

SYSTEM OVERVIEW

Preface: This document provides system application information for Lorain® Battery Disconnect Panel Model LBD2000, Spec. No. 586400200.

Description: The Model LBD2000 is a +24 or -48 volt Battery Disconnect Panel designed for mounting on a wall, in a 23" relay rack, or on a battery stack. The panel provides one fuse within the current range of 1000 to 2000 amperes. A disconnect contactor (2000A) with local manual or remote control is also provided. A shunt is included for monitoring battery discharge/recharge current. Local and remote Fuse Alarm and Open Contactor Alarm circuits are provided.



Caution: *This battery disconnect must be installed in the **UNGROUND**ED battery lead only.*

Note: *Battery Return and Load Return wiring is external to this assembly, and must be furnished by the customer.*

General Specifications

See detailed specifications on page 6.

Spec. No.:	586400200
Model:	LBD2000
Voltage:	List 1: -48VDC List 11: +24VDC
Capacity:	2000A
Agency Approval:	UL Listed, CSA
Framework Type:	Cabinet for Mounting on Wall, 23" Relay Rack, or Battery Stack
Mounting Width:	21.38 Inches
Mounting Height:	17.47 Inches
Mounting Depth:	11.63 Inches
Rack-Mount Front Projection:	6.00 Inches
Access:	Front for operation and maintenance; top, bottom, sides or rear for wiring
Color:	Gray
Accessories:	Lugs, Fuses, Busbar Rear Extension Kit , Cable Opening Cover Kits , Fuse Hardware Kit , Battery Bank Installation Kit
Environment:	+40°C (+122°F)

Vertiv™ Battery Disconnect Panel

System Application Guide

TABLE OF CONTENTS

SYSTEM OVERVIEW	1
LIST INFORMATION	3
List Structure	3
List Descriptions	3
List 1: -48VDC Single-Circuit Disconnect Panel	3
List 11: +24VDC Single-Circuit Disconnect Panel	3
ACCESSORY INFORMATION	4
Lugs	4
Output (Load) Lug Requirements	4
Input (Battery) Lug Requirements	4
Standard Crimp Lugs	4
Fuses	5
Fuse Hardware Kit (Part No. 521212)	5
Busbar Rear Extension Kit (Part No. 520319)	5
Cable Opening Cover Kit for Top and Bottom Panels (Part No. 521157)	5
Battery Bank Installation Kit (Part No. P0915627)	5
SPECIFICATIONS	6
1.1 Electrical Ratings	6
1.2 Environmental Ratings	6
1.3 Standard Features	6
MECHANICAL SPECIFICATIONS	8
Overall Dimensions	8
Overall Dimensions (Cont'd.)	9
Terminal Dimensions and Locations, Standard Busbars	10
Terminal Dimensions and Locations with Busbar Rear Extension Kit (Part No. 520319)	11
RELATED DOCUMENTATION	12

Vertiv™ Battery Disconnect Panel

System Application Guide

LIST INFORMATION

List Structure

When viewing electronically, more detailed information is available for each option by clicking on the desired number in the column entitled *List #* from the table below.

List No.	Part Number	Description
1	58640020001	Single-Circuit Battery Disconnect Panel, -48VDC.
11	58640020011	Single-Circuit Battery Disconnect Panel, +24VDC.

List Descriptions

List 1: -48VDC Single-Circuit Disconnect Panel

Features

- ◆ Wall or rack mountable.
- ◆ Wiring can enter cabinet from top, bottom or rear (with Busbar Rear Extension Kit).
- ◆ Disconnect contactor allows local or remote disconnect.
- ◆ Shunt output (25mV. @ 2500 A) is provided for battery current monitoring.
- ◆ One (1) Fuse Alarm circuit card is provided to allow remote alarm monitoring.
- ◆ Panel is equipped with a lockable front access door. Accepts customer-furnished 1/4" dia. padlock.
- ◆ Panel is equipped with a remote door alarm circuit with manual cutoff feature.

Restrictions

Lockout/Tagout feature does not include padlock.

Ordering Notes

- 1) Order one (1) fuse from Table 2.
- 2) Order lugs per site requirements from Table 1.

List 11: +24VDC Single-Circuit Disconnect Panel

Features

- ◆ Wall or rack mountable.
- ◆ Wiring can enter cabinet from top, bottom, or rear (with Busbar Rear Extension Kit).
- ◆ Disconnect contactor allows local or remote disconnect.
- ◆ Shunt output (25mV. @ 2500 A) is provided for battery current monitoring.
- ◆ One (1) Fuse Alarm circuit card is provided to allow remote alarm monitoring.
- ◆ Panel is equipped with a lockable front access door. Accepts customer-furnished 1/4" dia. padlock.
- ◆ Panel is equipped with a remote door alarm circuit with manual cutoff feature.

Restrictions

Lockout/Tagout feature does not include padlock.

Ordering Notes

- 1) Order one (1) fuse from Table 2.
- 2) Order lugs per site requirements from Table 1.

ACCESSORY INFORMATION

Lugs

Note: Use wiring with a minimum temperature rating of 90°C for all Load and Battery connections.

For lug selection, refer to Tables 1A and 1B.

Lugs should be crimped per lug manufacturer’s specifications.

All lugs for customer connections must be ordered separately.

Output (Load) Lug Requirements

Load lug requirements are determined by site requirements. Refer to the following for lug specifications.

Load: Lug terminated Load conductors are connected to the load busbar within the Battery Disconnect Panel. For lug mounting hole size and spacing dimensions, refer to the [“Physical Size Information”](#) section of this document.

Load Return: Load Return connections are to be provided by the customer outside the Battery Disconnect Panel.

Input (Battery) Lug Requirements

Battery Input lug requirements are determined by site requirements. Refer to the following for lug specifications.

Battery: Lug terminated Input conductors are connected to the battery input busbar within the Battery Disconnect Panel. For lug mounting hole size and spacing dimensions, refer to the [“Physical Size Information”](#) section of this document.

Battery Return: Input Return connections are to be provided by the customer outside the Battery Disconnect Panel.

Standard Crimp Lugs

CRIMP LUGS (Two-Hole, 3/8" Bolt Clearance Holes, 1" Centers)	
LEAD SIZE (AWG)	PART NUMBER
8	245349800
6	245349900
4	245350000
2	245348200
1/0	245347100
2/0	245347200
3/0	245347300
4/0	245347400
250 KCMIL	245347500
300 KCMIL	245347600
350 KCMIL	245347700
400 KCMIL	245347800
500 KCMIL	245347900
600 KCMIL	245348000
750 KCMIL	245348100

Table 1A

Vertiv™ Battery Disconnect Panel

System Application Guide

CRIMP LUGS (Two-Hole, 1/2" Bolt Clearance Holes, 1-3/4" Centers)	
LEAD SIZE (AWG)	PART NUMBER
1/0	245348300
2/0	245348400
3/0	245348500
4/0	245348600
250 KCMIL	245348700
350 KCMIL	245348900
500 KCMIL	245349200
600 KCMIL	245349300
750 KCMIL	245349500

Table 1B

Fuses

For available fuse sizes, refer to Table 2.

Type	Current Rating (Amperes)	Part No.
Bussmann TPB	1000	124746
	1200	124747
	1600	124745
	2000	123464

Table 2

Fuse Hardware Kit (Part No. 521212)

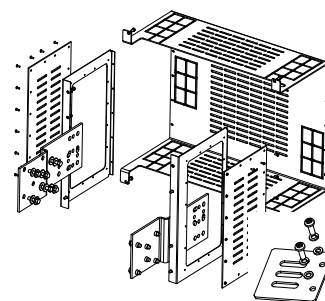
Provides the 3/8-24 x 1" bolts and associated washers required for installing (1) replacement fuse.

Busbar Rear Extension Kit (Part No. 520319)

Extends input and output busbars through cabinet rear panel. Allows lug connections outside of cabinet for rack mount applications. Includes a plastic safety cover and all required hardware.

Cable Opening Cover Kit for Top and Bottom Panels (Part No. 521157)

Covers one (1) segment of an input or output cable opening in the bottom or top panel of the Battery Disconnect Panel cabinet. Replaces original cutout. Mounting hardware included.



Battery Bank Installation Kit (Part No. P0915627)

Used to mount the Battery Disconnect Panel to the top of a VRLA Battery Stack. (Includes Mounting Bracket Kit P/N 535140.)

Vertiv™ Battery Disconnect Panel

System Application Guide

SPECIFICATIONS

1.1 Electrical Ratings

1.1.1 Voltage:

- (A) List 1: -48VDC operation. 39VDC to 60VDC maximum.
- (B) List 11: +24VDC operation. 18VDC to 30VDC maximum.
- (C) Current: 2000A Max.

1.1.2 Current: 1000 - 2000 Amps.

1.2 Environmental Ratings

1.2.1 Operating Ambient Temperature Range: 0°C to +40°C (+32°F to +104°F).

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

1.2.3 Humidity: This system is capable of operating in an ambient relative humidity range of 0% to 95%, noncondensing.

1.2.4 Altitude: The maximum operating ambient temperature should be derated by 10°C at an elevation of 10,000 feet above sea level. For elevations between 3,000 feet and 10,000 feet, derate the maximum operating ambient temperature linearly.

1.2.5 Ventilation Requirements: The Battery Disconnect Panel should be mounted so that ventilating openings are not blocked and temperature of the air entering the cabinet does not exceed the limits stated in Paragraph 1.2.1.

1.2.6 Compliance Information

- (A) Safety Compliance: This panel is UL Listed for use in DC Power Distribution Centers for Communications Equipment. This unit also meets the requirements of CSA 22.2, No. 225 and is tested and Certified by UL ("c UL") as a Custom Built Power Distribution Center for Communications Equipment.
- (B) Seismic Compliance: Designed to meet NEBS.

1.3 Standard Features

1.3.1 Local Controls and Indicators:

- (A) BAT DISC Switch: Permits locally opening (releasing) contactor.
- (B) EPO RESET Switch: Permits closing of contactor following application of an Emergency Power Off signal.
- (C) FUSE ALARM Indicator: Red LED, visible through opening in front door, illuminates if the fuse operates open.
- (D) CONTR ALARM Indicator: Red LED, visible through opening in front door, illuminates if the disconnect contactor opens (releases).

1.3.2 External Alarms Circuits: Screw-compression terminal block provides the following connections. Terminal block accepts 10-22 AWG wire.

- (A) Fuse Alarm (FA): Three sets of Form-C relay contacts change state if a fuse operates open. Contacts are rated for 0.5 A at 125 VAC, 1.0 A at 30 VDC, and 0.3 A at 110 VDC.

Note: *Do not apply voltages higher than 42.4 volts AC (peak) or 60 volts DC.*

- (B) Contactor Alarm: One set of Form-C relay contacts change state if the disconnect contactor opens (releases). Contacts are rated for

- (C) Door Alarm: A SPDT switch changes state if the door is opened. Contacts are rated for 1A at 125VAC.

Note: *Do not apply voltages higher than 42.4 volts AC (peak) or 60 volts DC.*

1.3.3 Monitoring, Reference and Control Outputs: Screw-compression terminal block provides the following connections. Terminal block accepts 10-22 AWG wire.

- (A) Battery Current Monitoring: The Battery Disconnect Panel provides a shunt (25mV. @ 2500A). The following signal is provided for monitoring battery discharge/recharge current.

- (1) Shunt output. Allows monitoring of battery discharge/recharge current. A 49.9-ohm current limiting resistor is provided in each lead.

1.3.4 External Monitoring, Reference, and Control Inputs: Screw-compression terminal block provides the following connections. Terminal block accepts 10-22 AWG wire.

- (A) Controlled Battery Source (CBS): Input required for operating monitoring, alarm and control circuits. Accepts ±20VDC to ±56VDC. External 1-1/3A fuse required.

- (B) Contactor Control: Removal of a ground signal opens (releases) the disconnect contactor. Reapplying the ground signal closes (pulls in) the contactor.

- (C) Emergency Power Off (EPO), Emergency Shutdown and Fire Alarm Disconnect: Applying a ground signal opens (releases) the disconnect contactor. Local manual reset is required.

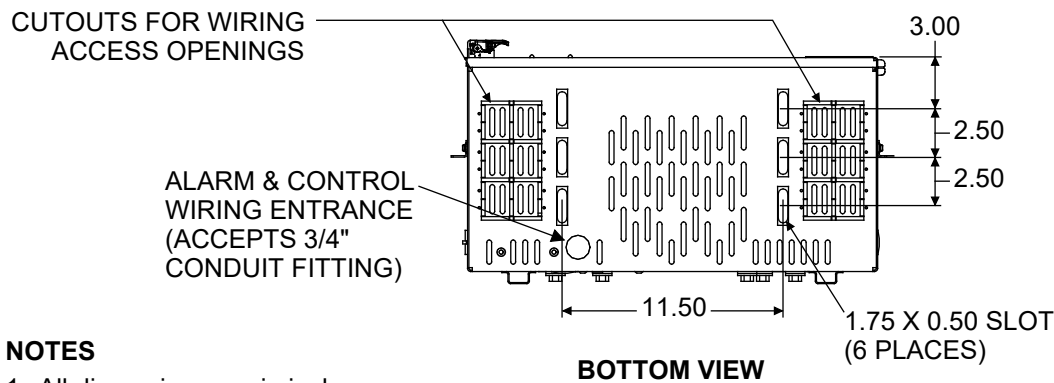
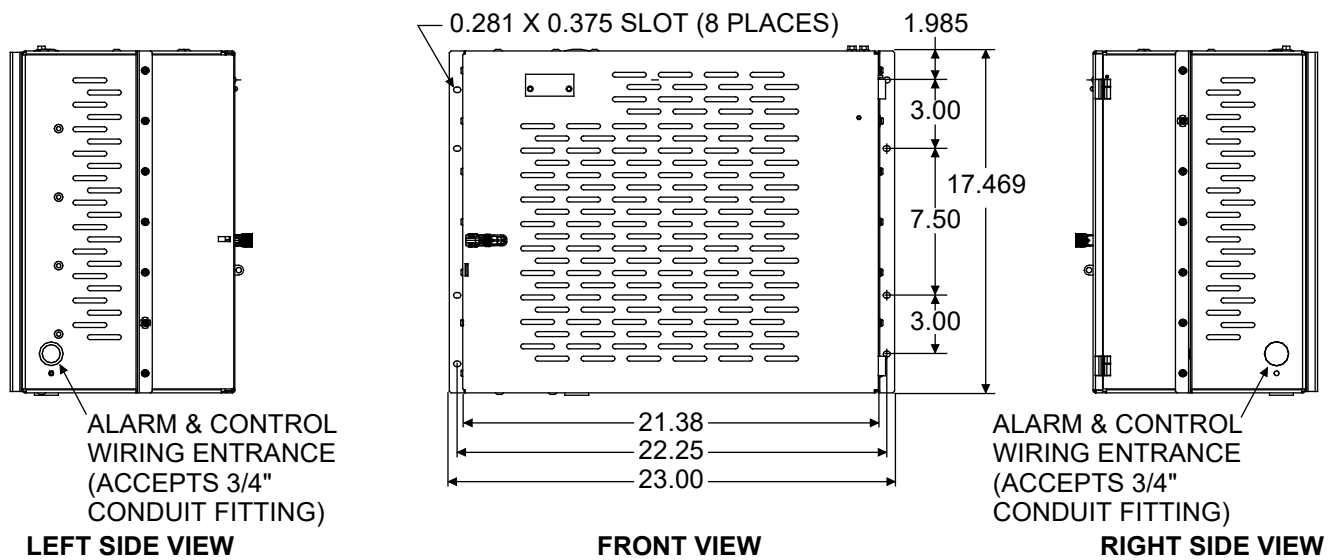
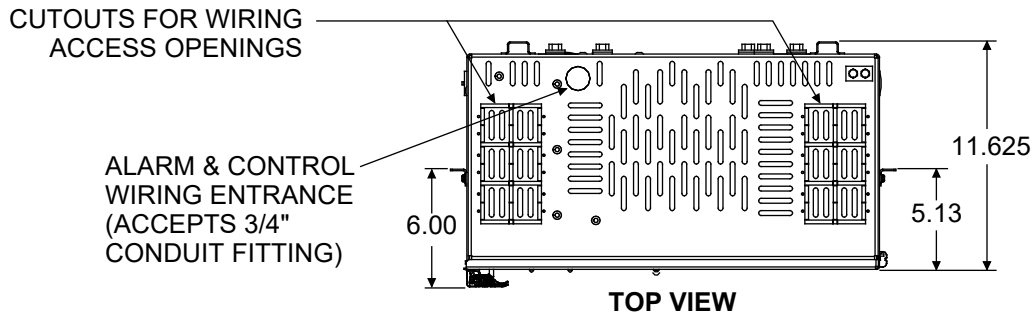
Vertiv™ Battery Disconnect Panel

System Application Guide

Note: For applications in which a single-pole switch is used for Emergency Power Off (EPO) control of both the Battery Disconnect Panel and an associated Lorain Vortex Power System, installation of a factory-furnished isolation diode kit is required. See instruction manual for installation procedure.

MECHANICAL SPECIFICATIONS

Overall Dimensions

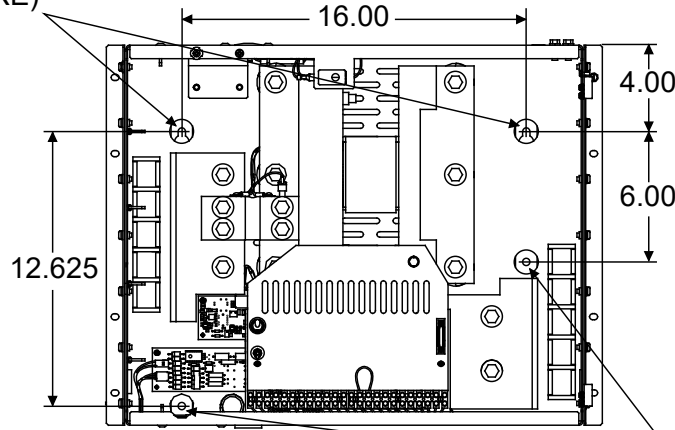


NOTES

1. All dimensions are in inches.
2. Furnished rack-mounting angles are shipped detached.
3. See next page for additional views.
4. Approx. Weight (in lbs):
Net: 90
Shipping: 105

Overall Dimensions (Cont'd.)

WALL MOUNTING HOLES IN REAR PANEL (FOR 5/16" HARDWARE)

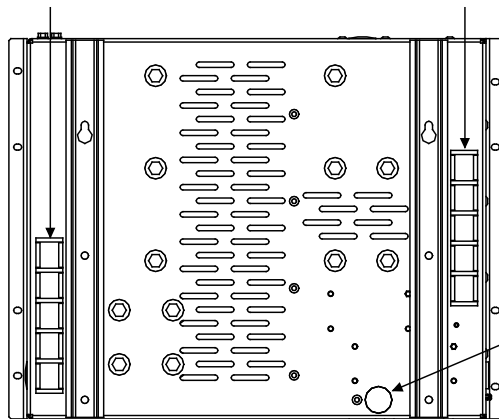


**FRONT VIEW
WITH DOOR REMOVED**

WALL MOUNTING HOLES IN REAR PANEL (FOR 5/16" HARDWARE)

CUTOUTS FOR REAR EXTENSION BUSBAR ACCESS OPENING

CUTOUTS FOR REAR EXTENSION BUSBAR ACCESS OPENING



ALARM & CONTROL WIRING ENTRANCE (ACCEPTS 3/4" CONDUIT FITTING)

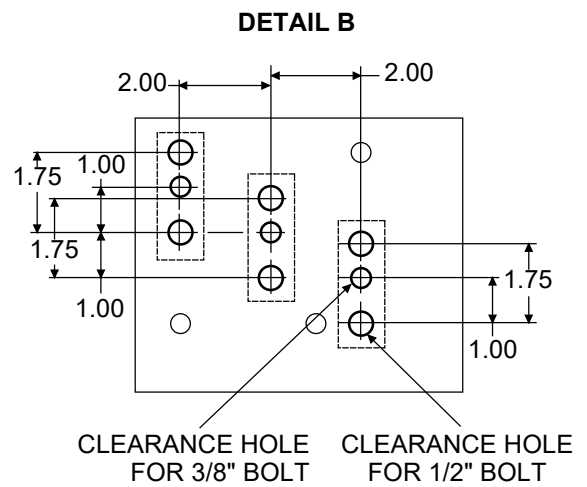
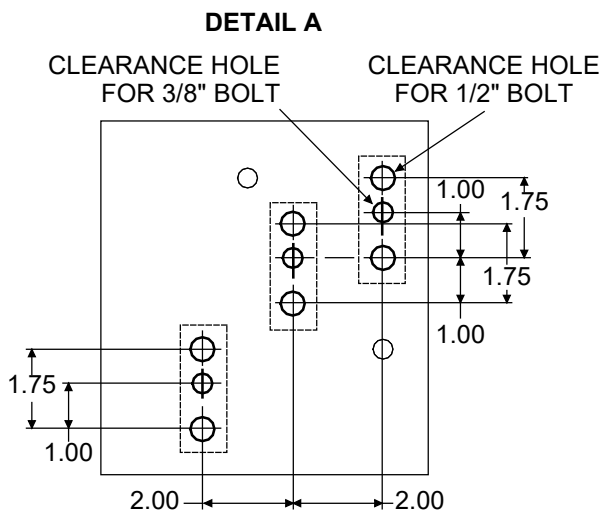
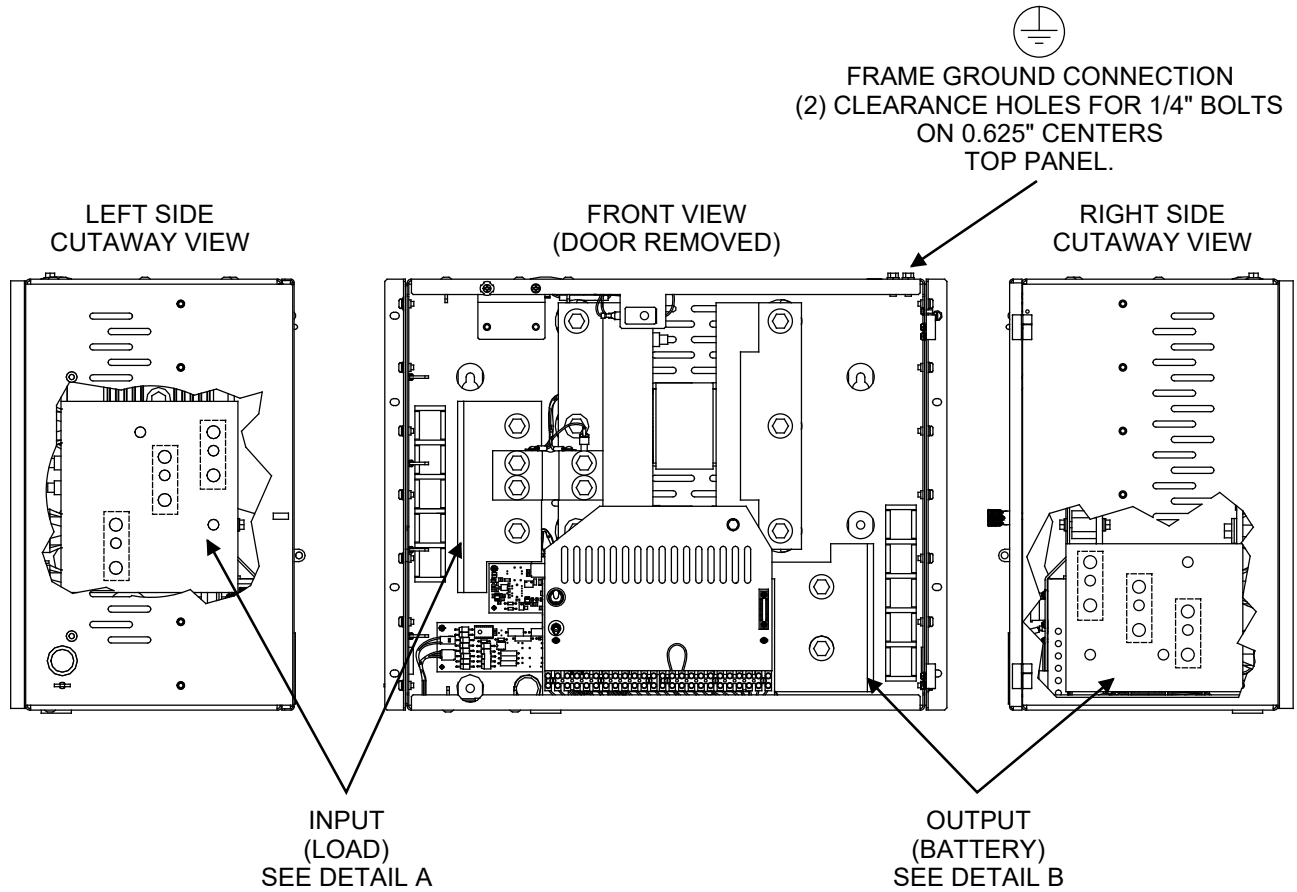
REAR VIEW

Vertiv™ Battery Disconnect Panel

System Application Guide

Terminal Dimensions and Locations, Standard Busbars

All dimensions are in inches.

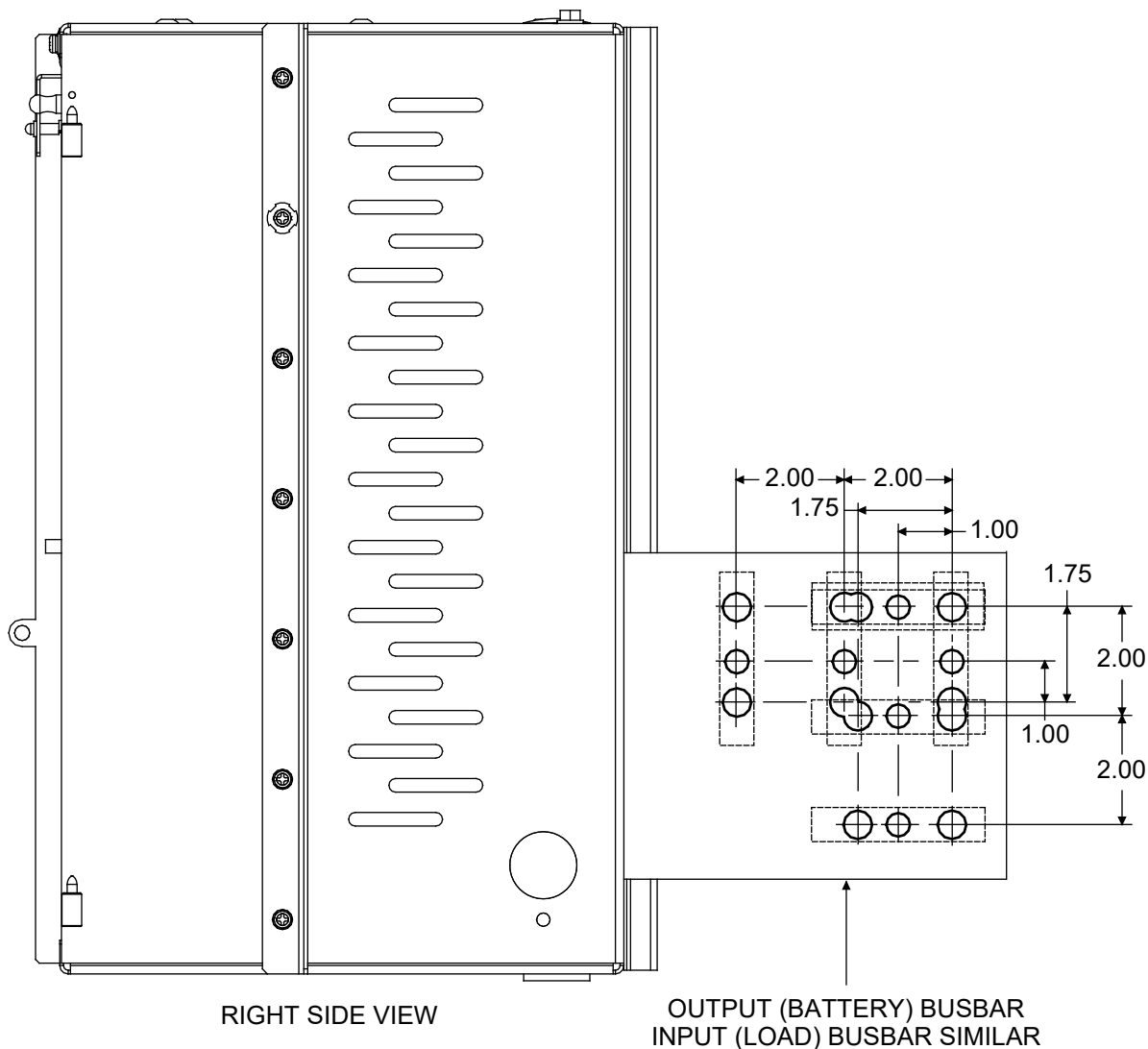


Vertiv™ Battery Disconnect Panel

System Application Guide

Terminal Dimensions and Locations with Busbar Rear Extension Kit (Part No. 520319)

All dimensions are in inches.



Vertiv™ Battery Disconnect Panel

System Application Guide

RELATED DOCUMENTATION

Schematic Diagram: SD586400200

Wiring Diagram: T586400200

Instructions: Section 5938 (Installation and User Instructions)
P0913485 (Battery Bank Installation Kit Instructions)

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