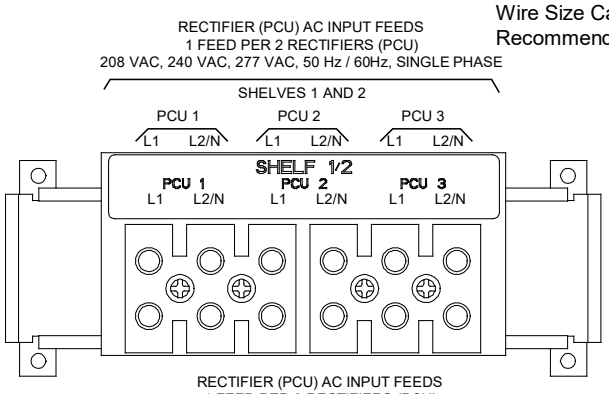
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

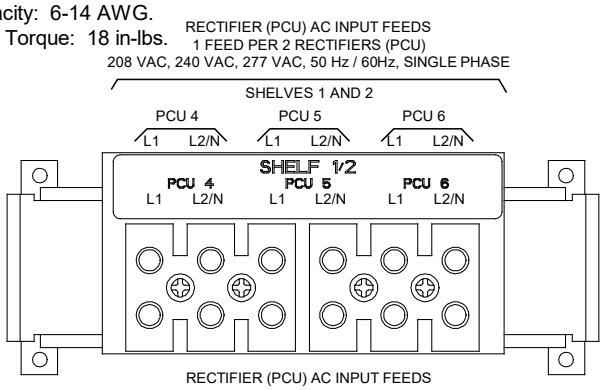
GND GND

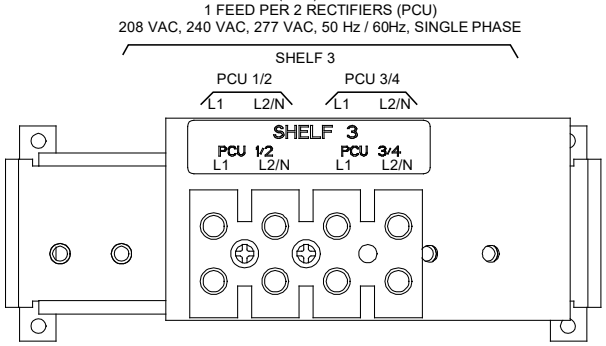
Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

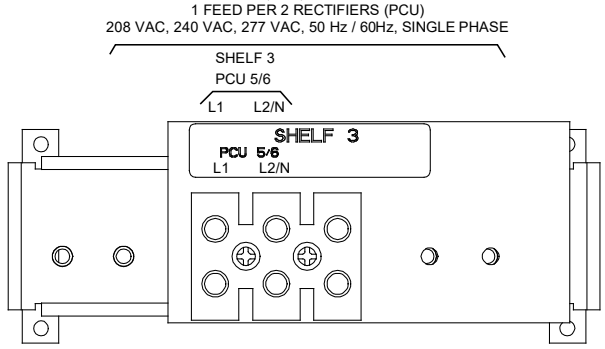
Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.









AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with Two (2) Shelves Installed

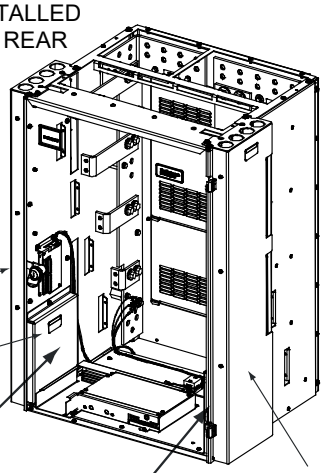
Installed in a Relay Rack

AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Two (2) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.



(4-Row Cabinet Shown, Others Similar)

Front Door Removed in Illustration for Clarity

AC Wireway Cover

AC Input Connector Cover

AC Wireway Cover

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

GND

GND

Inside View Right Side

GND

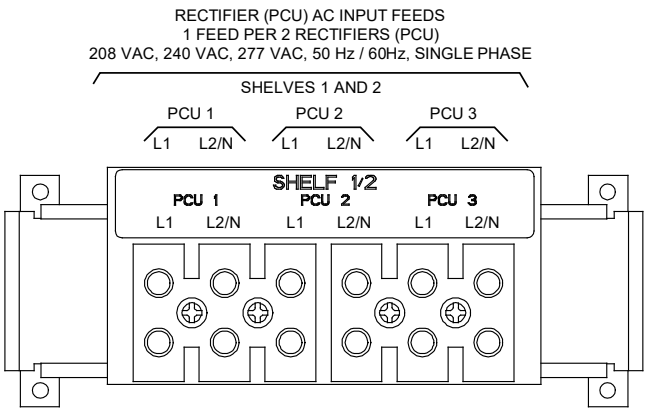
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

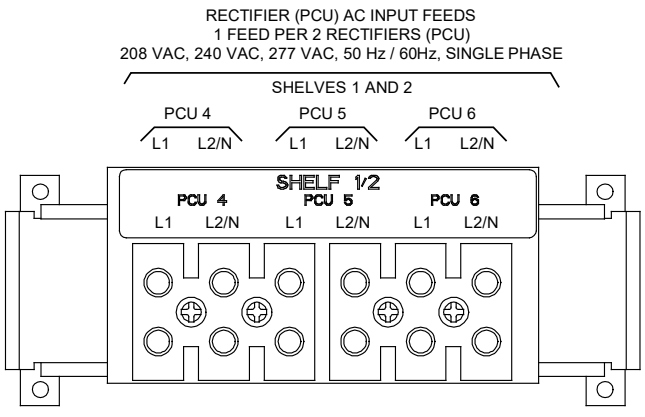
GND

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.





AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705300 (Nominal 208 VAC, 240 VAC) or 588705400 (Nominal 208 VAC, 240 VAC, 277 VAC) or 588705500 (Nominal 208 VAC, 240 VAC, 277 VAC) Module Mounting Assemblies with Rectifiers (1 Feed per 2 Rectifiers, Single Phase) - with One (1) Shelf Installed

Installed in a Relay Rack

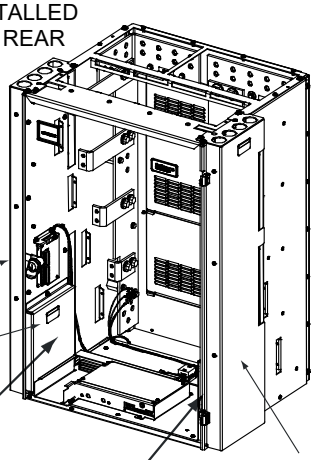
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with One (1) Shelf Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6

Shelf #1

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.



(4-Row Cabinet Shown, Others Similar)
Front Door Removed in Illustration for Clarity
AC Wireway Cover
AC Input Connector Cover
AC Wireway Cover

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

GND GND

Inside View Right Side

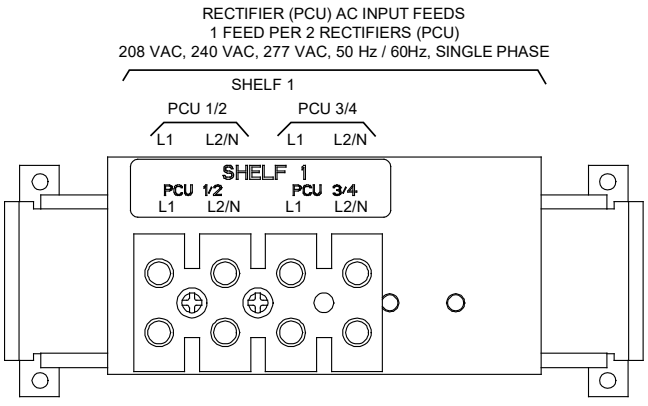
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

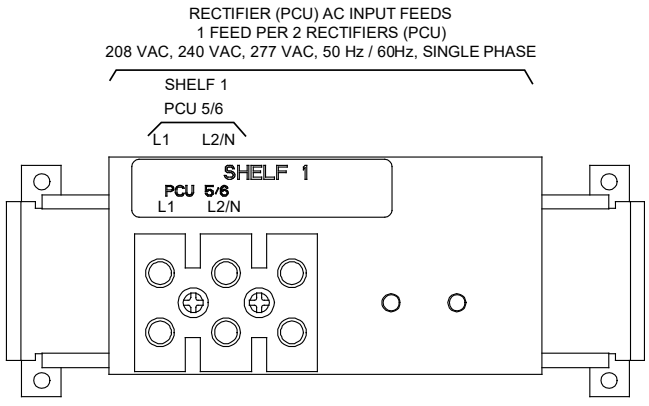
GND GND

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.





AC Input Connections to AC Input Termination Assembly List 42 Illustration when used with 588705000 or 588705300 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC) (1 Feed per 3 Rectifiers, Three Phase)

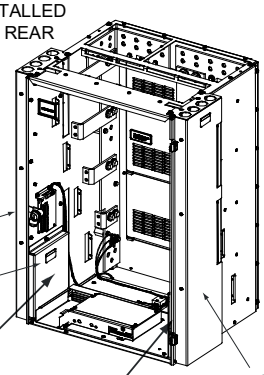
Installed in a Relay Rack

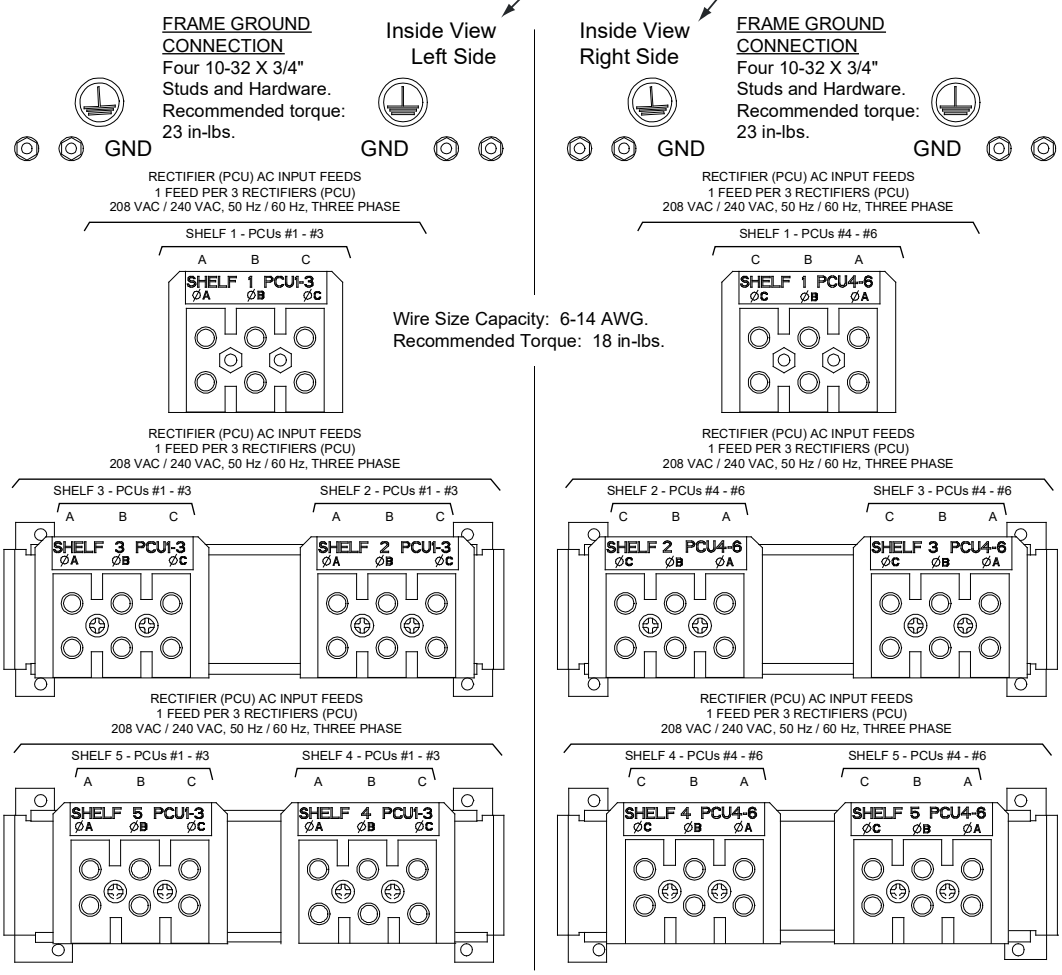
AC INPUT CONNECTIONS,
1 FEED PER 3 RECTIFIERS, THREE PHASE
(582127000 LIST 42)

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.





Note: For fewer power shelves than shown, only the connections for the installed shelves are present.

Note: The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

AC Input Connections to AC Input Termination Assembly List 43 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 277/480 VAC) (1 Feed per 3 Rectifiers, Three Phase)

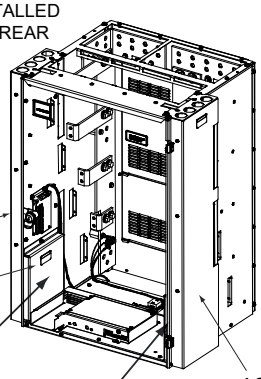
Installed in a Relay Rack

AC INPUT CONNECTIONS,
1 FEED PER 3 RECTIFIERS, THREE PHASE
(582127000 LIST 43)

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.



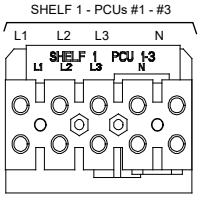
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

GND GND

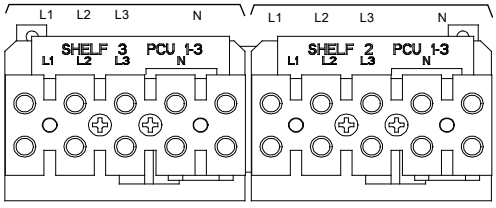
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 1 - PCUs #1 - #3



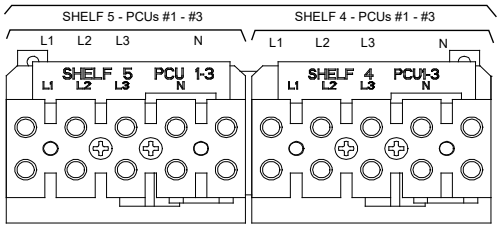
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 3 - PCUs #1 - #3 | SHELF 2 - PCUs #1 - #3



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 5 - PCUs #1 - #3 | SHELF 4 - PCUs #1 - #3



Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.

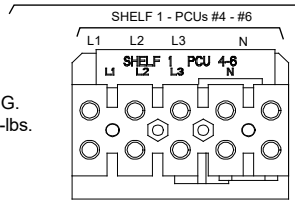
Inside View Right Side

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

GND GND

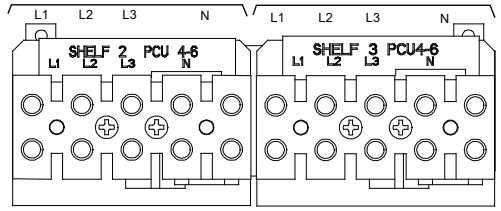
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 1 - PCUs #4 - #6



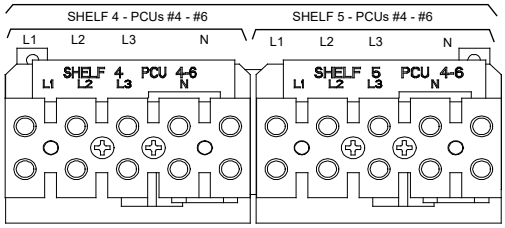
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 2 - PCUs #4 - #6 | SHELF 3 - PCUs #4 - #6



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60Hz, THREE PHASE

SHELF 4 - PCUs #4 - #6 | SHELF 5 - PCUs #4 - #6



Note: For fewer power shelves than shown, only the connections for the installed shelves are present.
Note: The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases.

AC Input Connections to AC Input Termination Assembly List 40 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 1 Rectifier, Single Phase)

Installed in an Enclosure

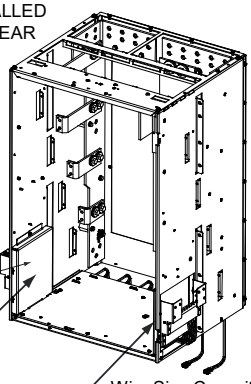
AC INPUT CONNECTIONS,
1 FEED PER 1 RECTIFIER, SINGLE PHASE
(582127000 LIST 40)

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #6

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

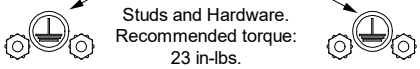
(4-Row Cabinet Shown, Others Similar)



Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

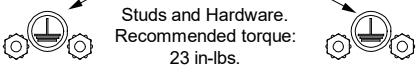
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

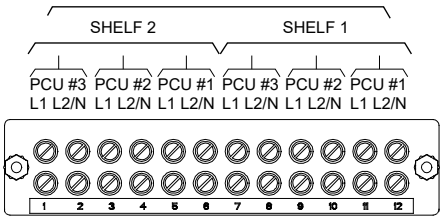


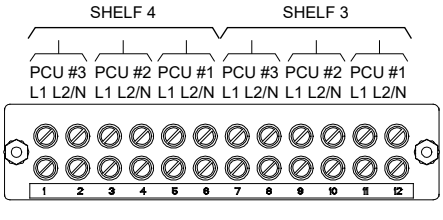
Inside View Right Side

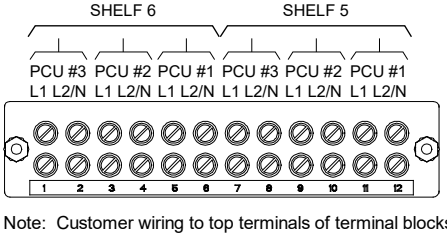
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.



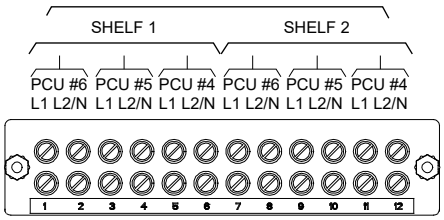
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 1 RECTIFIER (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE

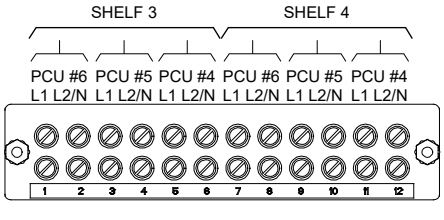


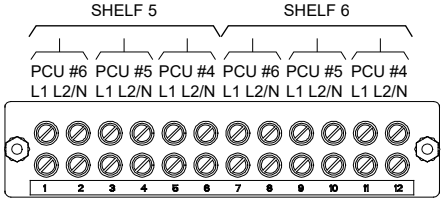




RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 1 RECTIFIER (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE







Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:	Line to Neutral
Connect Line 1 to Terminal L1.	Connect Line to Terminal L1.
Connect Line 2 to Terminal L2/N.	Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with Six (6) Shelves Installed

Installed in an Enclosure

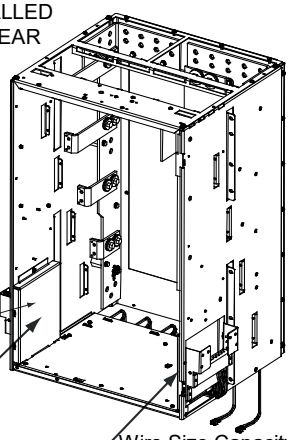
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Six (6) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #6

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

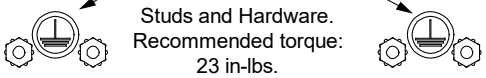


AC Input Connector Cover

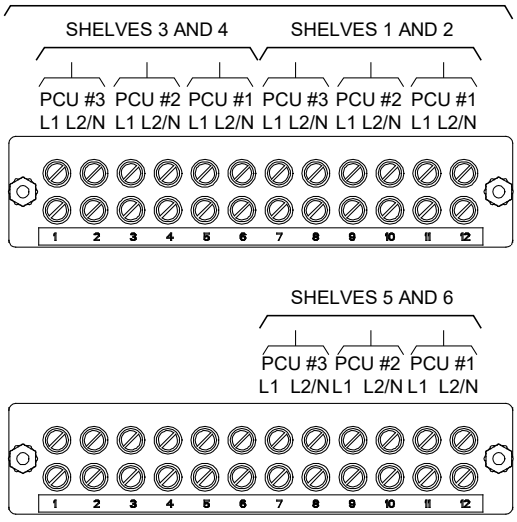
Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

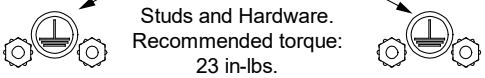
Inside View Left Side



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE

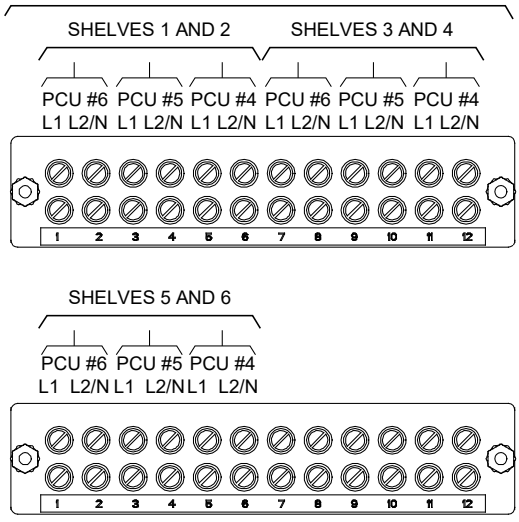


Inside View Right Side



FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:	Line to Neutral
Connect Line 1 to Terminal L1.	Connect Line to Terminal L1.
Connect Line 2 to Terminal L2/N.	Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with Five (5) Shelves Installed

Installed in an Enclosure

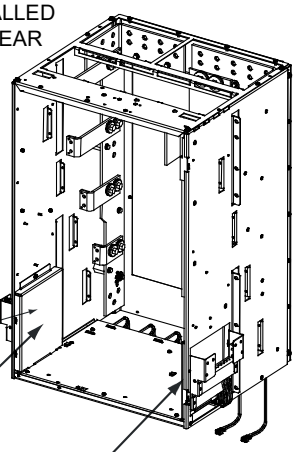
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Five (5) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

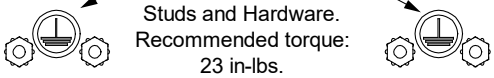


AC Input Connector Cover

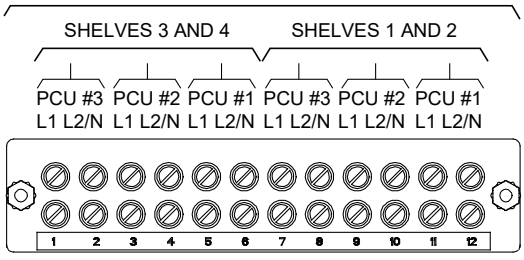
Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

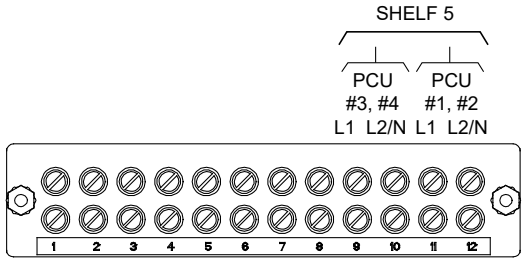
FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

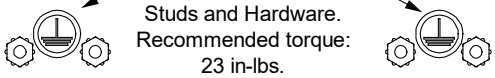


RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



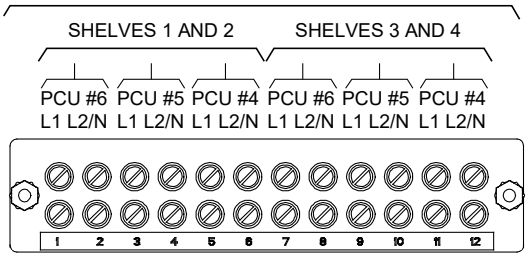


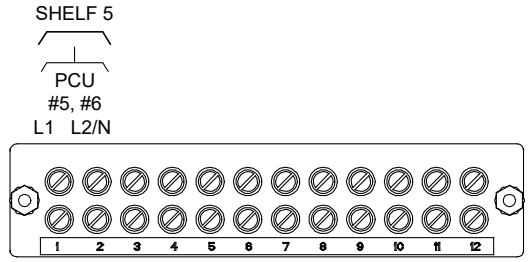
Inside View Right Side



FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE





Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:	Line to Neutral
Connect Line 1 to Terminal L1.	Connect Line to Terminal L1.
Connect Line 2 to Terminal L2/N.	Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with Four (4) Shelves Installed

Installed in an Enclosure

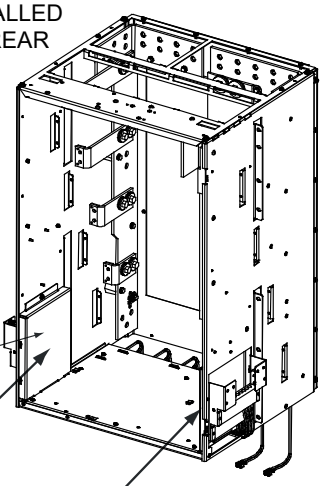
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Four (4) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

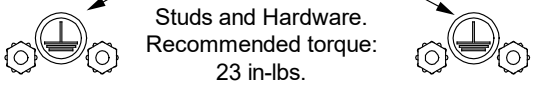


AC Input Connector Cover

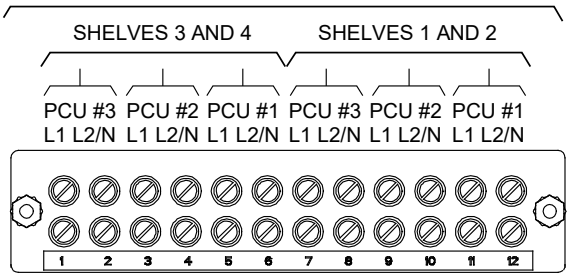
Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

Inside View Left Side

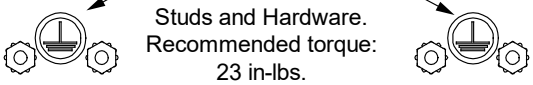


RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE

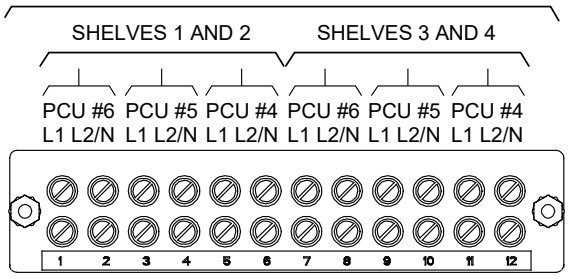


Inside View Right Side

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with Three (3) Shelves Installed

Installed in an Enclosure

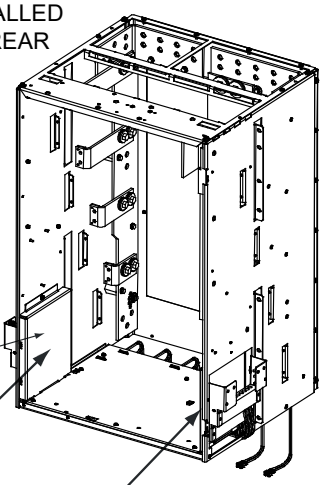
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Three (3) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3

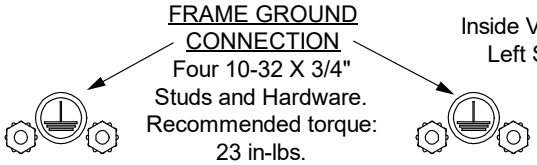
Rectifier Module (PCU) Mounting Slots

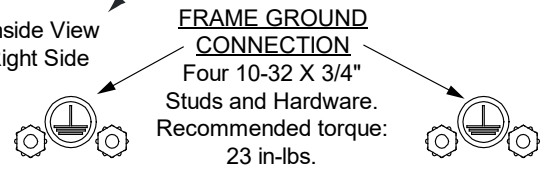
NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

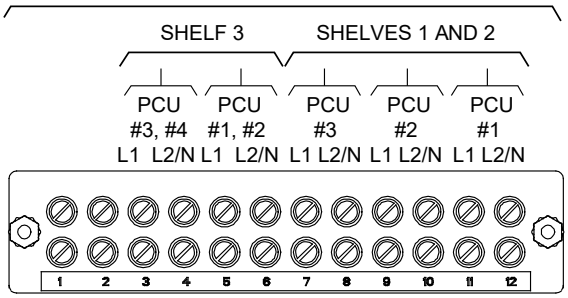


Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

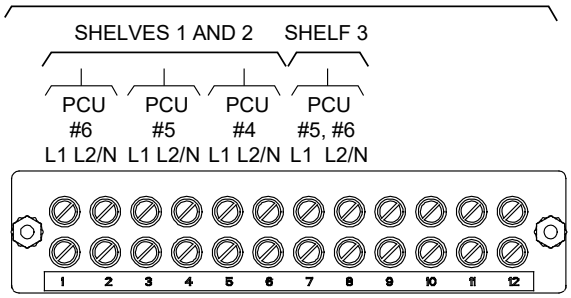




RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with Two (2) Shelves Installed

Installed in an Enclosure

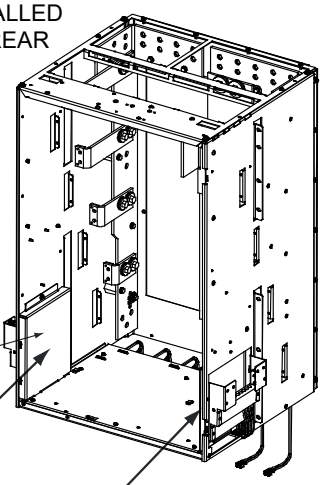
AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with Two (2) Shelves Installed

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2

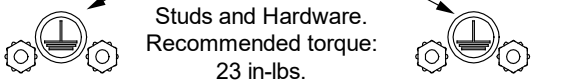
Rectifier Module (PCU) Mounting Slots

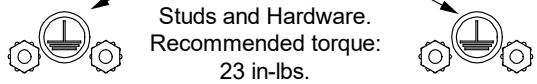
NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

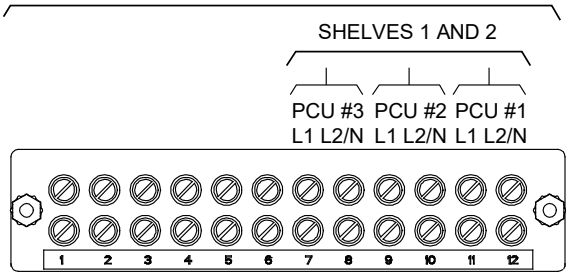


Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

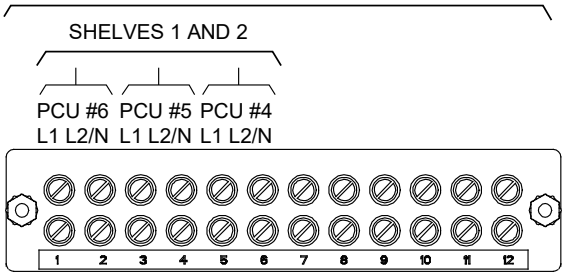




RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:
Connect Line 1 to Terminal L1.
Connect Line 2 to Terminal L2/N.

Line to Neutral
Connect Line to Terminal L1.
Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 41 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC, 277 VAC) (1 Feed per 2 Rectifiers, Single Phase) - with One (1) Shelf Installed

Installed in an Enclosure

AC INPUT CONNECTIONS,
1 FEED PER 2 RECTIFIERS, SINGLE PHASE
(582127000 LIST 41),
with One (1) Shelf Installed

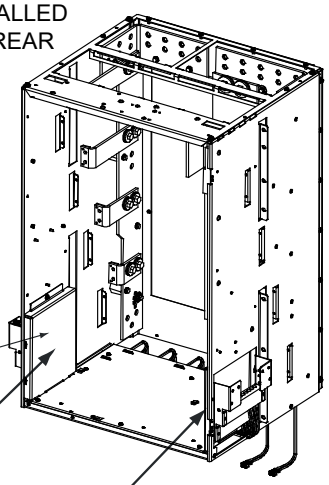
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6

Shelf #1

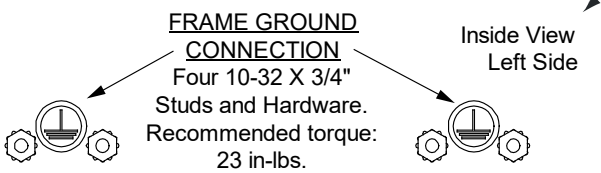
Rectifier Module (PCU) Mounting Slots

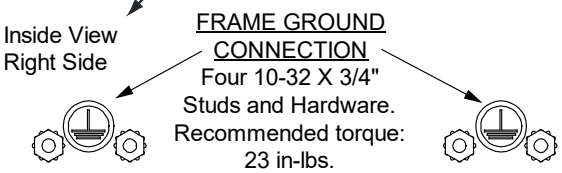
NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

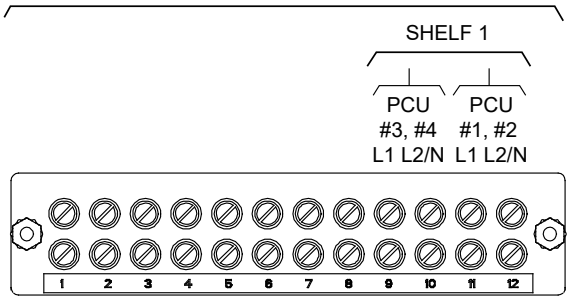


Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

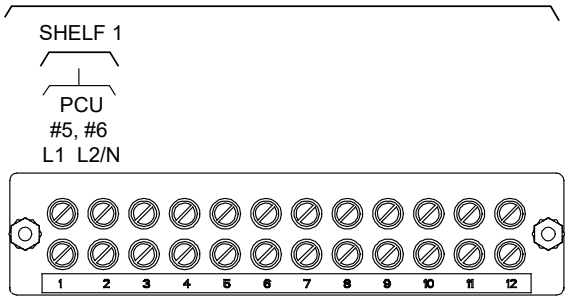




RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS (PCU)
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Line to Line:	Line to Neutral
Connect Line 1 to Terminal L1.	Connect Line to Terminal L1.
Connect Line 2 to Terminal L2/N.	Connect Neutral to Terminal L2/N.

AC Input Connections to AC Input Termination Assembly List 42 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 208 VAC, 240 VAC) (1 Feed per 3 Rectifiers, Three Phase)

Installed in an Enclosure

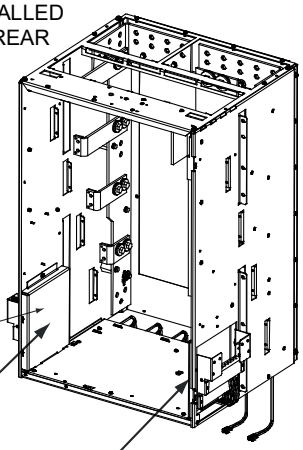
AC INPUT CONNECTIONS,
1 FEED PER 3 RECTIFIERS, THREE PHASE
(582127000 LIST 42)

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #6

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)



AC Input Connector Cover

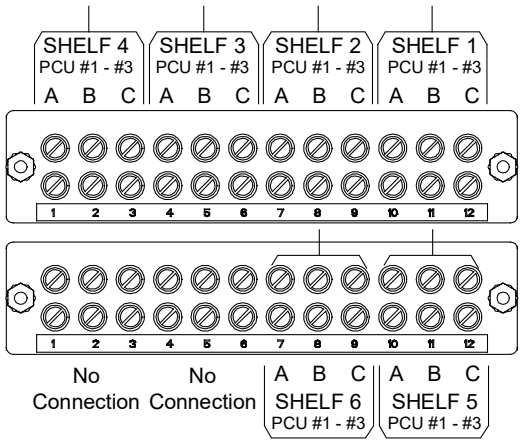
Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

Inside View Left Side

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
208 VAC / 240 VAC, 50 Hz / 60 Hz, THREE PHASE

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

GND GND

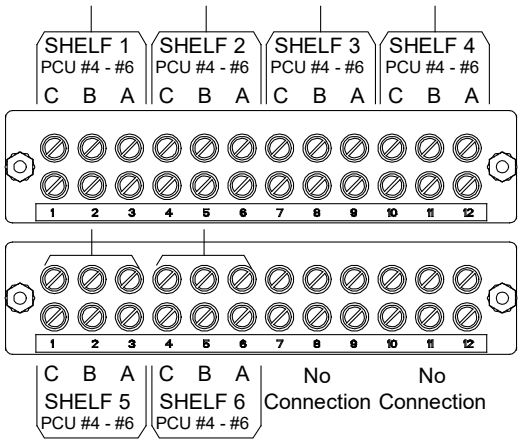


Inside View Right Side

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
208 VAC / 240 VAC, 50 Hz / 60 Hz, THREE PHASE

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

GND GND



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Note: The three-phase input is internally distributed within the system to provide a single-phase line to line connection to each rectifier position, evenly distributed across the three phases.

AC Input Connections to AC Input Termination Assembly List 43 Illustration when used with 588705000 or 588705400 or 588705500 Module Mounting Assemblies with Rectifiers (Nominal 277/480 VAC) (1 Feed per 3 Rectifiers, Three Phase)

Installed in an Enclosure

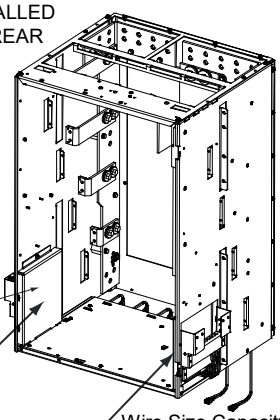
AC INPUT CONNECTIONS,
1 FEED PER 3 RECTIFIERS, THREE PHASE
(582127000 LIST 43)

Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #1
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #2
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #3
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #4
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #5
Rect. (PCU) 1	Rect. (PCU) 2	Rect. (PCU) 3	Rect. (PCU) 4	Rect. (PCU) 5	Rect. (PCU) 6	Shelf #6

Rectifier Module (PCU) Mounting Slots

NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

(4-Row Cabinet Shown, Others Similar)

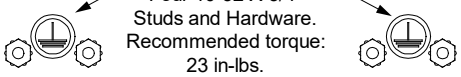


AC Input Connector Cover

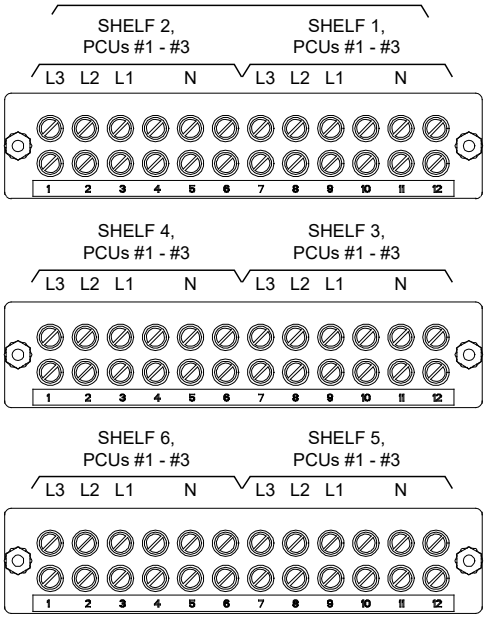
Wire Size Capacity:
4 AWG to 14 AWG.
Recommended Torque:
10-14 AWG 20 in-lbs.
8 AWG 25 in-lbs.
4 AWG 35 in-lbs.

FRAME GROUND CONNECTION
Four 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

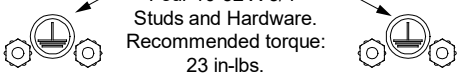
Inside View Left Side



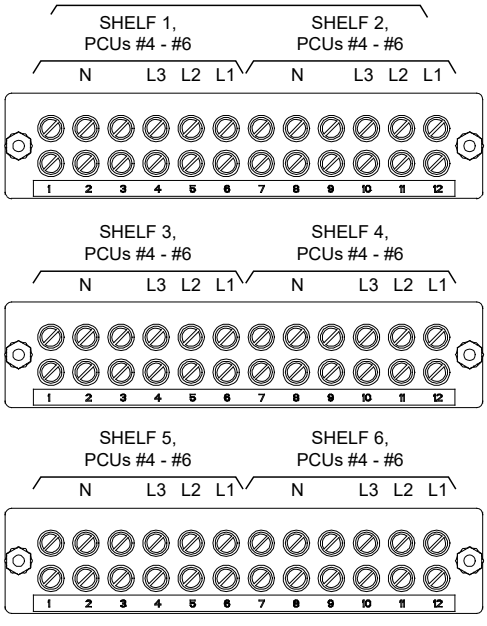
RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60 Hz, THREE PHASE



Inside View Right Side



RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60 Hz, THREE PHASE



Note: Customer wiring to top terminals of terminal blocks.
For fewer power shelves than shown, only the connections for the installed shelves are present.

Note: The three-phase input is internally distributed within the system to provide a single-phase line to neutral connection to each rectifier position, evenly distributed across the three phases.

AC Input Branch Circuit Protection and Wire Size Selection (List 100, 101, 102, 103, 203) (Nominal 208 VAC, 240 VAC)

Refer to the following table for recommended wire sizes and branch circuit protection.

AC Input to **List 100, 101, 102, 103, 203** AC Input Termination Assembly (Nominal 208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz) Provides "1 AC Feed per 2 Rectifiers" Single Phase Input Terminations				
Input Voltage	**Input Current** [7]	**Overcurrent Protection** [1]	**40 °C Ambient Temperature**	
			Wire [3] [4] [5]	**Conduit Size** [6]
208 VAC	20 A	25 A [2]	10 AWG	3/4"
240 VAC	17.5 A	25 A [2]	10 AWG	3/4"

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

2 Maximum over current protection device is 30 A.

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 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 System with Four (4) Spec. No. 588705300 Rectifier Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) PCUs. For operation in countries where the NEC is not recognized, follow applicable codes.

7 Input current based on R48-2000e3 rectifier module.

Table 36
Recommended AC Input Branch Circuit Protection and Wire Size (List 100, 101, 102, 103, 203)

AC Input Connections to AC Input Termination Assembly in List 100, 101, 102, 103, 203 Illustration (Nominal 208 VAC, 240 VAC)

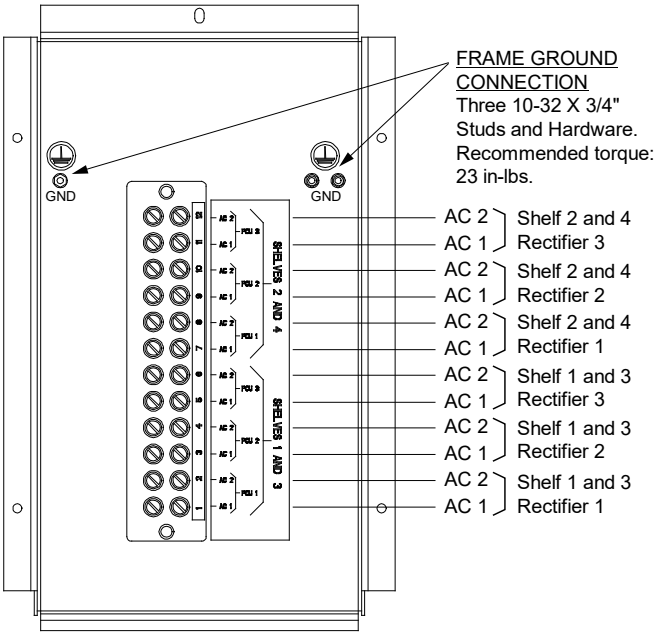
RECTIFIER AC INPUT FEEDS
1 FEED PER 2 RECTIFIERS
208 VAC / 240 VAC, 50 Hz / 60 Hz, SINGLE PHASE

Line to Line:
Connect Line 1 to Terminal “AC 1”.
Connect Line 2 to Terminal “AC 2”.

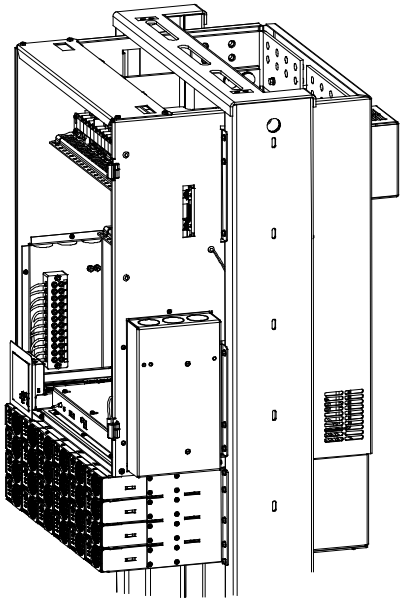
Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.

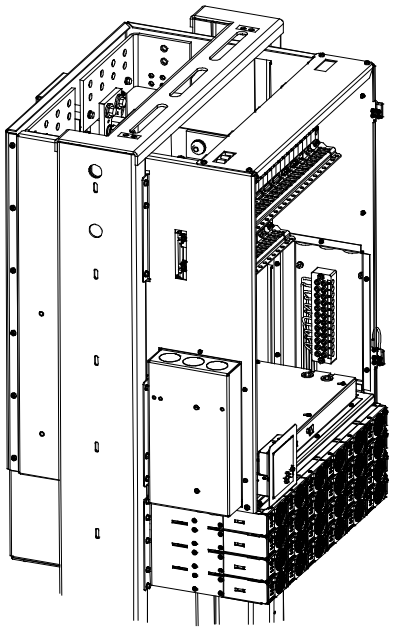
Rect. 1	Rect. 2	Rect. 3	Rect. 4	Rect. 5	Rect. 6	Shelf #1
Rect. 1	Rect. 2	Rect. 3	Rect. 4	Rect. 5	Rect. 6	Shelf #2
Rect. 1	Rect. 2	Rect. 3	Rect. 4	Rect. 5	Rect. 6	Shelf #3
Rect. 1	Rect. 2	Rect. 3	Rect. 4	Rect. 5	Rect. 6	Shelf #4

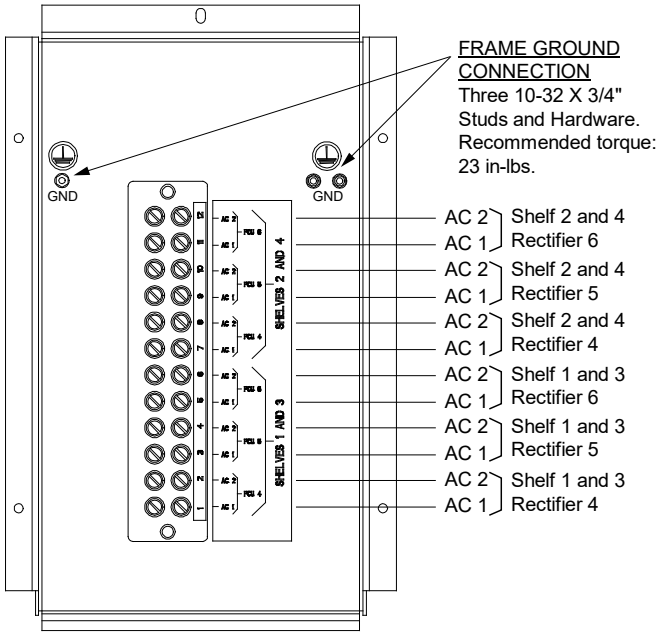
Rectifier Module Mounting Slots



FRAME GROUND CONNECTION
Three 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.







FRAME GROUND CONNECTION
Three 10-32 X 3/4" Studs and Hardware.
Recommended torque: 23 in-lbs.

400V DC Input

DC Input Branch Circuit Protection and Wire Size Selection for DC Input Termination Assembly List 45, 46, 47 when used with 588705000 Module Mounting Assemblies with Converters (input voltage range: 260V DC to 400V DC)

Refer to the following tables for recommended wire sizes and branch circuit protection.

DC Input to List 45 DC Input Termination Assembly (400 Volts DC) Provides "1 DC Feed per 1 Converter" Input Terminations (System with Spec. No. 58870500040 Converter Module Assemblies)				
Input Voltage	**Input Current**	**Overcurrent Protection**	**40 °C Ambient Temperature**	
			Wire (1) (2) (3) (6)	**Conduit Size**
400V DC	14.6 A (7)	20 A	12 AWG (4) 10 AWG (5)	3/4" (4) 1" (5)

1 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.

2 Equipment grounding conductors must be provided with the DC input conductors supplied to the assembly. 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.

3 THHN 90°C Wire.

4 System with Four (4) Spec. No. 588705000 Converter Module Assemblies: Conduit sized for six (6) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) converters. For operation in countries where the NEC is not recognized, follow applicable codes.

5 System with Five (5) Spec. No. 588705000 Converter Module Assemblies: Conduit sized for twelve (12) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) converters. For operation in countries where the NEC is not recognized, follow applicable codes.

6 Maximum loop length is 100 meters (328 feet). Loop length is the sum of the lengths of the positive and negative leads.

7 14.6 A DC maximum input current @ 260V DC, 3500W output.

Table 37
Recommended DC Input Branch Circuit Protection and Wire Size when Using
List 45 "1 DC Feed per 1 Converter" DC Input Termination Assembly,
System with Spec. No. 588705000 Converter Module Assemblies

DC Input to List 46 DC Input Termination Assembly (400 Volts DC) Provides "1 DC Feed per 2 Converters" Input Terminations (System with Spec. No. 58870500040 Converter Module Assemblies)				
Input Voltage	**Input Current**	**Overcurrent Protection**	**40 °C Ambient Temperature**	
			Wire [1] [2] [3] [5]	**Conduit Size**
400V DC	29.2 A	40 A [6]	8 AWG	1" [4]

[1] 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.

[2] Equipment grounding conductors must be provided with the DC input conductors supplied to the assembly. 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.

[3] THHN 90°C Wire.

[4] System with Four (4) Spec. No. 588705000 Converter Module Assemblies: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for four (4) converters. For operation in countries where the NEC is not recognized, follow applicable codes.

[5] Maximum loop length is 100 meters (328 feet). Loop length is the sum of the lengths of the positive and negative leads.

[6] Maximum over current protection device is 45 A at 40 °C.

Table 38
Recommended DC Input Branch Circuit Protection and Wire Size when Using
List 46 "1 DC Feed per 2 Converters" DC Input Termination Assembly,
System with Spec. No. 588705000 Converter Module Assemblies

DC Input to List 47 DC Input Termination Assembly (400 Volts DC) Provides "1 DC Feed per 3 Converters" Input Terminations (System with Spec. No. 58870500040 Converter Module Assemblies)				
Input Voltage	**Input Current**	**Overcurrent Protection [4]**	**40 °C Ambient Temperature**	
			Wire [1] [2] [3] [7]	**Conduit Size [5] [6]**
400V DC	44 A	60 A	6 AWG	1"

[1] 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.

[2] Equipment grounding conductors must be provided with the DC input conductors supplied to the assembly. 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.

[3] THHN 90°C Wire.

[4] Maximum over current protection device is 70 A at 40 °C.

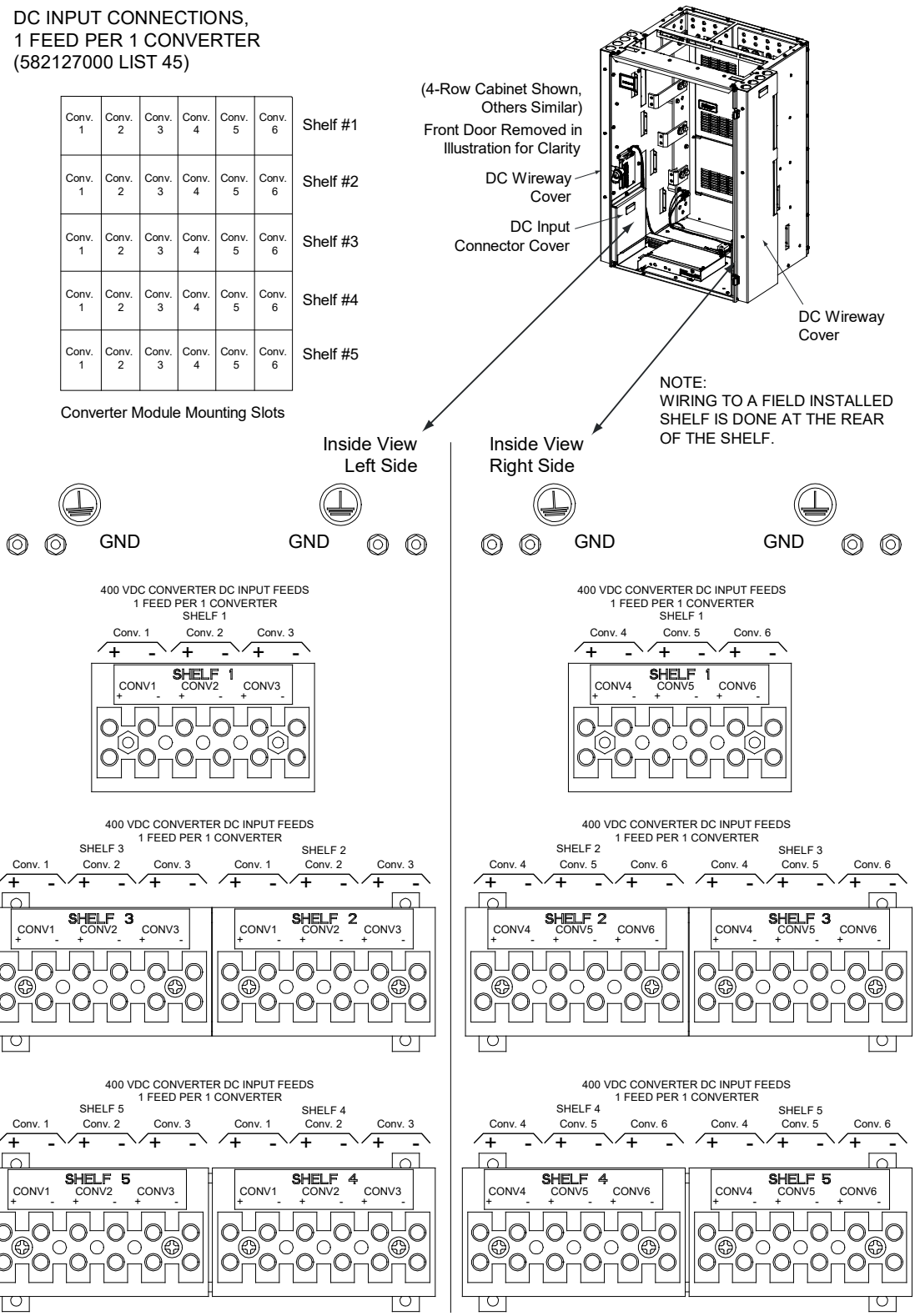
[5] System with Four (4) Spec. No. 588705000 Converter Module Assemblies: Conduit sized for two (2) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for three (3) converters. For operation in countries where the NEC is not recognized, follow applicable codes.

[6] System with Five (5) Spec. No. 588705000 Converter Module Assemblies: Conduit sized for four (4) current carrying conductors and one (1) ground conductor per conduit (based on NEC recommendations), for six (6) converters. For operation in countries where the NEC is not recognized, follow applicable codes.

[7] Maximum loop length is 100 meters (328 feet). Loop length is the sum of the lengths of the positive and negative leads.

Table 39
Recommended DC Input Branch Circuit Protection and Wire Size when Using
List 47 "1 DC Feed per 3 Converters" DC Input Termination Assembly,
System with Spec. No. 588705000 Converter Module Assemblies

400V DC Input Connections to DC Input Termination Assembly List 45, 46, 47 Illustration when used with 588705000 Module Mounting Assemblies with Converters

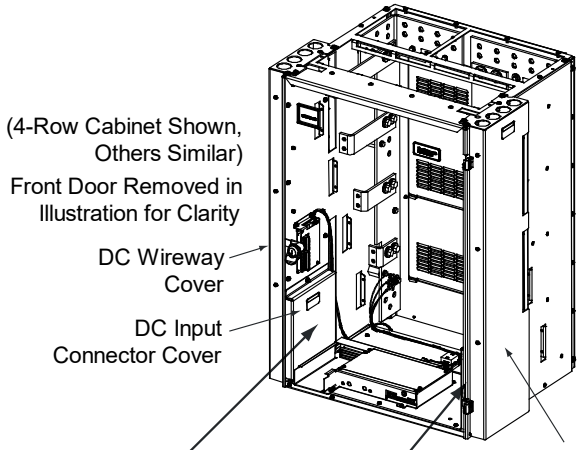


Note: For fewer power shelves than shown, only the connections for the installed shelves are present.

DC INPUT CONNECTIONS, 1 FEED PER 2 CONVERTERS (582127000 LIST 46)

Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #1
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #2
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #3
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #4

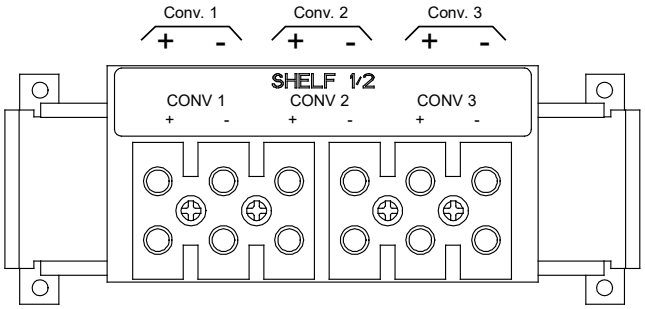
Converter Module Mounting Slots



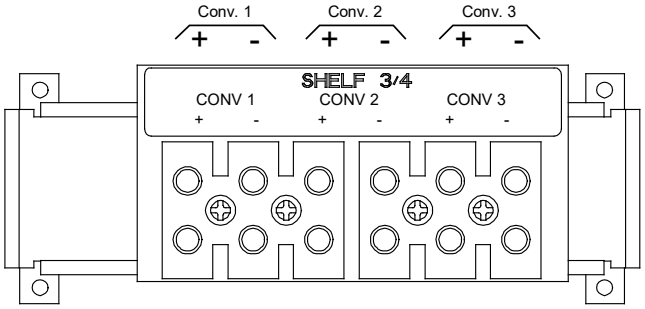
NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

Inside View Left Side

400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 2 CONVERTERS
SHELVES 1 AND 2

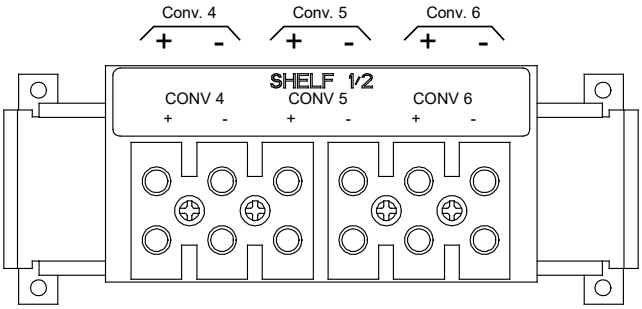


400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 2 CONVERTERS
SHELVES 3 AND 4

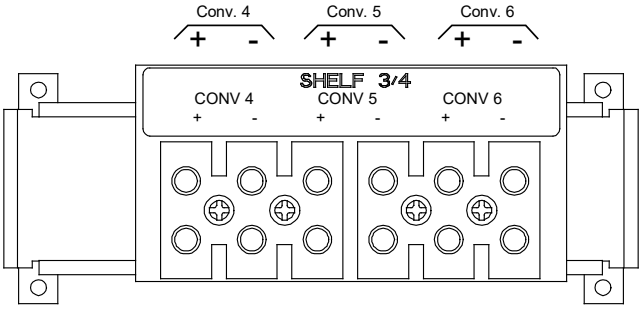


Inside View Right Side

400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 2 CONVERTERS
SHELVES 1 AND 2



400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 2 CONVERTERS
SHELVES 3 AND 4

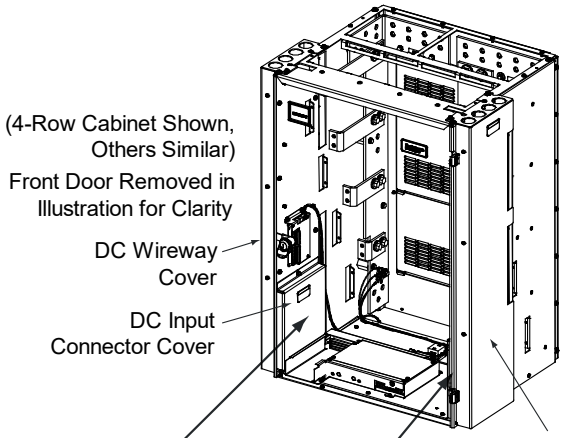


Note: For fewer power shelves than shown, only the connections for the installed shelves are present.

DC INPUT CONNECTIONS, 1 FEED PER 3 CONVERTERS (582127000 LIST 47)

Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #1
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #2
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #3
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #4
Conv. 1	Conv. 2	Conv. 3	Conv. 4	Conv. 5	Conv. 6	Shelf #5

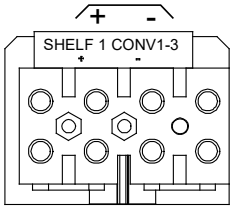
Converter Module Mounting Slots



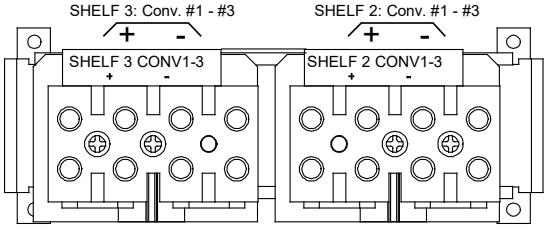
NOTE:
WIRING TO A FIELD INSTALLED SHELF IS DONE AT THE REAR OF THE SHELF.

Inside View Left Side

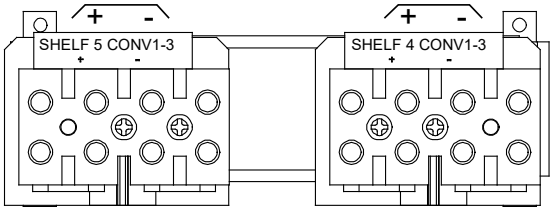
400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 1: Conv. #1 - #3



400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 3: Conv. #1 - #3 SHELF 2: Conv. #1 - #3

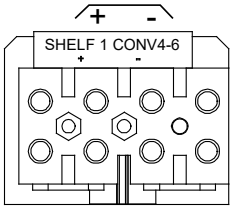


400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 5: Conv. #1 - #3 SHELF 4: Conv. #1 - #3

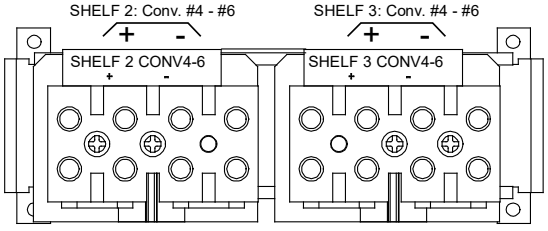


Inside View Right Side

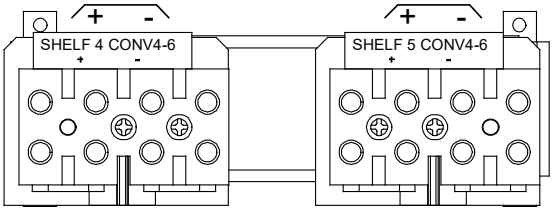
400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 1: Conv. #4 - #6



400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 2: Conv. #4 - #6 SHELF 3: Conv. #4 - #6



400 VDC CONVERTER DC INPUT FEEDS
1 FEED PER 3 CONVERTERS
SHELF 4: Conv. #4 - #6 SHELF 5: Conv. #4 - #6



Note: For fewer power shelves than shown, only the connections for the installed shelves are present.

AC Input Connections to Field Installed Module Mounting Assemblies

Spec. No. 588705000 List 22 (208 VAC, 240 VAC Input, Single Phase)

Refer to Table 40 for recommended AC input branch circuit protection and Figure 2 for terminal location.

AC Input (Line Cords) 588705000 List 22 Line Cords for Individual Rectifier Module AC Input Branch Circuits are Factory Connected (One AC Input Branch Circuit per Rectifier Module, Six AC Input Branch Circuits per Shelf)	
Operating Ambient Temperature	**Recommended Branch Circuit Protection [1, 2]**
30 °C	25 Amperes
40 °C [3]	

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

2 Recommendations based on Nominal Line Full Load Input Current of 18 Amperes.

3 Line cord option can only be used up to 40 °C ambient.

Table 40
Recommended AC Input Branch Circuit Protection - 588705000 List 22

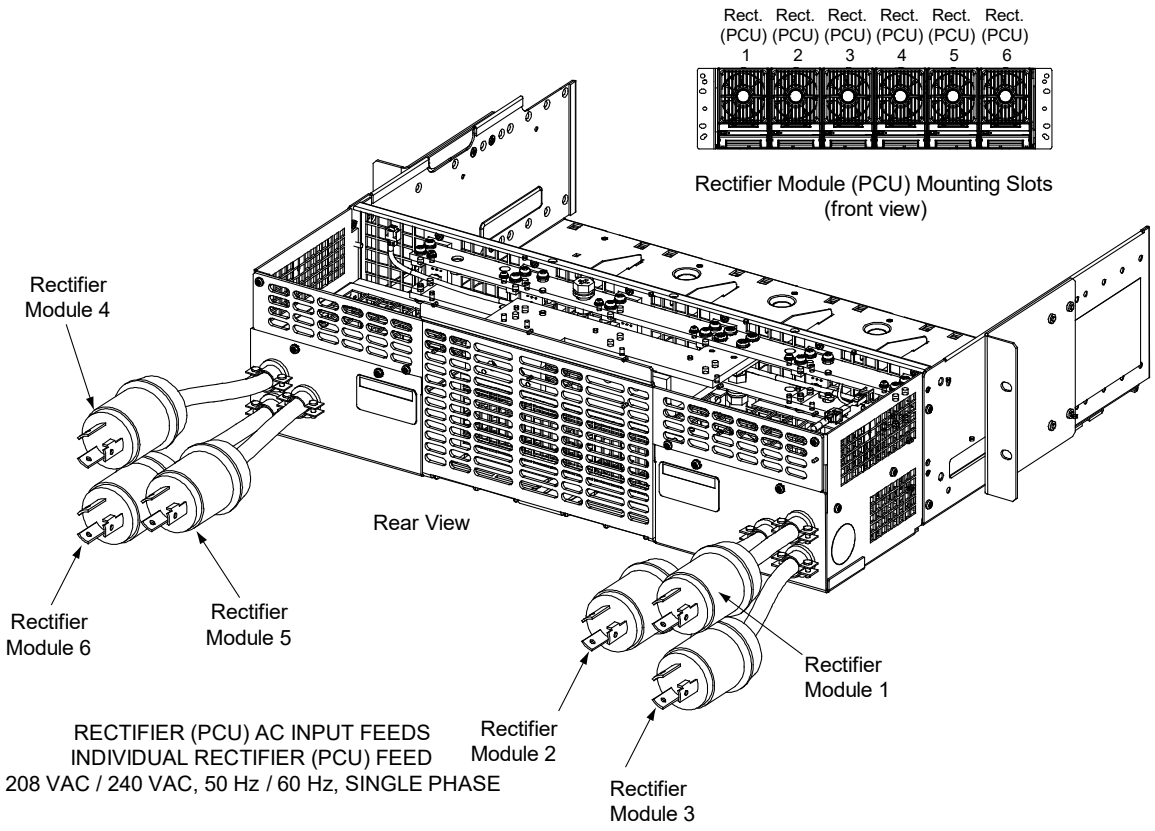


Figure 2
588705000 List 22 AC Input Connections (Single-Phase Input) (Line Cords)

Spec. No. 588705000 List 31 (208 VAC, 240 VAC, 277 VAC Input, Single Phase)

Refer to Table 41 for recommended AC input branch circuit protection and wire size and Figure 3 for terminal location.

AC Input (TB1 and TB2) 588705000 List 31 Connection Points for Individual Rectifier Module AC Input Branch Circuits are Provided (One AC Input Branch Circuit per Rectifier Module, Six AC Input Branch Circuits per Shelf)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	17.3 A	25 A [2]	10 AWG	3/4”
240 VAC	15.0 A	20 A	12 AWG	1/2”
277 VAC	13.5 A	20 A	12 AWG	1/2”

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

[2] Maximum over current protection device is 30 A.

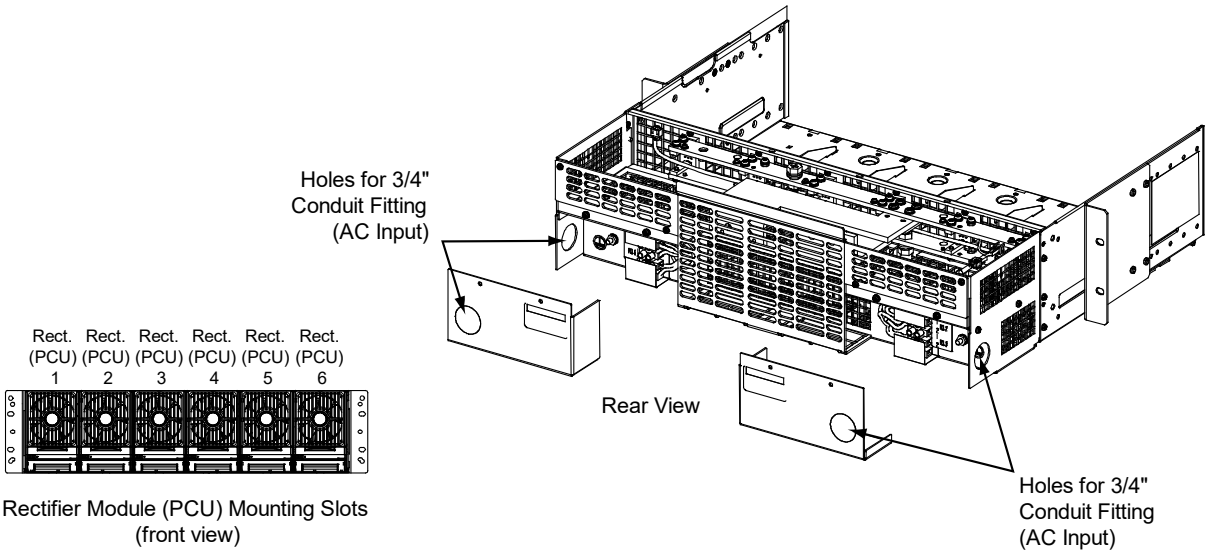
[3] Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

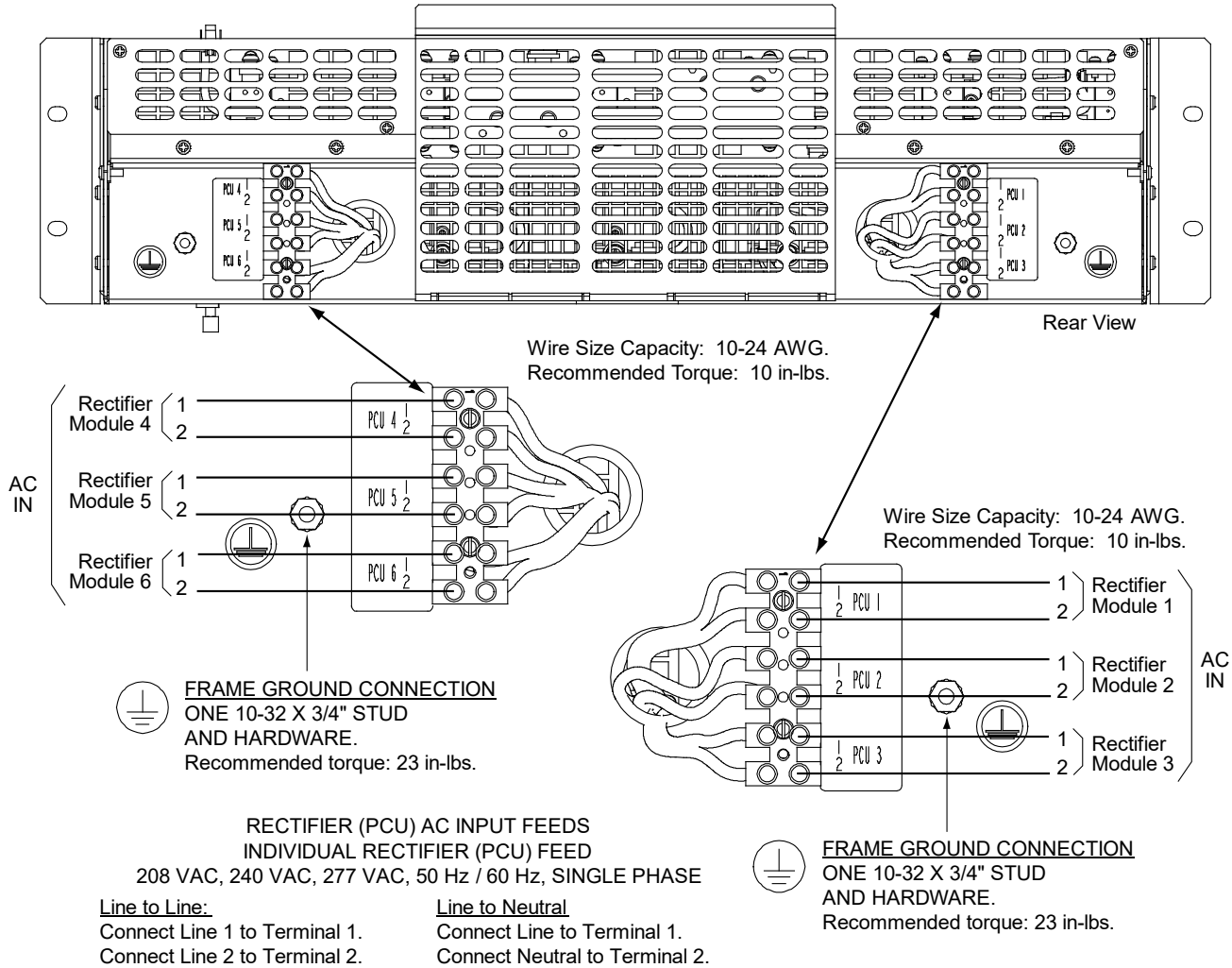
[4] Equipment grounding conductors must be provided with the AC input conductors supplied to the assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum 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] Input current based on R48-3500E rectifier module.

[6] THHN 90°C Wire.

Table 41
Recommended AC Input Branch Circuit Protection and Wire Size - 588705000 List 31





RECTIFIER (PCU) AC INPUT FEEDS
INDIVIDUAL RECTIFIER (PCU) FEED
208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, SINGLE PHASE

Line to Line:	Line to Neutral
Connect Line 1 to Terminal 1.	Connect Line to Terminal 1.
Connect Line 2 to Terminal 2.	Connect Neutral to Terminal 2.

Figure 3
588705000 List 31 AC Input and Frame Ground Connections (Single-Phase Input) (Terminal Blocks)

Spec. No. 588705000 List 32 (208 VAC, 240 VAC Input, Three Phase)

Refer to Table 42 for recommended AC input branch circuit protection and wire size and Figure 4 for terminal location.

AC Input (TB1 and TB2) 588705000 List 32 Connection Points for Two 3-Phase AC Input Feeds are Provided per Shelf				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	29.3 A	40 A [2]	8 AWG	3/4”
240 VAC	25.5 A	35 A [2]	8 AWG	3/4”

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

2 Maximum over current protection device is 50 A.

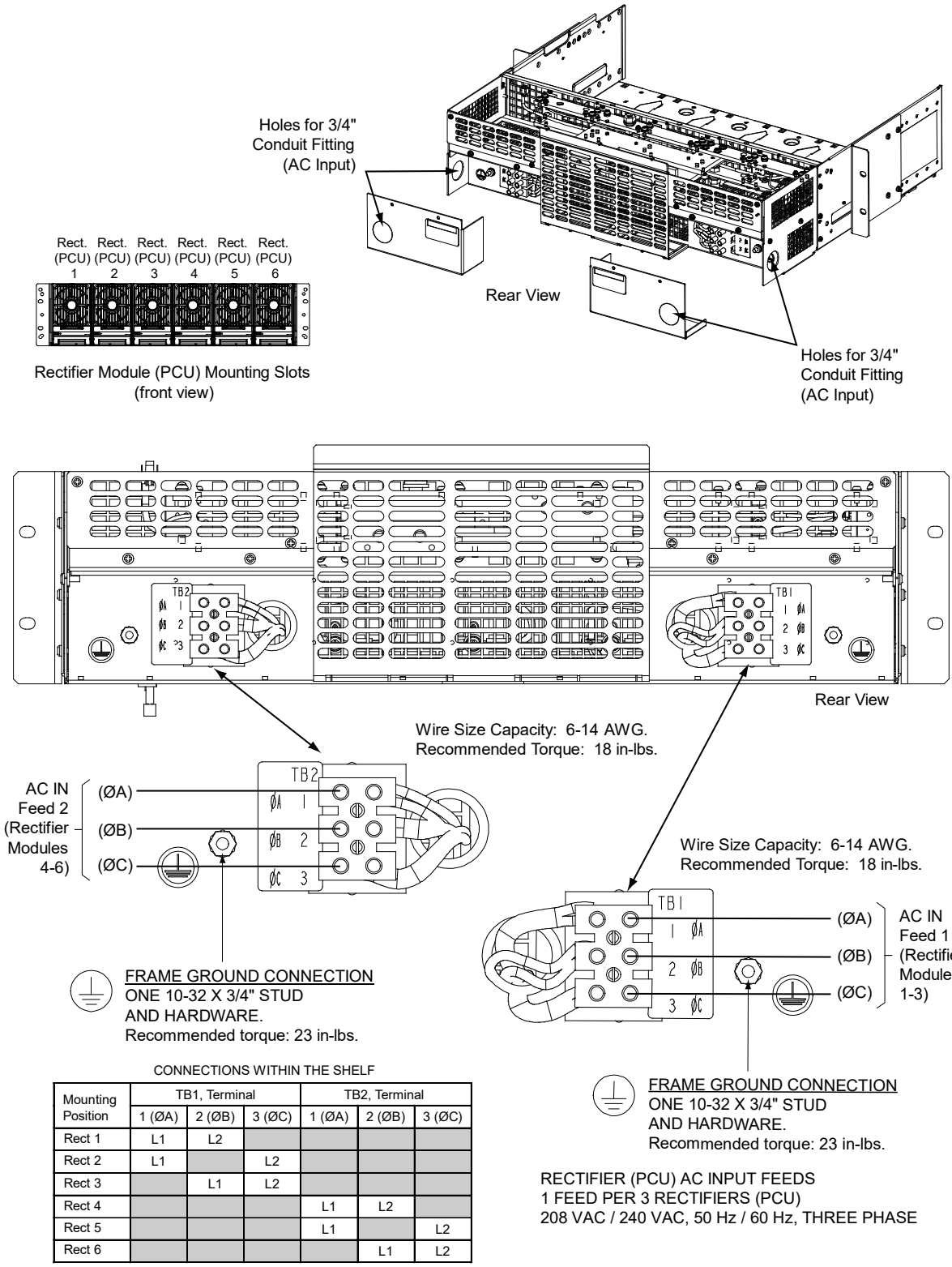
3 Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

4 Equipment grounding conductors must be provided with the AC input conductors supplied to the 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 Input current based on R48-3500E rectifier module.

6 THHN 90°C Wire.

Table 42
Recommended AC Input Branch Circuit Protection and Wire Size - 588705000 List 32



CONNECTIONS WITHIN THE SHELF

Mounting Position	TB1, Terminal			TB2, Terminal		
	1 (ØA)	2 (ØB)	3 (ØC)	1 (ØA)	2 (ØB)	3 (ØC)
Rect 1	L1	L2				
Rect 2	L1		L2			
Rect 3		L1	L2			
Rect 4				L1	L2	
Rect 5				L1		L2
Rect 6					L1	L2

Figure 4
588705000 List 32 AC Input and Frame Ground Connections (Three-Phase Input) (Terminal Blocks)

Spec. No. 588705000 List 33 (277/480 VAC Input, Three Phase)

Refer to Table 43 for recommended AC input branch circuit protection and wire size and Figure 5 for terminal location.

AC Input (TB1 and TB2) 588705000 List 33 Connection Points for Two 3-Phase AC Input Feeds are Provided per Shelf				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
277/480 VAC	13.5 A	20 A	12 AWG	1/2”

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

2 Maximum over current protection device is 20 A.

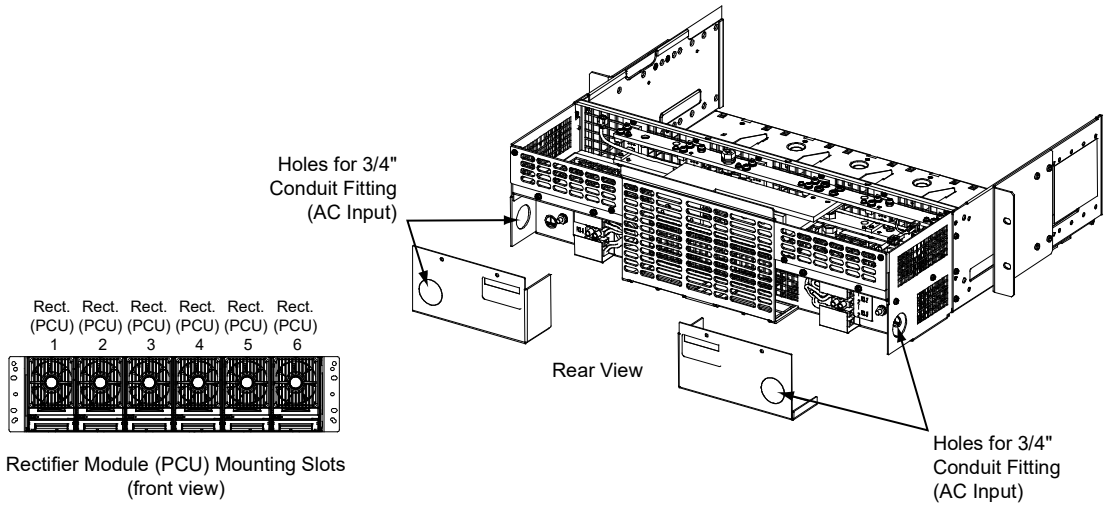
3 Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

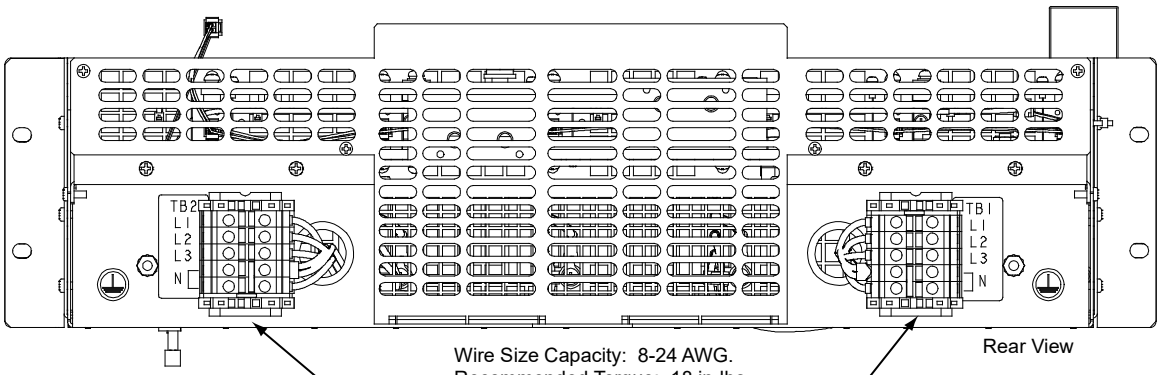
4 Equipment grounding conductors must be provided with the AC input conductors supplied to the assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum 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.

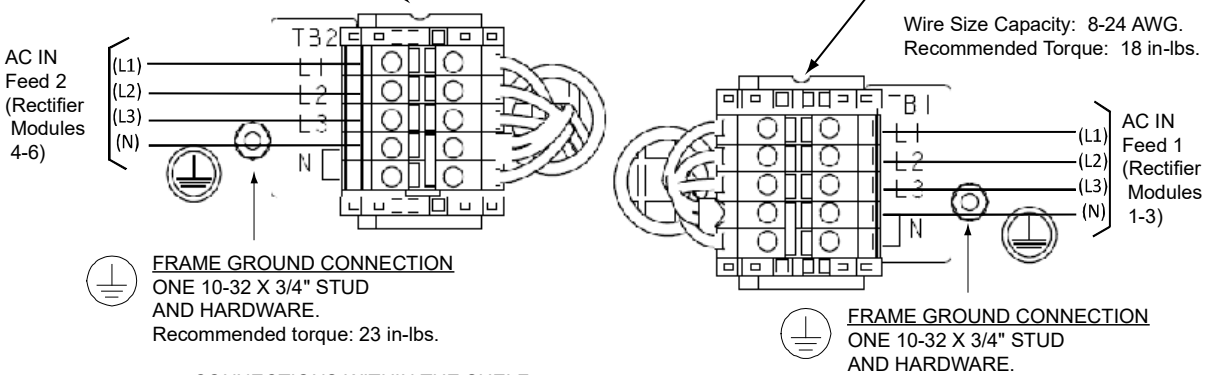
5 Input current based on R48-3500E rectifier module.

6 THHN 90°C Wire.

Table 43
Recommended AC Input Branch Circuit Protection and Wire Size - 588705000 List 33







CONNECTIONS WITHIN THE SHELF

Mounting Position	TB1, Terminal				TB2, Terminal			
	L1	L2	L3	N	L1	L2	L3	N
Rect 1	L1			N				
Rect 2		L2		N				
Rect 3			L3	N				
Rect 4					L1			N
Rect 5						L2		N
Rect 6							L3	N

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60 Hz, THREE PHASE

Figure 5
588705000 List 33 AC Input and Frame Ground Connections (Three-Phase Input) (Terminal Blocks)

Spec. No. 588705300 List 03 (120 VAC / 208 VAC / 240 VAC Input, Single Phase)

The module mounting assembly is equipped with plug-in AC input connectors located on the rear of the assembly. Mating connectors and wire harnesses are available (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107 and "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108). Refer to Figure 6 for module mounting assembly rectifier AC input terminal location.

Refer to Table 44 for recommended AC input branch circuit protection when using the supplied rectifier AC input cable assemblies.

Refer to Table 45 for recommended AC input branch circuit protection when using the supplied rectifier AC input line cords.

Recommended Rectifier AC Input Branch Circuit Protection (Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz) Supplied Input Cable Assemblies (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107) (One AC Input Branch Circuit per Two Rectifier Modules)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
120 VAC	18 A	30 A
208 VAC	20 A	25 A
240 VAC	17.5 A	25 A

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

[2] Input current based on R48-2000e3 rectifier module.

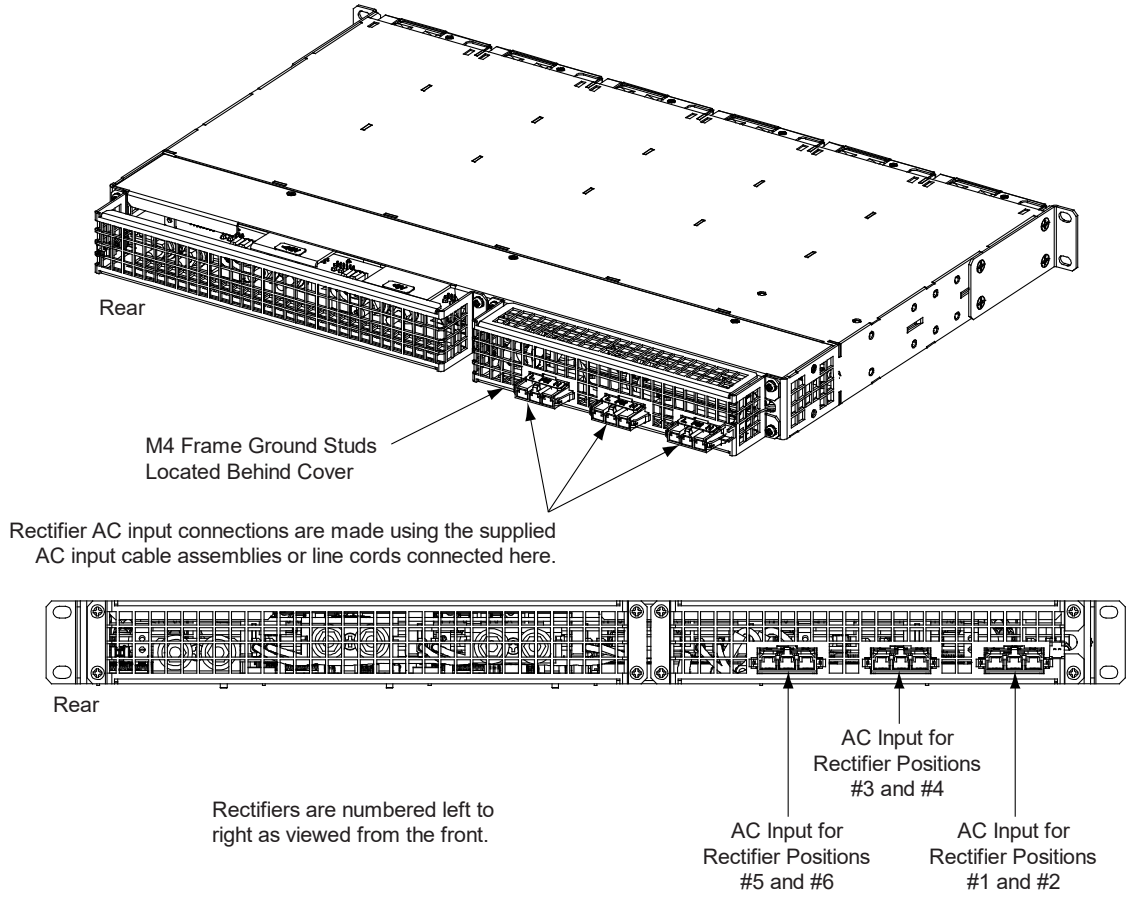
Table 44
Recommended Rectifier AC Input Branch Circuit Protection
(Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz)
Supplied Input Cable Assemblies

Recommended Rectifier AC Input Branch Circuit Protection (Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz) Supplied AC Input Line Cords (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108) (One AC Input Branch Circuit per Two Rectifier Modules)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
120 VAC	18 A	Size per AC Line Cord Plug Rating
208 VAC	20 A	
240 VAC	17.5 A	

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

[2] Input current based on R48-2000e3 rectifier module.

Table 45
Recommended Rectifier AC Input Branch Circuit Protection
(Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz)
Supplied AC Input Line Cords



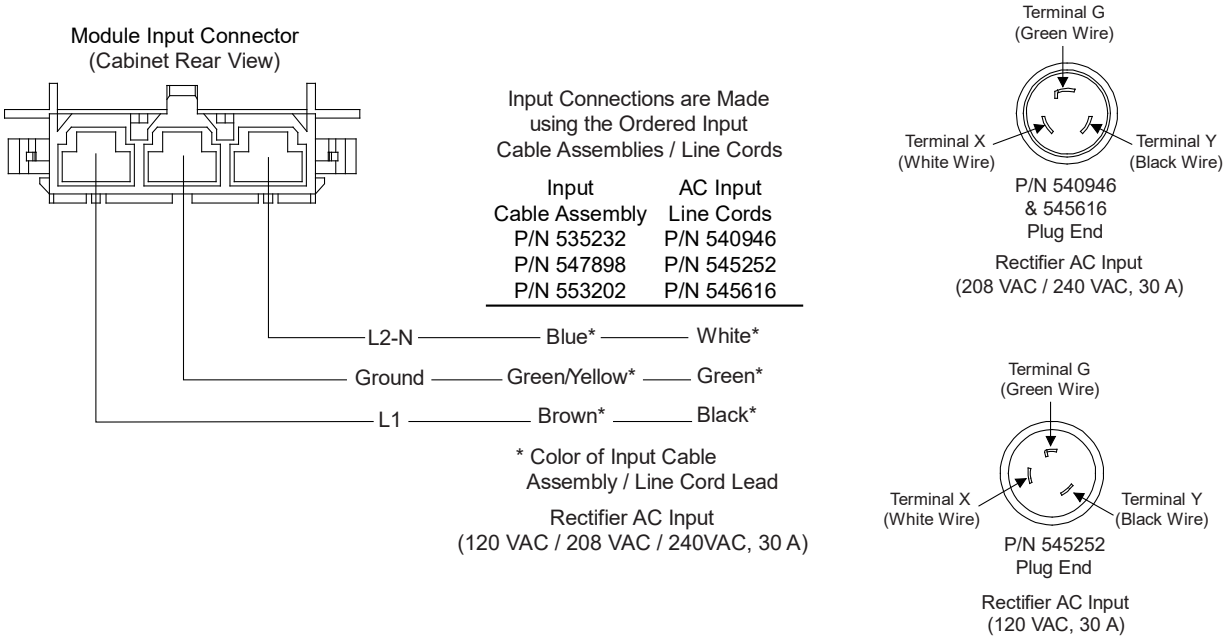


Figure 6
Input Connections, 588705300 List 03

Spec. No. 588705400 List 02 (208 VAC, 240 VAC, 277 VAC Single Phase, 50 Hz / 60 Hz)

The module mounting assembly is equipped with plug-in AC input connectors located on the rear of the assembly. Mating connectors and wire harnesses are available (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107 and "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108). Refer to Figure 7 for module mounting assembly rectifier AC input terminal location.

Refer to Table 46 for recommended AC input branch circuit protection when using the supplied rectifier AC input cable assemblies.

Refer to Table 47 for recommended AC input branch circuit protection when using the supplied rectifier AC input line cords.

Recommended Rectifier AC Input Branch Circuit Protection (208 VAC, 240 VAC, 277 VAC Single Phase, 50 Hz / 60 Hz) Supplied Input Cable Assemblies (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Cable Assemblies" on page 107) (Connection Points for Six Single Phase AC Input Feeds are Provided per Shelf, One AC Input Branch Circuit per One Rectifier Module)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
208 VAC	17.9 A	25 A
240 VAC	15.5 A	25 A
277 VAC	13.5 A	20 A

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

[2] Input current based on R48-3500E3 rectifier module.

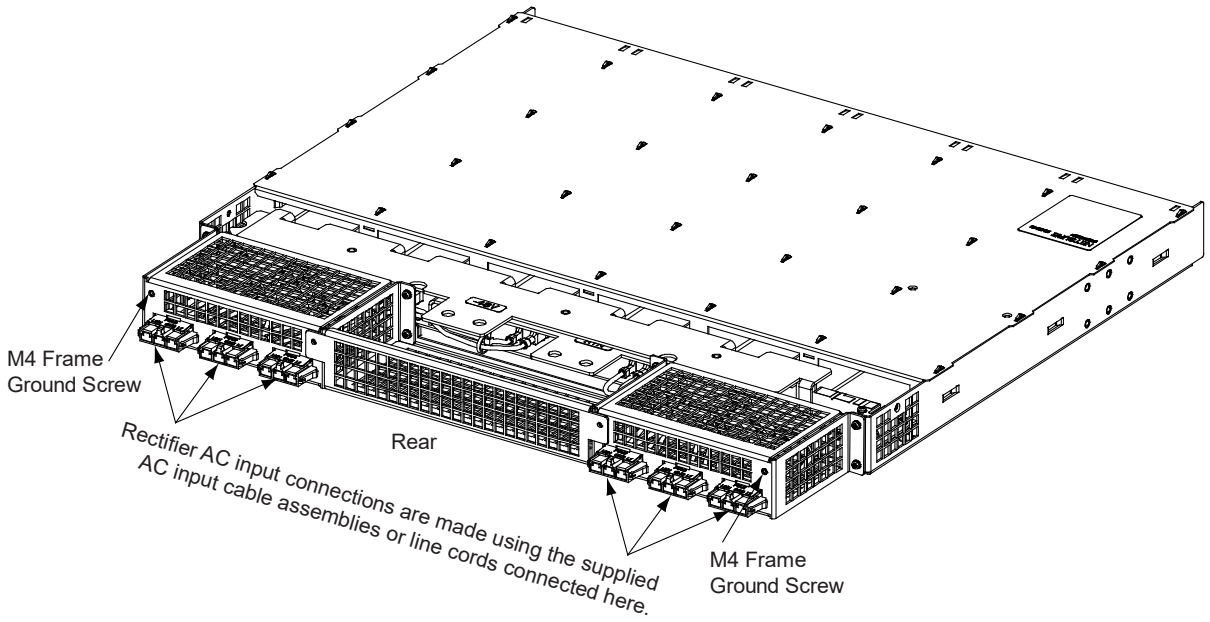
Table 46
Recommended Rectifier AC Input Branch Circuit Protection
(208 VAC, 240 VAC, 277 VAC, Single Phase, 50 Hz / 60 Hz)
Supplied Input Cable Assemblies

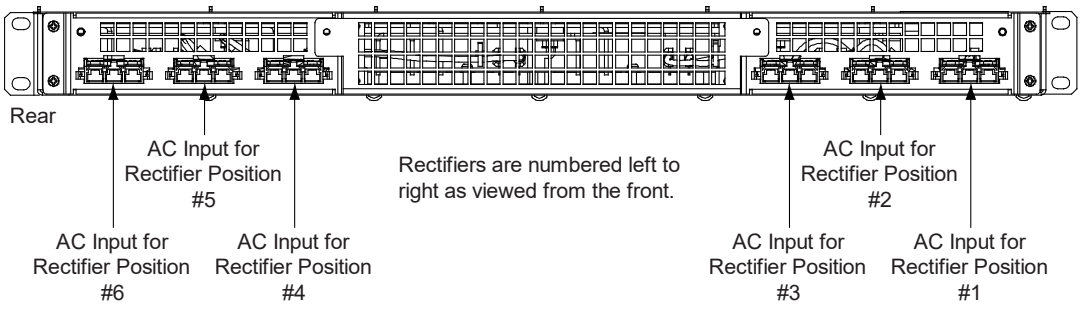
Recommended Rectifier AC Input Branch Circuit Protection (208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz) Supplied AC Input Line Cords (see "588705300 and 588705400 Module Mounting Assembly Rectifier AC Input Line Cords" on page 108) (Connection Points for Six Single Phase AC Input Feeds are Provided per Shelf, One AC Input Branch Circuit per One Rectifier Module)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
208 VAC	17.9 A	Size per AC Line Cord Plug Rating
240 VAC	15.5 A	

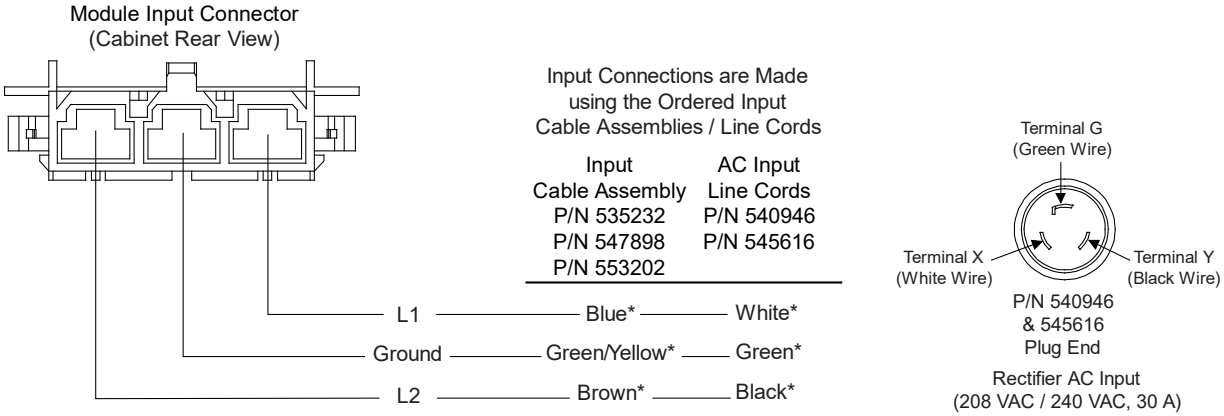
1 The AC input branch circuit protective device should be of the time-delay or high inrush type.

2 Input current based on R48-3500E3 rectifier module.

Table 47
Recommended Rectifier AC Input Branch Circuit Protection
(208 VAC, 240 VAC, Single Phase, 50 Hz / 60 Hz)
Supplied AC Input Line Cords







Rectifier AC Input
(208 VAC, 240 VAC, 277 VAC, 30 A)

Line to Line:	Line to Neutral
Connect Line 1 to Terminal 1.	Connect Line to Terminal 1.
Connect Line 2 to Terminal 2.	Connect Neutral to Terminal 2.

Figure 7
Input Connections, 588705400 List 02

Spec. No. 588705400 List 03 (208 VAC, 240 VAC Input, Three Phase, 50 Hz / 60 Hz)

The module mounting assembly is equipped with plug-in AC input connectors located on the rear of the assembly. Mating connectors and AC input line cords are available (P/N 562046). Refer to Figure 8 for module mounting assembly rectifier AC input terminal location.

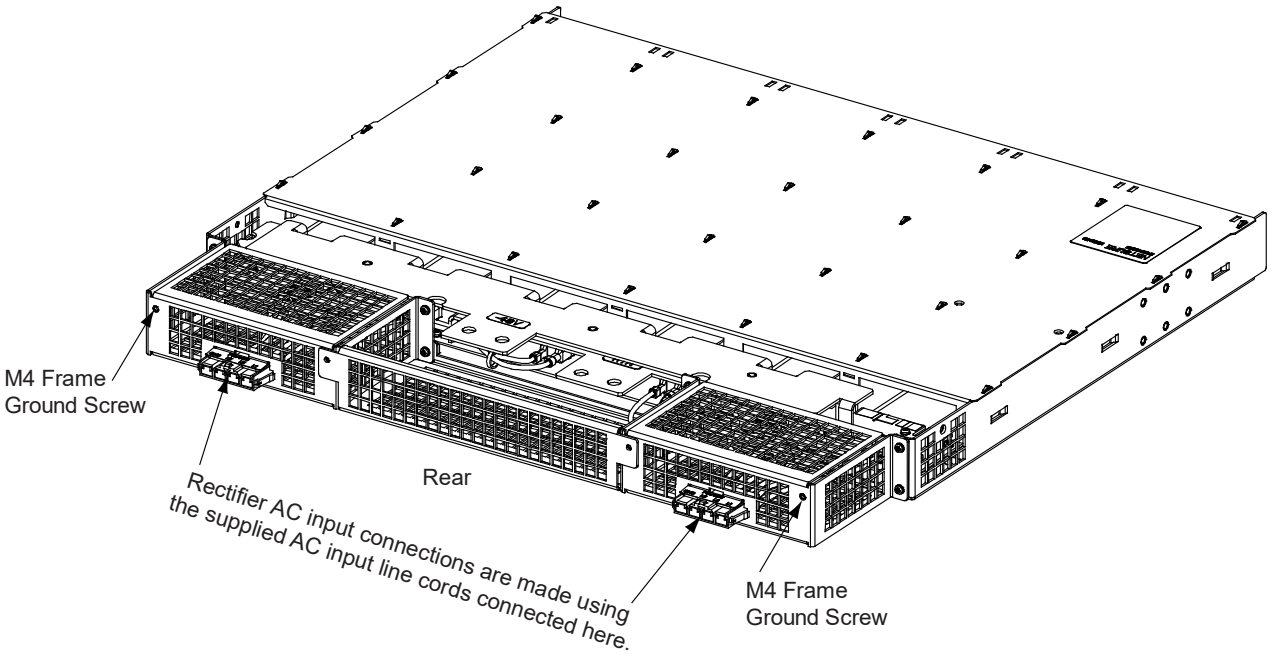
Refer to Table 48 for recommended AC input branch circuit protection when using the supplied rectifier AC input line cords.

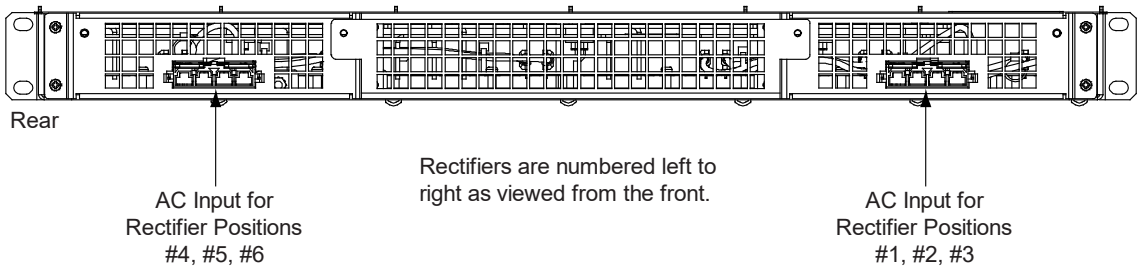
Recommended Rectifier AC Input Branch Circuit Protection (208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz) Supplied AC Input Line Cords (P/N 562046) (Connection Points for Two 3-Phase AC Input Feeds are Provided per Shelf)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
208 VAC	31 A	Size per AC Line Cord Plug Rating
240 VAC	27 A	

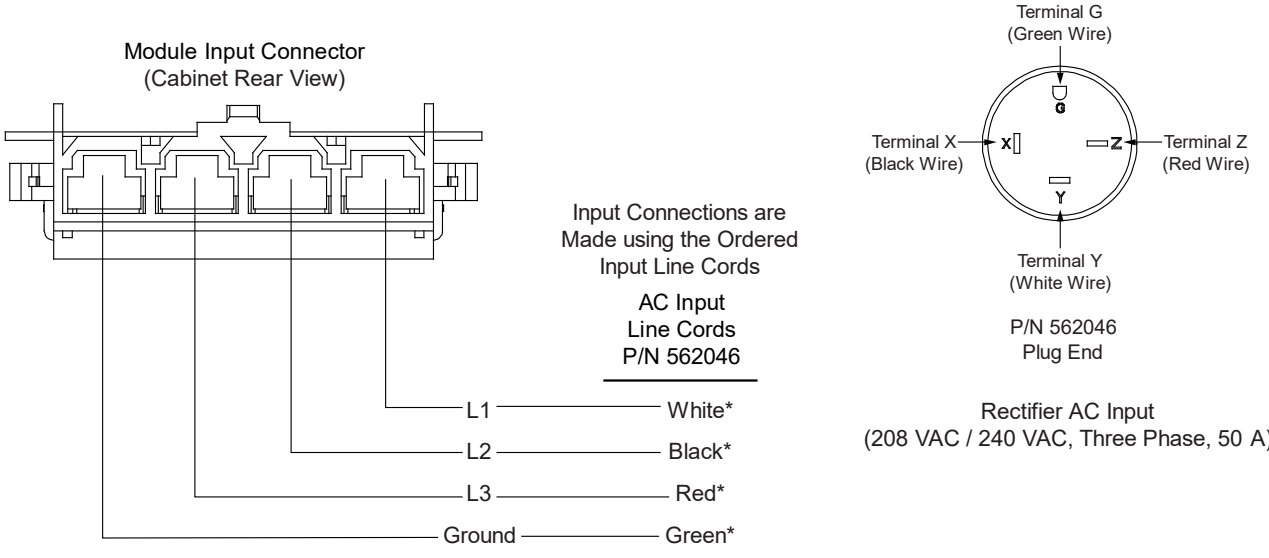
[1] The AC input branch circuit protective device should be of the time-delay or high inrush type.

[2] Input current based on R48-3500e3 rectifier module.

Table 48
Recommended Rectifier AC Input Branch Circuit Protection
(208 VAC, 240 VAC, Three Phase, 50 Hz / 60 Hz)
Supplied AC Input Line Cords







* Color of Input Line Cord Lead

Figure 8
Input Connections, 588705400 List 03

Spec. No. 588705400 List 04 (277/480 VAC Three Phase Input, 50 Hz / 60 Hz)

The module mounting assembly is equipped with plug-in AC input connectors located on the rear of the assembly. Mating connectors and AC input line cords are available (P/N 562045). Refer to Figure 9 for module mounting assembly rectifier AC input terminal location.

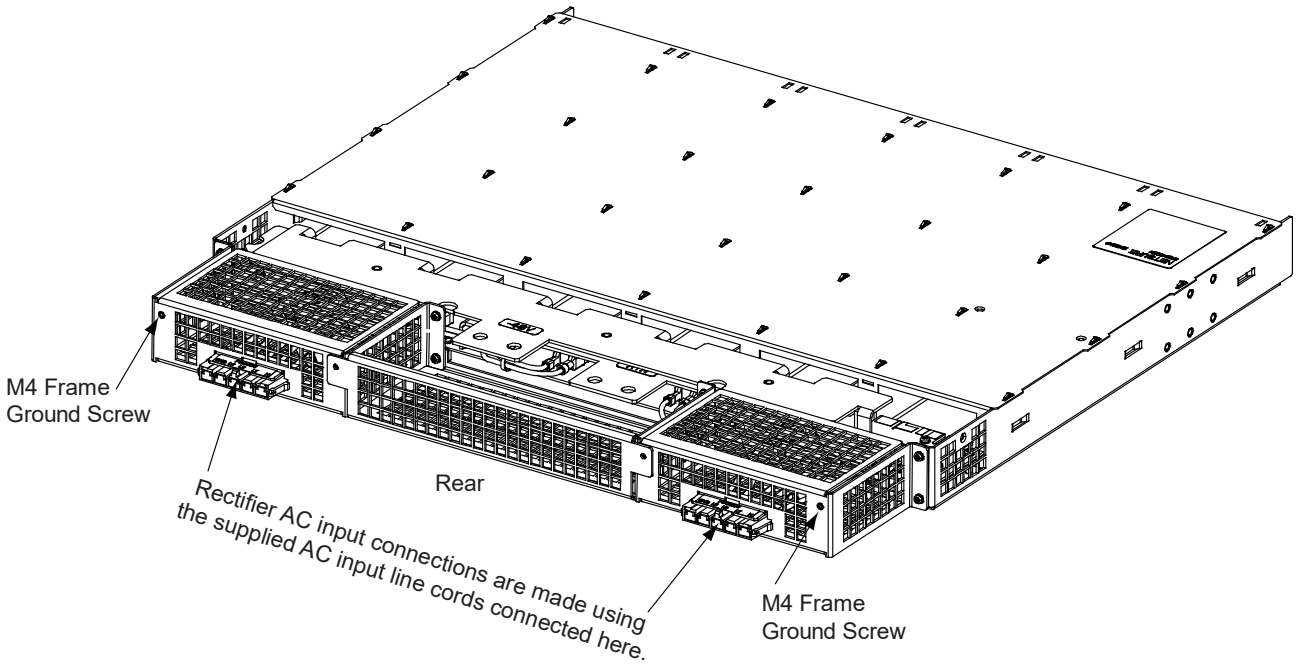
Refer to Table 49 for recommended AC input branch circuit protection when using the supplied rectifier AC input line cords.

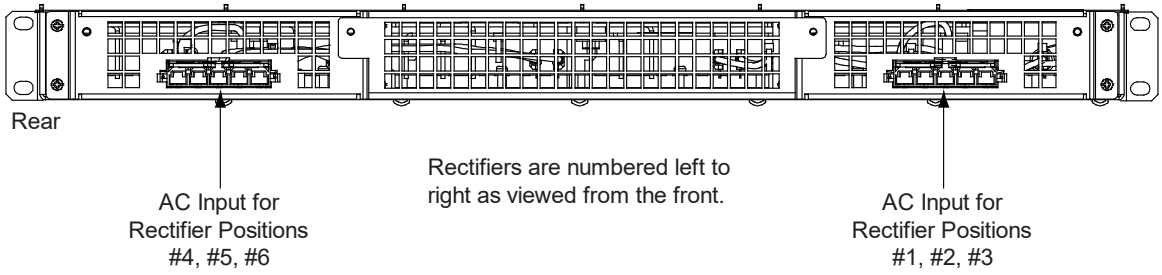
Recommended Rectifier AC Input Branch Circuit Protection (277/480 VAC, Three Phase, 50 Hz / 60 Hz) Supplied AC Input Line Cords (P/N 562045) (Connection Points for Two 3-Phase AC Input Feeds are Provided per shelf)		
Input Voltage	**Input Current [2]**	**Overcurrent Protection [1]**
277 VAC	13.5 A	Size per AC Line Cord Plug Rating

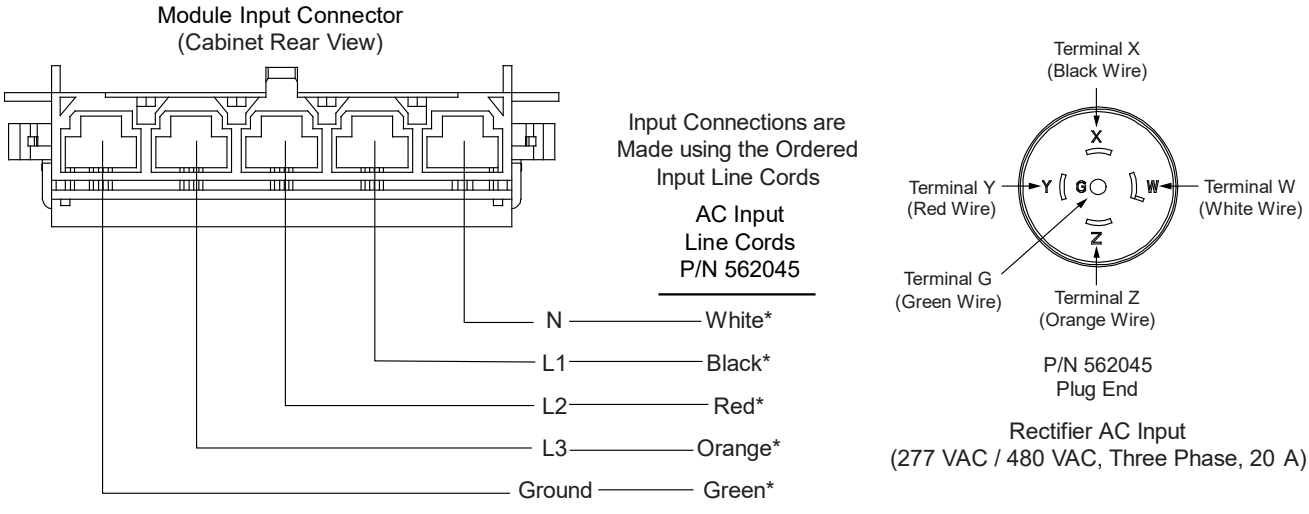
[1] The AC input branch circuit protective device should be of the time-delay or high inrush type.

[2] Input current based on R48-3500E3 rectifier module.

Table 49
Recommended Rectifier AC Input Branch Circuit Protection
(277/480 VAC, Three Phase, 50 Hz / 60 Hz)
Supplied AC Input Line Cords







* Color of Input Line Cord Lead

Figure 9
Input Connections, 588705400 List 04

Spec. No. 588705500 List 02 (208 VAC, 240 VAC Input, Single Phase)

Refer to Table 50 for recommended AC input branch circuit protection and Figure 10 for terminal location.

AC Input (Line Cords) 588705500 List 02 Line Cords for Individual Rectifier Module AC Input Branch Circuits are Factory Connected (One AC Input Branch Circuit per Rectifier Module, Six AC Input Branch Circuits per Shelf)	
Operating Ambient Temperature	**Recommended Branch Circuit Protection [1, 2]**
30 °C	30 Amperes
40 °C [3]	

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

2 Recommendations based on Nominal Line Full Load Input Current of 20.7 amperes.

3 Line cord option can only be used up to 40 °C ambient.

Table 50
Recommended AC Input Branch Circuit Protection - 588705500 List 02

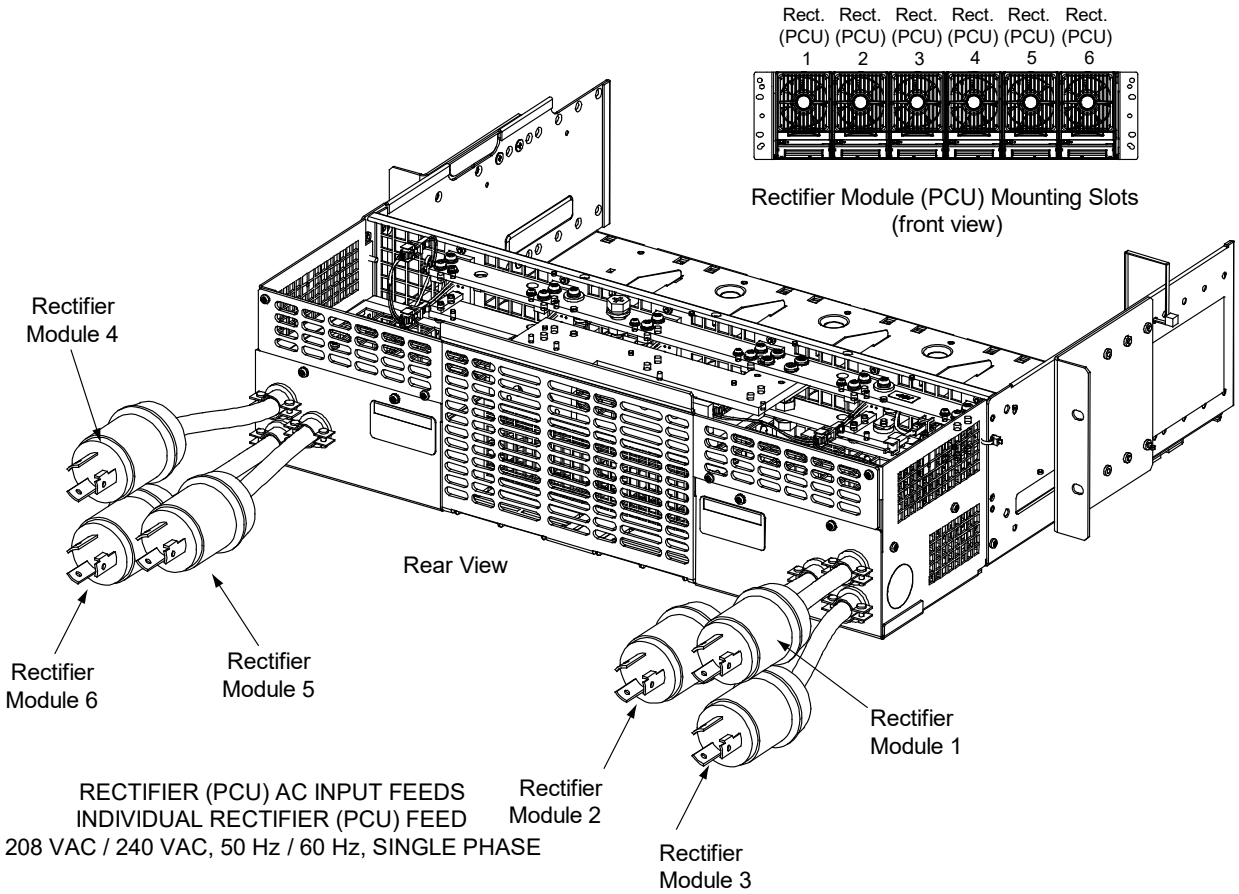


Figure 10
588705500 List 02 AC Input Connections (Single-Phase Input) (Line Cords)

Spec. No. 588705500 List 03 (208 VAC, 240 VAC, 277 VAC Input, Single Phase)

Refer to Table 51 for recommended AC input branch circuit protection and wire size and Figure 11 for terminal location.

AC Input (TB1 and TB2) 588705500 List 03 Connection Points for Individual Rectifier Module AC Input Branch Circuits are Provided (One AC Input Branch Circuit per Rectifier Module, Six AC Input Branch Circuits per Shelf)				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	20.7 A	30 A	10 AWG	3/4”
240 VAC	17.8 A	25 A [2]	10 AWG	3/4”
277 VAC	15.3 A	20 A	12 AWG	1/2”

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

2 Maximum over current protection device is 30 A @ 40 °C.

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 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 Input current based on R48-4000e rectifier module.

6 THHN 90°C Wire.

Table 51
Recommended AC Input Branch Circuit Protection and Wire Size - 588705500 List 03

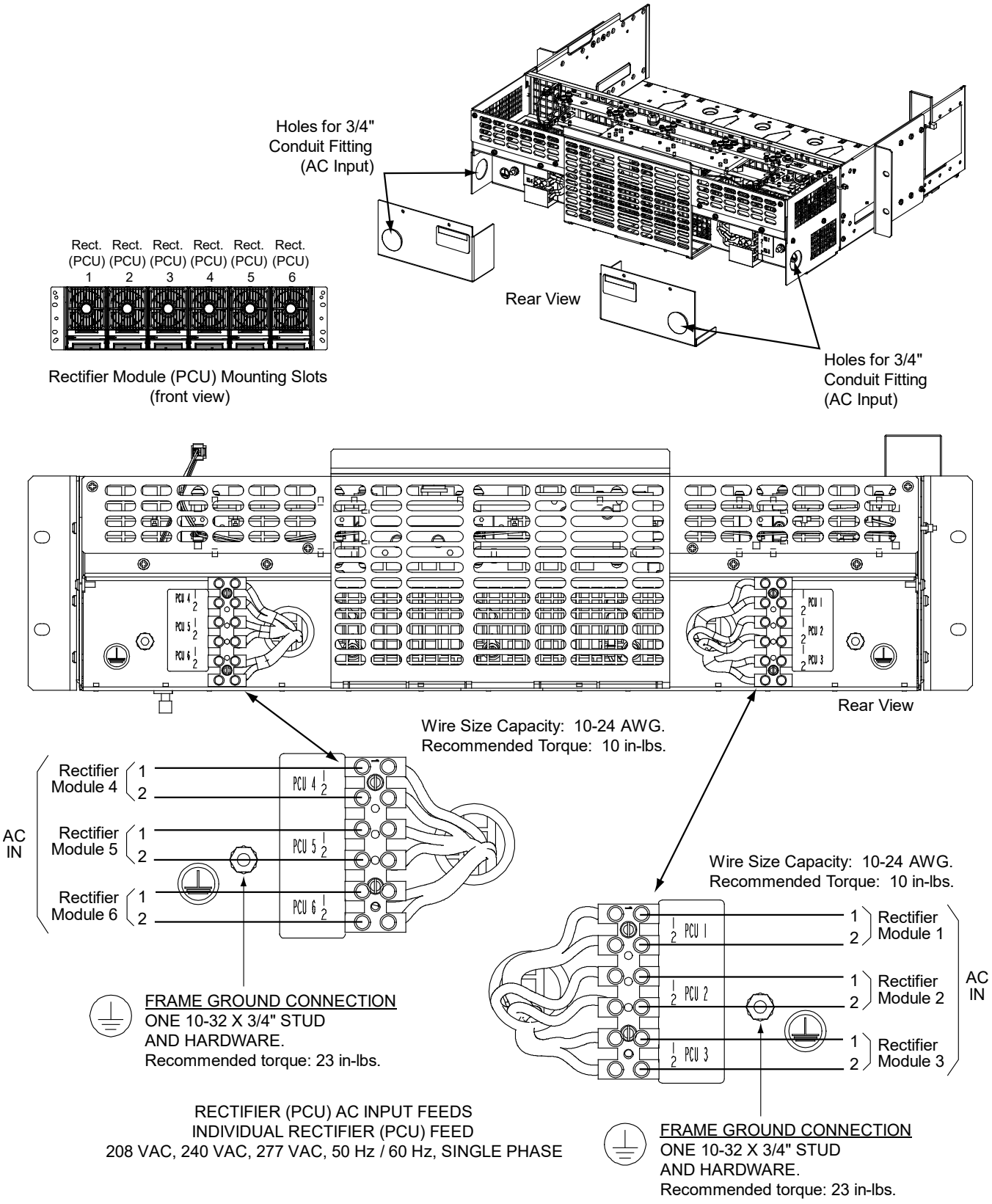


Figure 11
588705500 List 03 AC Input and Frame Ground Connections (Single-Phase Input) (Terminal Blocks)

Spec. No. 588705500 List 04 (208 VAC, 240 VAC Input, Three Phase)

Refer to Table 52 for recommended AC input branch circuit protection and wire size and Figure 12 for terminal location.

AC Input (TB1 and TB2) 588705500 List 04 Connection Points for Two 3-Phase AC Input Feeds are Provided per Shelf				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
208 VAC	36.0 A	45 A [2]	8 AWG	3/4”
240 VAC	31.0 A	40 A [2]	8 AWG	3/4”

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

2 Maximum over current protection device is 50 A @ 40 °C.

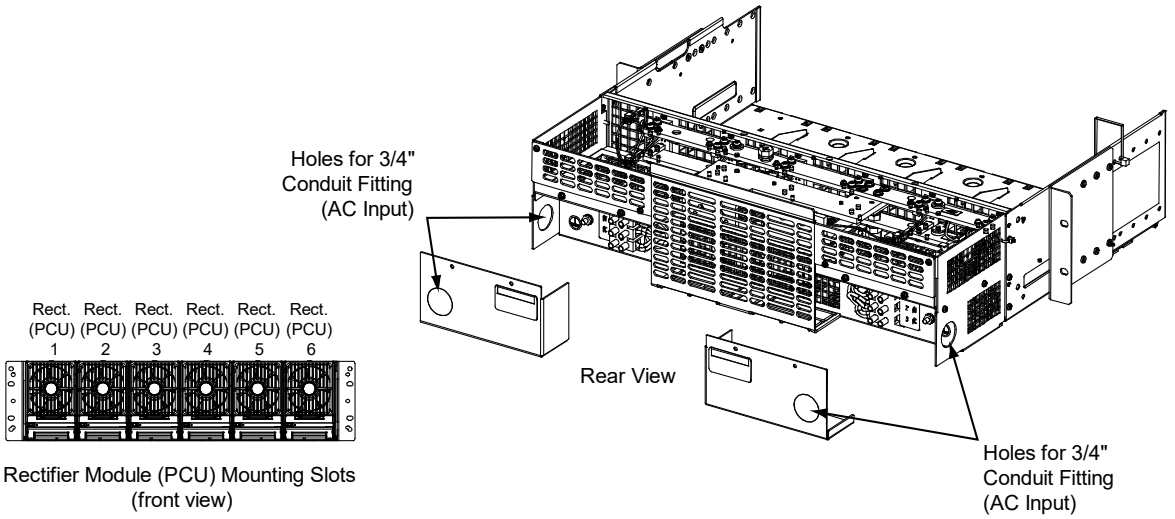
3 Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

4 Equipment grounding conductors must be provided with the AC input conductors supplied to the 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.

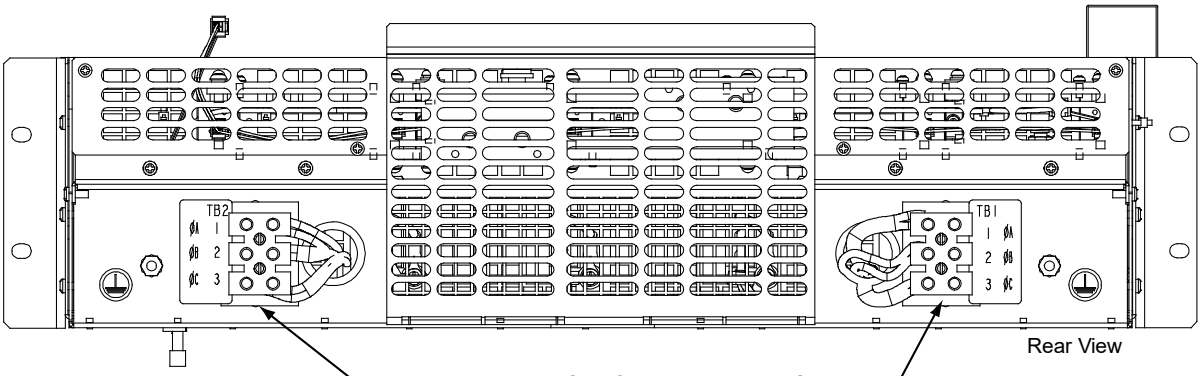
5 Input current based on R48-4000e rectifier module.

6 THHN 90°C Wire.

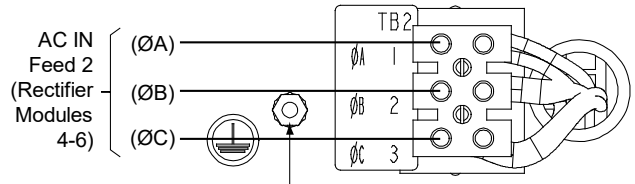
Table 52
Recommended AC Input Branch Circuit Protection and Wire Size - 588705500 List 04



Rectifier Module (PCU) Mounting Slots
(front view)

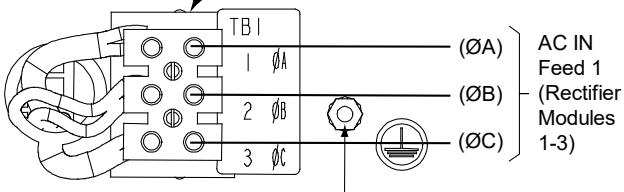


Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.



FRAME GROUND CONNECTION
ONE 10-32 X 3/4" STUD
AND HARDWARE.
Recommended torque: 23 in-lbs.

Wire Size Capacity: 6-14 AWG.
Recommended Torque: 18 in-lbs.



FRAME GROUND CONNECTION
ONE 10-32 X 3/4" STUD
AND HARDWARE.
Recommended torque: 23 in-lbs.

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
208 VAC / 240 VAC, 50 Hz / 60 Hz, THREE PHASE

CONNECTIONS WITHIN THE SHELF

Mounting Position	TB1, Terminal			TB2, Terminal		
	1 (ØA)	2 (ØB)	3 (ØC)	1 (ØA)	2 (ØB)	3 (ØC)
Rect 1	L1	L2				
Rect 2	L1		L2			
Rect 3		L1	L2			
Rect 4				L1	L2	
Rect 5				L1		L2
Rect 6					L1	L2

Figure 12
588705500 List 04 AC Input and Frame Ground Connections (Three-Phase Input) (Terminal Blocks)

Spec. No. 588705500 List 05 (277/480 VAC Input, Three Phase)

Refer to Table 53 for recommended AC input branch circuit protection and wire size and Figure 13 for terminal location.

AC Input (TB1 and TB2) 588705500 List 05 Connection Points for Two 3-Phase AC Input Feeds are Provided per Shelf				
Input Voltage	**Input Current [5]**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [4] [6]	**Conduit Size**
277/480 VAC	15.3 A	20 A	12 AWG	1/2”

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

[2] Maximum over current protection device is 20 A.

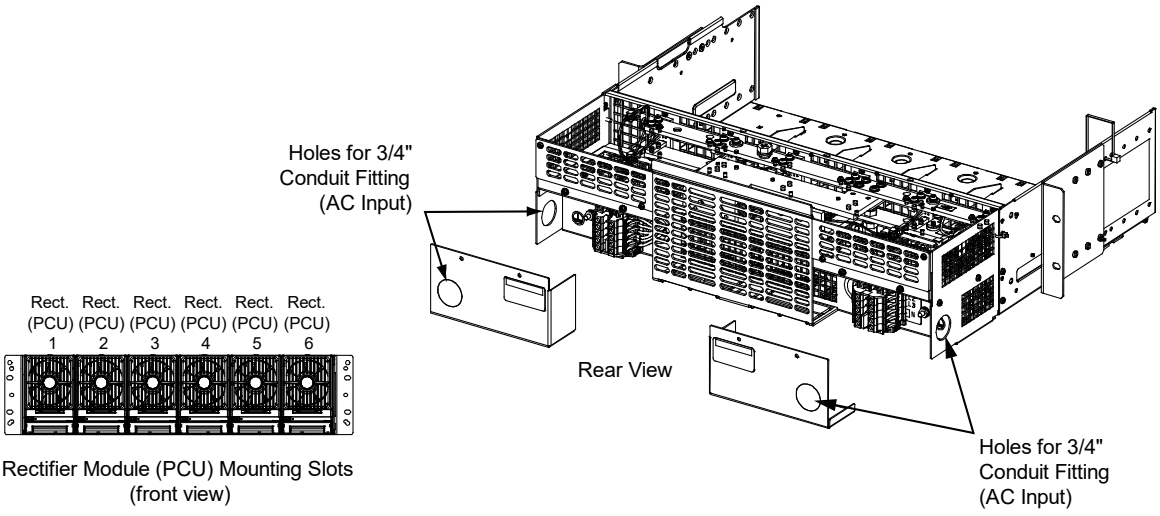
[3] Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

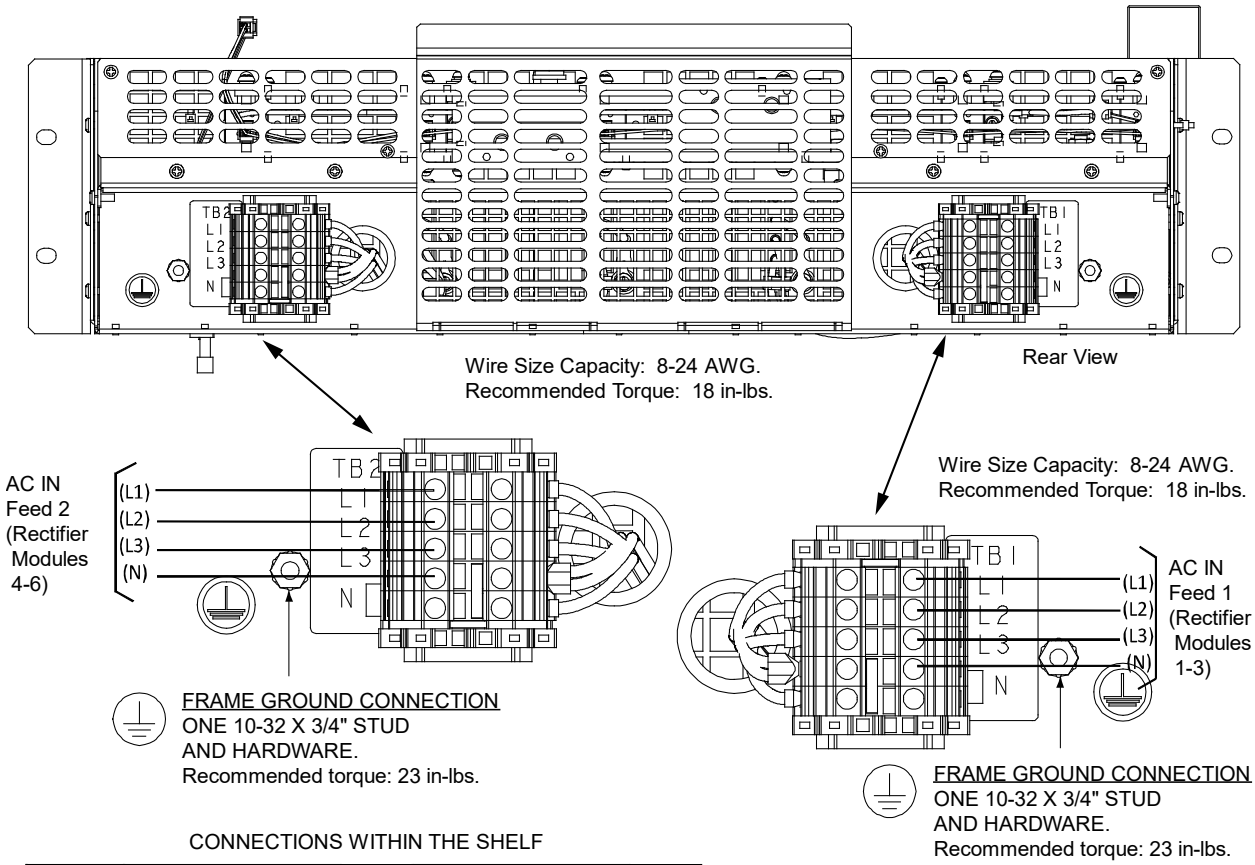
[4] Equipment grounding conductors must be provided with the AC input conductors supplied to the assembly. Frame ground terminals must be connected to earth ground, not power system neutral. Equipment grounding conductor size based on recommendations of the NEC Table 250-122 for copper wire. If aluminum 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] Input current based on R48-4000e rectifier module.

[6] THHN 90°C Wire.

Table 53
Recommended AC Input Branch Circuit Protection and Wire Size - 588705500 List 05





CONNECTIONS WITHIN THE SHELF

Mounting Position	TB1, Terminal				TB2, Terminal			
	L1	L2	L3	N	L1	L2	L3	N
Rect 1	L1			N				
Rect 2		L2		N				
Rect 3			L3	N				
Rect 4					L1			N
Rect 5						L2		N
Rect 6							L3	N

RECTIFIER (PCU) AC INPUT FEEDS
1 FEED PER 3 RECTIFIERS (PCU)
277 VAC / 480 VAC, 50 Hz / 60 Hz, THREE PHASE

Figure 13
588705500 List 05 AC Input and Frame Ground Connections (Three-Phase Input) (Terminal Blocks)

DC Input Connections to Field Installed Module Mounting Assemblies

Spec. No. 588705000 List 41 Module Mounting Assembly (400V DC Input)

Refer to

Table 54 for recommended DC input branch circuit protection and wire size and Figure 10 for terminal location.

DC Input (TB1 and TB2) 5588705000 List 41 Connection Points for Individual Converter Module DC Input Branch Circuits are Provided (One DC Input Branch Circuit per Converter Module, Six DC Input Branch Circuits per Shelf)				
Input Voltage	**Input Current**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3] [6]	**Conduit Size**
400 VDC	14.6 A	20 A	12 AWG [4]	3/4”

[1] The DC input branch circuit protective device should be of the time-delay or high inrush type.

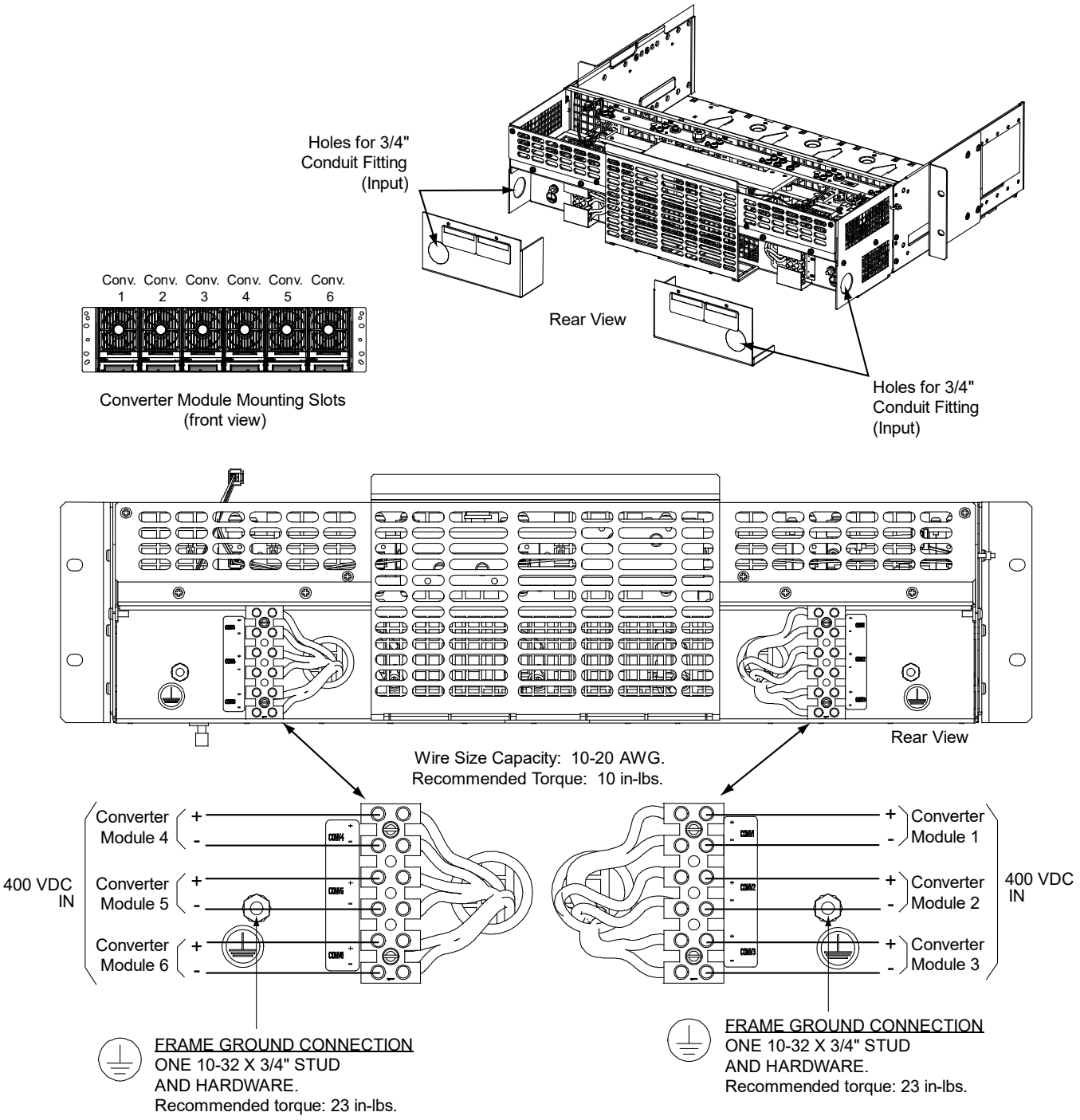
[3] Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

[4] Equipment grounding conductors must be provided with the DC input conductors supplied to the 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] Input current based on C400/48-3500E rectifier module.

[6] THHN 90°C Wire.

Table 54
Recommended DC Input Branch Circuit Protection and Wire Size - 588705000 List 41



INDIVIDUAL 400 VDC CONVERTER FEEDS
1 FEED PER CONVERTER

Figure 14
588705000 List 41 DC Input and Frame Ground Connections (Terminal Blocks)

Spec. No. 588705000 List 42 Module Mounting Assembly (400V DC Input)

Refer to Table 55 for recommended DC input branch circuit protection and wire size and Figure 11 for terminal location.

DC Input (TB1 and TB2) 588705000 List 42 Connection Points for Two DC Input Feeds are Provided per Shelf				
Input Voltage	**Input Current**	**Overcurrent Protection [1]**	**40 °C Ambient Temperature**	
			Wire [3]	**Conduit Size**
400 VDC	44 A	60 A	6 AWG	3/4”

[1] The DC input branch circuit protective device should be of the time-delay or high inrush type.

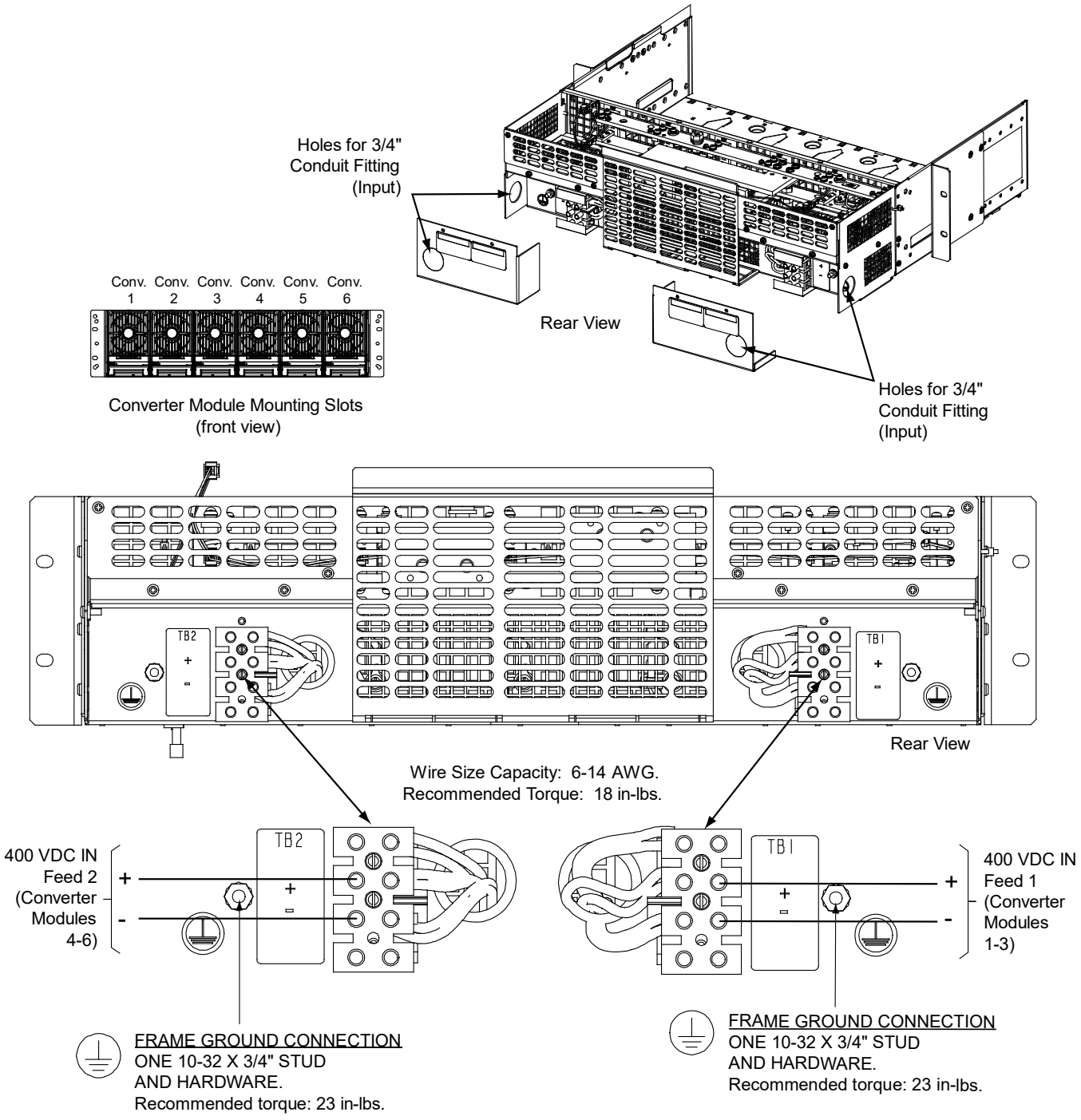
[3] Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association’s (NFPA) National Electrical Code (NEC). Table 310.15 (B) (16) for copper wire at 90 °C conductor temperature. For operation in countries where the NEC is not recognized,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

[4] Equipment grounding conductors must be provided with the DC input conductors supplied to the 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] Input current based on C400/48-3500E rectifier module.

[6] THHN 90°C Wire.

Table 55
Recommended DC Input Branch Circuit Protection and Wire Size - 588705000 List 42



CONVERTER 400 VDC INPUT FEEDS
1 FEED PER 3 CONVERTERS

Figure 15
588705000 List 42 DC Input and Frame Ground Connections (Terminal Blocks)

External Alarm, Reference, Monitoring (All Lists except List 100, 101, 102, 103, 203)

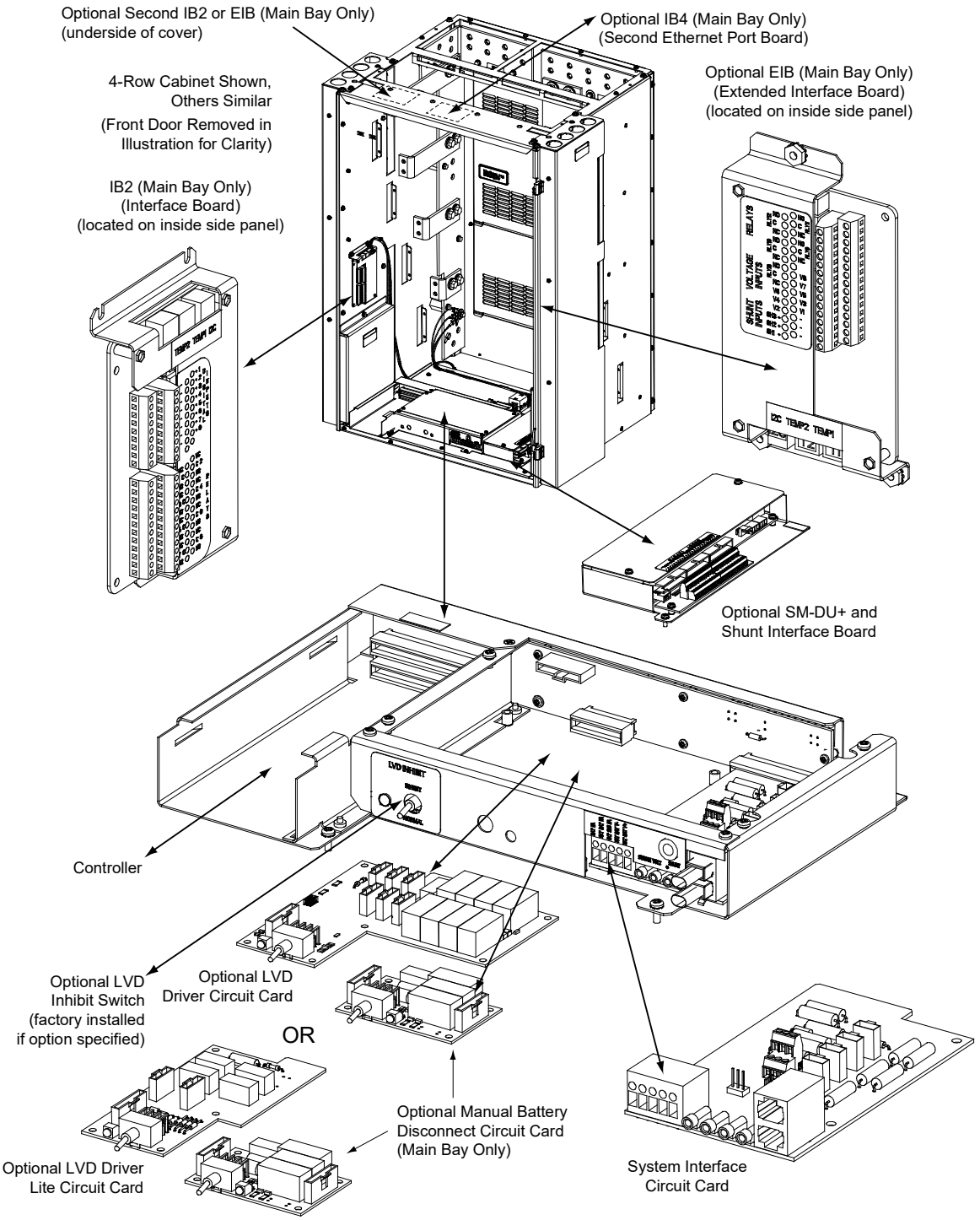
External Alarm, Reference, Monitoring, and Control Wire Sizes

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

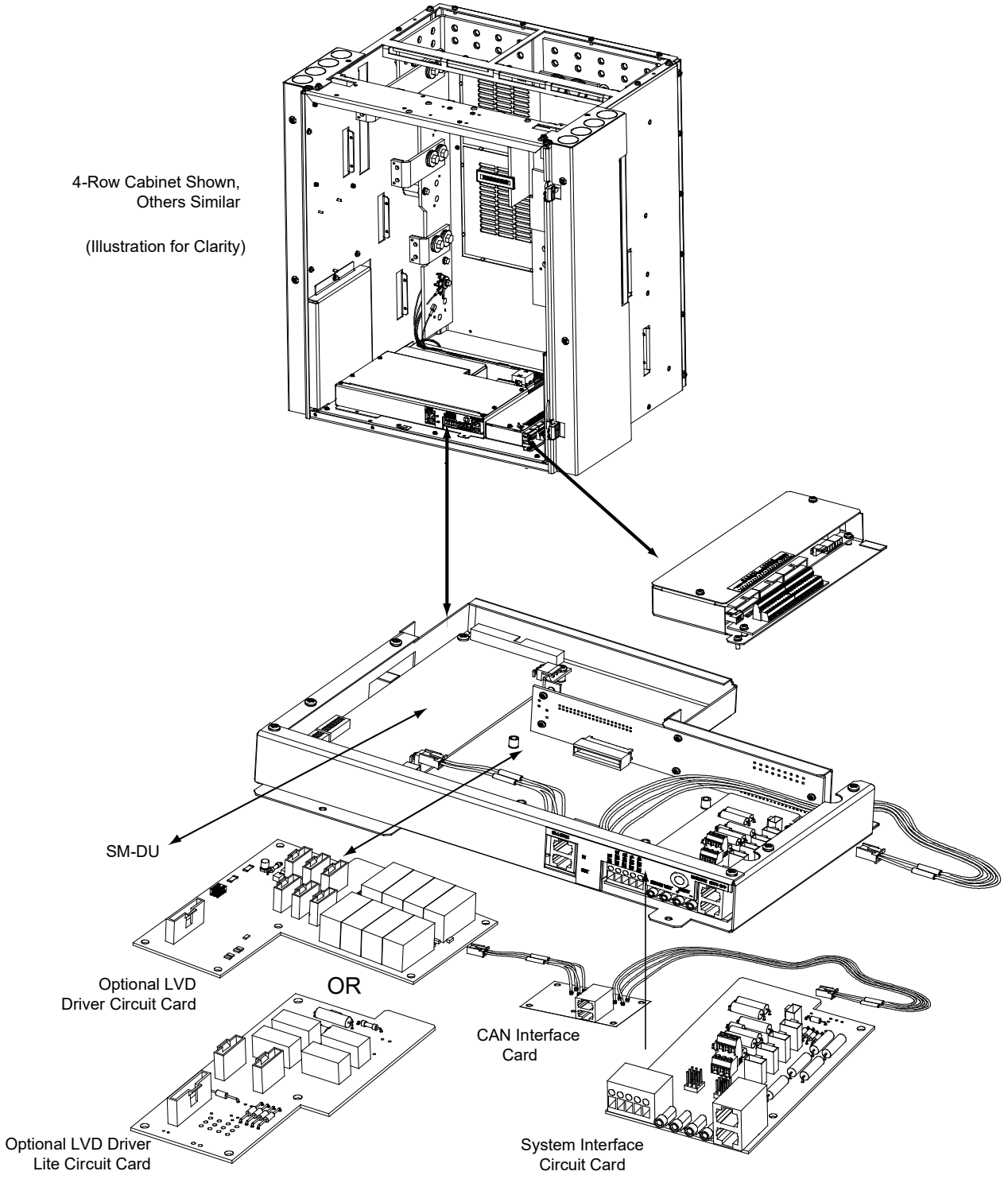
External Alarm, Reference, Monitoring, and Control Illustrations

See Table 19 for replacement part numbers.

Circuit Card Location (Main Bay)



Circuit Card Location (Supplementary Bay)


4-Row Cabinet Shown,
Others Similar
(Illustration for Clarity)
SM-DU
Optional LVD
Driver Circuit Card
OR
Optional LVD Driver
Lite Circuit Card
CAN Interface
Card
System Interface
Circuit Card

(Main Bay Only)

* When an NCU configuration is furnished that enables NCU capability to receive status information sent from Fiamm SoNick [Sodium Nickel] batteries. Connect leads from the Fiamm SoNick batteries to the RS-485 terminals. Refer to the battery manufacturer documentation and the NCU controller manual UM1M830BNA for details.

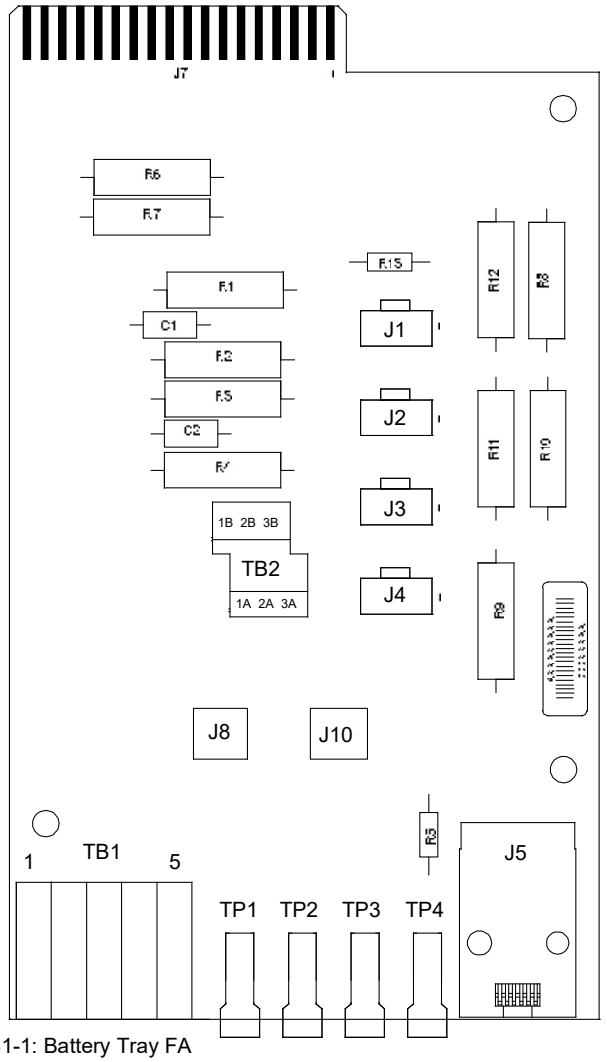
TB2 (Main Bay Only)

RS485 Connection*
TB2 1A: RS485+
TB2 2A: RS485-

RS232 Connection
TB2 1B: CGND
TB2 2B: TXD232
TB2 3B:RXD232

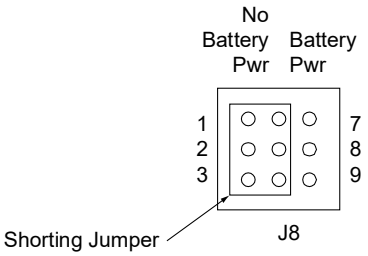
TB2 3A: Internally used by system.

TB2
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.0 in-lbs.

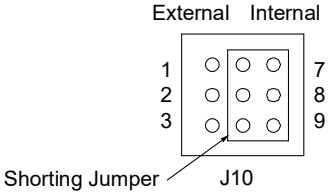


J1, J2, J3, J4
Distribution Panels FA Inputs

J8 (Main Bay Only)
Selects to power Controller from "Battery Power" or not.



J10 (Main Bay Only)
Battery Monitoring External / Internal (see TB1-4 and TB1-5 for external monitoring points)



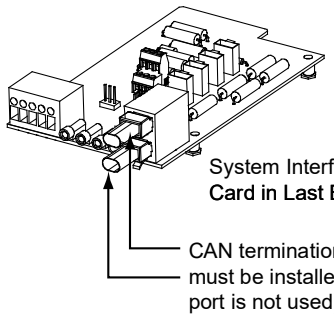
J5
CAN2 (top)
CAN1 (bottom)

TB1-1: Battery Tray FA
TB1-2: External Battery FA
TB1-3: External System FA
TB1-4: External Battery Monitoring (-)
TB1-5: External Battery Monitoring (+)

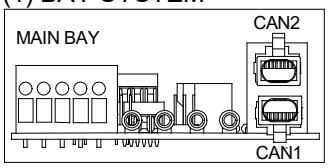
TP1 (+) and TP2 (-)
Bay Voltage Monitoring

TP3 (+) and TP4 (-)
Bay Load Shunt Monitoring

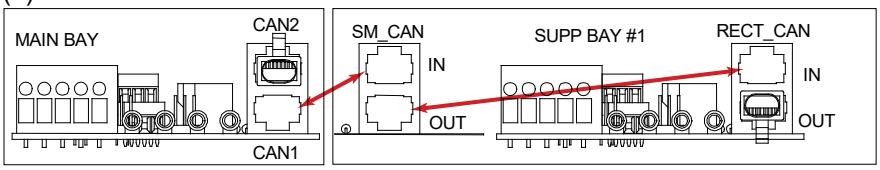
TB1
TB1-2, TB1-3, TB1-4, TB1-5 Main Bay Only.
Wire Size Capacity: 22-12 AWG.
Recommended Torque: 3.0 in-lbs.
FA Signals: System voltage applied to the terminal turns in an alarm.



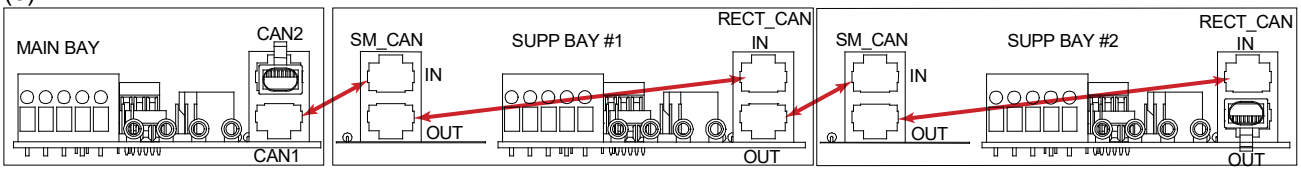
(1) BAY SYSTEM



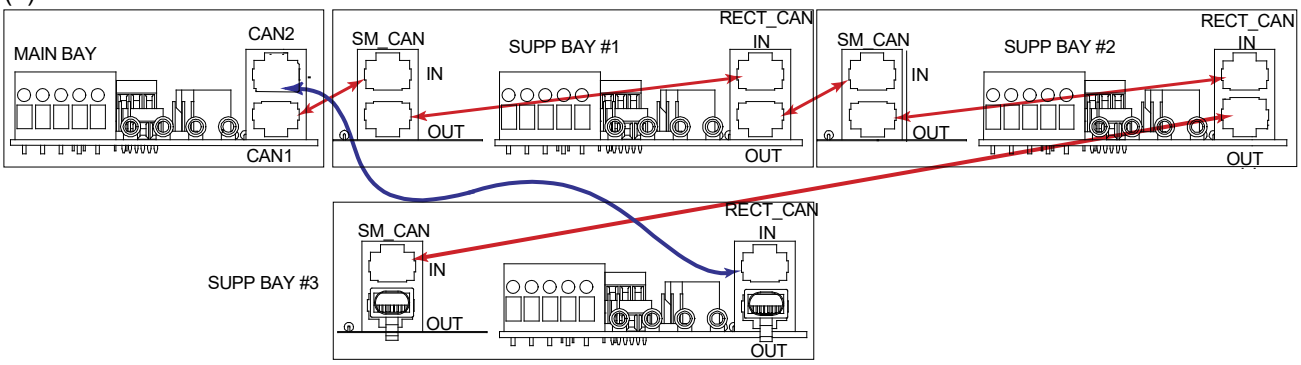
(2) BAY SYSTEM



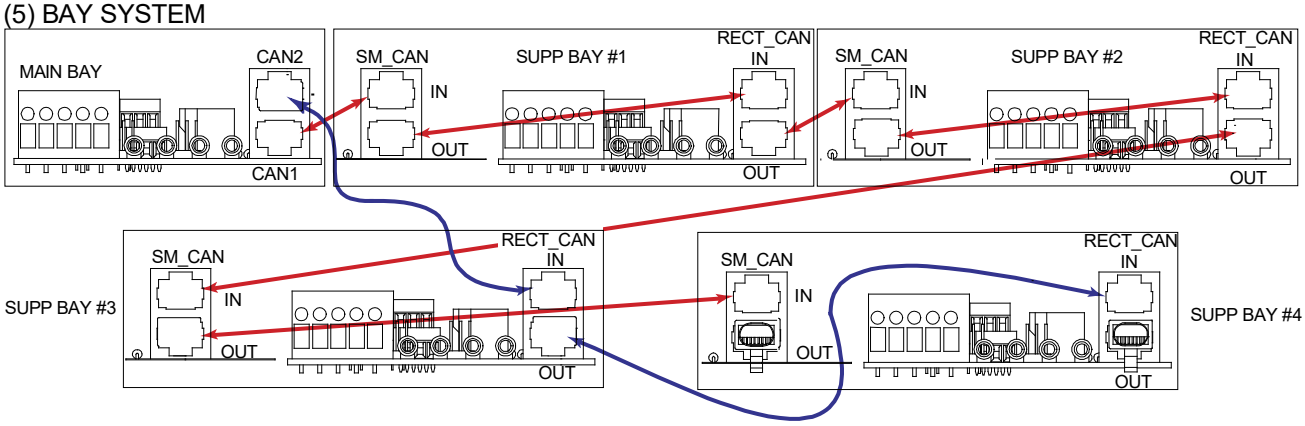
(3) BAY SYSTEM



(4) BAY SYSTEM



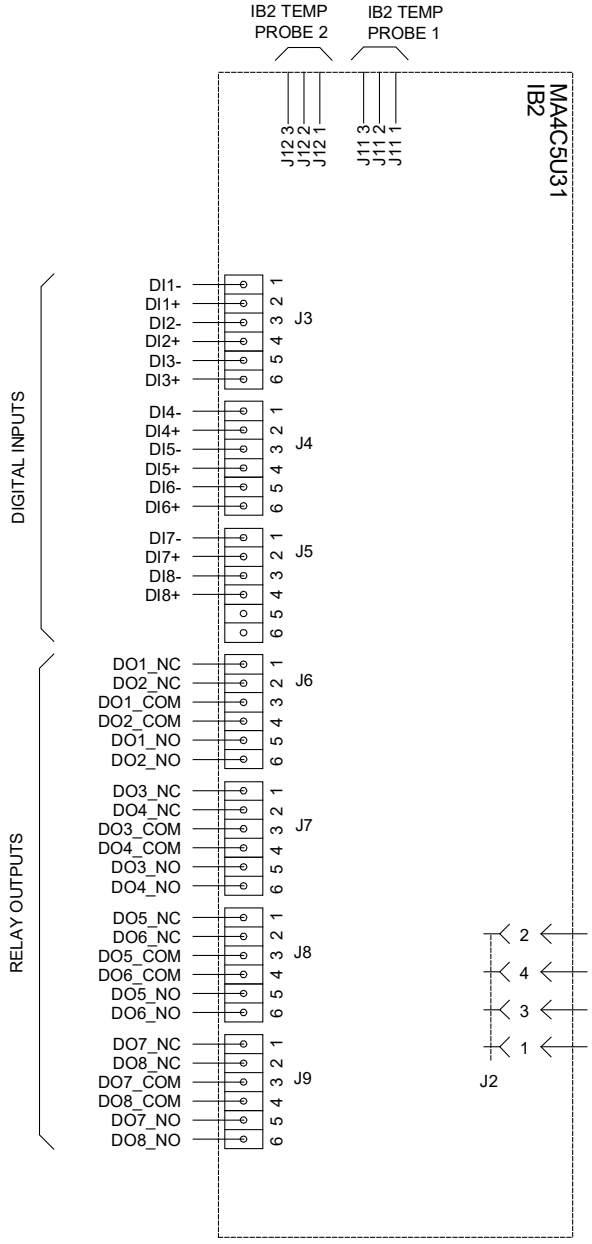
(5) BAY SYSTEM

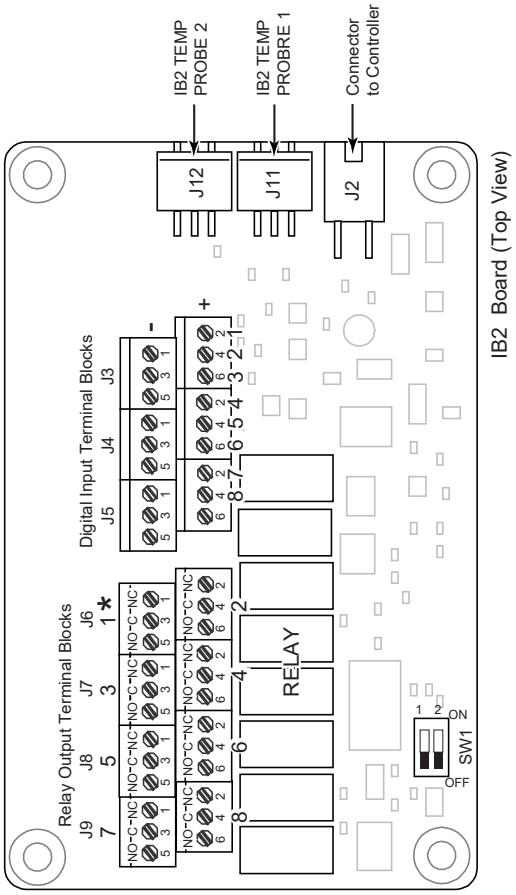


NOTE: Use standard CAT5 communications cables.

1. Diagrams above are for typical configurations. CAN1 is used for all SM_CAN connections and for RECT_CAN connections up through and including the bay with the 72nd rectifier slot maximum (for 1R483500E3 or 1R484000E) or the 60th rectifier slot maximum (for 1R483500E). CAN2 of the Main Bay should be connected to RECT_CAN IN in the supplementary bay that has the 73rd rectifier slot (for 1R483500E3 or 1R484000E) or the 61st rectifier slot (for 1R48500E).

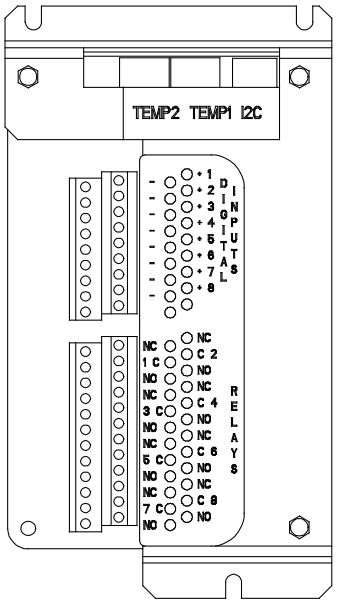
Schematic Diagram of IB2 Board





J3-J9:
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.2 in-lbs.

IB2 Board Assembly



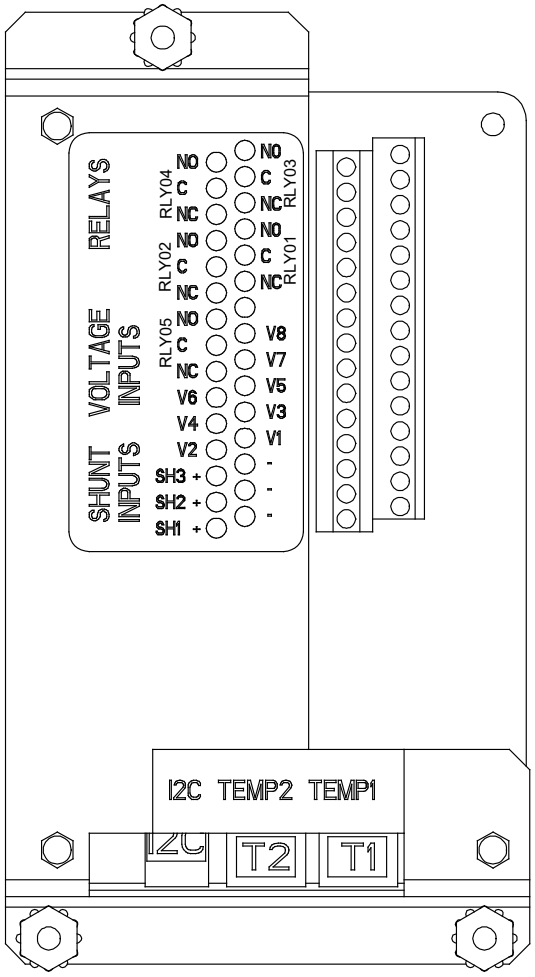
* The relay assigned to “Critical Summary” alarm (Relay 1 on first IB2 by default) will operate in the “Fail Safe Mode”. “Fail Safe Mode” means Relay 1 is de-energized during an alarm condition, opening the contacts between the C and NO terminals, and closing the contacts between the C and NC terminals.

The remaining seven (7) relays energize during an alarm condition, closing the contacts between the C and NO terminals, and opening the contacts between the C and NC terminals.

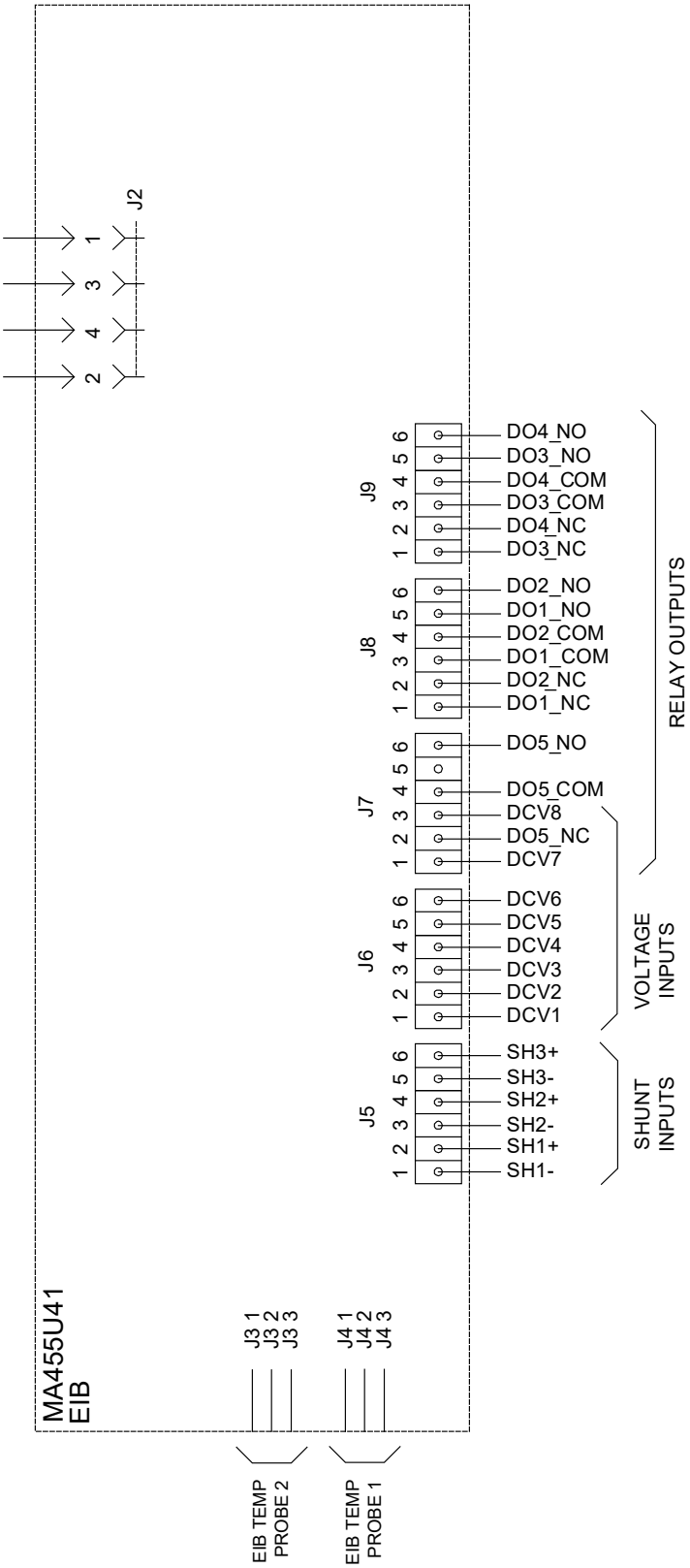
Refer to the configuration drawing (C-drawing) supplied with your system for your system’s specific relay labeling.

Not all I/O points are available for customer connection (some are used for factory system connections).

EIB Board

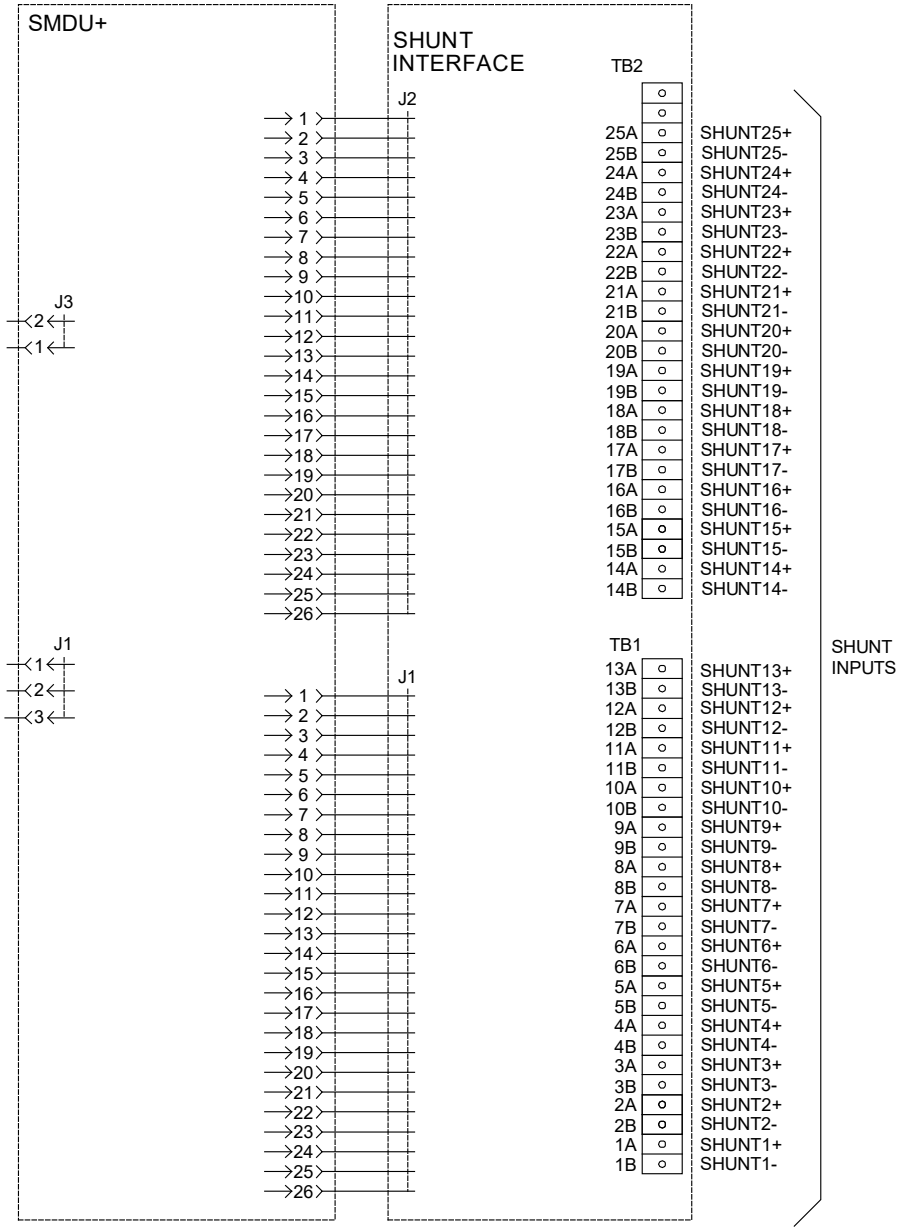


Schematic Diagram of EIB Board

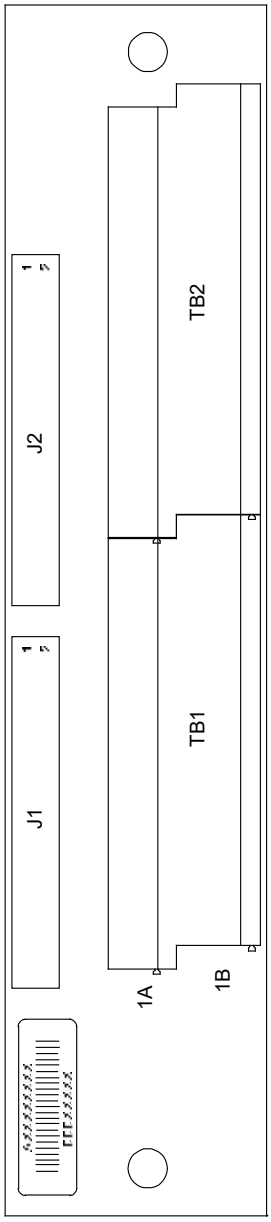


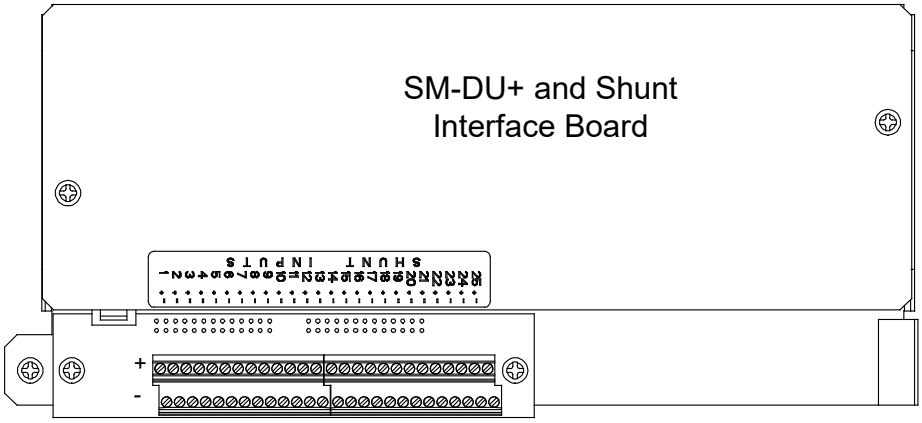
J5-J9
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.2 in-lbs.

Schematic Diagram of SM-DU+ and Shunt Interface Board



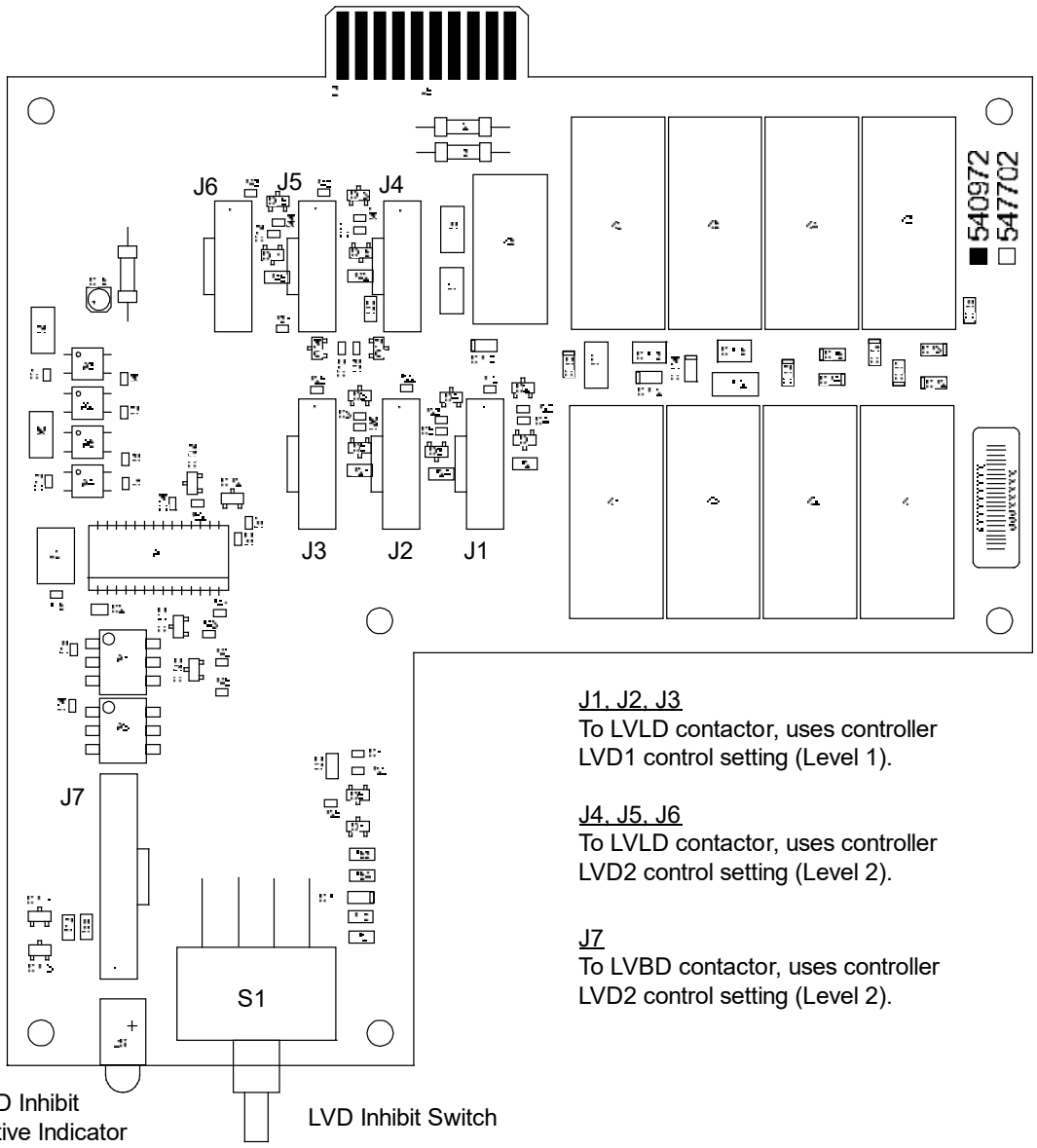
Shunt Interface Board





TB1 - TB2
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.2 in-lbs.

Optional LVD Driver Circuit Card



LVD Inhibit Active Indicator

LVD Inhibit Switch

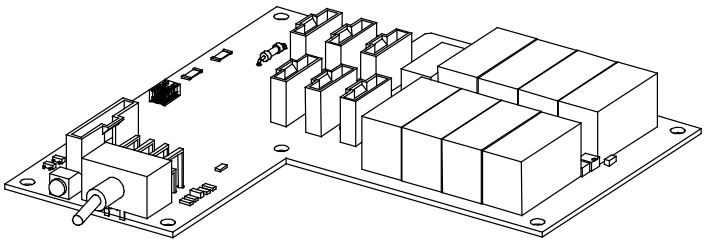
J1, J2, J3
To LVLD contactor, uses controller LVD1 control setting (Level 1).

J4, J5, J6
To LVLD contactor, uses controller LVD2 control setting (Level 2).

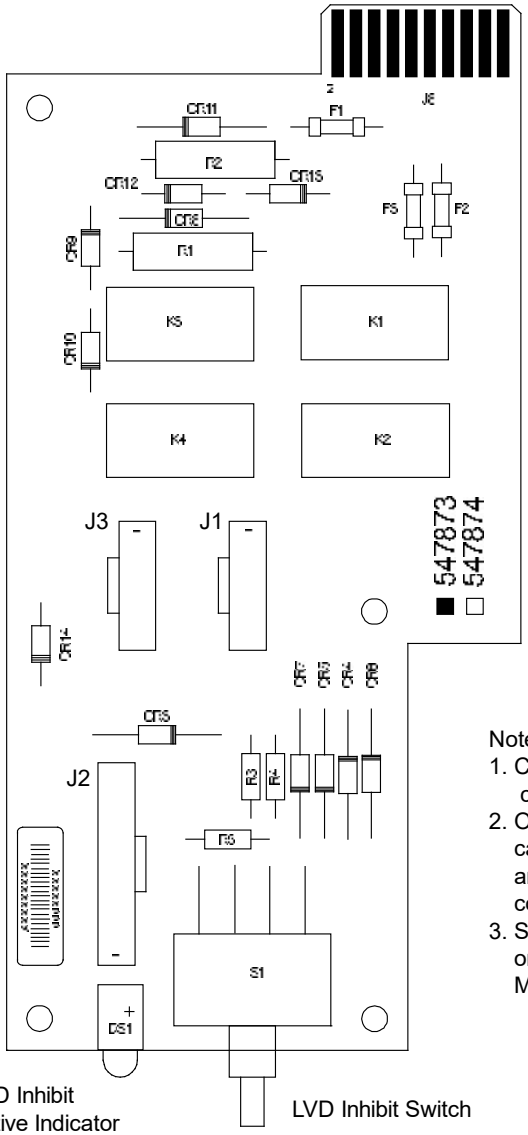
J7
To LVBD contactor, uses controller LVD2 control setting (Level 2).

Momentary UP / Middle / Down
Momentary UP Position: Closes all LVD Contactors (inhibit mode).
Middle Position: OFF (Controller DOES NOT control LVD's) (inhibit mode).
DOWN Position: ON (Controller controls LVD's).

Notes:
1. Connects up to (4) LVLD and (1) LVBD contactors.
2. Switch and indicator located on circuit card installed in Main Bay only.



Optional LVD Driver Lite Circuit Card



LVD Inhibit Active Indicator

LVD Inhibit Switch

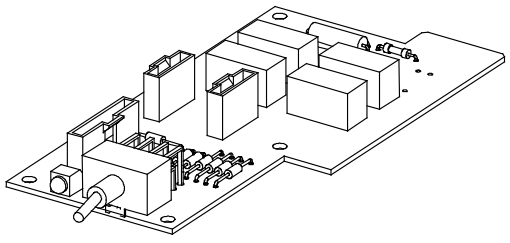
J1
To LVLD contactor, uses controller LVD1 control setting (Level 1).

J3
To LVLD contactor, uses controller LVD2 control setting (Level 2).

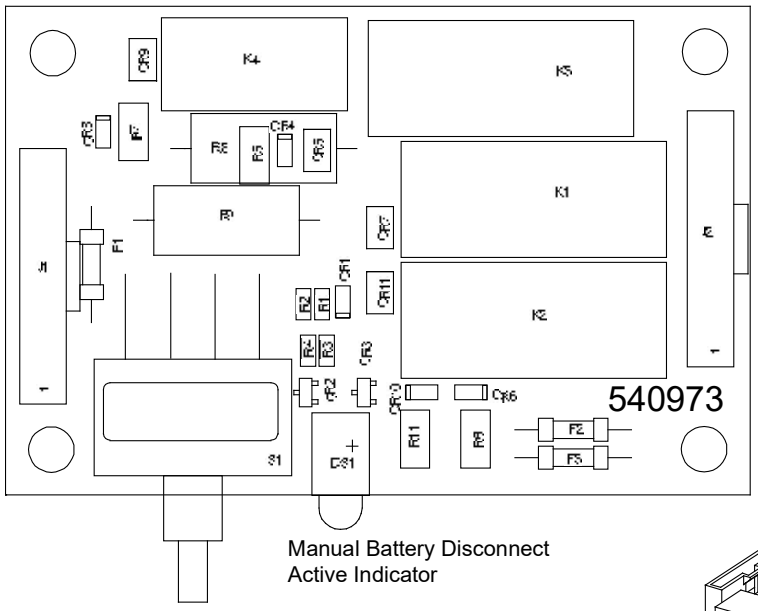
J2
To LVBD contactor, uses controller LVD2 control setting (Level 2). Can only be used if it is contained in a List 21 (1-row) cabinet.

Notes:
1. Connects up to (2) LVD contactors rated at 600 A or less.
2. Only one (1) contactor per level can be accommodated. J2 and J3 are on Level 2, only one (1) of these connectors can be used at a time.
3. Switch and indicator located on circuit card installed in Main Bay only.

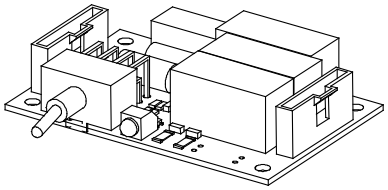
Momentary UP / Middle / Down
Momentary UP Position: Closes all LVD Contactors (inhibit mode).
Middle Position: OFF (Controller DOES NOT control LVD's) (inhibit mode).
DOWN Position: ON (Controller controls LVD's).



Optional Manual Battery
Disconnect Circuit Card
(Main Bay Only)

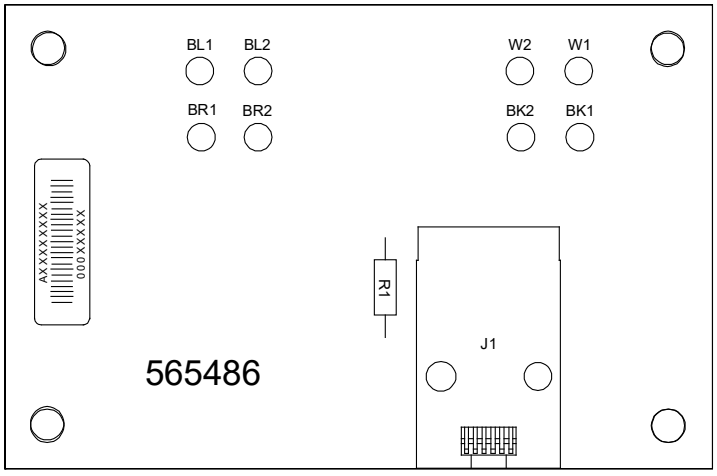


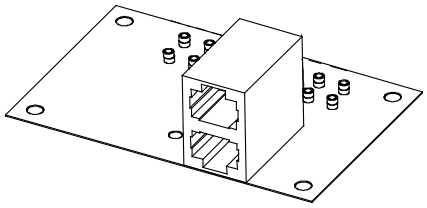
Manual Battery Disconnect
Active Indicator



Momentary UP / Middle / Momentary Down
Momentary UP Postion:Closes Battery Disconnect Contactor
Middle Position: Normal Operation
Momentary DOWN Postion: Opens Battery Disconnect Contactor

CAN Interface Board
(Supplementary Bay Only)



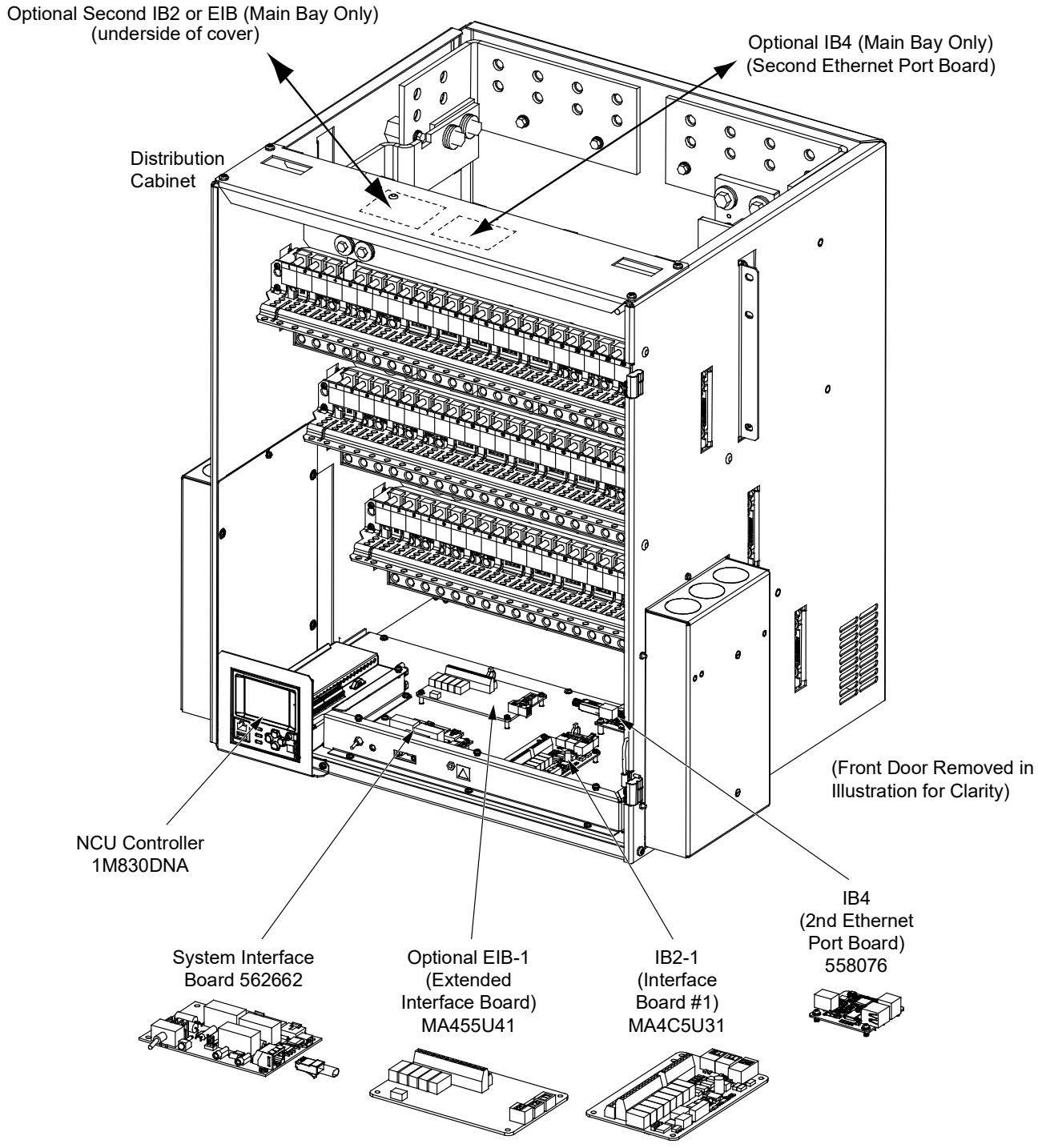


External Alarm, Reference, Monitoring (List 100, 101, 102, 103, 203)

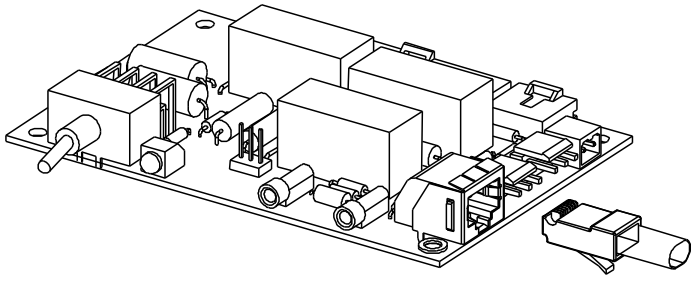
External Alarm, Reference, Monitoring, and Control Wire Sizes

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

External Alarm, Reference, Monitoring, and Control Illustrations

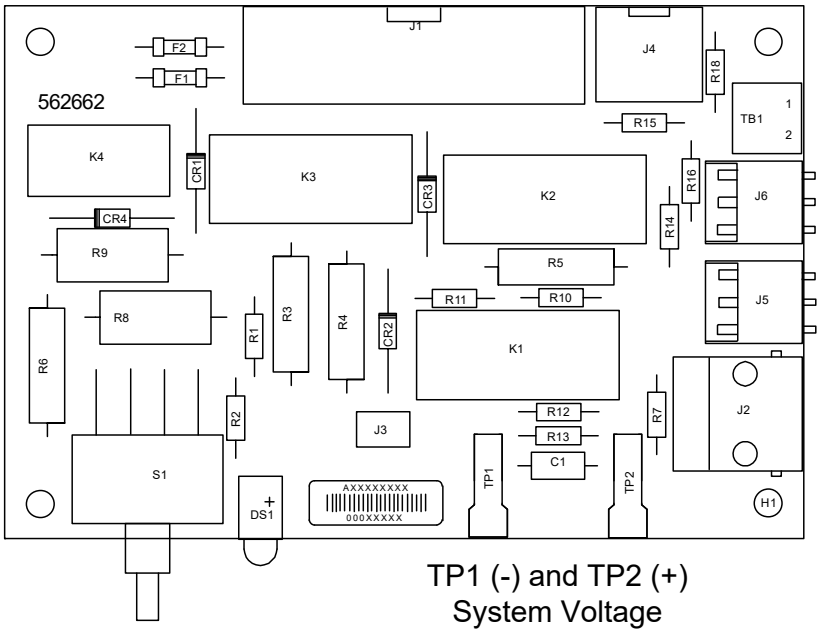


System Interface Board



CAN termination plug P/N 548398 must be installed if an external device is not connected to the system.

System Interface Board



TP1 (-) and TP2 (+)
System Voltage

TB1
Wire Size Capacity: 14AWG to 30AWG
Recommended Torque: 0.28Nm or 2.48 in-lb

FA Signals: System voltage applied to the terminal turns in an alarm.

TB1-1: Bat Tray FA

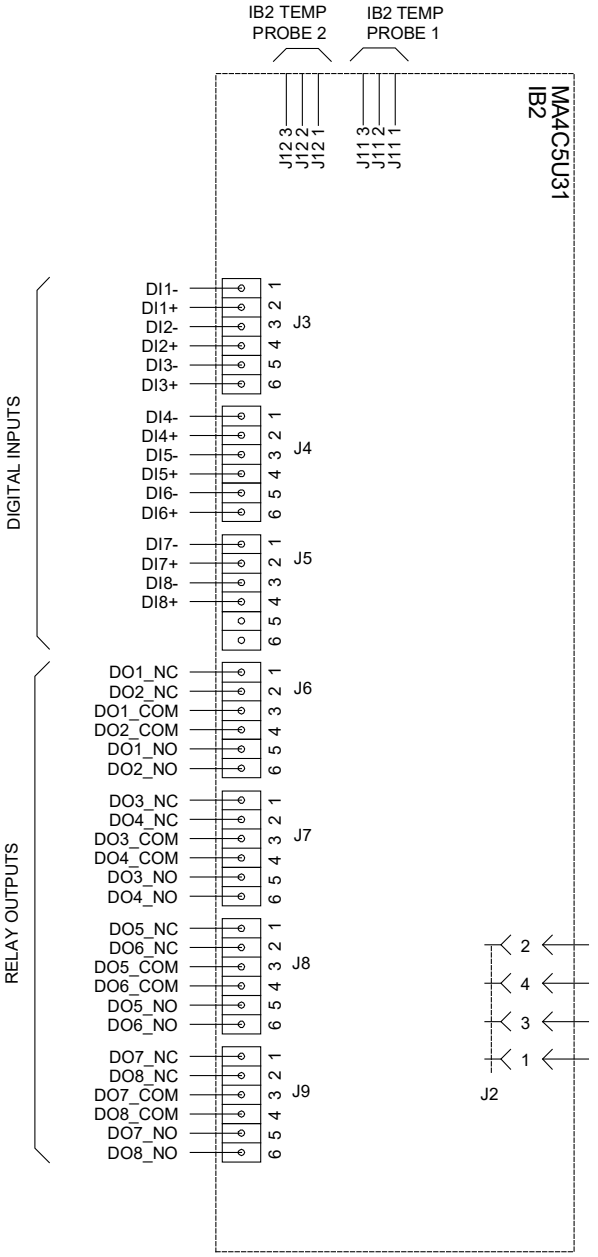
TB1-2: Bat Rack FA

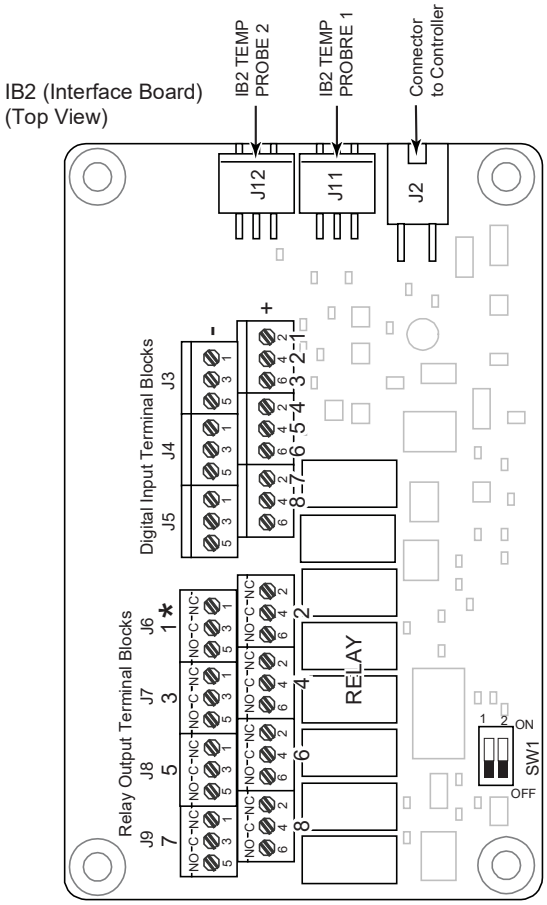
J6 (System Temp 2)

J5 (System Temp 1)

NCU CAN Port

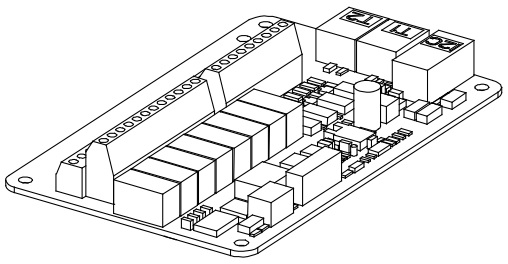
Schematic Diagram of IB2 Board





J3-J9:
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.2 in-lbs.

IB2 (Interface Board)



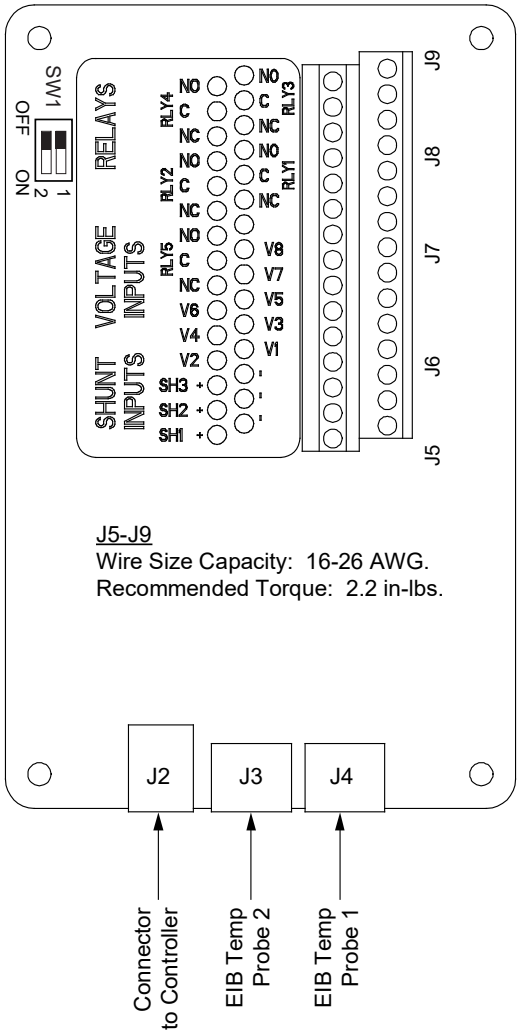
* The relay assigned to “Critical Summary” alarm (relay 1 on first IB2 by default) will operate in the “Fail Safe Mode”. “Fail Safe Mode” means Relay 1 is de-energized during an alarm condition, opening the contacts between the C and NO terminals, and closing the contacts between the C and NC terminals.

The remaining seven (7) relays energize during an alarm condition, closing the contacts between the C and NO terminals, and opening the contacts between the C and NC terminals.

Refer to the configuration drawing (C-drawing) supplied with your system for your system’s specific relay labeling.

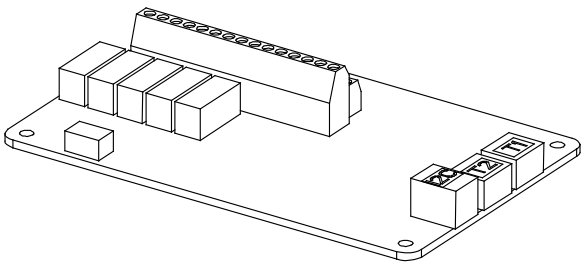
Not all I/O points are available for customer connection (some are used for factory system connections).

EIB (Extended Interface Board)
(Top View)

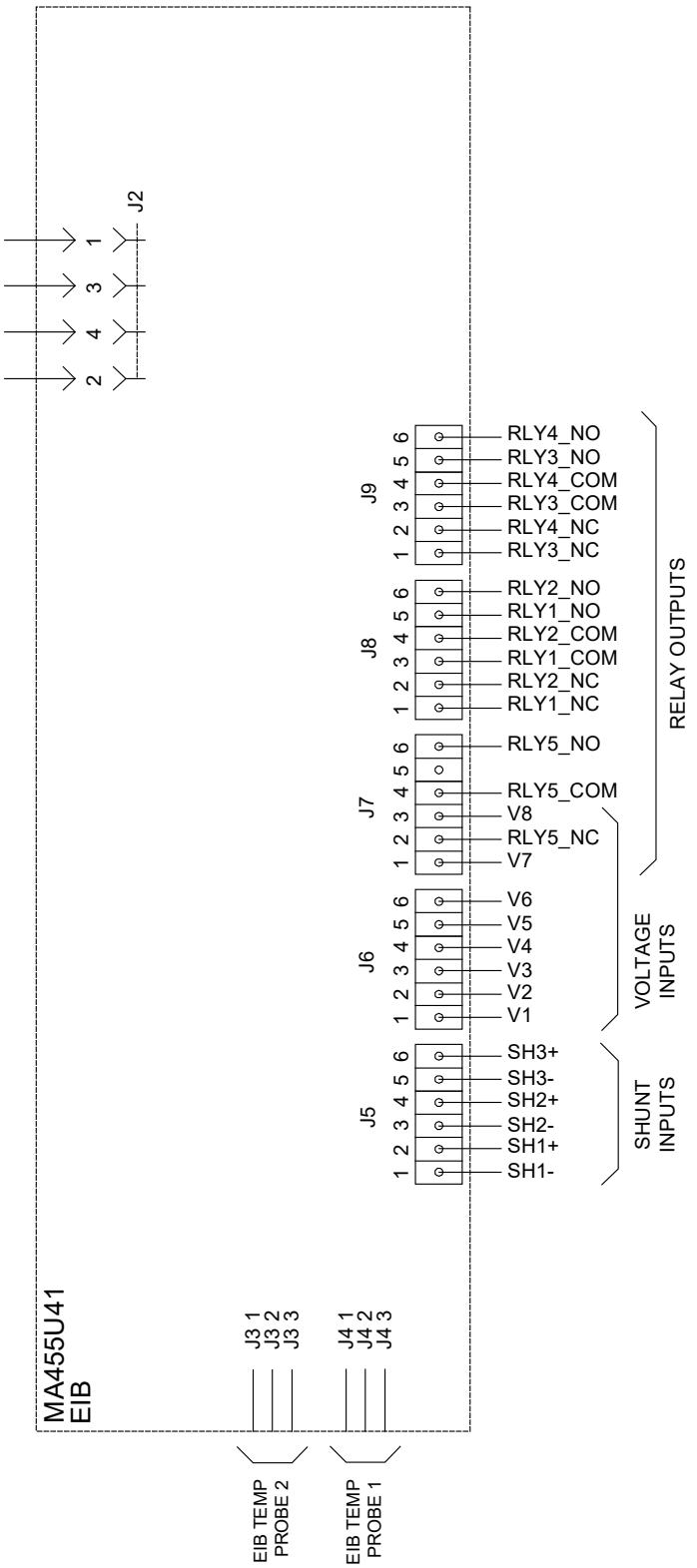


J5-J9
Wire Size Capacity: 16-26 AWG.
Recommended Torque: 2.2 in-lbs.

EIB (Extended Interface Board)



Schematic Diagram of EIB Board



Load Distribution

Load Distribution Wire Sizes and Lugs Selection

The rating of the distribution device determines the load lead wire size requirement. The distribution panel ordered determines the lug hole size and spacing requirements. For wire size and lug selection; refer to the following.

- **When Distribution Panels using Bullet Nose Type Devices (TPS/TLS Fuses and/or Bullet Nose Type Circuit Breakers) are Provided:** Lug-terminated load leads are connected to the individual load busbars and load return busbar (if equipped) located on the distribution panel. If the distribution panel is not equipped with a load return busbar, load return connections are made to a separate return busbar.

  The distribution panel's individual load busbars and load return busbar (if equipped) provide 1/4-20 studs for installation of customer-provided two-hole lugs that have 5/8 inch centers and 1/4 inch bolt clearance holes. Customer must provide (or order) lug mounting hardware. The distribution panel's individual load busbars and return busbar (if equipped) are designed to accommodate the lugs listed in Table 8 and Table 10. Use Table 51 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating. Maximum size of wire to be connected to a single fuseholder/circuit breaker position is 2 AWG. For wiring up to 350 kcmil, see Table 10 or see the following part numbers in ACCESSORY DESCRIPTIONS for available lug adapter busbars: 514714, 514717, 522786, and 534449. Use Table 9 and Table 52 when using the lug adapters.

  The separate return busbar (if furnished) provides 3/8-16 captive nuts for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts and hardware. The separate return busbar (if furnished) are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating.

- **When Distribution Panels using GJ/218 Circuit Breakers, TPH Fuses, or TPL-B Fuses are Provided:** Lug-terminated load leads are connected to the individual load busbars and load return busbar (if equipped) located on the distribution panel. If the distribution panel is not equipped with a load return busbar, load return connections are made to a separate return busbar.

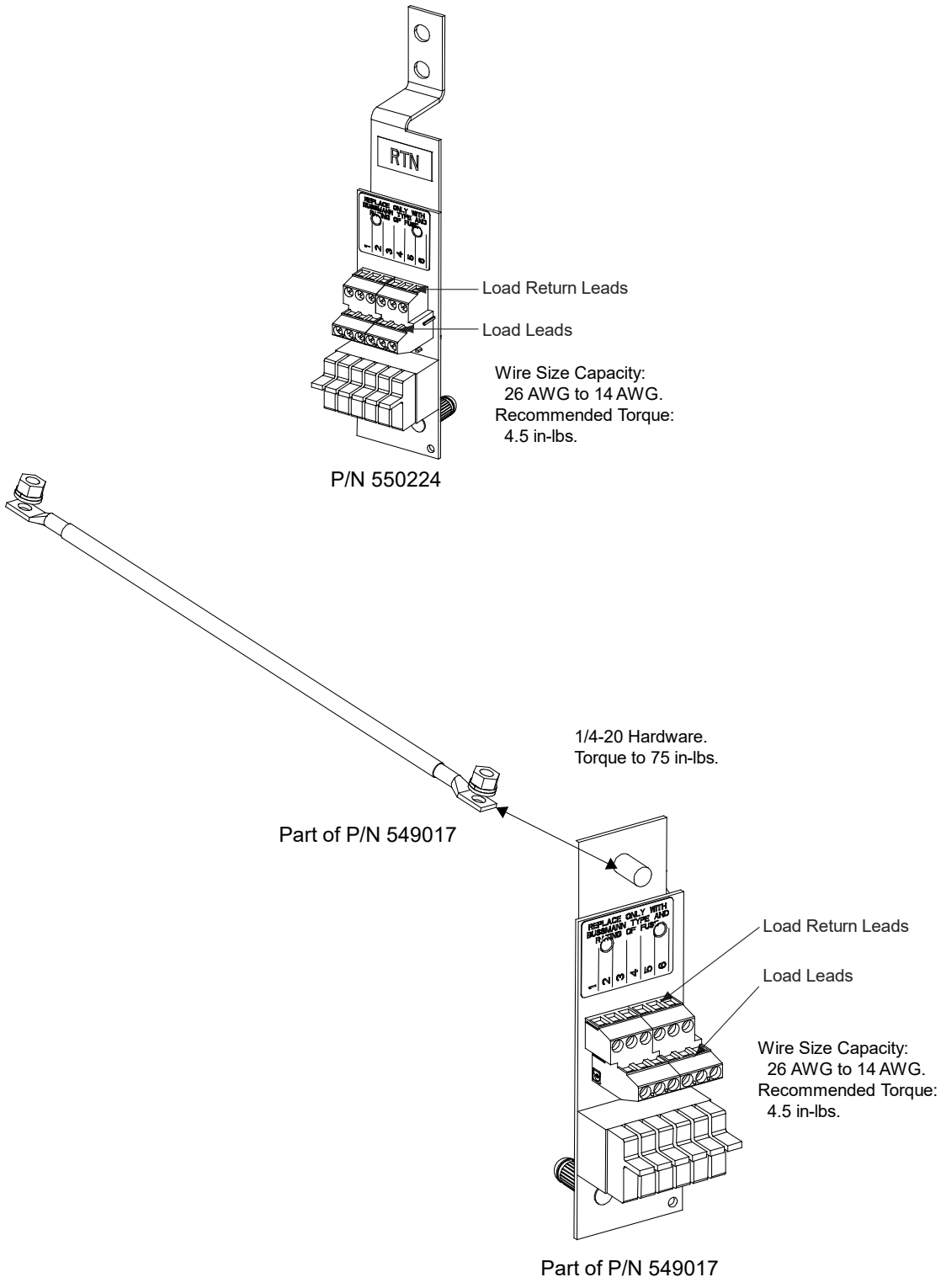
  The distribution panel's individual load busbars and load return busbar (if equipped) provide 3/8-16 captive nuts or studs for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts (if required) and hardware. The distribution panel's individual load busbars and return busbar (if equipped) are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating.

  The separate return busbar (if furnished) provides 3/8-16 captive nuts for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts and hardware. The separate return busbar (if furnished) are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating.

Load Distribution (Distribution Panels) Illustrations

Refer to the illustrations located under the Distribution Panel List descriptions in this document.

Load Distribution Wiring (Optional Bullet Nose 6-Position GMT Fuse Block) Illustration



Battery Input

Battery Input Wire Sizes and Lugs Selection

- **When Distribution Panels Providing Battery Disconnect Fuse/Circuit Breaker Positions are Provided:** The rating of the disconnect device determines the input battery lead wire size requirement. The distribution panel ordered determines the lug hole size and spacing requirements. For wire size and lug selection; refer to the following.

  a) **When Distribution Panels Using Bullet Nose Type Devices (TPS/TLS Fuses and/or Bullet Nose Type Circuit Breakers) are Provided:** Lug-terminated input battery leads are connected to the individual battery busbars and battery return busbar (if equipped) located on the distribution panel. If the distribution panel is not equipped with a battery return busbar, battery return connections are made to a separate return busbar.

  The distribution panel's individual battery busbars and battery return busbar (if equipped) provide 1/4-20 studs for installation of customer-provided two-hole lugs that have 5/8 inch centers and 1/4 inch bolt clearance holes. Customer must provide (or order) lug mounting hardware. The distribution panel's individual battery busbars and return busbar (if equipped) are designed to accommodate the lugs listed in Table 8 and Table 10. Use Table 51 to select recommended battery wire sizes and lugs for various loop lengths per battery disconnect fuse/circuit breaker ampere rating. Maximum size of wire to be connected to a single fuseholder/circuit breaker position is 2 AWG. For wiring up to 350 kcmil, see Table 10 or see the following part numbers in ACCESSORY DESCRIPTIONS for available adapter busbars: 514714, 514717, 522786, and 534449. Use Table 9 and Table 52 when using the lug adapters.

  The separate return busbar (if furnished) provides 3/8-16 captive nuts for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts and hardware. The separate return busbar (if furnished) are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating.

  b) **When Distribution Panels Using GJ/218 Circuit Breakers, TPH Fuses, or TPL-B Fuses are Provided:** Lug-terminated battery leads are connected to the individual battery busbars and battery return busbar (if equipped) located on the distribution panel. If the distribution panel is not equipped with a battery return busbar, battery return connections are made to a separate return busbar.

  The distribution panel's individual battery busbars and battery return busbar (if equipped) provide 3/8-16 captive nuts or studs for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts (if required) and hardware. The distribution panel's individual battery busbars and battery return busbar are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended battery wire sizes and lugs for various loop lengths per battery disconnect fuse/circuit breaker ampere rating.

  The separate return busbar (if furnished) provides 3/8-16 captive nuts for installation of customer-provided two-hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide (or order) lug mounting bolts and hardware. The separate return busbar (if furnished) are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended load distribution wire sizes and lugs for various loop lengths per fuse/circuit breaker ampere rating.

- **When Distribution Panels with Battery Disconnect Fuse/Circuit Breaker Positions are NOT Provided:** Lug-terminated input battery leads are connected to the battery busbar and battery return busbar. These busbars provide 3/8-16 captive nuts for installation of customer-provided two hole lugs that have 1 inch centers and 3/8 inch bolt clearance holes. Customer must provide lug mounting bolts and hardware. Battery wire size and lug requirements are determined by site requirements. For wire size and lug selection; refer to the following.

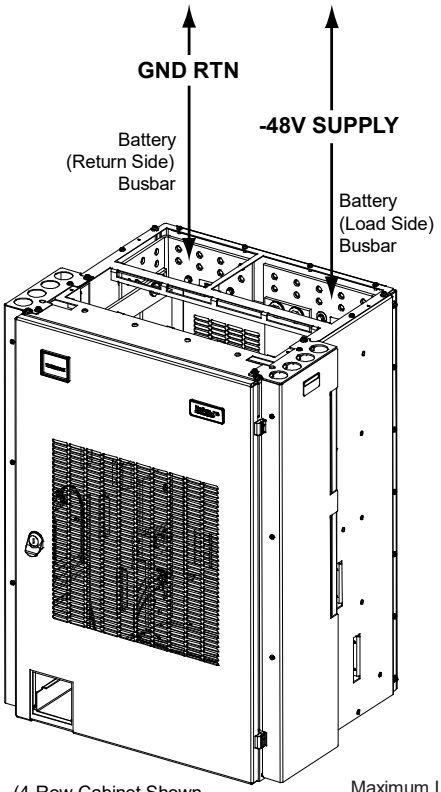
  The battery busbars are designed to accommodate the lugs listed in Table 9. Use Table 52 to select recommended battery wire sizes and lugs for various loop lengths per required battery branch circuit ampere rating.

Battery Input Illustrations

a) Connections to Battery Disconnect Circuit Breakers

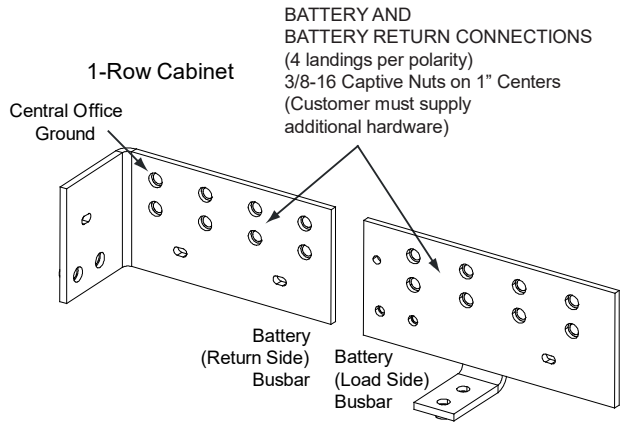
Refer to the illustrations located under the Distribution Panel List descriptions in this document.

b) Connections to Lists 21 through 24 Distribution Cabinets (except List 100, 101, 102, 103, 203)

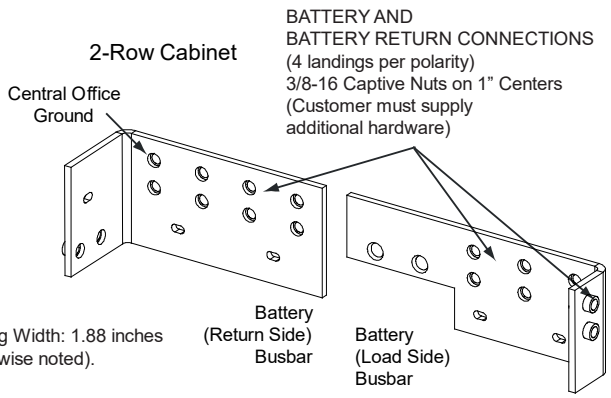


(4-Row Cabinet Shown, Others Similar)

1-Row Cabinet

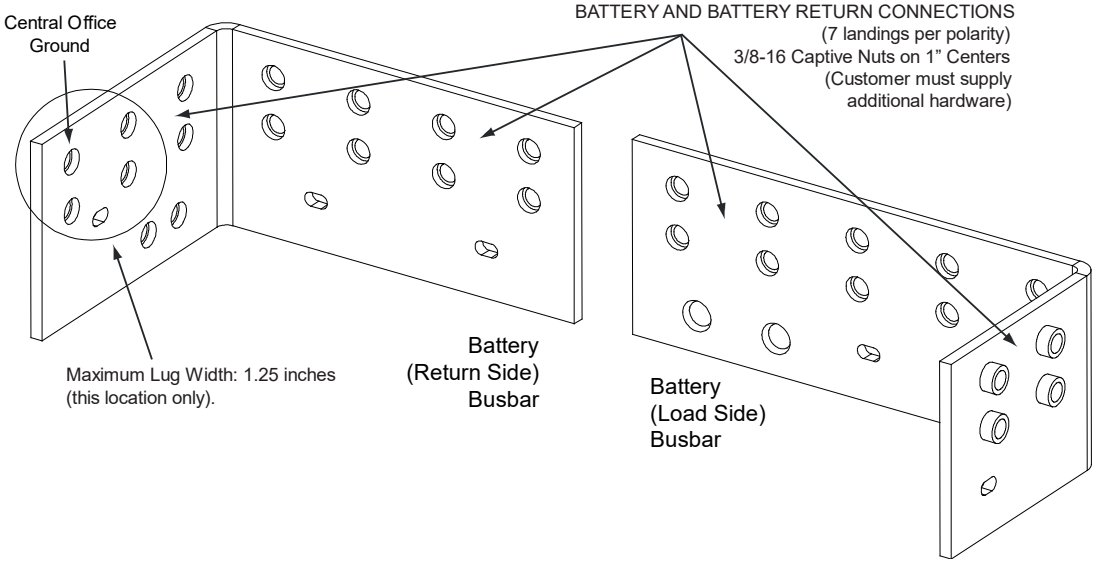


2-Row Cabinet

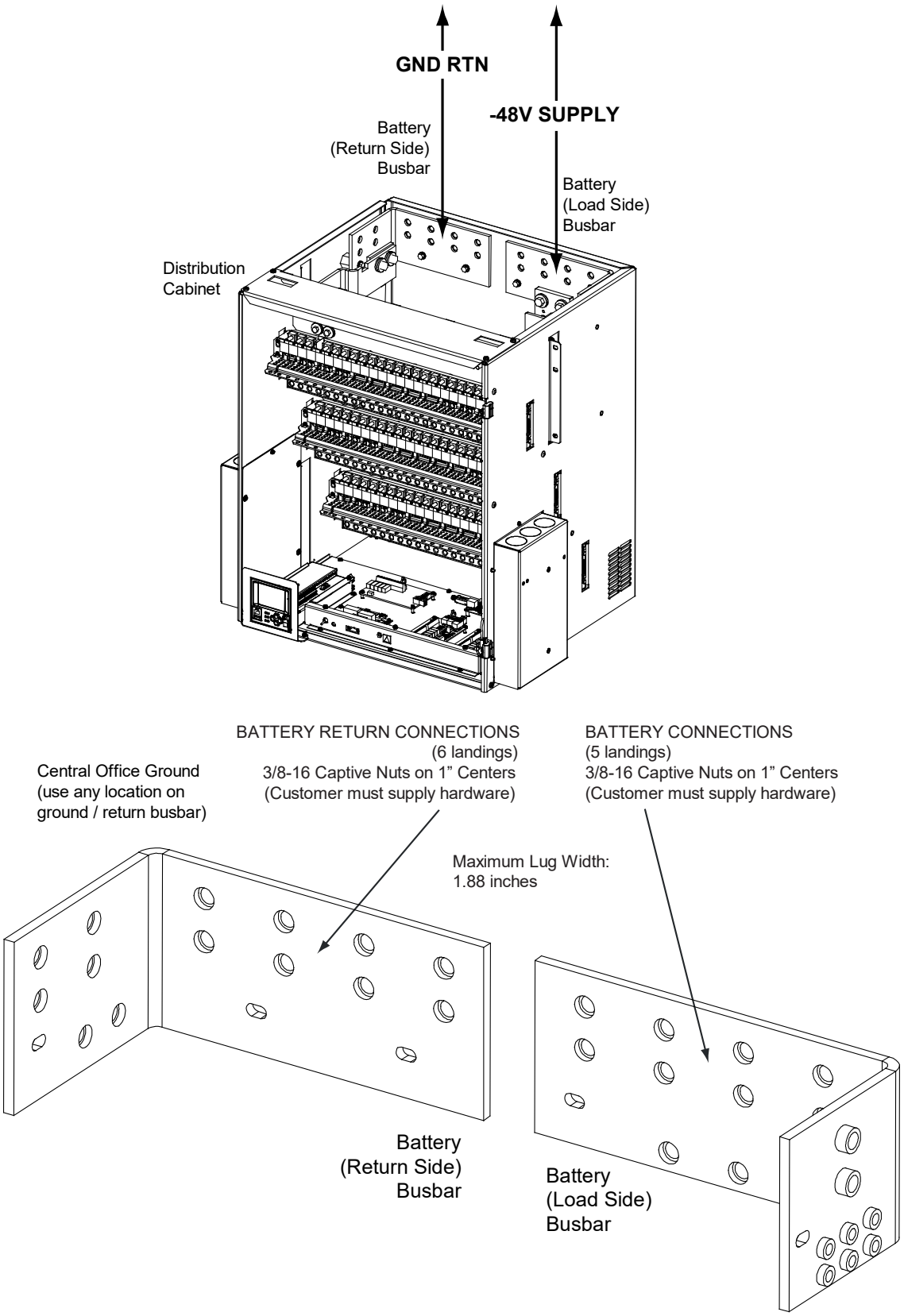


Maximum Lug Width: 1.88 inches (unless otherwise noted).

3-Row and 4-Row Cabinets

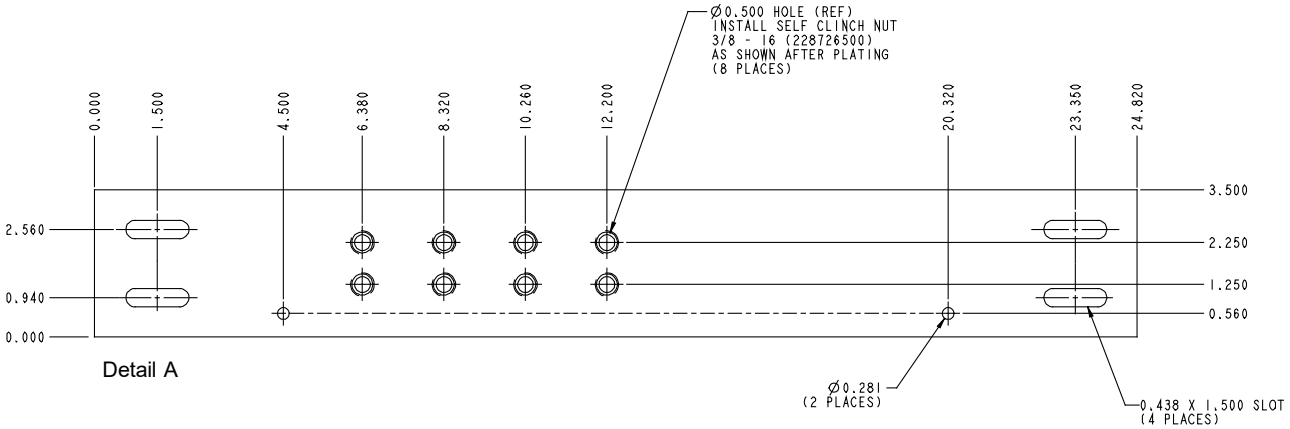


c) Connections to List 100, 101, 102, 103, 203 Distribution Cabinet



d) Connections to Interbay Busbars (P/O List 2 and List 3) (for system mounted in a relay rack only)

Note: *The current rating of the inter-bay bus bars is 2000 amps maximum. Rectifier placement load and battery connections should be such that this maximum current is not exceeded.*

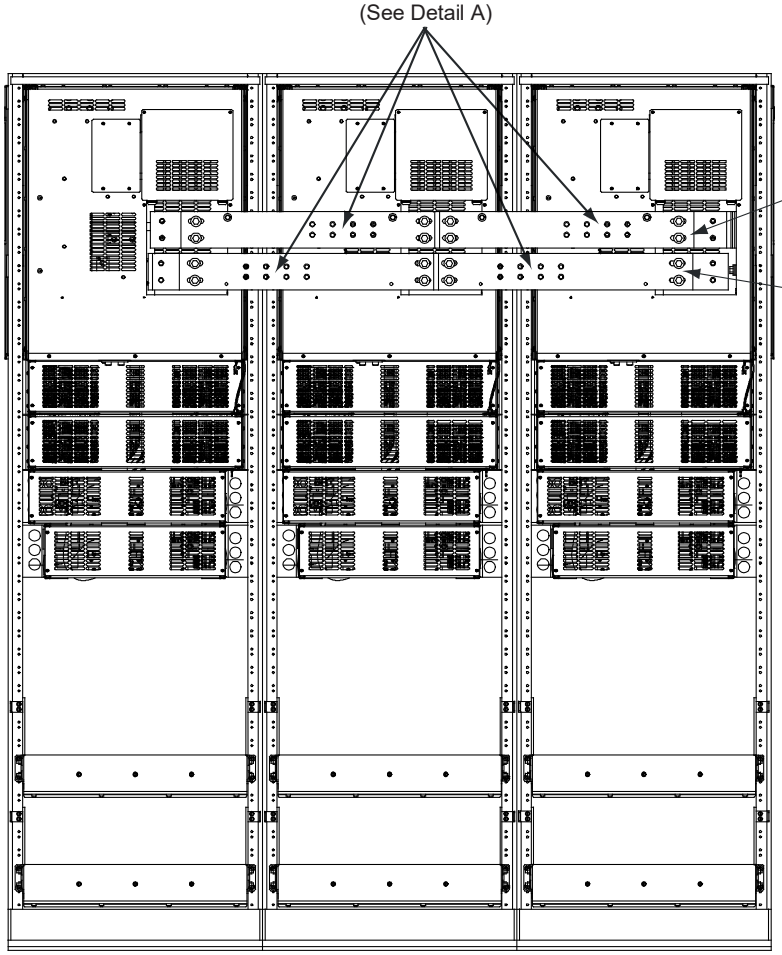


Detail A

RECTIFIER AND RECTIFIER RETURN CONNECTIONS
(CAN ONLY BE USED FOR BATTERY CONNECTIONS
IF THE SYSTEM DOES NOT CONTAIN A BATTERY
SHUNT OR BATTERY DISCONNECT CONTACTOR)
3/8-16 Captive Nuts on 1" Centers
(Customer must supply additional hardware.)
Maximum Lug Width: 1.88 inches.
(See Detail A)

Notes:
1. All dimensions are in inches.

Rear busbar cover shields
not shown in illustration.



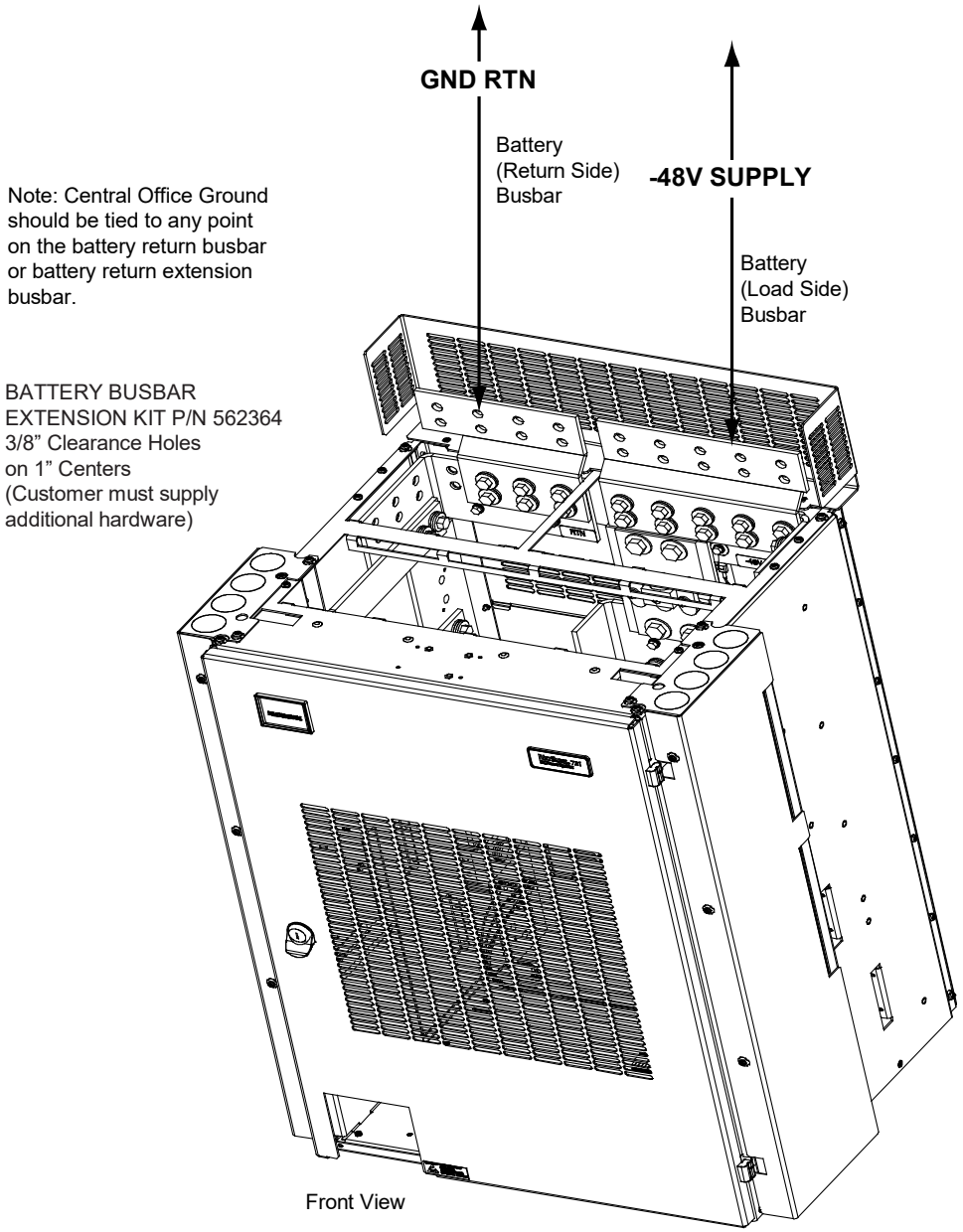
GND RETURN
Rectifier (Return Side) Busbar

-48V Supply
Rectifier (Load Side) Busbar

Rear

e) Connections to Optional Battery Busbar Extension Kit P/N 562364 Installed in a List 23 and List 24 Distribution Cabinet

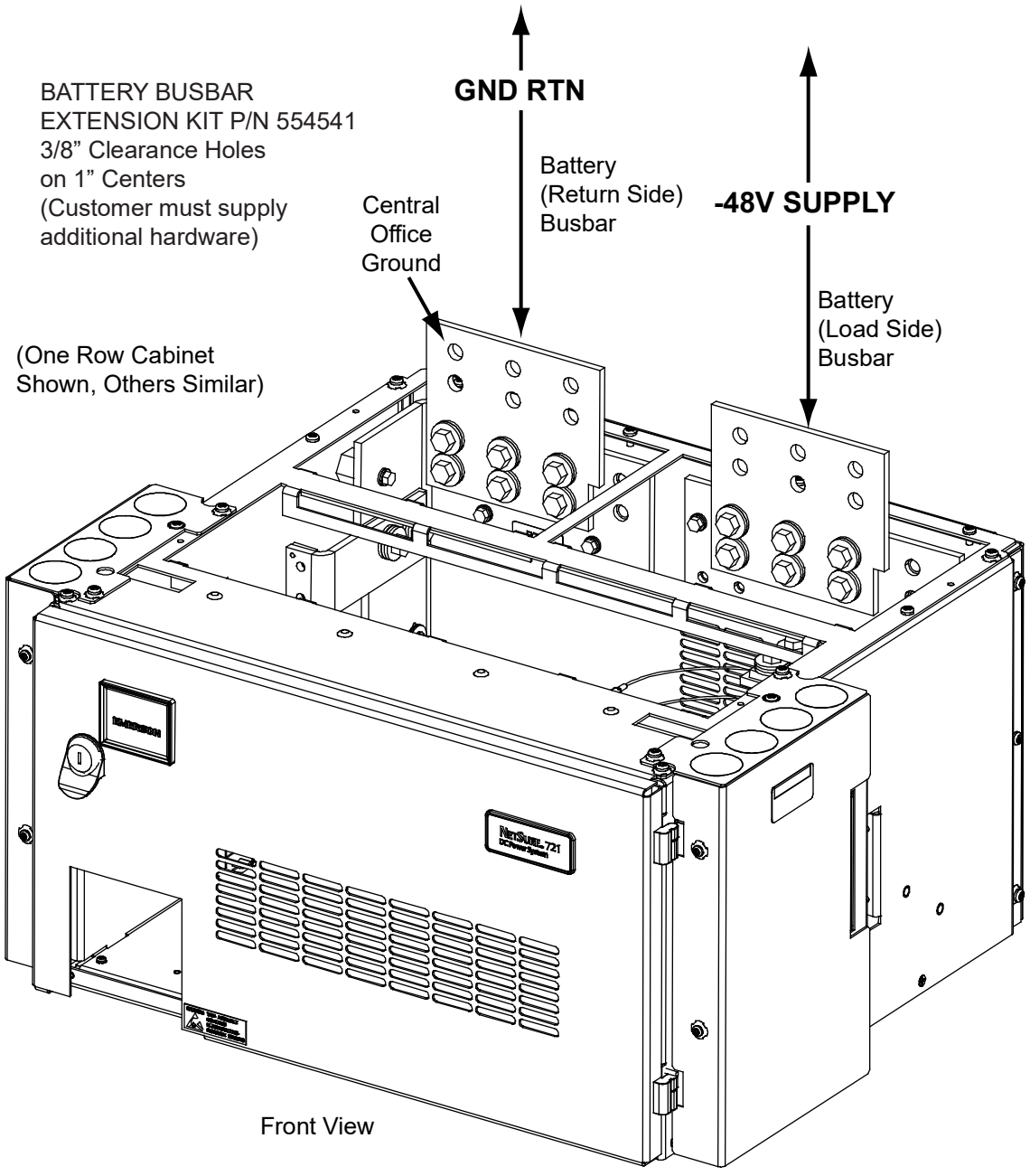
Note: *See Battery Busbar Extension Kit (P/N 562364) under ACCESSORY DESCRIPTIONS for description.*



List 24 Distribution Cabinet
(List 23 similar)

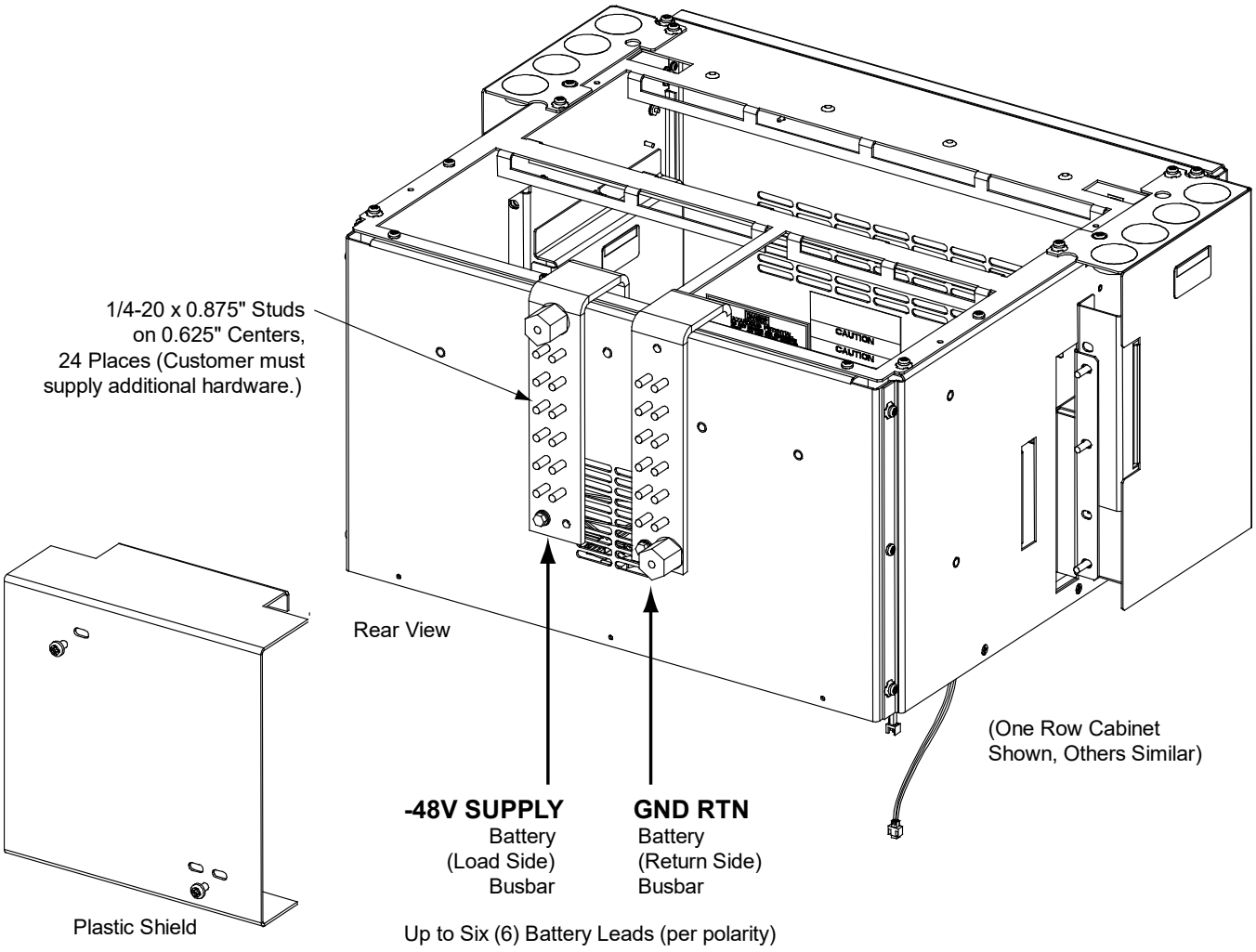
f) Connections to Optional Battery Busbar Extension Kit P/N 554541 Installed in a Lists 21 through 22 Distribution Cabinets

Note: *See Battery Busbar Extension Kit (P/N 554541) under ACCESSORY DESCRIPTIONS for description.*



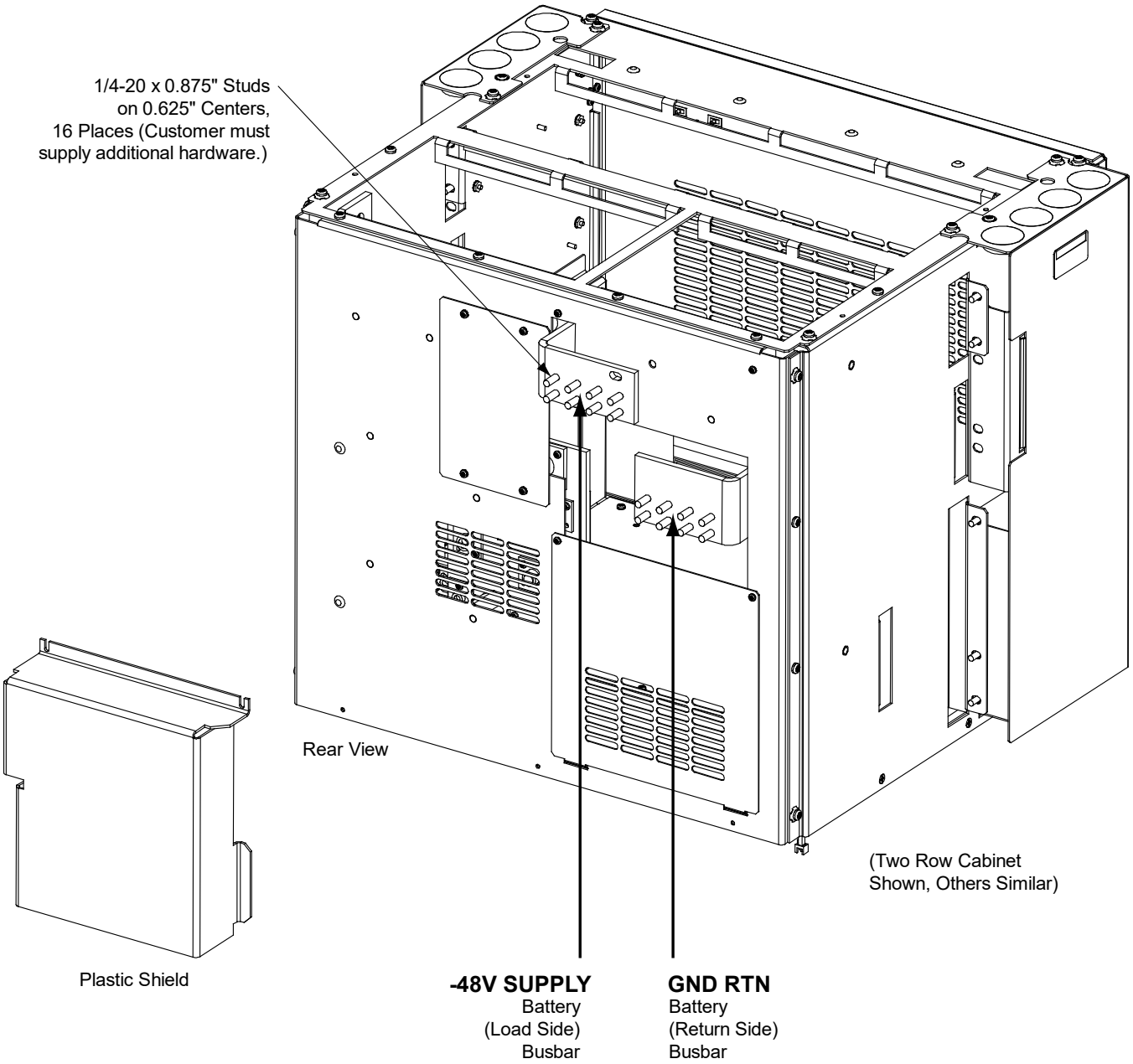
g) Connections to Optional Battery Landing Busbar Kit P/N 553584 Installed in List 21 Distribution Cabinet (for systems mounted in a relay rack only)

Note: *See Battery Busbar Extension Kit (P/N 553584) under ACCESSORY DESCRIPTIONS for description.*



h) Connections to Optional Battery Landing Busbar Kit P/N 555478 Installed in Lists 22 through 24 Distribution Cabinets (for systems mounted in a relay rack only)

Note: *See Battery Busbar Extension Kit (P/N 555478) under ACCESSORY DESCRIPTIONS for description.*



Wire Size and Lug Selection Tables for Load and Battery Connections to TPS/TLS Fuses and Bullet Nose Type Circuit Breakers

Fuse/ Circuit Breaker Amperage	Recm 90°C Wire Size [1]							
	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG	4 AWG	2 AWG	1/0 AWG
	Loop Length (feet) [2]							
1, 3, 5, 6, 10 A	37 [3, 4]	58 [3, 4]	93 [3, 4]	--	--	--	--	--
15 A	24 [3, 4]	39 [3, 4]	62 [3, 4]	--	--	--	--	--
20 A	--	29 [3, 4]	46 [3, 4]	74 [3, 4]	--	--	--	--
25 A	--	--	37 [3, 4]	59 [3, 4]	94 [3, 4]	--	--	--
30 A	--	--	31 [3, 4]	49 [3, 4]	78 [3, 4]	--	--	--
35 A	--	--	--	42 [3, 4]	67 [3, 4]	107 [3, 4]	--	--
40 A	--	--	--	37 [3, 4]	59 [3, 4]	94 [3, 4]	--	--
45 A	--	--	--	33 [3, 4]	52 [3, 4]	83 [3, 4]	--	--
50 A	--	--	--	29 [3, 4]	47 [3, 4]	75 [3, 4]	--	--
60 A	--	--	--	--	39 [3, 4]	62 [3, 4]	99 [3, 4]	--
70 A	--	--	--	--	33 [3]	53 [3, 4]	85 [3, 4]	135 [4]
75 A	--	--	--	--	31 [3]	50 [3, 4]	79 [3, 4]	126 [4]
80 A	--	--	--	--	--	47 [3, 4]	74 [3, 4]	118 [3, 4]
Recommended Crimp Lug [5]								
Lug	245342300	245342300	245342300	245390200	245346700	245346800	245346900	245393500 [6]

1 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.

2 Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.

3 Wire Size / Loop Length Combination Calculated using 30 °C Ambient Operating Temperature.

4 Wire Size / Loop Length Combination Calculated using 40 °C Ambient Operating Temperature.

5 Two-hole lug, 1/4" bolt clearance hole, 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

6 Special application crimp lug / strap combination.

Table 56 (cont'd on next page)
Recommended Wire Sizes and Lugs for Load and Battery Connections to Various **TPS/TLS Fuses** and **Bullet Nose Type Circuit Breakers**

Fuse/ Circuit Breaker Amperage	Recm 90°C Wire Size (1)							
	4 AWG	2 AWG	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil	350 kcmil
	Loop Length (feet) (2)							
90 A	41 (3)	66 (3, 4)	105 (3, 4)	133 (4)	--	--	--	--
100 A	--	59 (3, 4)	95 (3, 4)	119 (3, 4)	--	--	--	--
125 A	--	47 (3)	76 (3, 4)	95 (3, 4)	120 (4)	--	--	--
150 A	--	--	63 (3, 4)	79 (3, 4)	100 (3, 4)	--	--	--
200 A	--	--	--	--	75 (3, 4)	95 (3, 4)	112 (3, 4)	--
250 A	--	--	--	--	--	76 (3, 4, 7)	90 (3, 4, 7)	126 (3, 4, 7)
300 A	--	--	--	--	--	--	--	105 (3, 4, 7)
Recommended Crimp Lug								
Lug (5)	245346800	245346900	245393500 (6)	245393600 (6)	245393700 (6)	245393800 (6)	514872 (6)	514873 (6)
Lug (8, 9)	--	245348200	245347100	245347200	245347300	245347400	245347500	245347700

1 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.

2 Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.

3 Wire Size / Loop Length Combination Calculated using 30 °C Ambient Operating Temperature.

4 Wire Size / Loop Length Combination Calculated using 40 °C Ambient Operating Temperature.

5 Two-hole lug, 1/4" bolt clearance hole, 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

6 Special application crimp lug / strap combination.

7 **MUST USE** P/N 514717 Lug Adapter Busbar for lugs having 1/4" bolt clearance hole, 5/8" centers.

8 Two-hole lug, 3/8" bolt clearance hole, 1" centers. Lugs should be crimped per lug manufacturer's specifications.

9 **MUST USE** P/N 522786 or 534449 Lug Adapter Busbar for 125 A to 200 A circuit breakers or P/N 514714 Lug Adapter Busbar Kit for 225 A to 300 A circuit breakers.

Table 51 (cont'd from previous page)
Recommended Wire Sizes and Lugs for Load and Battery Connections
to Various **TPS/TLS Fuses** and **Bullet Nose Type Circuit Breakers**

Wire Size and Lug Selection Tables for Load and Battery Connections to TPH Fuses, TPL-B Fuses, and GJ/218 Type Circuit Breakers or Battery Branch Circuits

Fuse/ Circuit Breaker Amperage	Recm 90°C Wire Size [1]							
	6 AWG	4 AWG	2 AWG	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil
	Loop Length (feet) [2]							
70 A	33 [3]	53 [3, 4]	85 [3, 4]	135 [4]	--	--	--	--
80 A	--	47 [3, 4]	74 [3, 4]	118 [3, 4]	--	--	--	--
100 A	--	--	59 [3, 4]	95 [3, 4]	119 [3, 4]	--	--	--
125 A	--	--	47 [3]	76 [3, 4]	95 [3, 4]	120 [4]	--	--
150 A	--	--	--	63 [3, 4]	79 [3, 4]	100 [3, 4]	--	--
175 A	--	--	--	--	68 [3, 4]	86 [3, 4]	108 [3, 4]	--
200 A	--	--	--	--	--	75 [3, 4]	95 [3, 4]	112 [3, 4]
Recommended Crimp Lug [5]								
Lug	245349900	245350000	245348200	245347100	245347200	245347300	245347400	245347500

1 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.

2 Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.

3 Wire Size / Loop Length Combination Calculated using 30 °C Ambient Operating Temperature.

4 Wire Size / Loop Length Combination Calculated using 40 °C Ambient Operating Temperature.

5 Two-hole lug, 3/8" bolt clearance hole, 1" centers. Lugs should be crimped per lug manufacturer's specifications.

Table 57 (cont'd on next page)
Recommended Wire Sizes and Lugs for Load and Battery Connections to Various **TPH Fuses**, **TPL-B Fuses**, and **GJ/218-Circuit Breakers** or **Battery Branch Circuits**

Fuse/ Circuit Breaker Amperage	Recm 90°C Wire Size [1]							
	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil	300 kcmil	350 kcmil	400 kcmil	500 kcmil
	Loop Length (feet) [2]							
225 A	--	67 [3]	84 [3, 4]	100 [3, 4]	120 [4]	--	--	--
250 A	--	--	76 [3]	90 [3, 4]	108 [3, 4]	126 [4]	--	--
300 A	159 [4] (2) Wires	--	--	--	90 [3]	105 [3, 4]	120 [3, 4]	--
400 A	--	75 [3, 4] (2) Wires	95 [3, 4] (2) Wires	112 [3, 4] (2) Wires	--	--	--	--
500 A	--	--	76 [3] (2) Wires	90 [3, 4] (2) Wires	108 [3, 4] (2) Wires	126 [4] (2) Wires	--	--
600 A	--	--	--	--	90 [3] (2) Wires	105 [3, 4] (2) Wires 157 [4] (3) Wires	120 [3, 4] (2) Wires	--
800 A	--	--	--	84 [3] (3) Wires	101 [3, 4] (3) Wires	118 [3, 4] (3) Wires	135 [3, 4] (3) Wires	--
Recommended Crimp Lug [5]								
Lug	245347200 (per cable)	245347300 (per cable)	245347400 (per cable)	245347500 (per cable)	245347600 (per cable) See also Note 6.	245347700 (per cable) See also Note 6.	245347800 (per cable) See also Note 6.	245347900 (per cable)

1 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.

2 Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.

3 Wire Size / Loop Length Combination Calculated using 30 °C Ambient Operating Temperature.

4 Wire Size / Loop Length Combination Calculated using 40 °C Ambient Operating Temperature.

5 Two-hole lug, 3/8" bolt clearance hole, 1" centers. Lugs should be crimped per lug manufacturer's specifications.

6 For a 600 A GJ/218 circuit breaker installed in a List AM or List AP distribution panel, P/N 562888 3-pole lug adapter may be ordered. P/N 562888 includes one (1) busbar that mounts on the three lug landing positions of a 600 A circuit breaker installed in a List AM or List AP distribution panel and one (1) busbar that mounts on the three landings of the associated ground return bar. These busbars provide two (2) landings for standard two-hole lugs having 3/8" bolt clearance holes on 1" centers.

Table 52 (cont'd from previous page)
Recommended Wire Sizes and Lugs for Load and Battery Connections
to Various **TPH Fuses**, **TPL-B Fuses**, **GJ/218-Circuit Breakers**
or **Battery Branch Circuits**

SPECIFICATIONS

1. SYSTEM

1.1 Output Ratings

See “General Specifications” starting on page 3.

1.2 Input Ratings

See “General Specifications” starting on page 3.

1.3 Environmental Ratings

Operating Ambient Temperature Range: -40 °C to +40 °C (-40 °F to +104 °F).

Storage Ambient Temperature Range: -40 °C to +85 °C (-40 °F to +185 °F).

Humidity: This Power System is capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

Altitude: 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 5000 feet.

Mounting: Refer to “Overall Dimensions” on page 235 for mounting dimensions.

- 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 network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- The DC return connection to this system can remain isolated from system frame and chassis (DC-I).
- This system is suitable for installation as part of the Common Bonding Network (CBN).
- Rectifier, converter, and mounting assembly ventilating openings must not be blocked and temperature of air entering rectifiers and converters must not exceed the rated operating ambient temperature range.
- Clearance requirements are:
  a) Recommended minimum aisle space clearance for the front of each bay is 2'6".
  b) Recommended minimum aisle space clearance for the rear of each bay is 2’0” for any of the following conditions:
     1) Multiple bay arrangements that incorporate rear inter-bay busbars (List 2, List 3, List 7 and List 8 bays).
     2) Addition of a module mounting assembly in the field.
     3) Making AC input connections to a field installed module mounting assembly.
     4) Adding battery tray(s) in the field.
  c) For all other conditions, required minimum spacing from the rear of the bay to a wall or other solid surface is that which is specified for proper converter and/or module mounting assembly ventilation.

     588705000 Module Mounting Assembly: The distance from the rear of a module mounting assembly to a wall or other solid structure must not be less than two (2) inches. This will assure proper airflow through the rectifier modules.

     588705300 and 588705400 Module Mounting Assembly: The distance from the rear of the module mounting assembly to a wall or other solid structure must not be less than four (4) inches. This will assure proper airflow through the rectifier and converter modules.

     Note: *Minimum spacing specified for ventilation may not permit replacement of certain components such as busbars or module mounting assemblies.*

1.4 Compliance Information

Safety Compliance: This power board is UL Listed ("c UL") as a DC Power Distribution Center for Communications Equipment. This unit meets the requirements of CSA 22.2, No. 225 and is tested and Certified by UL ("c UL") as a Custom Built Power Distribution Center for Communications Equipment.

NEBS Compliance: Compliance verified by a Nationally Recognized Testing Laboratory (NRTL) per GR-1089-CORE and GR-63-CORE. Contact Vertiv for NEBS compliance reports.

Rectifier Modules: In order to remain compliant during a fan failure condition, the backup battery connection must be utilized to provide sufficient power to the loads for up to eight (8) hours when the system is operated at greater than 50% output power. If no backup battery connection is used, the system must operate with a redundant module installed.

Converter Modules: In order to remain compliant during a fan failure condition, the system must operate with a redundant module installed.

1.5 IB2 and EIB (Controller Interface Board) Ratings

Digital Input Ratings

(A) Maximum Voltage Rating: 60 VDC.

(B) Active High: > 19 VDC.

(C) Active Low: < 1 VDC.

Relay Ratings

(D) Steady State: 0.5 A @ 60 VDC; 1.0 A @ 30 VDC.

(E) Peak: 3 A @ 30 VDC.

2. 588705000 MODULE MOUNTING ASSEMBLY

2.1 Output Ratings

-48 VDC, 437 A, 21000 W (maximum).

2.2 Input Ratings

588705000 List 21: 208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, 1-Phase, 17.3 A / 15 A / 13.5 A.

588705000 List 22: 208 VAC, 240 VAC, 50 Hz / 60 Hz, 1-Phase, 17.3 A / 15 A.

588705000 List 31: 208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, 1-Phase, 17.3 A / 15 A / 13.5 A.

588705000 List 32: 208 VAC, 240 VAC, 50 Hz / 60 Hz, 3-Phase, 29.3 A / 25.5 A.

588705000 List 33: 277/480 VAC, 50 Hz / 60 Hz, 3-Phase, 13.5 A.

588705000 List 40, 41: 260 VDC to 400 VDC, 14.6 A.

588705000 List 42: 260 VDC to 400 VDC, 44 A.

2.3 Environmental Ratings

Operating Ambient Temperature Range: -40 °C to +65 °C (-40 °F to +149 °F).

Storage Ambient Temperature Range: -40 °C to +85 °C (-40 °F to +185 °F).

Humidity: Capable of operating in an ambient relative humidity range of 0 % to 95 %, non-condensing.

Altitude: 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 5000 feet.

Ventilation Requirements:

(A) Ventilation: A module mounting assembly must be mounted so ventilating openings are not blocked and temperature of the air entering the shelf does not exceed the Operating Ambient Temperature Range stated above. Refer also to “Mounting” below.

(B) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of module mounting shelves, one above the other, in a relay rack. There is no spacing requirement between stacked module mounting shelves of a single system.

Mounting: The module mounting assembly is designed for mounting in a 23 inch wide relay rack with 1 inch or 1-3/4 inch multiple drilling. Mounting angles are positioned for a fixed 9-inch front projection mounting. Refer to “Overall Dimensions” starting on page 235 for dimensional illustrations.

- 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 network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- The DC return connection to this system can remain isolated from system frame and chassis (DC-I).
- This system is suitable for installation as part of the Common Bonding Network (CBN).

- Rectifier and module mounting assembly ventilating openings must not be blocked and temperature of air entering rectifiers must not exceed the rated operating ambient temperature range.
- Clearance Requirements: The distance from the rear of a module mounting assembly to a wall or other solid structure must not be less than two (2) inches. This will assure proper airflow through the rectifier and converter modules.

  Note: *Minimum rear spacing specified for ventilation may not permit installation and maintenance of the system. Refer to "System Specifications" on starting on page 229 for increased clearance requirements.*

2.4 Compliance Information

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. This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

3. 588705300 MODULE MOUNTING ASSEMBLY

3.1 Input and Output Ratings

588705300 List 01

Input Rating: 208 VAC, 240 VAC, 10 A / 8.7 A, 50 Hz / 60 Hz, single-phase.

Output Rating: -48 VDC, 250 A (12000 W) maximum @ 45 °C.
+24 VDC, 187 A (4500 W) maximum @ 45 °C.
-48 VDC, 225 A (12000 W) maximum @ 65 °C.
+24 VDC, 150 A (3600 W) maximum @ 65 °C.
-48 VDC, 168 A (9000 W) maximum @ 70 °C.
+24 VDC, 125 A (3000 W) maximum @ 70 °C.

Input Rating: 120 VAC, 9 A, 50 Hz / 60 Hz, single-phase.

Output Rating: -48 VDC, 125 A (6000 W) maximum @ 45 °C.
+24 VDC, 187 A (4500 W) maximum @ 45 °C.
-48 VDC, 112 A (5400 W) maximum @ 65 °C.
+24 VDC, 150 A (3600 W) maximum @ 65 °C.
-48 VDC, 84.4 A (4050 W) maximum @ 70 °C.
+24 VDC, 125 A (3000 W) maximum @ 70 °C.

588705300 List 03

Input Rating: 208 VAC, 240 VAC, 20 A / 17.5 A, 50 Hz / 60 Hz, single-phase.

Output Rating: -48 VDC, 250 A (12000 W) maximum @ 45 °C.
+24 VDC, 187 A (4500 W) maximum @ 45 °C.
-48 VDC, 225 A (12000 W) maximum @ 65 °C.
+24 VDC, 150 A (3600 W) maximum @ 65 °C.
-48 VDC, 168 A (9000 W) maximum @ 70 °C.
+24 VDC, 125 A (3000 W) maximum @ 70 °C.

Input Rating: 120 VAC, 18 A, 50 Hz / 60 Hz, single-phase.

Output Rating: -48 VDC, 125 A (6000 W) maximum @ 45 °C.
+24 VDC, 187 A (4500 W) maximum @ 45 °C.
-48 VDC, 112 A (5400 W) maximum @ 65 °C.
+24 VDC, 150 A (3600 W) maximum @ 65 °C.
-48 VDC, 84.4 A (4050 W) maximum @ 70 °C.
+24 VDC, 125 A (3000 W) maximum @ 70 °C.

3.2 Environmental Ratings

Operating Ambient Temperature Range (208 VAC, 240 VAC Input):

(A) -40 °C to +45 °C (-40 °F to +113 °F).
588705300 List 01, 03: 250 A / -48 VDC and 187 A / +24 VDC, maximum.

(B) -40 °C to +65 °C (-40 °F to +149 °F).
588705300 List 01, 03: 225 A / -48 VDC and 150 A / +24 VDC, maximum.

(C) -40 °C to +70 °C (-40 °F to +158 °F).
588705300 List 01, 03: 168 A / -48 VDC and 125 A / +24 VDC, maximum.

Operating Ambient Temperature Range (120 VAC):

(D) -40 °C to +45 °C (-40 °F to +113 °F).
588705300 List 01, 03: 125 A / -48 VDC and 187 A / +24 VDC, maximum.

(E) -40 °C to +65 °C (-40 °F to +149 °F).
588705300 List 01, 03: 112 A / -48 VDC and 150 A / +24 VDC, maximum.

(F) -40 °C to +70 °C (-40 °F to +158 °F).
588705300 List 01, 03: 84.4 A / -48 VDC and 125 A / +24 VDC, maximum.

Storage Ambient Temperature Range: -40 °C to +70 °C (-40 °F to +158 °F).

Humidity: Capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

Altitude: 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 6562 feet.

Audible Noise:

(G) For One Rectifier Module: Less than 50 dB(A) at <25 °C, measured at 60cm (2') distance.

(H) For Twelve Rectifier Modules: Less than 55 dB with 12 rectifiers mounted in system at ≤25 °C, measured at 1 m (3') distance in front of system and at same horizontal line of the middle of system.

Ventilation Requirements:

(I) Ventilation: A module mounting assembly must be mounted so ventilating openings are not blocked and temperature of the air entering the assembly does not exceed the Operating Ambient Temperature Range stated above. Refer also to "Mounting" below.

(J) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of module mounting assemblies, one above the other, in a relay rack. There is no spacing requirement between stacked module mounting assemblies of a single system.

Mounting: The module mounting assembly is designed for mounting in a 23 inch wide relay rack with 1 inch or 1-3/4 inch multiple drilling. Mounting angles are positioned for a fixed 9-inch front projection mounting. Refer to "Overall Dimensions" starting on page 235 for dimensional illustrations.

- 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 network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- The DC return connection to this system can remain isolated from system frame and chassis (DC-I).
- This system is suitable for installation as part of the Common Bonding Network (CBN).
- Rectifier, converter, and module mounting assembly ventilating openings must not be blocked and temperature of air entering rectifiers and converters must not exceed the rated operating ambient temperature range.
- Clearance Requirements: The distance from the rear of the module mounting assembly to a wall or other solid structure must not be less than four (4) inches. This will assure proper airflow through the rectifier and converter modules.

Note: *Minimum rear spacing specified for ventilation may not permit installation and maintenance of the system. Refer to "System Specifications" on starting on page 229 for increased clearance requirements.*

3.3 Compliance Information

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. This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

GR-3108 Class 2 Compliant

4. 588705400 MODULE MOUNTING ASSEMBLY

4.1 Output Ratings

-48 VDC, 437 A, 21000 W (maximum).

4.2 Input Ratings

588705400 List 01, 02: 208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, 1-Phase, 17.9 A / 15.5 A / 13.5 A.

588705400 List 03: 208 VAC, 240 VAC, 50 Hz / 60 Hz, 3-Phase, 31 A / 27 A.

588705400 List 04: 277/480 VAC, 50 Hz / 60 Hz, 3-Phase, 13.5 A.

4.3 Environmental Ratings

Operating Ambient Temperature Range: -40 °C to +40 °C (-40 °F to +104 °F).

Storage Ambient Temperature Range: -40 °C to +85 °C (-40 °F to +185 °F).

Humidity: Capable of operating in an ambient relative humidity range of 0 % to 95 %, non-condensing.

Altitude: 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 5000 feet.

Ventilation Requirements:

(A) Ventilation: A module mounting assembly must be mounted so ventilating openings are not blocked and temperature of the air entering the shelf does not exceed the Operating Ambient Temperature Range stated above. Refer also to “Mounting” below.

(B) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of module mounting shelves, one above the other, in a relay rack. There is no spacing requirement between stacked module mounting shelves of a single system.

Mounting: The module mounting assembly is designed for mounting in a 23 inch wide relay rack with 1-3/4 inch multiple drilling. Mounting angles are positioned for a fixed 9-inch front projection mounting. Refer to “Overall Dimensions” starting on page 235 for dimensional illustrations.

- 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 network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- The DC return connection to this system can remain isolated from system frame and chassis (DC-I).
- This system is suitable for installation as part of the Common Bonding Network (CBN).
- Rectifier and module mounting assembly ventilating openings must not be blocked and temperature of air entering rectifiers must not exceed the rated operating ambient temperature range.
- Clearance Requirements: The distance from the rear of the module mounting assembly to a wall or other solid structure must not be less than four (4) inches. This will assure proper airflow through the rectifier modules.

Note: *Minimum rear spacing specified for ventilation may not permit installation and maintenance of the system. Refer to “System Specifications” on starting on page 229 for increased clearance requirements.*

4.4 Compliance Information

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. This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

5. 588705500 MODULE MOUNTING ASSEMBLY

5.1 Output Ratings

-48 VDC, 500 A, 24000 W (maximum).

5.2 Input Ratings

588705500 List 01: 208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, 1-Phase, 20.7 A / 17.8 A / 15.3 A.

588705500 List 02: 208 VAC, 240 VAC, 50 Hz / 60 Hz, 1-Phase, 20.7 A / 17.8 A.

588705500 List 03: 208 VAC, 240 VAC, 277 VAC, 50 Hz / 60 Hz, 1-Phase, 20.7 A / 17.8 A / 15.3 A.

588705500 List 04: 208 VAC, 240 VAC, 50 Hz / 60 Hz, 3-Phase, 36.0 A / 31.0 A.

588705500 List 05: 277/480 VAC, 50 Hz / 60 Hz, 3-Phase, 15.3 A.

5.3 Environmental Ratings

Operating Ambient Temperature Range: -40 °C to +65 °C (-40 °F to +149 °F).

Storage Ambient Temperature Range: -40 °C to +85 °C (-40 °F to +185 °F).

Humidity: Capable of operating in an ambient relative humidity range of 0 % to 95 %, non-condensing.

Altitude: 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 5000 feet.

Ventilation Requirements:

(A) Ventilation: A module mounting assembly must be mounted so ventilating openings are not blocked and temperature of the air entering the shelf does not exceed the Operating Ambient Temperature Range stated above. Refer also to “Mounting” below.

(B) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of module mounting shelves, one above the other, in a relay rack. There is no spacing requirement between stacked module mounting shelves of a single system.

Mounting: The module mounting assembly is designed for mounting in a 23 inch wide relay rack with 1 inch or 1-3/4 inch multiple drilling. Mounting angles are positioned for a fixed 9-inch front projection mounting. Refer to “Overall Dimensions” starting on page 235 for dimensional illustrations.

- 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 network telecommunication facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- This product is intended to be connected to the common bonding network in a network telecommunication facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).
- The DC return connection to this system can remain isolated from system frame and chassis (DC-I).
- This system is suitable for installation as part of the Common Bonding Network (CBN).
- Rectifier and module mounting assembly ventilating openings must not be blocked and temperature of air entering rectifiers must not exceed the rated operating ambient temperature range.
- Clearance Requirements: The distance from the rear of a module mounting assembly to a wall or other solid structure must not be less than two (2) inches. This will assure proper airflow through the rectifier and converter modules.

Note: *Minimum rear spacing specified for ventilation may not permit installation and maintenance of the system. Refer to “System Specifications” on starting on page 229 for increased clearance requirements.*

5.4 Compliance Information

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. This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

6. RECTIFIER

Refer to the Rectifier Instructions (UM1R483500e, UM1R483500e3, or UM1R482000e3).

7. CONVERTER

Refer to the Converter Instructions (UM1C48241500 or UM1C400483500e).

8. CONTROLLER

Refer to the ACU+ Controller Instructions (UM1M820BNA or UM1M820DNA400) or NCU Controller Instructions (UM1M830BNA).

For controller factory settings, refer to the Controller Configuration Drawing (C-drawing).

MECHANICAL SPECIFICATIONS

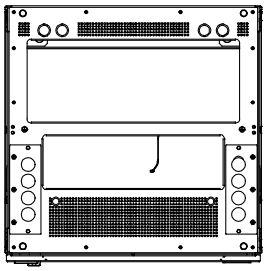
Overall Dimensions

Relay Racks

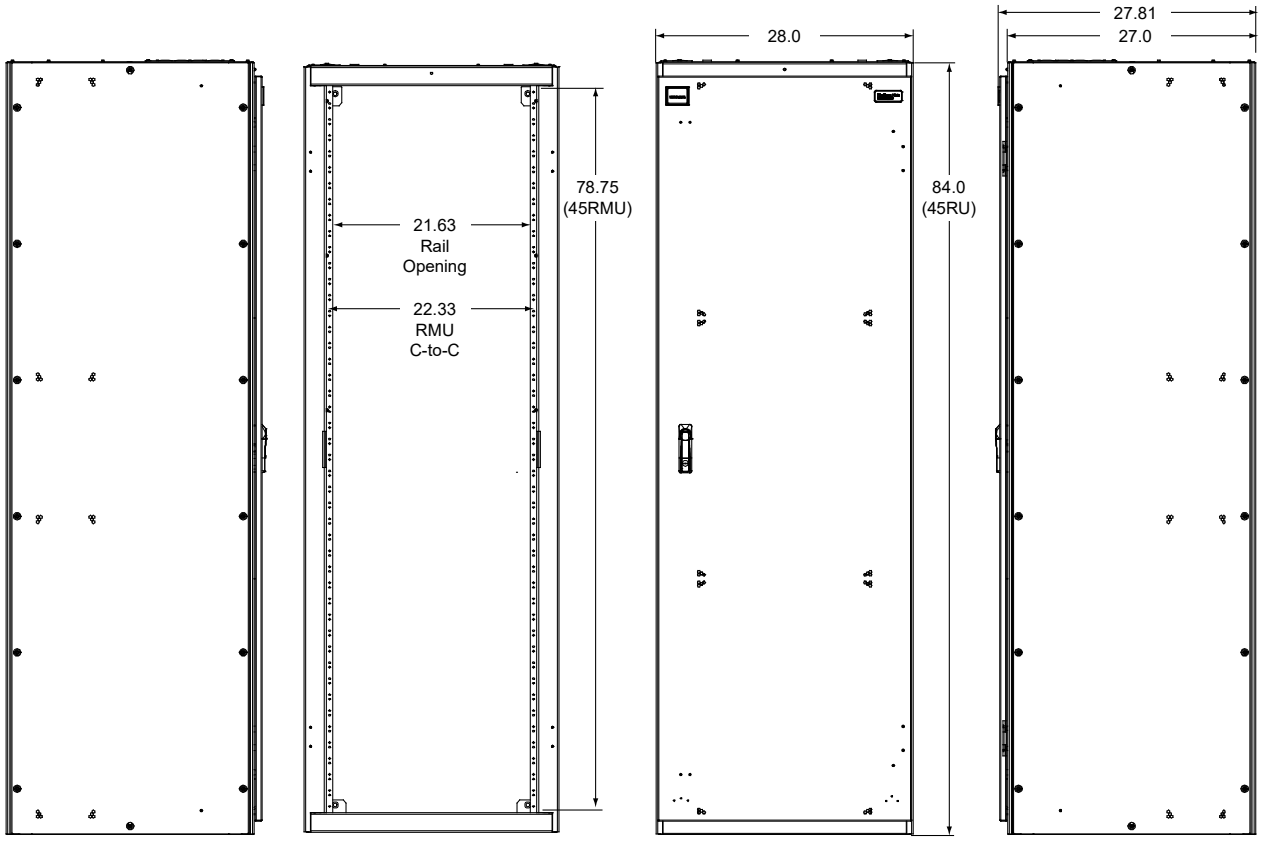
Refer to Table 6 for relay rack dimensions.

Enclosure, P/N 563524 or P/N 564881

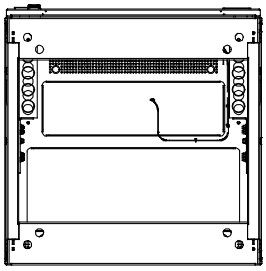
Notes:
1. All dimensions are in inches.
2. Finish: Textured Dark Gray



Top View



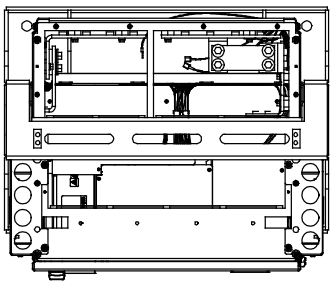
Left Side View | Front View (Door Removed) | Front View | Right Side View



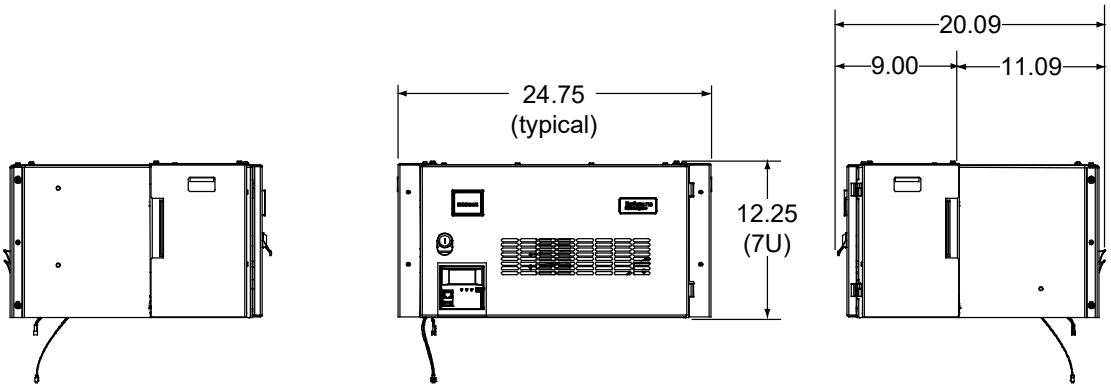
Bottom View

List 21 (One-Row Distribution Cabinet)

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray or Textured White



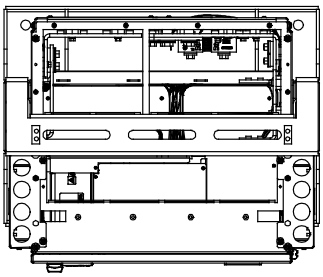
Top View



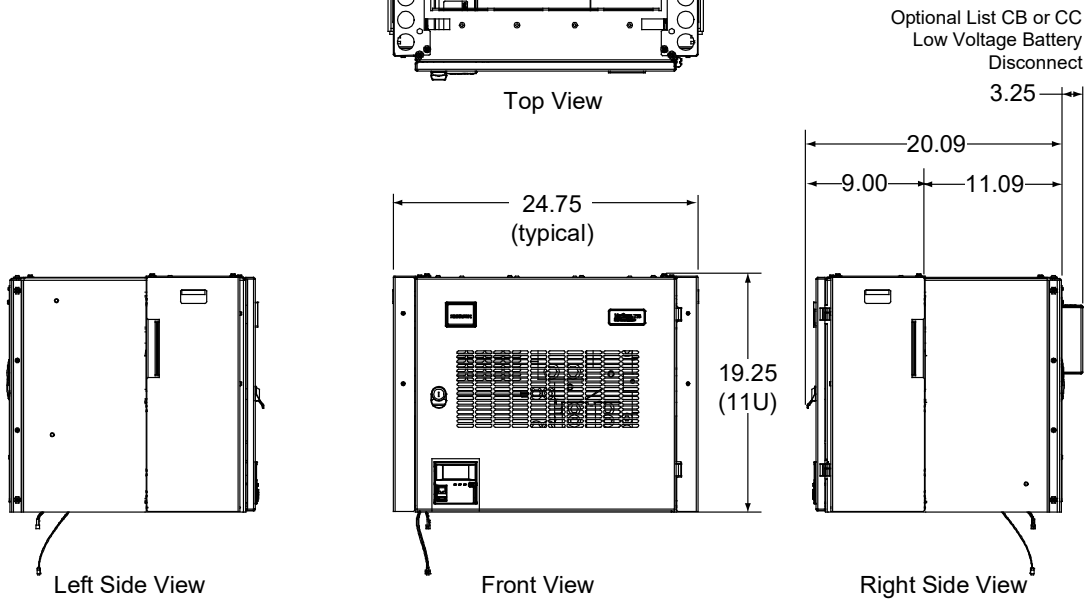
Left Side View | Front View | Right Side View

List 22 (Two-Row Distribution Cabinet)

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray or Textured White



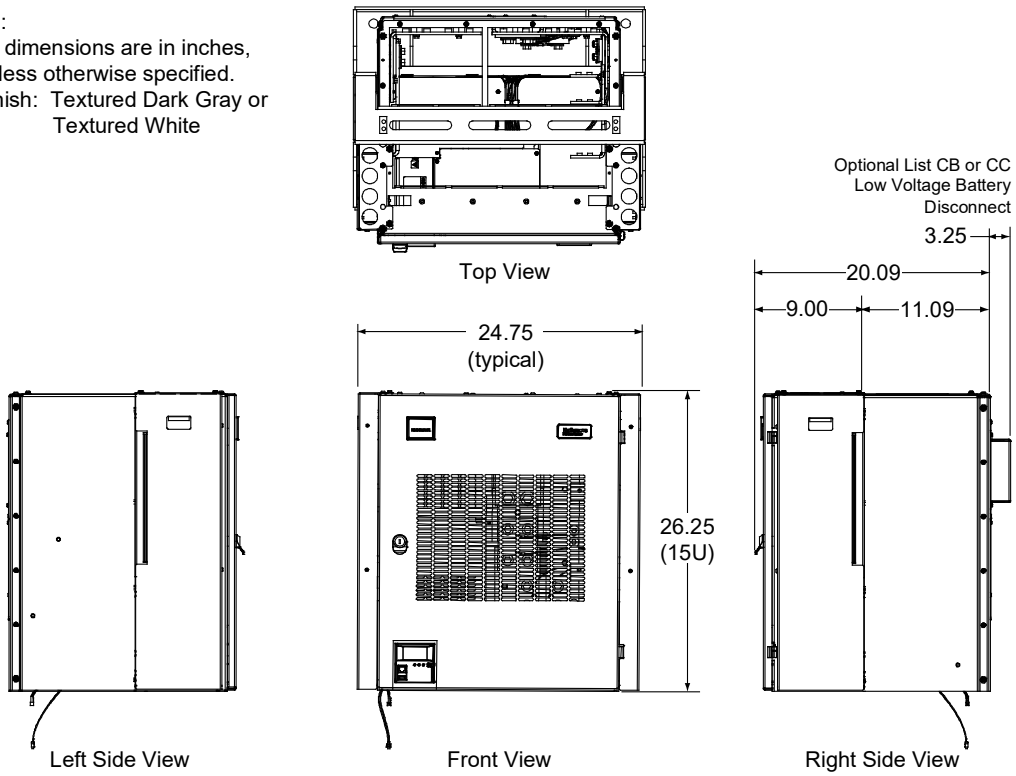
Top View



Left Side View | Front View | Right Side View

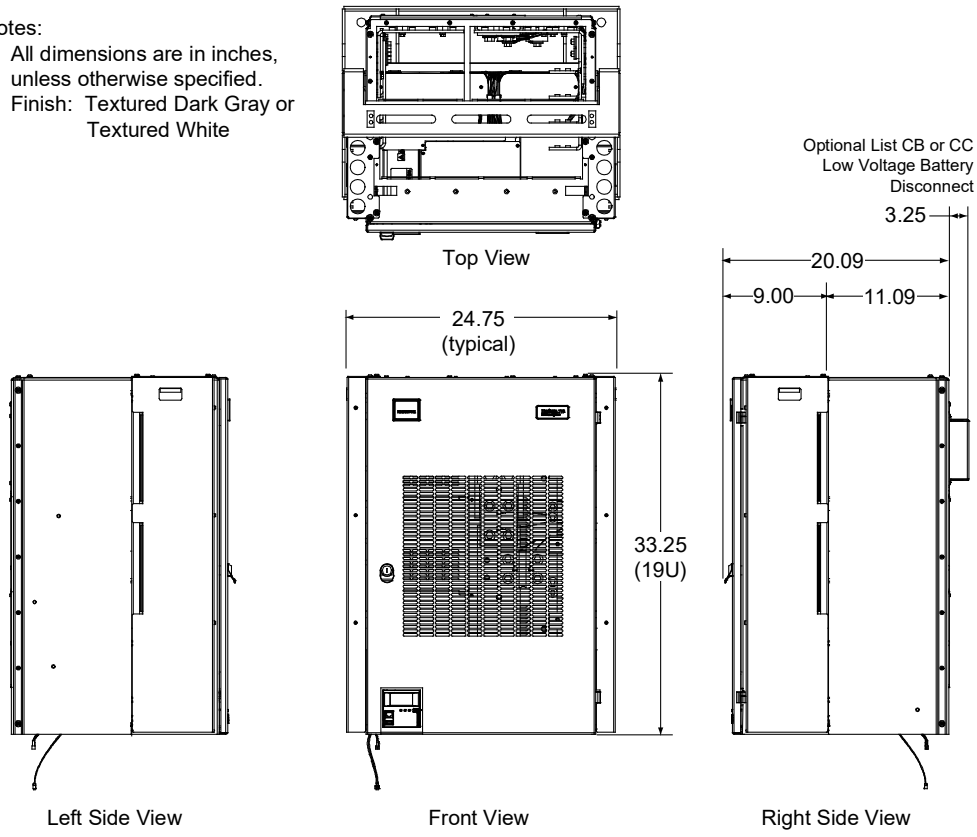
List 23 (Three-Row Distribution Cabinet)

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray or Textured White



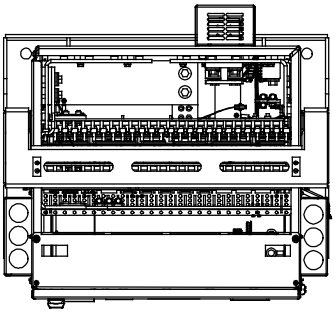
List 24 (Four-Row Distribution Cabinet)

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray or Textured White

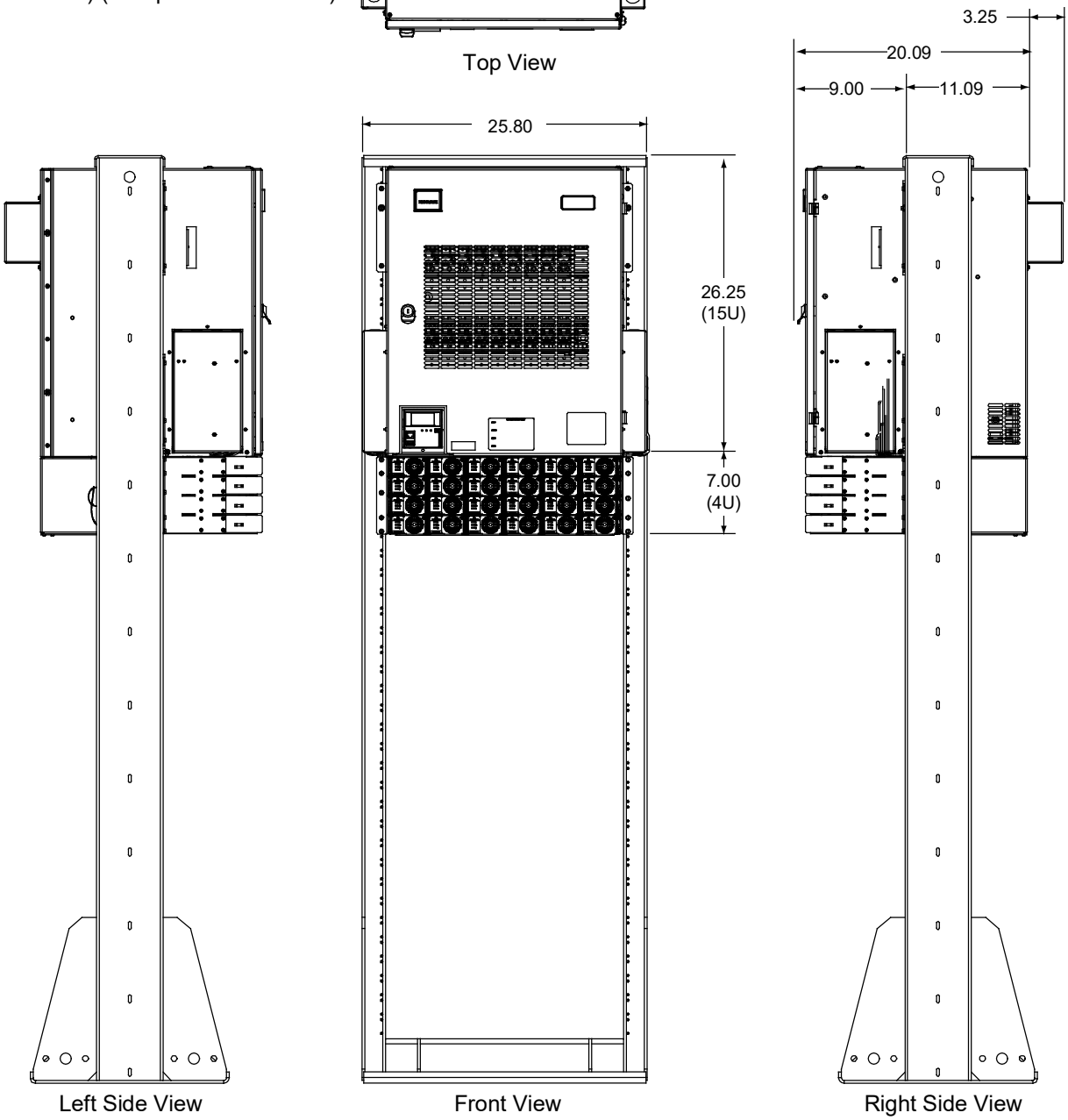


582127000100

Notes:
1. All dimensions are in inches.
2. Finish: Textured Gray or White
3. Relay Rack Dimensions:
   84”H x 25.8”W x 18”D
4. Relay Rack Available
   Rack Space: 26RU
   (1RU = 1.75”) (accepts #12 hardware)



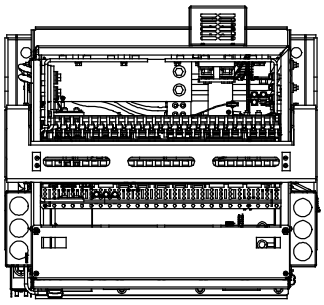
Top View



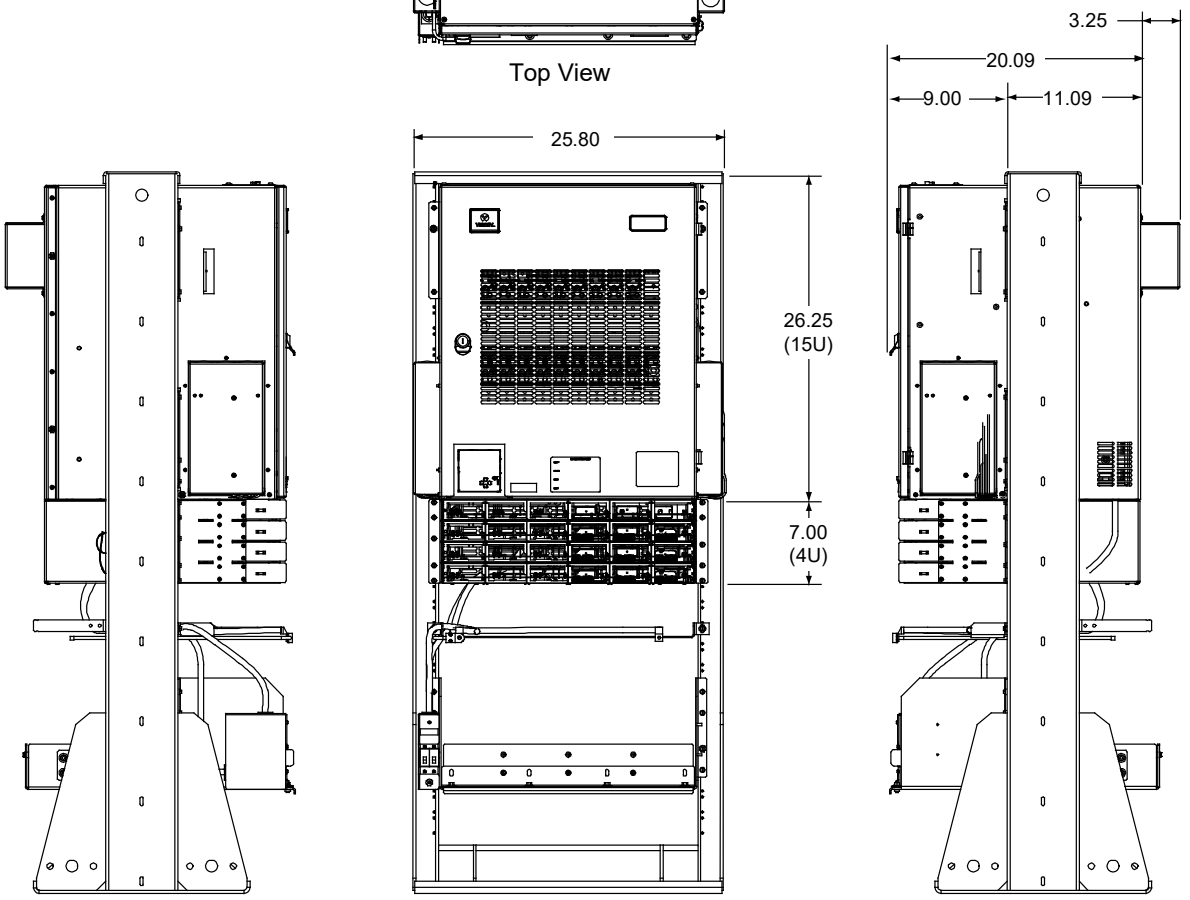
Left Side View | Front View | Right Side View

582127000101

Notes:
1. All dimensions are in inches.
2. Finish: Textured Gray or White
3. Relay Rack Dimensions:
   60”H x 25.8”W x 18”D
4. Relay Rack Available
   Rack Space: 4RU
   (1RU = 1.75”) (accepts #12 hardware)



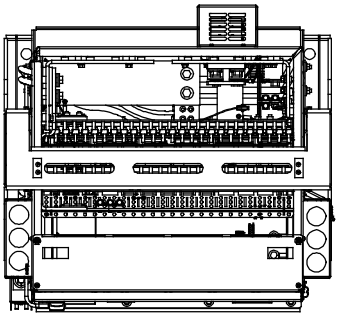
Top View



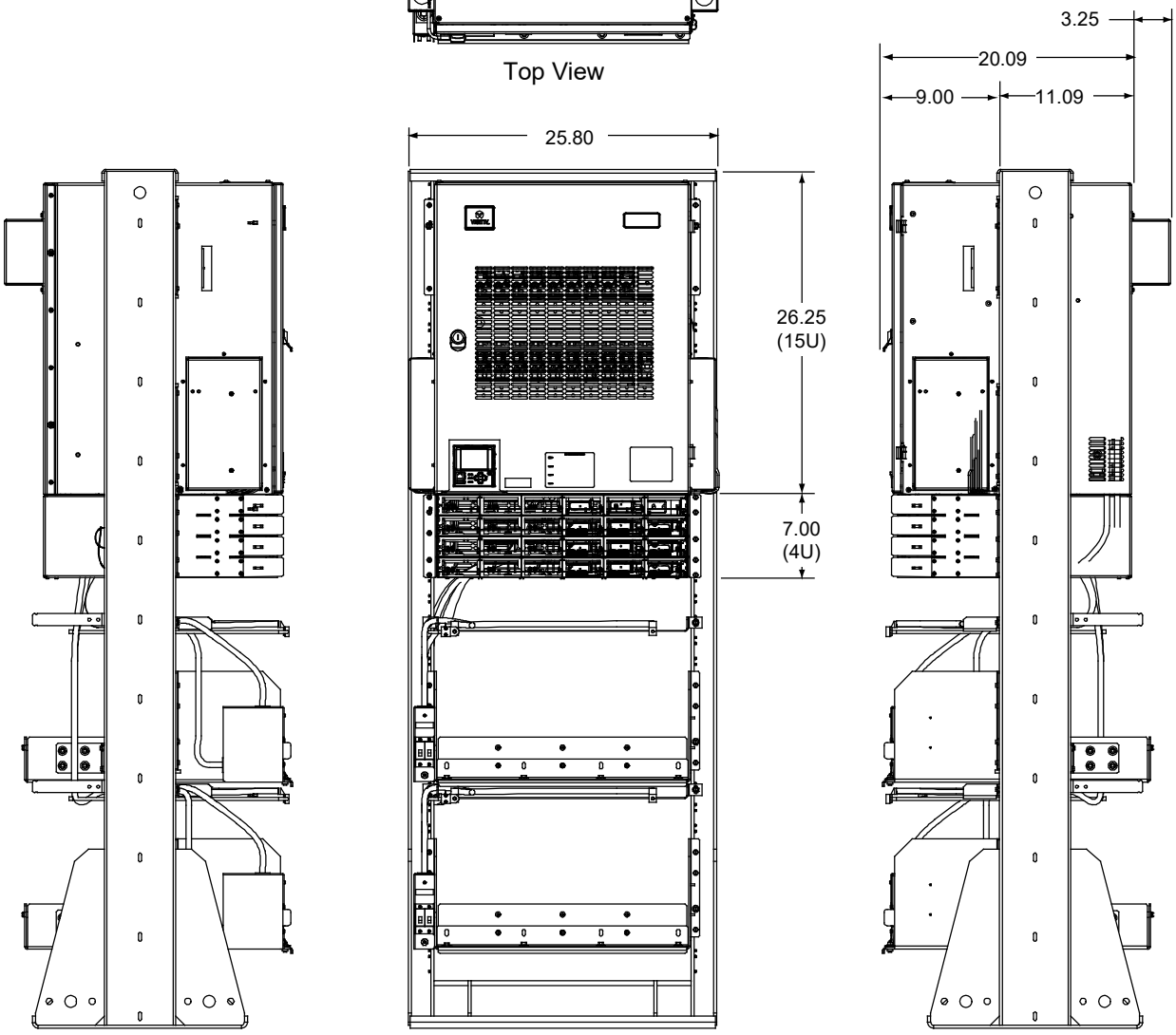
Left Side View | Front View | Right Side View

582127000102

Notes:
1. All dimensions are in inches.
2. Finish: Textured Gray or White
3. Relay Rack Dimensions:
   72”H x 25.8”W x 18”D
4. Relay Rack Available
   Rack Space: 3RU
   (1RU = 1.75”) (accepts #12 hardware)



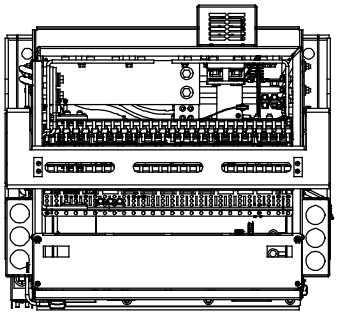
Top View



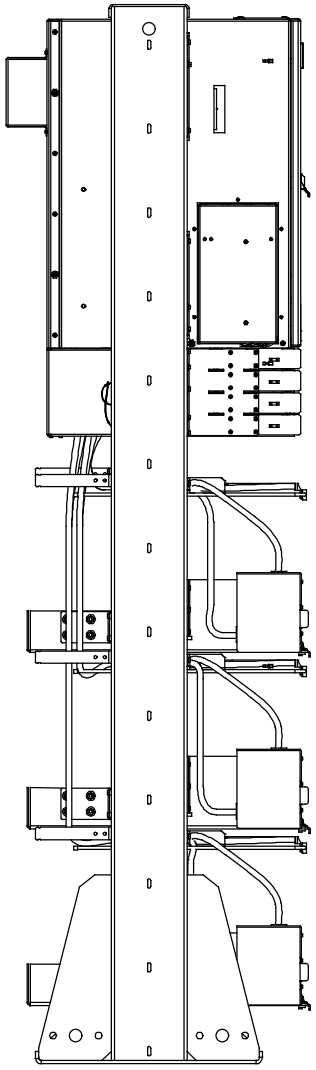
Left Side View | Front View | Right Side View

582127000103/582127000203

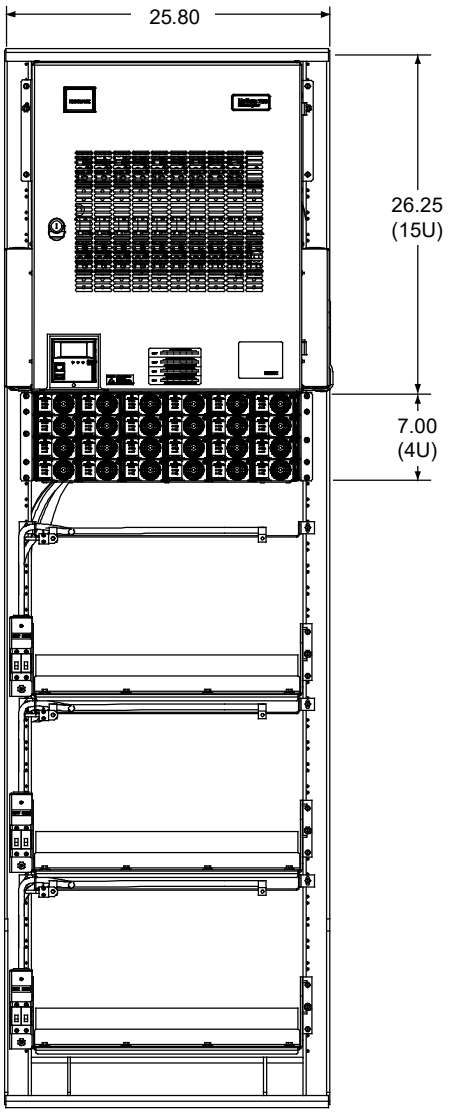
Notes:
1. All dimensions are in inches.
2. Finish: Textured Gray or White
3. Relay Rack Dimensions:
   84”H x 25.8”W x 18”D
4. Relay Rack Available
   Rack Space: 2RU
   (1RU = 1.75”) (accepts #12 hardware)



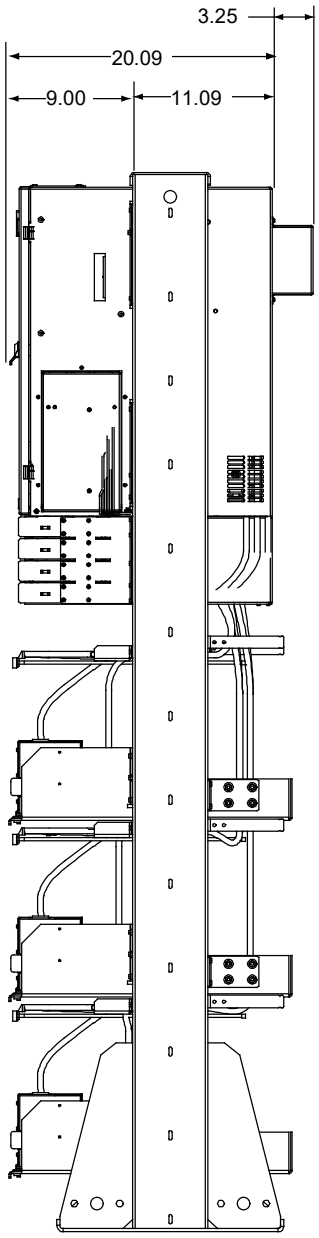
Top View



Left Side View



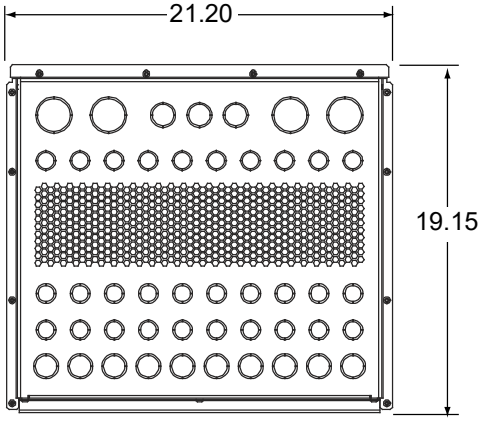
Front View



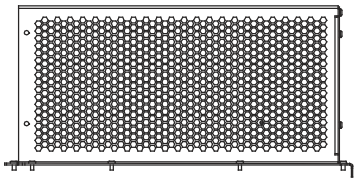
Right Side View

List 28 (DC Conduit Box)

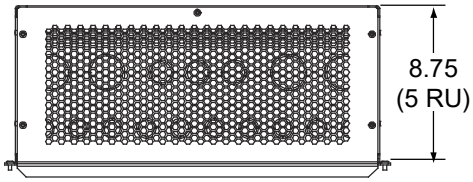
Notes:
1. All dimensions are in inches.
2. Finish: Textured Dark Gray or White.
3. 2”, 1.38”, and 1.09” punchouts provided.



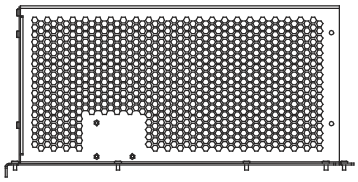
Top View



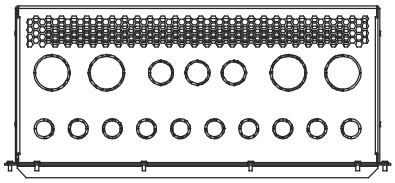
Left Side View



Front View



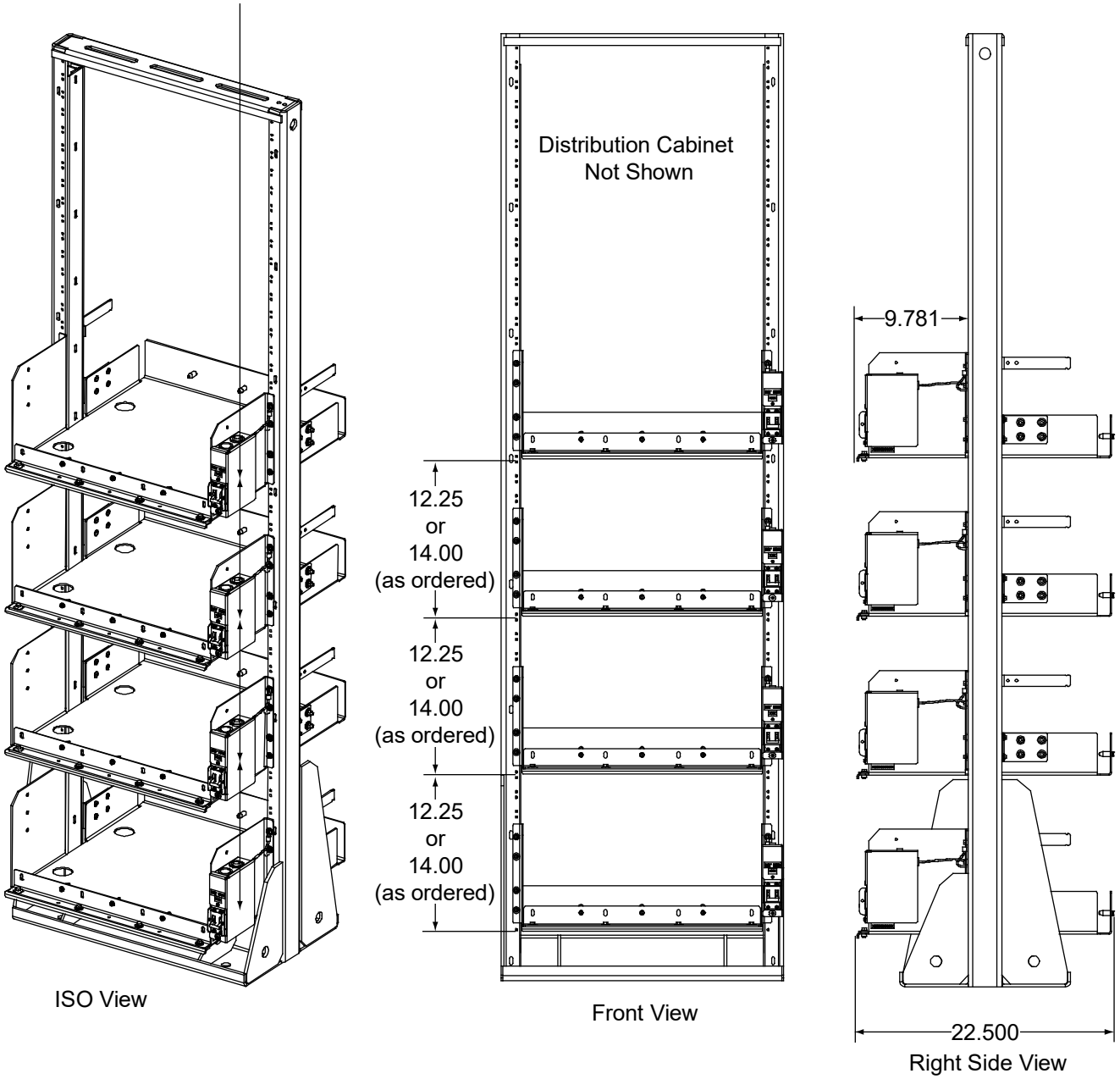
Right Side View



Rear View

List 93 (Battery Tray)

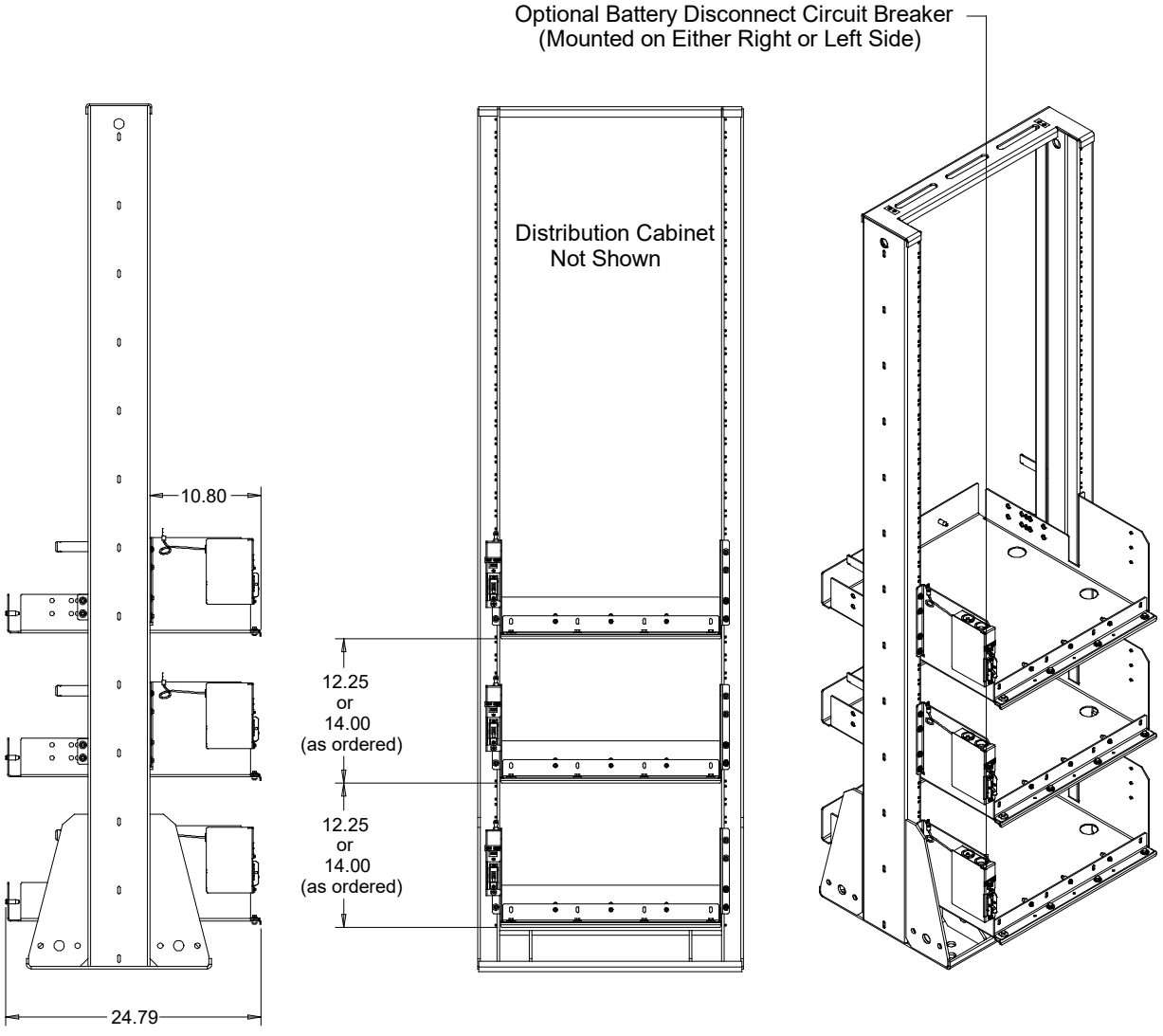
Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray
3. Maximum trays available per rack is four (4).



List 95 (Battery Tray)

Notes:

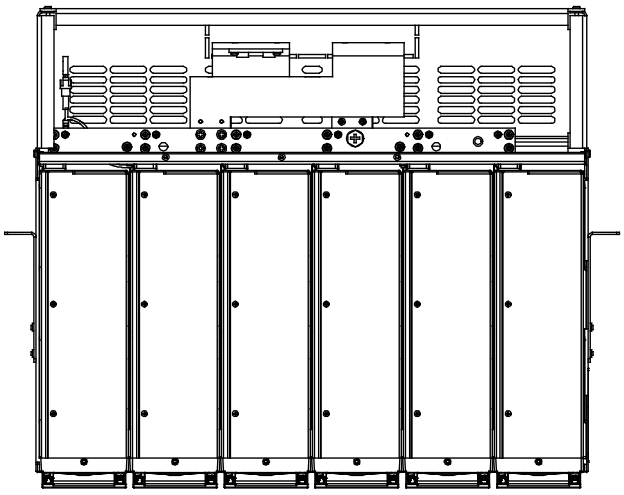
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Textured Dark Gray or White.
3. Maximum trays available per rack is four (4).



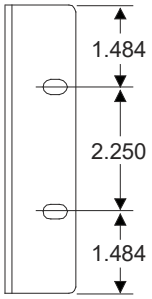
Left Side View | Front View | ISO View

588705000 Module Mounting Assembly (List 21 and List 40)

List 21 Shown.



Top View

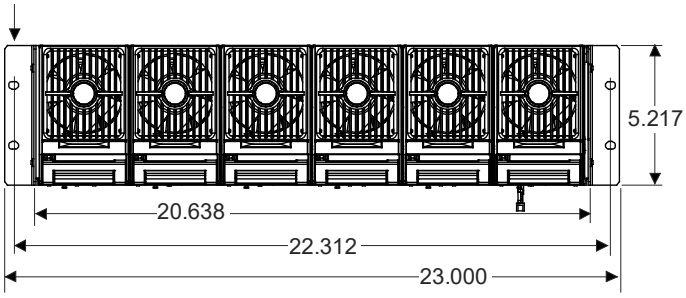


Mounting
Angle Detail

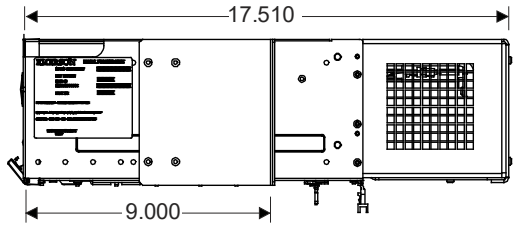
Notes:

1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   Shelf
   Net: 17
   Rectifier/Converter Module
   Net: 7
3. Finish:
   Shelf and Module Bodies:
   Bright Zinc Plating
   Module Face Plates:
   Textured Gray
4. Mounting angles are positioned for a fixed 9-inch front projection mounting.

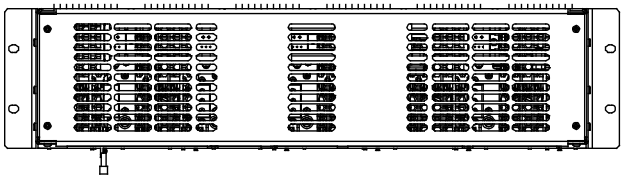
See Mounting Angle Detail



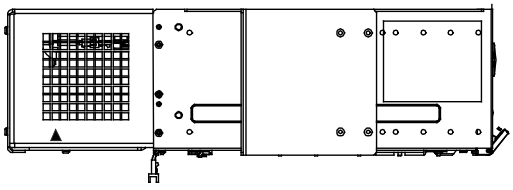
Front View



Right Side View



Rear View

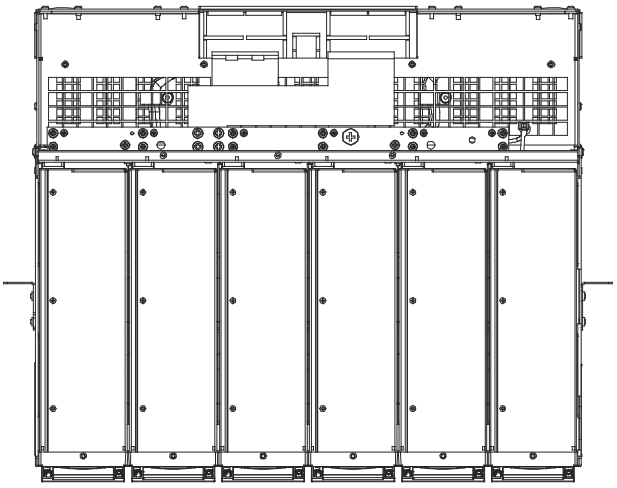


Left Side View

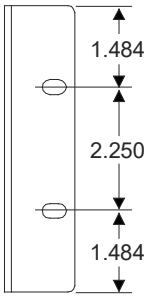
Figure 16

588705000 Module Mounting Assembly (List 22, 31, 32, 33, 41, and 42)

List 31 Shown.



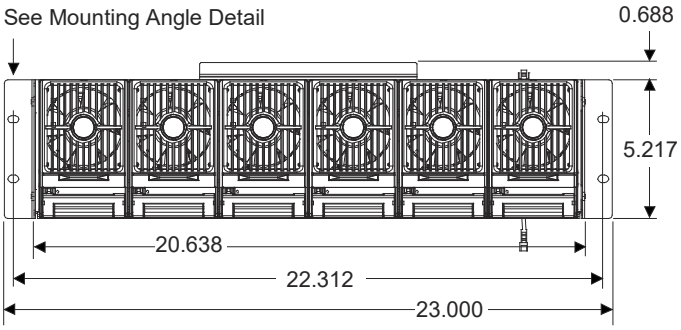
Top View



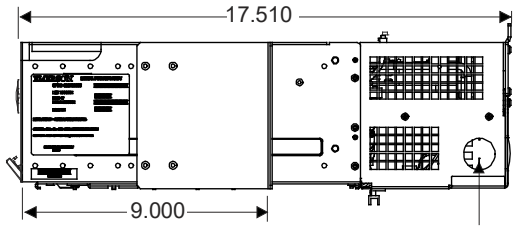
Mounting
Angle Detail

Notes:

1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   Shelf
   Net: 17
   Rectifier/Converter Module
   Net: 7
3. Finish:
   Shelf and Module Bodies:
   Bright Zinc Plating
   Module Face Plates:
   Textured Gray
4. Mounting angles are positioned for a fixed 9-inch front projection mounting.

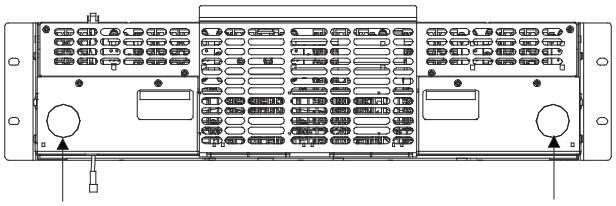


Front View



Right Side View

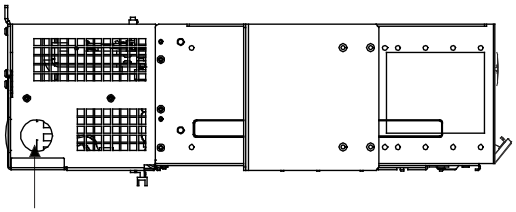
Hole for 3/4”
Conduit Filling
(Input)



Hole for 3/4”
Conduit Filling
(Input)

Rear View

Hole for 3/4”
Conduit Filling
(Input)

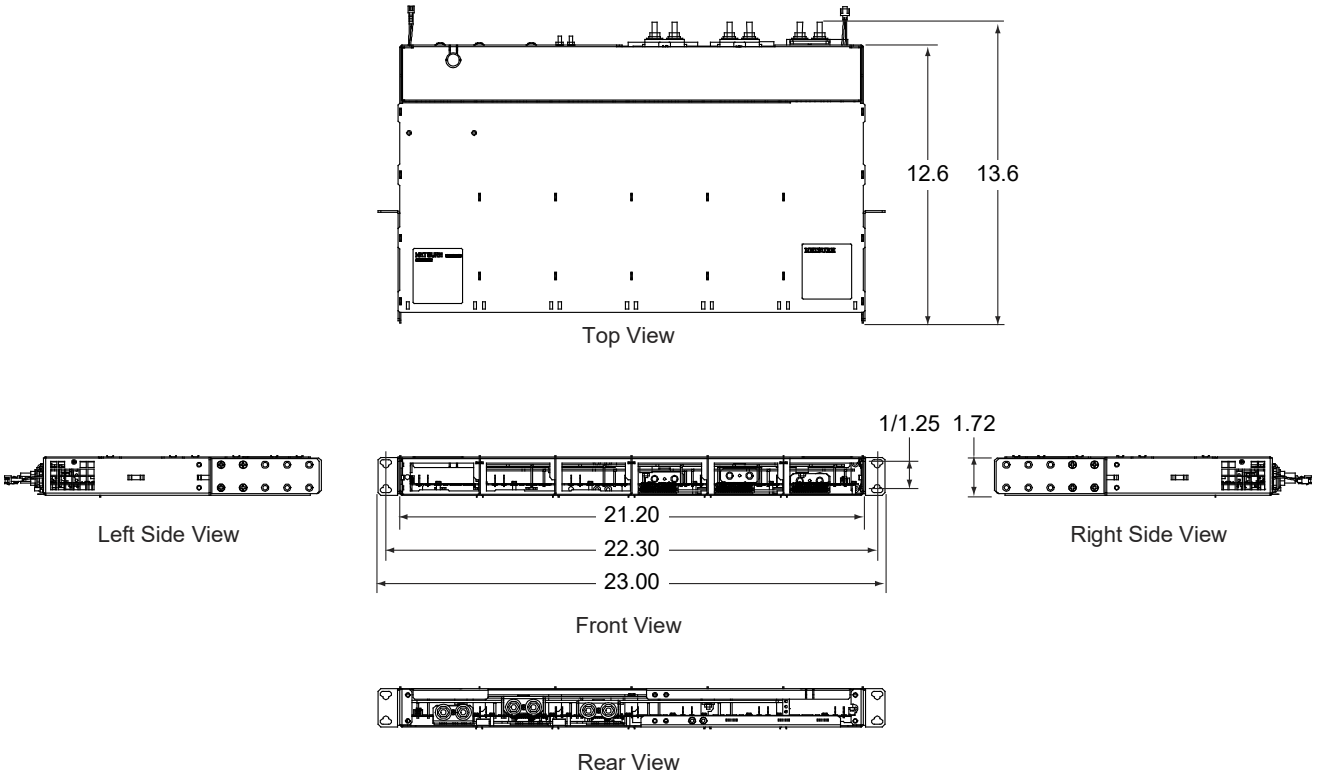


Hole for 3/4”
Conduit Filling
(Input)

Left Side View

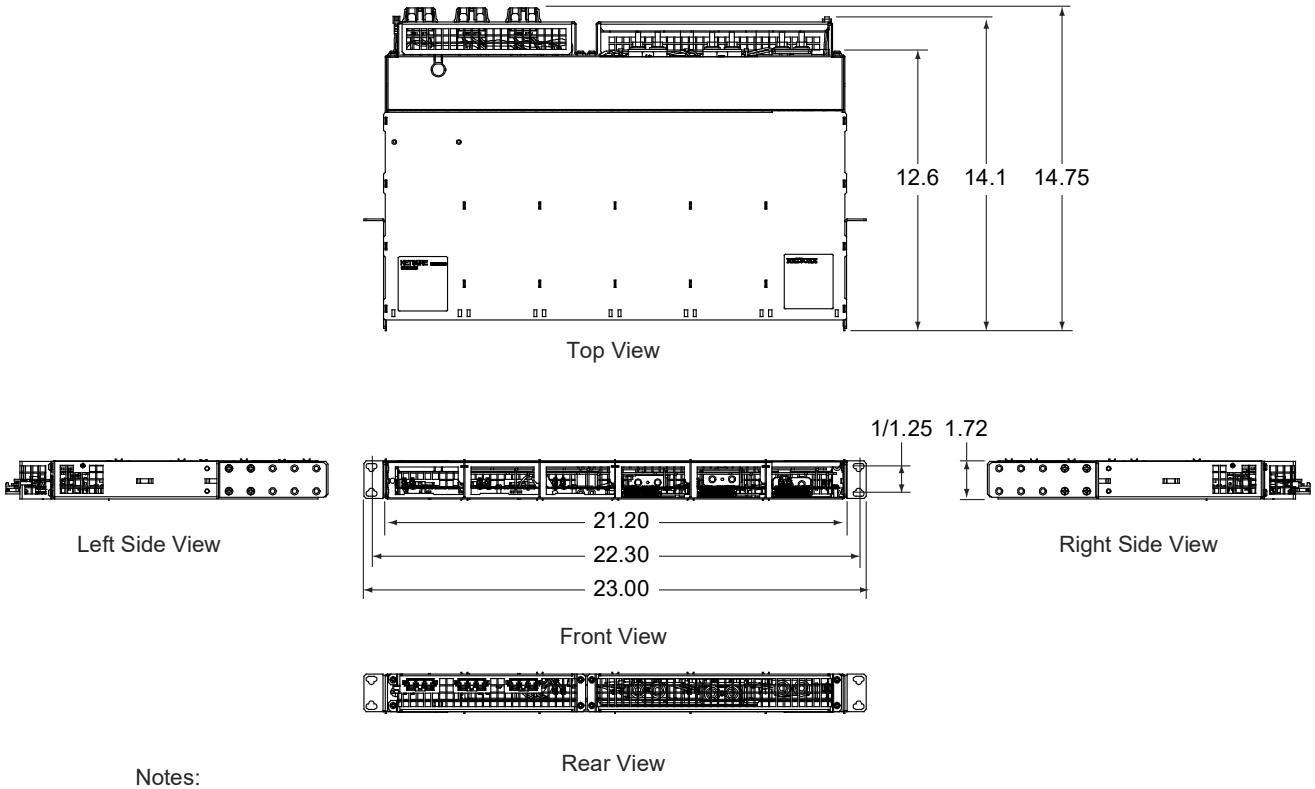
Figure 17

588705300 Module Mounting Assembly (List 01)



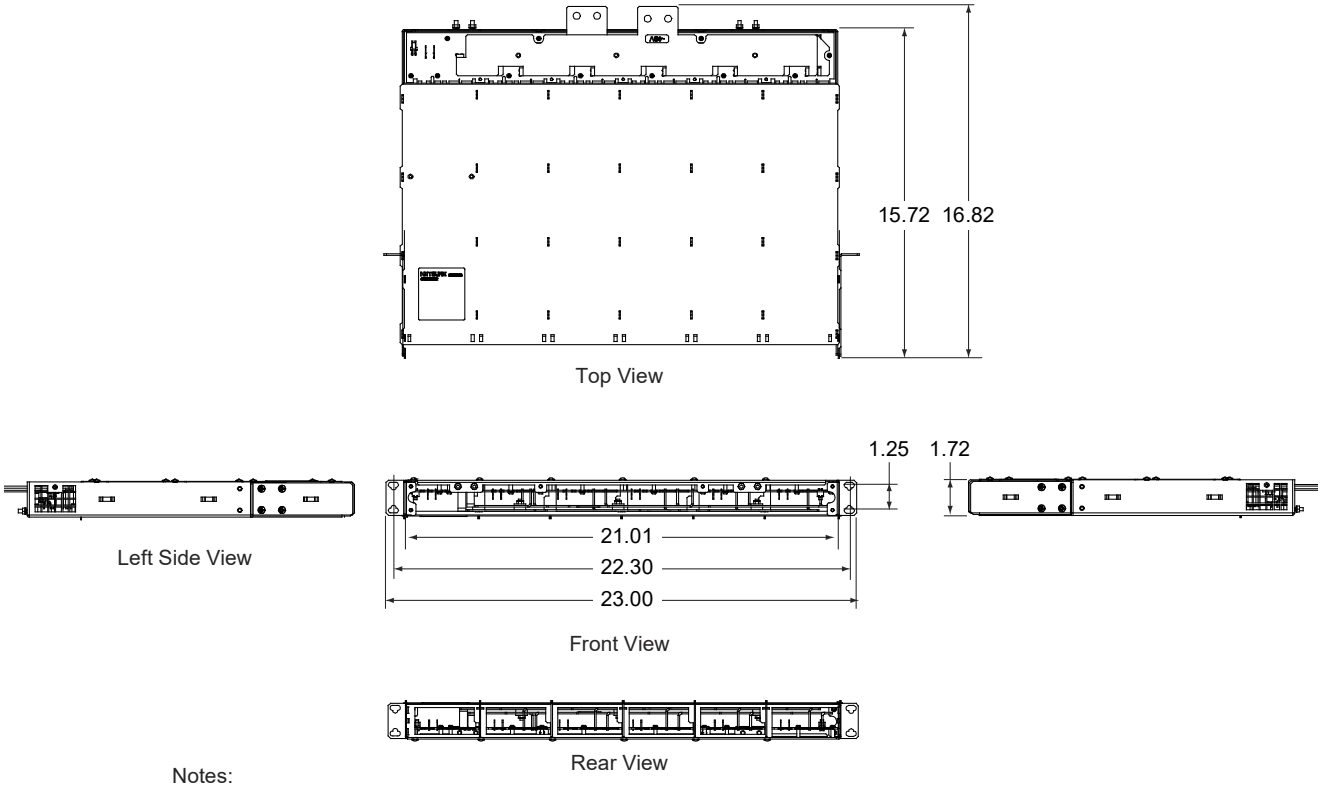
Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   - Module Mounting Assembly
     - Net: 11.0
   - Rectifier Module
     - Net: 2.5
   - Converter Module
     - Net: 2.3
3. Finish:
   - Module Mounting Assembly and Module Bodies:
     - Bright Zinc Plating
   - Module Face Plates:
     - Textured Gray
4. Front Projection: 9”.

588705300 Module Mounting Assembly (List 03)



Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   - Module Mounting Assembly
     - Net: 11.7
   - Rectifier Module
     - Net: 2.5
   - Converter Module
     - Net: 2.3
3. Finish:
   - Module Mounting Assembly and Module Bodies:
     - Bright Zinc Plating
   - Module Face Plates:
     - Textured Gray
4. Front Projection: 9”.

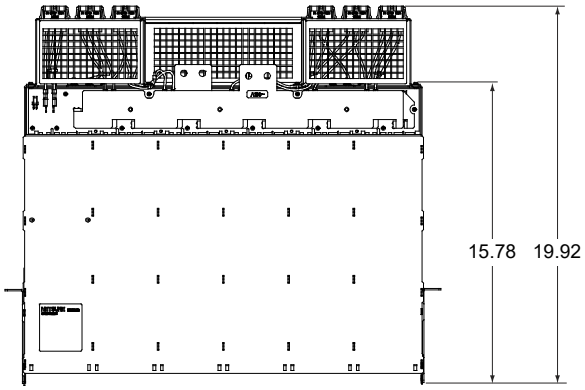
588705400 Module Mounting Assembly (List 01)



Notes:

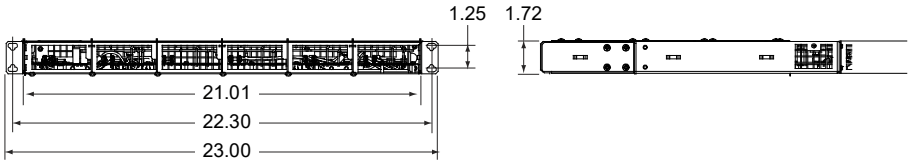
1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   - Module Mounting Assembly
     - Net: 11.0
   - Rectifier Module
     - Net: 3.7
3. Finish:
   - Module Mounting Assembly and Module Bodies:
     - Bright Zinc Plating
   - Module Face Plates:
     - Textured Dark Gray
4. Front Projection: 9”.

588705400 Module Mounting Assembly (List 02, 03, 04)

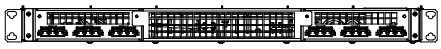


Top View

Left Side View



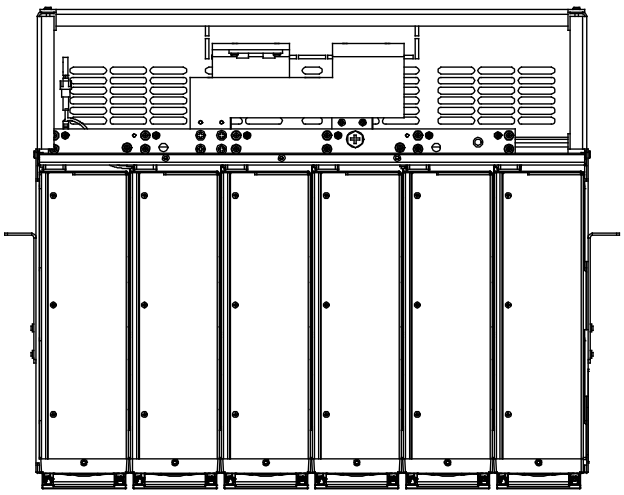
Front View



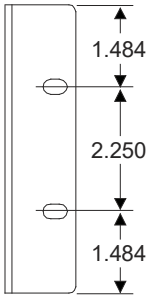
Rear View

Notes:
1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   Module Mounting Assembly
   Net: 13.5
   Rectifier Module
   Net: 3.7
3. Finish:
   Module Mounting Assembly and Module Bodies:
   Bright Zinc Plating
   Module Face Plates:
   Textured Dark Gray
4. Front Projection: 9”.

588705500 Module Mounting Assembly (List 01)



Top View

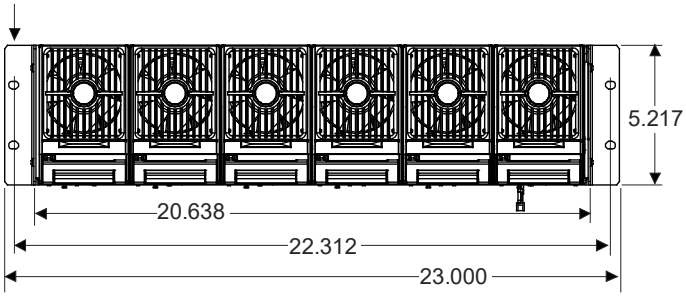


Mounting
Angle Detail

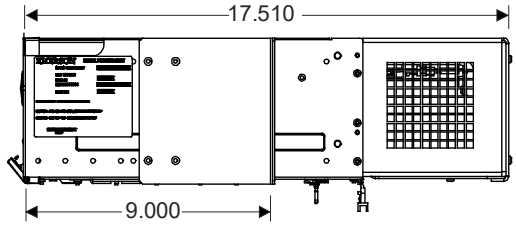
Notes:

1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   Shelf
   Net: 17
   Rectifier/Converter Module
   Net: 7
3. Finish:
   Shelf and Module Bodies:
   Bright Zinc Plating
   Module Face Plates:
   Textured Gray
4. Mounting angles are positioned for a fixed 9-inch front projection mounting.

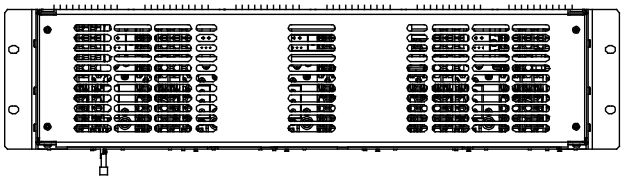
See Mounting Angle Detail



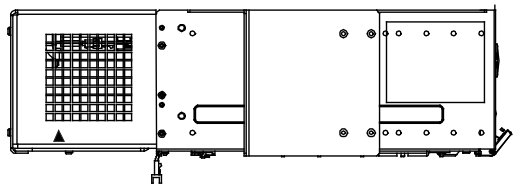
Front View



Right Side View



Rear View

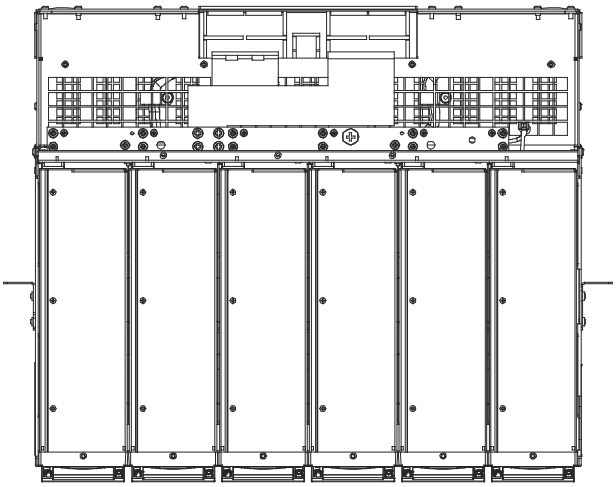


Left Side View

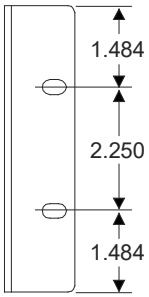
Figure 18

588705500 Module Mounting Assembly (List 02, 03, 04, and 05)

List 03 Shown.



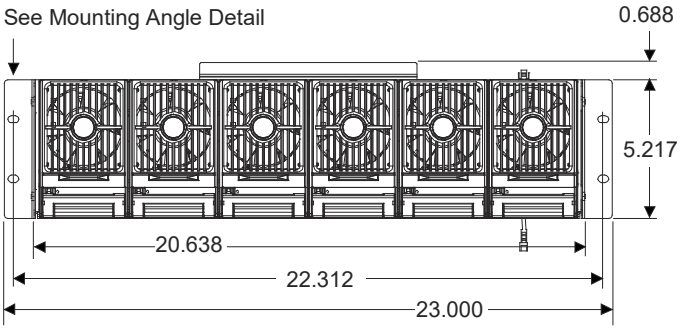
Top View



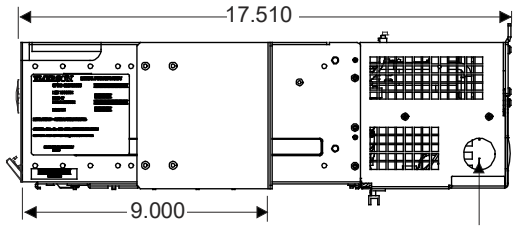
Mounting
Angle Detail

Notes:

1. All dimensions are in inches, unless otherwise specified.
2. Weight in LBS.
   Shelf
   Net: 17
   Rectifier/Converter Module
   Net: 7
3. Finish:
   Shelf and Module Bodies:
   Bright Zinc Plating
   Module Face Plates:
   Textured Gray
4. Mounting angles are positioned for a fixed 9-inch front projection mounting.

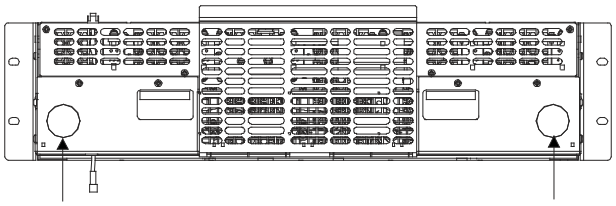


Front View



Right Side View

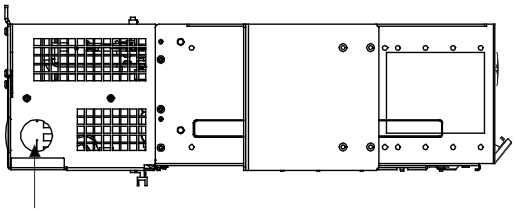
Hole for 3/4”
Conduit Filling
(Input)



Hole for 3/4”
Conduit Filling
(Input)

Rear View

Hole for 3/4”
Conduit Filling
(Input)



Hole for 3/4”
Conduit Filling
(Input)

Left Side View

Figure 19

Weights

List Number or Part Number	Net Weight (lbs), each	Description
Common Equipment		
58212700001	2	Common Equipment, Main Bay
58212700002	30	Common Equipment, 1st Supplemental Bay, Adjacent
58212700003	24	Common Equipment, 2nd Supplemental Bay, Adjacent
58212700005	1.5	Common Equipment, 1st Supplemental Bay, Remote
58212700006	1.5	Common Equipment, 2nd Supplemental Bay, Remote
58212700007	59	Common Equipment, 1st Supplemental Bay, Enclosure Mounted
58212700008	47	Common Equipment, 2nd Supplemental Bay, Enclosure Mounted
Configured Systems		
582127000100	485	Power and Distribution Bay (Fully Configured)
582127000101	463	Power and Distribution Bay (Fully Configured with One Battery Tray)
582127000102	519	Power and Distribution Bay (Fully Configured with Two Battery Trays)
582127000103	588	Power and Distribution Bay (Fully Configured with Three Battery Trays)
582127000203	588	Power and Distribution Bay (Fully Configured with Three Battery Trays)
Distribution Cabinets		
58212700021	55	Distribution Cabinet, 1 Row
58212700022	76	Distribution Cabinet, 2 Rows
58212700023	98	Distribution Cabinet, 3 Rows
58212700024	126	Distribution Cabinet, 4 Rows
DC Conduit Box		
58212700028	16.2	DC Conduit Box
Module Mounting Assembly 588705000		
58870500021	17	Module Mounting Assembly
58870500022		
58870500031		
58870500032		
58870500033		
58870500040		
58870500041		
58870500042		
1R483500e	7	Rectifier Module
1C400483500e	8	Converter Module
Module Mounting Assembly 588705300		
58870530001	11	Module Mounting Assembly
58870530003	11.7	Module Mounting Assembly
1R482000e3	2.5	Rectifier Module
1C48241500	2.3	Converter Module
Module Mounting Assembly 588705400		
58870540001	11	Module Mounting Assembly
58870540002	13.5	Module Mounting Assembly

List Number or Part Number	Net Weight (lbs), each	Description
58870540003	13.5	Module Mounting Assembly
58870540004	13.5	Module Mounting Assembly
1R483500e3	3.7	Rectifier Module
Module Mounting Assembly 588705500		
58870550001	17	Module Mounting Assembly
58870550002		
58870550003		
58870550004		
58870550005		
1R484000e	5.4	Rectifier Module
Controller		
1M830DNA	1.0	NCU
1M820DNA	1.0	ACU+
Battery Accessories		
58212700090	1.5	Battery Shunt, 800 A
58212700091	3.5	Battery Shunt, 2000 A
58212700092	3.2	Battery Shunt, 2500 A
58212700093	32	Integrated, Pre-cabled Battery Tray
58212700095	35.7	Optional Battery Tray, Pre-Cabled, For System Mounted in a Relay Rack Only, 22.5" Deep
559813 559814	1	Battery Disconnect Breaker Kit, 1-pole
559815 559816	1.5	Battery Disconnect Breaker Kit, 2-pole
Distribution Panels, Primary Voltage		
582127000AA	12	Distribution Panel
582127000AB	9	Distribution Panel
582127000AC	6	Distribution Panel
582127000AD	5	Distribution Panel
582127000AE	13	Distribution Panel
582127000AF	16	Distribution Panel
582127000AG	16	Distribution Panel
582127000AH	22	Distribution Panel
582127000AJ	11	Distribution Panel
582127000AK	13	Distribution Panel
582127000AL	12.6	Distribution Panel
582127000AM	17	Distribution Panel
582127000AN	9.6	Distribution Panel
582127000AP	8	Distribution Panel
Distribution Panels, Dual Voltage		
582127000DA	12.5	Distribution Panel
582127000DB	12.5	Distribution Panel

List Number or Part Number	Net Weight (lbs), each	Description
582127000DC	12.5	Distribution Panel
582127000DD	12.5	Distribution Panel
582127000DE	14	Distribution Panel
582127000DF	14	Distribution Panel
582127000DG	14	Distribution Panel
582127000DH	14	Distribution Panel
582127000DJ	14	Distribution Panel
582127000DK	14	Distribution Panel
Distribution Panels, Battery Disconnect		
582127000BA	16	Distribution Panel
582127000BB	12	Distribution Panel
582127000BC	10	Distribution Panel
582127000BD	8	Distribution Panel
582127000BE	17	Distribution Panel
582127000BF	20	Distribution Panel
582127000BG	20	Distribution Panel
582127000BH	25	Distribution Panel
Battery Disconnect Contactors		
582127000CA	7	600 Amp Battery Disconnect Contactor
582127000CB	6	1200 Amp Battery Disconnect Contactor
582127000CC	6	2000 Amp Battery Disconnect Contactor
Bulk Output Panel		
582127000EA	11	Bulk Output Panel
Ground Bar		
582127000GA	11	Ground Bar
Low Voltage Disconnect		
582127000LL	2.5	Low Voltage Load Disconnect Option
Manual Battery Disconnect		
582127000MB	1	Manual Battery Disconnect Option
Distribution Elements		
550224	1.5	Kit, 6-Position GMT Fuse Module, 35 A
549017	1.5	Kit, 6-Position GMT Fuse Module, 35 A
256623500	0.6	Circuit Breaker, 250 A, GJ/218, One-pole, Without Shunt
256626200	1.2	Circuit Breaker, 400 A, GJ/218, Two-pole, Without Shunt
256628200	2	Circuit Breaker, 600 A, GJ/218, Three-pole, Without Shunt
550249	3	Circuit Breaker, 800 A, GJ/218, Four-pole, With Shunt
Relay Racks		
562351	32	Relay Rack
562356	35	Relay Rack
562357	36	Relay Rack
562358	42	Relay Rack

List Number or Part Number	Net Weight (lbs), each	Description
562359	44	Relay Rack
562360	46	Relay Rack
559817	51	Relay Rack
562361	63	Relay Rack
559818	103	Relay Rack
559820	113	Relay Rack
10009902	243	Relay Rack
562355	246	Relay Rack
559821	81	Relay Rack
559822	123	Relay Rack
564169	187	Relay Rack
564127	208	Relay Rack
Enclosures		
563524	221	Enclosure, Seismic, 84”H x 28”W x 28”D, No Side Panels, Dark Gray Color
563666	22	Enclosure Side Panel, Dark Gray Color, Qty. 1
564881	221	Enclosure, Seismic, 84”H x 28”W x 28”D, No Side Panels, White Color
564889	22	Enclosure Side Panel, Qty. 1, White Color

RELATED DOCUMENTATION

System Quick Start Guide:	QS582127000
System Installation Instructions:	IM582127000
System User Instructions:	UM582127000
ACU+ Controller Instructions:	UM1M820BNA or UM1M820DNA400
NCU Controller Instructions:	UM1M830BNA
Rectifier Instructions:	UM1R483500e3
Rectifier Instructions:	UM1R483500e
Rectifier Instructions:	UM1R482000e3
Converter Instructions:	UM1C400483500e
Converter Instructions:	UM1C48241500
NCU Controller 2nd Ethernet Port Add-On Kit Instructions:	IM559252
NCU Controller 2nd Ethernet Port Retrofit Kit Instructions:	IM559251
System Installation Instructions (List 100, 101, 102, 103, 203):	IM582127000100
System User Instructions (List 100, 101, 102, 103, 203):	UM582127000100
Main Schematic Diagrams:	SD582127000 (System) SD588705000 (Module Mounting Assembly) SD588705300 (Module Mounting Assembly) SD588705400 (Module Mounting Assembly)
Main Wiring Diagrams:	T582127000 (System) T588705000 (Module Mounting Assembly)

BATTERY MANUFACTURER INFORMATION

Some equipment described in this System Application Guide is designed to accommodate batteries from various manufacturers. The following are referenced in this document.

C&D: C&D Technologies, Inc., Powercom Div., 1400 Union Meeting Road, Blue Bell, PA 19422-0858

Deka®: East Penn Mfg. Co., Inc., Lyon Station, PA 19536-0147

Douglas®: Douglas Battery Mfg. Co., 500 Battery Dr., Winston-Salem, NC 27117-2159

Fiamm: FIAMM T.I, 23880 Industrial Park Drive, Farmington Hills, Detroit, MI 48335

Marathon™: GNB Industrial Power, a Division of Exide Technologies, Princeton, NJ 08543.

Northstar: NorthStar Battery Co. LLC, 4000 Continental Way, Springfield, MO 65803

PowerSafe Enersys™: EnerSys Inc., Reading, PA, 196212-4145