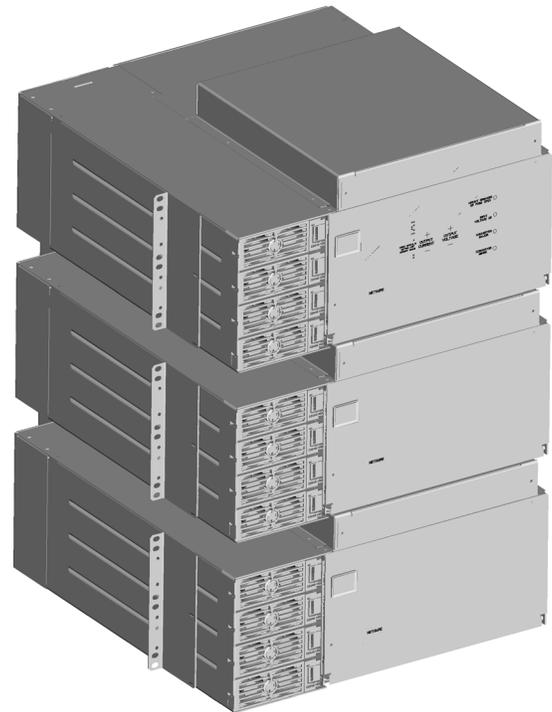


SYSTEM OVERVIEW

Description: +24VDC to -48VDC @ up to 375A converter system.

The Vertiv™ NetSure™ DCS48375 Converter System is comprised of a main shelf and up to two (2) expansion shelves. Each shelf provides mounting positions for up to four (4) converter modules. Each shelf also provides a 15-position distribution row (19" version) or 20-position distribution row (23" version) which accepts bullet nose circuit breakers and TPS/TLS fuseholders. A GMT fuse block option is also available.

Note: Refer to UM1C24481500 (Converter Module User Instructions) for converter module information.



General Specifications

See detailed specifications on page 24.

Family:	Vertiv™ NetSure™
Spec. Nos.:	584622100 (Main Shelf – 19" version) 584622200 (Expansion Shelf – 19" version) 584622300 (Main Shelf – 23" version) 584622400 (Expansion Shelf – 23" version)
Model:	DCS48375
Shelves per System:	(1) Main Shelf, up to (2) Expansion Shelves
Input Voltage	Nominal +24VDC
Output Voltage:	-48VDC, -50VDC, -52VDC, or -54VDC (User Selectable)
Output Capacity:	
per Converter Module:	31A (1500W)
per Shelf:	125A, maximum (Converter Output)
per Distribution Row:	250A, maximum (Distribution Load)
System:	375A, maximum (Converter Output + Distribution Load)
Agency Approval:	UL 60950 Recognized ("c UR"), NEBS (see "1.4 System Compliance Information" under SPECIFICATIONS)
Mounting Type:	Nominal 19" or 23" Relay Rack or Equipment Rack Mounting
Mounting Depth:	18.750" (w/out Expansion Wiring Cover) 20.375" (with Expansion Wiring Cover) 6" Front Projection
Mounting Height:	6.968" (4U) (w/out optional 1U Wiring Space Access Cover) 7.718" (5U) (with optional 1U Wiring Space Access Cover)
Access:	Front and Rear for Installation, Expansion, and Maintenance. Front for Operation.
Color:	Distribution Door and Converter Module Faceplates: Textured Gray Shelf: Galvannel
Environment:	-40°C to +40°C (-40°F to +104°F). -40°C to +65°C (-40°F to +149°F), with derating. (see "1.3.1 Operating Ambient Temperature Range:" under SPECIFICATIONS)

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

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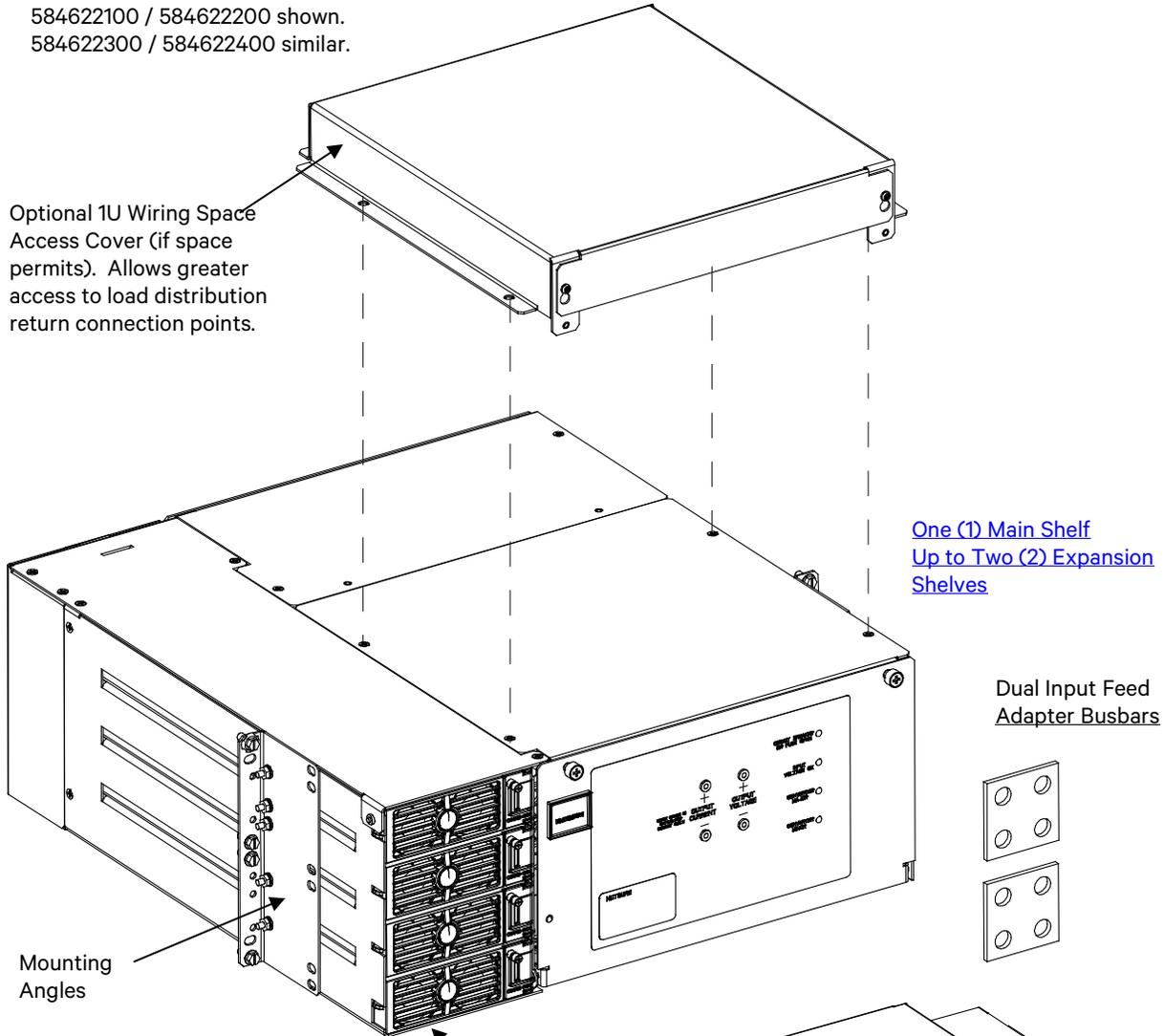
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MAIN COMPONENTS ILLUSTRATIONS

**584622100 (19" Main Shelf), 584622300 (23" Main Shelf),
584622200 (19" Expansion Shelf), 584622400 (23" Expansion Shelf)**

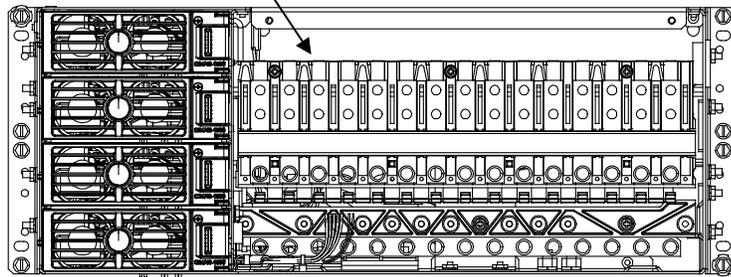
584622100 / 584622200 shown.
584622300 / 584622400 similar.

Optional 1U Wiring Space Access Cover (if space permits). Allows greater access to load distribution return connection points.

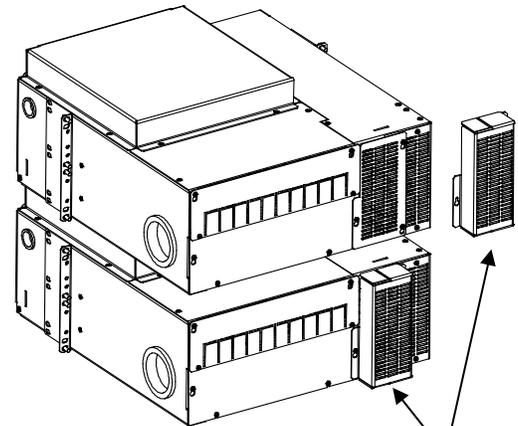


15-Position (19" version)
20-Position (23" version)
Distribution Panel

P/N [1C24481500](#)
Converter Modules.
Four (4) per Shelf.



Front View
(door removed in illustration for clarity only)



Expansion Wiring Access Cover
(extra cover supplied with Expansion Shelf, to be installed on Main Shelf)

ORDERING INFORMATION

584622100 Main Shelf and 584622200 Expansion Shelves – 19” Version

Features

- ◆ Includes reversible mounting angles for nominal 19” or 23” rack mounting.
- ◆ Includes the optional 1U wiring space access cover.
- ◆ Includes two (2) P/N 552506 optional dual input feed busbars.
- ◆ Accepts up to four (4) DC-DC converter modules.
- ◆ Includes a 15-position load distribution fuse / circuit breaker panel which accepts...
3A to 100A TPS/TLS fuses,
1A to 250A bullet nose circuit breakers, and
“Optional Bullet Nose 6-Position GMT Distribution Fuse Block (P/N 545333)”.

Ordering Notes

- 1) Order one (1) Spec. No. 584622100 Main Shelf and up to two (2) Spec. No. 584622200 Expansion Shelves per system.
- 2) Order DC-DC converter modules (P/N [1C24481500](#)) as required.
- 3) Refer also to “*Distribution Devices*”, “*Special Application Crimp Lugs, Busbar Adapter Kits, and Hardware Kits*”, and “*Wiring Notes*” under ORDERING INFORMATION.

584622300 Main Shelf and 584622400 Expansion Shelves – 23” Version

Features

- ◆ Includes the optional 1U wiring space access cover.
- ◆ Includes two (2) P/N 552506 optional dual input feed busbars.
- ◆ Accepts up to four (4) DC-DC converter modules.
- ◆ Includes a 20-position load distribution fuse / circuit breaker panel which accepts...
3A to 100A TPS/TLS fuses,
1A to 250A bullet nose circuit breakers, and
“Optional Bullet Nose 6-Position GMT Distribution Fuse Block (P/N 545333)”.

Ordering Notes

- 1) Order one (1) Spec. No. 584622300 Main Shelf and up to two (2) Spec. No. 584622400 Expansion Shelves per system.
- 2) Order DC-DC converter modules (P/N [1C24481500](#)) as required.
- 3) Refer also to “*Distribution Devices*”, “*Special Application Crimp Lugs, Busbar Adapter Kits, and Hardware Kits*”, and “*Wiring Notes*” under ORDERING INFORMATION.

DC-DC Converter Module (P/N 1C24481500)

Features

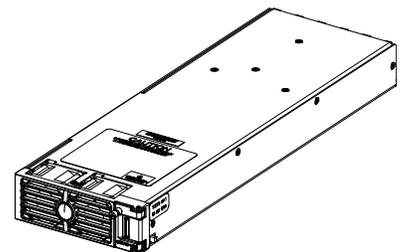
- ◆ Provides one (1) Model C24/48-1500, Spec. No. 1C24481500, 1500 watt / 24 to 48 volt DC-DC converter module.
- ◆ Refer to UM1C24481500 (Converter Module User Instructions) for converter module information.

Restrictions

Each shelf accepts up to four (4) DC-DC converter modules.

Ordering Notes

- 1) Order by P/N 1C24481500 as required.



Distribution Devices

Bullet Nose Circuit Breakers and Bullet Nose Fuseholders e/w TPS/TLS Fuses

Features

- ◆ A single fuseholder provides for installation of a 3A to 100A Bussmann TPS or Littelfuse TLS fuse (as listed in Table 1). This fuseholder plugs into a single distribution row mounting position. This fuseholder provides a GMT-A alarm fuse, which operates open to provide an alarm indication if the associated distribution fuse opens.
- ◆ Each circuit breaker (as listed in Table 2 and Table 3) plugs into one, two, or three distribution row mounting position(s).

Restrictions

Load should not exceed 80% of device rating.

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

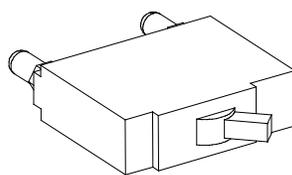
125A, 150A, 175A, and 200A circuit breakers occupy two mounting positions. 225A and 250A circuit breakers occupy three mounting positions.

Caution: For ambient temperatures at or below +40°C (+104°F), overcurrent devices rated 100A or greater **MUST HAVE an empty mounting position between it and any other overcurrent protective device. Maximum size circuit breakers that can be used are 100A single pole, 200A double pole, and 250A triple pole. Maximum size fuse is 100A. The distribution row is rated for a maximum of 250A.**

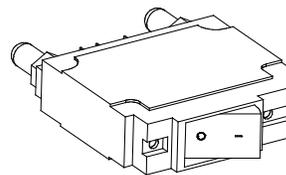
For ambient temperatures between +40°C (+104°F) and +65°C (+149°F), overcurrent devices rated 60A or greater **MUST HAVE an empty mounting position between it and any other overcurrent protective device. Maximum size circuit breakers that can be used are 70A single pole. No double pole or triple pole circuit breakers can be used. Maximum size fuse 70A. The distribution row is rated for a maximum of 250A.**

Ordering Notes

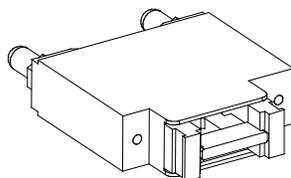
- 1) Order distribution fuses as required per Table 1. Also order one (1) P/N 117201 bullet nose fuseholder per fuse ordered. Order replacement alarm fuses (18/100A) per Table 5.
- 2) Order distribution circuit breakers as required per Table 2 or Table 3.
- 3) See Table 11 for recommended load distribution wire sizes and to order lugs.
 - Distribution devices requiring a single distribution position require a two hole lug with 1/4" bolt clearance holes on 5/8" centers (order per Table 11, order hardware kits per Table 7).
 - Distribution devices requiring two (2) or three (3) distribution positions require special application lugs (order per Table 11 and Table 6) or busbar adapter kits (order per Table 7) and two hole lugs with 3/8" bolt clearance holes on 1" centers (order per Table 8).



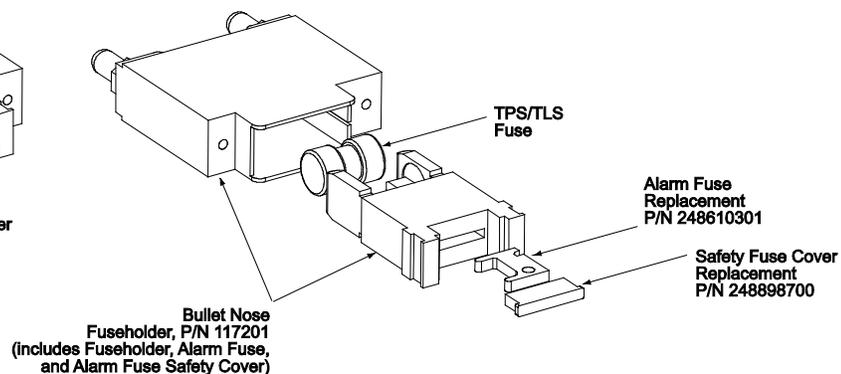
Toggle Handle Bullet Nose Circuit Breaker



Rocker Handle Bullet Nose Circuit Breaker



Bullet Nose Fuseholder



Vertiv™ NetSure™ DCS48375 Converter System
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Ampere Rating	Part Number	Bussmann P/N	Littelfuse P/N
3	248230900	TPS-3	TLS003
5	248231000	TPS-5	TLS005
6	248231200	TPS-6	TLS006
10	248231500	TPS-10	TLS010
15	248231800	TPS-15	TLS015
20	248232100	TPS-20	TLS020
25	248232400	TPS-25	TLS025
30	248232700	TPS-30	TLS030
40	248233300	TPS-40	TLS040
50	248233900	TPS-50	TLS050
60	248234200	TPS-60	TLS060
70	248234500	TPS-70	TLS070
80	118413	--	TLS080
90	118414	--	TLS090
100	118415	--	TLS100
Bullet Nose Fuseholder		P/N 117201 (Includes Fuseholder, 18/100A GMT-A Alarm Fuse, and GMT-X Safety Fuse Cover)	
See Table 11 for recommended load distribution wire sizes and lugs.			

Table 1
Bullet Nose Fuseholders and TPS/TLS Fuses

Vertiv™ NetSure™ DCS48375 Converter System
System Application Guide

Ampere Rating	Number of Poles	Number of Mounting Positions	Part Number	
			Electrical Trip ¹ (White Handle)	Electrical/ Mechanical Trip ² (Black Handle)
1	1	1	102272	101596
3	1	1	102273	101597
5	1	1	102274	101598
10	1	1	102275	101599
15	1	1	102276	101600
20	1	1	102277	101601
25	1	1	102278	101602
30	1	1	102279	101603
35	1	1	102280	101604
40	1	1	102281	101605
45	1	1	121998	121997
50	1	1	102282	101606
60	1	1	102283	101607
70	1	1	102284	101608
75	1	1	102285	101609
80	1	1	121996	121995
100	1	1	102286	101610
125	2	2	516991	516838
150	2	2	516993	516839
175	2	2	144883	144884
200	2	2	121831	121832
225	3	3	144885	144886
250	3	3	121835	121836
See Table 11 for recommended load distribution wire sizes and lugs.				
For 2-pole devices; either order lugs from Table 6 or adapter kit 545404 and lugs from Table 8.				
For 3-pole devices; either order lugs from Table 6 or adapter kit 545571 and lugs from Table 8.				

Circuit Breaker Alarm Operation:

- ¹ Provides an alarm during an electrical trip condition only.
- ² Provides an alarm during an electrical or manual trip condition.

Table 2
Toggle Handle Bullet Nose Circuit Breakers

Vertiv™ NetSure™ DCS48375 Converter System
System Application Guide

Ampere Rating	Number of Poles (and Mounting Positions)	Number of Mounting Positions	Part Number	
			Electrical Trip ¹ (White Handle)	Electrical/ Mechanical Trip ² (Black Handle)
1	1	1	142856	142878
3	1	1	142857	142879
5	1	1	142858	142880
10	1	1	142859	142881
15	1	1	142861	142882
20	1	1	142862	142883
25	1	1	142863	142884
30	1	1	142864	142885
35	1	1	142865	142886
40	1	1	142866	142887
45	1	1	142867	142888
50	1	1	142868	142889
60	1	1	142869	142890
70	1	1	142870	142891
75	1	1	142871	142892
80	1	1	142872	142901
100	1	1	142873	142902
125	2	2	142874	142903
150	2	2	142875	142904
200	2	2	142876	142905
250	3	3	142877	142906
See Table 11 for recommended load distribution wire sizes and lugs.				
For 2-pole devices; either order lugs from Table 6 or adapter kit 545404 and lugs from Table 8.				
For 3-pole devices; either order lugs from Table 6 or adapter kit 545571 and lugs from Table 8.				

Circuit Breaker Alarm Operation:

- ¹ Provides an alarm during an electrical trip condition only.
- ² Provides an alarm during an electrical or manual trip condition.

Table 3
Rocker Handle Bullet Nose Circuit Breakers

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

Optional Bullet Nose 6-Position GMT Distribution Fuse Block (P/N 545333)

Features

- ◆ Provides six (6) load distribution fuse positions (1/4A to 15A GMT alarm fuses).
- ◆ Mounts in two (2) distribution positions.
- ◆ Screw clamp type load and load return terminals provided.
- ◆ Includes six (6) dummy fuses equipped with safety fuse covers.

Restrictions

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

Occupies two (2) bullet device mounting positions.

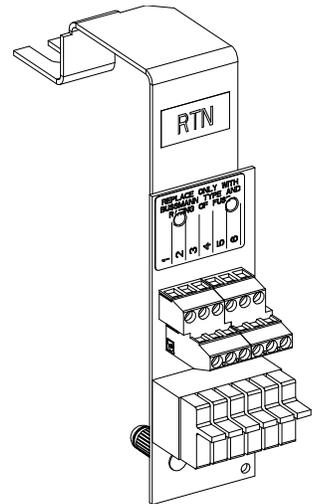
Terminal block wire size capacity: 24 to 14 AWG.

At 40°C ambient, GMT fuses greater than 10A MUST HAVE an empty mounting position between it and any other fuse. Maximum total current is 35A. Maximum GMT fuse size is 15A.

At 65°C ambient, GMT fuses greater than 5A MUST HAVE an empty mounting position between it and any other fuse. Maximum total current is 21A. Maximum GMT fuse size is 10A.

Ordering Notes

- 1) Order optional Bullet Nose 6-Position GMT Fuse Block (P/N 545333) as required.
- 2) Order fuses as required per Table 4.



Ampere Rating	Part Number	Fuse Color
18/100 (GMT-A)	248610301	---
1/4	248610200	VIOLET
1/2	248610300	RED
3/4	248610500	BROWN
1-1/3	248610700	WHITE
2	248610800	ORANGE
3	248610900	BLUE
5	248611000	GREEN
7-1/2	248611300	BLACK-WHITE
10	248611200	RED-WHITE
15	248611500	RED-BLUE
Replacement Safety Fuse Cover (GMT-Y)	102774	---
Replacement Dummy Fuse	248872600	---

Table 4
GMT Fuses

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

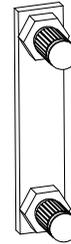
Bullet Nose Bypass Busbar (P/N 535015)

Features

- ◆ Replaces bullet nose circuit breaker or fuseholder where protective or disconnect device is not required.

Ordering Notes

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



Replacement Alarm, Reference, and Control Fuses

Ordering Notes

- 1) Order replacement fuses as required per Table 5.

Assembly	Desig.	Function	Size (Amperes)	Type	Part No.
TPS/TLS Fuseholders (P/N 117201)	FA	Fuse Alarm	18/100	Bussmann GMT-A	248610301
	--	--	--	Safety Fuse Cover (GMT-X)	248898700

Table 5
Replaceable Alarm, Reference, and Control Fuses

Special Application Crimp Lugs, Busbar Adapter Kits, and Hardware Kits

Special Application Crimp Lugs

Features

- ◆ Lug connects one (1) cable to two (2) distribution positions. Lug has 1/4" bolt clearance holes on 5/8" centers.

Ordering Notes

- 1) See Table 6 for part numbers for various cable sizes.

Lead Size	Part Number	
1/0 AWG	245393500	
2/0 AWG	245393600	
3/0 AWG	245393700	
4/0 AWG	245393800	
250 kcmil	514872	
350 kcmil	514873	

Table 6
Special Application Crimp Lugs / Strap Combination
(Two-Hole Lug, 1/4" Bolt Clearance Hole, 5/8" Centers)

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

Busbar Adapter and Hardware Kits

Features

- ◆ Kits include hardware shown in Table 7.
- ◆ Unless otherwise specified, busbar adapter kits are factory installed when ordered with shelf(s).

Ordering Notes

- 1) See Table 7 for part numbers and descriptions of available kits. For kits that provide 3/8-16 on 1" lug landings, order lugs from Table 8 as required.

Part Number	Description
545404	Busbar Adapter Kit – Converts (2) load positions (1/4-20 on 5/8" centers) to (1) landing (3/8-16 on 1" centers). Right-angle load busbar & straight return busbar for rear wiring egress.
545405	Busbar Adapter Kit – Converts (1) load position (1/4-20 on 5/8" centers) to (1) load landing (1/4-20 on 5/8" centers), right angle.
545571	Busbar Adapter Kit – Converts (3) load positions (1/4-20 on 5/8" centers) to (1) landing (3/8-16 on 1" centers). Right-angle load busbar & straight return busbar for rear wiring egress.
552876	Lug Hardware Kit – (32) 1/4-20 nuts, lock washers and flat washers.

Table 7
Busbar Adapter and Hardware Kits

Wire Size	Part Number
6 AWG	245349900
4 AWG	245350000
2 AWG	245348200
1/0 AWG	245347100
2/0 AWG	245347200
3/0 AWG	245347300
4/0 AWG	245347400
250 kcmil	245347500
300 kcmil	245347600
350 kcmil	245347700
400 kcmil	245347800
500 kcmil	245347900
600 kcmil	245348000
750 kcmil	245348100

Table 8
Crimp Lugs
(Two-Hole Lug, 3/8" Bolt Clearance Hole, 1" Centers)

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

Wiring Notes

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

Recommended Frame Ground Wire Size and Lug Selection

Features

- ◆ 1/4-20 x 0.5" studs on 5/8" center are provided for installation of a customer provided frame ground lead terminated in a 2-hole lug.

Ordering Notes

- 1) Frame ground lug must be ordered separately (lug mounting hardware is provided). For recommended wire size and lug selection, refer to Table 9. Lugs should be crimped per lug manufacturer's specifications.

Recm 90°C Wire Size ¹ (AWG)	Recommended Crimp Lug ²	
	Vendor	Part No.
6	T & B	54205
	Burndy	YAV6CL-2TC14FX
	Vertiv	245346700

¹ Equipment grounding conductor size based on the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 250-122 for copper wire was used. If aluminum or copper clad aluminum grounding conductor is used, refer to Table 250-122 for increased conductor size. For operation in countries where the NEC is not recognized, follow applicable codes.

² Two-hole lug, 1/4" bolt clearance hole, 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.

Table 9
Recommended Frame Ground Wire Size and Lug

Recommended DC Inputs Wire Sizes and Lugs Selection

Features

- ◆ 3/8-16 x 0.875" studs on 1" centers are provided for installation of customer provided DC input leads terminated in 2-hole lugs. Terminations are provided for each converter module (individual feed). Adapter busbars are provided loose with each shelf which allows two (2) converter modules to be fed by a single input.

Restrictions

Maximum lug width is 0.812 inches (individual feed) or 1.156 (dual feed).

Ordering Notes

- 1) DC input lugs must be ordered separately (lug mounting hardware is provided). For recommended wire sizes and lug selection, refer to Table 10. Lugs should be crimped per lug manufacturer's specifications.

Vertiv™ NetSure™ DCS48375 Converter System
System Application Guide

Individual Converter Module Feed					
Ambient Operating Temperature	Recommended DC Input Protective Device Rating	Recm 90°C Wire Size ¹ (AWG)	Loop Length ² (feet)	Recommended Crimp Lug ³	
				Vendor	Part No.
40°C	100A	2	60	T & B	256-30695-257
				Burndy	YA2CL-2TC38
				Vertiv	245348200
65°C ⁶		2 ⁴	60	T & B	256-30695-257
				Burndy	YA2CL-2TC38
				Vertiv	245348200
Dual Converter Module Feed – One (1) Input per Two (2) Converter Modules (requires two busbar adapters P/N 552506, shipped loose with each shelf)					
Ambient Operating Temperature	Recommended DC Input Protective Device Rating	Recm 90°C Wire Size ¹ (AWG)	Loop Length ² (feet)	Recommended Crimp Lug ³	
				Vendor	Part No.
40°C	200A ⁵	4/0	95	T & B	256-30695-835
				Burndy	YAV28L-2TC38FX-YEL
				Vertiv	245390500
65°C ⁶		4/0 ⁷	95	T & B	256-30695-835
				Burndy	YAV28L-2TC38FX-YEL
				Vertiv	245390500

- ¹ Wire sizes based on recommendations of the American National Standards Institute (ANSI) approved National Fire Protection Association's (NFPA) National Electrical Code (NEC). Table 310-16 for copper wire at 90°C conductor temperature, operating in ambient 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 Wire sizes listed are sufficient to restrict voltage drop to 1.0 volt or less at rated full load output current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.
- ³ Two-hole lug, 3/8" bolt clearance hole, 1" centers. Lugs should be crimped per lug manufacturer's specifications.
- ⁴ Maximum and minimum OCPD is 80A at 65°C.
- ⁵ Minimum OCPD is 200A at 40°C.
- ⁶ Calculated input current is 60A @ 24Vdc at 65°C per converter module based on 85% efficiency rating and 1200VA.
- ⁷ Maximum and minimum OCPD is 150A at 65°C with de-rated input current.

Table 10
Recommended DC Input Wire Sizes and Lugs

Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

Recommended Load Distribution Wire Sizes and Lugs Selection

Features

- ◆ 1/4-20 x 0.625" studs on 5/8" centers are provided for installation of customer provided load distribution leads terminated in 2-hole lugs.

Restrictions

Maximum lug width, 0.625 inches.

Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 AWG.

Ordering Notes

- 1) Load distribution lugs must be ordered separately. Customer must provide (or order) lug mounting hardware. The rating of the distribution device determines the load lead wire size requirement. For recommended wire sizes and lug selection for various loop lengths per fuse/circuit breaker ampere rating, refer to Table 11. Lugs should be crimped per lug manufacturer's specifications.
 - Maximum size of wire to be connected to a single fuseholder or circuit breaker position is 2 AWG. For wiring up to 350 kcmil, see "Special Application Crimp Lugs" under ORDERING INFORMATION.
 - Distribution devices requiring a single distribution position require a two hole lug with 1/4" bolt clearance holes on 5/8" centers (order per Table 11, order hardware kits per Table 7).
 - Distribution devices requiring two (2) or three (3) distribution positions require special application lugs (order per Table 11 and Table 6) or busbar adapter kits (order per Table 7) and two hole lugs with 3/8" bolt clearance holes on 1" centers (order per Table 8).

Notes to Table 11:

- 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 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.
- ² Recommended wire sizes are sufficient to restrict voltage drop to 1.0 volt or less at listed branch current for the loop lengths shown. Loop length is the sum of the lengths of the positive and negative leads.
- ³ Wire Size / Loop Length Combination Calculated using 40°C Ambient Operating Temperature.
- ⁴ Wire Size / Loop Length Combination Calculated using 50°C Ambient Operating Temperature.
- ⁵ Wire Size / Loop Length Combination Calculated using 65°C Ambient Operating Temperature.
- ⁶ These lugs are two-hole for 1/4" bolt clearance on 5/8" centers. Lugs should be crimped per lug manufacturer's specifications.
- ⁷ Special application crimp lug / strap combination.

Table 11 (cont'd on next page)
Recommended Load Distribution Wire Sizes and Lugs

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Fuse/Circuit Breaker Amperage	Recm 90°C Wire Size ⁽¹⁾						
	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG	4 AWG	2 AWG
	Loop Length (feet) ⁽²⁾						
1, 3, 5, 6, 10A	37 ^(3, 4, 5)	58 ^(3, 4, 5)	93 ^(3, 4, 5)	148 ^(3, 4, 5)	236 ^(3, 4, 5)	376 ^(3, 4, 5)	597 ^(3, 4, 5)
15A	24 ^(3, 4)	39 ^(3, 4, 5)	62 ^(3, 4, 5)	99 ^(3, 4, 5)	157 ^(3, 4, 5)	250 ^(3, 4, 5)	398 ^(3, 4, 5)
20A	--	29 ^(3, 4)	46 ^(3, 4, 5)	74 ^(3, 4, 5)	118 ^(3, 4, 5)	188 ^(3, 4, 5)	298 ^(3, 4, 5)
25A	--	--	37 ^(3, 4)	59 ^(3, 4, 5)	94 ^(3, 4, 5)	150 ^(3, 4, 5)	239 ^(3, 4, 5)
30A	--	--	31 ^(3, 4)	49 ^(3, 4, 5)	78 ^(3, 4, 5)	125 ^(3, 4, 5)	199 ^(3, 4, 5)
35A	--	--	--	42 ^(3, 4)	67 ^(3, 4, 5)	107 ^(3, 4, 5)	170 ^(3, 4, 5)
40A	--	--	--	37 ^(3, 4)	59 ^(3, 4, 5)	94 ^(3, 4, 5)	149 ^(3, 4, 5)
45A	--	--	--	33 ^(3, 4)	52 ^(3, 4)	83 ^(3, 4)	132 ^(3, 4)
50A	--	--	--	29 ⁽³⁾	47 ^(3, 4)	75 ^(3, 4)	119 ^(3, 4)
60A	--	--	--	--	39 ^(3, 4)	62 ^(3, 4)	99 ^(3, 4)
70A	--	--	--	--	--	53 ^(3, 4)	85 ^(3, 4)
75A	--	--	--	--	--	50 ^(3, 4)	79 ^(3, 4)
80A	--	--	--	--	--	47 ⁽³⁾	74 ^(3, 4)
Recommended Crimp Lug ⁽⁶⁾							
Lug	245342300	245342300	245342300	245390200	245346700	245346800	245346900

Fuse/Circuit Breaker Amperage	Recm 90°C Wire Size ⁽¹⁾						
	2 AWG	1/0 AWG	2/0 AWG	3/0 AWG	4/0 AWG	250 kcmil	350 kcmil
	Loop Length (feet) ⁽²⁾						
90A	66 ^(3, 4)	105 ⁽³⁾	133 ⁽³⁾	--	--	--	--
100A	59 ^(3, 4)	95 ⁽³⁾	119 ⁽³⁾	--	--	--	--
125A	47 ⁽³⁾	76 ⁽³⁾	95 ⁽³⁾	120 ⁽³⁾	--	--	--
150A	--	63 ⁽³⁾	79 ⁽³⁾	100 ⁽³⁾	--	--	--
175A	--	--	68 ^(3, 4)	86 ^(3, 4)	108 ^(3, 4)	--	--
200A	--	--	--	75 ⁽³⁾	95 ⁽³⁾	112 ⁽³⁾	--
225A	--	--	--	--	67 ⁽³⁾	84 ^(3, 4)	100 ^(3, 4)
250A	--	--	--	--	76 ^(3, 8)	90 ^(3, 8)	126 ^(3, 8)
Recommended Crimp Lug							
Lug	245346900 ⁽⁶⁾	245393500 ⁽⁷⁾	245393600 ⁽⁷⁾	245393700 ⁽⁷⁾	245393800 ⁽⁷⁾	514872 ⁽⁷⁾	514873 ⁽⁷⁾

Table 11 (cont'd from previous page)
Recommended Load Distribution Wire Sizes and Lugs

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

Features

- ◆ The system interface circuit card is mounted on the inside of the main shelf's front door. This circuit card provides four (4) sets of Form C relay contacts for external alarms, reference and monitoring inputs, plus an ESTOP input. Terminal blocks are provided on the circuit card for customer connections. Refer to Paragraphs 1.5.3 and 1.5.4 under "Specifications" for details.

Restrictions

Terminal block wire size capacity is 12 to 22 AWG.

Relay contacts are rated for 1A at 30VDC or 0.3A at 110VDC.

Ordering Notes

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

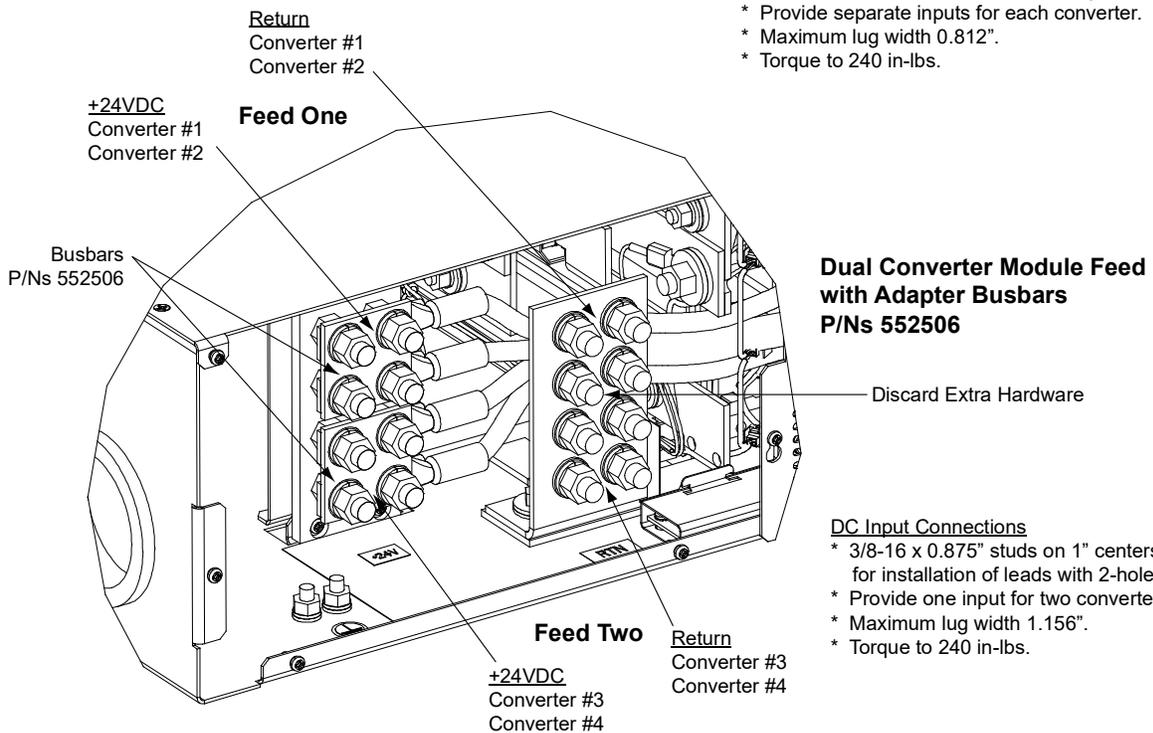
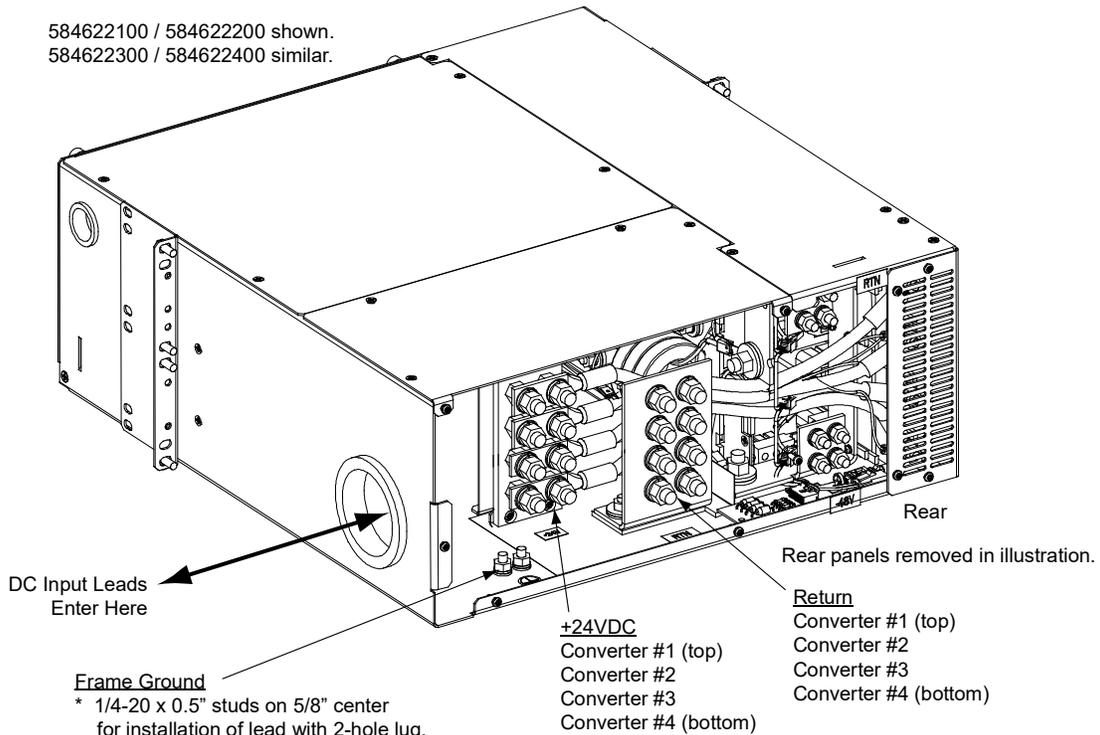
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Wiring Illustrations

DC Inputs and Frame Ground

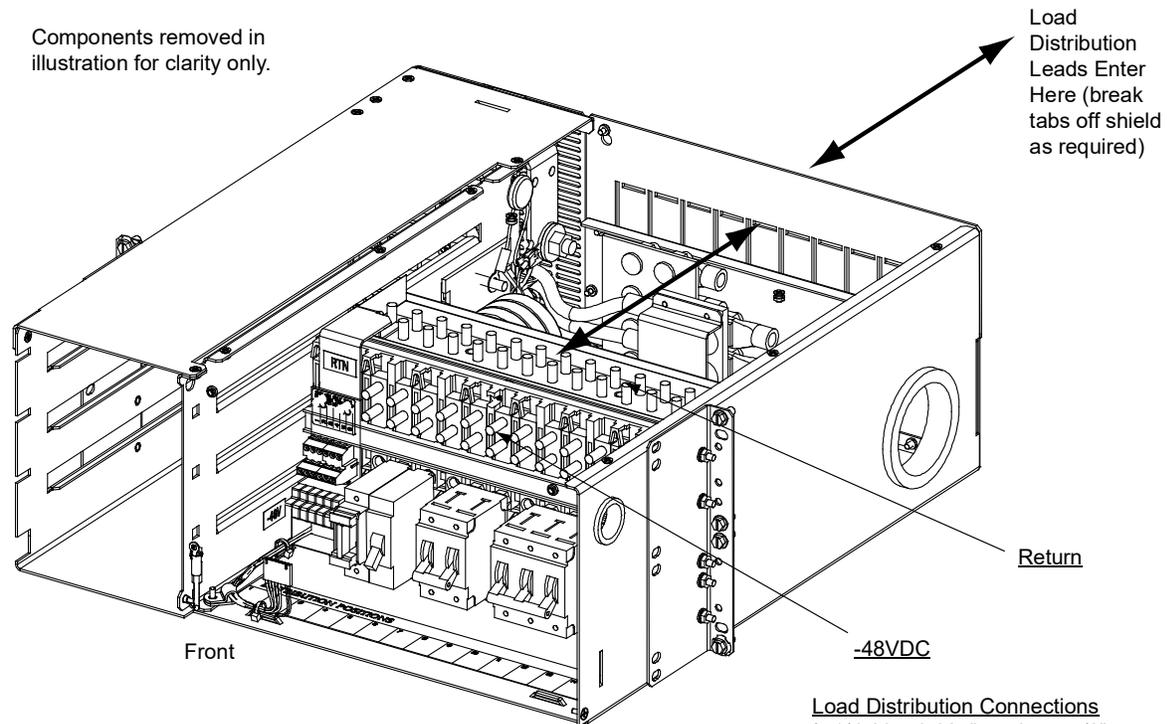
584622100 / 584622200 shown.
584622300 / 584622400 similar.



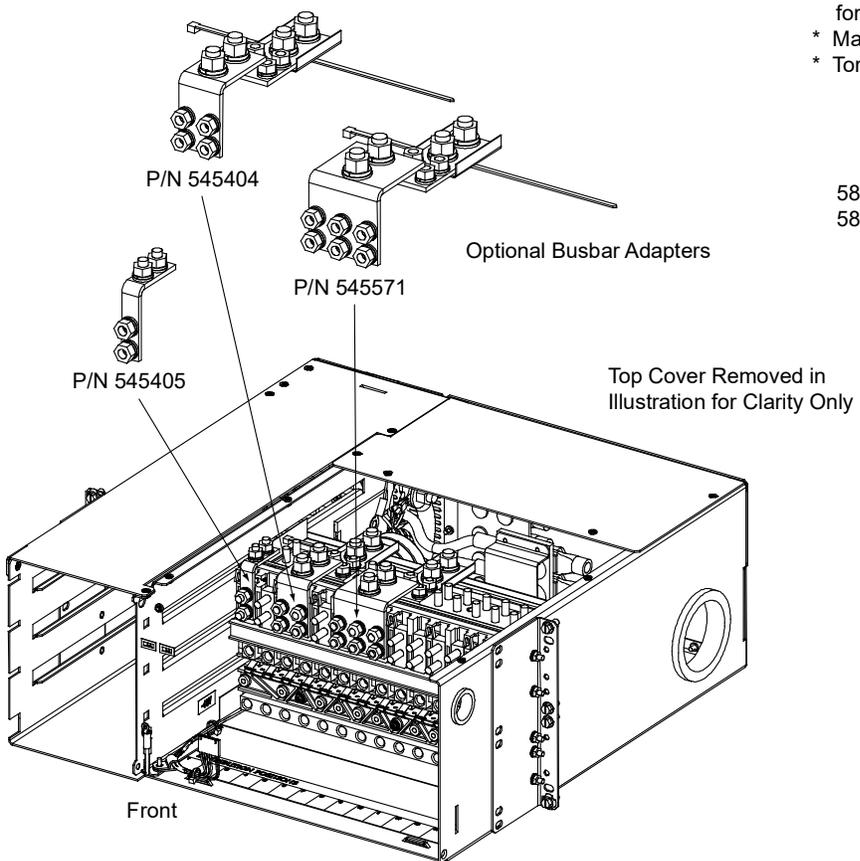
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Load Distribution (TPS/TLS Fuses and Bullet Nose Circuit Breakers)



- Load Distribution Connections**
- * 1/4-20 x 0.625" studs on 5/8" centers for installation of leads with 2-hole lugs.
 - * Maximum lug width 0.625".
 - * Torque to 58 in-lbs.

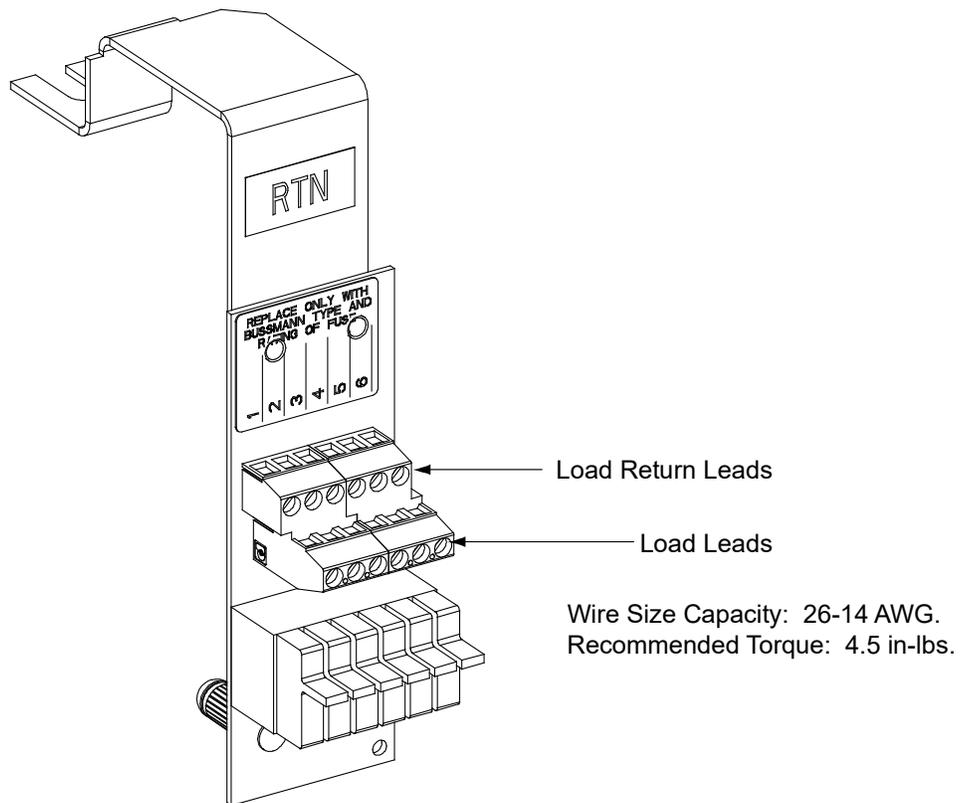


584622100 / 584622200 shown.
584622300 / 584622400 similar.

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Load Distribution (Optional Bullet Nose 6-Position GMT Fuse Block)

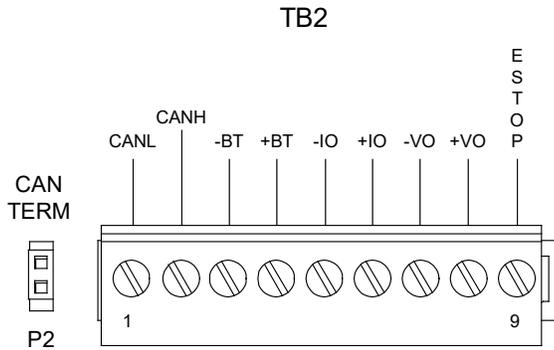


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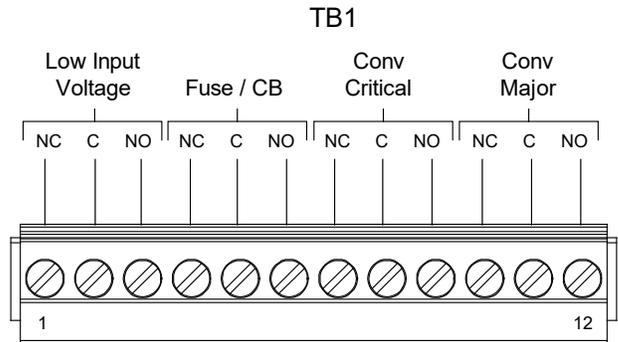
System Application Guide

External Alarm, Reference, Monitoring, and Control

Note: *External FA/CBA Alarm Input:* An external FA/CBA alarm signal can be connected to the system as shown in the “Shelf Interconnections” section.



Recommended Torque is 5.0 in-lbs.

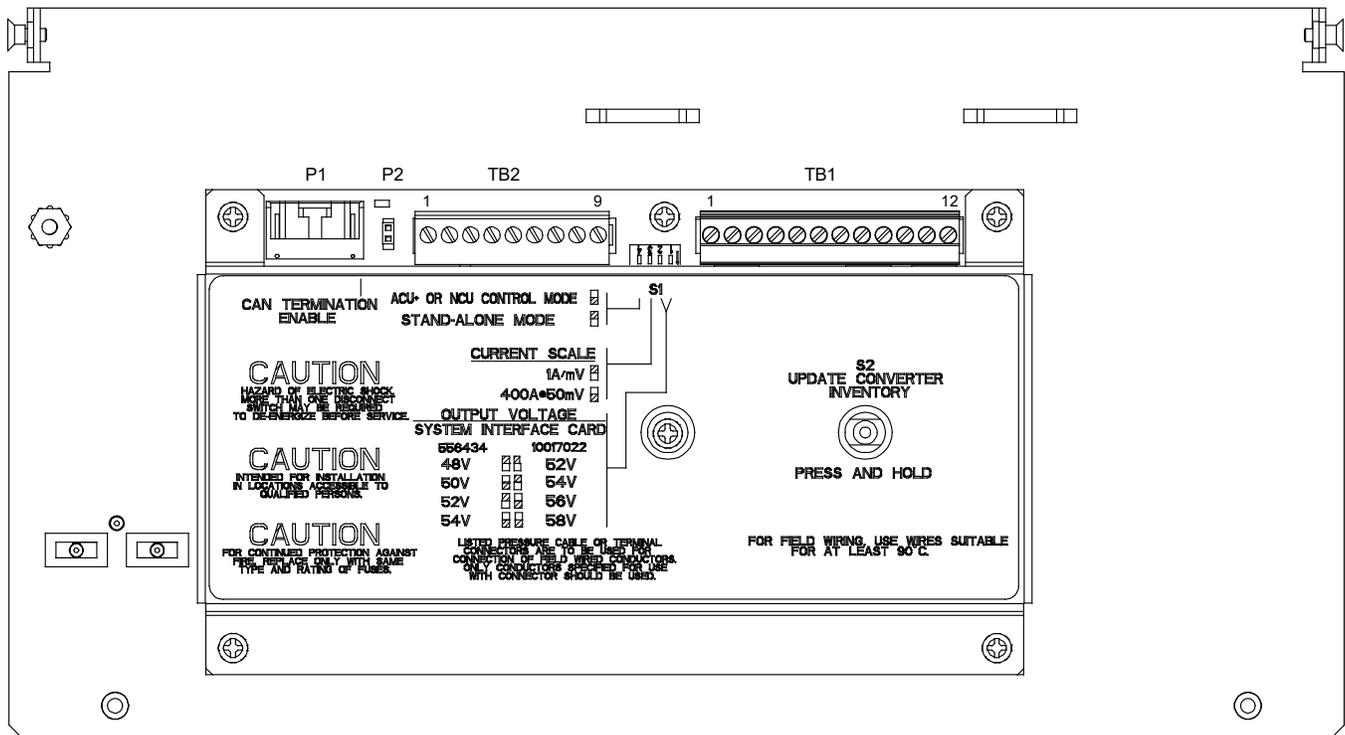


Recommended Torque is 5.0 in-lbs.

Low Input Voltage, Conv Critical, and Conv Major relays are energized for normal operating conditions and de-energized for an alarm condition.

Fuse / CB relay is de-energized for normal operating conditions and energized for an alarm condition.

Relay contacts shown represent normal system operation.



Inside View of Main Shelf's Front Door

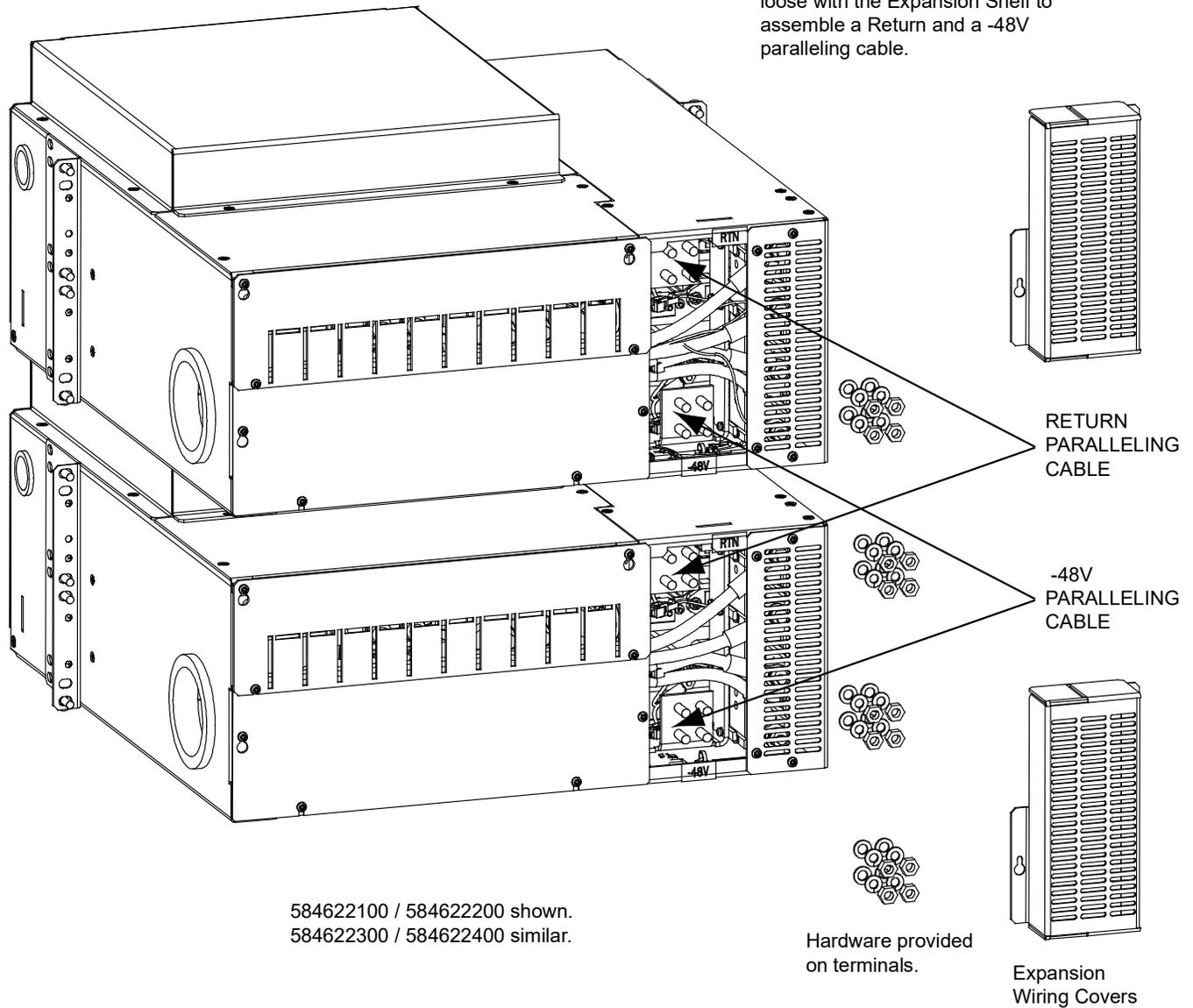
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Shelf Interconnections

Output Paralleling Leads

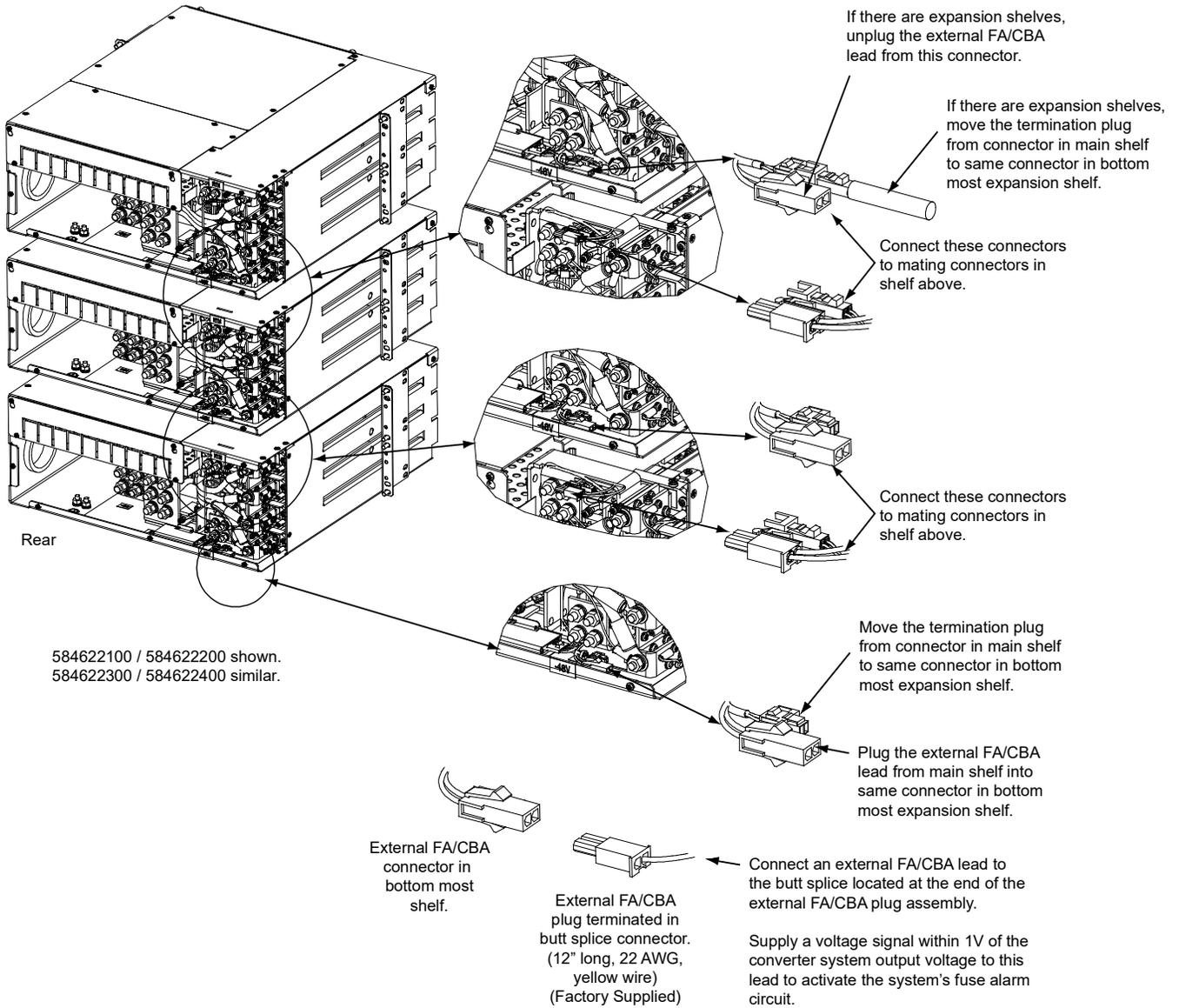
Cable, lugs, and labels are provided loose with the Expansion Shelf to assemble a Return and a -48V paralleling cable.



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FA/CBA and CAN Interconnections



Vertiv™ NetSure™ DCS48375 Converter System

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SPECIFICATIONS

Note: For DC-DC converter module specifications, refer to UM1C24481500 (Converter Module User Instructions).

1.1 System Output Ratings

1.1.1 Voltage: Nominal -48 volts DC, positive ground.

(A) With System Interface Circuit Card P/N 556434: -48VDC, -50VDC, -52VDC, or -54VDC

(B) With System Interface Circuit Card P/N 10017022: -52VDC, -54VDC, -56VDC, or -58VDC

1.1.2 Current: 375A, maximum (Converter Output + Distribution Load).

125A, maximum (Converter Output) per shelf.

250A, maximum (Distribution Load) per distribution row.

1.2 System Input Ratings

1.2.1 Input Voltage: Nominal +24 volts DC.

1.2.2 Nameplate Rating:

(A) Individual Feed: +20.5 to +30 volts DC, 87 to 59A.

(B) Dual Feed (one input per two converters): +20.5 to +30 volts DC, 175 to 120A.

1.2.3 Filtering: Noise reflected back to the central office battery is within the parameters set forth in Telcordia Technical Reference TR-TSY-000009, paragraph 5.0, using test measurements in Telcordia Technical Reference PUB 43802, pages 5 and 6.

1.3 System Environmental Ratings

1.3.1 Operating Ambient Temperature Range:

(A) -40°C to +40°C (-40°F to +104°F).

Overcurrent devices rated 100A or greater MUST HAVE a space adjacent to it. Maximum size circuit breakers that can be used are 100A single pole, 200A double pole, and 250A triple pole. Maximum size fuse is 100A.

(B) -40°C to +65°C (-40°F to +149°F), with derating.

For ambient temperatures between +40°C (+104°F) and +65°C (+149°F), overcurrent devices rated 60A or greater MUST HAVE a space adjacent to it. Maximum size circuit breakers that can be used are 70A single pole. No double pole or triple pole circuit breakers can be used. Maximum size fuse 70A.

1.3.2 Storage Ambient Temperature Range: -40°C to +85°C (-40°F to +185°F).

1.3.3 Humidity: Capable of operating in an ambient relative humidity range of 0% to 95%, non-condensing.

1.3.4 Altitude: Capable of operating in an altitude range of -200 feet to 10,000 feet. The maximum operating ambient temperature should be derated by 3°C per 1000 feet above 5000 feet.

1.3.5 Ventilation Requirements:

(A) Ventilation: A shelf must be mounted so ventilating openings are not blocked and temperature of the air entering the shelf does not exceed the Operating Ambient Temperature Range stated above.

(B) Stacking Considerations: This system is designed for front to back ventilation to facilitate stacking of shelves, one above the other, in a relay rack. There is no spacing requirement between stacked shelves of a single system.

1.3.6 Audible Noise (System): With four converter modules installed and operating, the audible noise at any point 5 feet from any vertical surface of the mounting shelf does not exceed 68 dBA when measured with a sound level meter conforming to ANSI S1.4.

1.3.7 Mounting:

(A) The shelf is designed for mounting in a 19-inch or 23-inch wide relay rack with 1-3/4 inch multiple drilling.

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

(C) This product must be located in a Controlled Environment with access to Craftspersons only.

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

(E) 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).

(F) Typical industry standards recommend minimum aisle space clearance of 2'6" for the front of the relay rack and 2' for the rear of the relay rack.

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1.4 System Compliance Information

1.4.1 Safety Compliance: 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. 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.

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

Converter Modules: In order to remain compliant during a fan failure condition, the system must operate with a redundant module installed.

1.5 System Standard Features

1.5.1 Local Indicators: The following local indicators are provided on the front of the main shelf's front door.

- (A) Circuit Breaker or Fuse Open (Red LED)
- (B) Input Voltage OK (Green LED)
- (C) Converter Critical (Red LED)
- (D) Converter Major (Yellow LED)

1.5.2 Test Points: The following test points are provided on the front of the main shelf's front door.

- (A) Output Voltage: Provided for measuring system output voltage.
- (B) Output Current: Provided for measuring system output current. Scale is User selectable for 400A/50mV or 1A/1mV. Current measurement is User selectable to be referenced to plus battery, minus battery, or no reference.

1.5.3 Emergency Shutdown Input (ESTOP): The converter modules can be inhibited by applying an external ground signal (24V Return). Converter modules automatically restart upon removal of the ground signal.

1.5.4 External Alarm Circuits: A set of Form-C relay contacts, rated for 1 ampere at 30 volts DC or 0.3 ampere at 110VDC, is provided for each of the following alarms.

(A) Converter Major Alarm: Alarms if one converter module fails. Alarm conditions are as follows.

- (1) A converter module reports a high voltage shutdown condition (HVSD).
- (2) A converter module reports a fan failure.
- (3) A converter module reports an EEPROM failure.
- (4) A converter module reports a converter failure.
- (5) A converter module reports a low input voltage condition.
- (6) A converter module reports a high temperature condition.
- (7) A converter module reports a thermal derating condition.

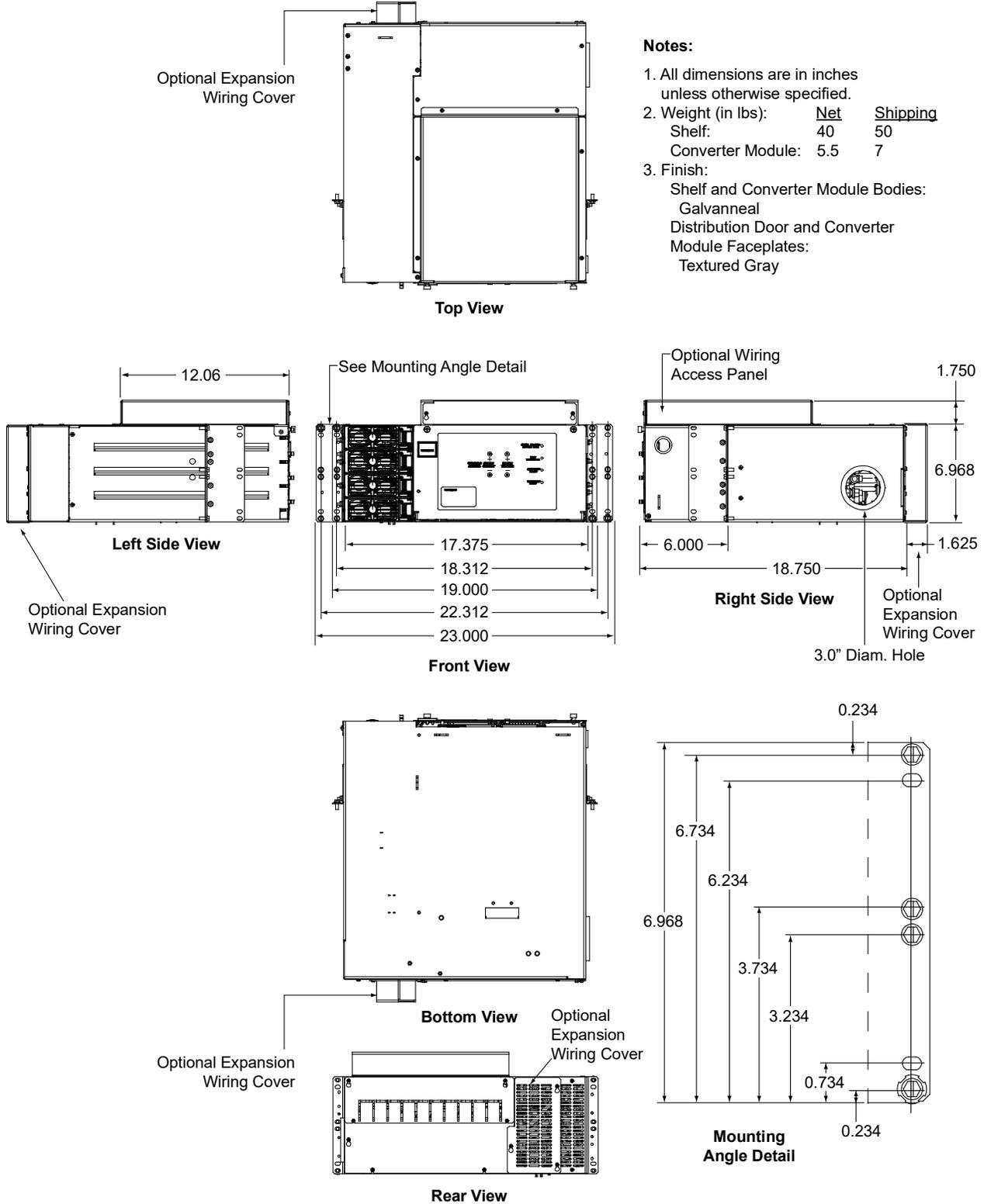
(B) Converter Critical Alarm: Alarms if more than one converter module fails (or if only one converter module is installed in the system and it fails). Alarm conditions are as stated in (A) above.

(C) FA/CB Alarm: Alarms if any distribution fuse or circuit breaker opens.

(D) Low Input Voltage: Alarms if the input voltage to the system falls to 20.5Vdc \pm 0.5Vdc. Alarm clears and the Input Voltage OK indicator illuminates when input voltage reaches 22.5Vdc \pm 0.5Vdc.

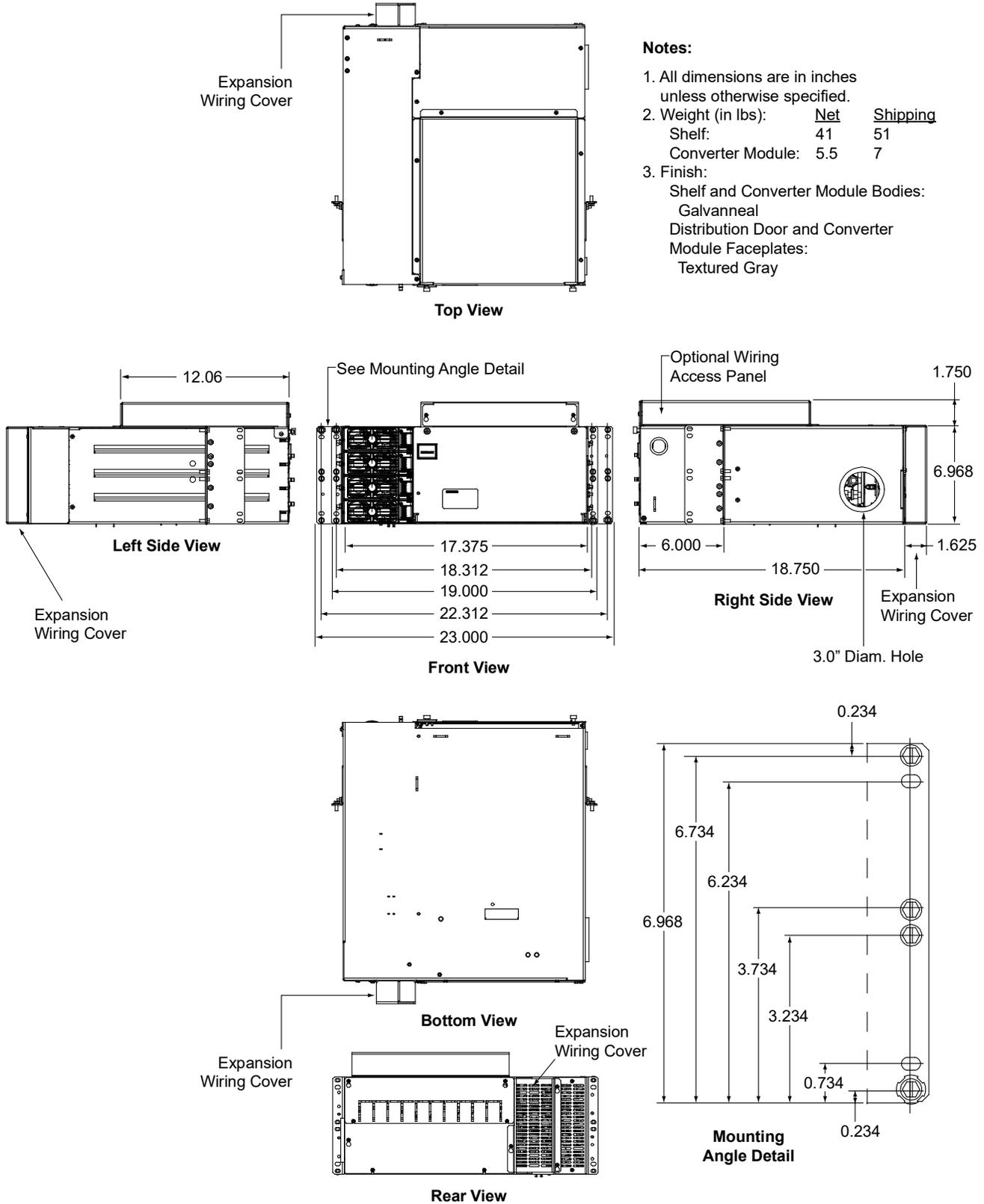
MECHANICAL SPECIFICATIONS

Overall Dimensions – 584622100 Main Shelf



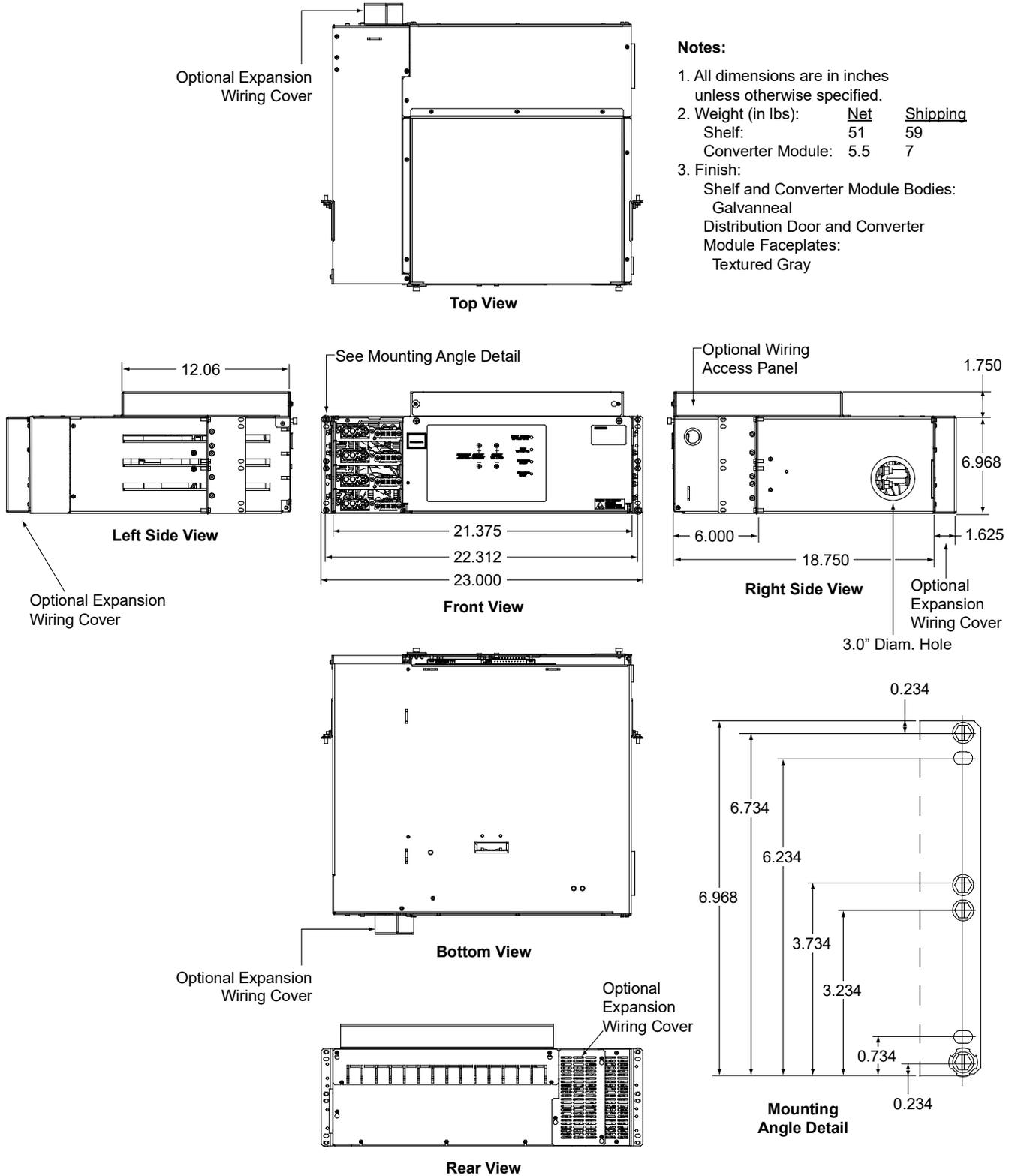
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Overall Dimensions – 584622200 Expansion Shelf



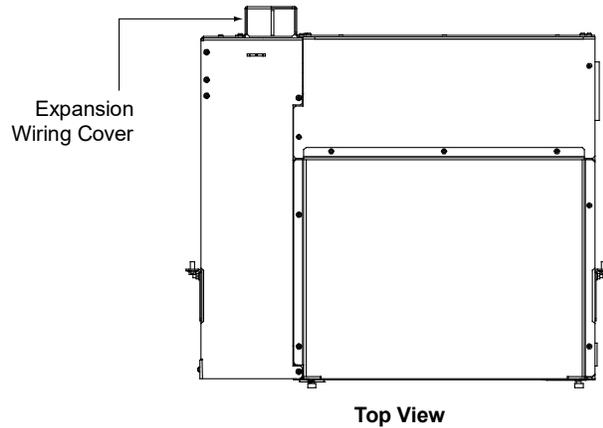
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Overall Dimensions – 584622300 Main Shelf



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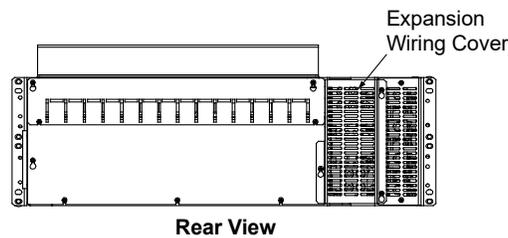
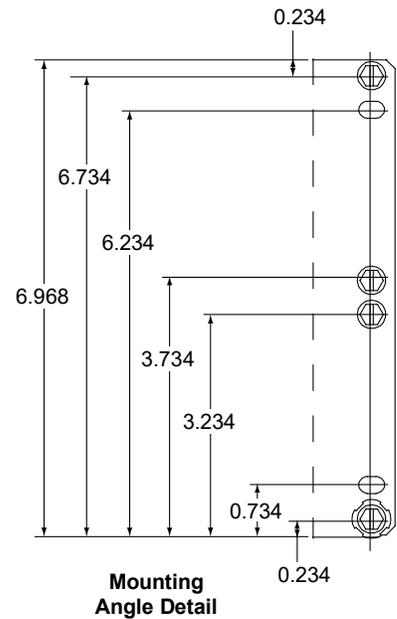
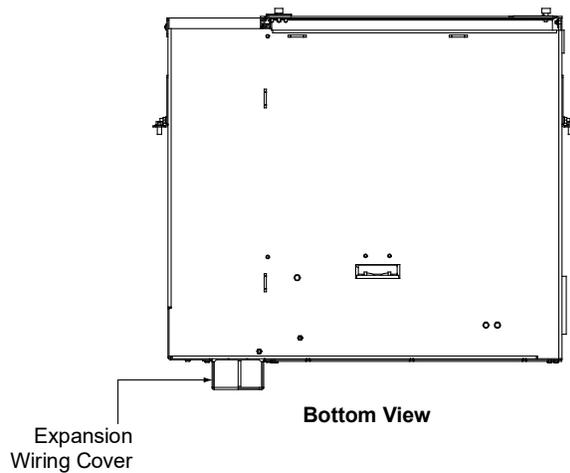
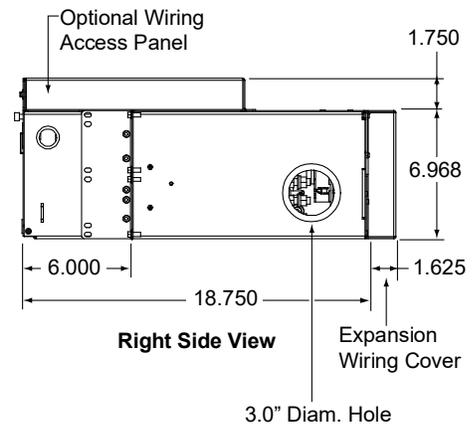
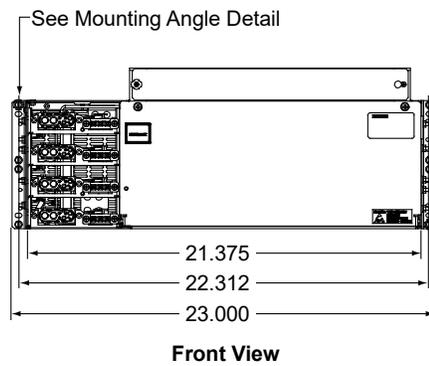
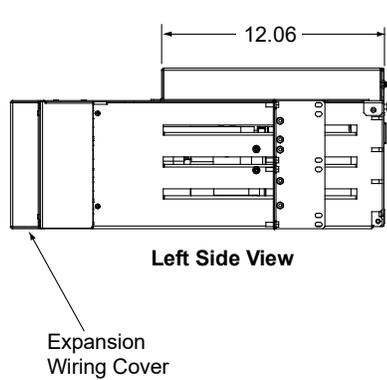
Overall Dimensions – 584622400 Expansion Shelf



Notes:

1. All dimensions are in inches unless otherwise specified.
2. Weight (in lbs):

	Net	Shipping
Shelf:	52	60
Converter Module:	5.5	7
3. Finish:
Shelf and Converter Module Bodies: Galvanneal
Distribution Door and Converter Module Faceplates: Textured Gray



Vertiv™ NetSure™ DCS48375 Converter System

System Application Guide

RELATED DOCUMENTATION

System Installation and User Instructions:	UM584622100
Converter Module Instructions:	UM1C24481500
Converter System Upgrade Kit Instructions:	IM10019684
System Schematic Diagram:	SD584622100 / SD584622300 SD584622200 / SD584622400
System Wiring Diagram:	T584622100 / T584622300 T584622200 / T584622400

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