

SYSTEM OVERVIEW

Description: -48 VDC @ up to 150 Amperes Power System

The Vertiv™ NetSure™ 5100 DC Power System is an integrated power system containing rectifiers, 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.

The Vertiv NetSure 5100 Series consists of the following components mounted in a 19" or 23" wide relay rack or cabinet rack. Wall mounting options are also available.

- **NCU (NetSure Control Unit) Controller**

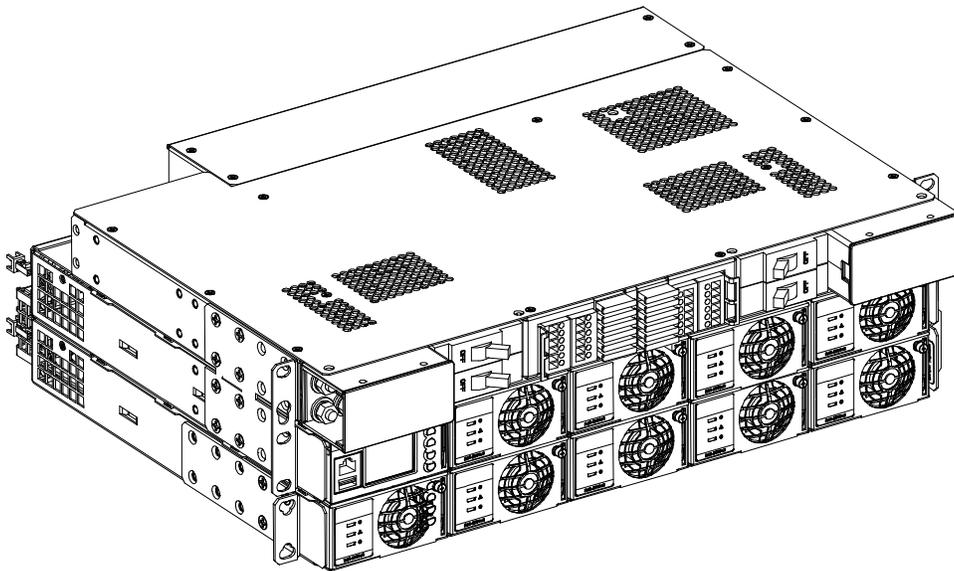
The controller provides power system control (including optional low voltage battery disconnect [LVBD] and low voltage load disconnect [LVLD] control), rectifier control (including a charge control function), metering functions, monitoring functions, local/remote alarm functions, and connections for binary inputs and programmable relay outputs via a controller interface board. 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 TFT display and keypad for local access. The controller provides an Ethernet port and comes with comprehensive webpages for remote access. The controller has optional 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.

- **Rectifier Modules**

The system contains rectifier modules, which provide load power, battery float current, and battery recharge current during normal operating conditions. Refer to the Rectifier Instructions (UM1R48200e3) for more information.

- **Distribution Unit**

Various distribution unit options are available, as described in this document. The distribution unit can be equipped with an optional Low Voltage Battery Disconnect (LVBD) or Low Voltage Load Disconnect (LVLD) contactor. The distribution unit provides DC distribution through circuit breakers and/or fuses.



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General Specifications

See detailed specifications starting on page 67.

Family:	NetSure™
Spec. No.:	582137200
Model:	5100
System AC Input Voltage:	Nominal 120 VAC / 208 VAC / 240 VAC, single phase, 3-wire, 50 Hz / 60 Hz, with an operating range of 100 VAC to 250 VAC. Acceptable input frequency range is 45 Hz to 65 Hz. Permitted Variation: 85 VAC to 300 VAC.
System AC Input Current:	
List 01 with Front AC Input Connectors (Dual Rectifier Feed):	18 A @ 120 VAC, 20 A @ 208 VAC, 17.5 A @ 240 VAC
List 01, 02 with Rear AC Input Connectors (Dual Rectifier Feed):	18 A @ 120 VAC, 20 A @ 208 VAC, 17.5 A @ 240 VAC
List 01 Factory Installed in a Cabinet (Factory Wired for Individual Rectifier Feed):	9 A @ 120 VAC, 10 A @ 208 VAC, 8.7 A @ 240 VAC
System DC Output Voltage:	-48 VDC
System DC Output Capacity:	150 A @ +40 °C, maximum, 80 A @ +65 °C, maximum.
Rectifier Rating (1R482000e3):	See UM1R482000e3.
System Agency Approval:	UL 1801 Recognized ("c UR") , NEBS
Framework Type:	Rack Mounted in a Relay Rack or Cabinet (Wall Mounting Options Available)
Mounting Width, Depth, Height:	See "Mechanical Specifications" starting on page 69.
Access:	Front for Operation Front and Rear for Installation and Maintenance
Supplemental Bay(s) Available:	None
Control:	Microprocessor
Color:	Front Panels are Gray, Shelf is Galvaneal
Environment:	-40 °C to +65 °C (-40 °F to +149 °F)

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MAIN COMPONENTS ILLUSTRATIONS

582137200

DISTRIBUTION UNIT:

- [582137200BA](#) (12) GMT Load Fuses;
(2) Bullet Type Load Circuit Breakers;
(2) Bullet Type Battery Disconnect
Circuit Breakers; with LVBD
- [582137200NA](#) (12) GMT Load Fuses;
(2) Bullet Type Load Circuit Breakers;
(2) Bullet Type Battery Disconnect
Circuit Breakers; without LVD
- [582137200BC](#) (12) GMT Load Fuses;
(4) Bullet Type Load Circuit Breakers;
with LVBD
- [582137200LC](#) (12) GMT Load Fuses;
(4) Bullet Type Load Circuit Breakers;
with LVLD
- [582137200NC](#) (12) GMT Load Fuses;
(4) Bullet Type Load Circuit Breakers;
without LVD
- [582137200BF](#) (36) GMT Load Fuses; with LVBD
- [582137200NF](#) (36) GMT Load Fuses; without LVD

- LIST 01 AC INPUT KITS:
Rear AC Input Connectors ([562642](#))
Front AC Input Connectors ([562644](#))
Factory Cabinet Installation ([562643](#))

MOUNTING BRACKETS:

When rear AC is specified, List 01 is factory connected to a distribution unit using 19" mounting brackets.
When front AC is specified, List 01 is factory connected to a distribution unit using an offset 23" mounting bracket built into the front AC input option.
List 02 is furnished with 19" mounting brackets and an offset 23" mounting bracket.
For mounting List 01 in a 23" rack when rear AC is specified, order P/N [563146](#).
For mounting List 02 in a 23" rack when rear AC is specified for List 01, order P/N [563148](#).

OPTIONAL WALL MOUNTING KITS:

- 19"/23" Vertical Wall Mount Brackets ([553203](#))
- 19" 6RU Horizontal Wall Mount ([552537](#))
- 23" 6RU Horizontal Wall Mount ([552535](#))

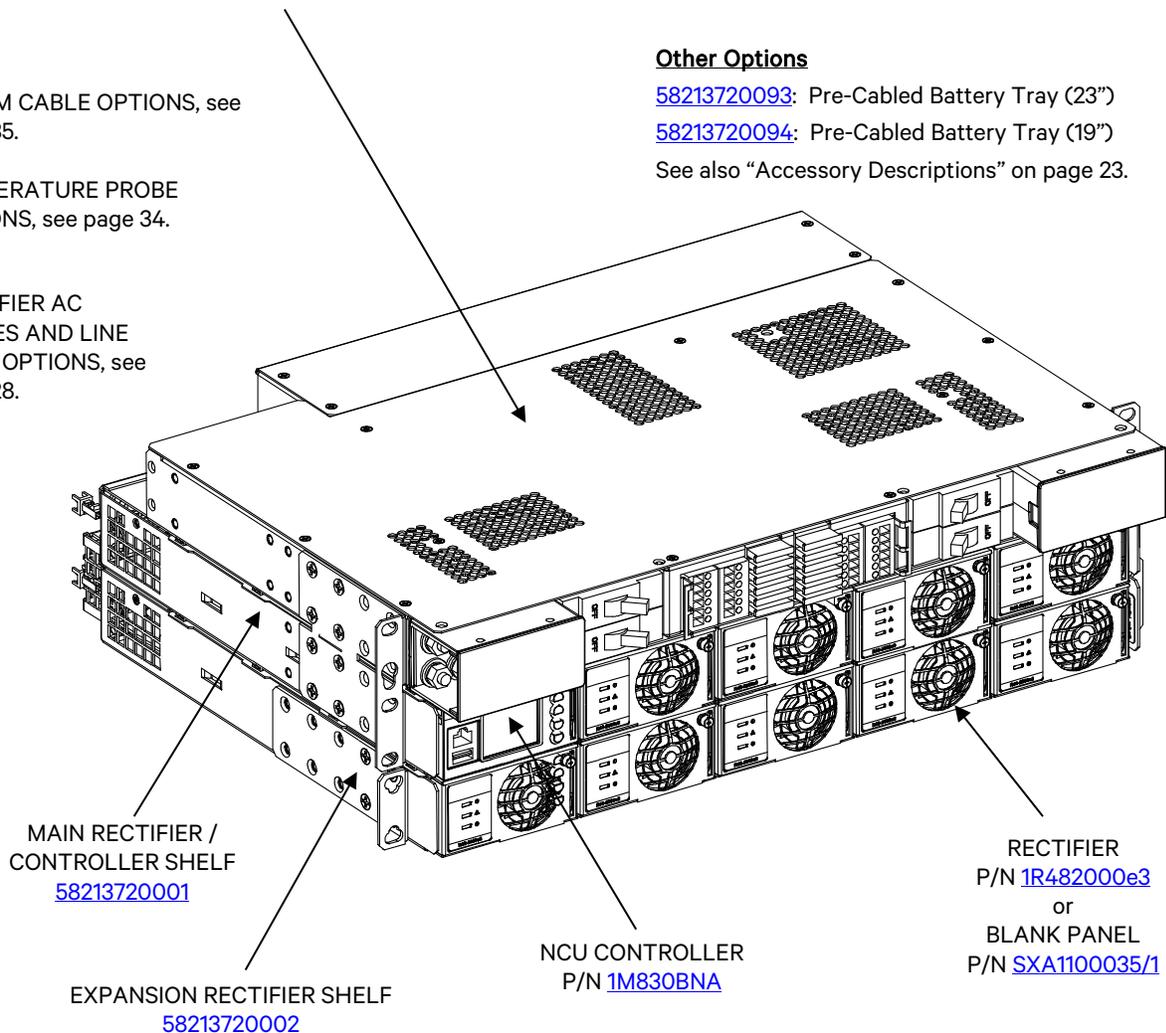
ALARM CABLE OPTIONS, see page 35.

TEMPERATURE PROBE OPTIONS, see page 34.

RECTIFIER AC CABLES AND LINE CORD OPTIONS, see page 28.

Other Options

- [58213720093](#): Pre-Cabled Battery Tray (23")
 - [58213720094](#): Pre-Cabled Battery Tray (19")
- See also "Accessory Descriptions" on page 23.



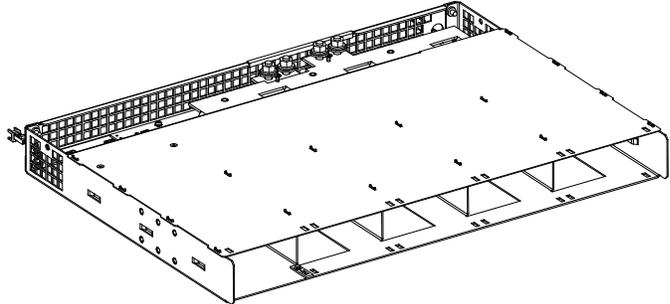
LIST DESCRIPTIONS

List Numbers

58213720001 (List 01): Main Rectifier / Controller Shelf

Features

- ◆ Consists of a 1RU high by 19" wide shelf. Factory connected to 19" (rear AC) or 23" (front AC) mounting brackets supplied with a distribution unit (23" mounting adapters available when rear AC required).
- ◆ Contains a system controller mounting slot.
- ◆ Contains four (4) rectifier module mounting slots.



Restrictions

Factory connected to the distribution unit ordered.

Ordering Notes

- 1) Order a relay rack as required (see page 23).
 - a) Order relay rack earthquake anchor kit P/N 562977 as required (see page 23).
 - b) Order battery tray(s) as required per List 93 or List 94 (see page 9 and 13).
- 2) Order a List 01 shelf for each system.
 - a) For other than rear AC input connectors, order an AC input connector kit for each List 01 (see page 27).
 - b) Order one (1) NCU Controller P/N 1M830BNA per List 01 (see page 32). Also specify appropriate configuration file for your site.
 - c) Order up to four (4) rectifier modules P/N 1R482000e3 per List 01 (see page 28).
 - d) Order rectifier AC input cables or line cords as required (see page 28).
 - e) Order a rectifier mounting position blank cover panel P/N SXA1100035/1 for each empty rectifier mounting position in the shelf as desired (see page 28).
- 3) In order to mount the List 01 system in a 23" rack, you will need to order the following depending on the AC input connector location specified.
 - a) Rear AC Input Connectors: Order 2RU 19" to 23" adapter brackets P/N 563146 (see page 25).
 - b) Front AC Input Connectors: Order AC input front connector kit P/N 562644, which includes the 23" 2RU offset mounting angle (see page 27).
- 4) Order one (1) distribution unit (List BA, BC, BF, LC, NA, NC, or NF) per system (see page 16). The distribution unit and List 01 are factory connected together as one unit.
 - a) Order battery cabinet(s) as required (see page 42).
 - b) Order external battery disconnect unit(s) as required (see page 45).
 - c) Order battery cables as required (see page 41).
 - d) Order fuses and/or circuit breakers as required per "Distribution Devices" on page 37.
 - e) Order battery and load distribution lugs as required (see the distribution unit list option descriptions starting on page 16).
 - f) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
 - g) Order IB2 board alarm cables as required (see page 35).
 - h) 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" on page 34.

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58213720002 (List 02): Expansion Rectifier Shelf

Features

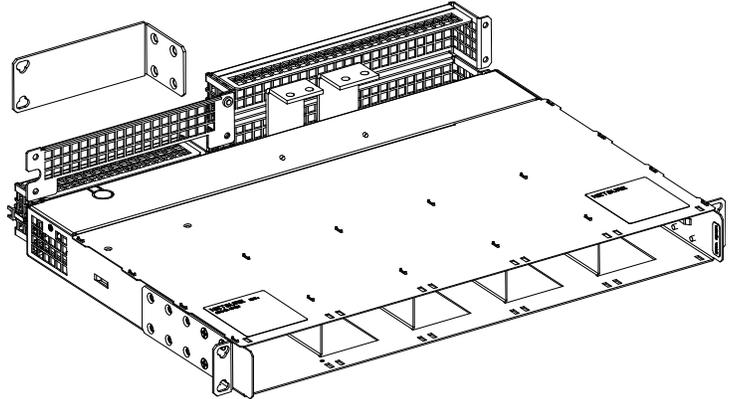
- ◆ Consists of a 1RU high by 19" wide shelf. Includes 19" mounting brackets. Includes the 23" offset mounting bracket for use with a List 01 equipped with front AC input connectors (23" mounting adapters available for use with a List 01 equipped with rear AC input connectors).
- ◆ Contains five (5) rectifier module mounting slots.

Restrictions

Rear AC input connectors only.

Ordering Notes

- 1) Order a List 02 shelf as required.
 - a) Order up to five (5) rectifier modules P/N 1R482000e3 per List 02 (see page 28).
 - b) Order rectifier AC input cables or line cords as required (see page 28).
 - c) Order a rectifier mounting position blank cover panel P/N SXA1100035/1 for each empty rectifier mounting position in the shelf as desired (see page 28).
- 2) In order to mount the List 02 system in a 23" rack, you will need to order or use the following depending on the AC input connector location in the List 01 shelf.
 - a) List 01 Rear AC Input Connectors: Order 1RU 19" to 23" adapter brackets P/N 563148 (see page 25).
 - b) List 01 Front AC Input Connectors: Use offset mounting bracket P/N SXA2300278/1 furnished with List 02 (see page 24).



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58213720093 (List 93): Pre-Cabled Battery Tray for 23" Wide Relay Rack

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 VDC 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 (one [1] circuit breaker per tray).
- ◆ Battery spacers included.
- ◆ For 100 A or less battery disconnect circuit breakers, battery cables are available. See page 41.
- ◆ See "58213720093 (23" Wide Battery Tray) (List 93)" on page 76 for battery tray dimensions and typical arrangement. Note different battery trays are available to accommodate the various size batteries listed below.

Restrictions

For 23" wide relay racks only.

Designed to accommodate the batteries listed below.

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.

A system can accommodate up to three (3) List 93's, depending on rack size and tray spacing.

Cable size for each tray is 2 AWG for optional battery disconnect circuit breaker selected (up to 100 A).

Not a stand-alone battery system. Must be used as part of a power system that includes a distribution unit list option and a relay rack.

Ordering Notes

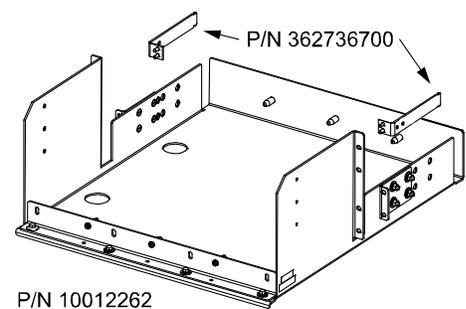
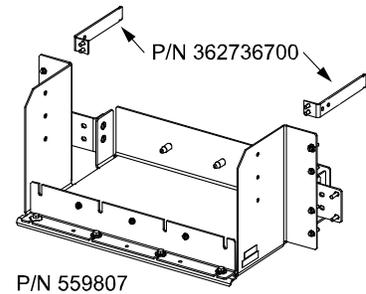
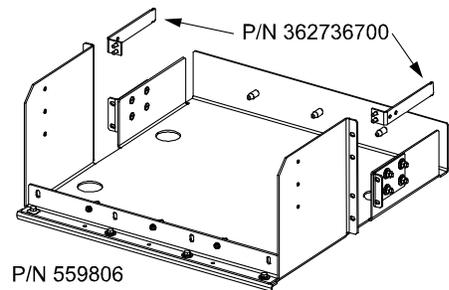
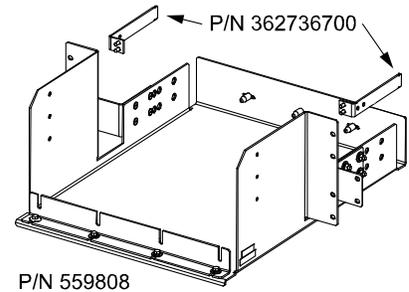
- 1) Order multiples of List 93 for more than one (1) battery tray. See **Restrictions** above.
- 2) Order one (1) or more P/N 362736700 cable bracket(s) as required.
- 3) Order batteries separately. Table 1, Table 2, Table 3, and Table 4 list the batteries recommended for use with List 93.
- 4) Specify rack spacing of 6U (10.5"), 7U (12.25"), or 8U (14") between trays and above top tray as required for battery clearance. See Table 1, Table 2, Table 3, and Table 4.
- 5) Specify the batteries you intend to use with each List 93 ordered. Lugs for battery connections vary according to the batteries to be installed. Battery cables will be lugged as shown in Table 1, Table 2, Table 3, and Table 4.

Note: If battery model is **not** specified, lugs will **not** be installed at factory. Instead, both available lug kits for the furnished wire size will be shipped loose with the order.

- 6) Specify with or without tray-mounted battery disconnect circuit breakers.

Note: All List 93 trays in a rack will be furnished with or without battery disconnect circuit breakers as specified for the first tray ordered.

- 7) If ordering List 93 with tray-mounted circuit breakers, order one (1) breaker per List 93 from Table 5.
- 8) If ordering List 93 with tray-mounted circuit breakers, specify breaker mounting on left or right side of tray. Circuit breaker mounting kits shown in Table 5 will be installed. Kit numbers are provided for reference only.



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- 9) If ordering List 93 with tray-mounted circuit breakers, order alarm jumper P/N 524384 for each system to connect the alarm terminal of up to three (3) battery disconnect circuit breakers.

Battery Tray P/N 559806							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Minimum Tray Spacing	Weight (per battery) (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Northstar	NSB155FT RED	--	155	4.9 x 22.0 x 11.0	7RU	101	528234
Northstar	NSB170FT RED	126111	170	4.9 x 22.0 x 12.6	8RU	116	528234
Northstar	NSB190FT RED	--	190	4.9 x 22.0 x 12.6	8RU	123	528234
Northstar	NSB155FT HT	--	154	4.9 x 22.0 x 11.0	7RU	117	528234
Northstar	NSB170FT HT	--	174	4.9 x 22.0 x 12.6	8RU	121	528234
Northstar	NSB190FT HT	--	190	4.9 x 22.0 x 12.6	8RU	132	528234
Deka Unigy I	12AVR-150ET	122018	150	4.90 x 22.00 x 11.75	8RU	115	528234
Deka Unigy I	12AVR-170ET	541381	170	4.90 x 22.00 x 12.60	8RU	120	528234
Deka Unigy I	HT170ET	--	164	4.93 x 22.17 x 12.58	8RU	118	528234
C&D	TEL12-160F	140456	157	5.0 x 22.0 x 11.1	7RU	116.8	528236
C&D	TEL12-180F	--	181	5.0 x 22.0 x 12.6	8RU	132.3	528236
C&D	TEL12-210F	554579	202	5.0 x 22.0 x 12.6	8RU	132.3	528236
Energysys	12V155FS	122010	155	4.90 x 22.10 x 11.10	7RU	106.9	528234
Energysys	12V170FS	--	170	4.90 x 22.10 x 11.10	7RU	112	528234
Energysys	SBS 170F	--	170	4.92 x 22.10 x 11.10	7RU	116	528234
Energysys	SBS 190F	--	190	4.90 x 22.10 x 12.40	8RU	132	528234
FIAMM	12FAT100	--	100	4.96 x 21.97 x 9.06	6RU	95	528234
FIAMM	12FAT155	--	155	4.96 x 21.97 x 12.64	8RU	129	528234
FIAMM	12FAT180	--	180	4.96 x 21.97 x 12.64	8RU	134	528234
GS Yuasa	PYL12V160FT	--	160	4.9 x 21.9 x 11.0	7RU	116.2	528234
GS Yuasa	PYL12V185FT	--	185	4.9 x 21.9 x 12.5	8RU	133.8	528234

¹ See "Battery Manufacturer Information" on page 82.

² Battery lug kit provides two lugs for one tray.

³ Up to 100 A battery disconnect.

Table 1

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Battery Tray P/N 559807							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Minimum Tray Spacing	Weight (per battery) (lb)	Lug Kit ^{3,4} (2 AWG) (90°)
Northstar	NSB40FT ²	--	38.1	3.80 X 9.80 X 8.20	6RU	34	528234
Northstar	NSB60FT ²	--	57.9	4.20 X 11.30 X 10.40	7RU	49	528234
Energys	12TD50F	--	48	4.2 X 10.9 X 8.7	6RU	38	528234

¹ See "Battery Manufacturer Information" on page 82.

² Batteries **MUST** be equipped with front access terminal option. See battery manufacturer for ordering information.

³ Battery lug kit provides two lugs for one tray.

⁴ Up to 100 A battery disconnect.

Table 2

Battery Tray P/N 559808							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Minimum Tray Spacing	Weight (per battery) (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Energys	12TD150F	--	143	4.3 X 21.7 X 11.3	8RU	105	528234

¹ See "Battery Manufacturer Information" on page 82.

² Battery lug kit provides two lugs for one tray.

³ Up to 100 A battery disconnect.

Table 3

Battery Tray P/N 10012262							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Minimum Tray Spacing	Weight (per battery) (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Deka	12AVR200ET	--	200	4.97 X 24.30 X 12.74	8RU	151	528234
Deka	HT200ET	--	200	4.97 X 24.15 X 12.74	8RU	151	528234

¹ See "Battery Manufacturer Information" on page 82.

² Battery lug kit provides two lugs for one tray.

³ Up to 100 A battery disconnect.

Table 4

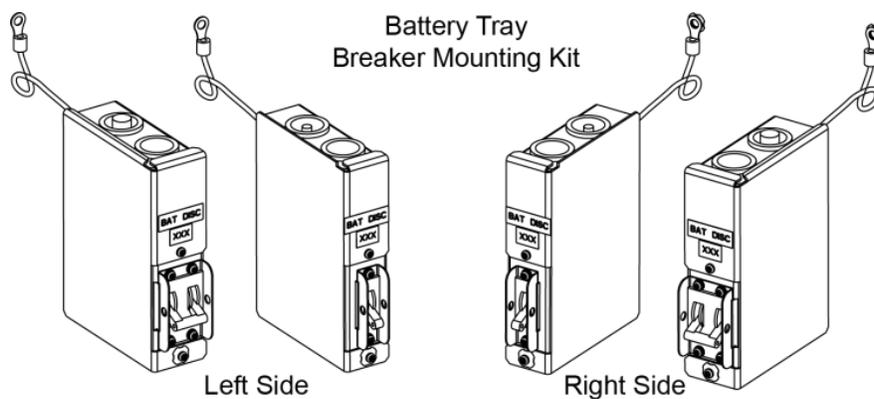
Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

Ampere Rating	Part No., Circuit Breaker, Electrical/Mechanical Trip ¹ (Black Handle)	Part No., Left-Side Breaker Mtg. Kit (For Reference Only)	Part No., Right-Side Breaker Mtg. Kit (For Reference Only)
50	256694300	559814	559813
60	256694700		
70	256695100		
75	256695500		
100	256695900		
125	100765	559816	559815
150	100763		

¹ Provides an alarm during an electrical or manual trip condition.

Table 5



Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

58213720094 (List 94): Pre-Cabled Battery Tray for 19" Wide Relay Rack

Features

- ◆ Each List 94 provides one (1) battery tray factory mounted in the 19" wide system relay rack specified when ordered. Each battery tray holds four (4) 12 VDC 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 (one [1] circuit breaker per tray).
- ◆ Battery spacers included.
- ◆ For 100 A or less battery disconnect circuit breakers, battery cables are available. See page 41.
- ◆ See "58213720094 (19" Wide Battery Tray) (List 94)" on page 77 for battery tray dimensions and typical arrangement. Note different battery trays are available to accommodate the various size batteries listed below.

Restrictions

For 19" wide relay racks only.

Designed to accommodate the batteries listed below.

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.

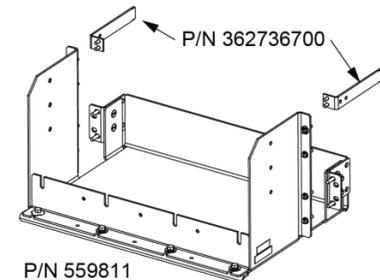
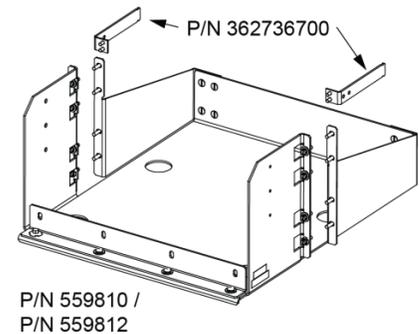
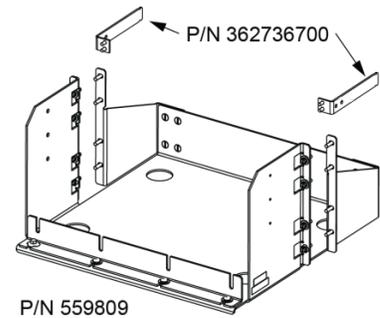
A system can accommodate up to three (3) List 94's, depending on rack size and tray spacing.

Cable size for each tray is 2 AWG for optional battery disconnect circuit breaker selected (up to 100 A).

Not a stand-alone battery system. Must be used as part of a power system that includes a distribution unit list option.

Ordering Notes

- 1) Order multiples of List 94 for more than one (1) battery tray. See **Restrictions** above.
- 2) Order one (1) or more P/N 362736700 cable bracket(s) as required.
- 3) Order batteries separately. Table 6, Table 7, Table 8, and Table 9 list batteries recommended for use with List 94.
- 4) Specify rack spacing of 6U (10.5"), 7U (12.25"), or 8U (14") between trays and above top tray as required for battery clearance. See Table 6, Table 7, Table 8, and Table 9.
- 5) Specify the batteries you intend to use with each List 94 ordered. Lugs for battery connections vary according to the batteries to be installed. Battery cables will be lugged as shown in Table 6, Table 7, Table 8, and Table 9.
Note: If battery model is **not** specified, lugs will **not** be installed at factory. Instead, both available lug kits for the furnished wire size will be shipped loose with the order.
- 6) Specify with or without tray-mounted battery disconnect circuit breakers.
Note: All List 94 trays in a rack will be furnished with or without battery disconnect circuit breakers as specified for the first tray ordered.
- 7) If ordering List 94's with tray-mounted breakers, order one (1) circuit breaker per List 94 from Table 10.
- 8) If ordering List 94 with tray-mounted circuit breakers, specify breaker mounting on left side or right side of tray. Circuit breaker mounting kits shown in Table 10 will be installed. Kit numbers are provided for reference only.
- 9) If ordering List 94 with tray-mounted circuit breakers, order alarm jumper P/N 524384 for each system to connect the alarm terminal of up to three (3) battery disconnect circuit breakers to the system.



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Battery Tray P/N 559809							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Minimum Tray Spacing	Weight per Battery (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Northstar	NSB90FT	--	90	4.25 X 15.59 X 10.04	7RU	71	528234
Northstar	NSB100FT	--	100	4.25 X 15.59 X 11.03	7RU	78	528234
Enersys	12TD100F4	--	96	4.3 X 15.5 X 11.3	8RU	71	528234
Enersys	12V92F	122005	92	4.10 X 16.40 X 10.10	7RU	61.7	528234
Enersys	SBS 100F	--	100	4.30 X 15.60 X 11.30	7RU	71.9	528234
Enersys	SBS C11F	--	91	4.10 X 16.40 X 10.10	7RU	61.6	528234
FIAMM	12UMTX100/19FT	--	100	4.25 X 15.55 X 10.83	7RU	74.8	528234
Northstar	NSB12-330FT	--	(330W)	4.20 X 15.60 X 10.00	7RU	70.6	528234
Northstar	NSB12-380FT	--	(380W)	4.20 X 15.60 X 11.30	7RU	78.3	528234

¹ See "Battery Manufacturer Information" on page 82.

² Battery lug kit provides two lugs for one tray.

³ Up to 100 A battery disconnect.

Table 6

Battery Tray P/N 559810							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight per Battery (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Enersys	12TD100F6	--	97	4.3 X 20.0 X 9.4	7RU	73	528234
Deka	12AVR100ET	241270905	96	4.33 X 20.13 X 9.38	6RU	75	528234
Enersys	12VE115F	--	101	4.33 X 20.10 X 9.25	6RU	80.5	528234

¹ See "Battery Manufacturer Information" on page 82.

² Battery lug kit provides two lugs for one tray.

³ Up to 100 A battery disconnect.

Table 7

Battery Tray P/N 559811							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight per Battery (lb)	Lug Kit ^{3,4} (2 AWG) (90°)
Northstar	NSB40FT ²	--	38.1	3.80 X 9.80 X 8.20	6RU	34	528234
Northstar	NSB60FT ²	--	57.9	4.20 X 11.30 X 10.40	7RU	49	528234
Enersys	12TD50F	--	48	4.2 X 10.9 X 8.7	6RU	38	528234

¹ See "Battery Manufacturer Information" on page 82.

² Batteries MUST be equipped with front access terminal option. See battery manufacturer for ordering information.

³ Battery lug kit provides two lugs for one tray.

⁴ Up to 100 A battery disconnect.

Table 8

Vertiv™ NetSure™ 5100 DC Power System
System Application Guide

Battery Tray P/N 559812							
Manufacturer ¹	Model	P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lb)	Lug Kit ^{2,3} (2 AWG) (90°)
Energys	12V125F	122009	125	4.10 X 22.10 X 12.40	8RU	124	528236
Energys	12TD150F	--	143	4.3 X 21.7 X 11.3	8RU	105	528234

¹ See “Battery Manufacturer Information” on page 82.

² Battery lug kit provides two lugs for one tray.

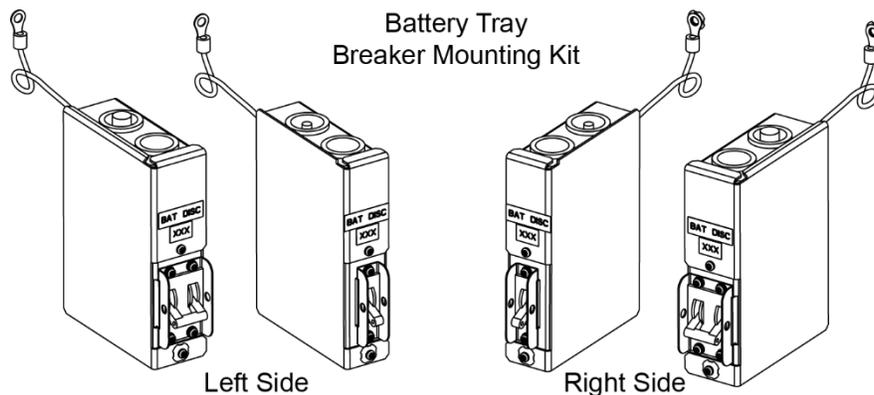
³ Up to 100 A battery disconnect.

Table 9

Ampere Rating	Part No., Circuit Breaker, Electrical/Mechanical Trip ¹ (Black Handle)	Part No., Left-Side Breaker Mtg. Kit (For Reference Only)	Part No., Right-Side Breaker Mtg. Kit (For Reference Only)
50	256694300	559814	559813
60	256694700		
70	256695100		
75	256695500		
100	256695900		
125	100765	559816	559815
150	100763		

¹ Provides an alarm during an electrical or manual trip condition.

Table 10



Distribution Units

582137200BA (List BA): Distribution Unit with (12) GMT Load Fuses; (2) Bullet Type Load Circuit Breakers; (2) Bullet Type Battery Disconnect Circuit Breakers; with Low Voltage Battery Disconnect (LVBD)

Features

- ◆ A 1RU high by 19" wide distribution unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, and...
 - (12) GMT fuse load distribution positions (0 A to 15 A).
 - (2) bullet nose-type circuit breaker load distribution positions (1 A to 150 A).
 - (2) bullet nose-type circuit breaker battery disconnect positions (1 A to 150 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

Maximum load distribution or battery circuit breaker size is 150 A @ +40 °C (+104 °F) or +65 °C (+149 °F).

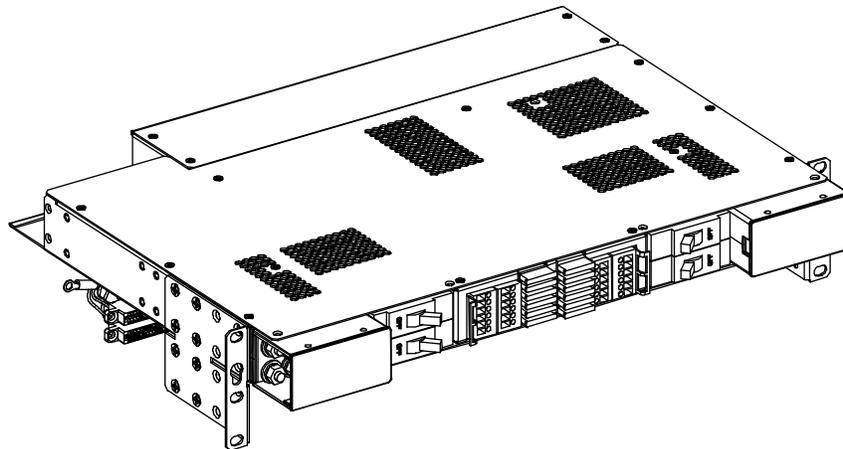
The GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "Bullet Nose Type Circuit Breakers" on page 37 and "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order circuit breakers as required per "Bullet Nose Type Circuit Breakers" on page 37.
- 3) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 4) Order circuit breaker load lugs and battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 5) Order battery cables as required. See page 41.
- 6) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 7) Order IB2 board alarm cables as required (see page 35).
- 8) The controller remains powered when the LVBD contactor opens. Specify if you require List BA to be factory configured for the controller not to be powered when the LVBD contactor opens.



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System Application Guide

582137200NA (List NA): Distribution Unit with (12) GMT Load Fuses; (2) Bullet Type Load Circuit Breakers; (2) Bullet Type Battery Disconnect Circuit Breakers; without Low Voltage Disconnect (LVD)

Features

- ◆ A 1RU high by 19" wide distribution unit without Low Voltage Disconnect (LVD), a battery shunt, and...
 - (12) GMT fuse load distribution positions (0 A to 15 A).
 - (2) bullet nose-type circuit breaker load distribution positions (1 A to 150 A).
 - (2) bullet nose-type circuit breaker battery disconnect positions (1 A to 150 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

Maximum load distribution or battery circuit breaker size is 150 A @ +40 °C (+104 °F) or +65 °C (+149 °F).

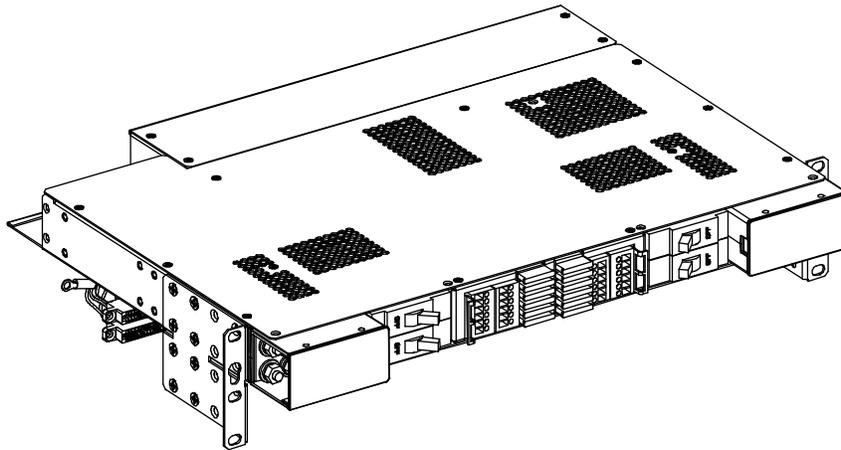
The GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "Bullet Nose Type Circuit Breakers" on page 37 and "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order circuit breakers as required per "Bullet Nose Type Circuit Breakers" on page 37.
- 3) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 4) Order circuit breaker load lugs and battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 5) Order battery cables as required. See page 41.
- 6) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 7) Order IB2 board alarm cables as required (see page 35).



Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

582137200BC (List BC): Distribution Unit with (12) GMT Load Fuses; (4) Bullet Type Load Circuit Breakers; with Low Voltage Battery Disconnect (LVBD)

Features

- ◆ A 1RU high by 19" wide distribution unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, (3) battery connection points, and...
(12) GMT fuse load distribution positions (0 A to 15 A).
(4) bullet nose-type circuit breaker load distribution positions (1 A to 150 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

Maximum load distribution circuit breaker size is 150 A @ +40 °C (+104 °F) or +65 °C (+149 °F).

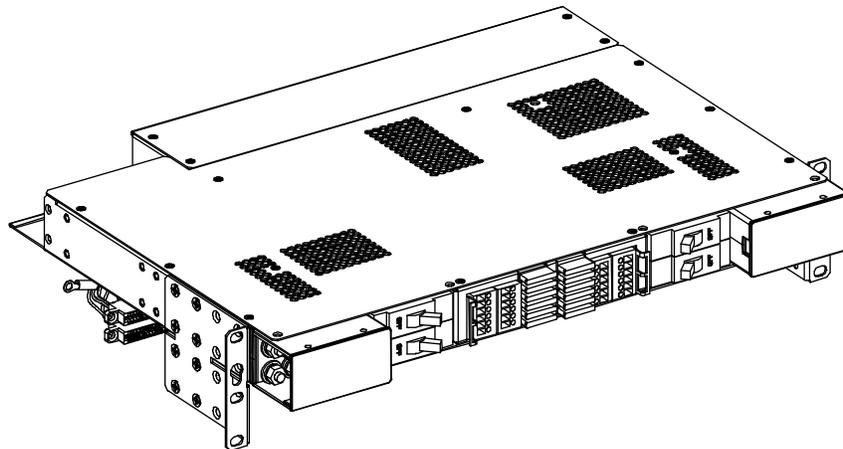
The GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "Bullet Nose Type Circuit Breakers" on page 37 and "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order circuit breakers as required per "Bullet Nose Type Circuit Breakers" on page 37.
- 3) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 4) Order circuit breaker load lugs and battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 5) Order battery cables as required. See page 41.
- 6) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 7) Order IB2 board alarm cables as required (see page 35).
- 8) The controller remains powered when the LVBD contactor opens. Specify if you require List BC to be factory configured for the controller not to be powered when the LVBD contactor opens.



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System Application Guide

582137200LC (List LC): Distribution Unit with (12) GMT Load Fuses; (4) Bullet Type Load Circuit Breakers; with Low Voltage Load Disconnect (LVLD)

Features

- ◆ A 1RU high by 19" wide distribution unit with Low Voltage Load Disconnect (LVLD), a battery shunt, (3) battery connection points, and...
(12) GMT fuse load distribution positions (0 A to 15 A).
(4) bullet nose-type circuit breaker load distribution positions (1 A to 150 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

Maximum load distribution circuit breaker size is 150 A @ +40 °C (+104 °F) or +65 °C (+149 °F).

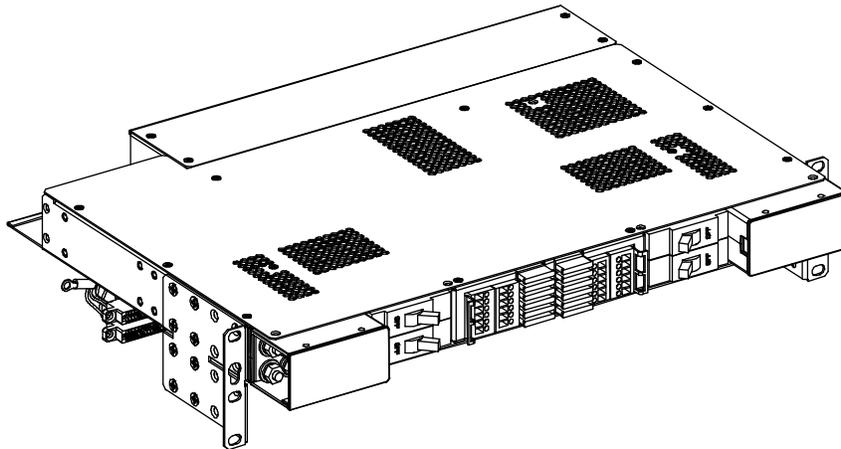
The GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "Bullet Nose Type Circuit Breakers" on page 37 and "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order circuit breakers as required per "Bullet Nose Type Circuit Breakers" on page 37.
- 3) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 4) Order circuit breaker load lugs and battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 5) Order battery cables as required. See page 41.
- 6) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 7) Order IB2 board alarm cables as required (see page 35).



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System Application Guide

582137200NC (List NC): Distribution Unit with (12) GMT Load Fuses; (4) Bullet Type Load Circuit Breakers; without Low Voltage Disconnect (LVD)

Features

- ◆ A 1RU high by 19" wide distribution unit without Low Voltage Disconnect (LVD), a battery shunt, (3) battery connection points, and...
(12) GMT fuse load distribution positions (0 A to 15 A).
(4) bullet nose-type circuit breaker load distribution positions (1 A to 150 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

Maximum load distribution circuit breaker size is 150 A @ +40 °C (+104 °F) or +65 °C (+149 °F).

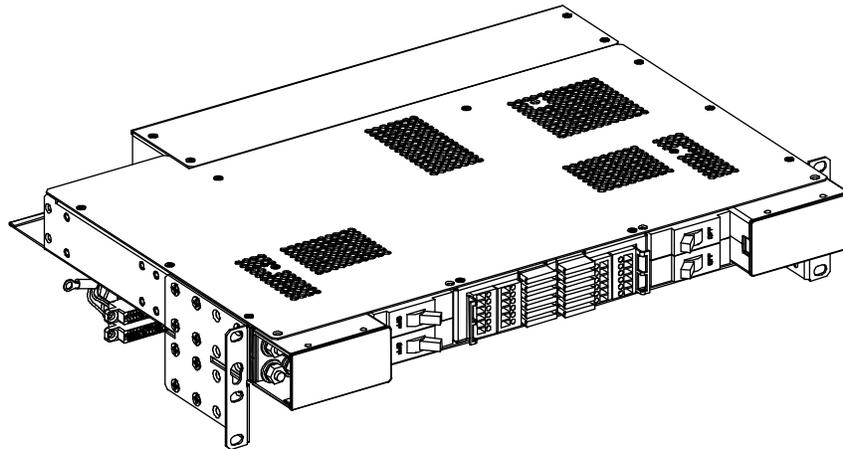
The GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "Bullet Nose Type Circuit Breakers" on page 37 and "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order circuit breakers as required per "Bullet Nose Type Circuit Breakers" on page 37.
- 3) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 4) Order circuit breaker load lugs and battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 5) Order battery cables as required. See page 41.
- 6) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 7) Order IB2 board alarm cables as required (see page 35).



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System Application Guide

582137200BF (List BF): Distribution Unit with (36) GMT Load Fuses; with Low Voltage Battery Disconnect (LVBD)

Features

- ◆ A 1RU high by 19" wide distribution unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, (3) battery connection points, and...
(36) GMT fuse load distribution positions (0 A to 15 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

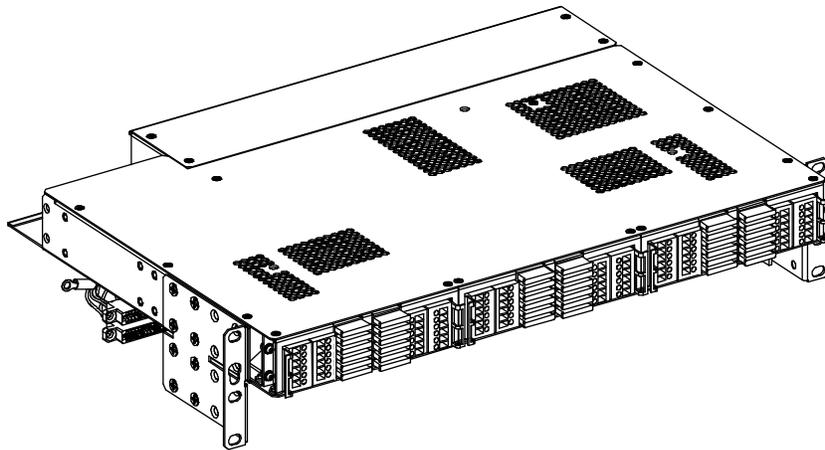
Each GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 3) Order battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 4) Order battery cables as required. See page 41.
- 5) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 6) Order IB2 board alarm cables as required (see page 35).
- 7) The controller remains powered when the LVBD contactor opens. Specify if you require List BF to be factory configured for the controller not to be powered when the LVBD contactor opens.



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System Application Guide

582137200NF (List NF): Distribution Unit with (36) GMT Load Fuses; without Low Voltage Disconnect (LVD)

Features

- ◆ A 1RU high by 19" wide distribution unit without Low Voltage Disconnect (LVD), a battery shunt, (3) battery connection points, and...
(36) GMT fuse load distribution positions (0 A to 15 A).
- ◆ Accepts either the IB2 controller interface board or IB4 (second Ethernet port) board.

Restrictions

Factory connected to List 01.

Maximum distribution current is 80 A at @ +65 °C (+149 °F) and 150 A @ +40 °C (+104 °F).

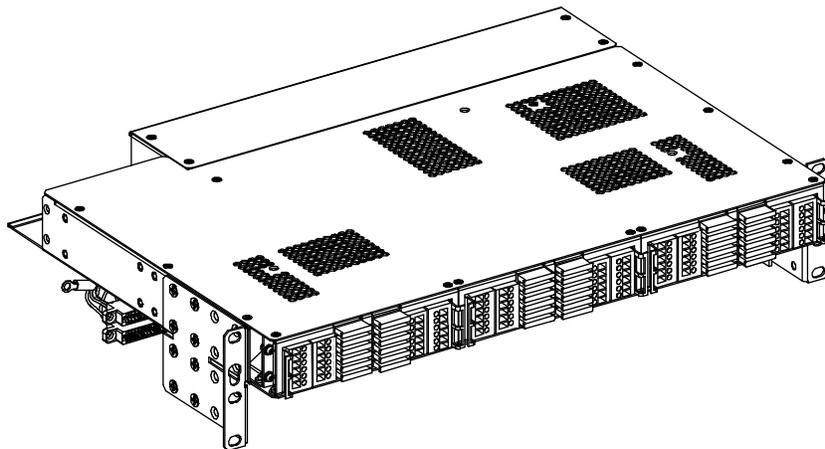
Each GMT fuse block has a 35 A @ +40 °C (+104 °F) and a 30 A @ +65 °C (+149 °F) maximum capacity.

Maximum GMT fuse size is 15 A.

See also "Restrictions" under "GMT Type Load Distribution Fuses" on page 39.

Ordering Notes

- 1) Order one (1) distribution unit for each system.
- 2) Order GMT fuses as required per "GMT Type Load Distribution Fuses" on page 39.
- 3) Order battery input lugs as required per "Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring" starting on page 60.
- 4) Order battery cables as required. See page 41.
- 5) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 6) Order IB2 board alarm cables as required (see page 35).



ACCESSORY DESCRIPTIONS

Relay Racks

Features

- ◆ The system is factory mounted in the relay rack specified when ordered.
- ◆ Relay racks are 19" or 23" standard mounting with 3" deep uprights (see Table 11).

Restrictions

If battery trays are ordered, they are factory mounted in the relay rack.

Ordering Notes

- 1) Order from relay racks listed in Table 11.

Part Number	Size	Available Mounting Positions (1RU = 1-3/4")	Notes
23" Relay Racks			
559817	51.906"H x 24.376"W x 15"D	28RU	Welded
559819	84.000"H x 25.000"W x 15"D	45RU	Seismic (Note 1, 2)
559818	72.000"H x 24.375"W x 15"D	37RU	Welded
559820	84.000"H x 24.375"W x 15"D	45RU	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
19" Relay Racks			
559824	84.000"H x 21.000"W x 15"D	45RU	Welded
559823	84.000"H x 20.375"W x 15"D	45RU	Seismic (Note 1, 2)

Note 1: Complies with Bellcore Seismic Zone 4 requirements.

Note 2: Seismic (Zone 4) compliant ONLY when system DOES NOT contain any of the following components: List 93 and List 94 Battery Trays.

Table 11
Available Relay Racks

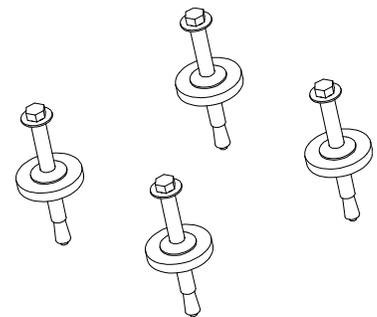
Relay Rack Earthquake Anchor Kit, P/N 562977

Features

- ◆ Provides four (4) sets of hardware for anchoring the relay rack to the floor.

Ordering Notes

- 1) Order by P/N 562977 as required.



Mounting Brackets

19" List 01 and Distribution Unit Mounting Bracket, P/N SXA2300256/1

Features

- ◆ Provides mounting brackets to install the system in a 19" relay rack or cabinet rack.

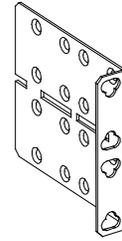
Restrictions

For use with List 01 and a distribution unit only. List 01 and the distribution unit list option ordered are factory connected together with this mounting bracket.

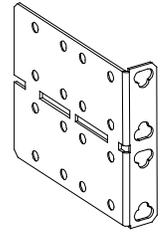
Can be re-positioned to provide either flush front mounting or 5" front projection mounting.

Ordering Notes

- 1) Factory furnished with each distribution unit and factory connected to the distribution unit and List 01. Order two (2) P/N SXA2300256/1 for replacements as required.



SXA2300256/1



SXA2300256/1

19" List 02 Mounting Bracket, P/N SXA2300279/1

Features

- ◆ Provides mounting brackets to install a List 02 expansion shelf in a 19" relay rack or cabinet rack.

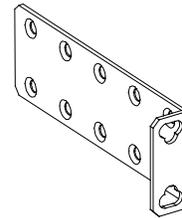
Restrictions

For use with List 02 only.

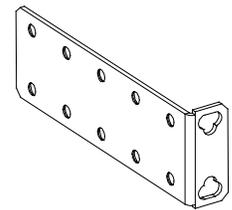
Can be re-positioned to provide either flush front mounting or 5" front projection mounting.

Ordering Notes

- 1) Factory furnished and connected to List 02. Order two (2) P/N SXA2300279/1 for replacements as required.



SXA2300279/1



SXA2300279/1

23" List 02 Offset Mounting Bracket, P/N SXA2300278/1

Features

- ◆ Provides mounting bracket to install a List 02 expansion shelf in a 23" relay rack or cabinet rack when List 01 is furnished with front AC input connectors. Replaces the left mounting bracket factory attached to List 02.

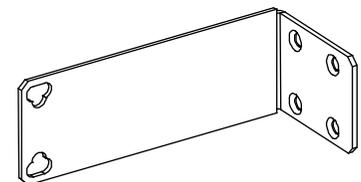
Restrictions

For use with List 02 only.

For use with List 01 front AC input only.

Ordering Notes

- 1) Factory furnished with List 02. Order one (1) P/N SXA2300278/1 for a replacement as required.



SXA2300278/1

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23" List 01 and Distribution Unit Mounting Bracket Adapter Kit, P/N 563146

Features

- ◆ Provides two (2) mounting bracket adapters to install a List 01 and distribution unit in a 23" relay rack or cabinet rack. Attaches to the 19" standard brackets to allow 23" mounting.

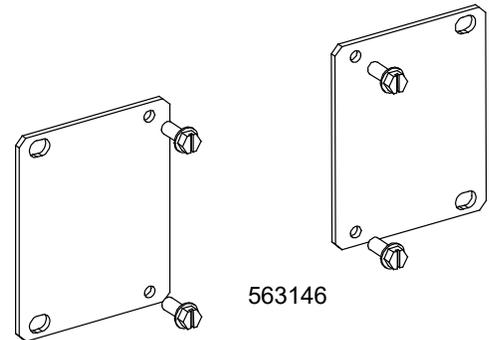
Restrictions

For use with List 01 and a distribution unit only.

For use with List 01 rear AC input only.

Ordering Notes

- 1) Order P/N 563146 as required.



23" List 02 Mounting Bracket Adapter Kit, P/N 563148

Features

- ◆ Provides two (2) mounting bracket adapters to install a List 02 expansion shelf in a 23" relay rack or cabinet rack. Attaches to the 19" standard brackets to allow 23" mounting.

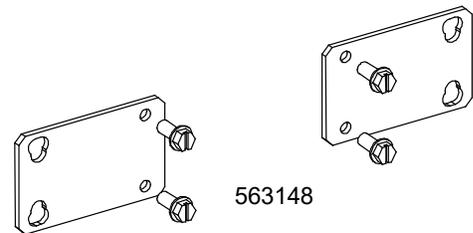
Restrictions

For use with List 02 only.

For use with List 01 rear AC input only.

Ordering Notes

- 1) Order P/N 563148 as required.



Optional Wall Mounting Kits

Optional Vertical Wall Mount Bracket Kit, P/N 553203

Features

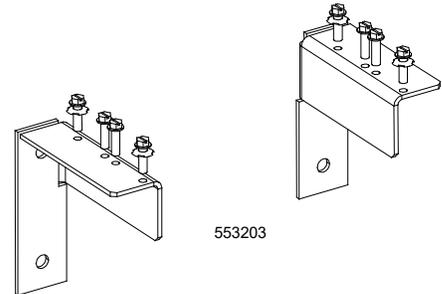
- ◆ Allows for vertical wall mounting List 01 and the distribution unit with the bottom of the system flat against a wall.
- ◆ See “System with Vertical Wall Mount Kit P/N 553203” on page 71 for mounting dimensions.

Restrictions

Customer must supply mounting fasteners for securing the wall mount brackets to the wall.

Ordering Notes

- 1) Order P/N 553203, which consists of two (2) wall brackets (P/N 553058 and 553059) and eight (8) 12-24 x 3/4” screws with four (4) ground washers for attaching the brackets to the system.



Optional 19” 6RU Wall Mount Bracket Kit, P/N 552537

Features

- ◆ Allows for horizontal wall mounting of 19” systems.
- ◆ See “System with 19” 6RU Wall Mount Kit P/N 552537” on page 72 for mounting dimensions.

Restrictions

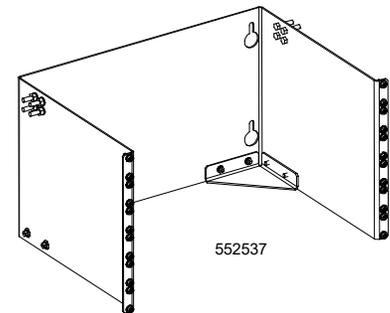
For horizontal mount only.

Customer must supply mounting fasteners for securing the wall mount bracket to the wall.

System mounting angles cannot be in the flush-front mount position.

Ordering Notes

- 1) Order by P/N 552537 as required.



Optional 23” 6RU Wall Mount Bracket Kit, P/N 552535

Features

- ◆ Allows for horizontal wall mounting of 23” systems.
- ◆ See “System with 23” 6RU Wall Mount Kit P/N 552535 (cont’d on next page)” on page 74 for mounting dimensions.

Restrictions

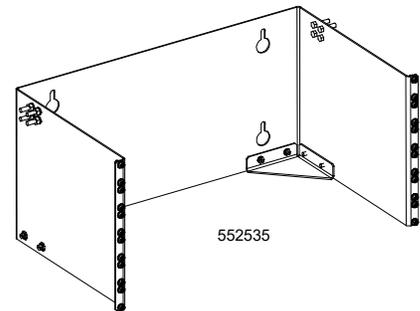
For horizontal mount only.

Customer must supply mounting fasteners for securing the wall mount bracket to the wall.

System mounting angles cannot be in the flush-front mount position.

Ordering Notes

- 1) Order by P/N 552535 as required.



List 01 AC Input Connector Kits

List 01 Rear AC Input Connector Kit, P/N 562642

Features

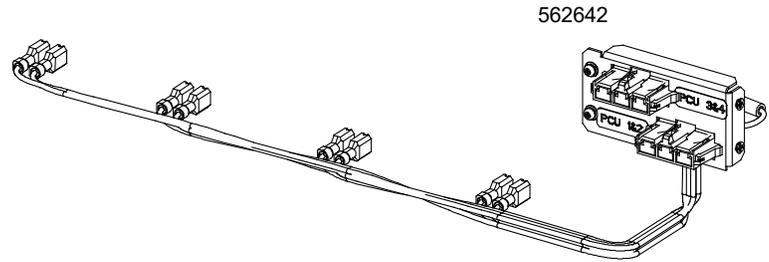
- ◆ Rear AC input connectors for List 01 are provided on the rear of the distribution unit.

Restrictions

For use with List 01 only.

Ordering Notes

- 1) Factory furnished and connected to List 01 and the distribution unit unless front AC input connector kit is specified.



List 01 Front AC Input Connector Kit, P/N 562644

Features

- ◆ Front AC input connectors are provided on the distribution unit and List 01 left (as viewed facing the system) mounting bracket.

Restrictions

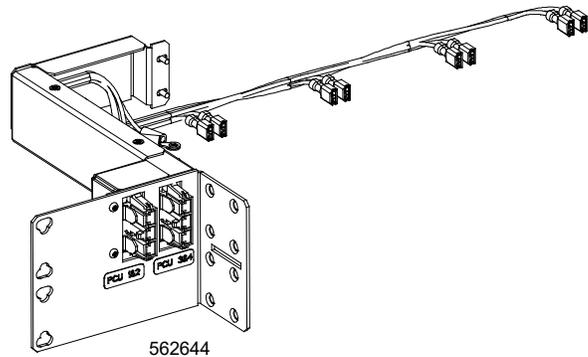
For use with List 01 only.

For use with 23" mounting only

Provides 5" front projection mounting only.

Ordering Notes

- 1) Order by P/N 562644 as required. When ordered, front AC input connectors are provided with the 23" mounting bracket factory connected to List 01 and the distribution unit ordered.



List 01 Factory Cabinet Installation, P/N 562643

Features

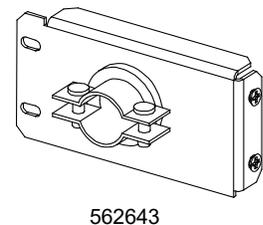
- ◆ For use when List 01 is factory installed in a cabinet. Factory interconnects the shelf AC input terminals to a termination panel provided in the cabinet.

Restrictions

For use with List 01 only.

Ordering Notes

- 1) Order by P/N 562643 as required. Provides a cover with cable clamp factory installed to the distribution unit for factory List 01 AC input wiring.



Rectifier Module

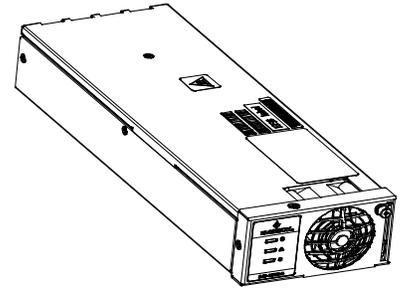
Rectifier Module, P/N 1R482000e3

Features

- ◆ Rectifier Module Model R48-2000e3 (Spec. No. 1R482000e3), 2000 W / -48 VDC.
- ◆ Refer to the Rectifier Instructions (UM1R482000e3) for more information.

Ordering Notes

- 1) Order by P/N 1R482000e3 as required.



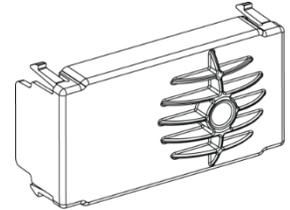
Rectifier Mounting Position Blank Cover Panel, P/N SXA1100035/1

Features

- ◆ Covers one (1) unused rectifier mounting position.

Ordering Notes

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



Rectifier AC Input Cable Assemblies and Rectifier AC Input Line Cords

Rectifier AC Input Cable Assembly, P/N 535232

Features

- ◆ One (1) 30" long, 8 AWG, AC input cable assembly that is terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and un-terminated on the remaining end.

Restrictions

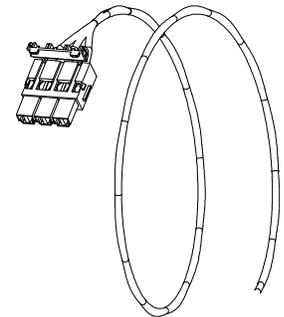
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

Rated for 30 A.

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



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Rectifier AC Input Cable Assembly, P/N 553202

Features

- ◆ One (1) 12' long, 8 AWG, AC input cable assembly that is terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and un-terminated on the remaining end.

Restrictions

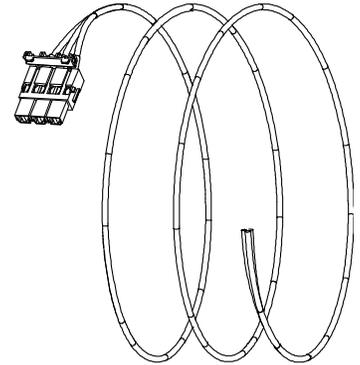
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

Rated for 30 A.

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 540946

Features

- ◆ One (1) 14' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

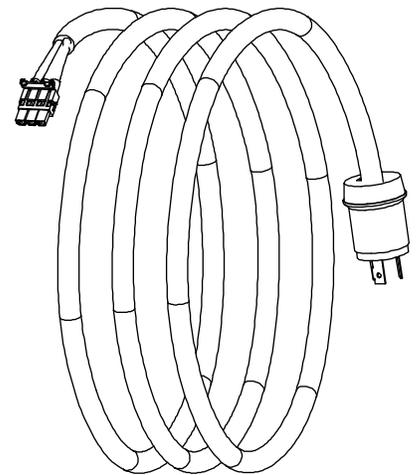
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 559301

Features

- ◆ One (1) 14' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug at a 90 degree angle bend which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

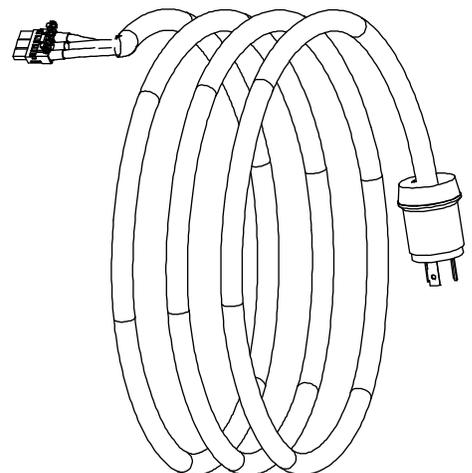
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



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Rectifier AC Input Line Cord, P/N 545616

Features

- ◆ One (1) 6' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

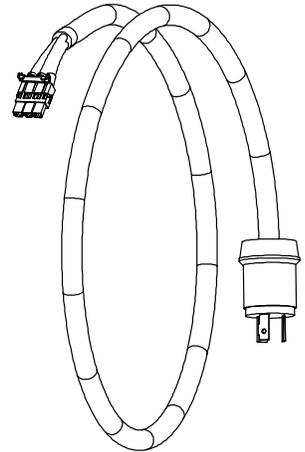
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 559842

Features

- ◆ One (1) 6' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug (wires molded 180° from plug orientation) which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

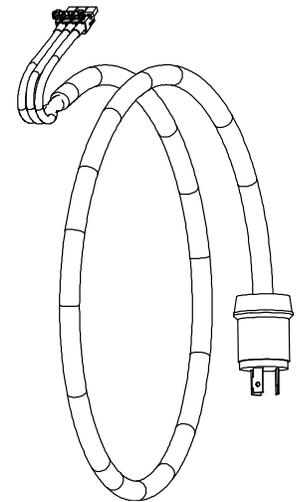
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 559302

Features

- ◆ One (1) 6' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug at a 90 degree angle bend which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L6-30P twist-lock plug.

Restrictions

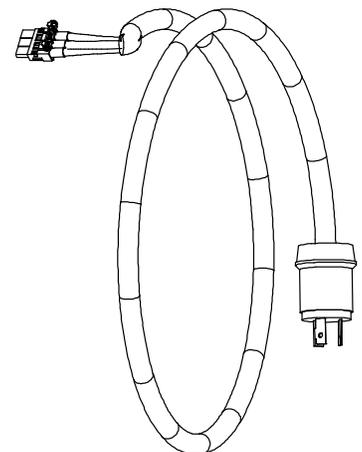
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 208 VAC / 240 VAC only (rated for 30 A at 208 VAC / 240 VAC).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



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Rectifier AC Input Line Cord, P/N 545252

Features

- ◆ One (1) 14' long, 8/3 AWG, AC input line cord that is terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L5-30P twist-lock plug.

Restrictions

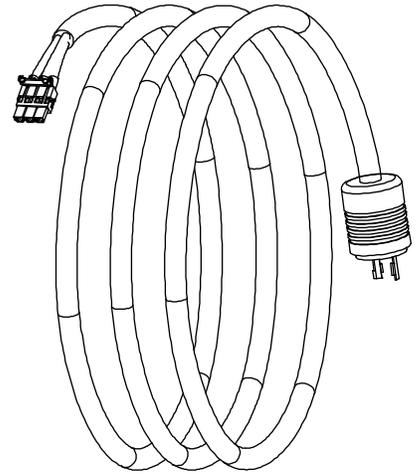
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 120 VAC only (rated for 30 A at 120 VAC @ 65 °C).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 547525

Features

- ◆ One (1) 14' long, 12/3 AWG, AC input line cord terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a NEMA L5-30P twist-lock plug.

Restrictions

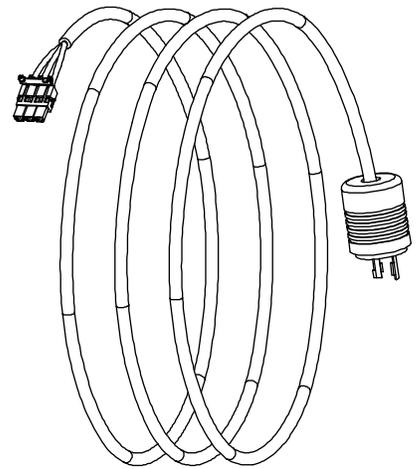
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

For 120 VAC only (rated for 20 A at 120 VAC @ 50 °C).

Ordering Notes

- 1) Order AC input cable assemblies or line cords as required.



Rectifier AC Input Line Cord, P/N 548196

Features

- ◆ One (1) 6' long, 12/3 AWG, AC input line cord terminated on one end with a Molex plug which mates with the AC input receptacle on the List 01 and List 02 shelves, and terminated on the remaining end with a IEC320 C20 plug.

Restrictions

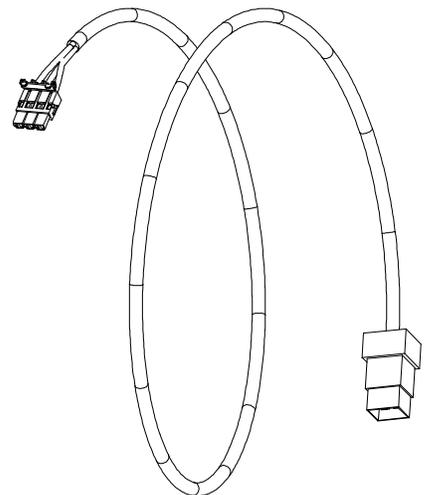
Each List 01 shelf requires two (2) AC input cable assemblies or line cords. Each feeds two (2) rectifiers.

Each List 02 shelf requires three (3) AC input cable assemblies or line cords. Two feed two (2) rectifiers, the other one (1) rectifier.

The C20 plug is rated 16 A @ 250 VAC (international rating) and 20 A @ 250 VAC (US rating). Can be used with rectifiers operating @ 120 VAC in +40 °C (+104 °F) or +65 °C (+149 °F) ambient. Can be used with rectifiers operating @ 240 VAC in +40 °C (+104 °F) ambient. CANNOT be used with rectifiers operating @ 240 VAC in +65 °C (+149 °F) ambient. CANNOT be used with rectifiers operating @ 208 VAC at any ambient.

Per UL 60950-1, 2nd Edition, when this cord is used with this power system, the following restrictions apply:

- The power system must be used in a location having equipotential bonding (such as a telecommunications center, a dedicated computer room or a restricted access location).
- The building installation shall provide a means for connection to protective earth; and the equipment is to be connected to that means; and a service person shall check whether or not the socket-outlet from which the equipment is to be



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powered provides a connection to the building protective earth. If not, the service person shall arrange for the installation of a protective earthing conductor from the separated protective earthing terminal to the protective earth wire in the building.

Ordering Notes

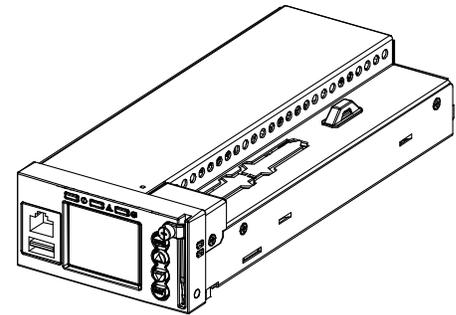
- 1) Order AC input cable assemblies or line cords as required.

Controller

NCU (NetSure Control Unit) Controller, P/N 1M830BNA

Features

- ◆ NCU Controller, Model M830B (Spec. No. 1M830BNA).
- ◆ Factory programmed with the configuration file specified when ordered.
Note: The controller is provided with the factory default configuration unless otherwise specified.
Note: Contact us for custom NCU configurations.
- ◆ Refer to the NCU Controller Instructions (UM1M830BNA) for more information.



Restrictions

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

Ordering Notes

- 1) Order one (1) NCU controller per power system, P/N 1M830BNA.
- 2) Order the IB2 Controller Interface Board (see page 33) or internal IB4 Controller Interface Board (see page 33). If IB2 board ordered, order external IB4 board kit if desired (see page 33).
- 3) 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” on page 34.
- 4) Order IB2 board alarm cables as required (see page 35).
- 5) Order optional SM-Temp Temperature Concentrator (Supervisory Module for Temperature Probes) as desired (shipped loose) (see page 36). Also order SM-Temp CAN Bus Interface Cable, P/N 562868, and “SM-Temp Jumpers, P/N 552888” (see page 36) as required.
Note: A system can have up to (8) SM-Temp modules for a total of sixty-eight (68) temperature probes that can be used in the power system for ambient and battery monitoring.
- 6) Order optional supervisory modules as desired (shipped loose). Also order “SM Supervisory Module RS-485 Interface Cable, P/N 547674” as required (see page 36).
- 7) 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.

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IB2 Controller Interface Board, P/N 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.

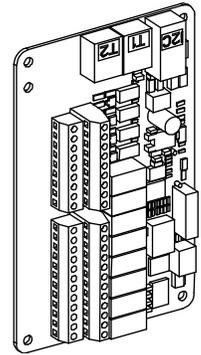
Restrictions

For use in List BA, BC, BF, LC, NA, NC, or NF distribution unit.

The distribution unit can contain either an IB2 board or an internal IB4 board, not both.

Ordering Notes

- 1) Order one (1) IB2 Interface Board Assembly (P/N MA4C5U31) per system as required.



Internal IB4 Controller Interface Board, P/N 562804

Features

- ◆ The IB4 board provides 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).

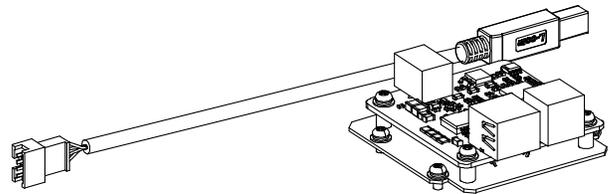
Restrictions

For use in List BA, BC, BF, LC, NA, NC, or NF distribution unit.

The distribution unit can contain either an IB2 board or an internal IB4 board, not both.

Ordering Notes

- 1) If an IB2 board is not installed and a second Ethernet port is required, order IB4 board P/N 562804.



External IB4 Controller Interface Board Kit, P/N 561929

Features

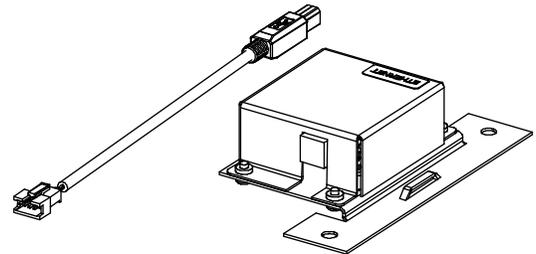
- ◆ Provides a kit to externally install the IB4 board.
- ◆ The IB4 board provides a second Ethernet port. The Ethernet port located on the NCU Controller's front panel can be used to connect a computer directly to the NCU. The Ethernet port located on the IB4 board can be used to connect the NCU to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

Restrictions

Mounts external to the system.

Ordering Notes

- 1) If an IB2 board is installed and a second Ethernet port is required, order kit P/N 561929.



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Optional Temperature Probes

Features

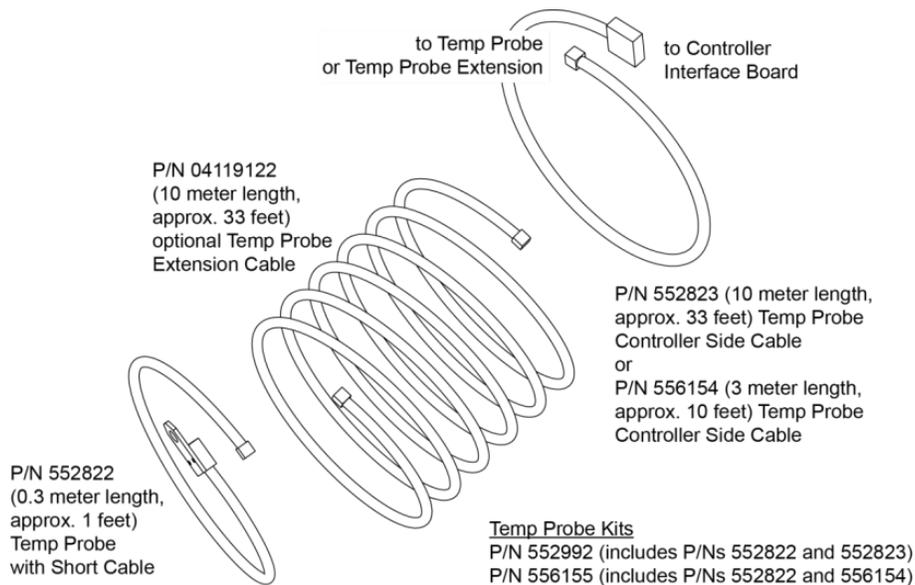
- ◆ Up to two (2) temperature probes can be connected to the System Interface Board. Up to two (2) additional temperature probes can be connected to the IB2 (Controller Interface Board). Any combination of the four (4) temperature probes can be programmed to monitor ambient temperature and/or battery 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 and/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" on page 36.



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IB2 Board Relay Output and Digital Input Alarm Cables

Features

- ◆ Two sets of relay output and digital input alarm cables are available, each set consisting of two pieces that plug together to make a complete set. One set for the digital inputs and another set for the relay outputs. One half of each set connects to the IB2 controller interface board. The other half of each set is unterminated on one end for connection to customer circuits.

Restrictions

For use with an IB2 board.

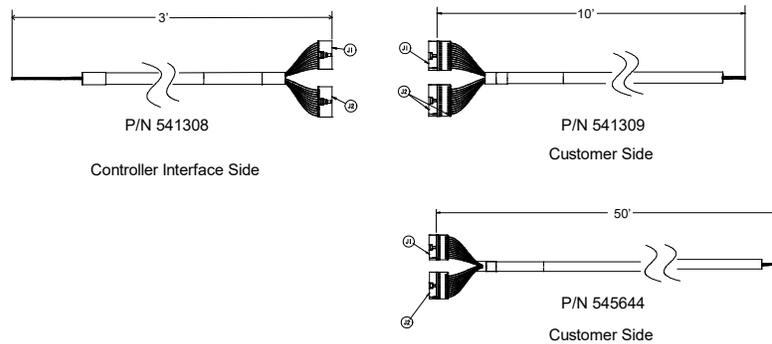
Ordering Notes

- 1) For a relay output alarm cable, order both P/Ns 541308 (3' controller interface circuit card side) and P/N 541309 (10' customer side) or P/N 545644 (50' customer side). P/N 541308 is factory connected to the IB2 controller interface board located in the distribution unit shelf.

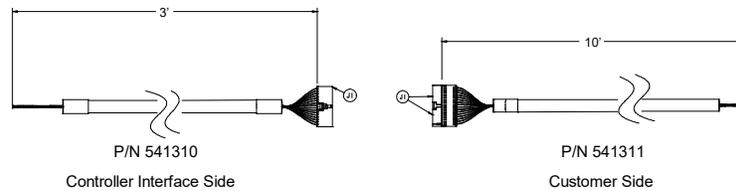
For a digital input alarm cable, order both P/Ns 541310 (3' controller interface circuit card side) and P/N 541311 (10' customer side). P/N 541310 is factory connected to the IB2 controller interface board located in the distribution unit shelf.

Note: A custom digital input cable (P/N 545591) and internal wiring kit (P/N 562884) is available. This kit is factory installed only.

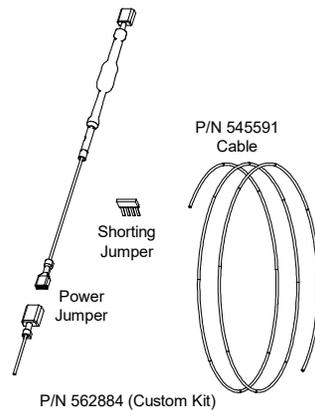
Relay Output Alarm Cable



Digital Input Alarm Cable



Custom Digital Input Alarm Cable

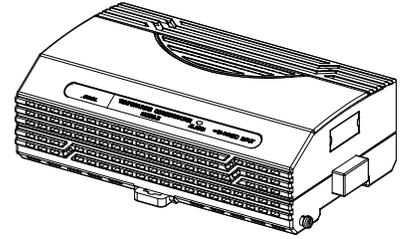


Optional SM-Temp Temperature Concentrator

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 NCU CAN bus. Via the CAN Bus, the NCU reads each temperature probe from each SM-Temp Concentrator.
- ◆ Refer to the SM-Temp Temperature Concentrator Instructions (UM547490) for more information.



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 Probes” on page 34.
- 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 36.

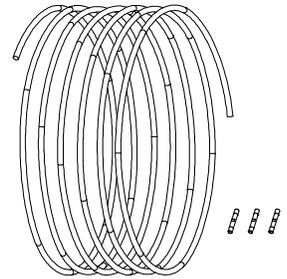
SM-Temp Jumpers, P/N 552888

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.



SM Supervisory Module RS-485 Interface Cable, P/N 547674

Features

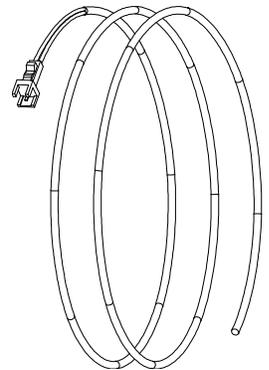
- ◆ Provides a 4’ cable for connecting SM supervisory modules to the system’s RS-485 interface connector located on the system interface circuit card.
- ◆ For interface with SM-AC, SM-BAT, SM-BRC, or SM-IO modules.

Restrictions

One (1) RS-485 connector is available in the system.

Ordering Notes

- 1) Order P/N 547674 as required.



Distribution Devices

Bullet Nose Type Circuit Breakers (Battery Disconnect and Load Distribution)

Features

- ◆ Each circuit breaker (as listed in Table 12) plugs into one or two mounting position(s) on a distribution unit containing bullet nose type distribution positions.

Restrictions

For use in Lists BA, BC, LC, NA, and NC

Each List BC, LC, and NC distribution unit holds up to four (4) single-pole or up to two (2) double-pole bullet nose-type load distribution circuit breakers.

Each List BA and NA distribution unit holds up to two (2) single-pole or one (1) double-pole bullet nose-type battery disconnect circuit breaker(s) and up to two (2) single-pole or one (1) double-pole bullet nose-type load distribution circuit breaker(s).

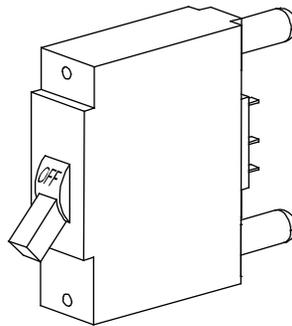
125 A and 150 A circuit breakers are 2-pole devices (occupy two mounting positions).

Load should not exceed 80% of device rating.

See the “Distribution Units” list descriptions (starting on page 16) for additional restrictions.

Ordering Notes

- 1) Order circuit breakers as required per Table 12.
- 2) See Table 21 for recommended battery and load distribution wire sizes and lugs.
- 3) When ordering 2-pole devices, a “Special Application Crimp Lug / Strap Combination” may be ordered per device. See “Special Application Crimp Lug / Strap Combination” on page 40.



Toggle Handle
Bullet Nose Circuit Breaker

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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	1	102286	101610
125	2	2	516991	516838
150	2	2	516993	516839
See Table 21 for recommended battery and load distribution wire sizes and lugs.				
When ordering 2-pole devices, a “Special Application Crimp Lug / Strap Combination” may be ordered per device. See “Special Application Crimp Lug / Strap Combination” on page 40.				

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
Toggle Handle Bullet Nose Type Circuit Breakers

Vertiv™ NetSure™ 5100 DC Power System

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GMT Type Load Distribution Fuses

Features

- ◆ Each List BF and NF distribution unit holds up to thirty-six (36) 18/100 A to 15 A GMT load distribution fuses.
- ◆ Each List BC, LC, NC, BA, NA distribution unit holds up to twelve (12) 18/100 A to 15 A GMT load distribution fuses.

Restrictions

When used for power distribution, load should not exceed 80% of device rating, except 10 A and 15 A fuses, for which load should not exceed 70% of device rating.

See the “Distribution Units” list descriptions (starting on page 16) for additional restrictions.

Ordering Notes

- 1) Order GMT fuses as required per Table 13.

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-X)	248898700	---
Replacement Dummy Fuse	248872600	---

Table 13
GMT Fuses

Bullet Nose Bypass Busbar with Handle, P/N 563020

Features

- ◆ Replaces a bullet nose circuit breaker when a protective or disconnect device is not required.

Restrictions

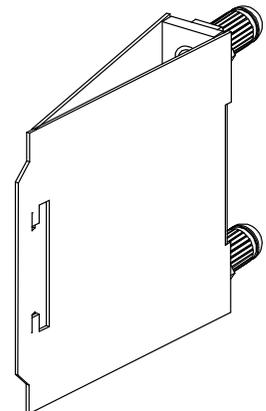
Each List BC, LC, and NC distribution unit holds up to four (4) load busbars.

Each List BA and NA distribution unit holds up to two (2) load busbars and up to two (2) battery busbars.

Maximum number of Bypass Busbars per system is four (4).

Ordering Notes

- 1) Order by P/N 563020 as required.



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Lugs

Standard Crimp Lugs

Features

- ◆ For use on the front circuit breaker battery and/or load busbars, and rear battery busbars.

Restrictions

Maximum single lug size for front breaker connections is 2 AWG narrow tongue lug P/N 140541.
Maximum lug size for rear battery landing point connections is 1/0 AWG flex wire lug P/N 112902.

Ordering Notes

- 1) Specify part number from Table 14 for desired lead size.

Lead Size	Part Number	
14-10 AWG	245342300	
8 AWG	245390200	
6 AWG	245346700	
4 AWG	245346800	
2 AWG	245346900	
2 AWG	140541 (Narrow Tongue)	
1/0 AWG	112902 (Flex Wire)	

Table 14
Crimp Lug
Two-Hole, 1/4" Bolt Clearance Hole, 5/8" Centers

Special Application Crimp Lug / Strap Combination

Features

- ◆ Straps two circuit breaker wiring positions together, and provides a crimp-type lug which allows distribution wiring up to 4/0 AWG. Designed for use with 125 A and larger bullet nose-type circuit breakers, which require two mounting positions.

Restrictions

Maximum double lug size for front breaker connections is 4/0 AWG lug P/N 245393800.

Ordering Notes

- 1) Specify part number from Table 15 for desired lead size.

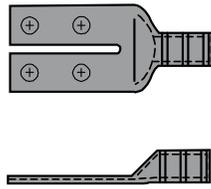
Lead Size	Part Number	
1/0 AWG	245393500	
2/0 AWG	245393600	
3/0 AWG	245393700	
4/0 AWG	245393800	

Table 15
Special Application Crimp Lug / Strap Combination
(Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)

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Battery Cables

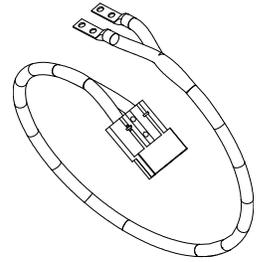
Shelf Side Battery Cables, P/N 540814

Features

- ◆ Provides two (2) 3' long, 2 AWG, battery cables terminated in a 2-position Red SB120 Anderson connector on the shelf side. Remaining end terminated in lugs for connection to shelf.
- ◆ Mates with P/N 540954 cable or the Anderson connector from P/N 10032894 battery cabinet.

Ordering Notes

- 1) Order as required. Lists BC, BF, LC, NC, and NF provides landings for up to three (3) battery strings. Lists BA and NA provides landings for up to two (2) battery strings.



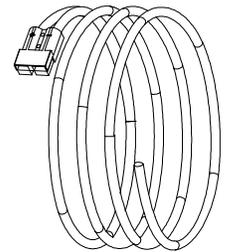
Battery Side Battery Cables, P/N 540954

Features

- ◆ Provides two (2) 12' long, 2 AWG, battery cables terminated in a 2-position Red SB120 Anderson connector on the battery side. Remaining end un-terminated for connection to batteries.
- ◆ Mates with P/N 540814 cable.

Ordering Notes

- 1) Order as required. Lists BC, BF, LC, NC, and NF provides landings for up to three (3) battery strings. Lists BA and NA provides landings for up to two (2) battery strings.



Shelf Side Battery Cables, P/N 545709

Features

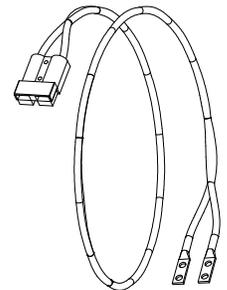
- ◆ Provides two (2) 4' long, 8 AWG, battery cables terminated in a 2-position Red SB50 Anderson connector on the shelf side. Remaining end terminated in lugs for connection to shelf.
- ◆ Mates with connector on listed battery cabinet.

Restrictions

For use with P/N 541434 or P/N 545534 battery cabinets only.

Ordering Notes

- 1) Order one (1) for each battery cabinet feed required. Lists BC, BF, LC, NC, and NF provides landings for up to three (3) battery strings. Lists BA and NA provides landings for up to two (2) battery strings.



Shelf Side Battery Cables, P/N 557304

Features

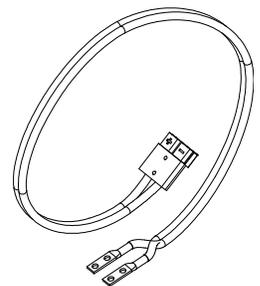
- ◆ Provides two (2) 3' long, 6 AWG, battery cables terminated in a 2-position Red SB50 Anderson connector on the shelf side. Remaining end terminated in lugs for connection to shelf.
- ◆ Mates with connector on listed battery cabinet.

Restrictions

For use with P/N 541434 or P/N 545534 battery cabinets only.

Ordering Notes

- 1) Order as required. Lists BC, BF, LC, NC, and NF provides landings for up to three (3) battery strings. Lists BA and NA provides landings for up to two (2) battery strings.

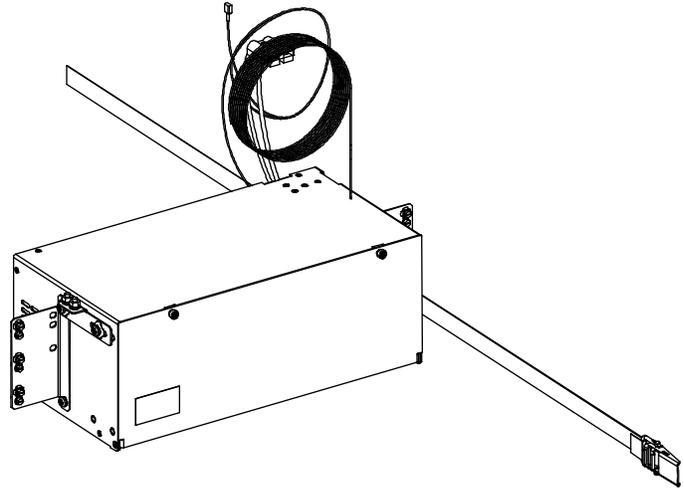


Battery Cabinets

NetSure 211bc Battery Cabinet (Spec. No. 541434)

Features

- ◆ The NetSure 211bc Battery Cabinet is rated at 30 amperes, and can be mounted in a 19" or 23" nominal relay rack, or mounted to a suitable wall.
- ◆ The battery cabinet contains one (1) 40 ampere battery disconnect circuit breaker.
- ◆ Battery circuit breaker alarm leads are provided to tie into the power system's alarm circuit.
- ◆ The battery cabinet is equipped with a battery cable terminated in an Anderson connector.
- ◆ Cables to connect the batteries (as specified in the table under *Order Notes*) into the battery cabinet provided.
- ◆ Battery cabinets can be paralleled to provide greater reserve time. Battery cabinets contain a second Anderson battery connector for plugging one cabinet into another.
- ◆ Refer to the Battery Cabinet Instructions (Section 6023) for more information.



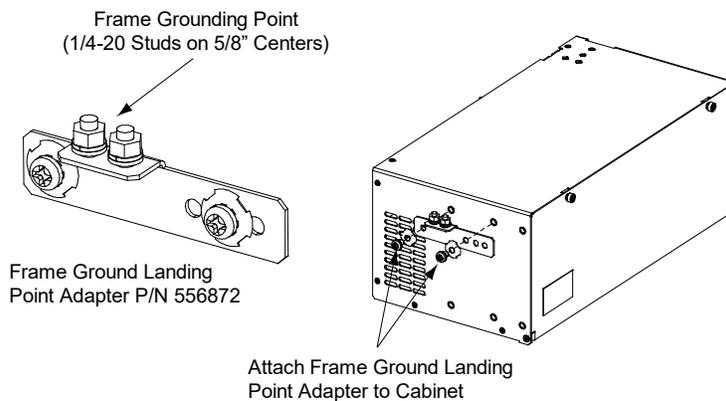
Ordering Notes

- 1) Order by Spec. No. 541434 as required.
- 2) Also order four (4) batteries per battery cabinet per the following table.

Battery Manufacturer	Manufacturer P/N	Our P/N	Capacity Amp-Hours (8 Hr rate)	Weight (lb) per Battery
Hawker	SBS 15	139091	14	12.50
Fiamm	12SLA12	139092	12	12.35
Energys	NP18-12FR	139774	16 *	13.60

* 10Hr rate

- 3) When ordering P/N 139774 batteries, also order P/N 545427 battery connection kit.
- 4) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



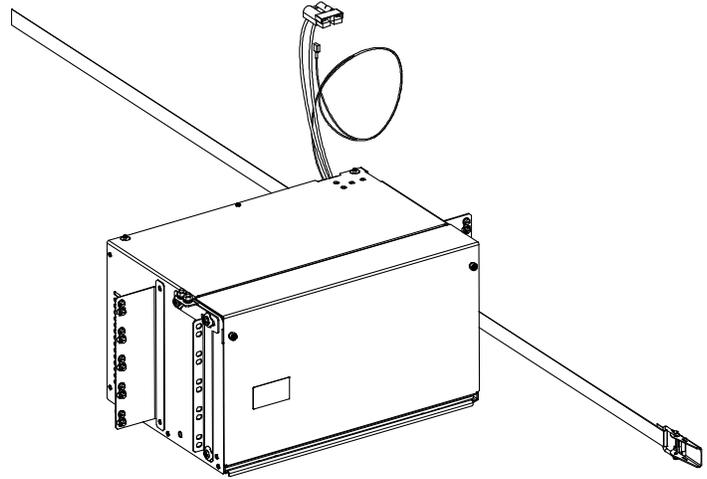
Vertiv™ NetSure™ 5100 DC Power System

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NetSure 211bc Battery Cabinet (Spec. No. 545534)

Features

- ◆ The NetSure 211bc Battery Cabinet is rated at 30 amperes, and can be mounted in a 19" or 23" nominal relay rack, or mounted to a suitable wall.
- ◆ The battery cabinet contains one (1) 40 ampere battery disconnect circuit breaker.
- ◆ Battery circuit breaker alarm leads are provided to tie into the power system's alarm circuit.
- ◆ The battery cabinet is equipped with a battery cable terminated in an Anderson connector.
- ◆ Cables to connect the batteries (as specified in the table under *Ordering Notes*) into the battery cabinet provided.
- ◆ Battery cabinets can be paralleled to provide greater reserve time. Battery cabinets contain a second Anderson battery connector for plugging one cabinet into another.
- ◆ Refer to the Battery Cabinet Instructions (Section 6033) for more information.

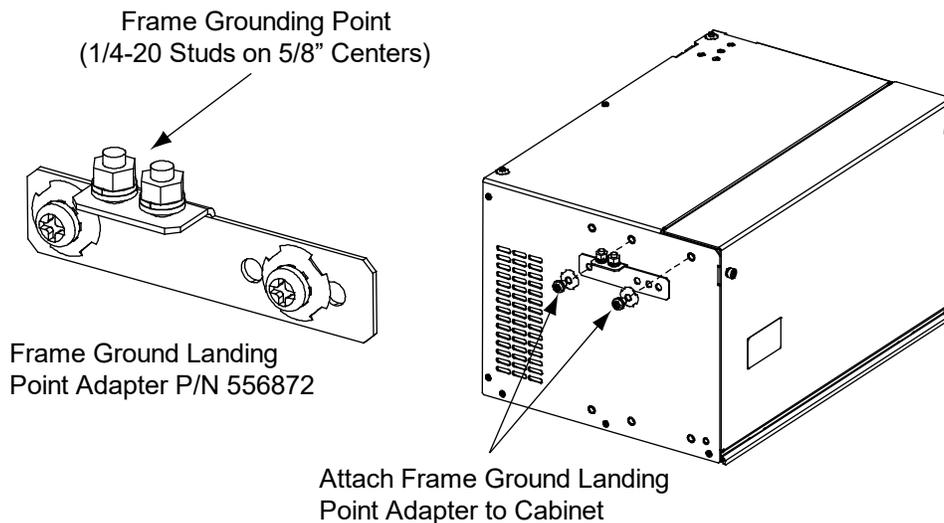


Ordering Notes

- 1) Order by Spec. No. 545534 as required.
- 2) Also order four (4) batteries per battery cabinet per the following table.

Battery Manufacturer	Manufacturer P/N	Our P/N	Capacity Amp-Hours (8 Hr rate)	Weight (lb) per Battery
Energys	SBS B10	140553	38	28.20
C&D / Dynasty	TEL12-30	140455	30.5	26.70
Energys	SBS-30	--	26	20.09
Energys	SBS-40	140581	38	28

- 3) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



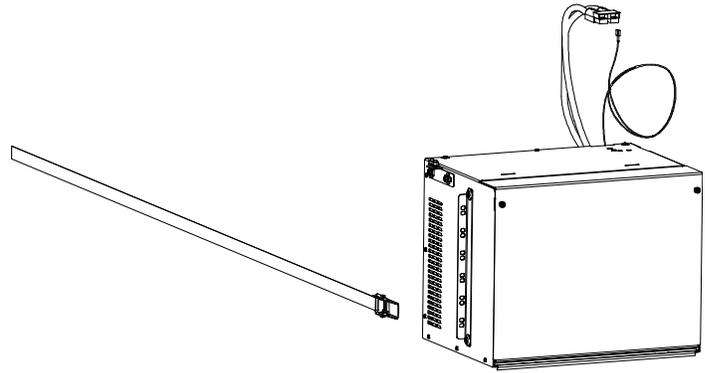
Vertiv™ NetSure™ 5100 DC Power System

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NetSure 5100bc Battery Cabinet (Spec. No. 10032894)

Features

- ◆ The NetSure 5100bc Battery Cabinet is rated at 70 amperes, and can be mounted in a 19" nominal relay rack, or mounted to a suitable wall.
- ◆ The battery cabinet contains one (1) 100 ampere battery disconnect circuit breaker.
- ◆ Battery circuit breaker alarm leads are provided to tie into the power system's alarm circuit.
- ◆ The battery cabinet is equipped with a battery cable terminated in an Anderson connector.
- ◆ Cables to connect the batteries (as specified in the table under *Ordering Notes*) into the battery cabinet provided.
- ◆ Battery cabinets can be paralleled to provide greater reserve time. Battery cabinets contain a second Anderson battery connector for plugging one cabinet into another.
- ◆ Refer to the Battery Cabinet Instructions (IM10032894) for more information.

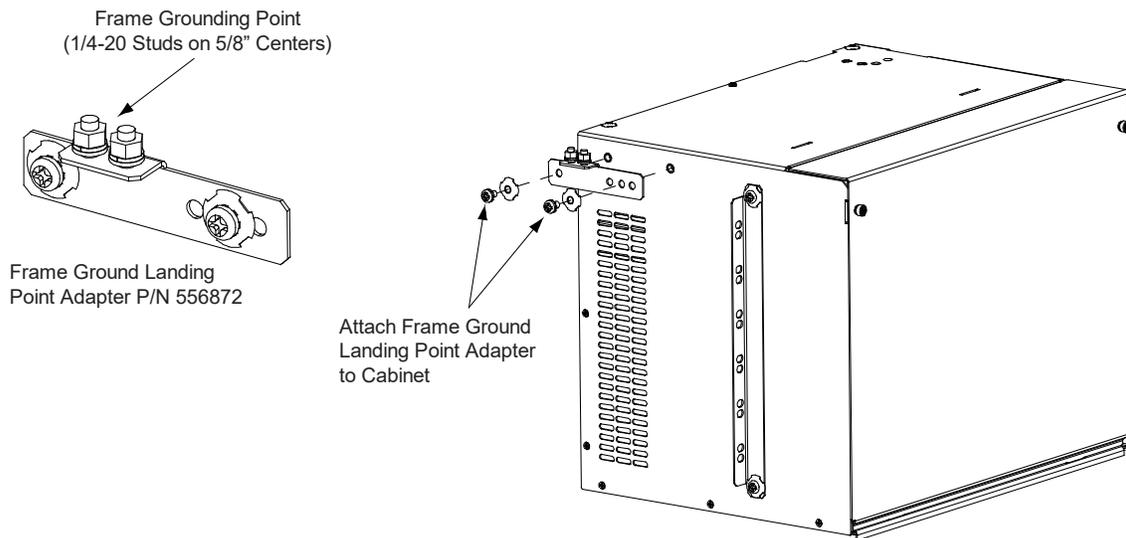


Ordering Notes

- 1) Order by Spec. No. 10032894 as required.
- 2) Also order four (4) batteries per battery cabinet per the following table.

Battery Manufacturer	Manufacturer P/N	Our P/N	Capacity Amp-Hours (8 Hr rate)	Weight (lb) per Battery
Energys	SBS B14	--	67Ah @C20	28

- 3) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



External Battery Disconnect Unit, P/N 535282

Features

- ◆ Battery disconnect unit with mounting tabs.
- ◆ Two 1/4-20 studs with hardware provided for installation of single hole battery lugs.
- ◆ One (10' long) alarm lead provided.

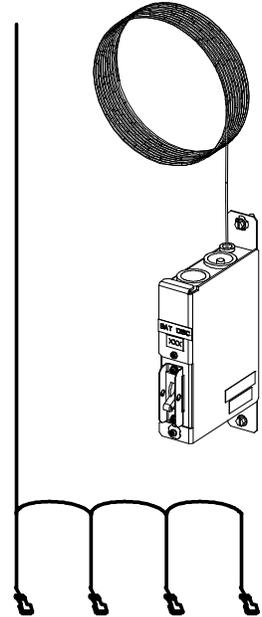
Restrictions

Circuit breakers are ordered separately.

Maximum number of battery disconnect units per system is three (3).

Ordering Notes

- 1) Order by P/N 535282 as required.
- 2) Order a circuit breaker for each battery disconnect unit from Table 16.
- 3) Also order two (2) P/N 245350815 lugs for each battery disconnect circuit breaker ordered.
- 4) Also order P/N 524384 jumper / alarm lead if more than one (1) battery disconnect units are to be used (daisy-chains the alarm terminal of up to three [3] battery disconnect units). (Section of alarm lead between battery disconnect units is 30", section of alarm lead between battery disconnect unit and system's alarm terminal is 84".)



Yellow Jumper/Alarm Lead (P/N 524384)
(for use when more than one Battery Disconnect Units are ordered)

Ampere Rating	P/N Electrical/Mechanical Trip ¹ (Black Handle)
60	256694700
70	256695100
75	256695500
100	256695900

Circuit Breaker Alarm Operation:

¹Provides an alarm during an electrical or manual trip condition.

Table 16
Battery Disconnect Unit Circuit Breakers

User Replaceable Components

Ordering Notes

- 1) Refer to Table 17.

Item	Part Number
Rectifier Module	1R482000e3
NCU Controller	1M830BNA
Controller IB2 Interface Board	MA4C5U31
Controller IB4 (second Ethernet port) Board	558076 (IB4 Board), 562804 (Complete Assembly, Internal) 561929 (Complete Assembly, External)
System Interface Board	562209

Table 17
User Replaceable Components

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

Relay Rack / Cabinet Frame Grounding Requirements

For relay rack / cabinet 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. 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 14 for lug selection.

Shelf Grounding Connection

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.

M4 frame ground studs are located on the rear of the system shelves.

Central Office Grounding Connection

Landing points are provided on the battery return bus for a central office ground lead (see Figure 11, Figure 12, or Figure 13). For central office 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.

Recommended CO ground wire size is 6 AWG.

Rectifier AC Input Connections

General

List 01 may be equipped with plug-in AC input connectors accessed from the front or rear of the system. List 02 is always equipped with plug-in AC input connectors accessed from the rear of the system. Mating connectors and cable assemblies or line cords are available (see "Rectifier AC Input Cable Assemblies and Rectifier AC Input Line Cords" on page 28).

List 01 may also be factory installed in a cabinet. When List 01 is factory installed in a cabinet, the factory interconnects the List 01 AC input terminals to a termination panel provided in the cabinet.

List 01, 02 Front or Rear Accessed AC Input Connectors

Refer to Table 18 for recommended AC input branch circuit protection when using the supplied rectifier AC input cable assemblies.

Refer to Table 19 for recommended AC input branch circuit protection when using the supplied rectifier AC input line cords.

Refer to Figure 1 and Figure 2 for an illustration.

List 01 Factory Installed in a Cabinet

Table 20 is provided for reference when List 01 is factory installed in a cabinet. Refer to the cabinet documentation for specific AC input wiring information.

Recommended Rectifier AC Input Branch Circuit Protection (Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz) Supplied Unterminated AC Input Cable Assemblies (see “Rectifier AC Input Cable Assemblies and Rectifier AC Input Line Cords” on page 28) (One AC Input Branch Circuit per Two Rectifier Modules)		
Input Voltage	Input Current ⁽²⁾	Overcurrent Protection ⁽¹⁾
120 VAC	18 A	25 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 18
Recommended Rectifier AC Input Branch Circuit Protection
(Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz)
Supplied Unterminated AC 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 “Rectifier AC Input Cable Assemblies and Rectifier AC Input Line Cords” on page 28) (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 19
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

Recommended Rectifier AC Input Branch Circuit Protection (Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz) (When used with 562643 for factory wiring to a Cabinet) (One AC Input Branch Circuit per One Rectifier Module)		
Input Voltage	Input Current ⁽²⁾	Overcurrent Protection ⁽¹⁾
120 VAC	9 A	15 A
208 VAC	10 A	15 A
240 VAC	8.8 A	15 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 20
 Recommended Rectifier AC Input Branch Circuit Protection
 (Nominal 120 VAC / 208 VAC / 240 VAC, Single Phase, 50 Hz / 60 Hz)
 (When Used with 562643 for Factory Wiring to a Cabinet)
 (One AC Input Branch Circuit per One Rectifier Module)

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List 01 Front Accessed AC Input Connectors

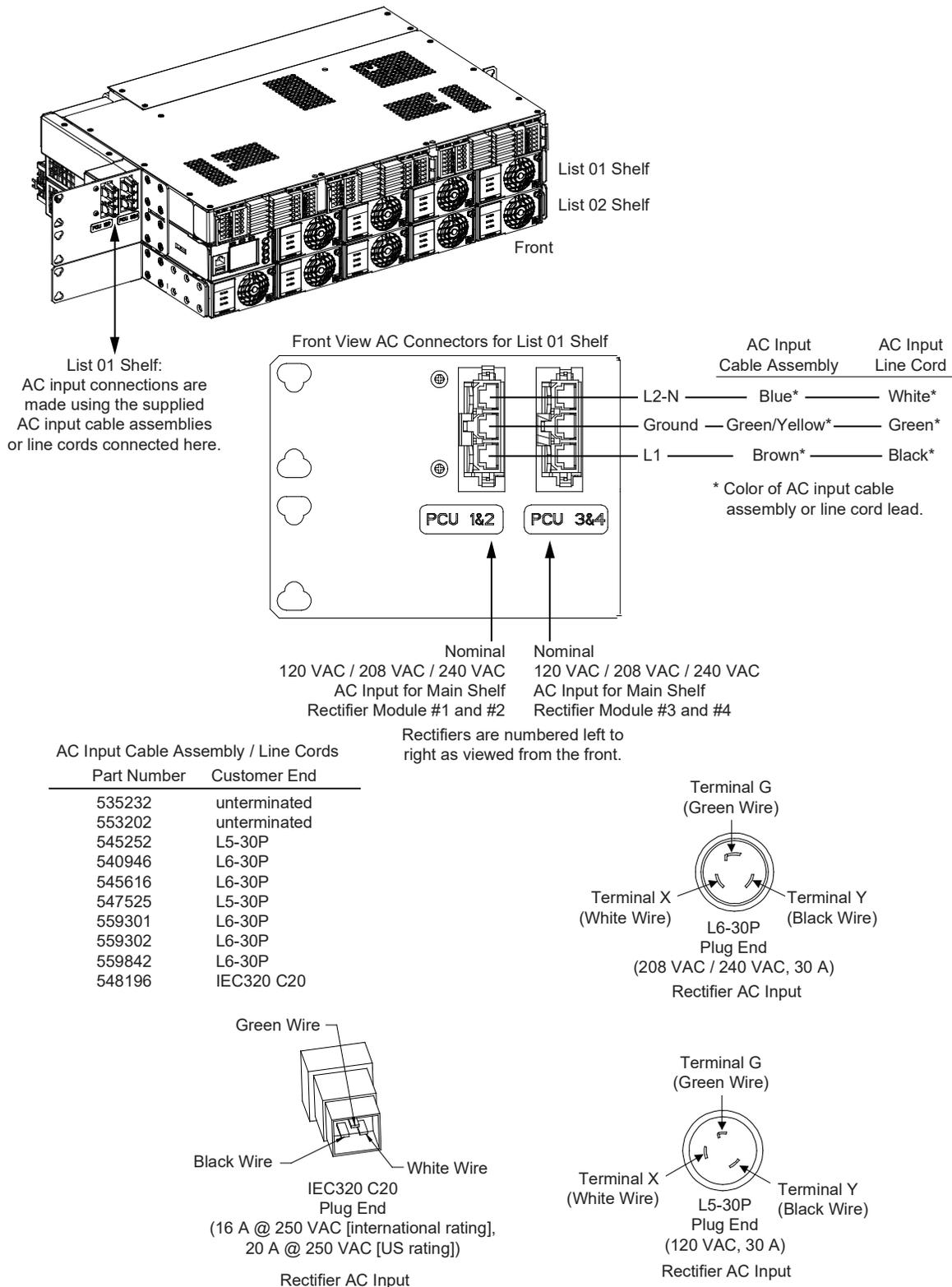
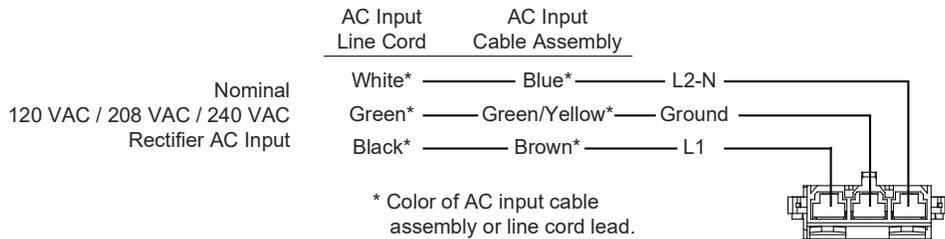
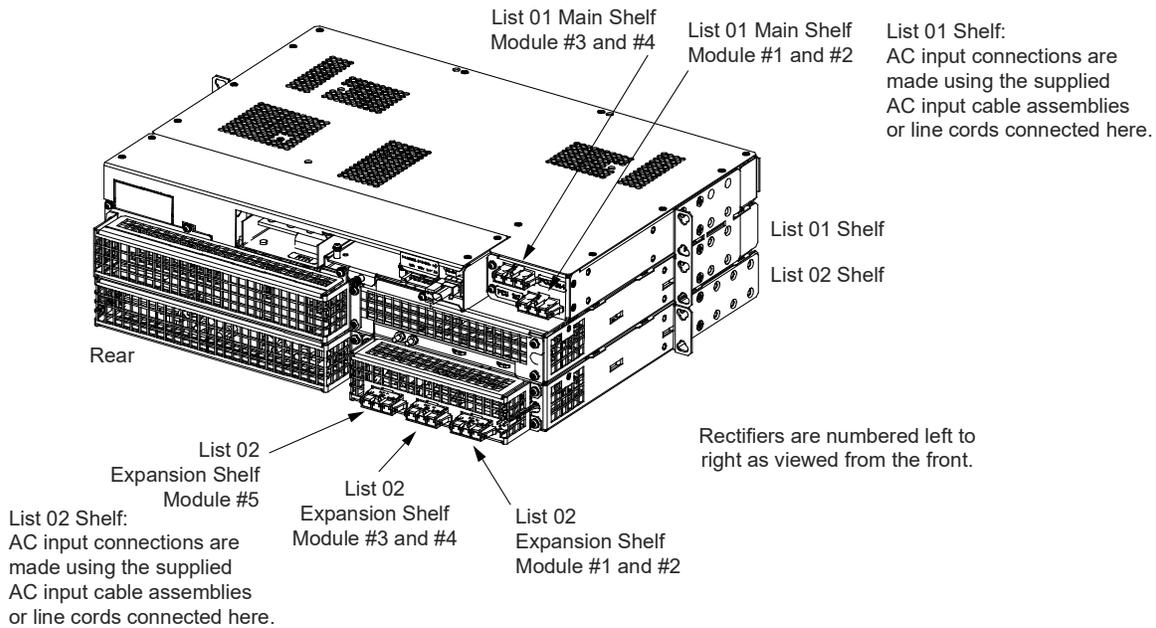


Figure 1
List 01 Front Accessed AC Input Connectors

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List 01, 02 Rear Accessed AC Input Connectors



AC Input Cable Assembly / Line Cords

Part Number	Customer End
535232	unterminated
553202	unterminated
545252	L5-30P
540946	L6-30P
545616	L6-30P
547525	L5-30P
559301	L6-30P
559302	L6-30P
559842	L6-30P
548196	IEC320 C20

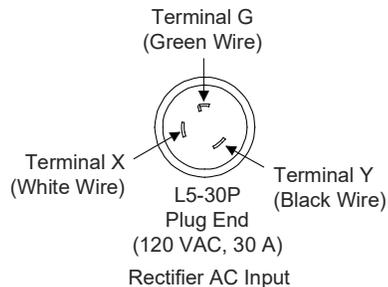
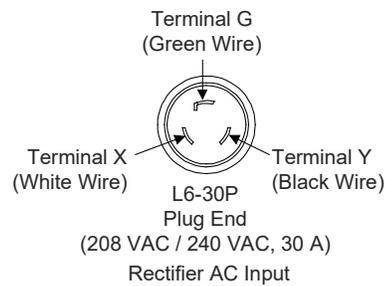
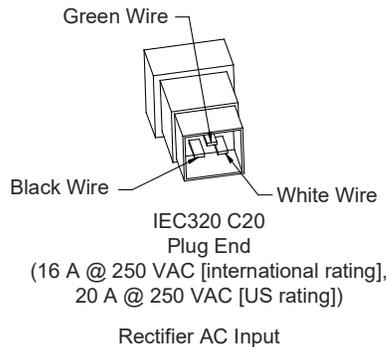


Figure 2
Rear Accessed AC Input Connectors

External Alarm, Reference, Monitoring, and Control Connections

General

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 Connections Locations

Refer to Figure 3.

System Interface Board

Refer to Figure 4.

IB2 (Controller Interface Board)

Refer to Figure 5.

Circuit Breaker Alarm Connections to External Battery Disconnect Units

Refer to Figure 6.

Circuit Breaker Alarm Connections to Battery Disconnect Circuit Breakers on Battery Trays

Refer to Figure 7.

Circuit Breaker Alarm Connections to Battery Disconnect Circuit Breakers on Battery Cabinets

Refer to Figure 8.

IB4 Board (NCU Controller Second Ethernet Port Board)

Refer to “NCU Controller Ethernet Connection (if required)” on page 59.

RS-485 Connector

The RS-485 connector is located near the IB4 or IB2 board. It is a dangling connector with a red and black wire harness.

Red Wire (Pin 1): RS485+

Black Wire (Pin 2): RS485-

Use cable P/N 547674 to interface with SM-AC, SM-BAT, SM-RC, or SM-IO supervisory modules.

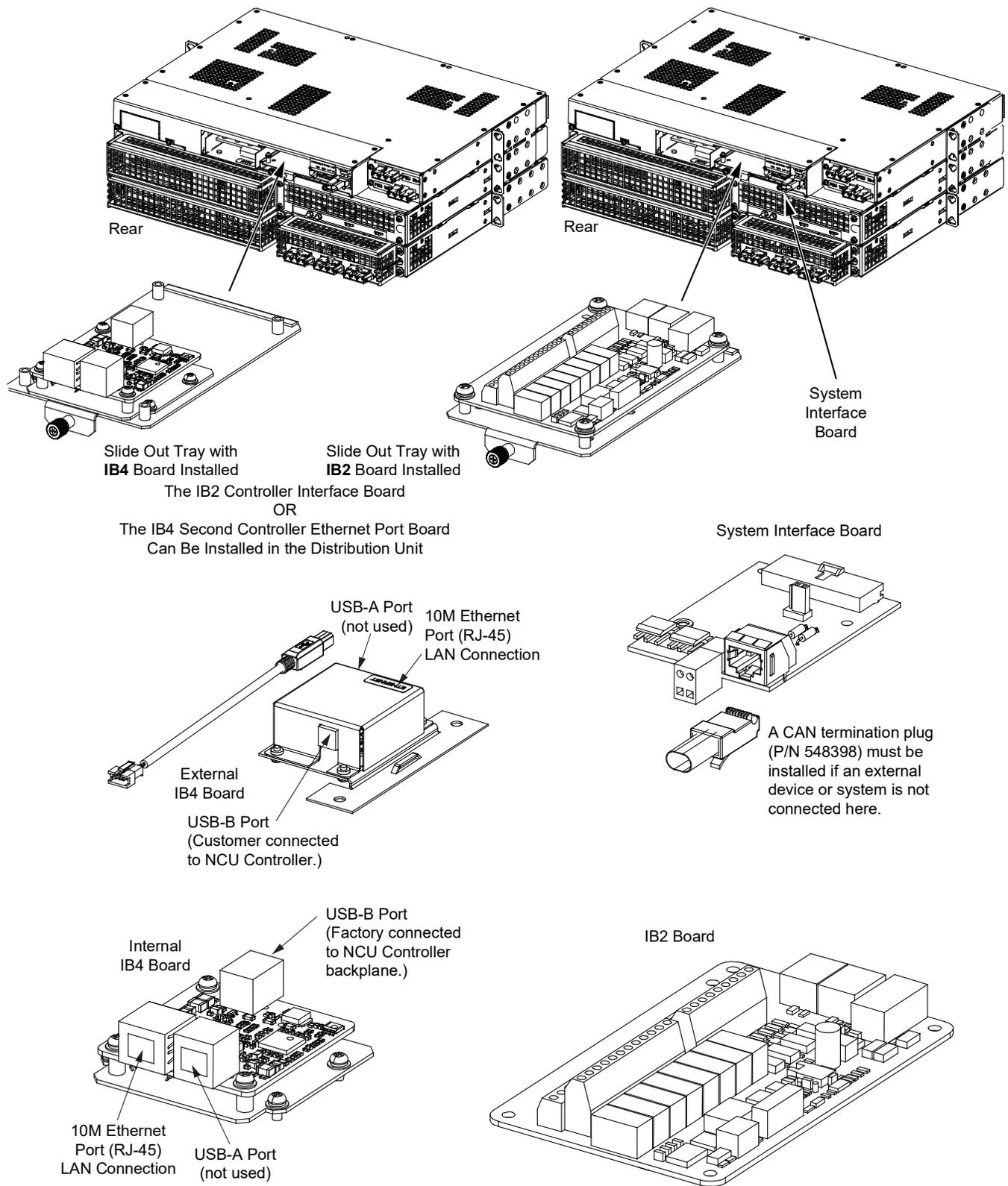
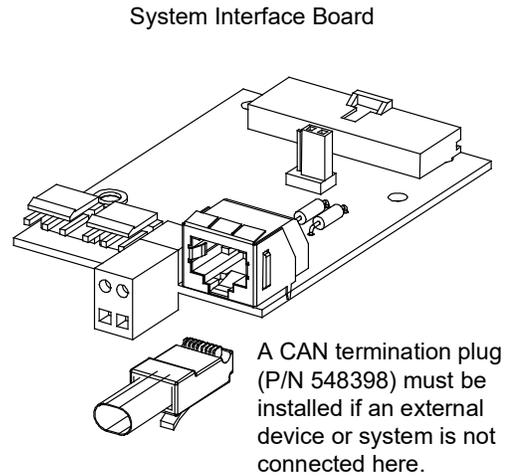
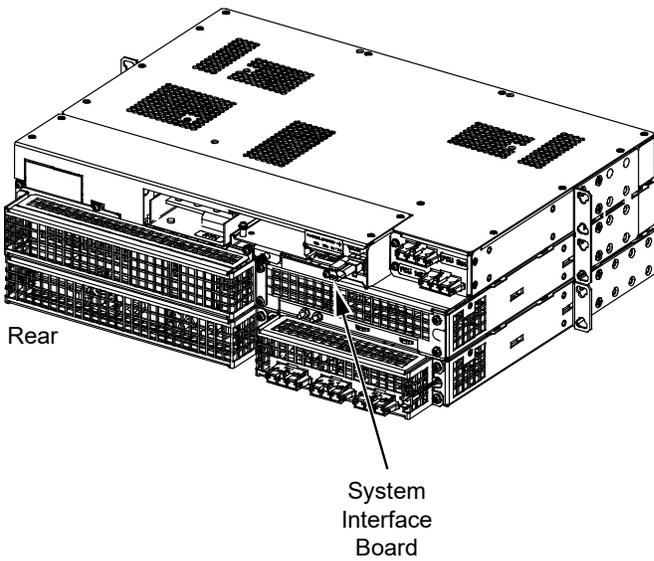
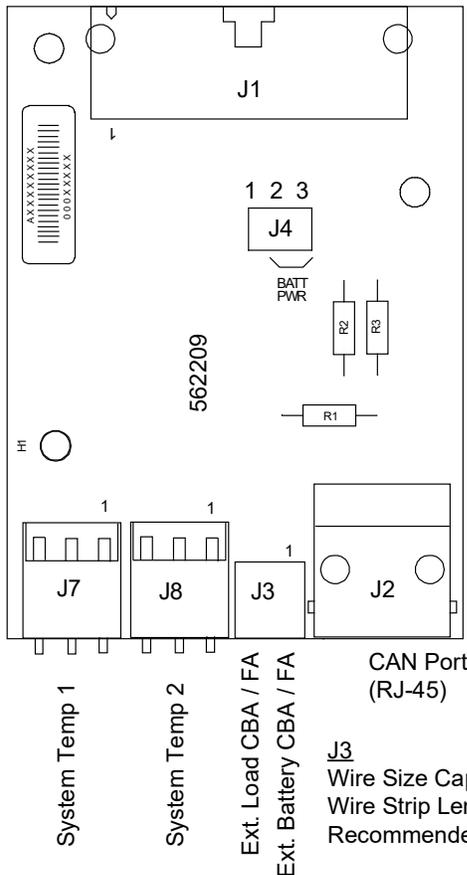


Figure 3
External Alarm, Reference, Monitoring, and Control Connections Locations

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System Interface Board P/N 562209



J4
Selects to power controller from “Battery Power” or not if a battery LVD contactor is furnished.

No	Battery	Battery
Pwr	Pwr	Pwr

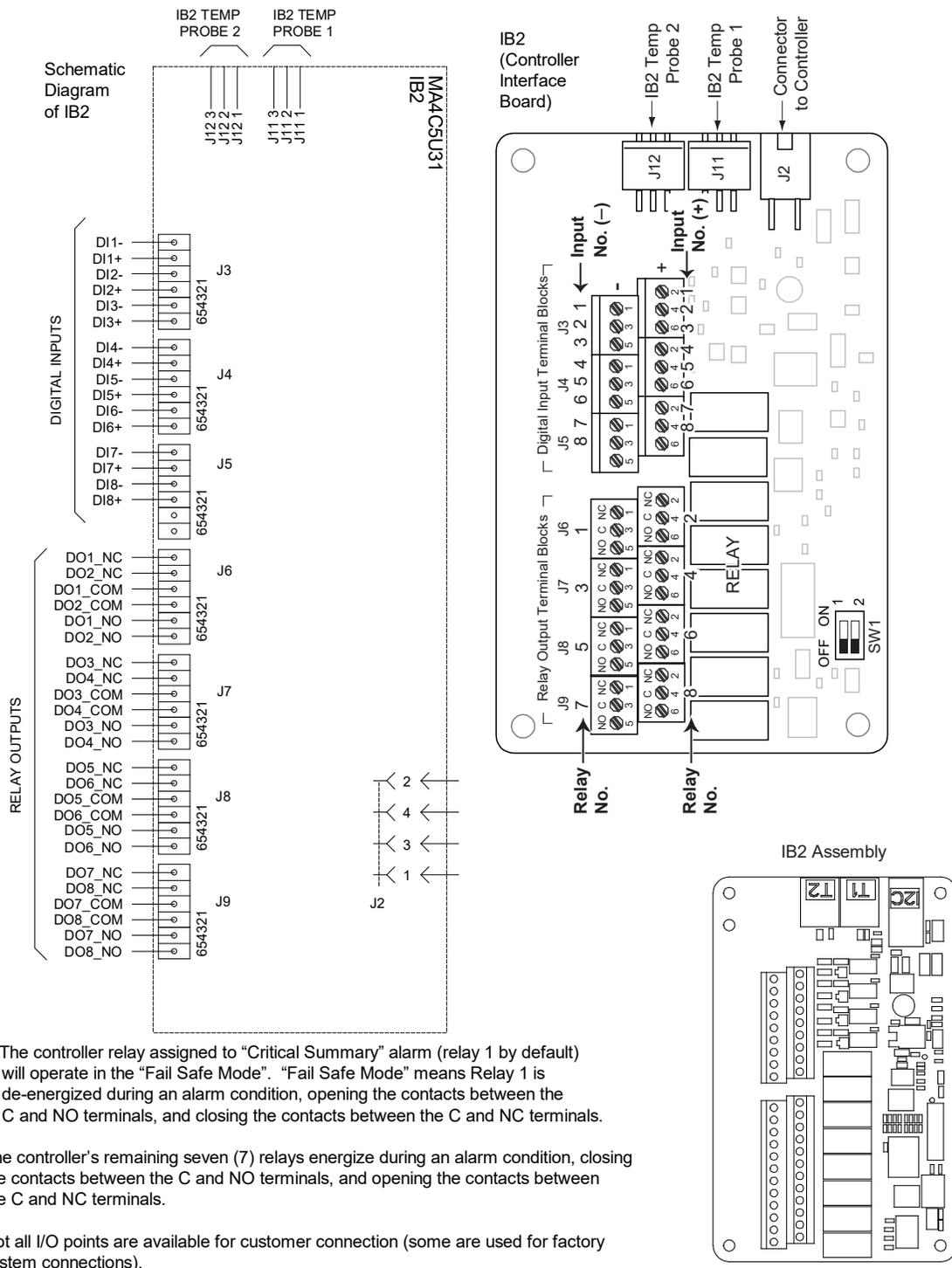
J4

1 2 3

Shorting Jumper

J3
Wire Size Capacity: 16 AWG to 30 AWG.
Wire Strip Length: 0.32 inch.
Recommended Torque: 2.3 in-lbs.

Figure 4
External Alarm, Reference, Monitoring, and Control Connections,
System Interface Board P/N 562209



* The controller relay assigned to “Critical Summary” alarm (relay 1 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 controller’s 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.

Not all I/O points are available for customer connection (some are used for factory system connections).

J3-J9:

Wire Size Capacity: 16 AWG to 26 AWG.

Wire Strip Length: 0.20 inch.

Recommended Torque: 2.2 in-lbs.

Figure 5
External Alarm, Reference, Monitoring, and Control Connections, IB2 (Controller Interface Board)

Alarm Wiring to a Single External Battery Disconnect Unit

Procedure

1. Connect YELLOW lead exiting top of Battery Disconnect Unit to terminal 1 of J3 located on the System Interface Board. Remove quick connect terminal first. The YELLOW lead is factory connected to circuit breaker “C (Common)” alarm terminal in the Battery Disconnect Unit.
2. There is NO connection to the circuit breaker “NO (Normally Open)” alarm terminal.
3. Connect loose end of Jumper factory connected to bottom terminal on circuit breaker to circuit breaker “NC (Normally Closed)” alarm terminal.

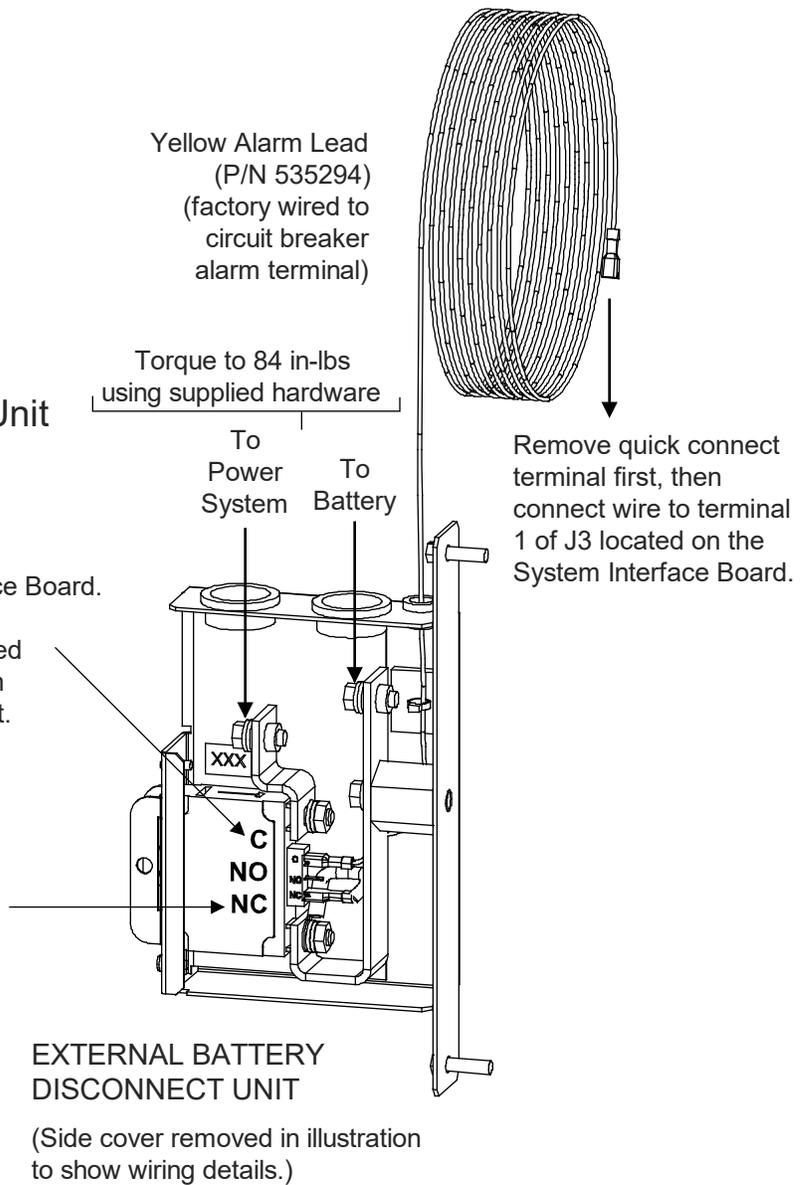
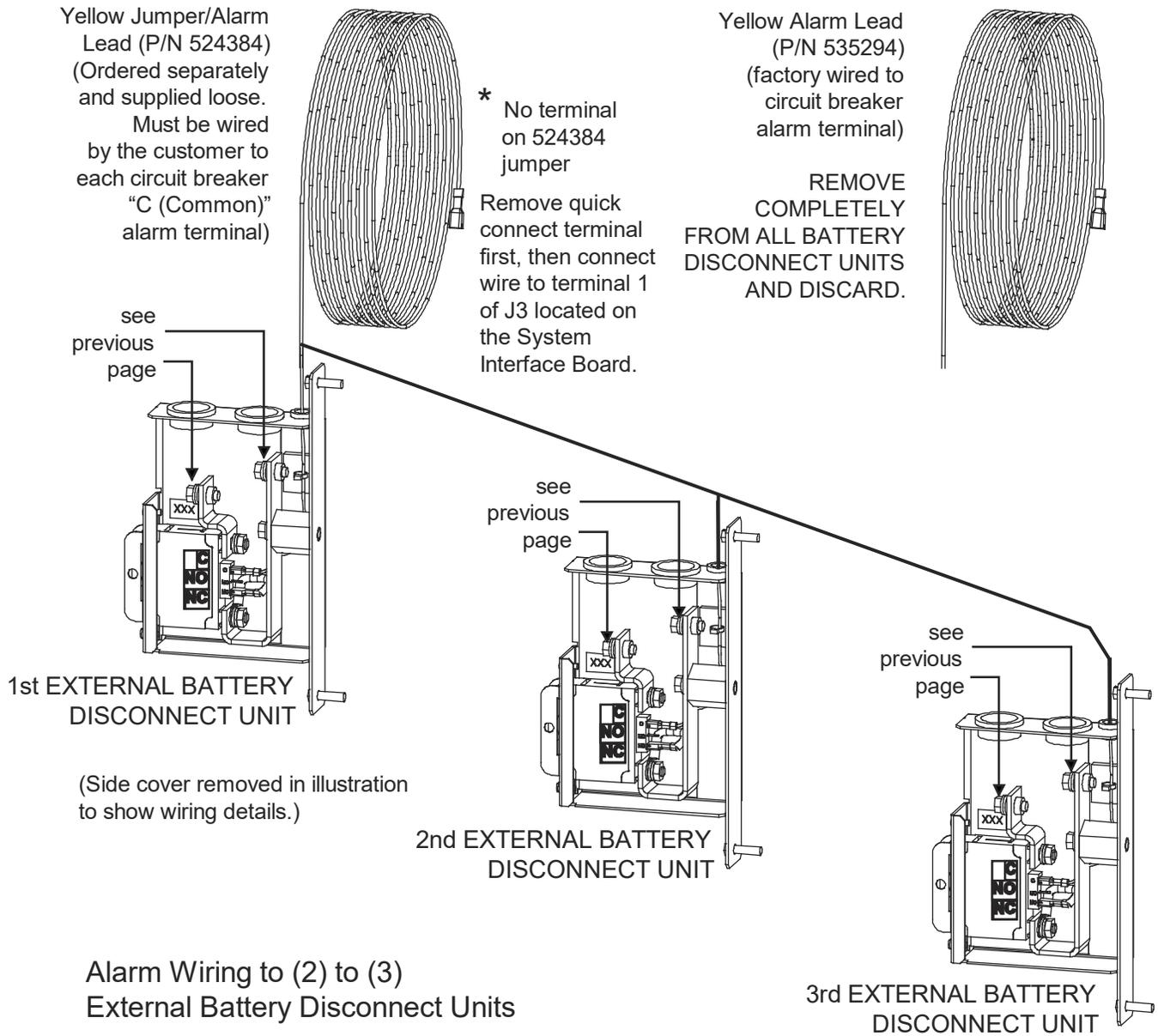


Figure 6

Circuit Breaker Alarm Connections to External Battery Disconnect Units (cont'd on next page)



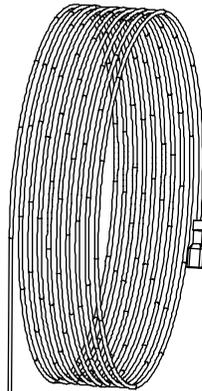
Alarm Wiring to (2) to (3) External Battery Disconnect Units

Procedure

1. Completely remove YELLOW lead exiting top of ALL Battery Disconnect Units and discard.
2. Connect separately ordered YELLOW jumper/alarm lead (P/N 524384) to circuit breaker "C (Common)" alarm terminals in ALL Battery Disconnect Units. Connect remaining end to terminal 1 of J3 located on the System Interface Board.
3. There is NO connection to the circuit breaker "NO (Normally Open)" alarm terminal.
4. In ALL Battery Disconnect Units, connect loose end of Jumper factory connected to bottom terminal on circuit breaker to circuit breaker "NC (Normally Closed)" alarm terminal.

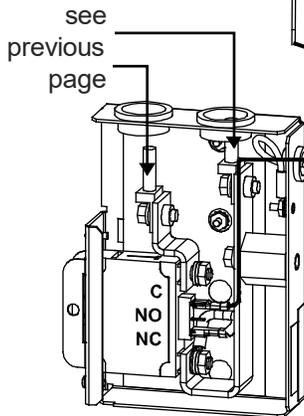
Figure 6
Circuit Breaker Alarm Connections to External Battery Disconnect Units (cont'd from previous page)

Yellow Jumper/Alarm Lead (P/N 524384)
(Ordered separately and supplied loose.
Must be wired by the customer to each circuit breaker "C (Common)" alarm terminal)



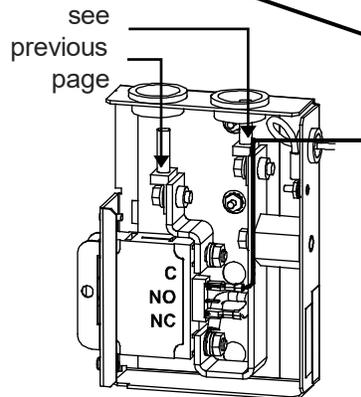
* No terminal on 524384 jumper

Remove quick connect terminal first, then connect wire to terminal 1 of J3 located on the System Interface Board.

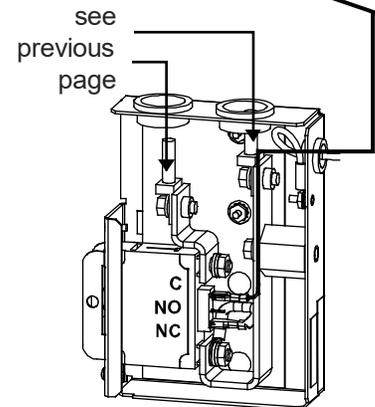


1st BATTERY TRAY BATTERY DISCONNECT CIRCUIT BREAKER

(Side cover removed in illustration to show wiring details.)



2nd BATTERY TRAY BATTERY DISCONNECT CIRCUIT BREAKER (if furnished)



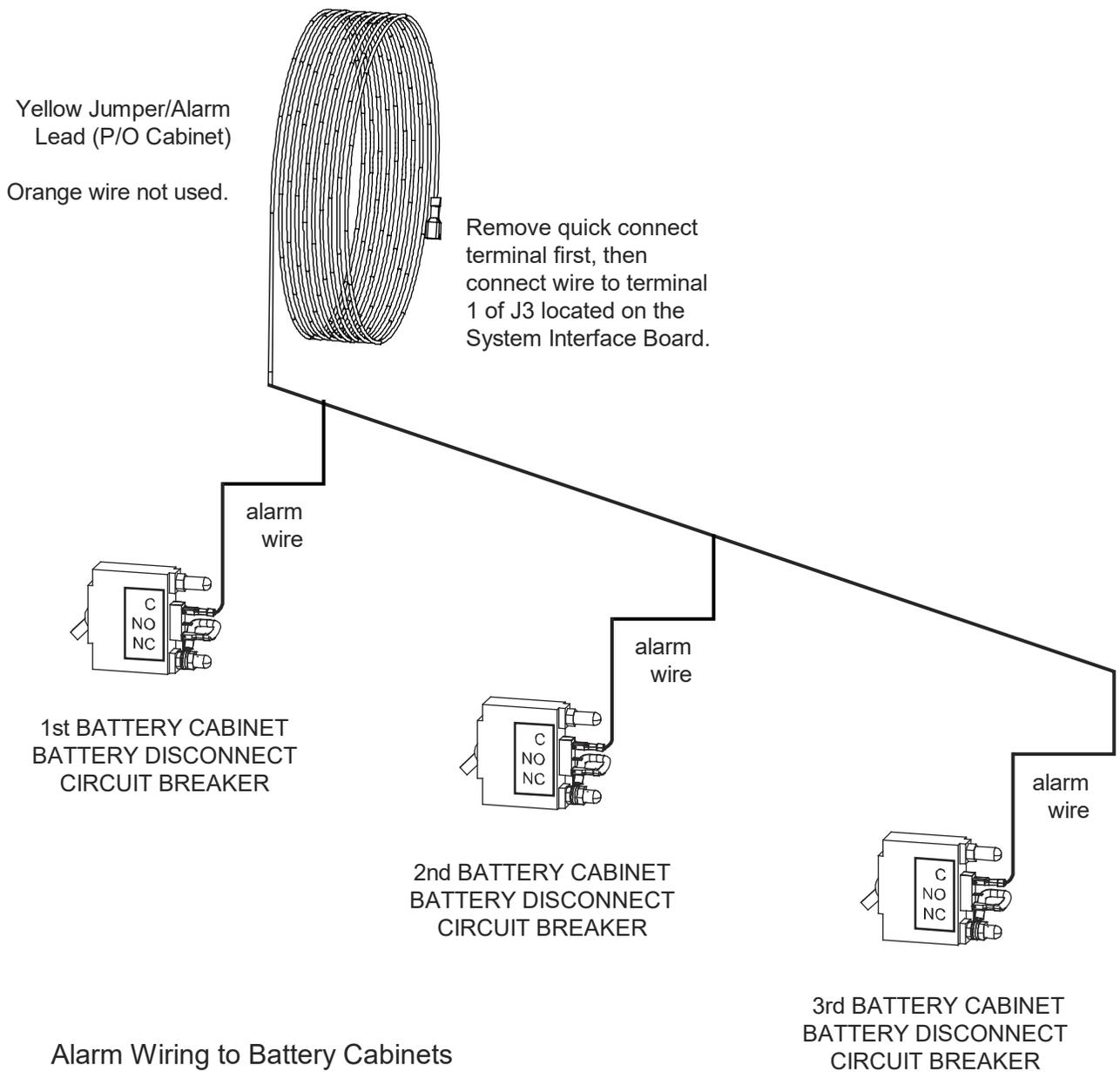
3rd BATTERY TRAY BATTERY DISCONNECT CIRCUIT BREAKER (if furnished)

Alarm Wiring to Battery Disconnect Circuit Breakers when (1) to (3) Battery Trays are Used

Procedure

1. Connect kit-supplied YELLOW jumper/alarm lead (P/N 524384) to circuit breaker "C (Common)" alarm terminals on ALL Battery Disconnect Circuit Breakers. Connect remaining end to terminal 1 of J3 located on the System Interface Board.
2. There is NO connection to the circuit breaker "NO (Normally Open)" alarm terminal.
3. On ALL Battery Disconnect circuit breakers, there should be a factory connected Jumper connected from the bottom terminal on the circuit breaker to the circuit breaker "NC (Normally Closed)" alarm terminal.

Figure 7
Circuit Breaker Alarm Connections to Battery Disconnect Circuit Breakers on Battery Trays



Alarm Wiring to Battery Cabinets

Procedure

1. Remove quick connect terminal from YELLOW battery cabinet alarm lead and connect to terminal 1 of J3 located on the System Interface Board.

Figure 8
Circuit Breaker Alarm Connections to Battery Disconnect Circuit Breakers on Battery Cabinets

NCU Controller Ethernet Connection (if required)

To NCU Front Panel

The NCU Controller provides a Web Interface via an Ethernet connection to a TCP/IP network. This interface can be accessed locally on a computer or remotely through a network. An RJ-45 Ethernet jack is provided on the front of the NCU.

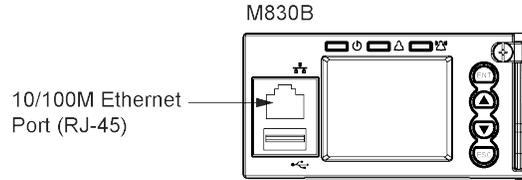


Figure 9
NCU Ethernet Port

Note: If your system has an IB4 board, DO NOT connect your Local Area Network (LAN) to the NCU front Ethernet port.

To IB4 Board (if furnished)

Your system may be furnished with an internal or external IB4 board. The IB4 board provides a second Ethernet port. The Ethernet port located on the NCU Controller’s front panel can ONLY 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).

Note: If your system has an IB4 board, DO NOT connect your Local Area Network (LAN) to the NCU front Ethernet port.

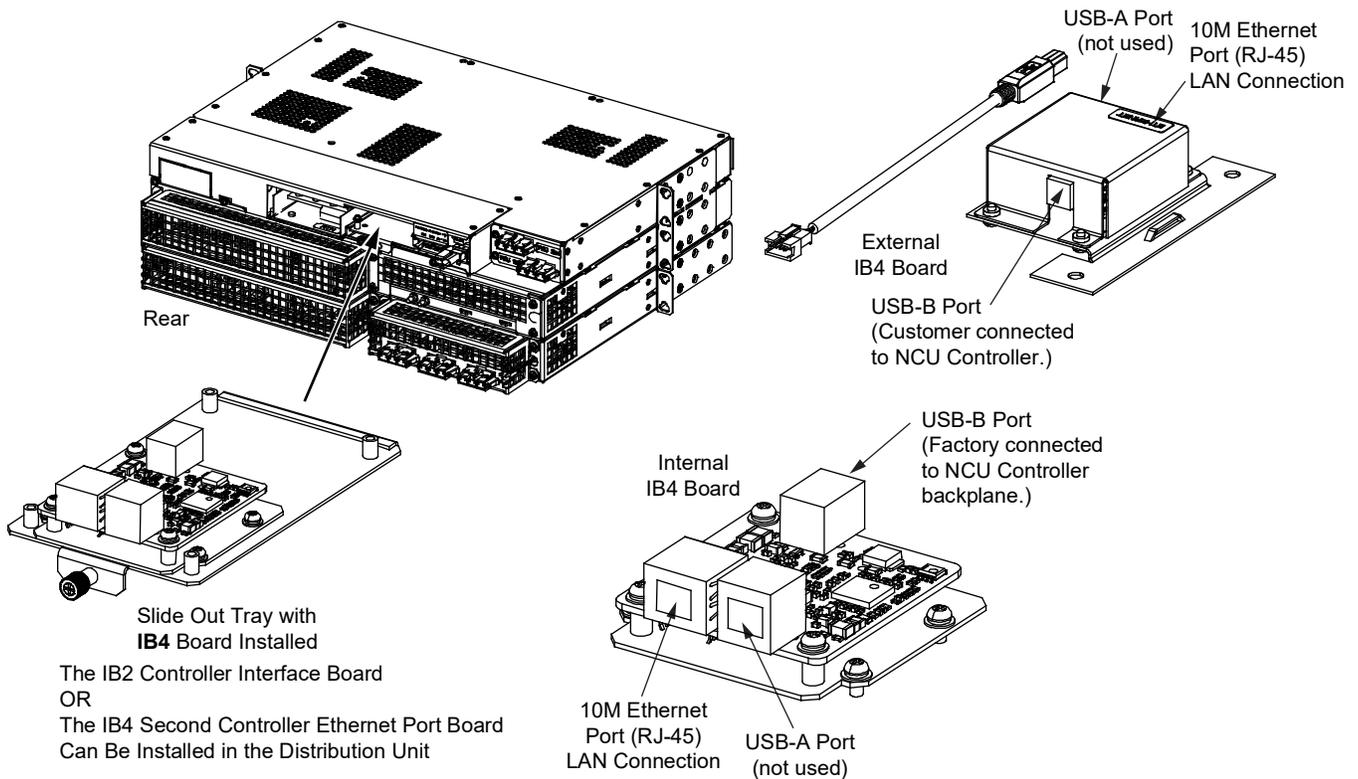


Figure 10
IB4 Board NCU Controller Second Ethernet Port

Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring

List BF and NF

Refer to Figure 11.

CO Ground Wiring

Refer to “Central Office Grounding Connection” on page 46.

Load Distribution Wiring to GMT Fuse Blocks

Load and load return leads are connected to screw-type terminal blocks located on the front of the distribution unit. Refer to Figure 11 for terminal block wire size capacity and recommended torque.

The rating of the distribution device determines the wire size requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes.

Input Battery Wiring

Input battery and battery return leads terminated in two-hole lugs are connected to threaded studs located on the rear inside of the distribution unit. Refer to Figure 11 for stud size/spacing and recommended torque.

Battery wire size and lug requirements are determined by site requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes. All lugs for customer connections must be ordered separately. See Table 14 for available lugs. Lugs should be crimped per lug manufacturer's specifications.

List BC, LC, and NC

Refer to Figure 12.

CO Ground Wiring

Refer to “Central Office Grounding Connection” on page 46.

Load Distribution Wiring to GMT Fuse Blocks

Load and load return leads are connected to screw-type terminal blocks located on the front of the distribution unit. Refer to Figure 12 for terminal block wire size capacity and recommended torque.

The rating of the distribution device determines the wire size requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes.

Load Distribution Wiring to Distribution Circuit Breakers

Load distribution and load return leads terminated in two-hole lugs are connected to threaded studs located on the front sides of the distribution unit. Refer to Figure 12 for stud size/spacing and recommended torque.

Load wire size and lug requirements are determined by the circuit breaker rating. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes. All lugs for customer connections must be ordered separately. For wire size and lug selection, refer to Table 14, Table 15, and Table 21. Lugs should be crimped per lug manufacturer's specifications.

Input Battery Wiring

Input battery and battery return leads terminated in two-hole lugs are connected to threaded studs located on the rear inside of the distribution unit. Refer to Figure 12 for stud size/spacing and recommended torque.

Battery wire size and lug requirements are determined by site requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes. All lugs for customer connections must be ordered separately. See Table 14 for available lugs. Lugs should be crimped per lug manufacturer's specifications.

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List BA and NA

Refer to Figure 13.

CO Ground Wiring

Refer to “Central Office Grounding Connection” on page 46.

Load Distribution Wiring to GMT Fuse Blocks

Load and load return leads are connected to screw-type terminal blocks located on the front of the distribution unit. Refer to Figure 13 for terminal block wire size capacity and recommended torque.

The rating of the distribution device determines the wire size requirements. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes.

Load Distribution Wiring to Distribution Circuit Breakers

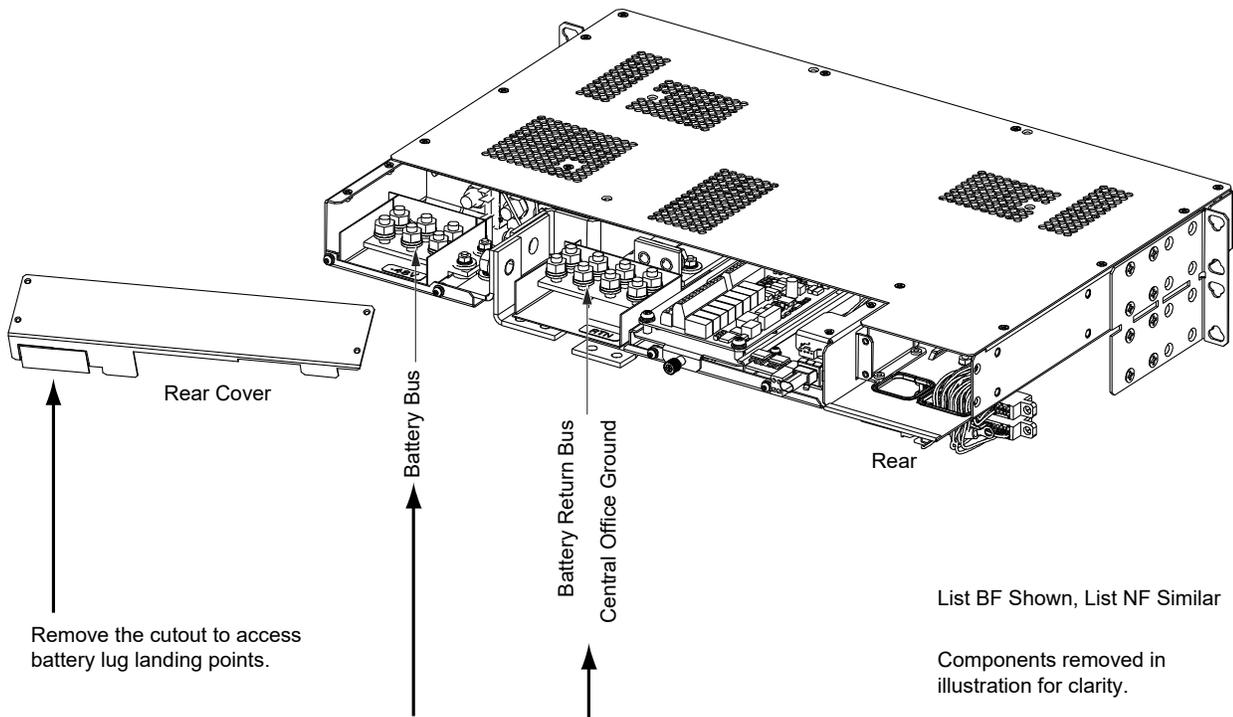
Load distribution and load return leads terminated in two-hole lugs are connected to threaded studs located on the left front side (as viewed from the front) of the distribution unit. Refer to Figure 13 for stud size/spacing and recommended torque.

Load wire size and lug requirements are determined by the circuit breaker rating. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes. All lugs for customer connections must be ordered separately. For wire size and lug selection, refer to Table 14, Table 15, and Table 21. Lugs should be crimped per lug manufacturer's specifications.

Input Battery Wiring to Distribution Circuit Breakers

Input battery and battery return leads terminated in two-hole lugs are connected to threaded studs located on the right front side (as viewed from the front) of the distribution unit. Refer to Figure 13 for stud size/spacing and recommended torque.

Battery wire size and lug requirements are determined by the circuit breaker rating. Refer to the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC) and applicable local codes. All lugs for customer connections must be ordered separately. For wire size and lug selection, refer to Table 14, Table 15, and Table 21. Lugs should be crimped per lug manufacturer's specifications.



List BF Shown, List NF Similar

Components removed in illustration for clarity.

-48 VDC SUPPLY GND RTN
Battery, Battery Return, CO Ground:
 1/4-20 studs on 5/8" centers for installation of customer provided two-hole lugs.
 Maximum Lug Width: 0.84 inches.
 Hardware:
 1/4-20 Hex Nut
 1/4" Lock Washer
 1/4" Flat Washer
 Torque to 58 in-lbs.

WARNING!
 Observe proper polarity when making battery and load connections.

-48 VDC Load Terminal Blocks:
 Wire Size Capacity:
 22 AWG to 12 AWG.
 Recommended Torque:
 4.4 in-lbs.

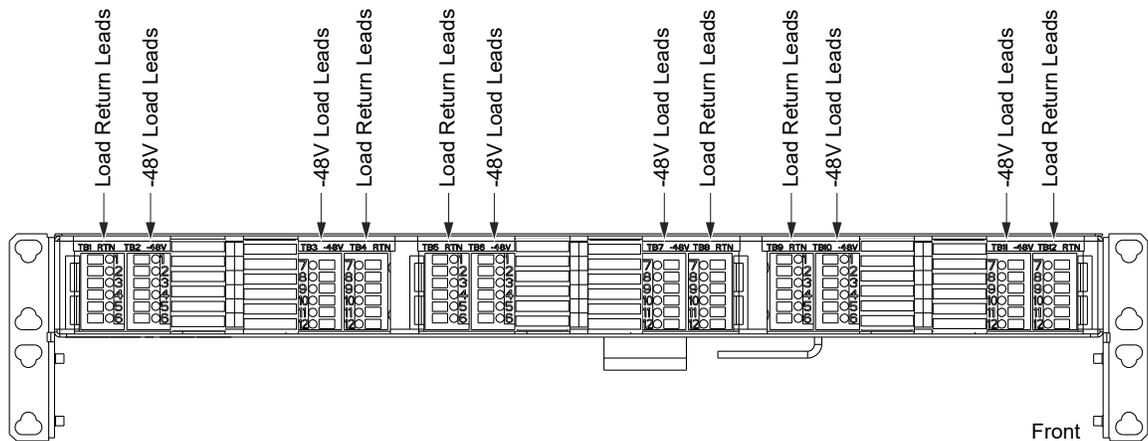


Figure 11
 Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring (Lists BF and NF)

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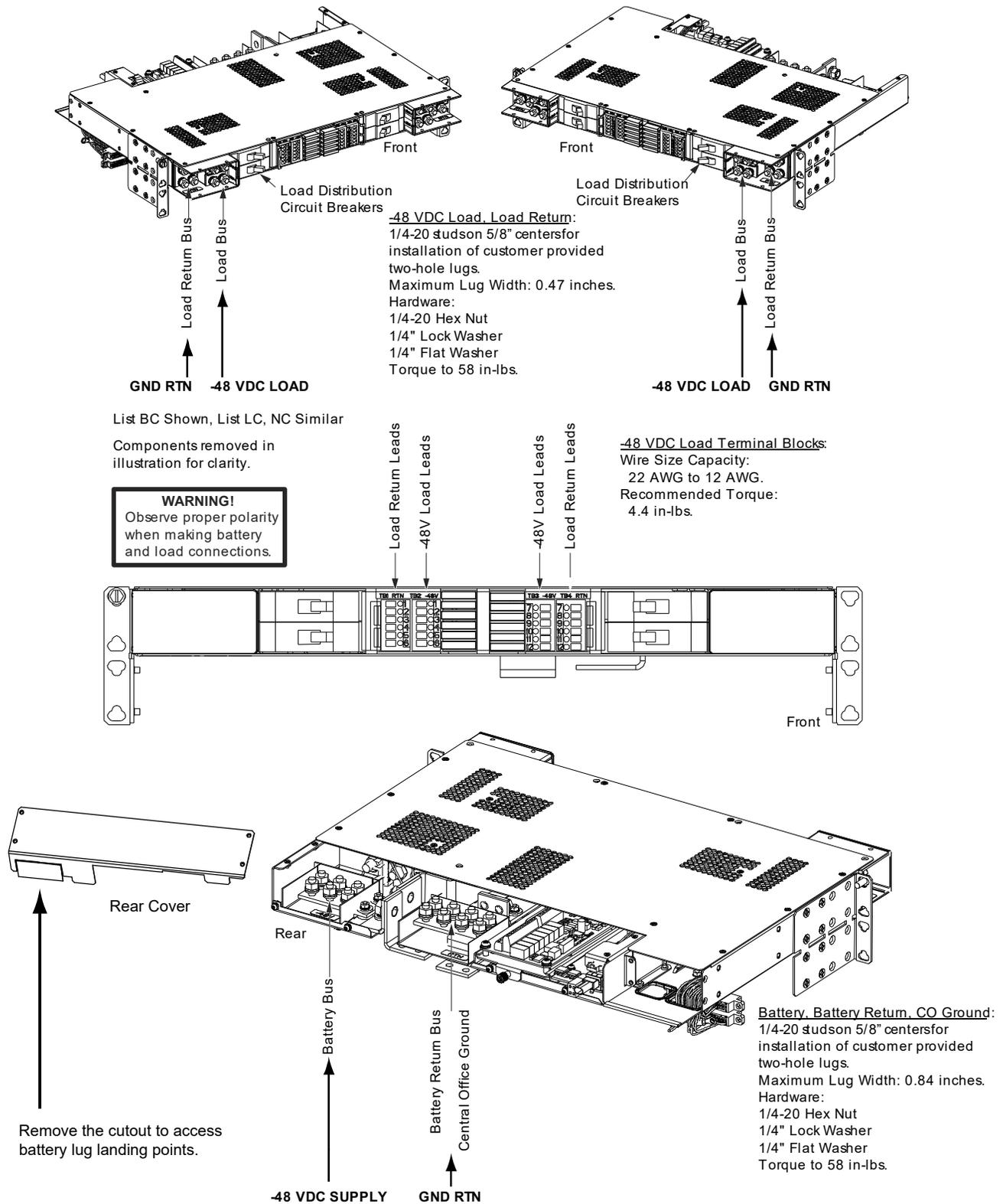
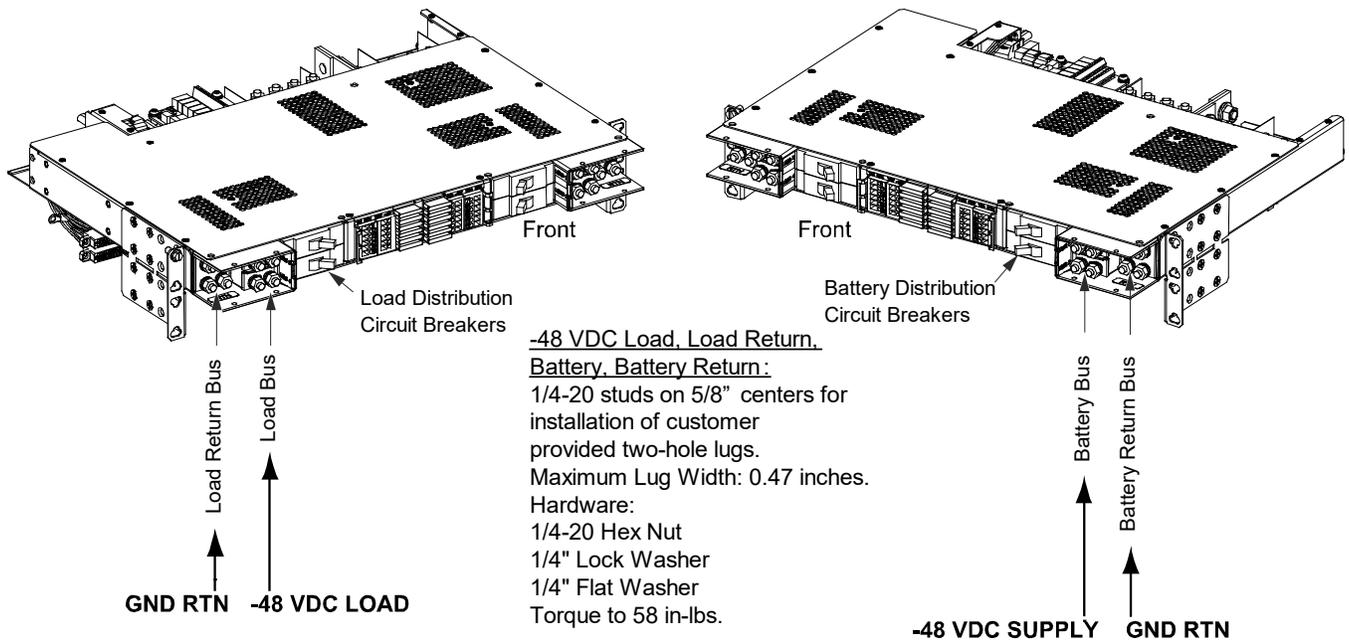


Figure 12
 Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring (Lists BC, LC and NC)

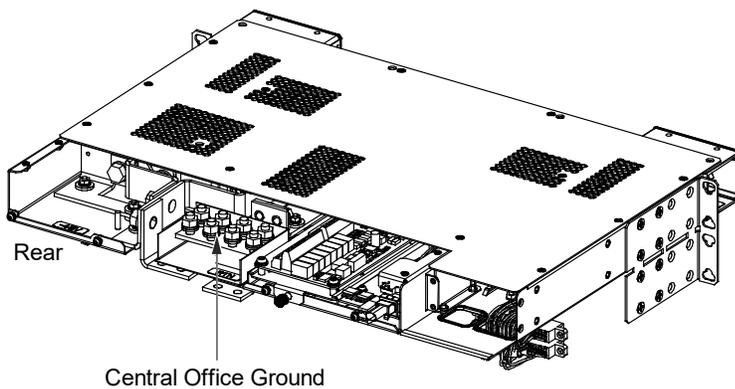
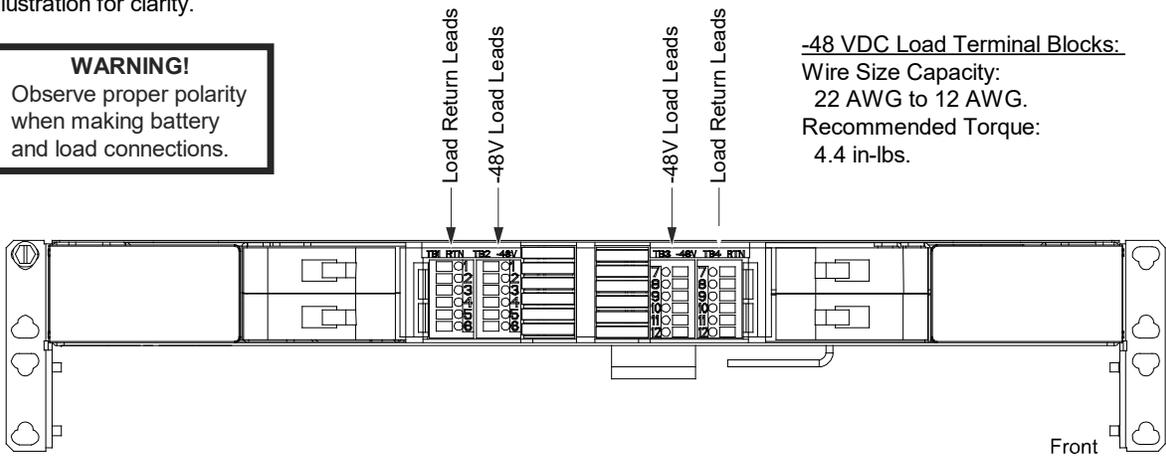
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List BA shown, List NA similar.

Components removed in illustration for clarity.

WARNING!
Observe proper polarity when making battery and load connections.



CO Ground:
1/4-20 studs on 5/8" centers for installation of customer provided two-hole lugs. Maximum Lug Width: 0.84 inches.

Hardware:

1/4-20 Hex Nut

1/4" Lock Washer

1/4" Flat Washer

Torque to 58 in-lbs.

Figure 13
Load Distribution Wiring, Input Battery Wiring, and CO Ground Wiring (Lists BA and NA)

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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, 10 A	37 ^(3, 4, 5)	58 ^(3, 4, 5)	93 ^(3, 4, 5)	148 ^(3, 4, 5)	236 ^(3, 4, 5)	376 ^(3, 4, 5)	597 ^(3, 4, 5)	--
15 A	24 ^(3, 4)	39 ^(3, 4, 5)	62 ^(3, 4, 5)	99 ^(3, 4, 5)	157 ^(3, 4, 5)	250 ^(3, 4, 5)	398 ^(3, 4, 5)	--
20 A	--	29 ^(3, 4)	46 ^(3, 4, 5)	74 ^(3, 4, 5)	118 ^(3, 4, 5)	188 ^(3, 4, 5)	298 ^(3, 4, 5)	--
25 A	--	--	37 ^(3, 4)	59 ^(3, 4, 5)	94 ^(3, 4, 5)	150 ^(3, 4, 5)	239 ^(3, 4, 5)	--
30 A	--	--	31 ^(3, 4)	49 ^(3, 4, 5)	78 ^(3, 4, 5)	125 ^(3, 4, 5)	199 ^(3, 4, 5)	--
35 A	--	--	--	42 ^(3, 4)	67 ^(3, 4, 5)	107 ^(3, 4, 5)	170 ^(3, 4, 5)	--
40 A	--	--	--	37 ^(3, 4)	59 ^(3, 4, 5)	94 ^(3, 4, 5)	149 ^(3, 4, 5)	--
45 A	--	--	--	33 ^(3, 4)	52 ^(3, 4)	83 ^(3, 4)	132 ^(3, 4)	--
50 A	--	--	--	29 ⁽³⁾	47 ^(3, 4)	75 ^(3, 4)	119 ^(3, 4)	--
60 A	--	--	--	--	39 ^(3, 4)	62 ^(3, 4)	99 ^(3, 4)	--
70 A	--	--	--	--	--	53 ^(3, 4)	85 ^(3, 4)	135 ⁽³⁾
75 A	--	--	--	--	--	50 ^(3, 4)	79 ^(3, 4)	126 ⁽³⁾
80 A	--	--	--	--	--	47 ⁽³⁾	74 ^(3, 4)	118 ⁽³⁾
Recommended Crimp Lug								
Lug	245342300 ⁽⁶⁾	245342300 ⁽⁶⁾	245342300 ⁽⁶⁾	245390200 ⁽⁶⁾	245346700 ⁽⁶⁾	245346800 ⁽⁶⁾	140541 ⁽⁶⁾	245393500 ⁽⁷⁾

Table 21 (cont'd on next page)
Recommended Battery and Load Distribution Wire Size and Lug Selection
for Bullet Nose-Type Circuit Breaker

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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	--	66 ^(3,4)	105 ⁽³⁾	133 ⁽³⁾	--	--	--	--
100 A	--	59 ^(3,4)	95 ⁽³⁾	119 ⁽³⁾	--	--	--	--
125 A ⁽⁷⁾	--	--	76 ⁽³⁾	95 ⁽³⁾	120 ⁽³⁾	--	--	--
150 A ⁽⁷⁾	--	--	63 ⁽³⁾	79 ⁽³⁾	100 ⁽³⁾	--	--	--
Recommended Crimp Lug								
Lug	--	140541 ⁽⁶⁾	245393500 ⁽⁷⁾	245393600 ⁽⁷⁾	245393700 ⁽⁷⁾	--	--	--

Table 21 (cont'd from previous page, cont'd on next page)
Recommended Battery and Load Distribution Wire Size and Lug Selection
for Bullet Nose-Type Circuit Breaker

Notes to Table 21:

- 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 40 °C Ambient Operating Temperature.
- ⁴ Wire Size / Loop Length Combination Calculated using 50 °C Ambient Operating Temperature.
- ⁵ Wire Size / Loop Length Combination Calculated using 65 °C Ambient Operating Temperature.
- ⁶ These lugs are two-hole for 1/4" bolt clearance on 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.
- ⁷ Special application crimp lug / strap combination (see "Special Application Crimp Lug / Strap Combination" on page 40).

SPECIFICATIONS

1. SYSTEM

1.1 DC Output Ratings

1.1.1 See “General Specifications” starting on page 2.

1.2 AC Input Ratings

1.2.1 See “General Specifications” starting on page 2.

1.3 Environmental Ratings

1.3.1 Operating Ambient Temperature Range: -40 °C to +65 °C (-40 °F to +149 °F).

1.3.2 Storage Ambient Temperature Range: -40 °C to +70 °C (-40 °F to +158 °F).

1.3.3 Relative Humidity: Capable of operating in an ambient relative humidity range of 0% to 90%, non-condensing.

1.3.4 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.

1.3.5 Audible Noise: Refer to UM1R482000e3.

1.3.6 Surge Protection: Refer to UM1R482000e3.

1.3.7 Ventilation Requirements: The system must be mounted so ventilating openings are not blocked and temperature of the air entering the system does not exceed the Operating Ambient Temperature Range stated above. Refer also to “Mounting” below.

1.3.8 Mounting: This power system is designed to mount in a standard 19” or 23” relay rack or equipment rack having 1” or 1-3/4” multiple drillings. Wall mounting options are also available. Refer to “Overall Dimensions” on page 69 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 electronic equipment enclosure that maintains temperature from -5 °C to +50 °C for Class 1 equipment or from -40 °C to +65 °C for Class 2 equipment.
- 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).
- System ventilating openings must not be blocked and temperature of air entering rectifiers must not exceed the rated operating ambient temperature range.
- Clearance requirements are (relay rack):
 - 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".
- Clearance requirements are (cabinet or wall mounting):
 - a) Recommended minimum clearance for the rear of the system is 4".

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1.4 Compliance Information

1.4.1 Safety Compliance: This panel is UL Recognized for use in DC Power Distribution Centers for Communications Equipment.

1.4.2 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.

1.4.3 GR-3108: GR-3108 Class 2 compliant.

1.5 IB2 (Controller Interface Board) Ratings

1.5.1 Digital Input Ratings

(A) Maximum Voltage Rating: 60 VDC.

(B) Active High: > 19 VDC.

(C) Active Low: < 1 VDC.

1.5.2 Relay Ratings

(A) Steady State: 0.5 A @ 60 VDC; 1.0 A @ 30 VDC.

(B) Peak: 3 A @ 30 VDC.

2. RECTIFIER

Refer to the Rectifier Instructions (UM1R482000e3).

3. CONTROLLER

Refer to the NCU Controller Instructions (UM1M830BNA).

For controller factory settings, refer to the Controller Configuration Drawing (C-drawing).

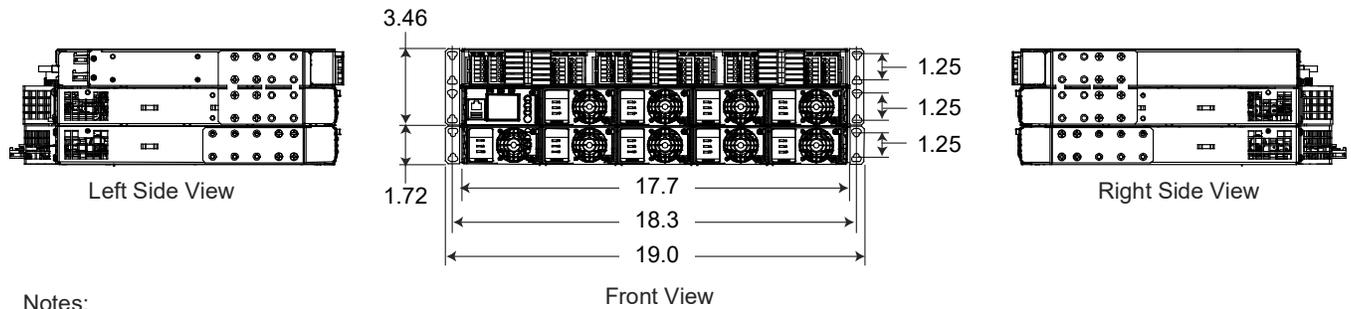
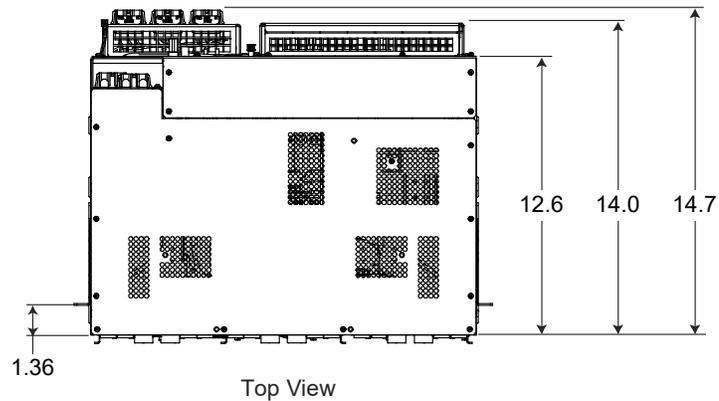
MECHANICAL SPECIFICATIONS

Overall Dimensions

Relay Racks

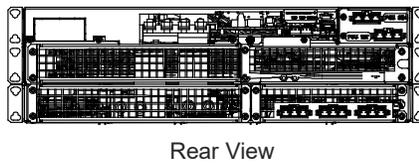
Refer to Table 11 for relay rack dimensions.

System with List 01, 02, and Distribution Unit; 19" Mounting



Notes:

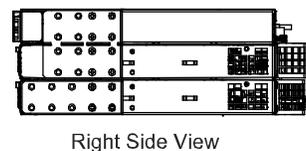
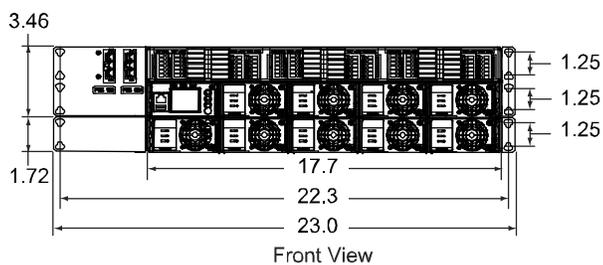
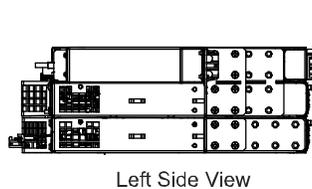
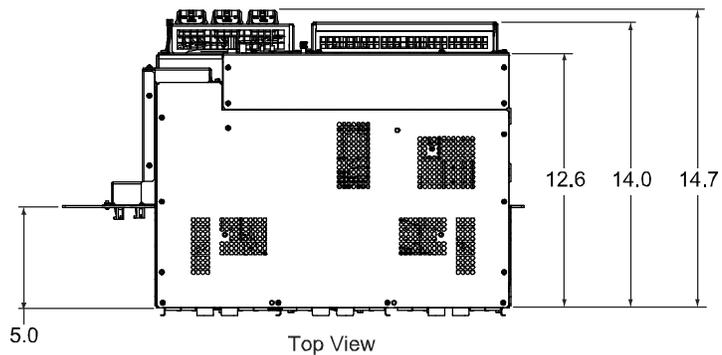
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Galvanized Steel.
3. Mounting angles can be reversed for flush-front mounting or 5-inch front projection mounting.



Vertiv™ NetSure™ 5100 DC Power System

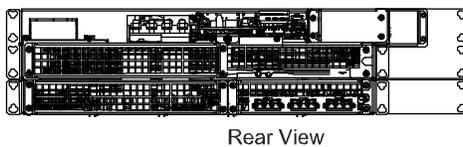
System Application Guide

System with List 01, 02, and Distribution Unit; 23" Mounting



Notes:

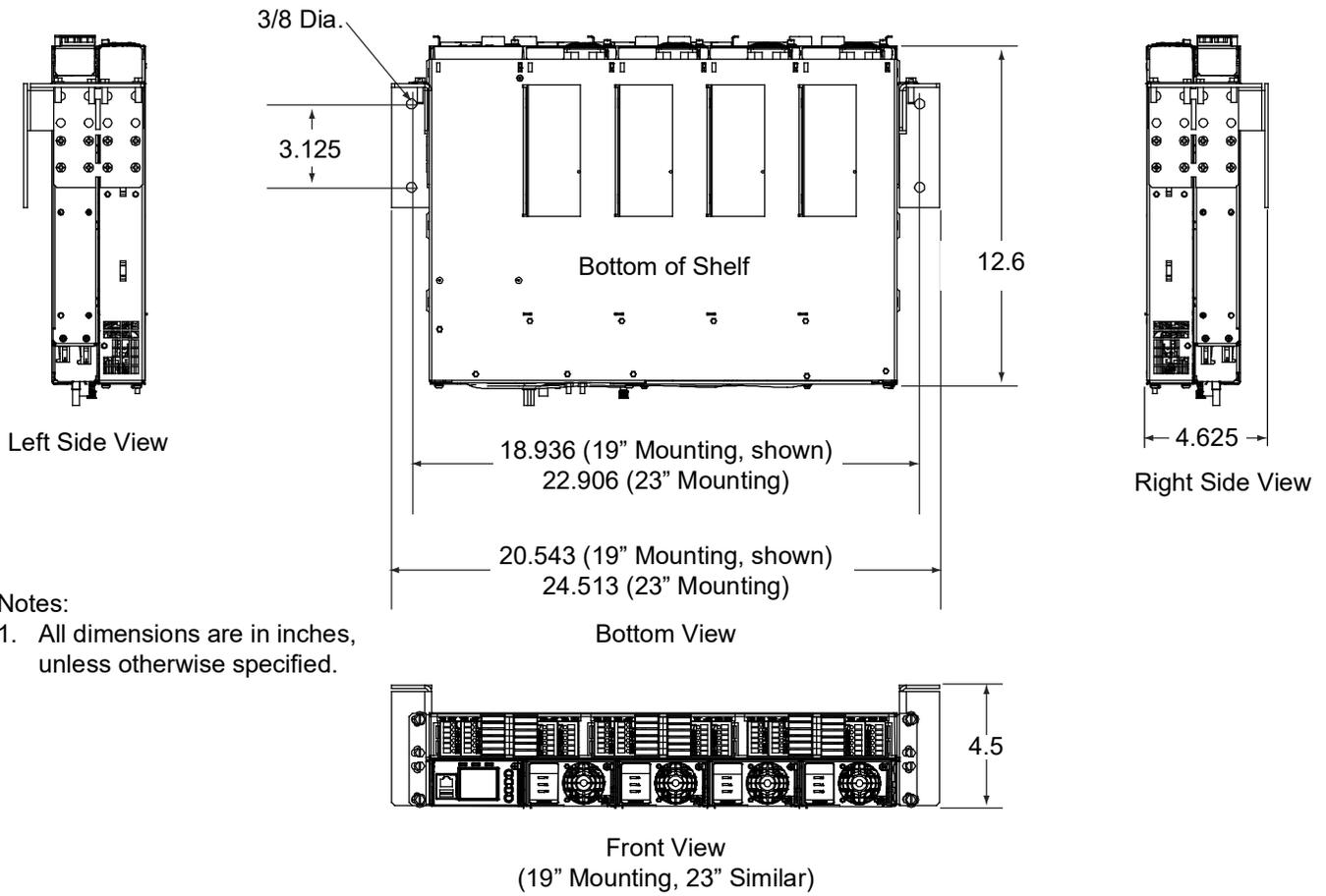
1. All dimensions are in inches, unless otherwise specified.
2. Finish: Galvanized Steel.



Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

System with Vertical Wall Mount Kit P/N 553203



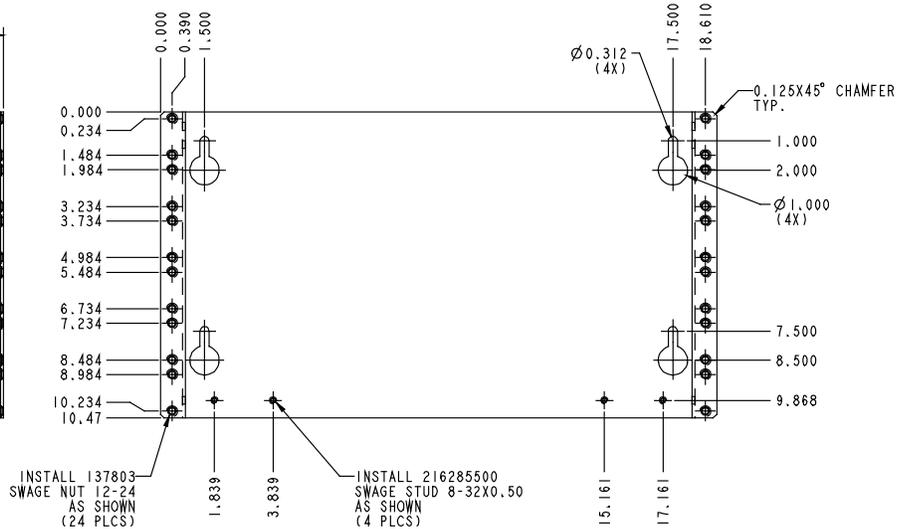
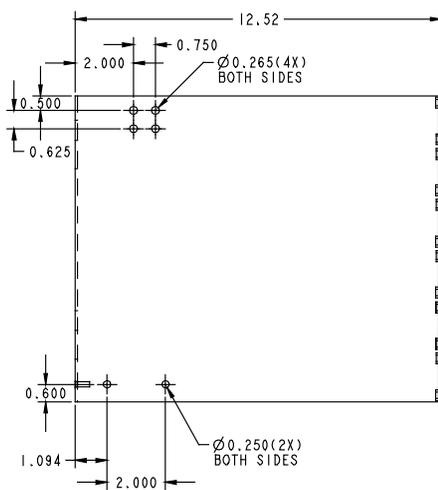
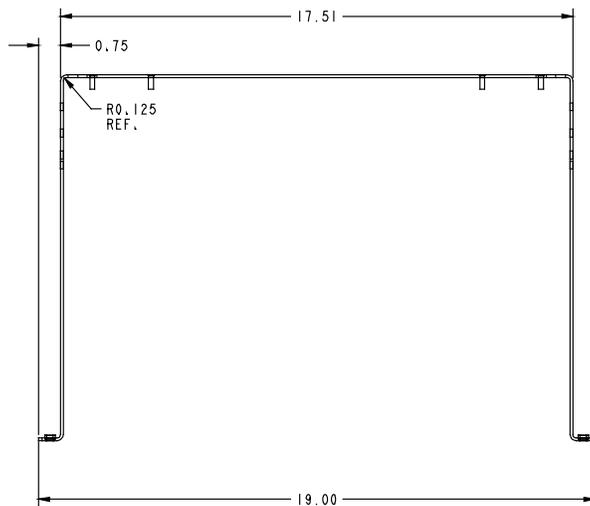
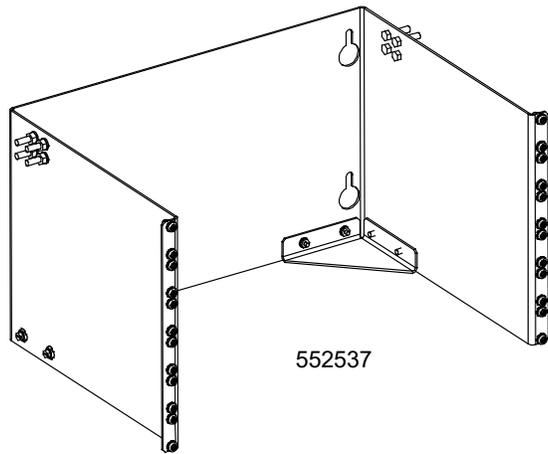
Notes:

1. All dimensions are in inches, unless otherwise specified.

Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

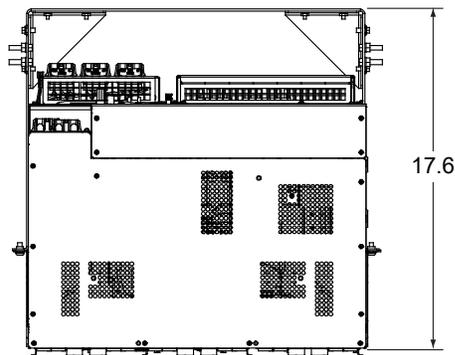
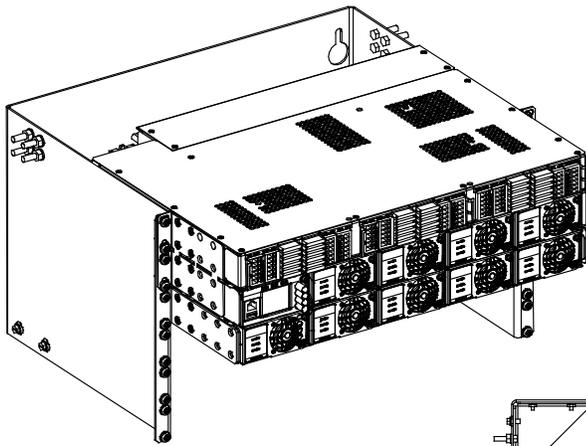
System with 19" 6RU Wall Mount Kit P/N 552537 (cont'd on next page)



Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

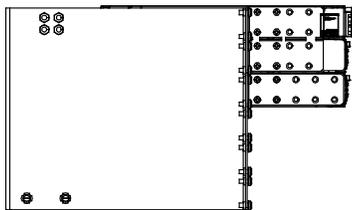
System with 19" 6RU Wall Mount Kit P/N 552537 (cont'd from previous page)



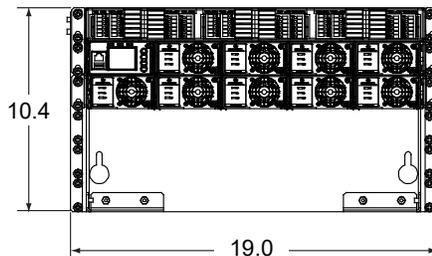
Top View

Notes:

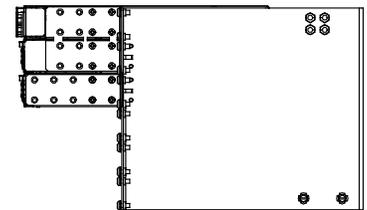
1. All dimensions are in inches, unless otherwise specified.



Left Side View



Front View

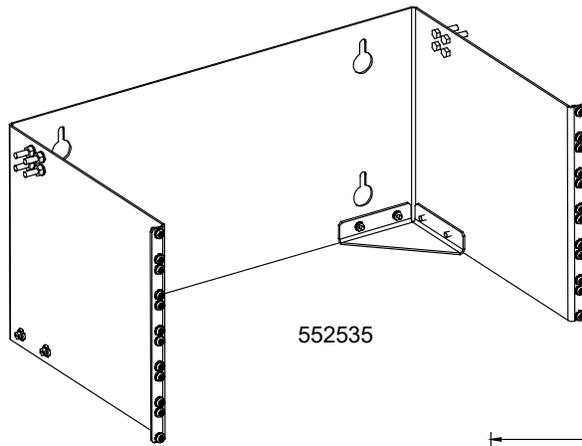


Right Side View

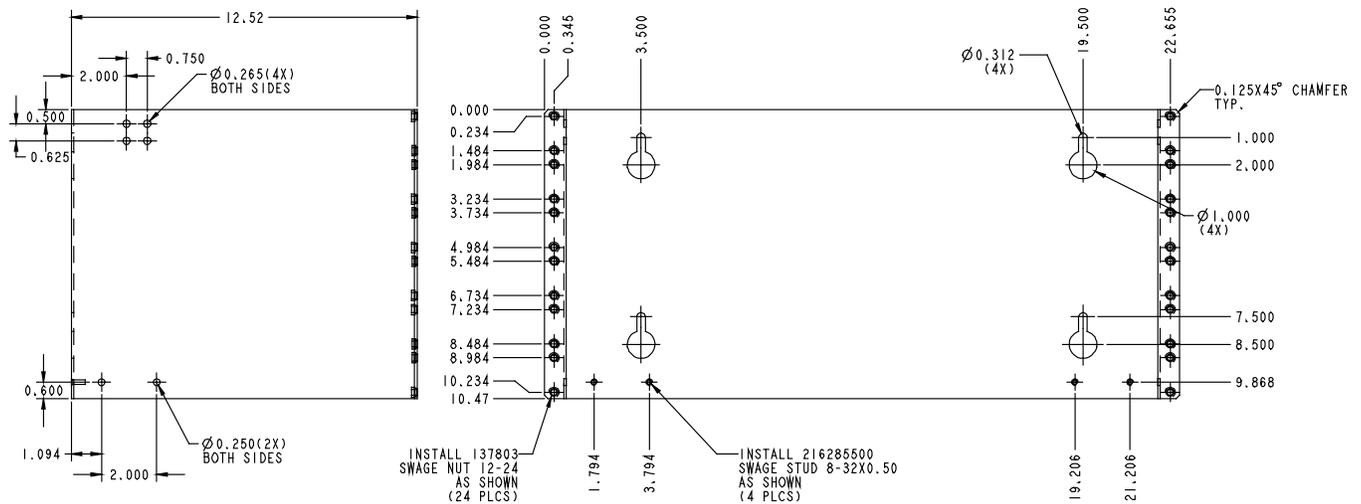
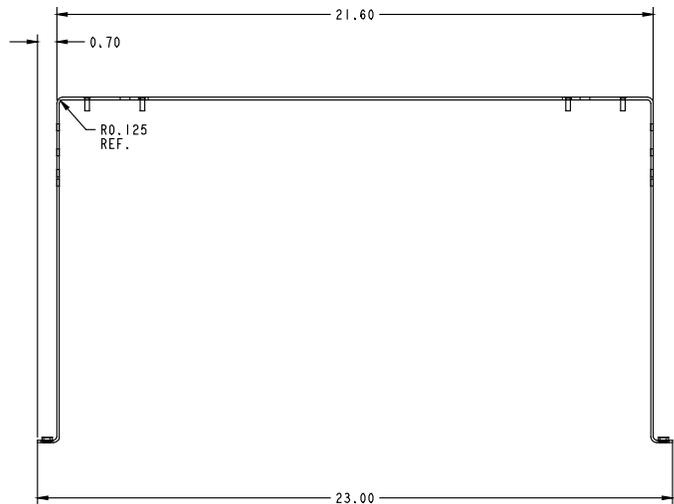
Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

System with 23" 6RU Wall Mount Kit P/N 552535 (cont'd on next page)



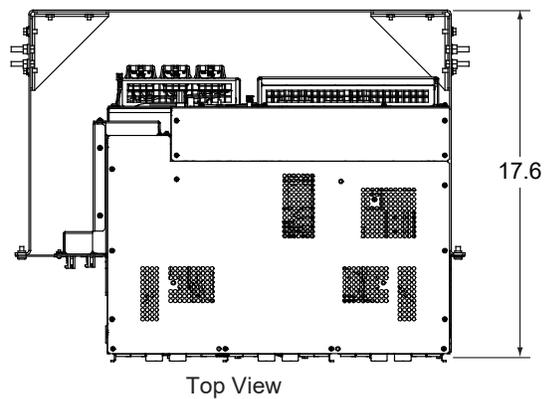
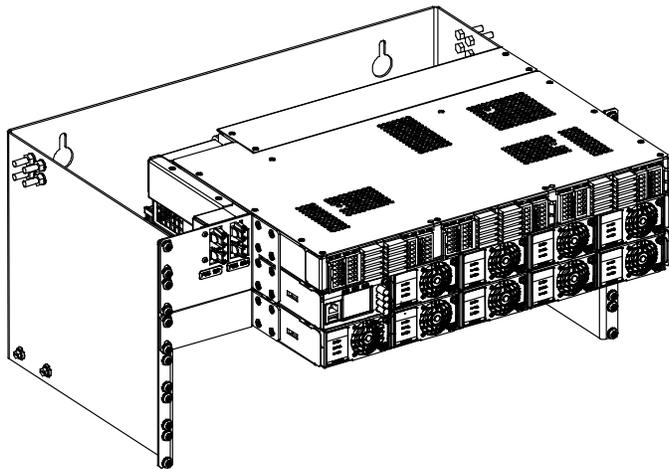
552535



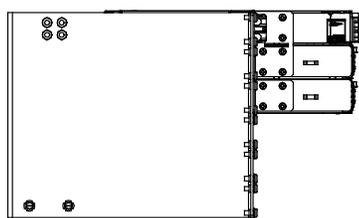
Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

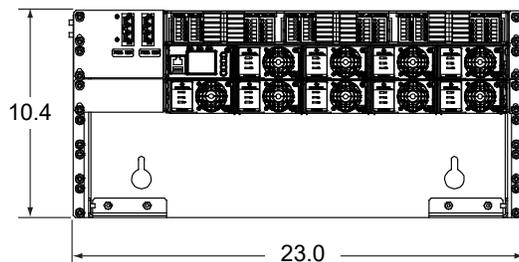
System with 23" 6RU Wall Mount Kit P/N 552535 (cont'd from previous page)



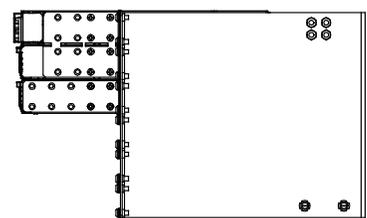
Notes:
1. All dimensions are in inches, unless otherwise specified.



Left Side View



Front View



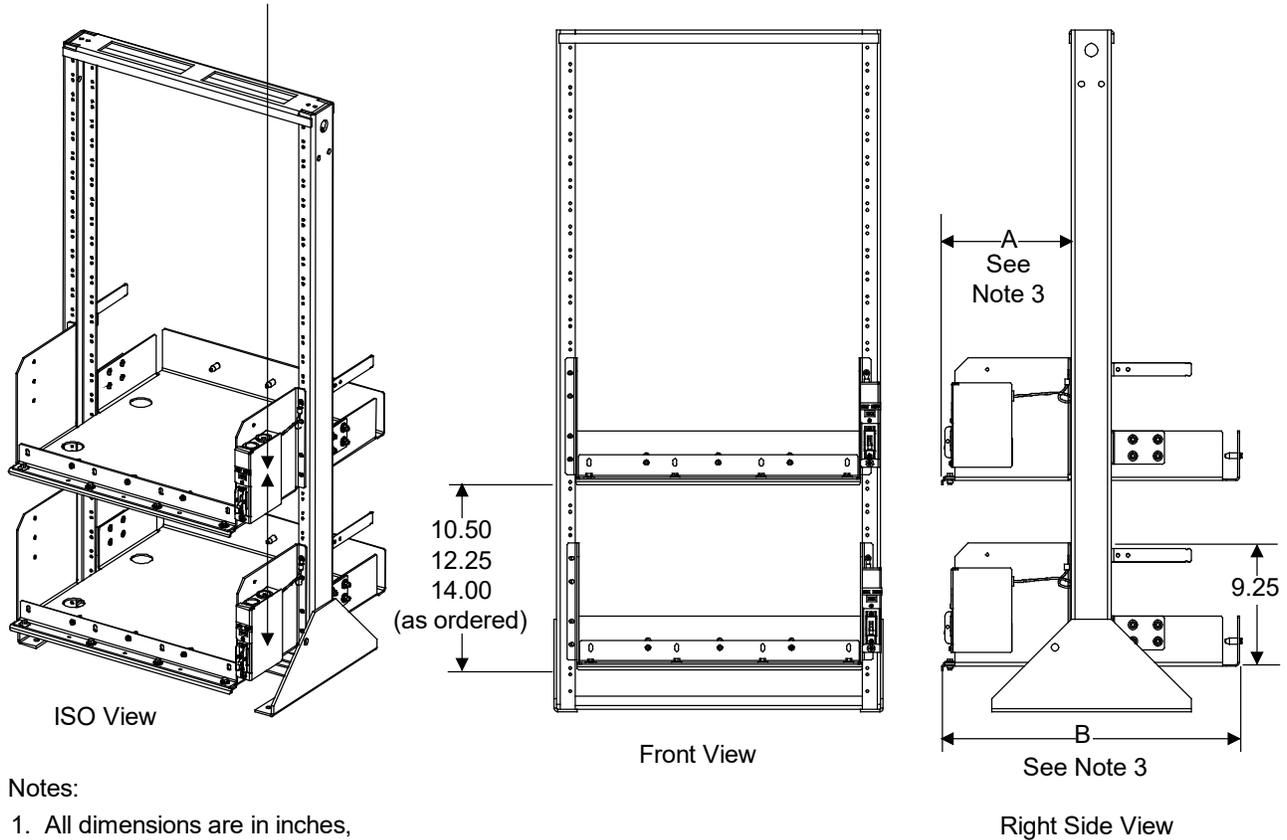
Right Side View

Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

58213720093 (23" Wide Battery Tray) (List 93)

Optional Battery Disconnect Circuit Breakers
(Shown on Right Side, Available on Either Side)



Notes:

1. All dimensions are in inches, unless otherwise specified.
2. P/N 559806 tray shown. Other part numbers are similar.
- 3.

Tray P/N	Dimension A	Dimension B
559806	9.78	24.44
559807	6.90	12.50
559808	10.48	23.14
10012262	10.80	24.79

4. Weight in LBS.
(per tray, less batteries).

Part No.	With Circuit Breaker Option	Without Circuit Breaker Option
559806	33 lbs	29 lbs
559807	20 lbs	18 lbs
559808	25 lbs	23 lbs
10012262	38 lbs	36 lbs

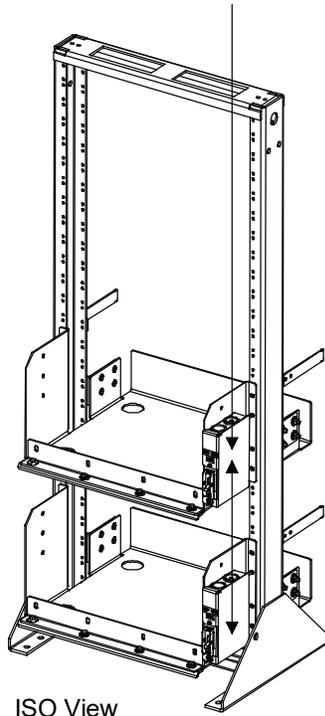
5. Finish: Textured Dark Gray.
6. A system can accommodate up to three (3) battery trays, depending on rack size and tray spacing.

Vertiv™ NetSure™ 5100 DC Power System

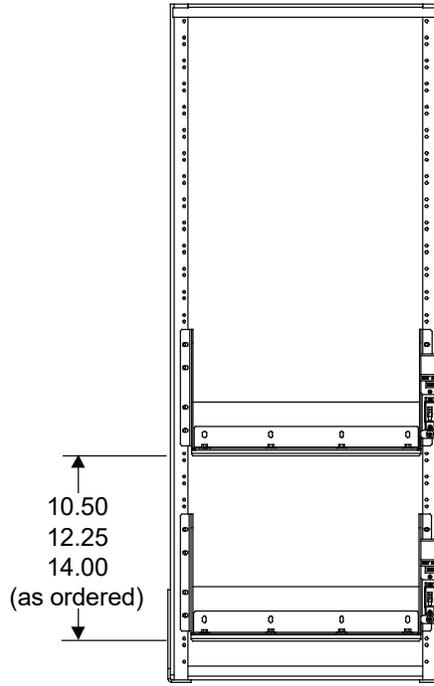
System Application Guide

58213720094 (19" Wide Battery Tray) (List 94)

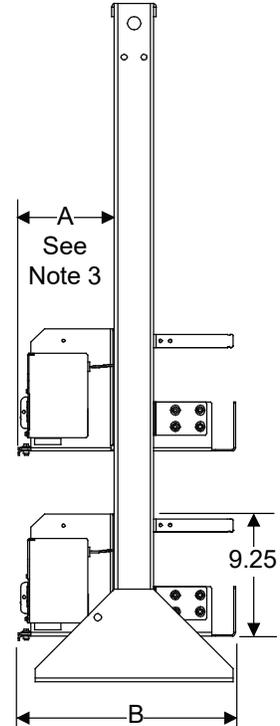
Optional Battery Disconnect Circuit Breakers
(Shown on Right Side, Available on Either Side)



ISO View



Front View



See Note 3

Right Side View

Notes:

1. All dimensions are in inches, unless otherwise specified.
2. P/N 559809 tray shown. Other part numbers are similar.

3.

Tray P/Ns	Dimension A	Dimension B
559809	7.78	17.04
559810	7.28	20.95
559811	6.90	12.50
559812	7.98	23.04

4. Weight in LBS.
(per tray, less batteries).

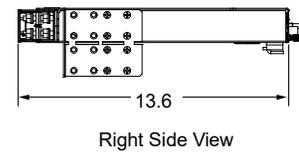
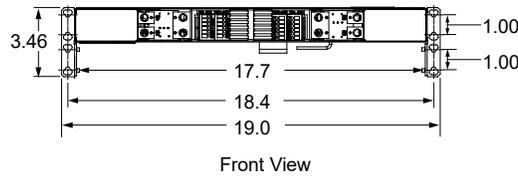
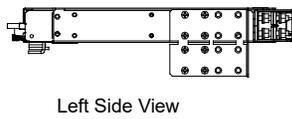
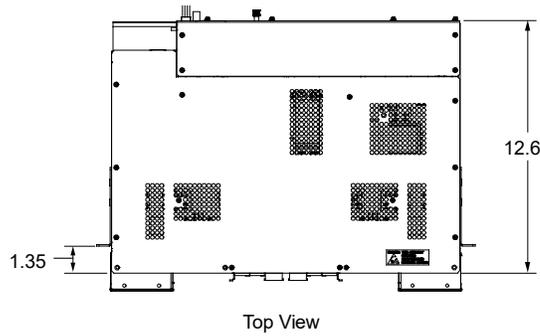
Tray P/Ns	With Circuit Breaker Option	Without Circuit Breaker Option
559809	25.0 lbs	23.0 lbs
559810	25.3 lbs	23.3 lbs
559811	18.5 lbs	16.5 lbs
559812	26.0 lbs	24.0 lbs

5. Finish: Textured Dark Gray.
6. A system can accommodate up to three (3) battery trays, depending on rack size and tray spacing.

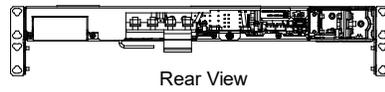
Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

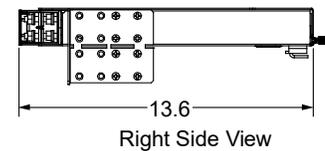
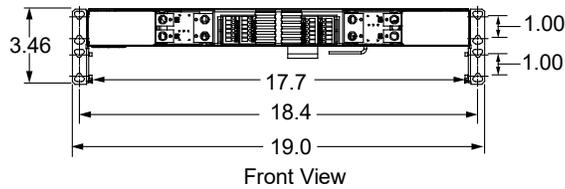
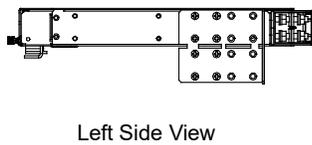
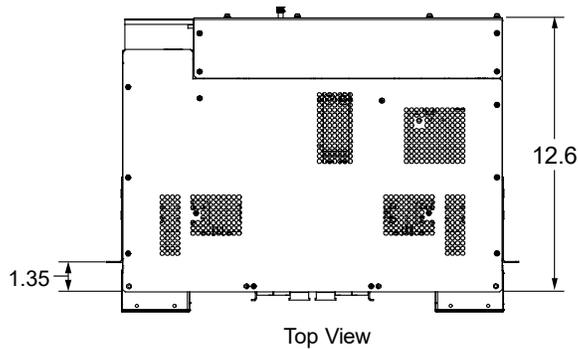
582137200 List BA



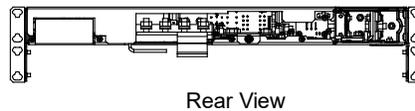
Notes:
1. All dimensions are in inches, unless otherwise specified.



582137200 List NA



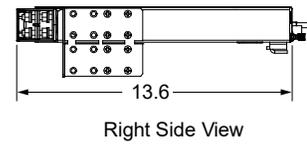
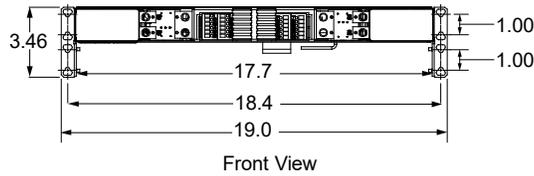
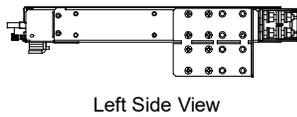
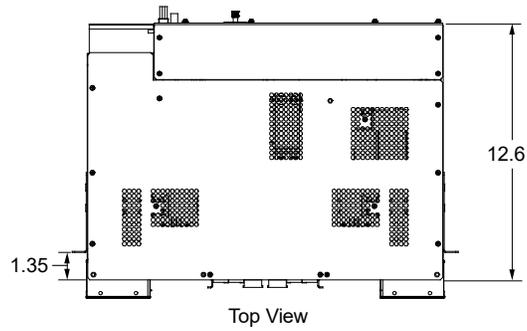
Notes:
1. All dimensions are in inches, unless otherwise specified.



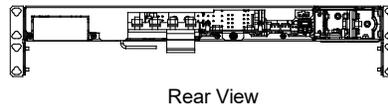
Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

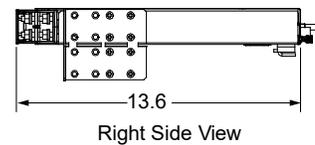
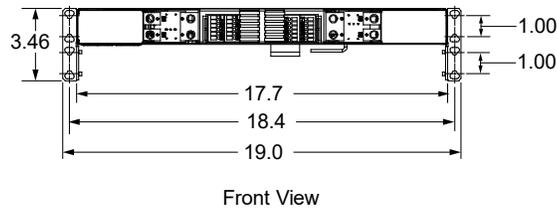
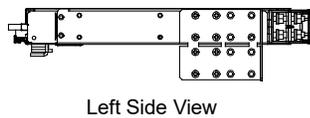
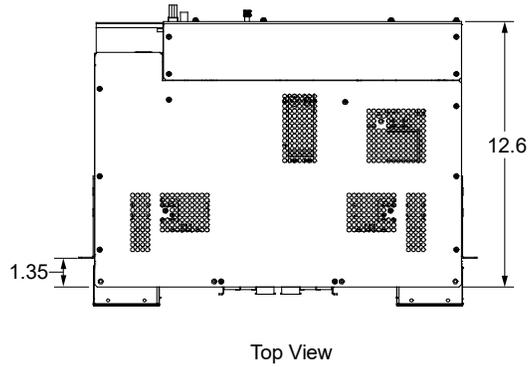
582137200 List BC



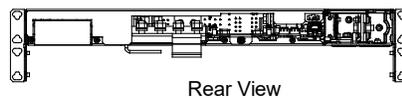
Notes:
1. All dimensions are in inches, unless otherwise specified.



582137200 List LC



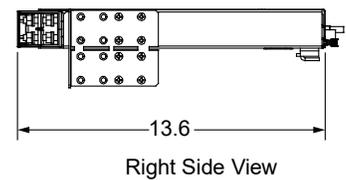
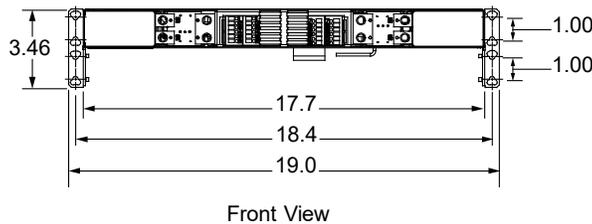
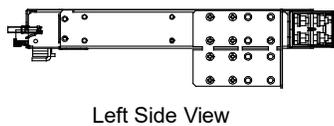
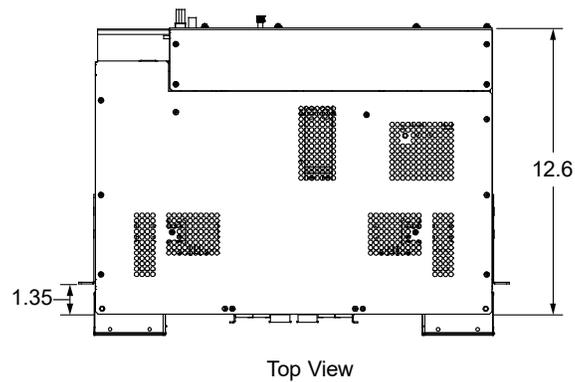
Notes:
1. All dimensions are in inches, unless otherwise specified.



Vertiv™ NetSure™ 5100 DC Power System

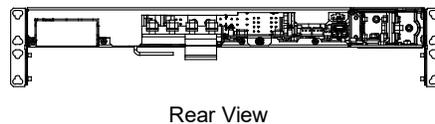
System Application Guide

582137200 List NC



Notes:

1. All dimensions are in inches, unless otherwise specified.



Vertiv™ NetSure™ 5100 DC Power System

System Application Guide

Weights

List Number or Part Number	Net Weight (lbs), each	Description
Controller/Rectifier Shelf		
58213720001	8.5	Main Shelf
58213720002	9.8	Expansion Shelf
Controller		
UM1M830BNA	2.2	NCU Controller
Rectifier		
1R482000e3	2.5	Rectifier Module
Distribution Unit		
582137200BA	15	(12) GMT Load Fuses / (2) Bullet Type Load Circuit Breakers / (2) Bullet Type Battery Disconnect Circuit Breakers (with LVBD)
582137200NA	14	(12) GMT Load Fuses / (2) Bullet Type Load Circuit Breakers / (2) Bullet Type Battery Disconnect Circuit Breakers (no LVBD)
582137200BC	15	(12) GMT Load Fuses / (4) Bullet Type Load Circuit Breakers (with LVBD)
582137200LC	15	(12) GMT Load Fuses / (4) Bullet Type Load Circuit Breakers (with LVLD)
582137200NC	14	(12) GMT Load Fuses / (4) Bullet Type Load Circuit Breakers (no LVD)
582137200BF	15	(36) GMT Load Fuses (with LVBD)
582137200NF	14	(36) GMT Load Fuses (no LVD)
Relay Racks		
559817	51	Relay Rack
559819	156	Relay Rack
559818	103	Relay Rack
559820	113	Relay Rack
559821	81	Relay Rack
559822	123	Relay Rack
559824	93	Relay Rack
559823	167	Relay Rack
Battery Trays		
See "58213720093 (23" Battery Tray)" on page 76 and "58213720094 (19" Battery Tray)" on page 77.		

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

Northstar: NorthStar Battery Co. LLC, 4000 Continental Way, Springfield, MO 65803

PowerSafe EnerSys™: EnerSys Inc., Reading, PA, 196212-4145

RELATED DOCUMENTATION

System Installation Instructions:	IM582137200
System User Instructions:	UM582137200
NCU Controller Instructions:	UM1M830BNA
Rectifier Instructions:	UM1R482000e3
SM-Temp Instructions:	UM547490
Battery Cabinet Spec. No. 541434 Installation and User Instructions:	Section 6023
Battery Cabinet Spec. No. 545534 Installation and User Instructions:	Section 6033
Battery Cabinet Spec. No. 10032894 Installation and User Instructions:	IM10032894
Battery Asymmetry Unit Instructions:	UM541649
Main Schematic Diagrams:	SD582137200
Main Wiring Diagrams:	T582137200

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