

## SYSTEM OVERVIEW

**Description:** The Vertiv™ NetSure™ 502NGFB DC Power System is a complete integrated power system containing rectifiers, intelligent control, metering, monitoring, and distribution. This power system consists of the following mounted in a 2RU high by 19" or 23" wide shelf.

- **Rectifier Modules**

The 19" wide shelf accommodates two (2) Rectifier Modules. The 23" wide shelf accommodates three (3) Rectifier Modules. The Rectifier Module R48-2000 comes in 2000W power rating. The modules provide load power, battery float current, and battery recharge current during normal operating conditions. The Rectifier Modules are designed to provide constant power. They are designed with the latest patented switch-mode technology using DSP (Digital Signal Processing) functionality for efficient operation. This means that, within the normal operating ambient temperature range and input voltage range, the maximum available output power is a constant 2000W. Within these ranges, the Rectifier Modules operate in one of three modes, depending upon load demands. Transition between modes is completely automatic. If ambient temperature rises above or input voltage falls below acceptable values, Rectifier Modules continue to operate but at derated output power levels.

- 1) **Constant Voltage Mode:** For any initial output voltage setting from 48 to 58 volts, output voltage remains constant regardless of load. This is the normal operating condition, in which loads are being supplied and batteries are float charged. Rectifier Modules operate in the Constant Voltage Mode unless load increases to the point where the product of load current and output voltage is approximately 2000W.
- 2) **Constant Power Mode:** As load increases above approximately 2000W (non-adjustable), output current continues to increase, but output voltage decreases as required to maintain constant output power. Rectifier Modules operate in the Constant Power Mode unless load continues to increase to the point where the current limit setting is reached.
- 3) **Constant Current Mode:** If load increases above the current limit setting, output voltage decreases linearly to maintain output current at current limit.

- **Controller**

The controller controls the operation of the rectifier modules. The controller also provides power system control, metering, monitoring, and alarm functions.

**NCU (NetSure™ Control Unit):** The controller provides power system control (including optional low voltage battery disconnect (LVBD) and low voltage load disconnect (LVLD) control), rectifier control (including a charge control function), metering functions, monitoring functions, local/remote alarm functions, and connections for binary inputs and programmable relay outputs. 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 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.

**ACU+ (Advanced Control Unit Plus):** 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, and local/remote alarm functions. The controller also supports rectifier temperature compensation if the system is equipped with a temperature probe(s). Temperature probe(s) may also be designated to monitor ambient temperature and/or battery temperature. The controller also provides data acquisition, system alarm management, and advanced battery and energy management. The controller contains an LCD display and keypad for local access. The controller provides an Ethernet port and comes with comprehensive webpages for remote access. The controller has SNMP capability for remote system management. The controller supports software upgrade via its USB port. Refer to the ACU+ Controller Instructions (UM1M820BNA) for more information.



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SCU+ (Standard Control Unit Plus): The SCU+ provides Rectifier Module and optional Low Voltage Battery Disconnect (LVBD) or Low Voltage Load Disconnect (LVLD) control, metering functions, monitoring functions, and local/remote alarms. The SCU+ contains an LCD display and keypad for local access. It provides connections for binary inputs, programmable relay outputs, and a charge control function. The controller also supports rectifier temperature compensation if the system is equipped with a temperature probe (or multiple temperature probes connected via a Temperature Concentrator (SM TEMP), and ambient temperature monitoring if equipped with a second temperature probe. The SCU+ also provides Ethernet connection and SNMP capability.

- **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.

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### General Specifications

See detailed specifications starting on page 75.

Family:	Vertiv™ NetSure™
Spec. No.:	582136700
Model:	502NGFB
Input Voltage	Nominal 120/208/240 volts AC, single phase, and 3-wire, 50/60 Hz, with an operating range of 100 to 250 volts. Acceptable input frequency range is 45 to 65 Hz.
Output Voltage:	-48 Volts DC
Output Capacity:	
Rectifier Module:	2000W (41.6A) @ 208/240VAC Input and +45°C (R48-2000) or +55°C (R48-2000e) 1262W (26.3A) @ 120VAC Input and +45°C (R48-2000) or +55°C (R48-2000e)
System:	List 2 19" Version: 4000W (83A), maximum List 6 23" Version: 6000W (125A), maximum <b>Note:</b> 19" version is "Specification Compliant" up to 66 amperes (2000W) at +65°C (+149°F). 23" version is "Specification Compliant" up to 100 amperes (6000W) at +65°C (+149°F).
Agency Approval:	<a href="#">UL 60950 Recognized, CAN/CSA 22.2</a>
Framework Type:	Relay Rack Mounted
Mounting Width:	19" or 23", nominal
Mounting Depth:	12"
Mounting Height:	3.5" (2RU)
Access:	Front for Installation, Operation, and Maintenance
Control:	Microprocessor
Color:	Front Panels are Gray, Shelf is Galvaneal
Environment:	<b>Lists 2 and 6:</b> -40°C (-40°F) to +65°C (+149°F), <a href="#">with deratings (see SPECIFICATIONS section)</a>

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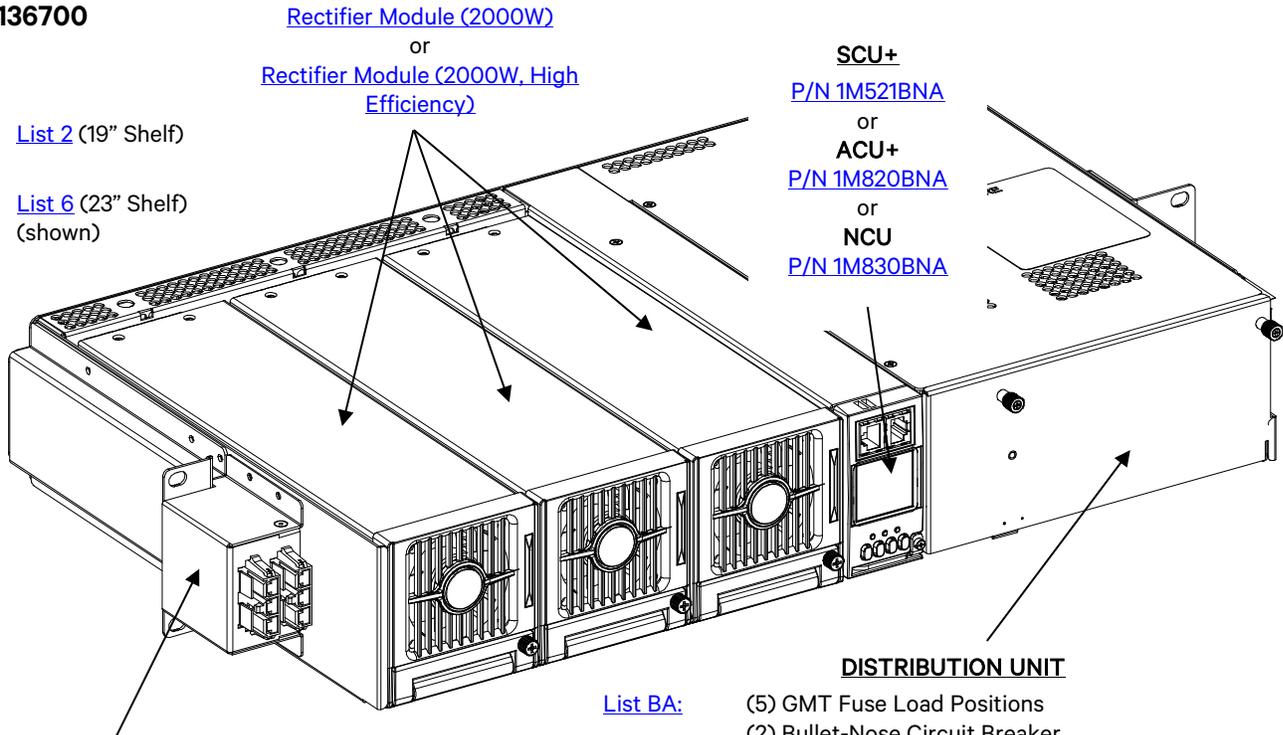
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**MAIN COMPONENTS ILLUSTRATIONS**

**582136700**



Side Molex AC Input Connectors (P/O List 2 and 6) and [AC Input Cables/Line Cords](#)

**List BA:**

- (5) GMT Fuse Load Positions
- (2) Bullet-Nose Circuit Breaker Load Positions
- (2) Bullet-Nose Circuit Breaker Battery Positions
- Low Voltage Battery Disconnect (LVBD)

**List NA:**

- (5) GMT Fuse Load Positions
- (2) Bullet-Nose Circuit Breaker Load Positions
- (2) Bullet-Nose Circuit Breaker Battery Positions
- NO Low Voltage Disconnect

**List BC:**

- (5) GMT Fuse Load Positions
- (4) Bullet-Nose Circuit Breaker Load Positions
- Low Voltage Battery Disconnect (LVBD)
- (3) Battery Landing Points

**List LC:**

- (5) GMT Fuse Load Positions
- (4) Bullet-Nose Circuit Breaker Load Positions
- Low Voltage Load Disconnect (LVLD)
- (3) Battery Landing Points

**DISTRIBUTION UNIT (continuation)**

**List NC:**

- (5) GMT Fuse Load Positions
- (4) Bullet-Nose Circuit Breaker Load Positions
- NO Low Voltage Disconnect
- (3) Battery Landing Points

**List BF:**

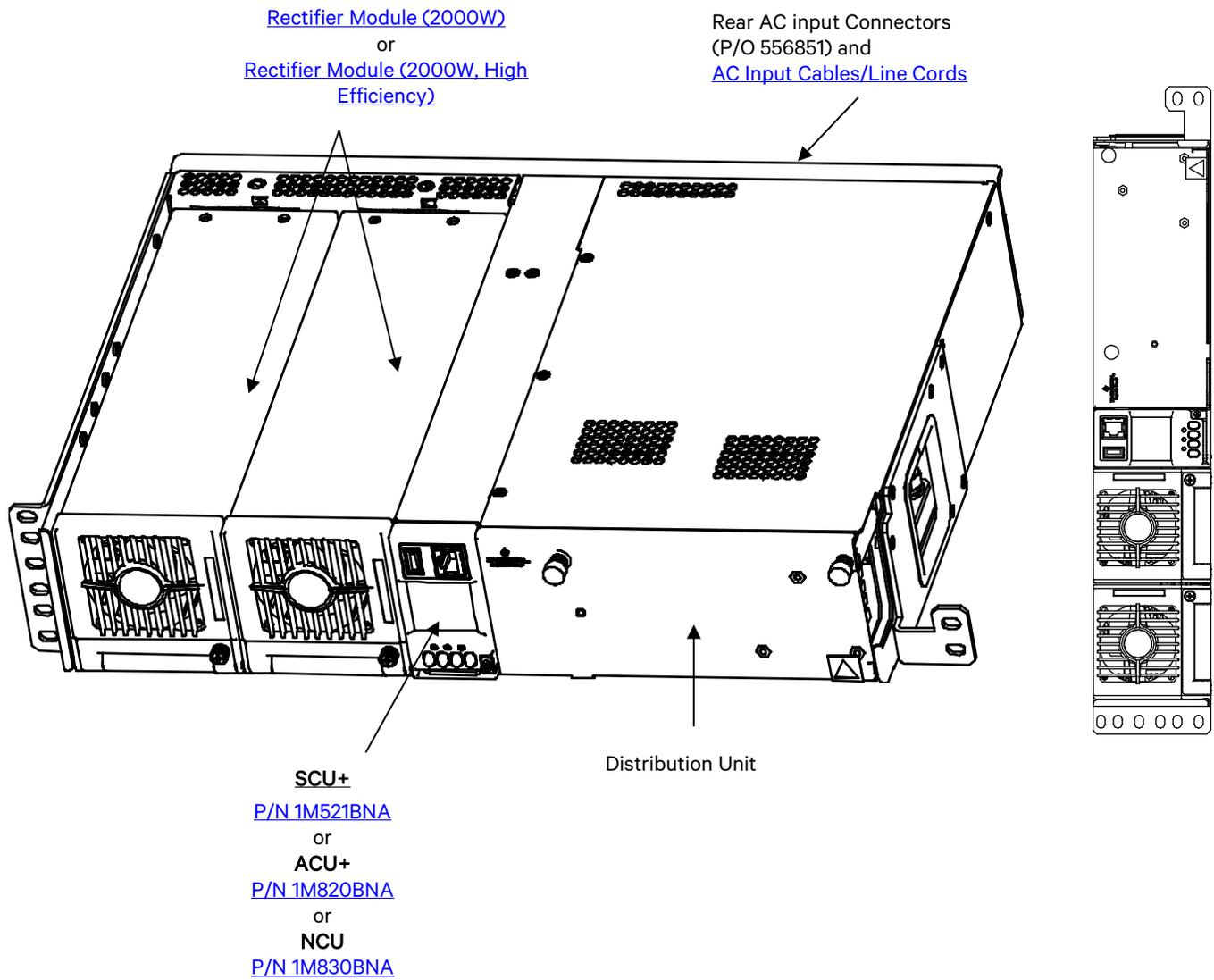
- (13) GMT Fuse Load Positions
- Low Voltage Battery Disconnect (LVBD)
- (3) Battery Landing Points

**List NF:**

- (13) GMT Fuse Load Positions
- NO Low Voltage Disconnect
- (3) Battery Landing Points

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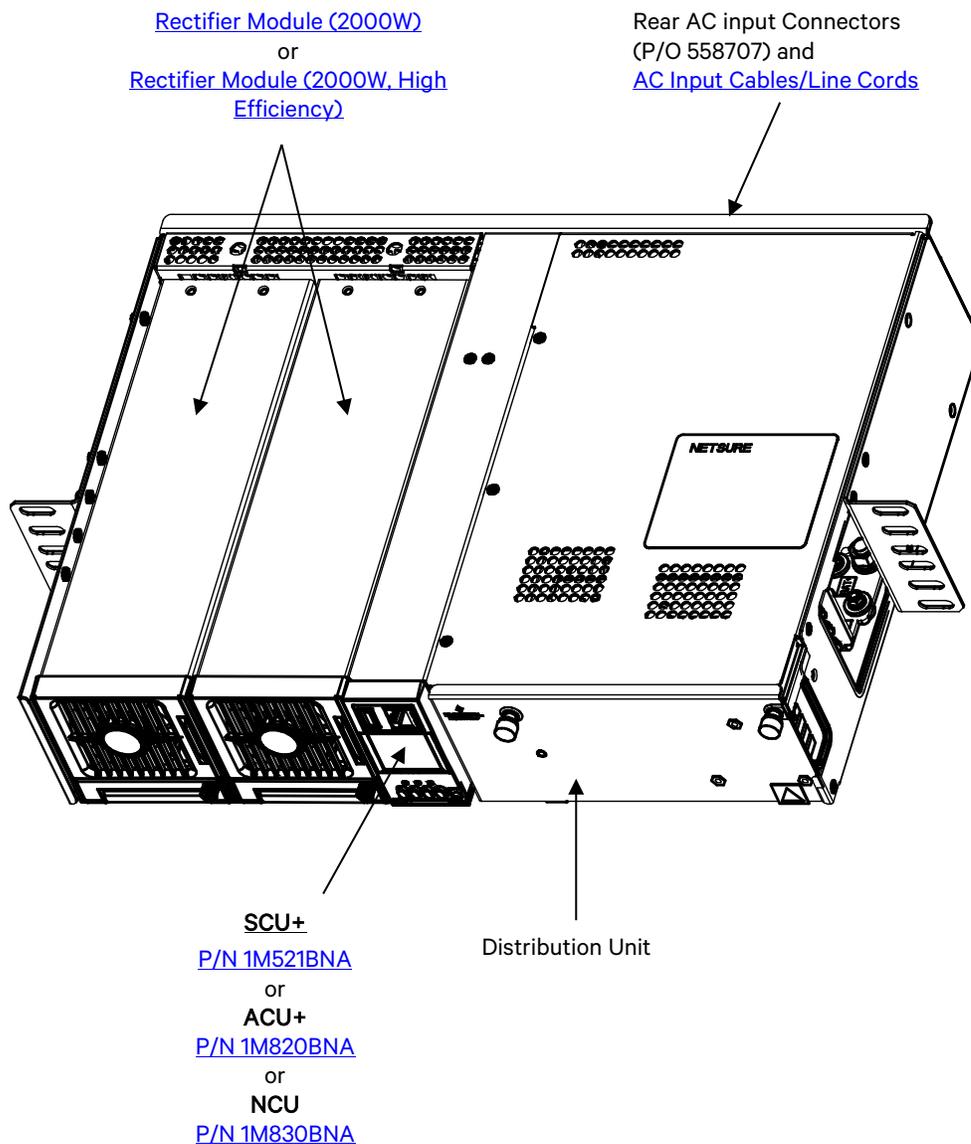
5821367002 with P/N 556851 (Vertical Flush Mount Kit)



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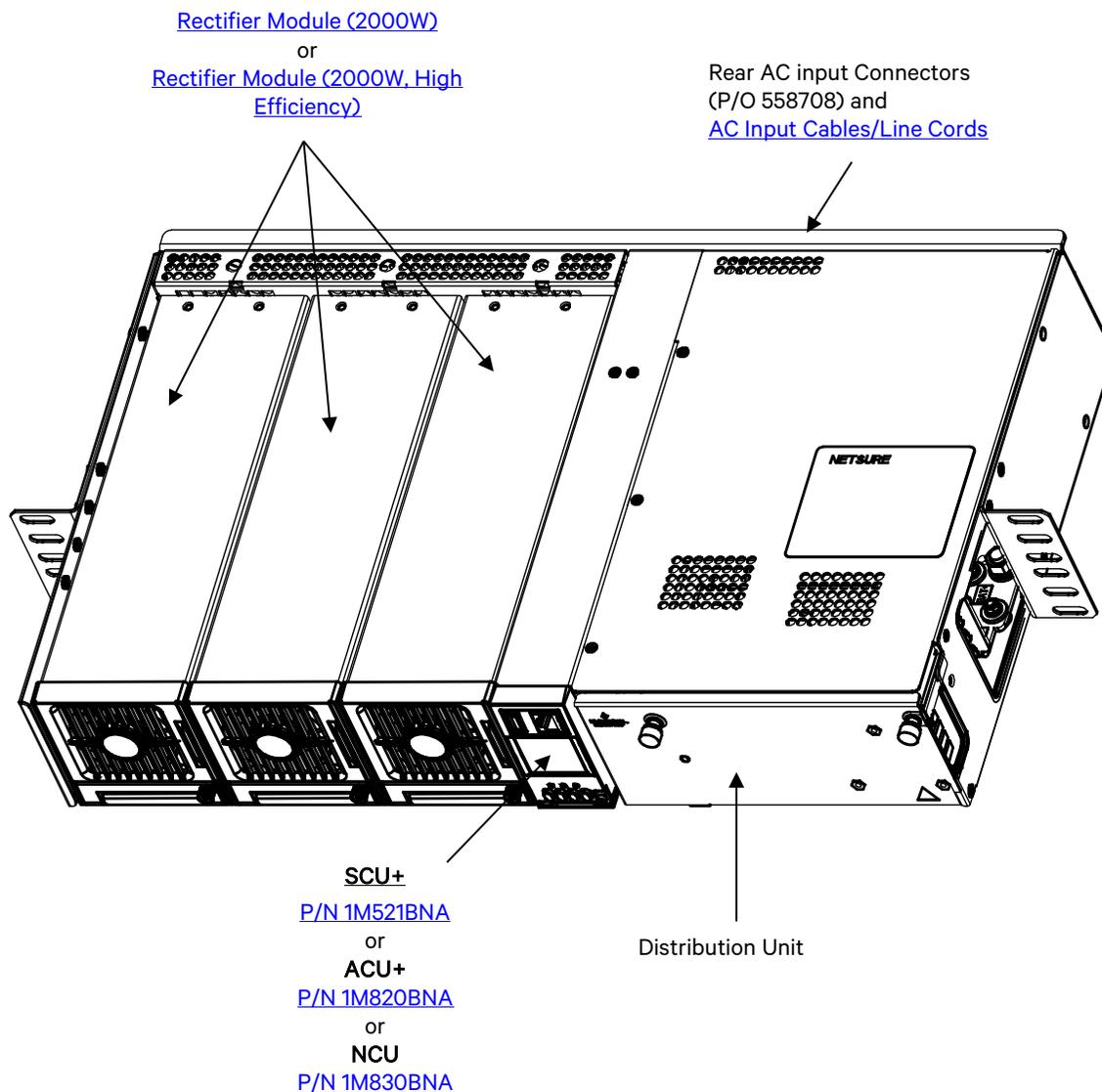
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### 5821367002 with P/N 558707 (Mount Kit)



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## 5821367006 with P/N 558708 (Mount Kit)



## Other

### **Other List Options**

- [List 60:](#) Five (5) Load Lead Assemblies for 10A GMT Fuse Positions  
(For use with Lists BC, LC, NC, BA, and NA.)
- [List 61:](#) Eight (8) Load Lead Assemblies for 10A GMT Fuse Positions  
(For use with Lists BF and NF.)
- [List 62:](#) Five (5) Load Lead Assemblies for 15A GMT Fuse Positions  
(For use with Lists BF and NF.)
- [List 65:](#) Shelf Side Battery Cables  
(For use with Lists BC, LC, NC, BF, and NF)
- [List 66:](#) Battery Side Battery Cables  
(For use with Lists BC, LC, NC, BF, and NF)
- [List 67:](#) Battery Side Battery Cables  
(for use w/ Lists BF, NF, BC, LC, and NC)
- [List 68:](#) Shelf Side Battery Cables  
(for use w/ Lists BC, LC, NC, BF, and NF)
- [List 89:](#) Relay Rack Earthquake Anchor Kit
- [List 90:](#) Temperature Probe (12 ft. total)
- [List 91:](#) Temperature Probe (33 ft. total)
- [List 93:](#) Battery Tray (23")
- [List 94:](#) Battery Tray (19")
- [List KG:](#) GMT Fuse Distribution Panel

## LIST DESCRIPTIONS

### List Numbers

#### List 2: 19" Shelf

##### Features

- ◆ Consists of a 2RU high by 19" wide shelf.
- ◆ Includes side AC input housing with Molex connectors.
- ◆ Houses up to two (2) Rectifier Modules, one (1) Controller, and one (1) Distribution Unit.
- ◆ Includes Relay Outputs Alarm Cable P/N 541308 (shelf side) factory connected in the shelf.

##### Restrictions

Each shelf holds up to two (2) Rectifier Modules.

##### Ordering Notes

- 1) Order List 2 as required.  
Also order the following as required.
- 2) Order one (1) SCU+ (P/N [1M521BNA](#)) or ACU+ (P/N [1M820BNA](#)) or NCU (P/N [1M830BNA](#)) Controller per shelf. Also specify appropriate configuration file for your site.
- 3) Order up to two (2) Rectifier Modules per shelf: P/N [1R482000e](#) or [1R482000](#).
- 4) Order [AC Input Cables or Line Cords](#) as required. Note that each 19" Shelf requires two (2) AC Input Cable Assemblies/Line Cords (each feeds one [1] rectifier).
- 5) Order one (1) Distribution Unit (List [BF](#), [NF](#), [BA](#), [NA](#), [BC](#), [LC](#), or [NC](#)) per shelf.
- 6) Order one (1) List [60](#) for each List BA, NA, BC, LC, or NC ordered.  
Each List 60 provides five (5) GMT fuse load lead assemblies (10A maximum).  
Order one (1) List [61](#) for each List BF or NF ordered.  
Each List 61 provides eight (8) GMT fuse load lead assemblies (10A maximum).  
Order one (1) List [62](#) for each List BF or NF ordered.  
Each List 62 provides five (5) GMT fuse load lead assemblies (15A maximum).
- 7) Order one (1) List [KG](#) GMT Distribution Fuse Panel per shelf, as required.
- 8) Order Shelf Side or Battery Side Battery Cables (List [65](#) or List [68](#), and/or List [66](#)) as required.
- 9) Order up to three (3) List [67](#) for each List BC, LC, NC, BF, and NF ordered.
- 10) Order Relay Rack Anchor Kit(s) (List [89](#)) as required.
- 11) Order up to two (2) Temperature Probes (List [90](#) or [91](#)) as required. One probe is used with the Battery Charge Temperature Compensation feature, the other to monitor ambient temperature. See "Optional Temperature Probes" on page 36 for temperature probe options with a mounting tab.
- 12) Order Battery Trays (List [94](#)) as required.
- 13) Order Optional Vertical Flush Mount Kit, P/N [556851](#) as required.
- 14) Order Optional Mount Kit, P/N [558707](#) as required.
- 15) Order [Relay Racks](#) per ACCESSORY DESCRIPTIONS section.
- 16) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 17) Order [External Battery Disconnect Unit](#) per ACCESSORY DESCRIPTIONS section.
- 18) Order [Alarm Cables](#) per ACCESSORY DESCRIPTIONS section.
- 19) Order lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.

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### List 6: 23" Shelf

#### Features

- ◆ Consists of a 2RU high by 23" wide shelf.
- ◆ Includes side AC input housing with Molex connectors.
- ◆ Houses up to three (3) Rectifier Modules, one (1) Controller, and one (1) Distribution Unit.
- ◆ Includes Relay Outputs Alarm Cable P/N 541308 (shelf side) factory connected in the shelf.

#### Restrictions

Each shelf holds up to three (3) Rectifier Modules.

#### Ordering Notes

- 1) Order List 6 as required.  
Also order the following as required.
- 2) Order one (1) SCU+ (P/N [1M521BNA](#)) or ACU+ (P/N [1M820BNA](#)) or NCU (P/N [1M830BNA](#)) Controller per shelf. Also specify appropriate configuration file for your site.
- 3) Order up to three (3) Rectifier Modules per shelf: P/N [1R482000e](#) or [1R482000](#).
- 4) Order [AC Input Cables or Line Cords](#) as required. Note that each 23" Shelf requires two (2) AC Input Cable Assemblies/Line Cords (one feeds one [1] rectifier, the other feeds two [2] rectifiers).
- 5) Order a Distribution Unit (List [BF](#), [NF](#), [BA](#), [NA](#), [BC](#), [LC](#), or [NC](#)) per shelf.
- 6) Order one (1) List [60](#) for each List BA, NA, BC, LC, or NC ordered.  
Each List 60 provides five (5) GMT fuse load lead assemblies (10A maximum).  
Order one (1) List [61](#) for each List BF or NF ordered.  
Each List 61 provides eight (8) GMT fuse load lead assemblies (10A maximum).  
Order one (1) List [62](#) for each List BF or NF ordered.  
Each List 62 provides five (5) GMT fuse load lead assemblies (15A maximum).
- 7) Order one (1) List [KG](#) GMT Distribution Fuse Panel per shelf, as required.
- 8) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#) or List [68](#), and/or List [66](#)) as required.
- 9) Order up to three (3) List [67](#) for each List BC, LC, NC, BF, and NF ordered.
- 10) Order Relay Rack Anchor Kit(s) (List [89](#)) as required.
- 11) Order up to two (2) Temperature Probes (List [90](#) or [91](#)) as required. One probe is used with the Battery Charge Temperature Compensation feature, the other to monitor ambient temperature. See "Optional Temperature Probes" on page 36 for temperature probe options with a mounting tab.
- 12) Order Battery Trays (List [93](#)) as required.
- 13) Order Optional Mount Kit, P/N [558708](#) as required.
- 14) Order [Relay Racks](#) per ACCESSORY DESCRIPTIONS section.
- 15) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 16) Order [External Battery Disconnect Unit](#) per ACCESSORY DESCRIPTIONS section.
- 17) Order [Alarm Cables](#) per ACCESSORY DESCRIPTIONS section.
- 18) Order lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.

# Vertiv™ NetSure™ 502NGFB DC Power System

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### **List 60: Load Lead Assemblies for GMT Fuses (for 10A positions)**

#### **Features**

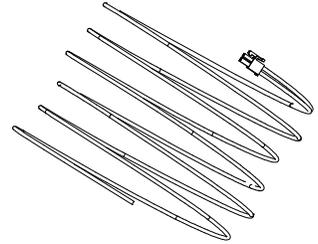
- ◆ Provides 12' long, 16 AWG, load and load return leads that are terminated on one end with the appropriate mating connector to plug into the system's 10A GMT fuse connector on a List BC, LC, NC, BA, or NA Distribution Unit, and are left un-terminated at the remaining end for connection into customer loads.

#### **Restrictions**

For use with Lists BC, LC, NC, BA, and NA only.

#### **Ordering Notes**

- 1) Order one (1) List 60 for each List BC, LC, NC, BA, and NA Distribution Unit. Each List 60 provides five (5) GMT fuse load lead assemblies, P/N 535206.



### **List 61: Load Lead Assemblies for GMT Fuses (for 10A positions)**

#### **Features**

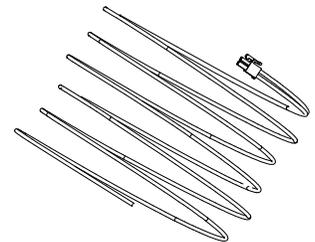
- ◆ Provides 12' long, 16 AWG, load and load return leads that are terminated on one end with the appropriate mating connector to plug into the system's 10A GMT fuse connector on a List BF or NF Distribution Unit, and are left un-terminated at the remaining end for connection into customer loads.

#### **Restrictions**

For use with Lists BF and NF only.

#### **Ordering Notes**

- 1) Order one (1) List 61 for each List BF and NF Distribution Unit. Each List 61 provides eight (8) GMT fuse load lead assemblies, P/N 535206.



### **List 62: Load Lead Assemblies for GMT Fuses (for 15A positions)**

#### **Features**

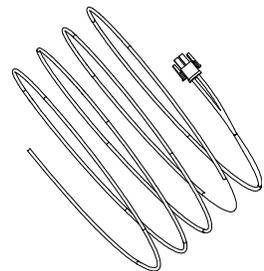
- ◆ Provides 12' long, 14 AWG, load and load return leads that are terminated on one end with the appropriate mating connector to plug into the system's 15A GMT fuse connector on a List BF or NF Distribution Unit, and are left un-terminated at the remaining end for connection into customer loads.

#### **Restrictions**

For use with Lists BF and NF only.

#### **Ordering Notes**

- 1) Order one (1) List 62 for each List BF or NF Distribution Unit. Each List 62 provides five (5) GMT fuse load lead assemblies, P/N 540988.



### **List 65: Shelf Side Battery Cables, P/N 540814**

#### **Features**

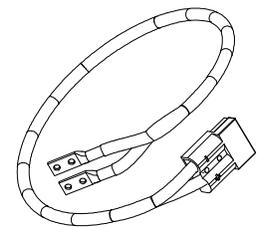
- ◆ Provides two (2) 3' long, 2 AWG, battery cables terminated in a 2-position Red SB120 Anderson connector on the shelf side. Remaining end terminated in lugs for connection to shelf.

#### **Restrictions**

For use with Lists BC, LC, NC, BF, and NF only.

#### **Ordering Notes**

- 1) Order as required. Each shelf provides landings for up to three (3) battery strings.



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### **List 66: Battery Side Battery Cables, P/N 540954**

#### **Features**

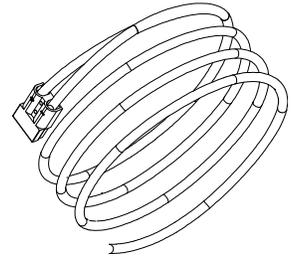
- ◆ Provides two (2) 12' long, 2 AWG, battery cables terminated in a 2-position Red SB120 Anderson connector on the battery side. Remaining end un-terminated for connection to batteries.

#### **Restrictions**

For use with Lists BC, LC, NC, BF, and NF only.

#### **Ordering Notes**

- 1) Order as required. Each shelf provides landings for up to three (3) battery strings.



### **List 67: Battery Cable, P/N 545709**

#### **Features**

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

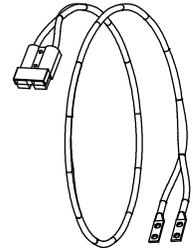
#### **Restrictions**

For use with Lists BC, LC, NC, BF, and NF only.

For use with [P/N 541434](#), [P/N 545534](#), [P/N 545506](#), or [P/N 554631](#) battery cabinets only.

#### **Ordering Notes**

- 1) Order up to three (3) List 67 for each List BC, LC, NC, BF, and NF ordered.
- 2) Order one (1) for each battery cabinet feed required.



### **List 68: 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.

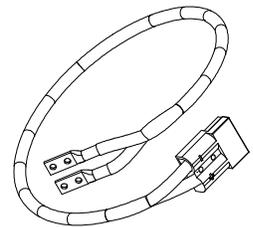
#### **Restrictions**

For use with Lists BC, LC, NC, BF, and NF only.

For use with [P/N 541434](#), [P/N 545534](#), [P/N 545506](#), or [P/N 554631](#) battery cabinets only.

#### **Ordering Notes**

- 1) Order as required. Each shelf provides landings for up to three (3) battery strings.



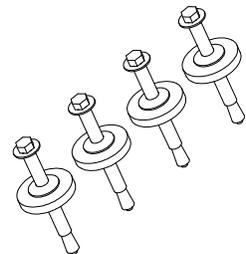
### **List 89: Relay Rack Earthquake Anchor Kit, P/N P0987167**

#### **Features**

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

#### **Ordering Notes**

- 1) Order as required.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **List 90: Optional Temperature Probe, P/N 04118246 (shelf side half) and P/N 04118247 (probe side half, 9 ft. long)**

#### **Features**

- ◆ Up to two (2) temperature probes can be connected to the Customer Interface (IB2) Board. Either or both probes can be programmed to monitor ambient temperature or battery temperature.
- ◆ A temperature probe set as a battery probe can also be designated to be used for the battery charge temperature compensation feature. If the system is equipped with the ACU+ or NCU Controller, the battery charge temperature compensation feature can be programmed to use one probe or the average or highest value of all probes programmed to monitor battery temperature. 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.
- ◆ If the system is equipped with the ACU+ or NCU Controller, a temperature probe set as a battery probe can also be used for controlling against battery thermal runaway (BTRM feature).
- ◆ The Temperature Probe assembly consists of two pieces that plug together to make a complete probe. When ordered, P/N 04118246 (3 feet long) is pre-wired to the shelf. P/N 04118247 (9 feet long) is shipped loose. Total length: 12 ft.



#### **Restrictions**

A temperature probe programmed to monitor battery temperature should be mounted on the top or side of a battery cell to sense battery temperature. A temperature probe used for battery charge temperature compensation or BTRM (Battery Thermal Runaway Management) should also be mounted on the top or side 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 up to two (2) Temperature Probes for each shelf, as required. Each List 90 includes one (1) P/N 04118246 and one (1) P/N 04118247.
- 2) For a Temperature Probe with a longer cable see List 91.
- 3) Only one (1) Temperature Probe can be used for compensation (in the SCU+). If multiple probes are required, order (1) SM-TEMP Temperature Concentrator.
- 4) See “Optional Temperature Probes” on page 36 for temperature probe options with a mounting tab.

### **List 91: Optional Temperature Probe,**

### **P/N 04118246 (shelf side half) and P/N 04116740 (probe side half, 30 ft. long)**

#### **Features**

- ◆ See above for description of Temperature Probes.
- ◆ The Temperature Probe assembly consists of two pieces that plug together to make a complete probe. When ordered, P/N 04118246 (3 feet long) is pre-wired to the shelf and P/N 04116740 (30 feet long) is shipped loose. Total length: 33 ft.

#### **Restrictions**

See above for restrictions.

#### **Ordering Notes**

- 1) Order up to two (2) Temperature Probes for each shelf, as required. Each List 91 includes one (1) P/N 04118246 and one (1) P/N 04116740.
- 2) For a Temperature Probe with a shorter cable see List 90.
- 3) Only one (1) Temperature Probe can be used for compensation (in the SCU+). If multiple probes are required, order (1) SM-TEMP Temperature Concentrator.
- 4) See “Optional Temperature Probes” on page 36 for temperature probe options with a mounting tab.

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### List 93: Battery Tray for 23" Relay Rack

#### Features

- ◆ Provides one battery tray that mounts four (4) 12V front terminal Valve Regulated Lead Acid (VRLA) batteries. Batteries are configured as one (1) 48V string.
- ◆ Accepts various VRLA batteries. See **Ordering Notes** below.
- ◆ See [Overall Dimensions - 23" Battery Tray](#) under *PHYSICAL SIZE INFORMATION* for battery tray dimensions and typical arrangement. Note that two battery trays are available to accommodate the various size batteries listed in the **Ordering Notes** tables.
- ◆ Trays can be ordered with or without battery disconnect circuit breakers. When circuit breakers are ordered, one is provided in the -48V lead of each battery string (1 circuit breaker per tray).
- ◆ Battery cables are available terminated at the power system end in an Anderson connector. Battery lugs are available for the remaining end.

#### Restrictions

For 23" relay racks only.

Maximum number of List 93's per rack is three (3).

A single List 93 must mount at bottom of rack. Multiple List 93's must mount starting at bottom of rack and working upward.

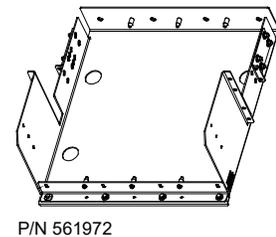
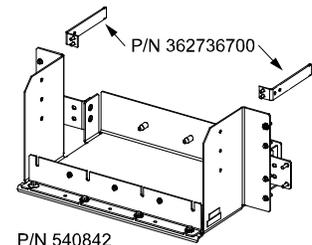
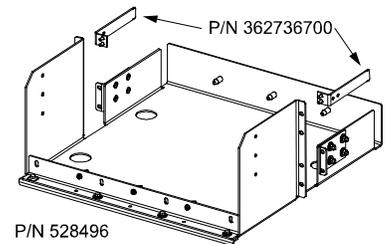
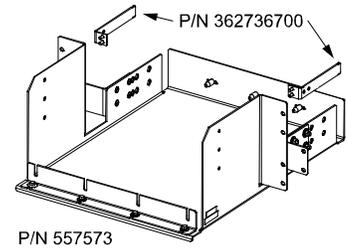
561972 will fit into the 23" relay rack (Telect Part Number:12300KW201).

#### 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. Tables A, B, C, and D list 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 Tables A, B, C, and D.
- 5) Battery lugs are provided, as specified from Table E.
- 6) Specify with or without 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 circuit breakers, order one (1) circuit breaker per List 93 from Table F.
- 8) If ordering List 93 with circuit breakers, specify breaker mounting on left side of tray, right side of tray, or remote mounting. Circuit breaker mounting kits shown in the Table F will be installed. Kit numbers are provided for reference only
- 9) If ordering List 93 with 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.



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Battery Tray P/N 528496						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
GNB Marathon	M12V125FT	--	125	4.90 X 22.00 X 11.15	7U	105
GNB Marathon	M12V155FT	112795	155	4.90 X 22.00 X 11.15	7U	119
Northstar	NSB110FT	--	110	4.92 X 22.05 X 8.94	7U	91
Northstar	NSB170FT	--	167	4.92 X 22.05 X 12.60	8U	131
Deka Unigy I	12AVR-150ET	122018	150	4.90 X 22.00 X 11.75	8U	115
C&D	TEL12-210F	554579	202	4.90 X 22.00 X 12.80	8U	132
Douglas	DGS12-150F	125453	150	4.90 X 22.00 X 12.70	8U	137
Douglas	DSN12-170F	--	170.8	4.92 X 22.05 X 12.60	8U	130

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table A

Battery Tray P/N 540842						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
Northstar	NSB40FT**	--	38.1	3.80 X 9.80 X 8.20	6U	34
Northstar	NSB60FT**	--	57.9	4.20 X 11.30 X 10.40	7U	49
Douglas	DGS12-25F	--	25	3.94 X 10.80 X 7.60	6U	27
Douglas	DGS12-50F	--	50	3.94 X 10.80 X 11.60	8U	48
Energys	12TD50F	--	48	4.2 X 10.9 X 8.7	6U	38

\* See [Battery Manufacturer Information](#) located at the end of this document.

\*\* Batteries MUST be equipped with front access terminal option. See Battery Manufacturer for ordering information.

Table B

Battery Tray P/N 557573						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
Energys	12TD150F	--	143	4.3 X 21.7 X 11.3	8U	105

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table C

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Battery Tray P/N 561972						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
GNB Marathon	M12V125FT	--	125	4.90 X 22.00 X 11.15	7U	105
GNB Marathon	M12V155FT	112795	155	4.90 X 22.00 X 11.15	7U	119
Northstar	NSB110FT	--	110	4.92 X 22.05 X 8.94	7U	91
Northstar	NSB170FT	--	167	4.92 X 22.05 X 12.60	8U	131
Deka Unigy I	12AVR-150ET	122018	150	4.90 X 22.00 X 11.75	8U	115
C&D	TEL12-210F	554579	202	4.90 X 22.00 X 12.80	8U	132
Douglas	DGS12-150F	125453	150	4.90 X 22.00 X 12.70	8U	137
Douglas	DSN12-170F	--	170.8	4.92 X 22.05 X 12.60	8U	130

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table D

Battery Specified	Battery Lug Kit Part Number (Kit provides two lugs for one tray.)
GNB Marathon M12V125FT	528234
GNB Marathon M12V155FT	
Northstar NSB110FT	
Northstar NSB170FT	
Deka Unigy I 12AVR-150ET	
C&D TEL12-210F	528236
Douglas DGS12-150F	
Douglas DSN12-170F	528234
Northstar NSB40FT	
Northstar NSB60FT	
Douglas DGS12-25F	
Douglas DGS12-50F	
Energys 12TD50F	
Energys 12TD150F	

Table E

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Ampere Rating	Part No., Circuit Breaker, Electrical/Mechanical Trip <sup>1</sup> (Black Handle)	Part No., Left-Side Breaker Mtg. Kit (For Reference Only)	Part No., Right-Side Breaker Mtg. Kit (For Reference Only)
1	256690300	528501	528500
3	256690700		
5	256691100		
10	256691500		
15	256691900		
20	256692300		
25	256692700		
30	256693100		
35	256693500		
40	256693900		
50	256694300		
60	256694700		
70	256695100		
75	256695500		
100	256695900		

<sup>1</sup> Provides an alarm during an electrical or manual trip condition.

Table F

# Vertiv™ NetSure™ 502NGFB DC Power System

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### List 94: Battery Tray for 19" Relay Rack

#### Features

- ◆ Provides one battery tray that mounts four (4) 12V front terminal Valve Regulated Lead Acid (VRLA) batteries. Batteries are configured as one (1) 48V string.
- ◆ Accepts various VRLA batteries. See **Ordering Notes** below.
- ◆ See [Overall Dimensions - 19" Battery Tray](#) under *PHYSICAL SIZE INFORMATION* for battery tray dimensions and typical arrangement. Note that three battery trays are available to accommodate the various size batteries listed in the **Ordering Notes** tables.
- ◆ Trays can be ordered with or without battery disconnect circuit breakers. When circuit breakers are ordered, one is provided in the -48V lead of each battery string (1 circuit breaker per tray).
- ◆ Battery cables are available terminated at the power system end in an Anderson connector. Battery lugs are available for the remaining end.

#### Restrictions

For 19" relay racks only.

Maximum number of List 94's per rack is three (3).

A single List 94 must mount at bottom of rack. Multiple List 94's must mount starting at bottom of rack and working upward.

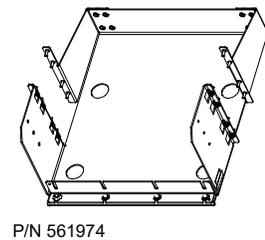
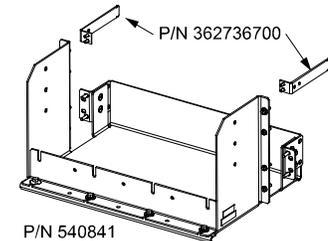
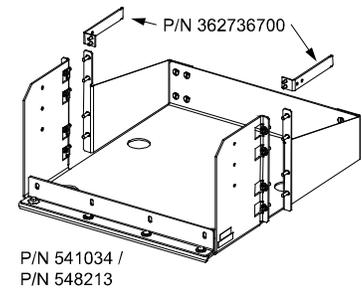
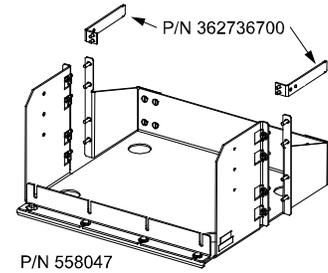
561974 will fit into the 19" Telect relay rack (Telect Part Number: 12545-300).

#### 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. Tables G, H, I, J, and K 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 Tables G, H, I, J, and K.
- 5) Battery lugs are provided, as specified from Table L.
- 6) Specify with or without 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 with circuit breakers, order one (1) circuit breaker per List 94 from Table M.
- 8) If ordering List 94 with circuit breakers, specify breaker mounting on left side of tray, right side of tray, or remote mounting. Circuit breaker mounting kits shown in the Table M will be installed. Kit numbers are provided for reference only
- 9) If ordering List 94 with 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.



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Battery Tray P/N 558047						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
Northstar	NSB90FT	--	90	4.25 X 15.59 X 10.04	7U	71
Northstar	NSB100FT	--	100	4.25 X 15.59 X 11.03	7U	78
GNB Marathon	M12V90FT	--	90	4.13 X 15.55 X 10.63	7U	70
Energys	12TD100F4	--	96	4.3 X 15.5 X 11.3	8U	71

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table G

Battery Tray P/N 541034						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
GNB Marathon	M12V105FT	--	105	4.33 X 20.12 X 9.37	7U	79
Energys	12TD100F6	--	97	4.3 X 20.0 X 9.4	7U	73

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table H

Battery Tray P/N 540841						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
Northstar	NSB40FT**	--	38.1	3.80 X 9.80 X 8.20	6U	34
Northstar	NSB60FT**	--	57.9	4.20 X 11.30 X 10.40	7U	49
Douglas	DGS12-25F	--	25	3.94 X 10.80 X 7.60	6U	27
Douglas	DGS12-50F	--	50	3.94 X 10.80 X 11.60	8U	48
Energys	12TD50F	--	48	4.2 X 10.9 X 8.7	6U	38

\* See [Battery Manufacturer Information](#) located at the end of this document.

\*\* Batteries MUST be equipped with front access terminal option. See Battery Manufacturer for ordering information.

Table I

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Battery Tray P/N 561974						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
GNB Marathon	M12V105FT	--	105	4.33 X 20.12 X 9.37	7U	79
Enersys	12TD100F6	--	97	4.3 X 20.0 X 9.4	7U	73

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table J

Battery Tray P/N 548213						
Manufacturer*	Model	Vertiv P/N	Rated 8-Hr. Capacity (Ah)	Dimension W x L x H (Inches)	Required Tray Spacing	Weight (per battery) (lbs)
Enersys	12V125F	122009	125	4.10 X 22.10 X 12.40	8U	124
Enersys	12TD150F	--	143	4.3 X 21.7 X 11.3	8U	105

\* See [Battery Manufacturer Information](#) located at the end of this document.

Table K

Battery Specified	Battery Lug Kit Part Number (Kit provides two lugs for one tray.)
Northstar NSB90FT	528234
Northstar NSB100FT	
GNB Marathon M12V90FT	
GNB Marathon M12V105FT	
Northstar NSB40FT	
Northstar NSB60FT	
Douglas DGS12-25F	
Douglas DGS12-50F	
Enersys 12V125F	
Enersys 12TD50F	
Enersys 12TD100F4	
Enersys 12TD100F6	
Enersys 12TD150F	

Table L

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Ampere Rating	Part No., Circuit Breaker, Electrical/Mechanical Trip <sup>1</sup> (Black Handle)	Part No., Left-Side Breaker Mtg. Kit (For Reference Only)	Part No., Right-Side Breaker Mtg. Kit (For Reference Only)
1	256690300	528501	528500
3	256690700		
5	256691100		
10	256691500		
15	256691900		
20	256692300		
25	256692700		
30	256693100		
35	256693500		
40	256693900		
50	256694300		
60	256694700		
70	256695100		
75	256695500		
100	256695900		

<sup>1</sup> Provides an alarm during an electrical or manual trip condition.

Table M

## Distribution Unit

### **List BF: Distribution Unit with GMT Fuse Load Distribution Positions and with Low Voltage Battery Disconnect (LVBD)**

#### **Features**

- ◆ Provides a Distribution Unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, (3) battery connection points, and thirteen (13) GMT fuse load distribution positions.
- ◆ Five (5) 0A to 15A GMT fuse load distribution positions.
- ◆ Eight (8) 0A to 10A GMT fuse load distribution positions.

#### **Restrictions**

The (13) Position GMT Fuse Printed Wiring Board is rated 100A at +40°C (+104°F) and 59.5A at 65°C (+149°F).

Unless otherwise specified fuses are mounted from bottom to top, starting with the highest capacity and working to the lowest capacity.

In an ambient of 40°C (+104°F):

- Fuseholders F1-F8 are rated for a 10A fuse maximum. An empty space **is not** required between fuses of any value.
- Fuseholders F9-F13 are rated for a 15A fuse maximum. An empty space **is not** required between fuses of any value. However, 15A fuses **cannot** be placed in adjacent fuseholders. 15A fuses must be separated by a smaller fuse or a space.

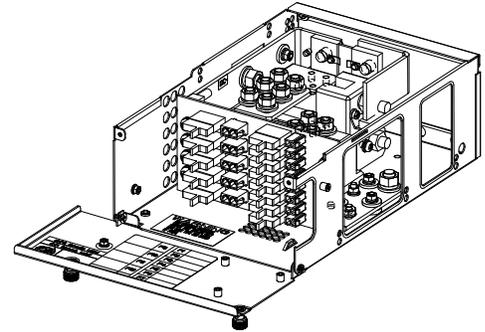
In an ambient of 65°C (+149°F):

- Fuseholders F1-F8 are rated for a 10A fuse maximum. An empty space **is** required between 10A fuses. A fuse greater than 3A **cannot** be placed in a fuseholder adjacent to a 10A fuse.
- Fuseholders F9-F13 are rated for a 15A fuse maximum. An empty space **is** required between 15A fuses. 10A fuses **cannot** be placed in adjacent fuseholders. A fuse greater than 3A **cannot** be placed in a fuseholder adjacent to a 10A fuse.

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BF or NF) for each shelf.  
Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [61](#) for each List BF. Each List 61 provides eight (8) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order one (1) List [62](#) for each List BF. Each List 62 provides five (5) GMT fuse load lead assemblies for the 15A fuse blocks.
- 5) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#), List [66](#), List [67](#), and/or List [68](#)) as required. List 65, List 67 and List 68 are factory installed.
- 6) 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

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### **List NF: Distribution Unit with GMT Fuse Load Distribution Positions and w/out Low Voltage Disconnect**

#### **Features**

- ◆ Provides a Distribution Unit w/out low voltage disconnect, a battery shunt, (3) battery connection points, and thirteen (13) GMT fuse load distribution positions.
- ◆ Five (5) 0A to 15A GMT fuse load distribution positions.
- ◆ Eight (8) 0A to 10A GMT fuse load distribution positions.

#### **Restrictions**

The (13) Position GMT Fuse Printed Wiring Board is rated 100A at +40°C (+104°F) and 59.5A at 65°C (+149°F).

Unless otherwise specified fuses are mounted from bottom to top, starting with the highest capacity and working to the lowest capacity.

In an ambient of 40°C (+104°F):

- Fuseholders F1-F8 are rated for a 10A fuse maximum. An empty space **is not** required between fuses of any value.
- Fuseholders F9-F13 are rated for a 15A fuse maximum. An empty space **is not** required between fuses of any value. However, 15A fuses **cannot** be placed in adjacent fuseholders. 15A fuses must be separated by a smaller fuse or a space.

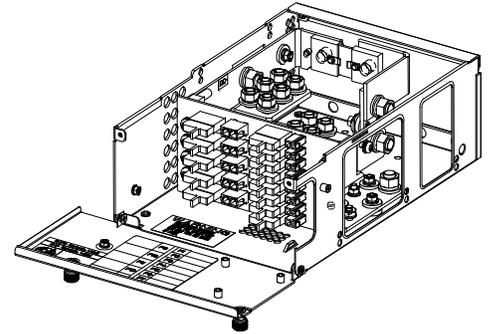
In an ambient of 65°C (+149°F):

- Fuseholders F1-F8 are rated for a 10A fuse maximum. An empty space **is** required between 10A fuses. A fuse greater than 3A **cannot** be placed in a fuseholder adjacent to a 10A fuse.
- Fuseholders F9-F13 are rated for a 15A fuse maximum. An empty space **is** required between 15A fuses. 10A fuses **cannot** be placed in adjacent fuseholders. A fuse greater than 3A **cannot** be placed in a fuseholder adjacent to a 10A fuse.

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BF or NF) for each List shelf. Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [61](#) for each List NF. Each List 61 provides eight (8) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order one (1) List [62](#) for each List NF. Each List 62 provides five (5) GMT fuse load lead assemblies for the 15A fuse blocks.
- 5) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#), List [66](#), List [67](#), and/or or List [68](#)) as required. List 65, List 67 and List 68 are factory installed.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### **List BC: Distribution Unit with GMT Fuse Load Distribution Positions, Circuit Breaker Load Distribution Positions, and with Low Voltage Battery Disconnect (LVBD)**

#### **Features**

- ◆ Provides a Distribution Unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, (3) battery connection points, four (4) bullet nose-type circuit breaker load distribution positions, five (5) GMT fuse load distribution positions (10A maximum).

#### **Restrictions**

For use with Lists 2 and 6 only.

Maximum distribution current is 72A at @ +65°C (+149°F) and 100A @ +40°C (+104°F).

Maximum load distribution or battery circuit breaker size is 75A @ +65°C (+149°F).

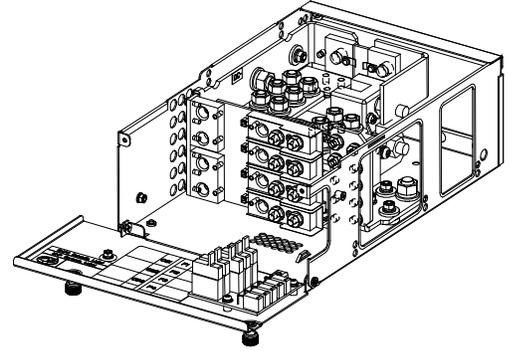
The GMT fuse block has a 35A @ +40°C (+104°F) and a 21A @ +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 10A. At +65°C (+149°F), a space is required between GMT fuses greater than 5A.

**Caution:** *In an ambient of +65 °C, 50 A overcurrent protective devices can be used without a space provided the continuous current in each device does not exceed 36 A. Overcurrent protective devices greater than 50 A shall have an empty mounting position between it and any other overcurrent protective device. The maximum size overcurrent device used shall be 70 A. There are no restrictions for overcurrent devices in an ambient of +40 °C.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” and “[Bullet Nose-Type Circuit Breakers \(Battery Disconnect and Load\)](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BC, LC, or NC) for each shelf.  
Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [60](#) for each List BC. Each List 60 provides five (5) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#), List [66](#), List [67](#), and/or or List [68](#)) as required. List 65, List 67 and List 68 are factory installed.
- 5) Order circuit breaker load lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.
- 6) 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.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### **List LC: Distribution Unit with GMT Fuse Load Distribution Positions, Circuit Breaker Load Distribution Positions, and with Low Voltage Load Disconnect (LVLVD)**

#### **Features**

- ◆ Provides a Distribution Unit with Low Voltage Load Disconnect (LVLVD), a battery shunt, (3) battery connection points, four (4) bullet nose-type circuit breaker load distribution positions, five (5) GMT fuse load distribution positions (10A maximum).

#### **Restrictions**

For use with Lists 2 and 6 only.

Maximum distribution current is 72A at @ +65°C (+149°F) and 100A @ +40°C (+104°F).

Maximum load distribution or battery circuit breaker size is 75A @ +65°C (+149°F).

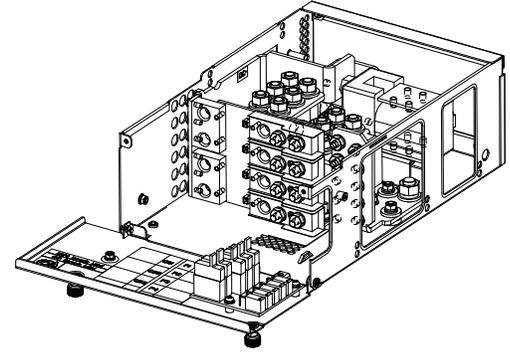
The GMT fuse block has a 35A @ +40°C (+104°F) and a 21A @ +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 10A. At +65°C (+149°F), a space is required between GMT fuses greater than 5A.

**Caution:** *In an ambient of +65 °C, 50 A overcurrent protective devices can be used without a space provided the continuous current in each device does not exceed 36 A. Overcurrent protective devices greater than 50 A shall have an empty mounting position between it and any other overcurrent protective device. The maximum size overcurrent device used shall be 70 A. There are no restrictions for overcurrent devices in an ambient of +40 °C.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” and “[Bullet Nose-Type Circuit Breakers \(Battery Disconnect and Load\)](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BC, LC, or NC) for each shelf.  
Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [60](#) for each List BC. Each List 60 provides five (5) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#), List [66](#), List [67](#), and/or or List [68](#)) as required. List 65, List 67 and List 68 are factory installed.
- 5) Order circuit breaker load lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **List NC: Distribution Unit with GMT Fuse Load Distribution Positions, Circuit Breaker Load Distribution Positions, and w/out Low Voltage Disconnect**

#### **Features**

- ◆ Provides a Distribution Unit w/out low voltage disconnect, a battery shunt, (3) battery connection points, four (4) bullet nose-type circuit breaker load distribution positions, five (5) GMT fuse load distribution positions (10A maximum).

#### **Restrictions**

Maximum distribution current is 72A at @ +65°C (+149°F) and 100A @ +40°C (+104°F).

Maximum load distribution or battery circuit breaker size is 75A @ +65°C (+149°F).

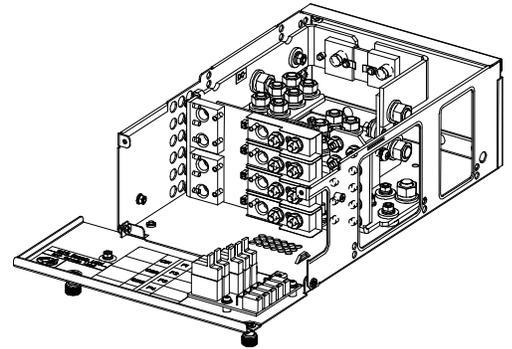
The GMT fuse block has a 35A @ +40°C (+104°F) and a 21A @ +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 10A. At +65°C (+149°F), a space is required between GMT fuses greater than 5A.

**Caution:** *In an ambient of +65 °C, 50 A overcurrent protective devices can be used without a space provided the continuous current in each device does not exceed 36 A. Overcurrent protective devices greater than 50 A shall have an empty mounting position between it and any other overcurrent protective device. The maximum size overcurrent device used shall be 70 A. There are no restrictions for overcurrent devices in an ambient of +40 °C.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” and “[Bullet Nose-Type Circuit Breakers \(Battery Disconnect and Load\)](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BC, LC, or NC) for each shelf. Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [60](#) for each List NC. Each List 60 provides five (5) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order Shelf Side, Battery Side Battery Cables or Output Cables (List [65](#), List [66](#), List [67](#), and/or or List [68](#)) as required. List 65, List 67 and List 68 are factory installed.
- 5) Order circuit breaker load lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **List BA: Distribution Unit with GMT Fuse Load Distribution Positions, Circuit Breaker Load Distribution Positions, Circuit Breaker Battery Disconnect Positions, and with Low Voltage Battery Disconnect (LVBD)**

#### **Features**

- ◆ Provides a Distribution Unit with Low Voltage Battery Disconnect (LVBD), a battery shunt, two (2) bullet nose-type circuit breaker load distribution positions, two (2) bullet nose-type circuit breaker battery disconnect positions, five (5) GMT fuse load distribution positions (10A maximum).

#### **Restrictions**

Maximum distribution current is 72A at @ +65°C (+149°F) and 100A @ +40°C (+104°F).

Maximum load distribution or battery circuit breaker size is 75A @ +65°C (+149°F).

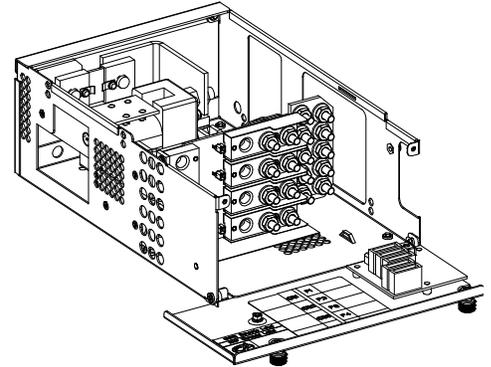
The GMT fuse block has a 35A @ +40°C (+104°F) and a 21A @ +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 10A. At +65°C (+149°F), a space is required between GMT fuses greater than 5A.

**Caution:** *In an ambient of +65 °C, 50 A overcurrent protective devices can be used without a space provided the continuous current in each device does not exceed 36 A. Overcurrent protective devices greater than 50 A shall have an empty mounting position between it and any other overcurrent protective device. The maximum size overcurrent device used shall be 70 A. There are no restrictions for overcurrent devices in an ambient of +40 °C.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” and “[Bullet Nose-Type Circuit Breakers \(Battery Disconnect and Load\)](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BA or NA) for each shelf.  
Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [60](#) for each List BA. Each List 60 provides five (5) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order circuit breaker load lugs and battery input lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.
- 5) 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.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **List NA: Distribution Unit with GMT Fuse Load Distribution Positions, Circuit Breaker Load Distribution Positions, Circuit Breaker Battery Disconnect Positions, and w/out Low Voltage Disconnect**

#### **Features**

- ◆ Provides a Distribution Unit w/out low voltage disconnect, a battery shunt, two (2) bullet nose-type circuit breaker load distribution positions, two (2) bullet nose-type circuit breaker battery disconnect positions, five (5) GMT fuse load distribution positions (10A maximum).

#### **Restrictions**

For use with Lists 2 and 6 only.

Maximum distribution current is 72A at @ +65°C (+149°F) and 100A @ +40°C (+104°F).

Maximum load distribution or battery circuit breaker size is 75A @ +65°C (+149°F).

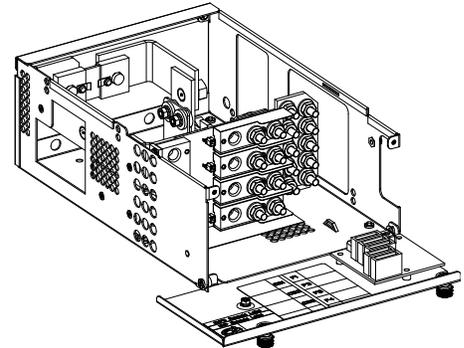
The GMT fuse block has a 35A @ +40°C (+104°F) and a 21A @ +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 10A. At +65°C (+149°F), a space is required between GMT fuses greater than 5A.

**Caution:** *In an ambient of +65 °C, 50 A overcurrent protective devices can be used without a space provided the continuous current in each device does not exceed 36 A. Overcurrent protective devices greater than 50 A shall have an empty mounting position between it and any other overcurrent protective device. The maximum size overcurrent device used shall be 70 A. There are no restrictions for overcurrent devices in an ambient of +40 °C.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” and “[Bullet Nose-Type Circuit Breakers \(Battery Disconnect and Load\)](#)” in the ACCESSORY DESCRIPTIONS section.

#### **Ordering Notes**

- 1) Order one (1) Distribution Unit (List BA or NA) for each shelf.  
Also order the following as required.
- 2) Order [Distribution Devices](#) per ACCESSORY DESCRIPTIONS section.
- 3) Order one (1) List [60](#) for each List NA. Each List 60 provides five (5) GMT fuse load lead assemblies for the 10A fuse blocks.
- 4) Order circuit breaker load lugs and battery input lugs per [Wiring Notes](#) under ACCESSORY DESCRIPTIONS section.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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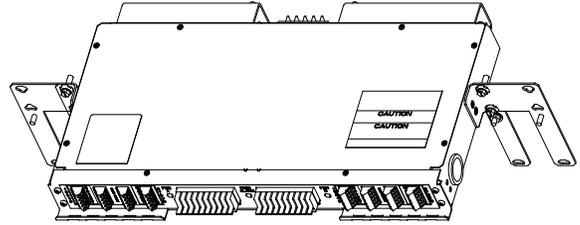
### List KG: Distribution Panel with (20) GMT Fuse Load Distribution Positions

#### Features

- ◆ 1U-high GMT fuse panel that provides Single Load Distribution (-48V)
- ◆ Provides twenty (20) 0A to 15A GMT fuse load distribution positions.

**Caution:** *At +40°C and +65°C ambient, a fuse with a rating of greater than 10 amperes SHALL HAVE an empty mounting position between it and any other fuse.*

- ◆ Maximum Capacity: 80A @ +40°C and 80A @ +65°C
- ◆ Factory mounted and connected to List 2 or 6 shelf.
- ◆ If the Distribution Unit in the system is equipped with Low Voltage Load Disconnect (LVLD), all List KG loads are disconnected.
- ◆ If one or more distribution fuses opens, one set of Form-C relay contacts changes state, and resistive battery is provided to an alarm terminal. Alarm circuit is factory connected to activate the Power System Controller fuse alarm



#### Restrictions

Mounts only immediately above List 2 or 6 shelf.

Maximum distribution current is 80A.

See also the **Restrictions** under "[GMT Load Distribution Fuses](#)" in the ACCESSORY DESCRIPTIONS section.

#### Ordering Notes

- 1) Order one (1) List KG GMT Distribution Fuse Panel Assembly for each List 2 or 6 shelf as required. Also order the following as required.
- 2) Order [GMT Load Distribution Fuses](#) per ACCESSORY DESCRIPTIONS section.

## ACCESSORY DESCRIPTIONS

### Relay Racks

#### Features

- ◆ The following relay racks are available.

#### Restrictions

Customer must mount power/distribution shelf in relay rack. If battery trays are ordered, they are factory mounted in the relay rack.

#### Ordering Notes

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

Part Number	Size	Available Mounting Positions (1RU = 1-3/4")	Notes
<b>23" Relay Racks</b>			
543156	51-3/8" H x 23" W	28RU	Welded
543161	6'0" H x 23" W	37RU	Welded
543160	7'0" H x 23" W	45RU	Seismic (Note 1)
543162	7'0" H x 23" W	45RU	Welded
543163	7'6" H x 23" W	48RU	Welded
543164	8'0" H x 23" W	51RU	Welded
<b>19" Relay Racks</b>			
525003	51-3/8" H x 19" W	28RU	Welded
534653	6'0" H x 19" W	37RU	Seismic (Note 1)
524961	6'0" H x 19" W	37RU	Welded
534654	6'6" H x 19" W	41RU	Seismic (Note 1)
534651	6'6" H x 19" W	41RU	Welded
528183	7'0" H x 19" W	45RU	Seismic (Note 1)
524988	7'0" H x 19"W	45RU	Welded
524963	7'6" H x 19" W	48RU	Welded
534652	8'0" H x 19" W	51RU	Welded

Note 1: Complies with Bellcore Seismic Zone 4 Requirements

Table N  
Available Relay Racks

## Rectifier

### **R48-2000 Rectifier Module**

#### **Features**

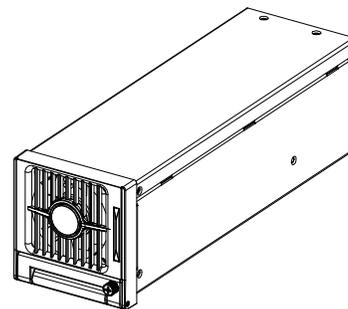
- ◆ Provides one (1) Model R48-2000, Spec. No. 1R482000, 2000 watt / 48 volt Rectifier Module.

#### **Restrictions**

Each List 2 Shelf (19") holds up to two (2) Rectifier Modules.  
Each List 6 Shelf (23") holds up to three (3) Rectifier Modules.

#### **Ordering Notes**

- 1) Order by P/N 1R482000 as required.



### **R48-2000e Rectifier Module, High Efficiency**

#### **Features**

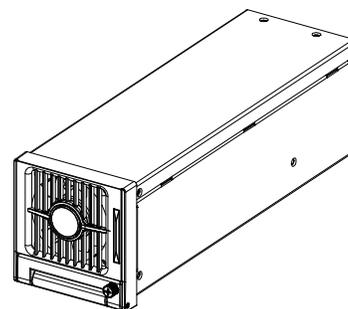
- ◆ Provides one (1) Model R48-2000e, Spec. No. 1R482000e, 2000 watt / 48 volt High Efficiency Rectifier Module.

#### **Restrictions**

Each List 2 Shelf (19") holds up to two (2) Rectifier Modules.  
Each List 6 Shelf (23") holds up to three (3) Rectifier Modules.

#### **Ordering Notes**

- 1) Order by P/N 1R482000e as required.



## Controller

### **NCU (NetSure™ Control Unit), P/N 1M830BNA**

#### **Features**

- ◆ Provides the NCU Controller.
- ◆ Factory programmed with the configuration file specified when ordered.

#### **Restrictions**

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

#### **Ordering Notes**

- 1) Order one (1) controller for each shelf.

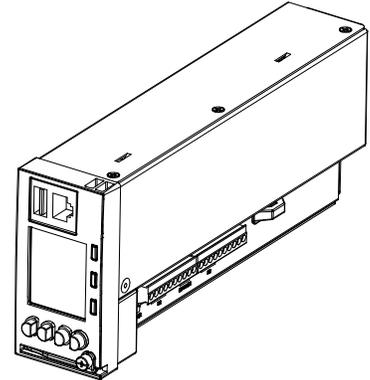
**Note:** The controller is provided with the factory default configuration unless otherwise specified.

- 2) 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 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, contact the factory or technical assistance center to obtain a copy of the original configuration file (all package) so it can be programmed into the new controller.

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



### **ACU+ (Advanced Control Unit Plus), P/N 1M820BNA**

#### **Features**

- ◆ Provides the ACU+ Controller.
- ◆ Factory programmed with the configuration file specified when ordered.

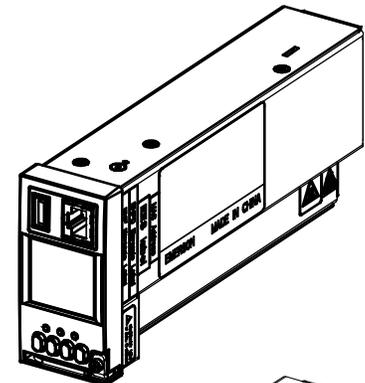
#### **Restrictions**

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

#### **Ordering Notes**

- 1) Order one (1) controller for each shelf.

**Note:** The controller is provided with the factory default configuration unless otherwise specified.



### **SCU+ (Standard Control Unit Plus), P/N 1M521BNA**

#### **Features**

- ◆ Provides the SCU+ Controller.
- ◆ Factory programmed with the configuration file specified when ordered.

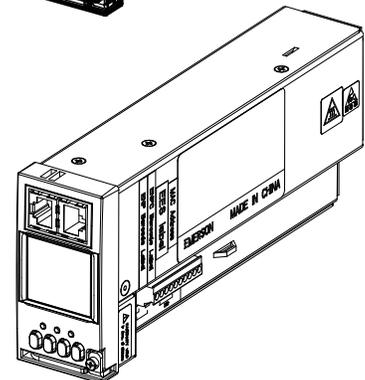
#### **Restrictions**

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

#### **Ordering Notes**

- 1) Order one controller for each shelf.

**Note:** The controller is provided with the factory default configuration unless otherwise specified.



## Optional Temperature Probes

### Features

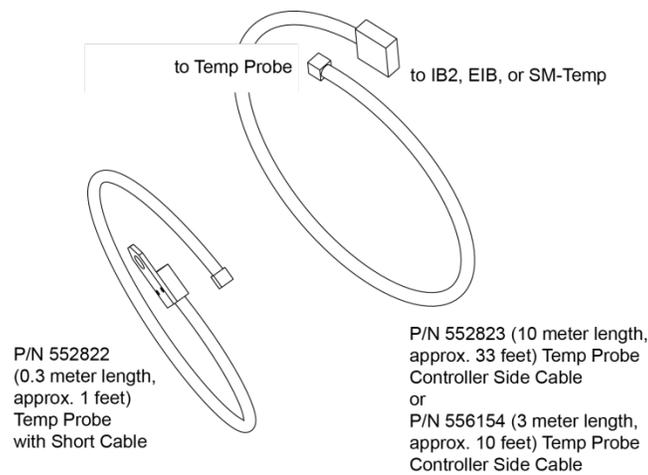
- ◆ Up to two (2) temperature probes can be connected to the Customer Interface (IB2) Board. Either or both probes can be programmed to monitor ambient temperature or battery temperature.
- ◆ A temperature probe set as a battery probe can also be designated to be used for the battery charge temperature compensation feature. If the system is equipped with the ACU+ or NCU Controller, the battery charge temperature compensation feature can be programmed to use one probe or the average or highest value of all probes programmed to monitor battery temperature. 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.
- ◆ If the system is equipped with the ACU+ or NCU Controller, a temperature probe set as a battery probe can also be used for controlling against battery thermal runaway (BTRM feature).
- ◆ The temperature sensor end of the probe contains a tab with a 5/16" clearance hole for mounting.
- ◆ The Temperature Probe assembly consists of two pieces that plug together to make a complete probe.

### Restrictions

A temperature probe programmed to monitor battery temperature should be mounted on the top or side of a battery cell to sense battery temperature. A temperature probe used for battery charge temperature compensation or BTRM (Battery Thermal Runaway Management) should also be mounted on the top or side 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 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).
- 2) See "[List 90](#)" on page 16 and "[List 91](#)" on page 16 for additional temperature probe options.



### Temp Probe Kits

P/N 552992 (includes P/Ns 552822 and 552823)

P/N 556155 (includes P/Ns 552822 and 556154)

## Mounting and Adapter Kits

### Optional Wall Mount Bracket Kit for Lists 2 and 6, P/N 553203

#### **Features**

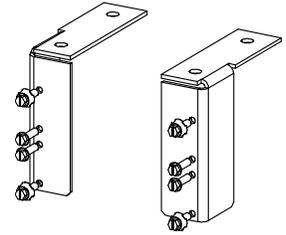
- ◆ Allows for vertical wall mounting.
- ◆ See [Physical Size Information](#) for mounting dimensions.

#### **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 ¾” screws with four (4) ground washers for attaching the brackets to the shelf.



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

#### **Features**

- ◆ Allows for horizontal wall mounting of 19” systems.
- ◆ See “Overall Dimensions - System with 19” 6RU Wall Mount Kit P/N 552537 (cont’d on next page) on page 85.

#### **Restrictions**

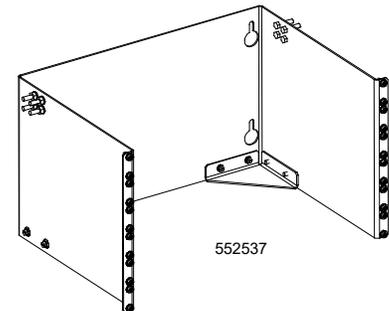
For horizontal mount only.

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 “Overall Dimensions - System with 23” 6RU Wall Mount Kit P/N 552535 (cont’d on next page)” on page 87.

#### **Restrictions**

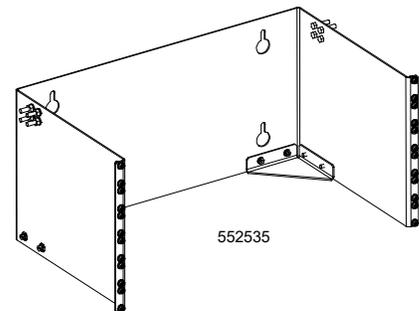
For horizontal mount only.

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.



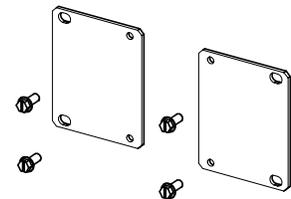
### Optional 19” to 23” Rack Adapter Kit, P/N 545728

#### **Features**

- ◆ Allows for 23” relay rack mounting

#### **Ordering Notes**

- 1) Order P/N 545728, which consists of two (2) P/N 545727 adapters and four (4) 12-24 x 1/2” thread forming screws.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **Optional Vertical Flush Mount Kit for List 2, P/N 556851**

#### **Features**

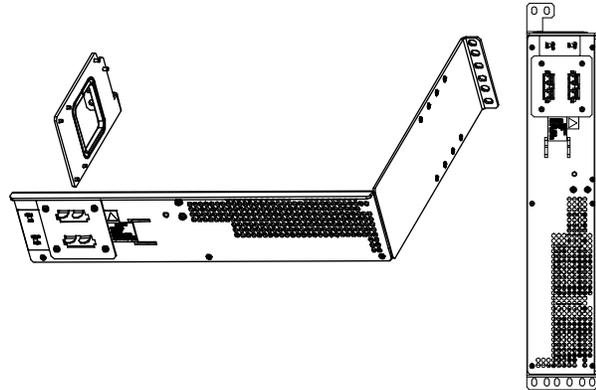
- ◆ Allows for vertical flush mounting.
- ◆ This kit provides rear AC.

#### **Restrictions**

For List 2 only  
For vertical mount only.

#### **Ordering Notes**

- 1) Order P/N 556851 as required.



### **Optional Mount Kit for List 2, P/N 558707**

#### **Features**

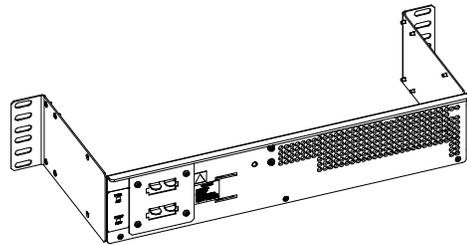
- ◆ Allows for horizontal mounting and a 5" front projection.
- ◆ This kit provides rear AC.

#### **Restrictions**

For List 2 only

#### **Ordering Notes**

- 1) Order P/N 558707 as required.



### **Optional Mount Kit for List 6, P/N 558708**

#### **Features**

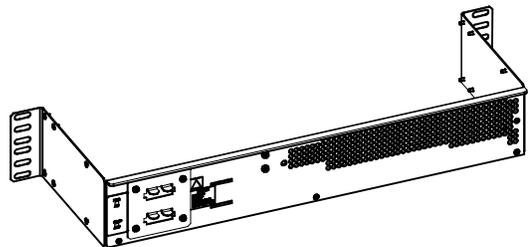
- ◆ Allows for horizontal mounting and a 5" front projection.
- ◆ This kit provides rear AC.

#### **Restrictions**

For List 6 only

#### **Ordering Notes**

- 1) Order P/N 558708 as required.



## Distribution Devices

### GMT Load Distribution Fuses

#### **Features**

- ◆ Each List BF and NF Distribution Unit holds up to five (5) 0-15A GMT load distribution fuses and eight (8) 0-10A GMT load distribution fuses.
- ◆ Each List BC, LC, NC, BA, NA Distribution Unit holds up to five (5) 0-10A GMT load distribution fuses.
- ◆ Each List KG Distribution Panel holds up to twenty (20) 0-15A GMT load distribution fuses.

#### **Restrictions**

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

The 70% restriction for 10A GMT fuses also applies to 15A GMT fuses.

See also the **Restrictions** for each Distribution Unit in the LIST DESCRIPTIONS section.

See also [Load Distribution Wiring \(GMT Fuses\) \(Lists BC, LC, NC, BA, and NA only\)](#) and [Load Distribution Wiring \(GMT Fuses\) \(Lists BF and NF only\)](#) under WIRING NOTES for additional wiring restrictions.

#### **Ordering Notes**

- 1) Order GMT fuses per Table 2.

<b>Ampere Rating</b>	<b>Part Number</b>	<b>Fuse Color</b>
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 Dummy Fuse	248872600	--
Replacement Safety Fuse Cover	102774	--

Table O  
GMT Fuses

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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

#### Features

- ◆ Each List BC, LC, and NC Distribution Unit holds up to four (4) bullet nose-type load distribution circuit breakers.
- ◆ Each List BA and NA Distribution Unit holds up to two (2) bullet nose-type battery disconnect circuit breakers and up to two (2) bullet nose-type load distribution circuit breakers.

#### Restrictions

See also the **Restrictions** for each Distribution Unit in the LIST DESCRIPTIONS section.

See also [Load Distribution Wiring \(Circuit Breakers\)](#) and [Input Battery Wiring \(to Battery Disconnect Circuit Breakers\)](#) under WIRING NOTES for additional wiring restrictions.

#### Ordering Notes

- 1) Order circuit breakers per Table 3.

Ampere Rating	Number of Poles (and Mounting Positions)	Part Number	
		Electrical Trip <sup>1</sup> (White Handle)	Electrical/ Mechanical Trip <sup>2</sup> (Black Handle)
1	1	102272	101596
3	1	102273	101597
5	1	102274	101598
10	1	102275	101599
15	1	102276	101600
20	1	102277	101601
25	1	102278	101602
30	1	102279	101603
35	1	102280	101604
40	1	102281	101605
45	1	121998	121997
50	1	102282	101606
60	1	102283	101607
70	1	102284	101608
75	1	102285	101609
80	1	121996	121995
90	1	138887	138888
100	1	102286	101610

See [Table 8](#) for recommended wire sizes and lugs.

Circuit Breaker Alarm Operation:

- <sup>1</sup> Provides an alarm during an electrical trip condition only.
- <sup>2</sup> 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 P  
Bullet Nose-Type Circuit Breakers

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **Bulk Output Bus bar, P/N 535015**

#### **Features**

- ◆ Provides replacement for circuit breakers shown in Table 3.
- ◆ Includes two (2) bullet terminals.
- ◆ Each List BC, LC, and NC Distribution Unit holds up to four (4) load bus bars.
- ◆ Each List BA and NA Distribution Unit holds up to two (2) load bus bars and up to two (2) battery bus bars.

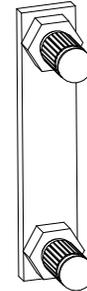
#### **Restrictions**

Bulk Output Bus bars are ordered separately.

Maximum number of Bulk Output Bus bars per system is four (4).

#### **Ordering Notes**

- 1) Order by P/N 535015 as required.



### **AC Input Cables and Line Cords**

#### **AC Input Cable Assembly, P/N 535232**

#### **Features**

- ◆ Provides one (1) 30" long, 8 AWG, AC Input Cable Assembly;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and the remaining end un-terminated.

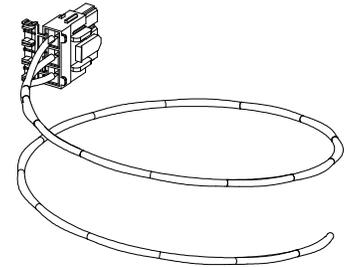
#### **Restrictions**

Rated for 30A.

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



#### **AC Input Cable Assembly, P/N 553202**

#### **Features**

- ◆ Provides one (1) 12' long, 8 AWG, AC Input Cable Assembly;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and the remaining end un-terminated.

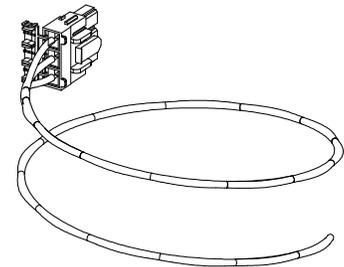
#### **Restrictions**

Rated for 30A.

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **AC Input Line Cord, P/N 540946, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-30P twist-lock plug.

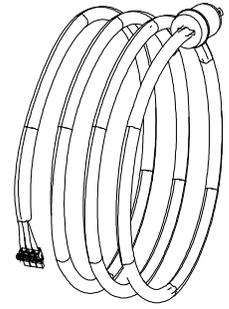
#### **Restrictions**

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

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



### **AC Input Line Cord, P/N 559301, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug at a 90 degree angle bend which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-30P twist-lock plug.

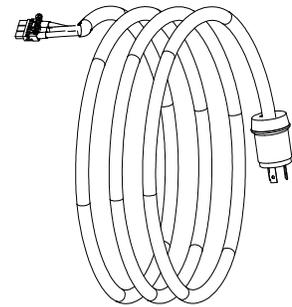
#### **Restrictions**

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

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



### **AC Input Line Cord, P/N 545616, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 6' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-30P twist-lock plug.

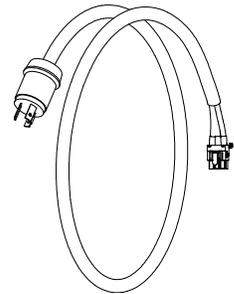
#### **Restrictions**

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

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **AC Input Line Cord, P/N 559842, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 6' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug (wires molded 180° from plug orientation) which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-30P twist-lock plug.

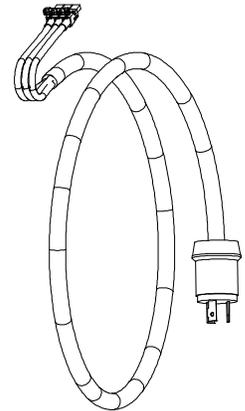
#### **Restrictions**

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

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



### **AC Input Line Cord, P/N 559302, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 6' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug at a 90 degree angle bend which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-30P twist-lock plug.

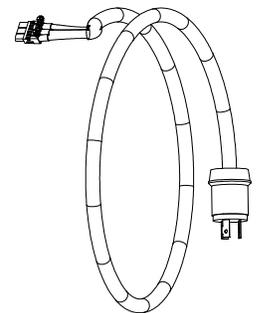
#### **Restrictions**

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

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



### **AC Input Line Cord, P/N 545252, 120VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 8/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L5-30P twist-lock plug.

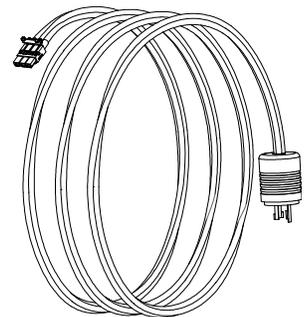
#### **Restrictions**

For 120 VAC only (rated for 30A at 120VAC).

Each List 2 and 6 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 and 6 ordered.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **AC Input Line Cord, P/N 545478, 120VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 14/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA 5-15P plug.

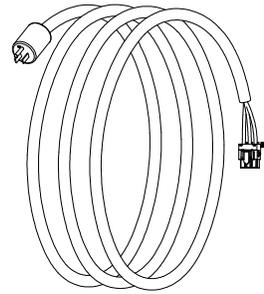
#### **Restrictions**

For 120 VAC only (rated for 15A at 120VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



### **AC Input Line Cord, P/N 545479, 120VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 14/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L5-15P twist-lock plug.

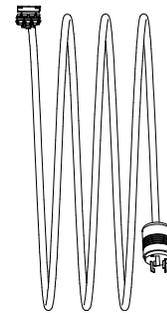
#### **Restrictions**

For 120 VAC only (rated for 15A at 120VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



### **AC Input Line Cord, P/N 545480, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 14/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-15P twist-lock plug.

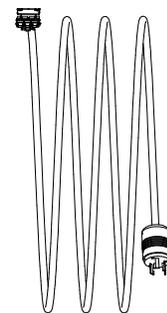
#### **Restrictions**

For 208/240 VAC only (rated for 15A at 208/240VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **AC Input Line Cord, P/N 545481, 120VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 12/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L5-20P twist-lock plug.

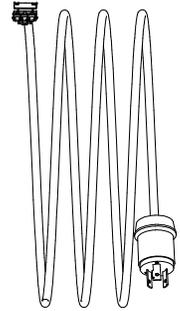
#### **Restrictions**

For 120 VAC only (rated for 20A at 120VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



### **AC Input Line Cord, P/N 545482, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 14/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA 6-15P plug.

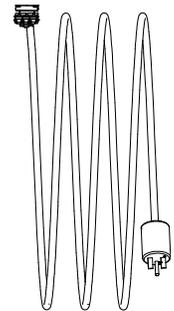
#### **Restrictions**

For 208/240 VAC only (rated for 15A at 208/240VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



### **AC Input Line Cord, P/N 545553, 208/240VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 12/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L6-20P twist-lock plug.

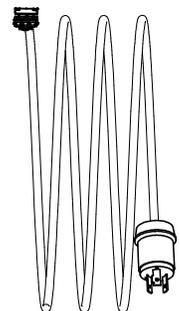
#### **Restrictions**

For 208/240 VAC only (rated for 20A at 208/240VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **AC Input Line Cord, P/N 547525, 120VAC**

#### **Features**

- ◆ Provides one (1) 14' long, 12/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA L5-30P twist-lock plug.

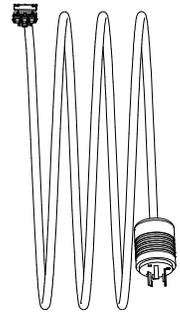
#### **Restrictions**

For 120 VAC only (rated for 30A at 120VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



### **AC Input Line Cord, P/N 548457, 120VAC**

#### **Features**

- ◆ Provides one (1) 6' long, 14/3 AWG, AC Input Line Cord;
  - ◆ terminated on one end with a Molex plug which mates with AC input receptacle on the Power/Distribution Shelf,
  - ◆ and on the remaining end with a NEMA 5-15P plug.

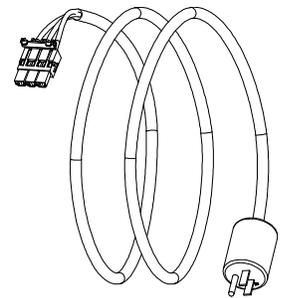
#### **Restrictions**

For 120 VAC only (rated for 15A at 120VAC).

Each List 2 requires two (2) AC Input Cable Assemblies/Line Cords.

#### **Ordering Notes**

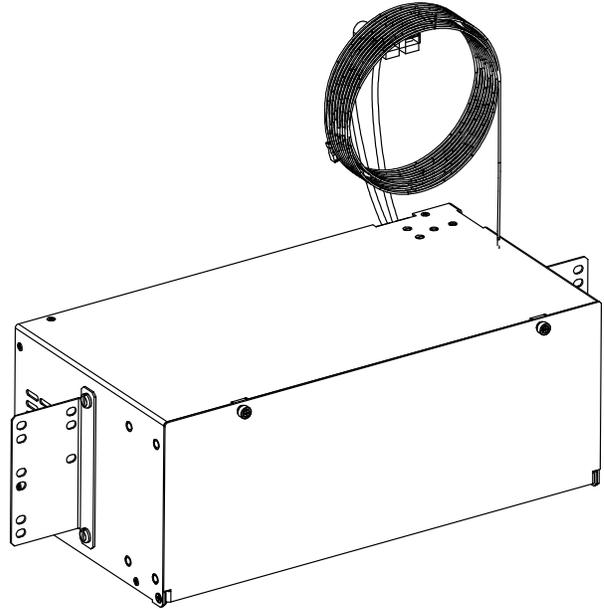
- 1) Order two (2) AC Input Cable Assemblies/Line Cords as required for each List 2 ordered.



**Vertiv™ NetSure™ 211Bc Battery Cabinet (Spec. No. 541434)**

**Features**

- ◆ The Vertiv™ 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.



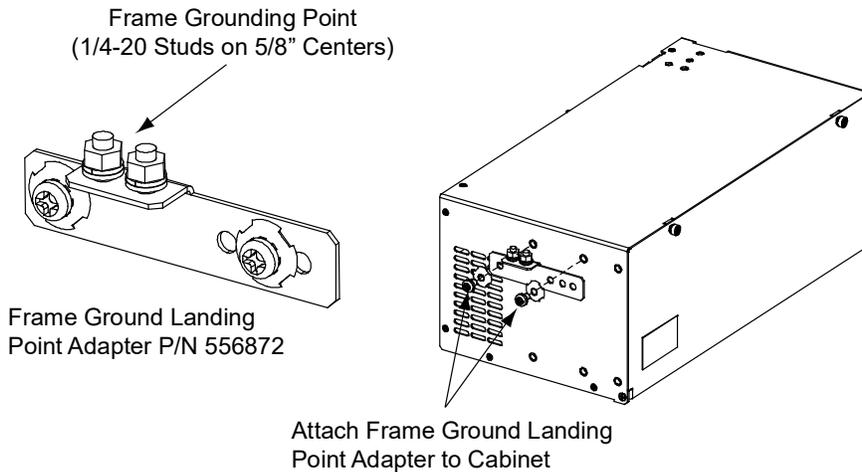
**Ordering Notes**

- 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	Vertiv P/N	Capacity Amp-Hours (8Hr rate)	Weight (lb) per Battery
Hawker	SBS 15	139091	14	12.50
Fiamm	12SLA12	139092	12	12.35
EaglePicher	HE-12V7.7FR	139094	6.9	5.94
EaglePicher	HE-12V12.7FR	139093	11.6*	9.68
Energys	NP18-12FR	139774	16 *	13.60

\* 10Hr rate

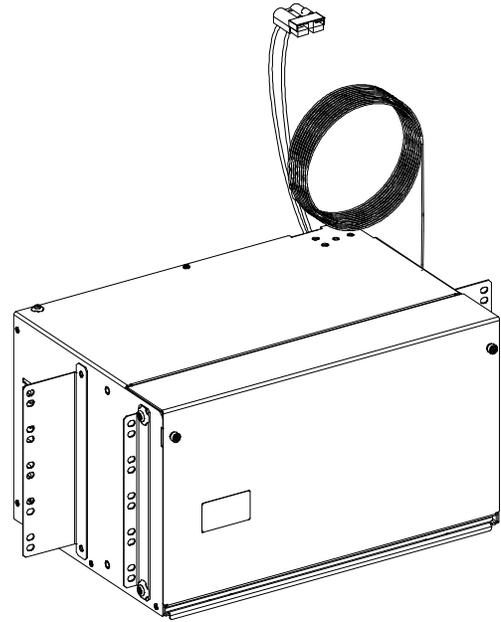
- 3) When ordering 139774 batteries, also order 545427 Battery Connection kit.
- 4) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



**Vertiv™ NetSure™ 211Bc Battery Cabinet (Spec. No. 545534)**

**Features**

- ◆ The Vertiv™ 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.

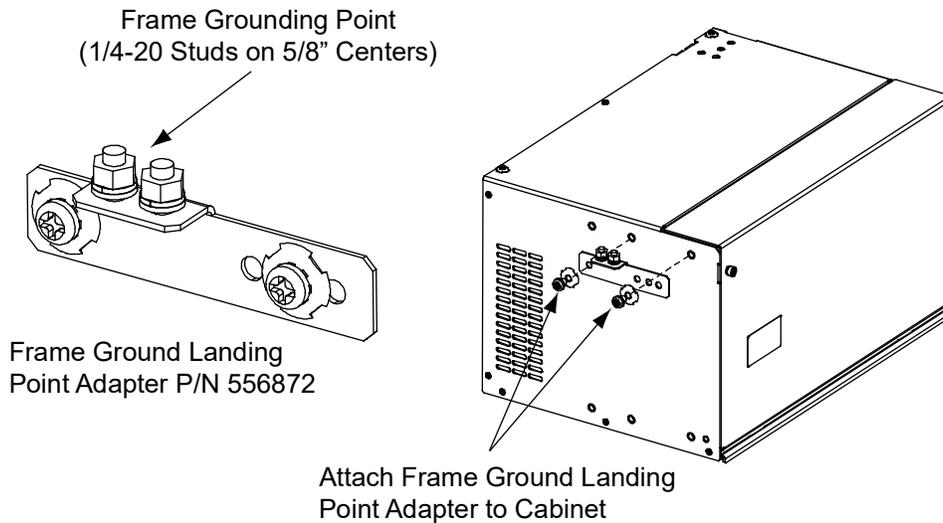


**Ordering Notes**

- 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	Vertiv P/N	Capacity Amp-Hours (8Hr rate)	Weight (lb) per Battery
Energys	SBS B10	140553	38	28.20
C&D / Dynasty	TEL12-30	140455	30.5	26.70
Energys	SBS30	-	26	20.9
Energys	SBS40	140581	38	28

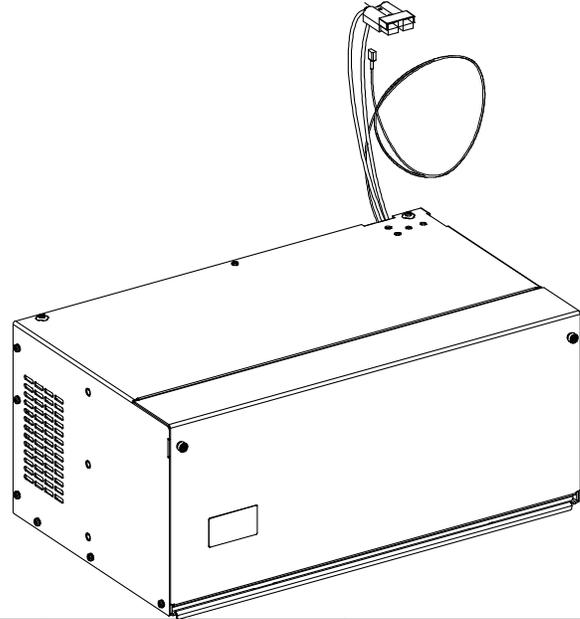
- 3) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



**Vertiv™ NetSure™ 211bc Battery Cabinet (Spec. No. 545506)**

**Features**

- ◆ The Vertiv™ NetSure™ 211bc Battery Cabinet is rated at 30 amperes, and can be mounted in a 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.

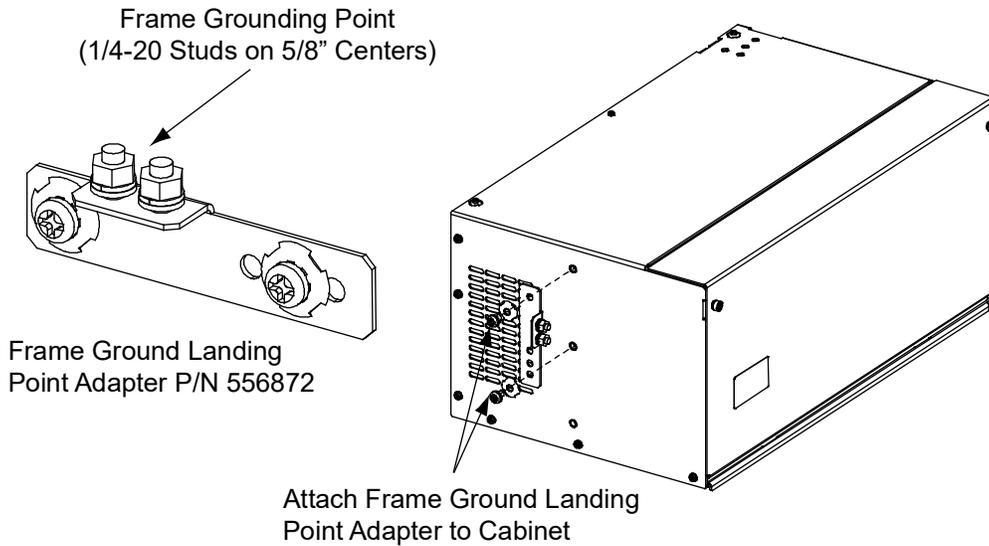


**Ordering Notes**

- 1) Order by Spec. No. 545506 as required.
- 2) Also order four (4) batteries per Battery Cabinet per the following table.

Battery Manufacturer	Manufacturer P/N	Vertiv P/N	Capacity Amp-Hours (8Hr rate)	Weight (lb) per Battery
Enersys	SBS B10	140553	38	28.20
Enersys	SBS 40	140581	38	28.00
C&D/ Dynasty	TEL12-30	140455	30.5	26.70
C&D/ Dynasty	TEL12-45	140454	46	26.70

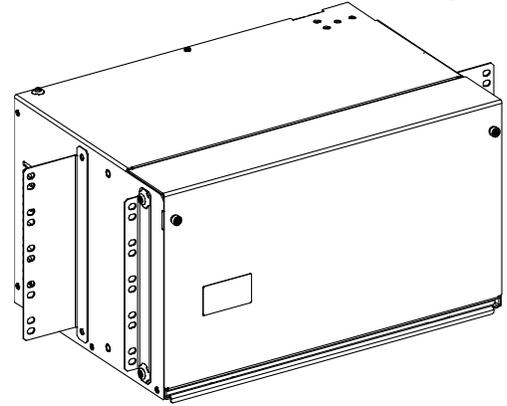
- 3) When wall mounted, also order a battery cabinet frame grounding landing point adapter P/N 556872. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



**Vertiv™ NetSure™ 211Bc Battery Cabinet (Spec. No. 554631)**

**Features**

- ◆ The Vertiv™ 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.

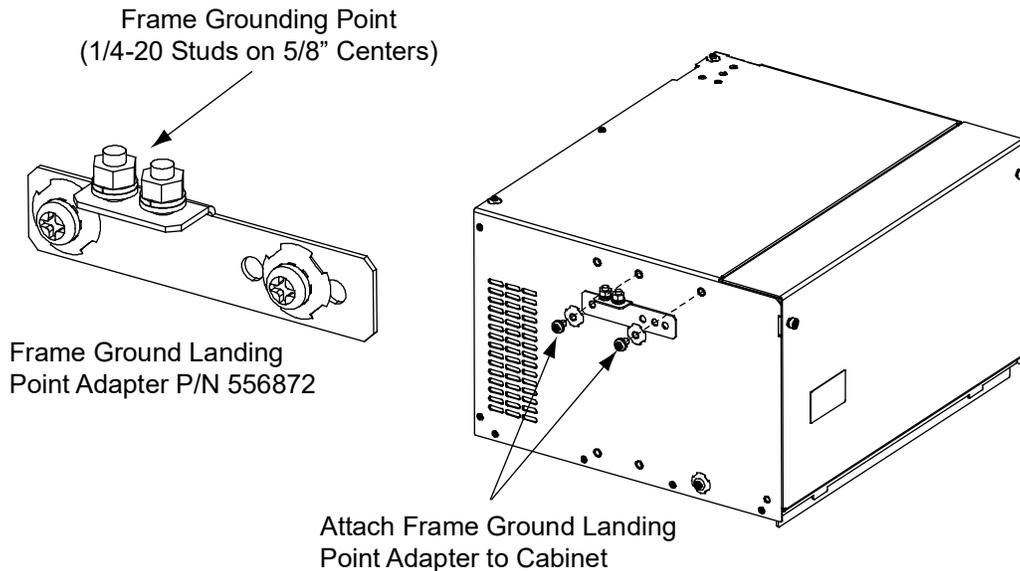


**Ordering Notes**

- 1) Order by Spec. No. 554631as required.
- 2) Also order four (4) batteries per Battery Cabinet per the following table.

Battery Manufacturer	Manufacturer P/N	Vertiv P/N	Capacity Amp-Hours (8Hr rate)	Weight (lb) per Battery
GNB	M12V40F	241173815	40	39.00

**Note:** When wall mounted, a battery cabinet frame grounding landing point adapter, P/N 556872, is provided. This adapter installs in the relay rack mounting bracket holes located on either side of the cabinet.



**External Battery Disconnect Unit**

**Features**

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

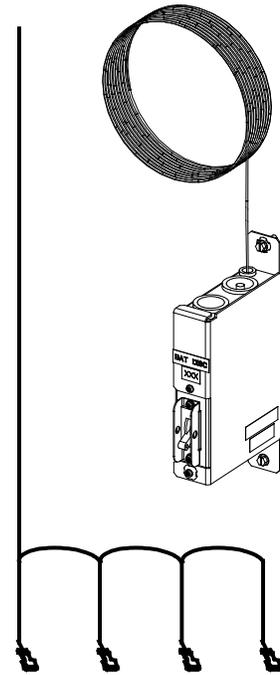
**Restrictions**

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 4.
- 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 <sup>1</sup> (Black Handle)
1	256690300
3	256690700
5	256691100
10	256691500
15	256691900
20	256692300
25	256692700
30	256693100

Ampere Rating	P/N Electrical/Mechanical Trip <sup>1</sup> (Black Handle)
35	256693500
40	256693900
50	256694300
60	256694700
70	256695100
75	256695500
100	256695900

Circuit Breaker Alarm Operation:

<sup>1</sup>Provides an alarm during an electrical or manual trip condition.

Table Q  
Battery Disconnect Unit Circuit Breakers

### SM TEMP Temperature Concentrator (P/N 547490)

#### Features

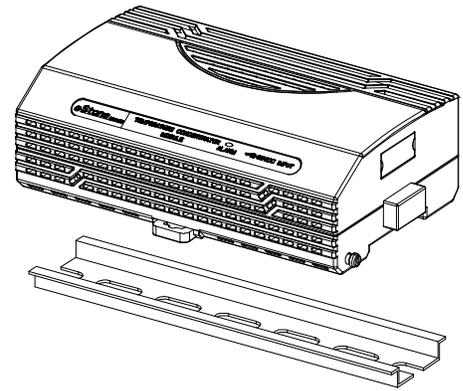
- ◆ Allows for multiple temperature probes to be used for temperature compensation. Compensation can be based on highest probe temperature or average probe temperature.
- ◆ Provides (8) temperature probe inputs per SM TEMP.
- ◆ Can be cascaded up to (8) SM TEMP modules, connecting up to 64 temperature probes.
- ◆ Provides analog output for all controllers.

#### Restrictions

Concentrator needs to plug into analog temp input on IB2 board.

#### Ordering Notes

- 1) Order P/N 547490.
- 2) Order up to (8) 3-meter (P/N 547749) or 10-meter (P/N 547750) temperature probes for each concentrator.



### SM Module RS-485 Interface Cable P/N 547674

#### Features

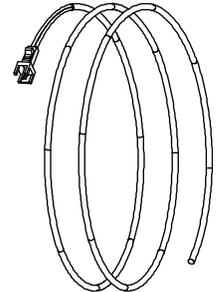
- ◆ Provides 4' cable for connecting SM supervisory modules to the system RS-485 interface connector.
- ◆ For interface with SM AC, SM BAT, SM BRC, or SM IO modules.

#### Restrictions

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

#### Ordering Notes

- 1) Order P/N 547674 as required.



### Alarm Cables

#### Features

- ◆ Two sets of Alarm Cables are available. One set for the Digital Inputs and another set for the Relay Outputs. One half of the Relay Outputs Alarm Cable is provided and factory connected in the shelf. The other half (includes mating connector on one end and un-terminated on the other end) must be ordered separately. Both halves of the Digital Inputs Alarm Cable must be ordered separately. When ordered, one half of the Digital Inputs Alarm Cable is factory connected in the shelf. The other half has a mating connector on one end and is un-terminated on the other end.

#### Ordering Notes

- 1) For the Relay Outputs Alarm Cable, P/N 541308 (3 ft.) is provided and factory connected in the shelf. A mating cable, P/N 541309 (10 ft.) or P/N 545644 (50 ft.), must be ordered separately.
- 2) For the Digital Inputs Cable, order P/N 541310 (shelf side, 3 ft.) and P/N 541311 (customer side, 10 ft.).

**Note:** A custom digital input cable (P/N 545591) and internal wiring kit (P/N 545594) is available. This kit is factory installed only.

### Optional Bullet-Nose-type 6-Position GMT Fuse Board (Part No. 545332)

#### Features

- ◆ Factory installed in a List BC, LC, NC, BA, and NA Distribution Unit.
- ◆ Provides six (6) 0A to 15A GMT fuse load distribution positions.
- ◆ Screw clamp type load and load return terminals provided.
- ◆ Includes six (6) dummy fuses equipped with safety fuse covers.

#### Restrictions

For use with Lists BC, LC, NC, BA, and NA.

Terminal block wire size capacity: 24 to 14 AWG.

Requires two (2) bullet device mounting positions.

Fuse Module has a 30A @ +40°C (+104°F) and +65°C (+149°F) maximum capacity. Maximum GMT fuse size is 15A. Fuses are to be loaded from bottom to top with highest value in the lowest position.

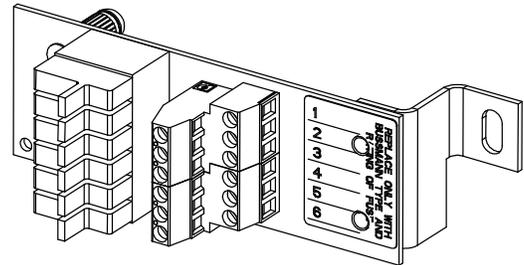
**Caution:** *A fuse with a rating greater than 10 amperes SHALL HAVE an empty mounting position between it and any other overcurrent protective device.*

See also the **Restrictions** under “[GMT Load Distribution Fuses](#)” in the ACCESSORY DESCRIPTIONS section.

Factory installed only.

#### Ordering Notes

- 1) Order optional Bullet Nose-Type 6-Position GMT Fuse Module (P/N 545332) as required.
- 2) Order GMT fuses as required per [Table 2](#).



## User Replaceable Components

### Ordering Notes

- 1) Refer to Table 6.

Item	Part Number
2000W Rectifier Module	1R482000
2000W High Efficiency Rectifier Module	1R482000e
Rectifier Module Fan	32010096 for 1R482000 32010106 for 1R482000e
NCU Controller Module	1M830BNA* * Also specify the appropriate NCU configuration file. Refer to the configuration file label on your existing NCU Controller.
ACU+ Controller Module	1M820BNA* * Also specify the appropriate ACU+ configuration file. Refer to the configuration file label on your existing ACU+ Controller.
SCU+ (Standard Control Unit Plus)	1M521BNA* * Also specify the appropriate SCU+ configuration file. Refer to the configuration file label on your existing SCU+ Controller.
Temperature Probe	Order per List 90 (9 ft. long) or List 91 (30 Ft. long) (or if only one piece of the two piece probe is needed, see the List 90 or 91 description for part numbers). See "Optional Temperature Probes" on page 36 for temperature probe options with a mounting tab.

Table R  
Replacement Part Numbers

## Wiring Notes

Refer also to the next section, [Wiring Illustrations](#).

### **AC Input Branch Circuit Protection and Wiring**

#### **Features**

- ◆ Each shelf contains side mounted plug-in Molex AC input connectors. Rear AC access if P/N 556851, 558707, or 558708 ordered.
- ◆ AC input branch circuits are connected via AC Input Cable Assemblies/Line Cords ordered with the system.

#### **Restrictions**

For correct AC input wire size, order the appropriate Input Cable Assembly/Line Cord for each AC input branch circuit. Refer to *AC Input Cables and Line Cords* in the ACCESSORIES DESCRIPTIONS section of this document.

Each shelf requires two AC input branch circuits.

In the 19" shelf, each feeds one rectifier. Recommended branch circuit protection is 15 amperes.

In the 23" shelf, one feeds one rectifier and the other feeds two rectifiers. Recommended branch circuit protection is 30 amperes.

Branch circuit protective devices should be of the time-delay or high inrush type.

### **External Alarm and Monitoring Wiring**

#### **Features**

- ◆ Alarm output and monitoring input leads are connected to screw-type terminal blocks located on the Signal Interface Assembly located inside the shelf. These leads enter the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf. A wireway is provided to route the wires to the Signal Interface Assembly.

#### **Restrictions**

Terminal block wire size capacity is 16 to 26 AWG.

Recommended Wire Size: 22 AWG for Loop Lengths Up to 200 ft.  
18-20 AWG for Loop Lengths Over 200 ft.

### **Load Distribution Wiring (GMT Fuses) (Lists BF and NF)**

#### **Features**

- ◆ Load distribution (GMT fuses) and load return leads are connected to receptacles located inside the Distribution Unit. Load leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf. Note that the GMT distribution fuse block accepts two ranges of fuse amperage sizes, and that two different types of receptacles are provided.

#### **Restrictions**

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.

#### **Ordering Notes**

- 1) Lists 61 provides 12' long, 16 AWG, load and load return leads that are terminated on one end with the appropriate mating connector\* to plug into the system's lower amperage rating GMT fuse connector, and are left un-terminated at the remaining end for connection into customer loads.
  - \* Consists of housing Molex P/N 39-01-2025 and terminals P/N 44476-3112 [loose] or 44476-3111 [reel].
- 2) Lists 62 provides 12' long, 14 AWG, load and load return leads that are terminated on one end with the appropriate mating connector\* to plug into the system's higher amperage rating GMT fuse connector, and are left un-terminated at the remaining end for connection into customer loads.
  - \* Consists of housing Tyco P/N 350777-1 and terminals Tyco P/N 350551-3 [loose] or Tyco 350537-3 [reel].

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **Load Distribution Wiring (GMT Fuses) (Lists BC, LC, NC, BA, and NA)**

#### **Features**

- ◆ Load distribution (GMT fuses) and load return leads are connected to receptacles located inside the Distribution Unit. Load leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

#### **Restrictions**

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.

#### **Ordering Notes**

- 1) List 60 provides 12' long, 16 AWG, load and load return leads that are terminated on one end with the appropriate mating connector\* to plug into the system's GMT fuse connector, and are left un-terminated at the remaining end for connection into customer loads.
  - \* Consists of housing Molex P/N 39-01-2025 and terminals P/N 44476-3112 [loose] or 44476-3111 [reel].

### **Load Distribution Wiring (Optional Bullet-Nose-Type 6-Position GMT Fuse Module)**

#### **Features**

- ◆ Load and load return leads are connected to a screw-type terminal block located on the front of the Fuse Module.

#### **Restrictions**

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.

Terminal block wire size capacity is 24 to 14 AWG.

### **Load Distribution Wiring (Circuit Breakers) (Lists BC, LC, NC, BA, and NA)**

#### **Features**

- ◆ Load distribution (circuit breakers) and load return leads terminated in two-hole lugs are connected to threaded studs located inside the Distribution Unit. Load leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

#### **Restrictions**

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.

All lugs for customer connections must be ordered separately. Mounting hardware is factory supplied.

Maximum wire size is 6 AWG when all four (4) circuit breaker positions are used. 4 AWG or 2 AWG can be used, but the number of breaker positions will be reduced as follows;

- **4 AWG:** 3 breakers max. (2 load/1 battery or 1 load/2 battery on lists BA and NA; 3 load on lists BC, LC, and NC). Use 6 AWG for CO Ground.
- **2 AWG:** 2 breakers max. (1 load/1 battery on lists BA and NA; 2 load on lists BC, LC, and NC). Use 6 AWG for CO Ground.

For 4 AWG and 2 AWG wire, install a customer supplied flat washer between the lug and the nut supplied on the termination.

#### **Ordering Notes**

- 1) The rating of the distribution device determines the wire size requirements. For wire size and lug selection, refer to [Table 7](#).
- 2) Lugs should be crimped per lug manufacturer's specifications.

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## System Application Guide

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### **Load Distribution Wiring (GMT Fuses) (List KG)**

#### **Features**

- ◆ Load distribution (GMT fuses) and load return leads are connected to terminal blocks located on the front of the assembly.

#### **Restrictions**

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.

Terminal block wire size capacity is 26 to 14 AWG.

### **CO Ground Wiring**

#### **Features**

- ◆ Two 10-32 studs on 5/8" centers with hardware are provided on the Return Bus for CO Ground wiring.

#### **Restrictions**

Recommended CO ground wire size is 6 AWG.

Recommended lug is 245346500 (2-hole, 10-32 clearance holes, and 5/8" centers).

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System Application Guide

Circuit Breaker Amperage	Recm 90°C Wire Size <sup>(1)</sup>						
	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG	4 AWG	2 AWG
	Loop Length (feet) <sup>(2)</sup>						
1, 3, 5, 10A	37 <sup>(3, 4, 5)</sup>	58 <sup>(3, 4, 5)</sup>	93 <sup>(3, 4, 5)</sup>	148 <sup>(3, 4, 5)</sup>	236 <sup>(3, 4, 5)</sup>	--	--
15A	24 <sup>(3, 4)</sup>	39 <sup>(3, 4, 5)</sup>	62 <sup>(3, 4, 5)</sup>	99 <sup>(3, 4, 5)</sup>	157 <sup>(3, 4, 5)</sup>	--	--
20A	--	29 <sup>(3, 4)</sup>	46 <sup>(3, 4, 5)</sup>	74 <sup>(3, 4, 5)</sup>	118 <sup>(3, 4, 5)</sup>	--	--
25A	--	--	37 <sup>(3, 4)</sup>	59 <sup>(3, 4, 5)</sup>	94 <sup>(3, 4, 5)</sup>	--	--
30A	--	--	31 <sup>(3, 4)</sup>	49 <sup>(3, 4, 5)</sup>	78 <sup>(3, 4, 5)</sup>	--	--
35A	--	--	--	42 <sup>(3, 4)</sup>	67 <sup>(3, 4, 5)</sup>	107 <sup>(3, 4)</sup>	--
40A	--	--	--	37 <sup>(3, 4)</sup>	59 <sup>(3, 4, 5)</sup>	94 <sup>(3, 4)</sup>	--
45A	--	--	--	33 <sup>(3, 4)</sup>	52 <sup>(3, 4)</sup>	83 <sup>(3, 4)</sup>	--
50A	--	--	--	29 <sup>(3)</sup>	47 <sup>(3, 4)</sup>	75 <sup>(3, 4)</sup>	--
60A	--	--	--	--	39 <sup>(3, 4)</sup>	62 <sup>(3, 4)</sup>	99 <sup>(3, 4)</sup>
70A						53 <sup>(3, 4)</sup>	85 <sup>(3, 4)</sup>
75A						50 <sup>(3, 4)</sup>	79 <sup>(3, 4)</sup>
80A						47 <sup>(3, 4)</sup>	74 <sup>(3, 4)</sup>
90A						41 <sup>(3)</sup>	66 <sup>(3, 4)</sup>
100A						--	59 <sup>(3, 4)</sup>
Recommended Crimp Lug <sup>(6)</sup>							
2-hole	245390100	245390100	245390100	245346600	245346500	245346800	245346900

- <sup>1</sup> Wire sizes are based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). **Table 310-16** for wire rated at 90°C conductor temperature operating in ambient temperatures of 40°C, 50°C, and 65°C was used. For other operating ambient temperatures, refer to the NEC. For operation in countries where the NEC is not recognized, follow applicable codes.
- <sup>2</sup> 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.
- <sup>3</sup> Wire Size / Loop Length Combination Calculated using 40°C Ambient Operating Temperature.
- <sup>4</sup> Wire Size / Loop Length Combination Calculated using 50°C Ambient Operating Temperature.
- <sup>5</sup> Wire Size / Loop Length Combination Calculated using 65°C Ambient Operating Temperature.
- <sup>6</sup> Two-hole lugs are 10-32 bolt clearance on 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

Table S  
Recommended Battery and Load Distribution Wire Size and Lug Selection  
(Bullet Nose-Type Circuit Breaker)

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### Input Battery Wiring (to battery bus bars) (Lists BF, NF, BC, LC, and NC)

#### Features

- ◆ Battery and battery return leads terminated in two-hole lugs are connected to threaded studs located inside the Distribution Unit. Battery leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the top of the shelf.

#### Restrictions

All lugs for customer connections must be ordered separately. Mounting hardware is factory supplied.

Maximum size of wire to be connected to a single lug position is 2 AWG.

Maximum lug width, 0.61 inches.

#### Ordering Notes

- 1) Battery wire size varies depending on load, therefore no specific information is provided for wire size. When making connections, observe correct polarity.  
Refer to Table 8 for recommended wire sizes and lugs at rated maximum output capacity.  
19" Version: 72A, maximum.  
23" Version: 100A, maximum.
- 2) List 65 and List 66 provide 2 AWG "shelf side" and "battery side" (respectively) battery cables. List 68 provides 6 AWG shelf side battery cables.
- 3) Lugs should be crimped per lug manufacturer's specifications.

Maximum Current (Amps)	Ambient Operating Temperature <sup>(1)</sup>	Loop Length (Ft) 1.0 Volt Drop <sup>(2)</sup>	Loop Length (Ft) 0.25 Volt Drop <sup>(2)</sup>	Recm 90°C Wire Size (AWG) <sup>(1)</sup>	Recommended Crimp Lug <sup>(3)</sup>
72A	65°C	53.7	13.4	4	245346800
		85.4	21.4	2	245346900
100A	40°C	56.9	14.2	2	245346900

- 1 Wire sizes are based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). **Table 310-16** for copper wire rated at **90°C** conductor temperature operating in ambient temperature of **40°C and 65°C** was used. For other operating ambient temperatures, refer to the NEC. For operation in countries where the NEC is not recognized, follow applicable codes
- 2 Recommended wire sizes are sufficient to restrict voltage drop to the voltage shown in the column heading, or less, at rated full load output current of the system for the loop lengths shown in this column. Loop length is the sum of the lengths of the positive and negative leads.
- 3 Two-hole lug, 1/4-20 bolt clearance hole, 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

Table T  
Recommended Battery Wire Size and Lug Selection

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### **Input Battery Wiring (to Battery Disconnect Circuit Breakers) (Lists BA and NA)**

#### **Features**

- ◆ Battery and battery return leads terminated in two-hole lugs are connected to threaded studs located inside the Distribution Unit. Battery leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

#### **Restrictions**

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.

All lugs for customer connections must be ordered separately. Mounting hardware is factory supplied.

Maximum wire size is 6 AWG when all four (4) circuit breaker positions are used. 4 AWG or 2 AWG can be used, but the number of breaker positions will be reduced as follows;

- **4 AWG:** 3 breakers max. (2 load/1 battery or 1 load/2 battery on lists BA and NA; 3 load on lists BC, LC, and NC). Use 6 AWG for CO Ground.
- **2 AWG:** 2 breakers max. (1 load/1 battery on lists BA and NA; 2 load on lists BC, LC, and NC). Use 6 AWG for CO Ground.

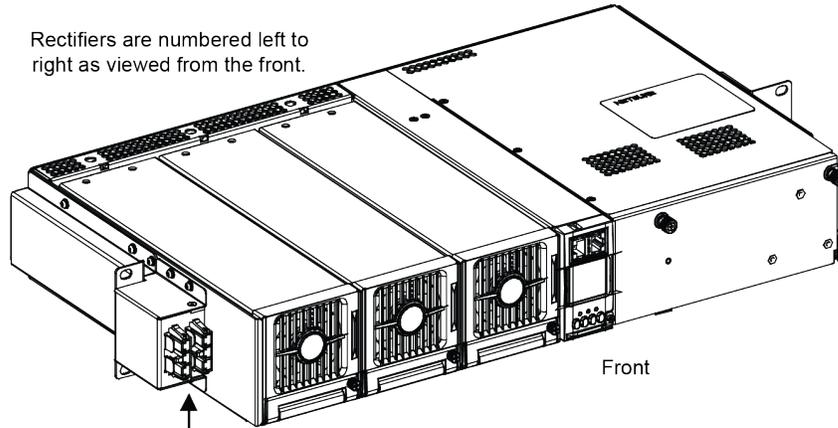
For 4 AWG and 2 AWG wire, install a customer supplied flat washer between the lug and the nut supplied on the termination.

#### **Ordering Notes**

- 1) The rating of the distribution device determines the wire size requirements. For wire size and lug selection, refer to [Table 8](#).
- 2) Lugs should be crimped per lug manufacturer's specifications.

**Wiring Illustrations**

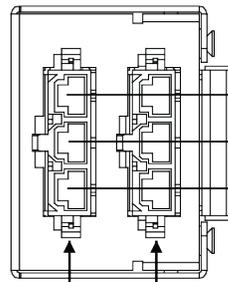
**AC Input Wiring (List 6 shown)**



Rectifiers are numbered left to right as viewed from the front.

AC Input connections are made using the supplied AC Input Cable Assemblies/Line Cords connected here.

Front View



Nominal 120/208/240V  
AC Input for Rectifier  
Module #1  
(In the 23" Shelf,  
this input also connects  
to Rectifier Module #3.)

Nominal 120/208/240V  
AC Input for Rectifier  
Module #2

AC Input Cable Assembly	AC Input Line Cord
-------------------------	--------------------

L2-N	Blue*	White*
Ground	Green/Yellow*	Green*
L1	Brown*	Black*

\* Color of AC Input Cable Assembly/Line Cord lead.

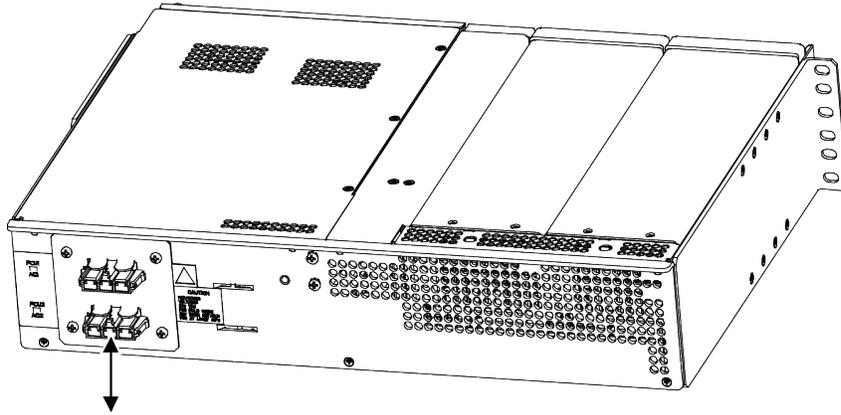
**\* AC Input Cable Assembly / Line Cords**

Part Number	Customer End
535232	unterminated (List 2, 6)
553202	unterminated (List 2, 6)
545252	L5-30P (List 2, 6)
540946	L6-30P (List 2, 6)
545616	L6-30P (List 2, 6)
545478	5-15P (List 2)
545479	L5-15P (List 2)
545480	L6-15P (List 2)
545481	L5-20P (List 2)
545482	6-15P (List 2)
545553	L6-20P (List 2)
547525	L5-30P (List 2)
548457	5-15P (List 2)
559301	L6-30P (List 2, 6)
559302	L6-30P (List 2, 6)
559842	L6-30P (List 2, 6)

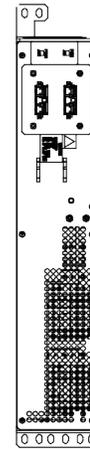
# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### AC Input Wiring for List 2 and List 6 with Rear AC Input Connectors



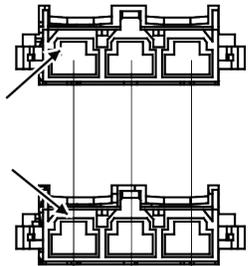
AC Input connections are made using the supplied AC Input Cable Assemblies/Line Cords connected here.



Rear View

Nominal 120/208/240V  
AC Input for Rectifier  
Module #1

Nominal 120/208/240V  
AC Input for Rectifier  
Module #2



AC Input Cable Assembly	AC Input Line Cord
Brown*	Black* — L1
Green/Yellow*	Green* — Ground
Blue*	White* — L2-N

\* Color of AC Input Cable Assembly/Line Cord lead.

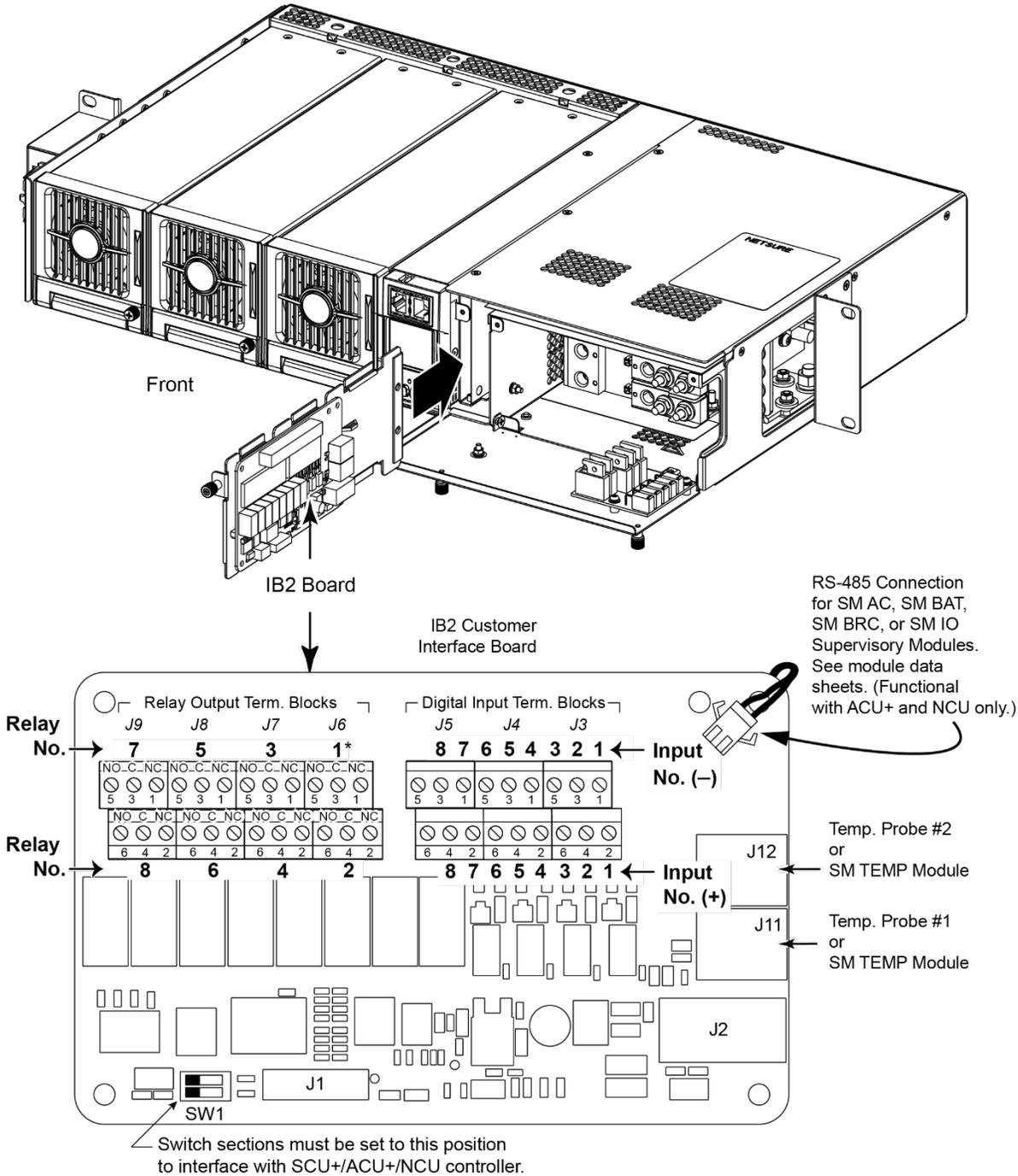
#### \* AC Input Cable Assembly / Line Cords

Part Number	Customer End
535232	unterminated (List 2, 6)
553202	unterminated (List 2, 6)
545252	L5-30P (List 2, 6)
540946	L6-30P (List 2, 6)
545616	L6-30P (List 2, 6)
545478	5-15P (List 2)
545479	L5-15P (List 2)
545480	L6-15P (List 2)
545481	L5-20P (List 2)
545482	6-15P (List 2)
545553	L6-20P (List 2)
547525	L5-30P (List 2)
548457	5-15P (List 2)
559301	L6-30P (List 2, 6)
559302	L6-30P (List 2, 6)
559842	L6-30P (List 2, 6)

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## System Application Guide

### External Alarm and Monitoring Wiring (List 6 shown)



\* The relay assigned by the Controller to be the "Major Summary" (SCU+) or "Critical Summary" (ACU+ and NCU) 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 remaining seven (7) alarm 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.

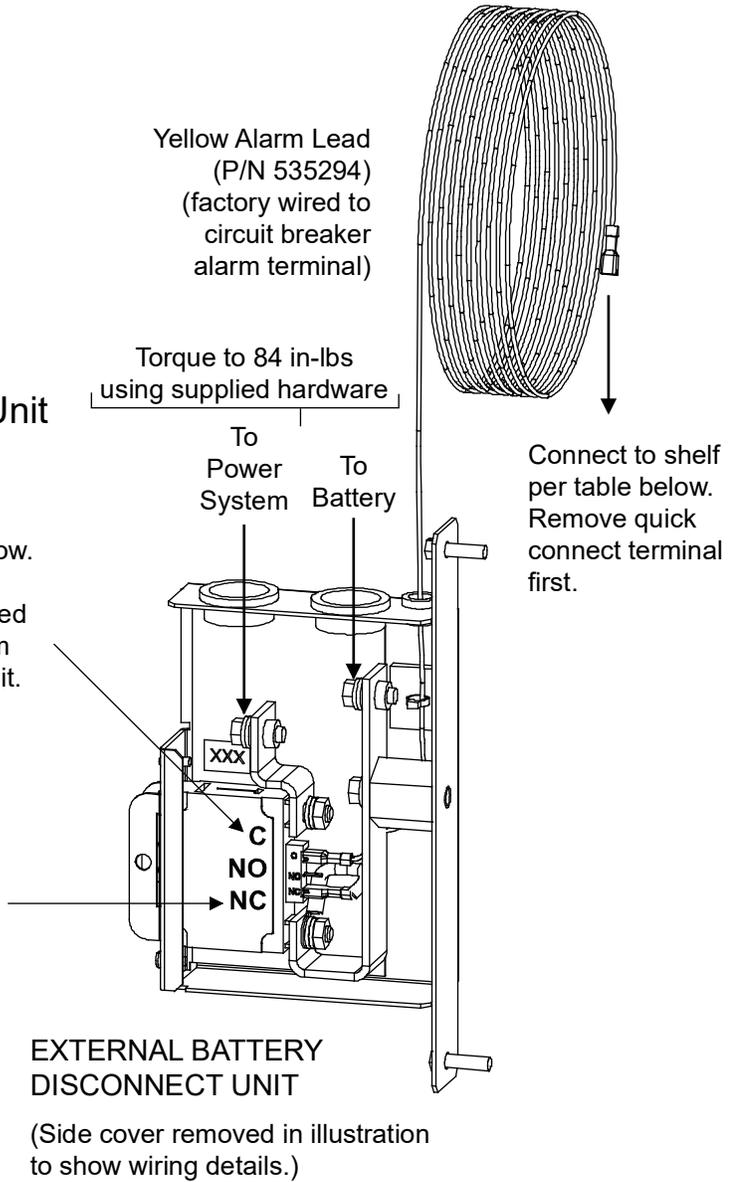
A factory-connected jumper supplies +BAT (Battery Return) to the positive side of Digital Input # 2.

**External Interface Connections (continuation)**

**Alarm Wiring to a Single External Battery Disconnect Unit**

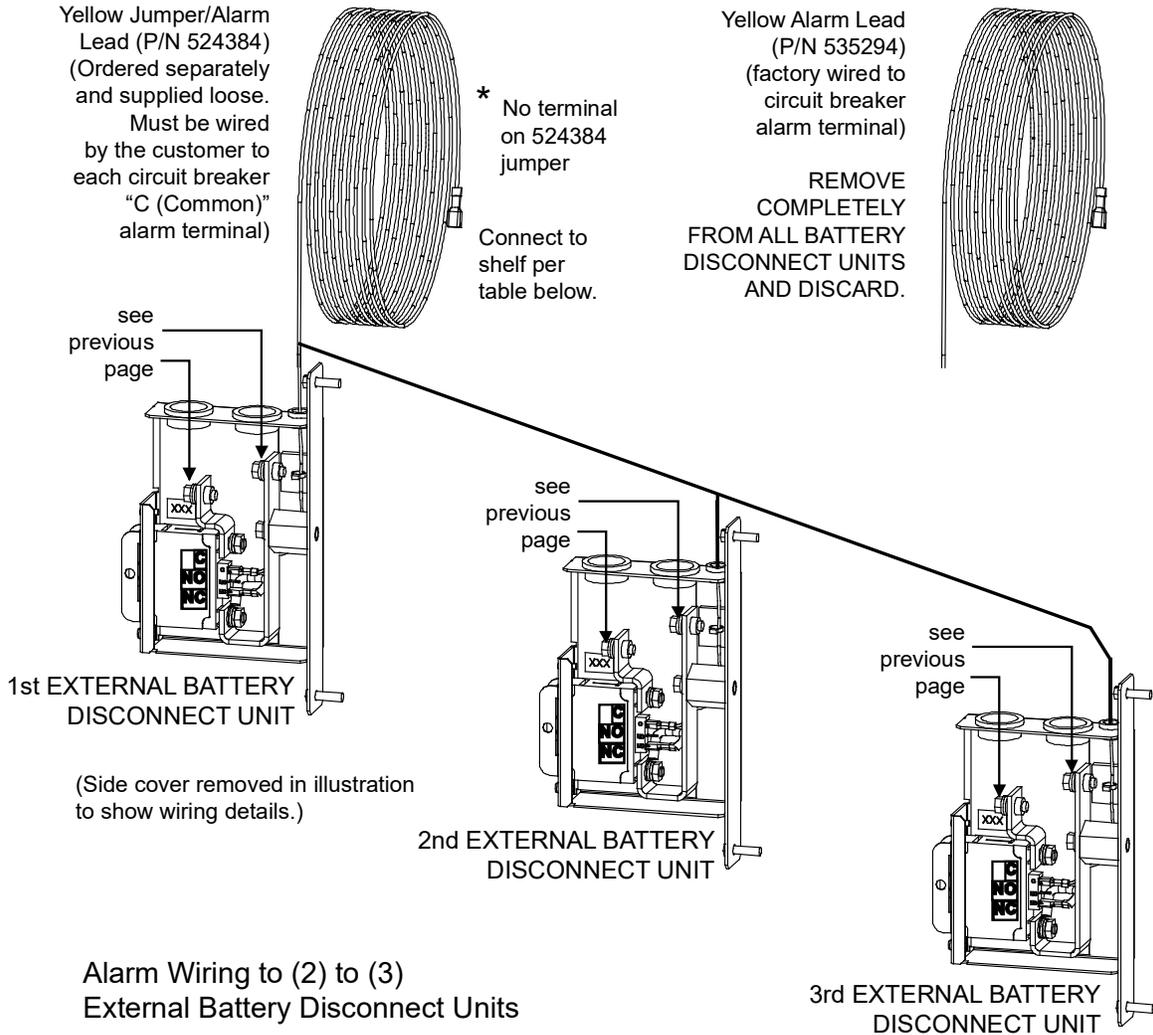
Procedure

1. Connect YELLOW lead exiting top of Battery Disconnect Unit per table below. 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.



541311 Alarm Cable on shelf	BREAKER ALARM CONNECTION CONNECT YELLOW WIRE TO:
NO	Pin 3 of J3 on Customer Interface BD (negative side of Digital Input 2)
YES	O-R Lead of 541311 Splice and heat shrink tubing included with 541311

**External Interface Connections (continuation)**



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

Procedure

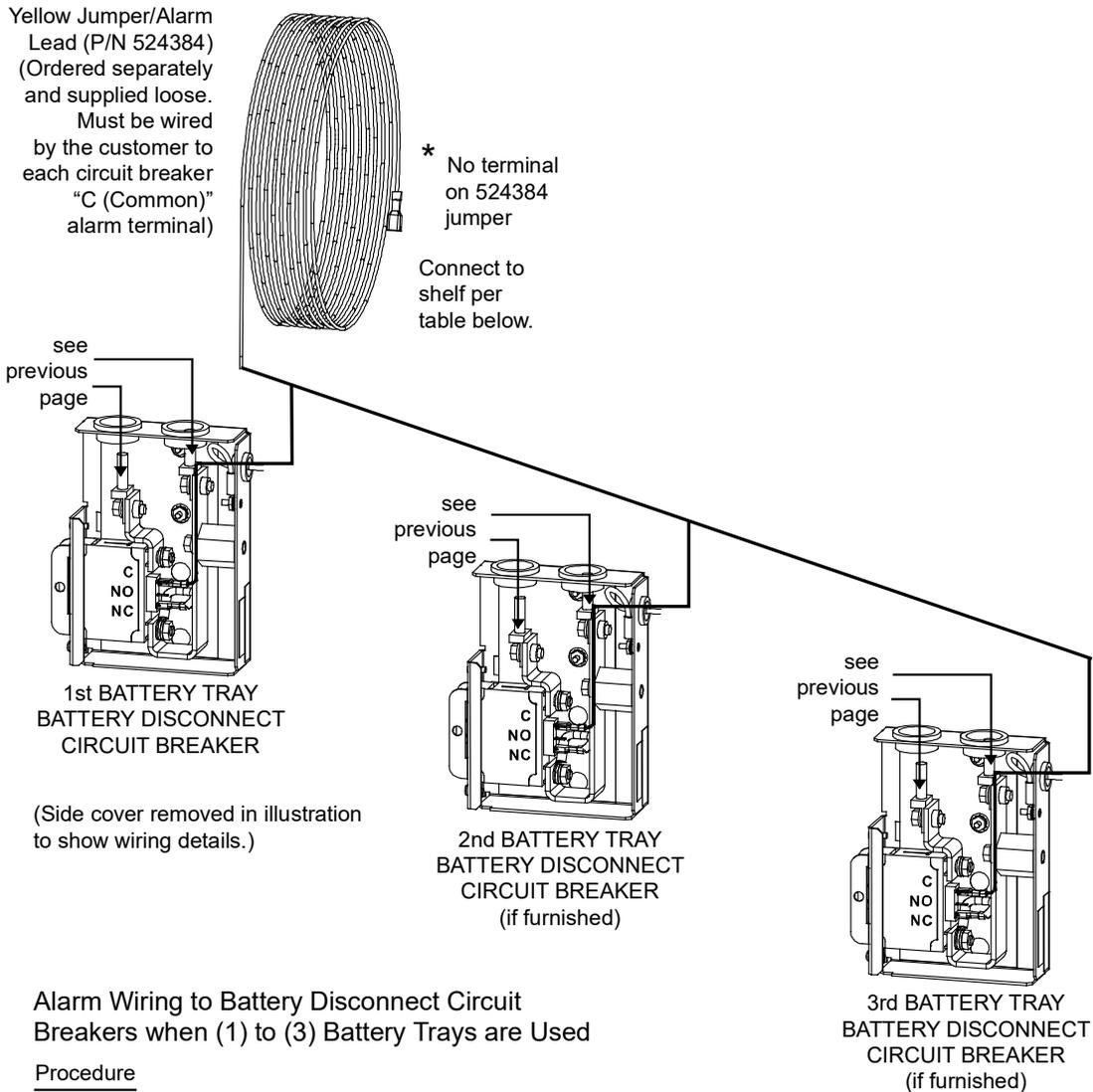
1. Completely remove YELLOW lead exiting top of ALL Battery Disconnect Units and discard.
2. Connect separately ordered YELLOW jumper/alarm lead (P/N 524384) to circuit breaker "C (Common)" alarm terminals in ALL Battery Disconnect Units. Connect remaining end per table below.
3. There is NO connection 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.

541311 Alarm Cable on shelf	BREAKER ALARM CONNECTION CONNECT YELLOW WIRE TO:
NO	Pin 3 of J3 on Customer Interface BD (negative side of Digital Input 2)
YES	O-R Lead of 541311 Splice and heat shrink tubing included with 541311

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### External Interface Connections (continuation)



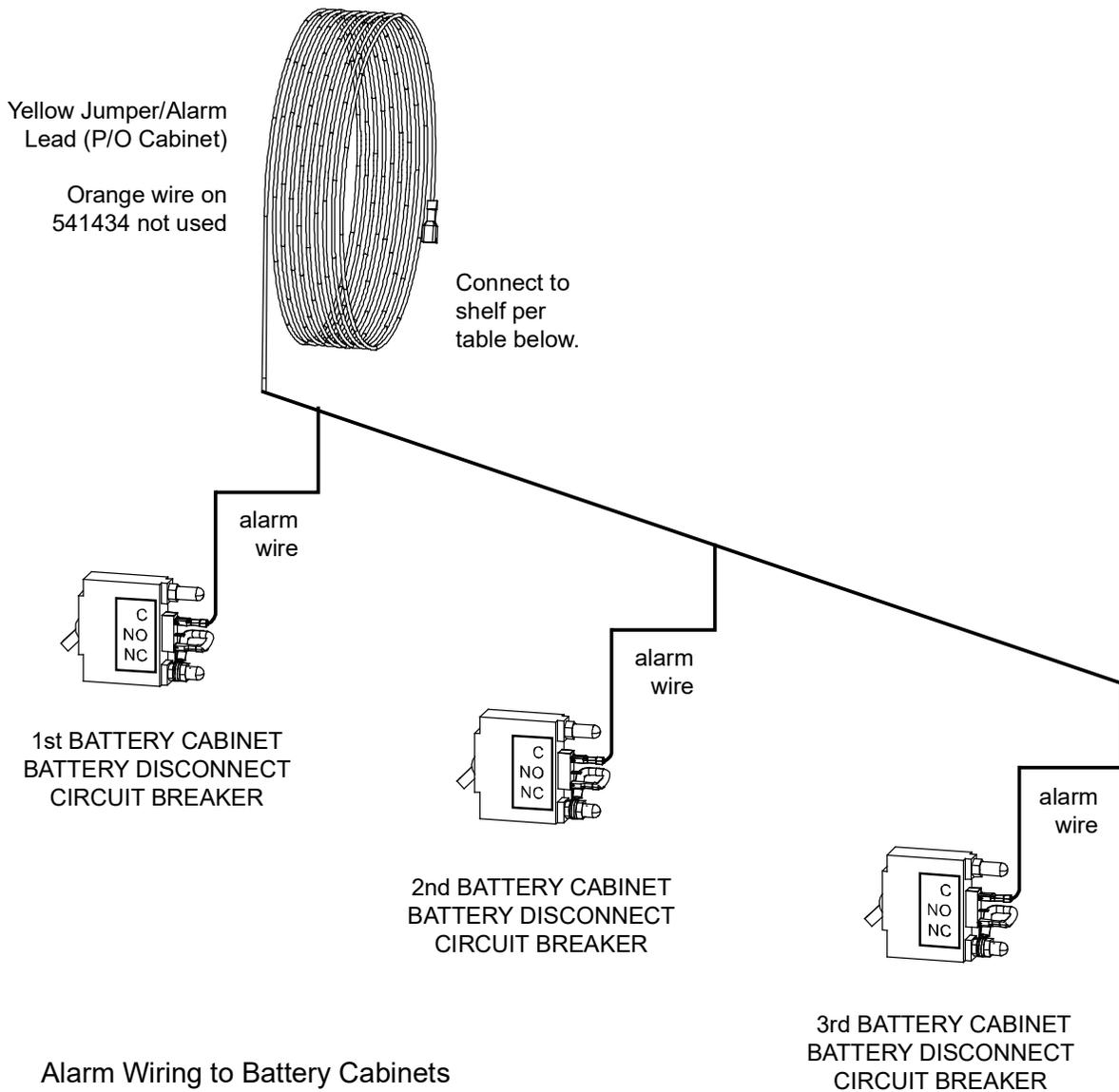
### Alarm Wiring to Battery Disconnect Circuit Breakers when (1) to (3) Battery Trays are Used

#### Procedure

1. Connect kit-supplied YELLOW jumper/lead (P/N 524384) to circuit breaker "C (Common)" alarm terminals on ALL Battery Disconnect Circuit Breakers. Connect remaining per table below.
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.

541311 Alarm Cable on shelf	BREAKER ALARM CONNECTION CONNECT YELLOW WIRE TO:
NO	Pin 3 of J3 on Customer Interface BD (negative side of Digital Input 2)
YES	O-R Lead of 541311 Splice and heat shrink tubing included with 541311

**External Interface Connections (continuation)**



**Alarm Wiring to Battery Cabinets**

Procedure

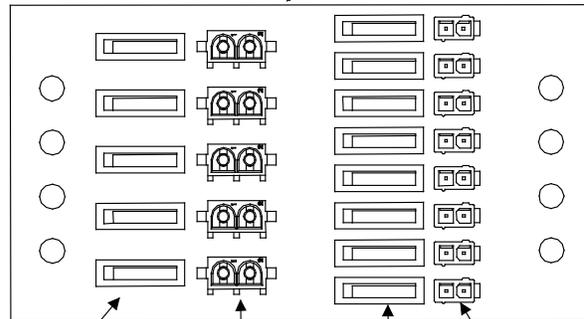
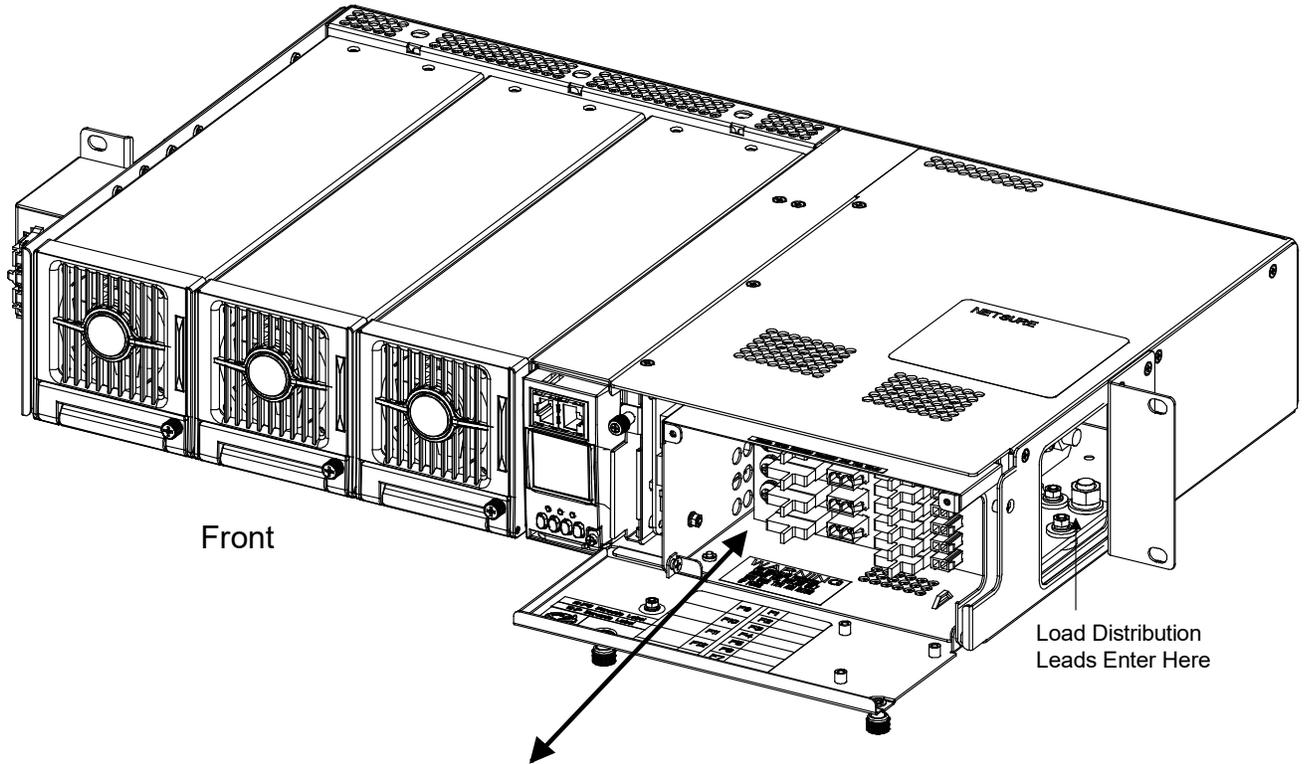
1. Remove quick connect terminal from YELLOW battery cabinet alarm lead and wire per table below.

541311 Alarm Cable on shelf	BREAKER ALARM CONNECTION CONNECT YELLOW WIRE TO:
NO	Pin 3 of J3 on Customer Interface BD (negative side of Digital Input 2)
YES	O-R Lead of 541311 Splice and heat shrink tubing included with 541311

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### Load Distribution Wiring (GMT Fuses) (Lists BF and NF in List 6, as shown)



GMT Fuse Positions  
(Max. 15A)

GMT Fuse Load Distribution Leads  
Connect Here

GMT Fuse Positions  
(Max. 10A)

GMT Fuse Load Distribution Leads  
Connect Here

Mating Connectors and 12' Leads provided with List 62.

-48V on Left (Black Lead),  
Return on Right (White Lead)

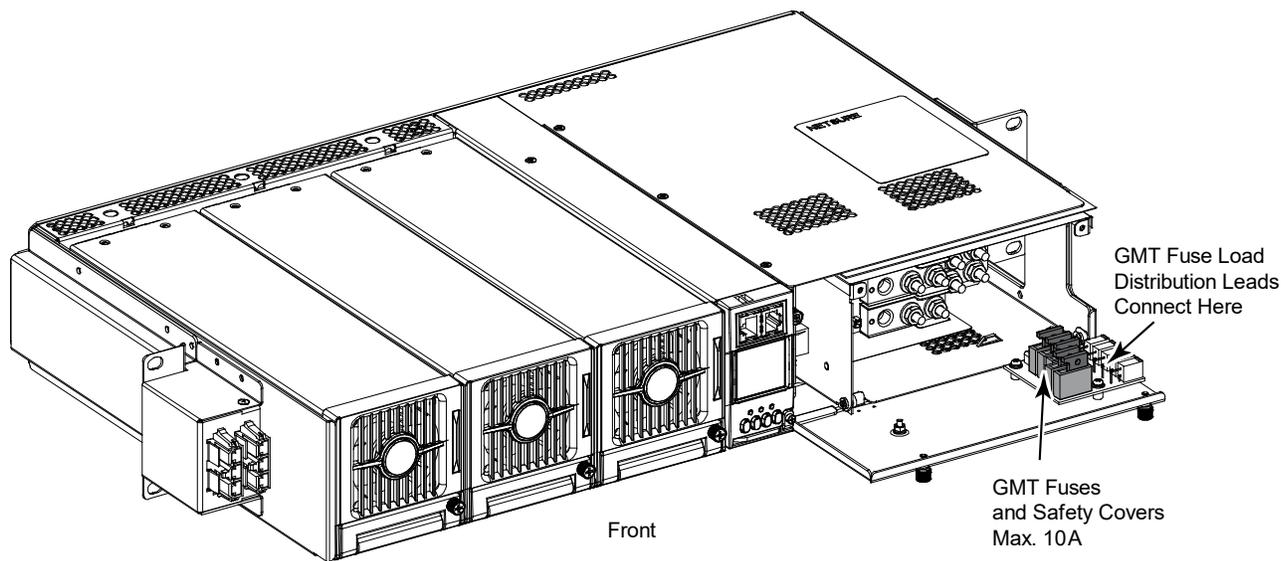
Mating Connectors and 12' Leads provided with List 61.

-48V on Left (Black Lead),  
Return on Right (White Lead)

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

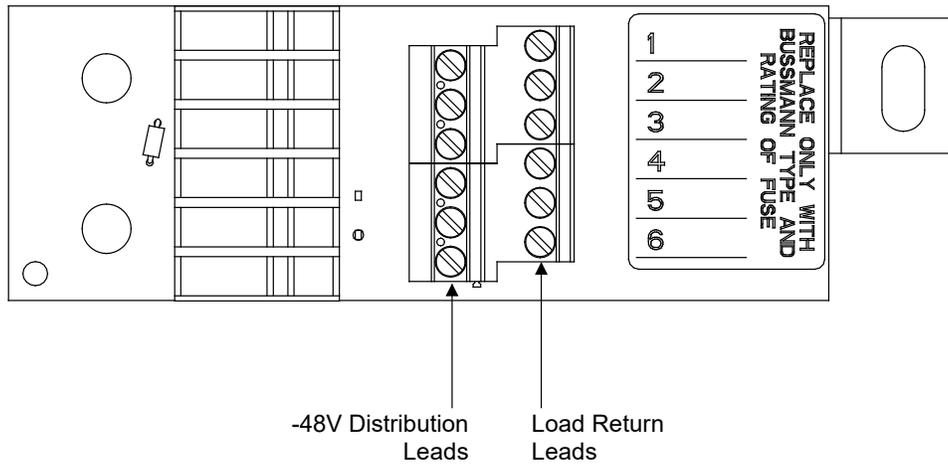
### Load Distribution Wiring (GMT Fuses) (Lists BC, LC, NC, BA, and NA installed in List 6, as shown)



Mating Connectors and 12' Leads provided with List 60

-48V on Left (Black Lead),  
Return on Right (White Lead)  
as viewed from side with door closed

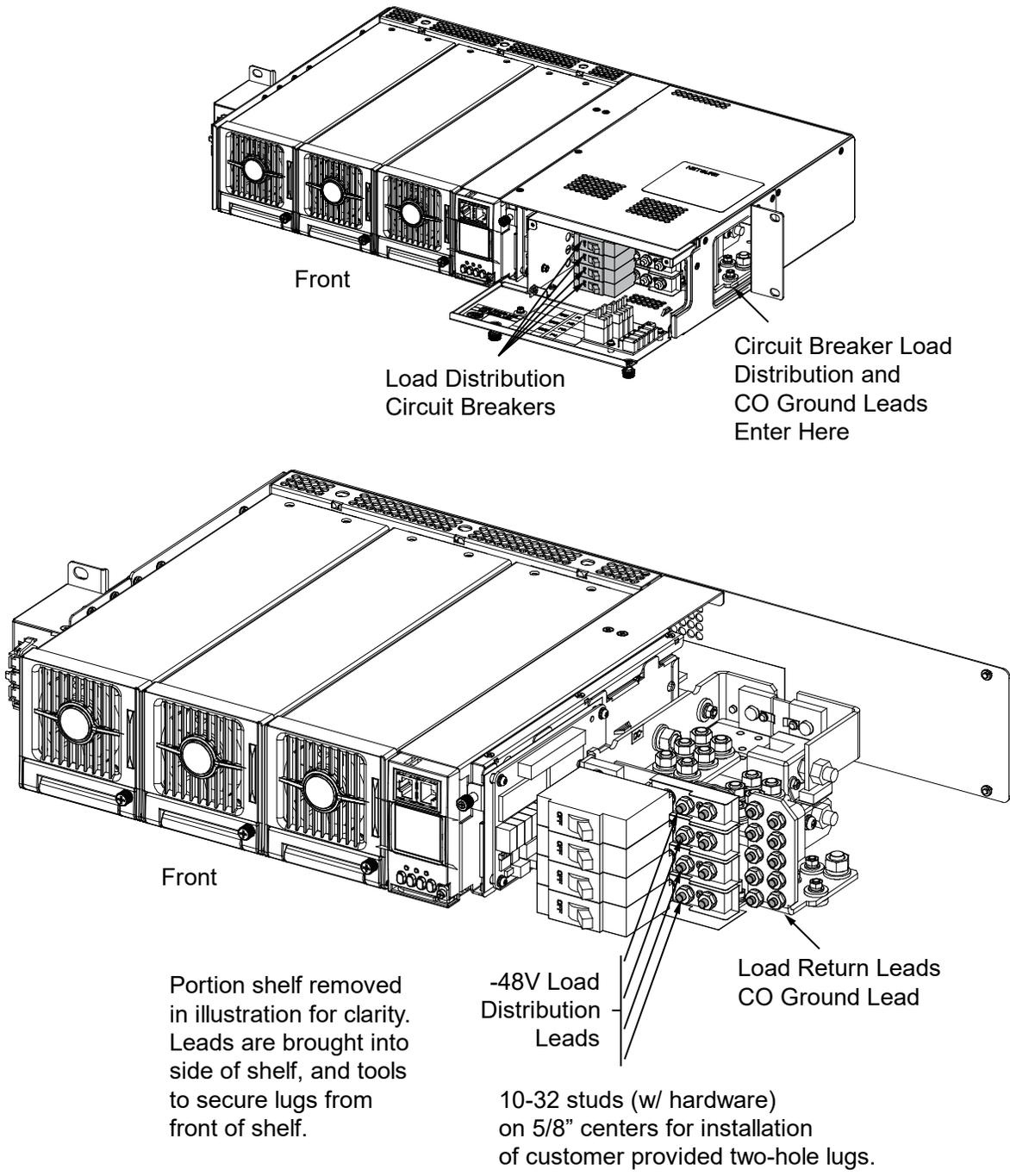
**Load Distribution Wiring (Optional Bullet Nose 6-Position GMT Fuse Module)**



# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

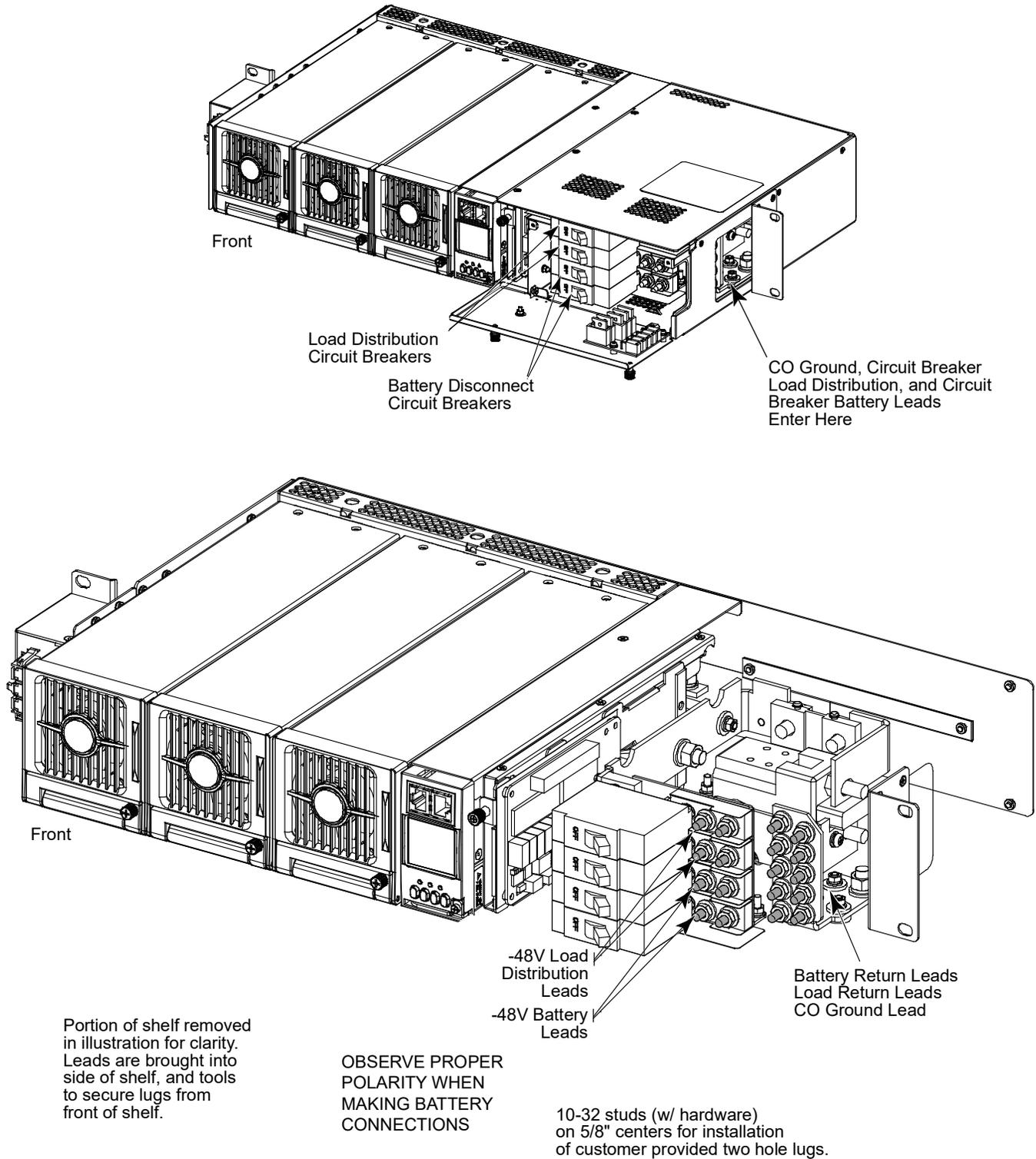
### **Load Distribution Wiring (Circuit Breakers), Input Battery Wiring (Circuit Breakers), and CO Ground Wiring (Lists BC, LC and NC, List 6 shown)**



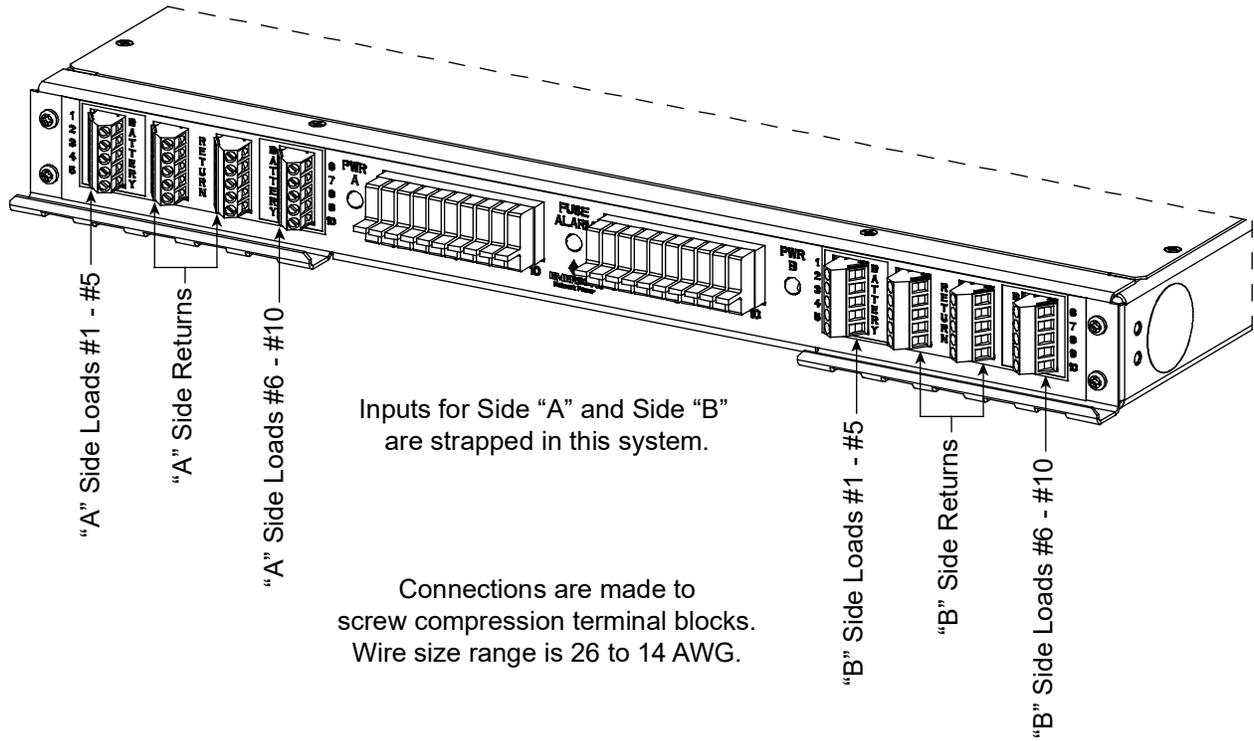
# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### **Load Distribution Wiring (Circuit Breakers), Input Battery Wiring (Circuit Breakers), and CO Ground Wiring (Lists BA and NA, List 6 shown)**



**Load Distribution Wiring (GMT Fuses) (List KG)**

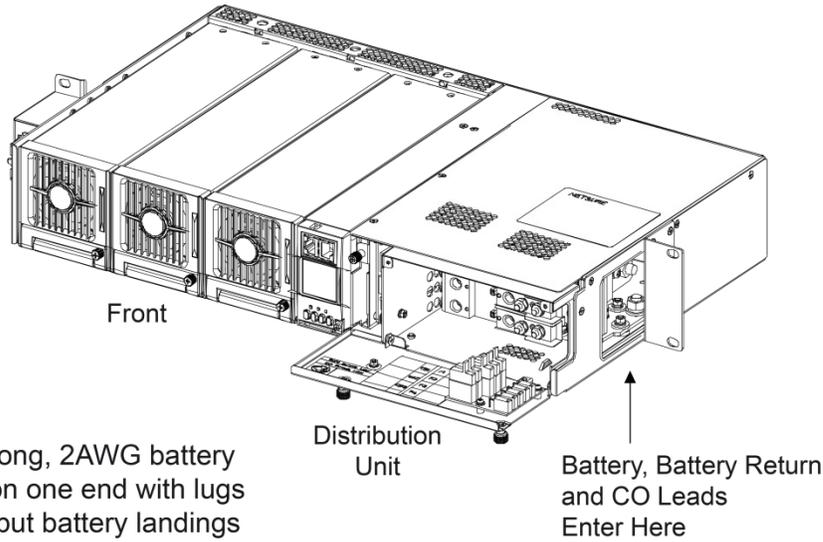


# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### Input Battery Wiring (Lists BF, NF, BC, LC, and NC in List 6, as shown)

List NC Distribution Unit shown. List BC, LC, NC, BF, and NF similar.

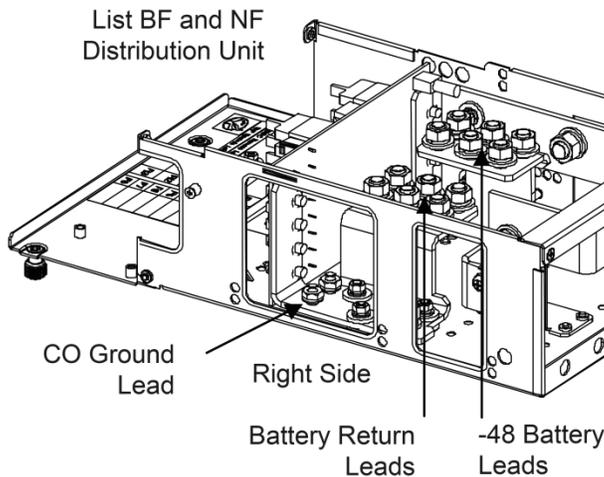
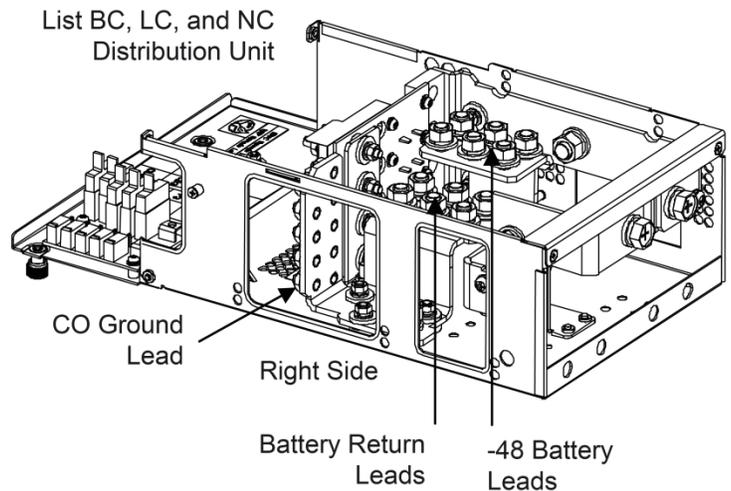


List 65 provides 3' long, 2AWG battery cables terminated on one end with lugs to connect to the input battery landings and on the other end with an Anderson connector.

List 66 provides 12' long, 2AWG battery cables terminated on one end an Anderson connector and left unterminated at the remaining end for connection of battery lugs.

Battery: 1/4-20 studs (w/ hardware) on 5/8" centers for installation on customer provided two-hole lugs.

CO Ground: 10-32 studs (w/ hardware) on 5/8" centers for installation on customer provided two-hole lugs.



**OBSERVE PROPER POLARITY WHEN MAKING BATTERY CONNECTIONS**

## SPECIFICATIONS

### 1. SYSTEM

#### Environmental Ratings

Lists 2 and 6 Operating Ambient Temperature Range (Specification Compliant):

- (A) -40°C (-40°F) to +65°C (+149°F) with derating output.
- (B) -40°C (-40°F) to +40°C (+104°F) with full power performance.

Storage Ambient Temperature Range: -40°C (-40°F) to +80°C (+176°F).

Humidity: This Power System is capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

Altitude: 2000 m (6560 ft) at full power (power limited for heights above 2000 m).

Mounting: This product is intended only for installation in a Restricted Access Location on or above a non-combustible surface.

This product is intended for installation in Network Telecommunication Facilities (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

This product is intended to be connected to the common bonding network in a Network Telecommunication Facility (CO, vault, hut, or other environmentally controlled electronic equipment enclosure).

Separate shelves are available for mounting in either a 19" or 23" wide relay rack (1" or 1-3/4" multiple drilling).

Mounting angles are positioned for a 5-inch front projection mounting only.

Ventilation Requirements: Rectifier and mounting shelf ventilating openings must not be blocked and temperature of air entering rectifiers must not exceed rated Operating Ambient Temperature Range stated above.

#### Compliance Information

Surge Protection: See UM1R482000e.

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

#### Safety Compliance:

- (C) This unit meets the requirements of UL 60950, Standard for Information Technology Equipment, and is UL Recognized as a power supply for use in Telephone, Electronic Data Processing, or Information Processing Equipment.
- (D) This unit meets the requirements of CAN/CSA 22.2, No. 60950-00 and is tested and Certified by UL ("c UR") as a Component Type Power Supply.

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

### EMC and Safety:

- (E) Complies with the Low-Voltage Directive, 73/23/EEC. Complies with Emissions and Immunity requirements as specified in GR-1089-Core Issue 4.

<b>EMC</b>		
<b>Emissions</b>		<b>Test Level</b>
EN 55022: 1998 CFR 47 – Part 15 GR-1089 Issue 4	Conducted	Class B
	Radiated	Class B
<b>Immunity</b>		
GR-1089 Issue 4	EN 61000-4-2 Electrostatic Discharge	8kV / 15kV
	EN 61000-4-4 Electric Fast Transients	0.25kV / 0.5kV
	Radiated Immunity	8.5V/m
	Conducted Immunity	89dBuA
	Surge IEEE C62.41	2kV / 6kV
<b>SAFETY</b>		
EN 60950-1: 2001	Safety of Information Technology Equipment, including Electrical Business Equipment	

NEBS Compliance: Compliance verified by a Nationally Recognized Testing Laboratory (NRTL) per GR-1089-CORE and GR-63-CORE. Contact Vertiv for NEBS compliance reports.

For Vertiv™ NetSure™ 502NGFB 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.

### Standard Features

**AC Input Connections:** AC input leads are connected to Molex connectors located on the side of the shelf. Each shelf requires two (2) AC input branch circuits. In the 19" shelf, each feeds one rectifier. In the 23" shelf, one feeds one rectifier and the other feeds two rectifiers.

**Battery Connections:** Battery and battery return leads terminated in two-hole lugs are connected to threaded studs located inside the Distribution Unit. Battery leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

**Load Connections:** Load distribution (circuit breakers, if furnished) and load return leads terminated in two-hole lugs are connected to threaded studs located inside the Distribution Unit. Load leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

Load distribution (GMT fuses) and load return leads are connected to receptacles located inside the Distribution Unit. Load leads are brought into the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf.

**Alarm and Monitoring Connections:** Alarm output and monitoring input leads are connected to screw-type terminal blocks located on the Signal Interface Assembly located inside the shelf. These leads enter the right side (as viewed from the front) of the shelf and are accessible from the front of the shelf

# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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### Dimensions

#### (F) 19" Shelf

- (1) Millimeters: 89 (Height) X 483 (Width) X 305 (Depth).
- (2) Inches: 3.5 (Height) X 19 (Width) X 12 (Depth).

#### (G) 23" Shelf

- (1) Millimeters: 89 (Height) x 584 (Width) x 305 (Depth).
- (2) Inches: 3.5 (Height) x 23 (Width) x 12 (Depth).

### Weight

- (H) 19" Shelf (w/out Rectifier Modules): 17 lbs (7.7 kg).
- (I) 23" Shelf (w/out Rectifier Modules): 18 lbs (8.2 kg).

## 2. RECTIFIER

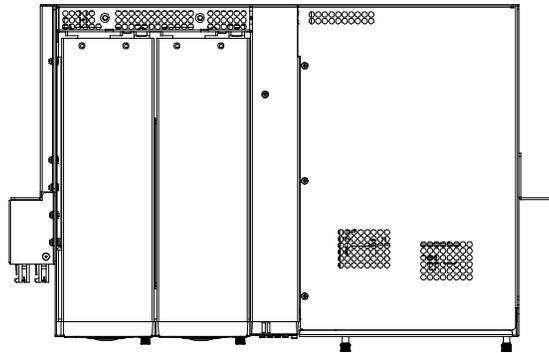
Refer to the Rectifier Instructions (UM1R482000e).

## 3. CONTROLLER

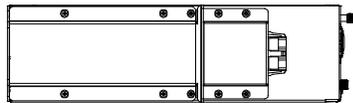
Refer to the Controller Instructions (UM1M521BNA or UM1M820BNA or UM1M830BNA).  
For controller factory settings, refer to the Controller Configuration Drawing (C-drawing).

**MECHANICAL SPECIFICATIONS**

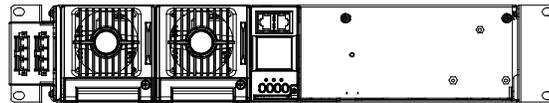
**Overall Dimensions – List 2**



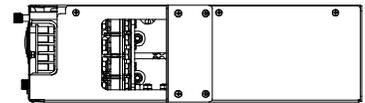
Top View



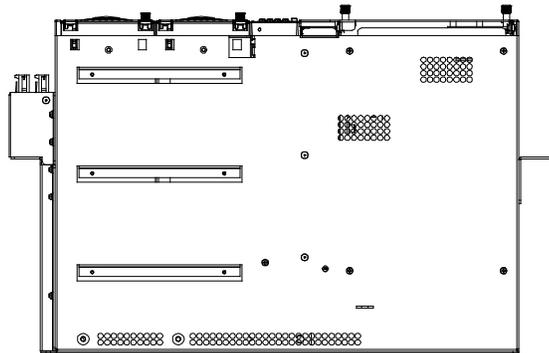
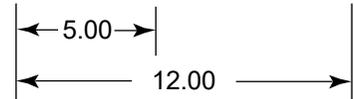
Left Side View



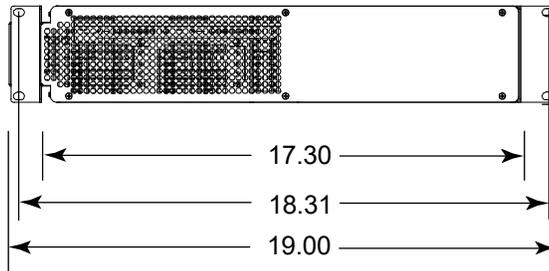
Front View



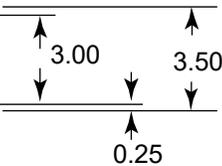
Right Side View



Bottom View

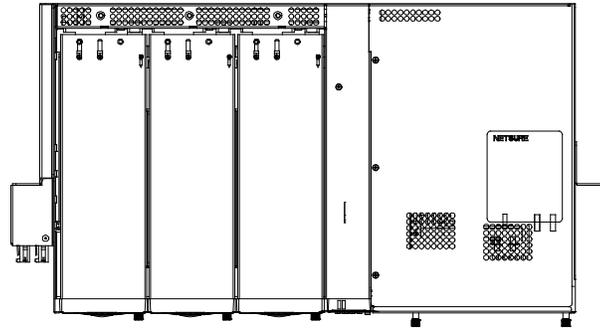


Rear View

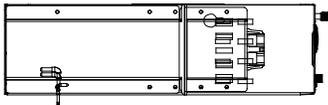


Notes:  
 1. All dimensions are in inches, unless otherwise specified.

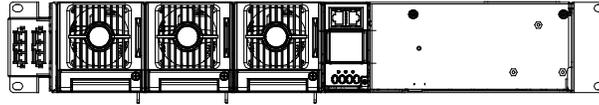
**Overall Dimensions – List 6**



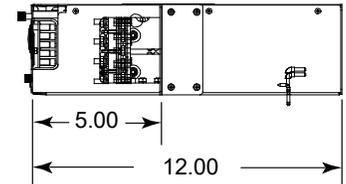
Top View



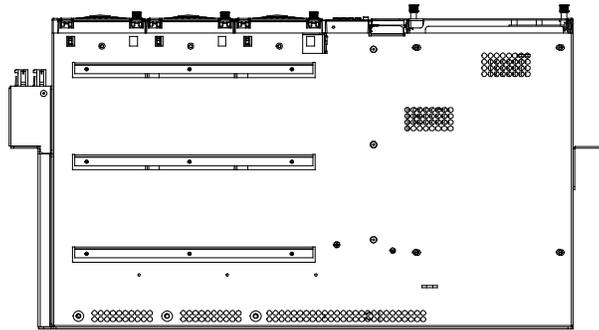
Left Side View



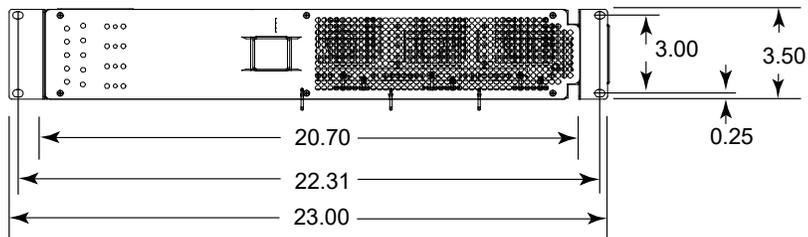
Front View



Right Side View



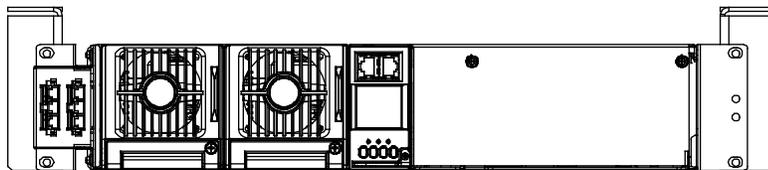
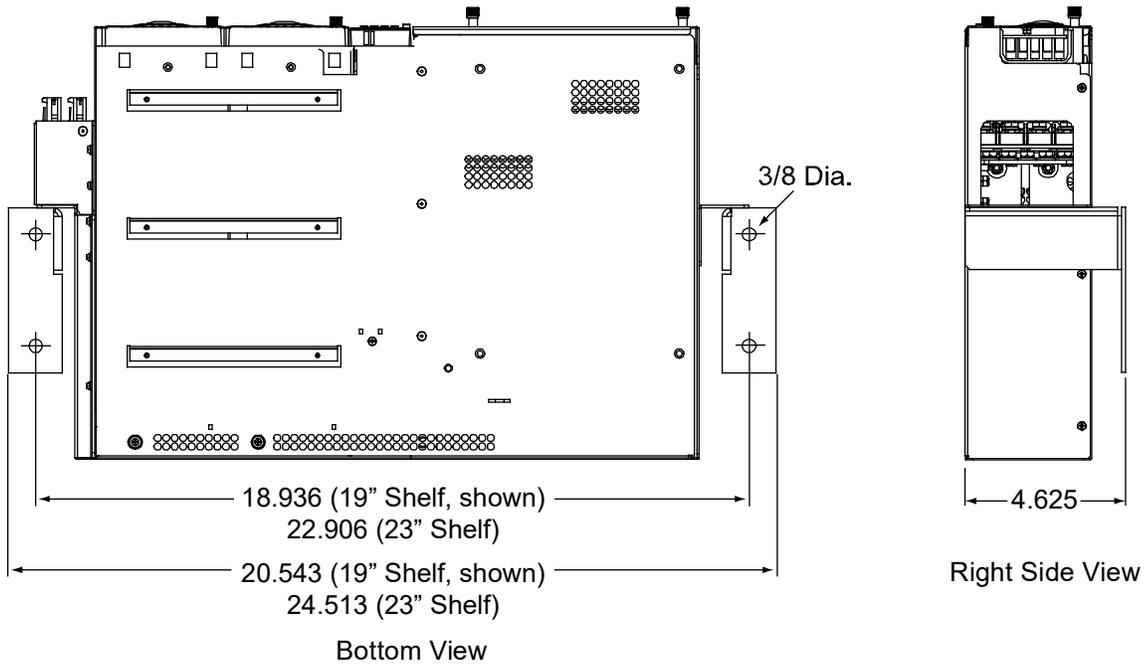
Bottom View



Rear View

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

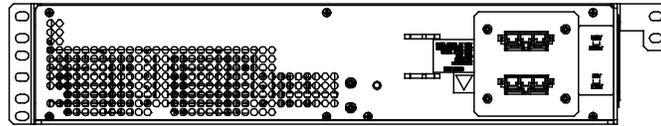
**Additional Dimensions – Lists 2 and 6 with Wall Mounting Kit (P/N 553203)**



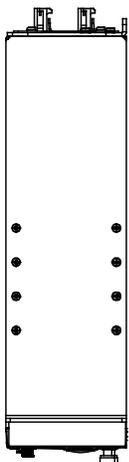
Front View, 19" (23" similar)

**Note:** All dimensions are in inches.

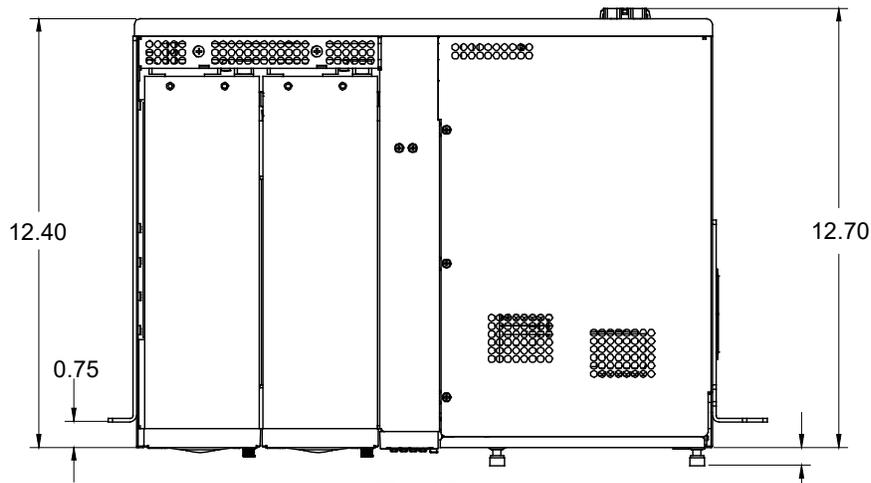
**Additional Dimensions - List 2 and Vertical Flush Mounting Kit (P/N 556851)**



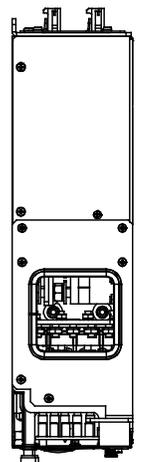
Rear View



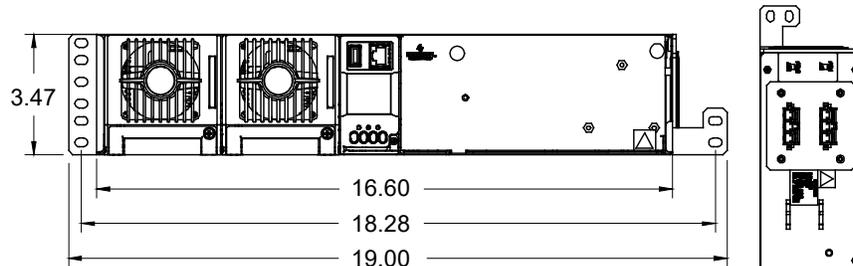
Left Side View



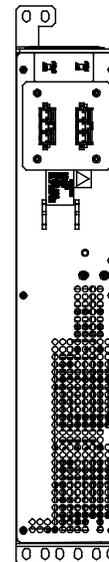
Top View



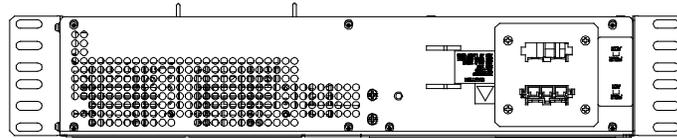
Right Side View



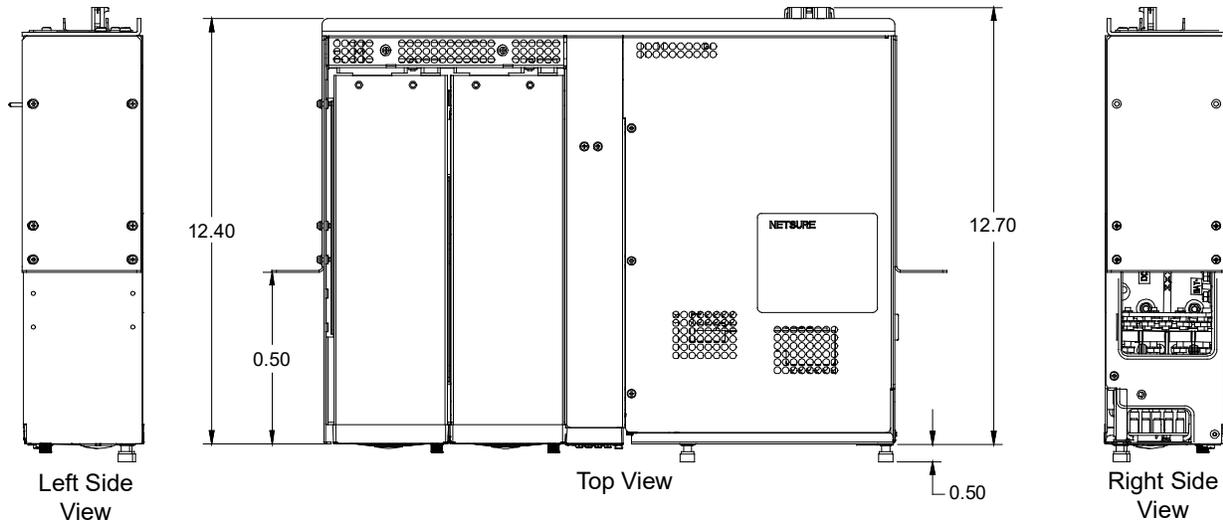
Front View



**Additional Dimensions - List 2 and Mounting Kit (P/N 558707)**



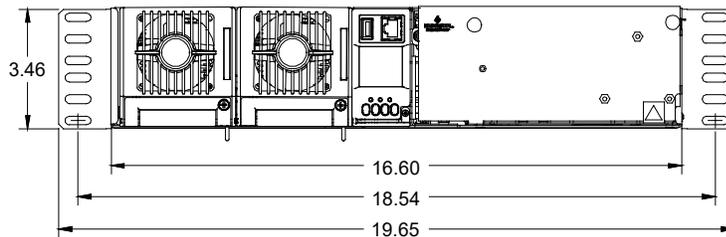
Rear View



Left Side View

Top View

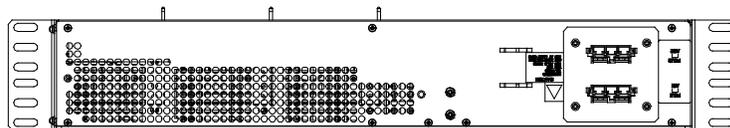
Right Side View



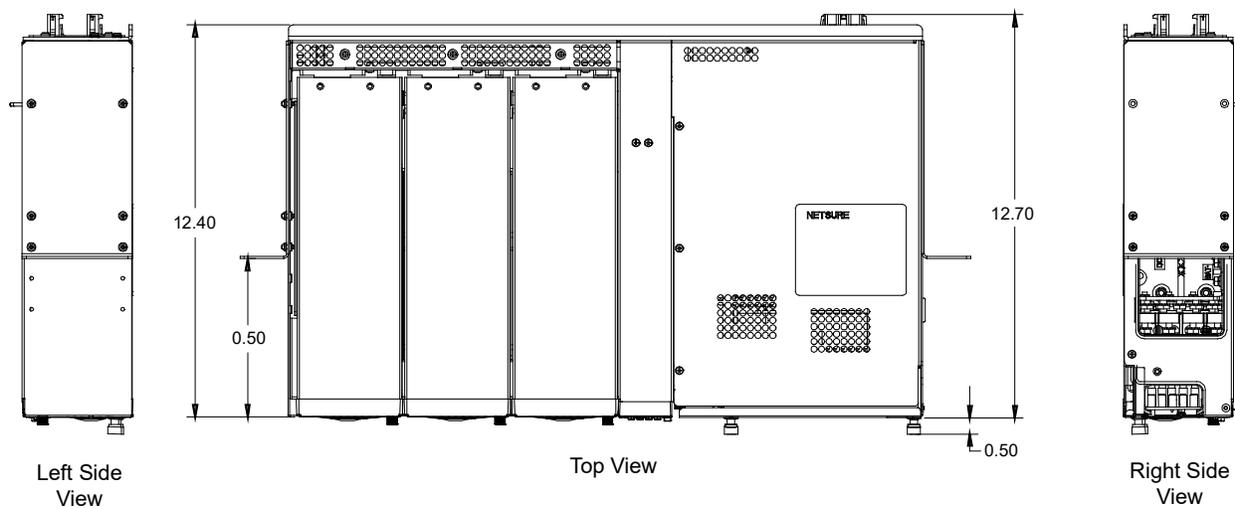
Right Side View

Vertiv™ NetSure™ 502NGFB DC Power System  
 System Application Guide

**Additional Dimensions - List 6 and Mounting Kit (P/N 558708)**



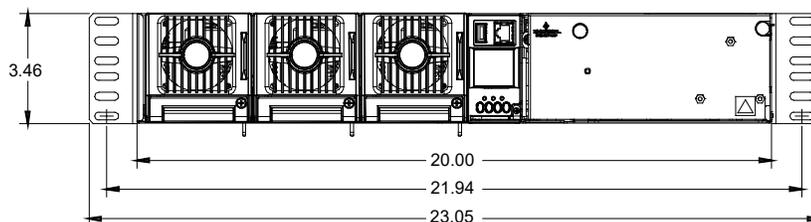
Rear View



Left Side View

Top View

Right Side View

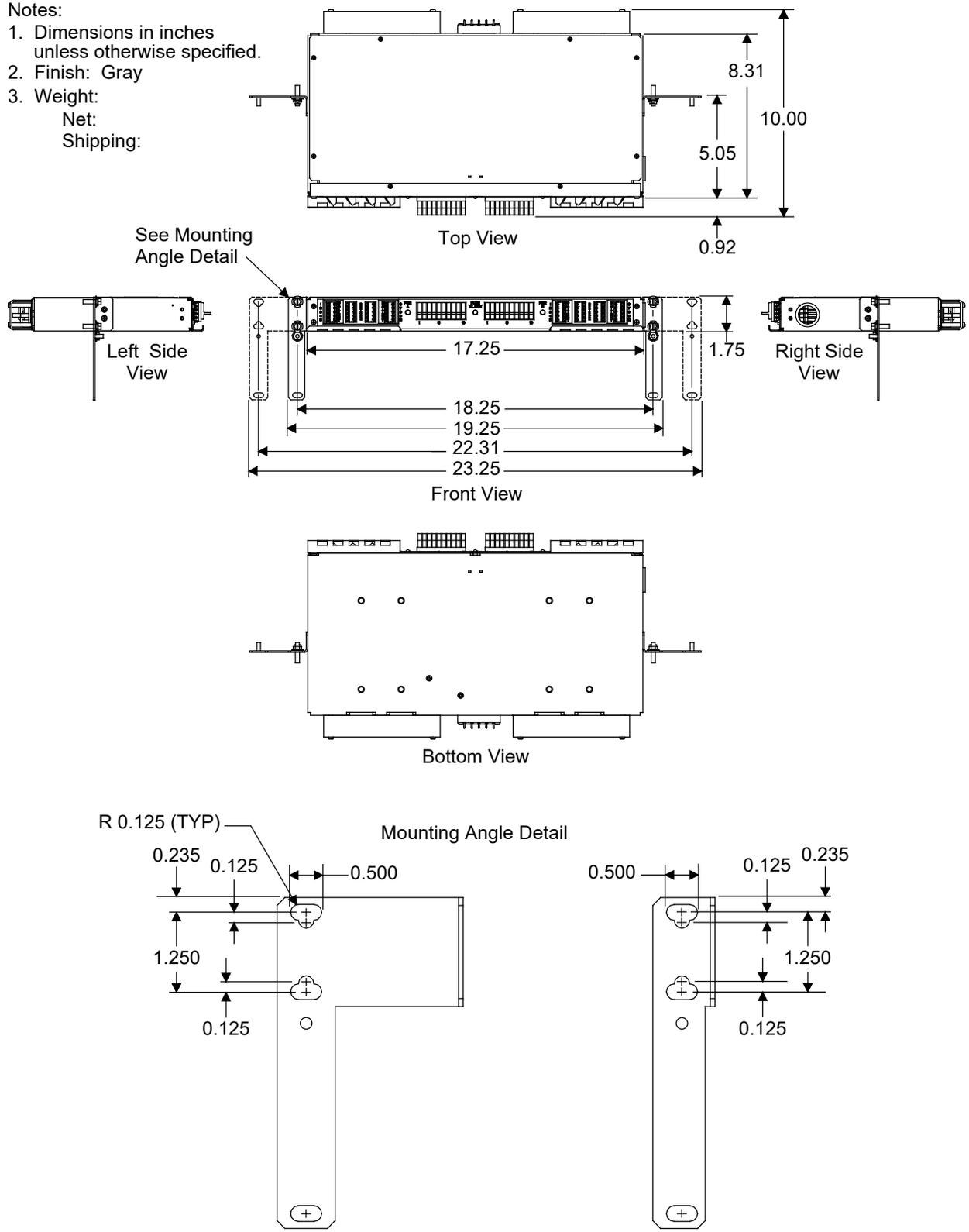


Right Side View

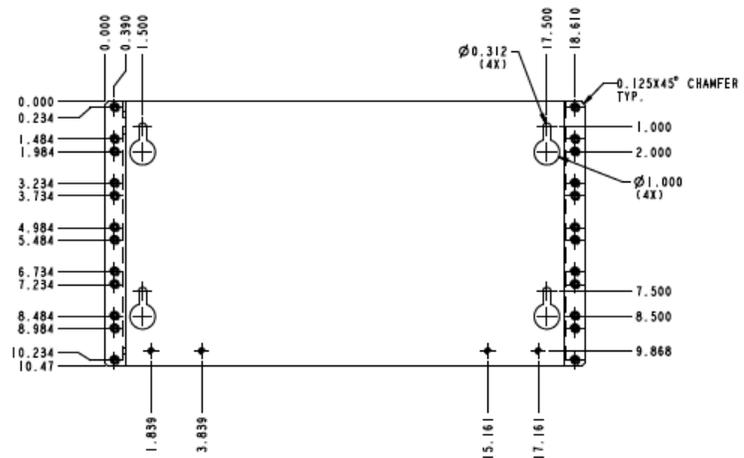
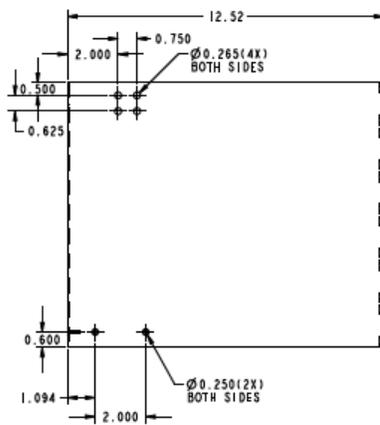
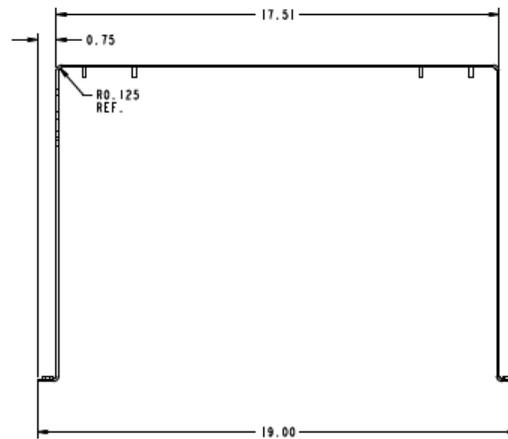
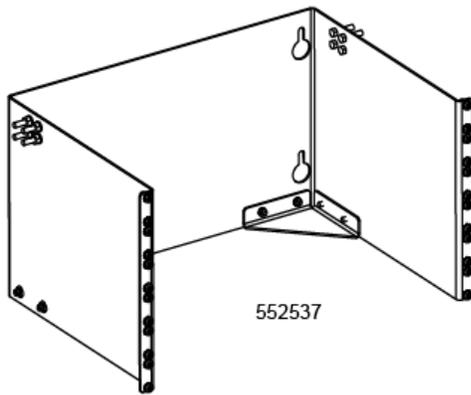
**Overall Dimensions – List KG**

Notes:

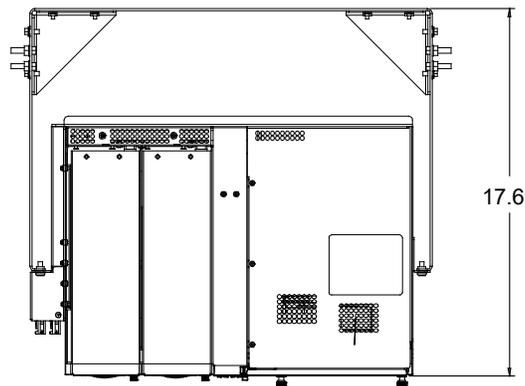
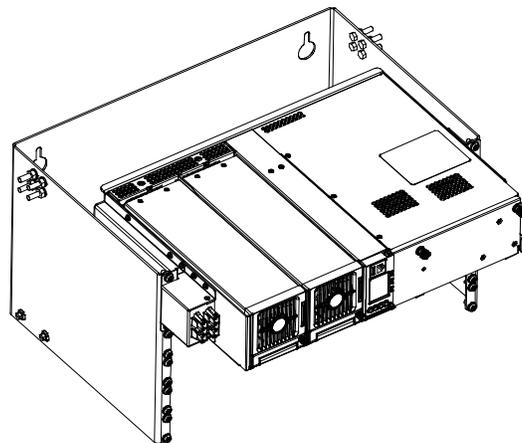
1. Dimensions in inches unless otherwise specified.
2. Finish: Gray
3. Weight:  
 Net:  
 Shipping:



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



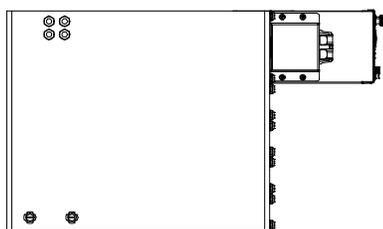
**Overall Dimensions - System with 19" 6RU Wall Mount Kit P/N 552537 (cont'd from previous page)**



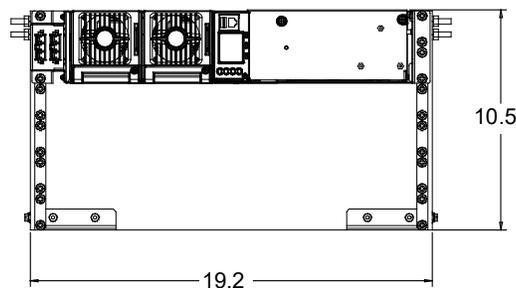
Top View

Notes:

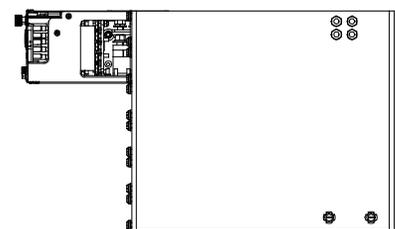
- 1. All dimensions are in inches, unless otherwise specified.



Left Side View



Front View

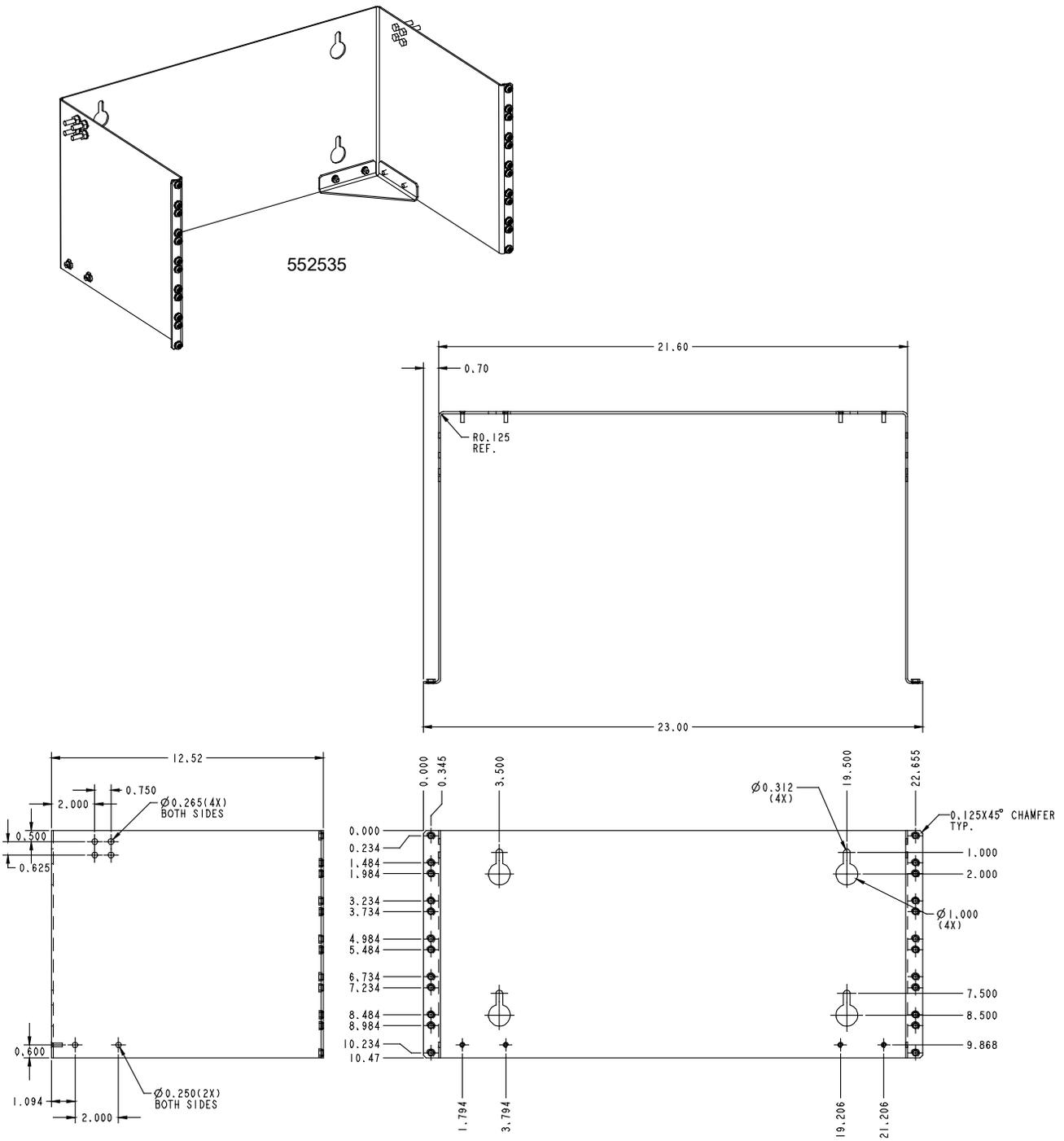


Right Side View

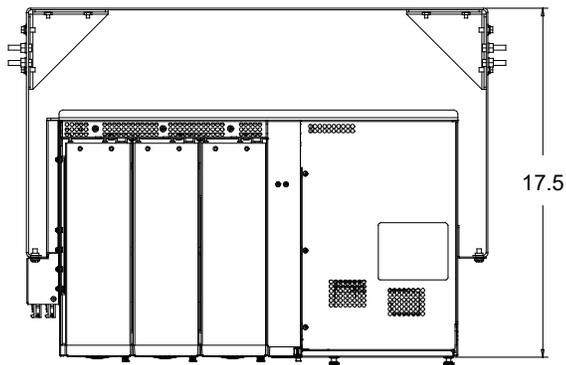
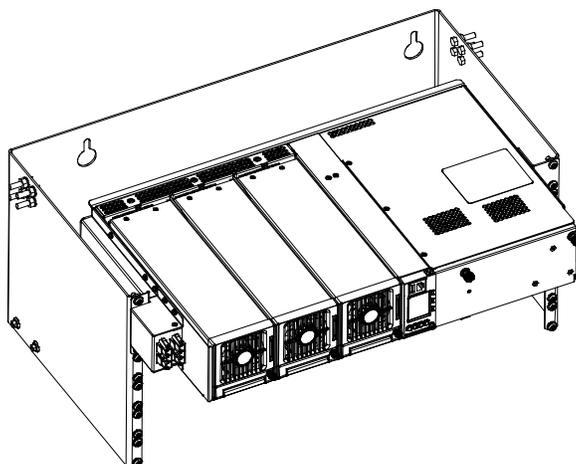
# Vertiv™ NetSure™ 502NGFB DC Power System

## System Application Guide

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



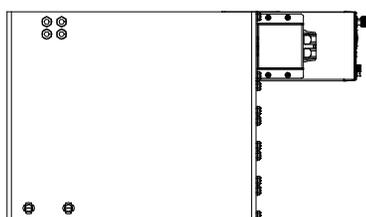
**Overall Dimensions - System with 23" 6RU Wall Mount Kit P/N 552535 (cont'd from previous page)**



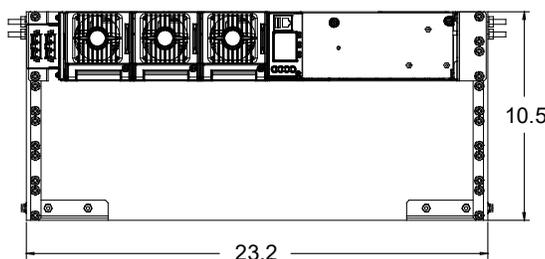
Top View

Notes:

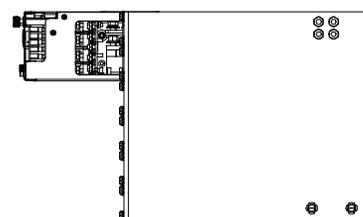
- 1. All dimensions are in inches, unless otherwise specified.



Left Side View



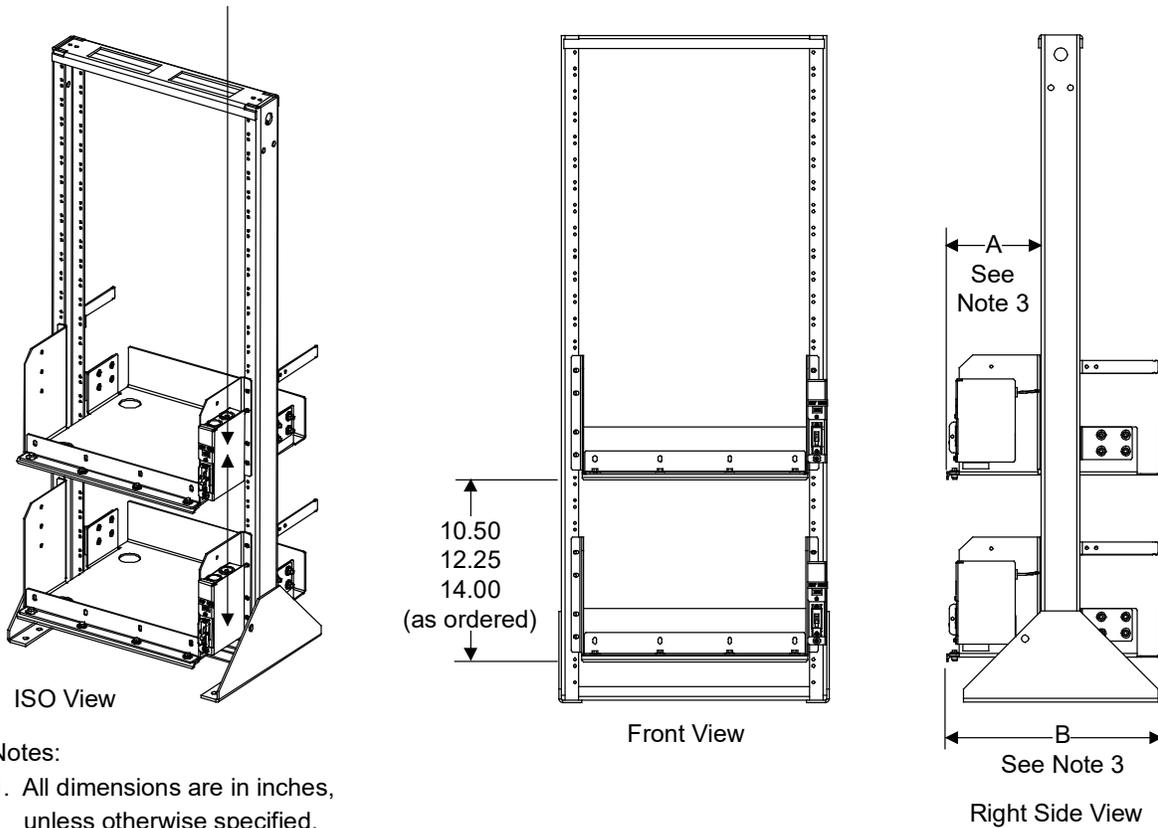
Front View



Right Side View

**Overall Dimensions – 19” Battery Tray**

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 558047 tray shown.  
P/Ns 541034, 540841 and 548213 similar.

3.

Tray P/Ns	Dimension A	Dimension B
558047	7.78	17.60
541034	7.03	20.95
540841	6.90	12.50
548213	7.28	22.35
561974	7.03	20.95

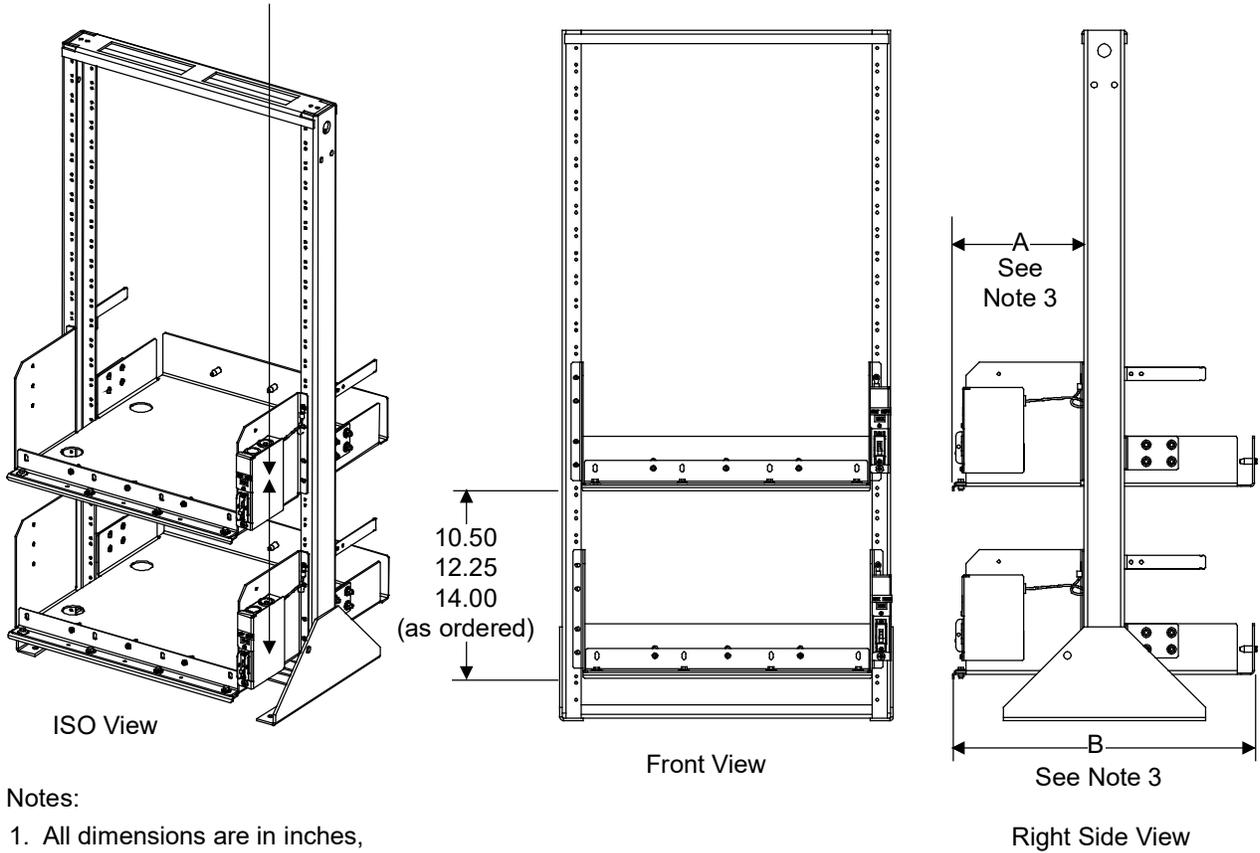
4. Weight in LBS.  
(per tray, less batteries).

Tray P/Ns	With Circuit Breaker Option	Without Circuit Breaker Option
558047	25.0 lbs	23.0 lbs
541034	25.3 lbs	23.3 lbs
540841	18.5 lbs	16.5 lbs
548213	26.0 lbs	24.0 lbs
561974	25.3 lbs	23.3 lbs

5. Finish: Gray
6. Maximum trays available per rack is three (3).

**Overall Dimensions – 23” Battery Tray**

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 528496 tray shown. P/N 540842 and 557573 similar.

3.

Tray P/N	Dimension A	Dimension B
528496	9.781	22.44
540842	6.90	12.50
557573	10.48	23.14
561972	9.781	22.44

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

Part No.	With Circuit Breaker Option	Without Circuit Breaker Option
528496	33 lbs	29 lbs
540842	20 lbs	18 lbs
557573	25 lbs	23 lbs
561972	33 lbs	29 lbs

5. Finish: Gray
6. Maximum trays available per rack is three (3).

### 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

**Marathon™:** GNB Industrial Power, a Division of Exide Technologies, Princeton, NJ 08543.

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

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

### RELATED DOCUMENTATION

<b>Installation Instructions:</b>	Section 6009
<b>User Instructions:</b>	Section 6010
<b>Battery Cabinet Spec. No. 541434 Installation and User Instructions:</b>	Section 6023
<b>Battery Cabinet Spec. No. 545534 Installation and User Instructions:</b>	Section 6033
<b>Battery Cabinet Spec. No. 545506 Installation and User Instructions:</b>	Section 6036
<b>Battery Cabinet Spec. No. 554631 Installation and User Instructions:</b>	UM554631
<b>Rectifier User Instructions:</b>	UM1R482000e
<b>NCU Controller User Instructions:</b>	UM1M830BNA
<b>ACU+ Controller User Instructions:</b>	UM1M820BNA
<b>SCU+ Controller User Instructions:</b>	UM1M521BNA

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