Liebert® EXS UPS with External wall bypass

Installation/User Manual

The information contained in this document is subject to change without notice and may not be suitable for all applications. While every precaution has been taken to ensure the accuracy and completeness of this document, Vertiv assumes no responsibility and disclaims all liability for damages result from use of this information or for any errors or omissions.

Refer to local regulations and building codes relating to the application, installation, and operation of this product. The consulting engineer, installer, and/or end user is responsible for compliance with all applicable laws and regulations relation to the application, installation, and operation of this product.

The products covered by this instruction manual are manufactured and/or sold by Vertiv. This document is the property of Vertiv and contains confidential and proprietary information owned by Vertiv. Any copying, use, or disclosure of it without the written permission of Vertiv is strictly prohibited.

Names of companies and products are trademarks or registered trademarks of the respective companies. Any questions regarding usage of trademark names should be directed to the original manufacturer.

Technical Support Site

If you encounter any installation or operational issues with your product, check the pertinent section of this manual to see if the issue can be resolved by following outlined procedures.

Visit https://www.vertiv.com/en-us/support/ for additional assistance.

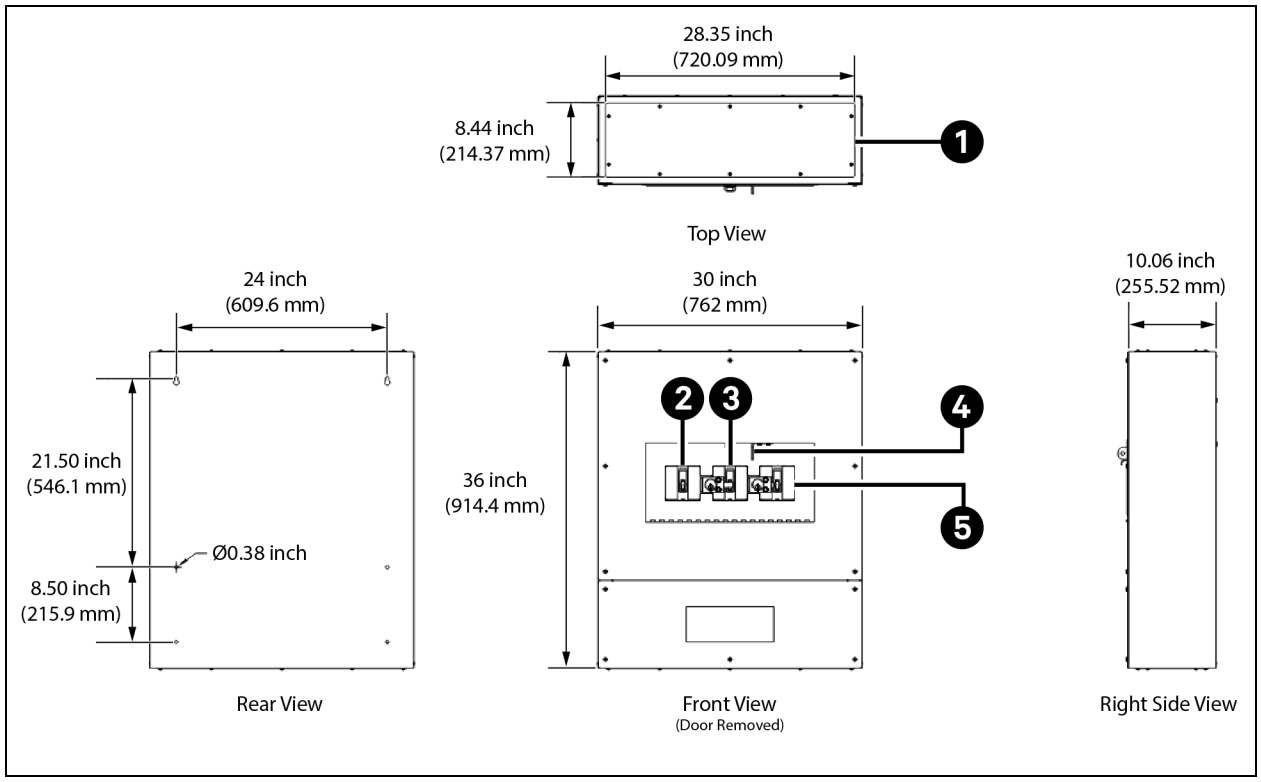
TABLE OF CONTENTS

This page intentionally left blank

1 External Views and Cable Termination Points

External Bypass Connections for External Maintenance Bypass

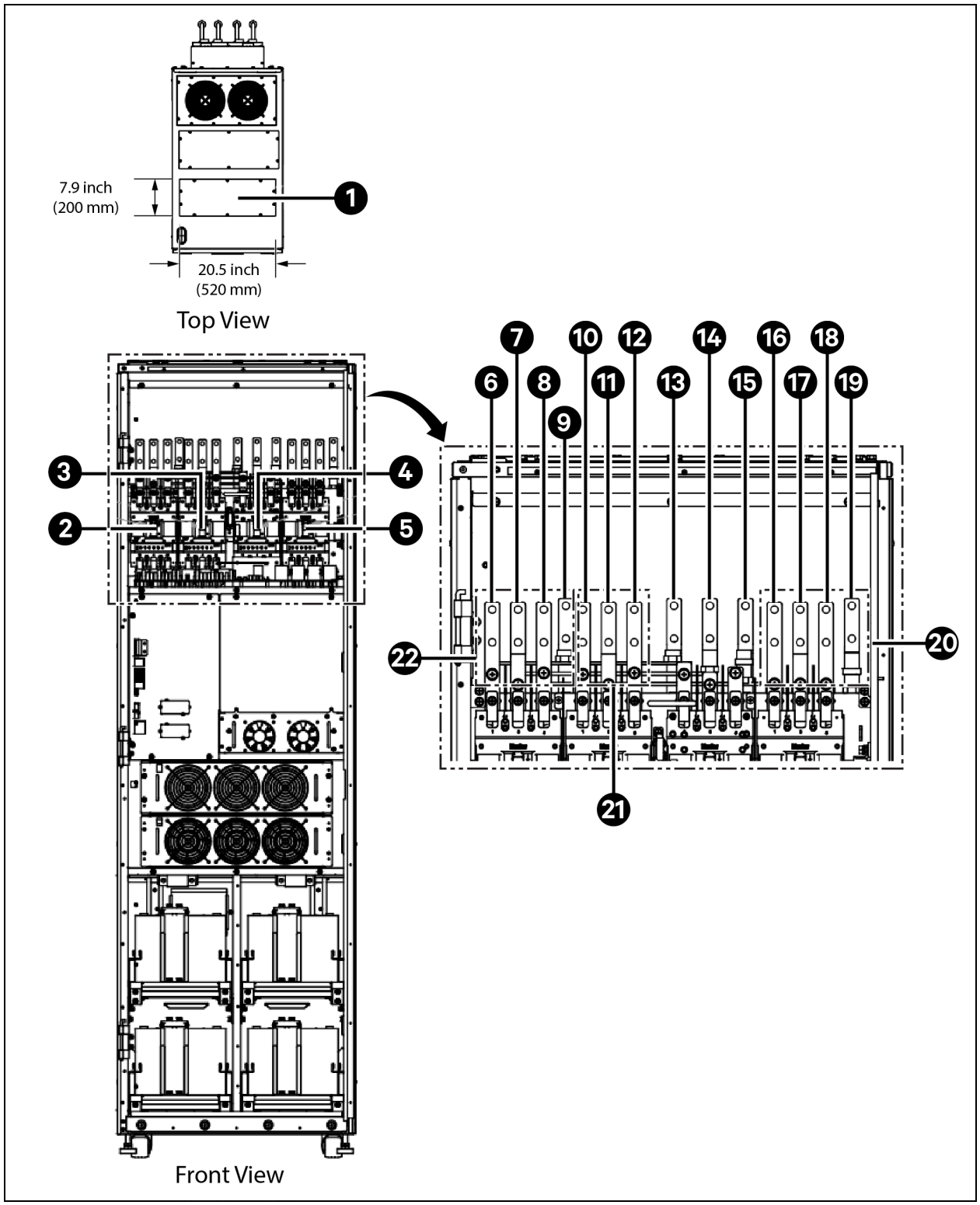
Figure 1.1 External Maintenance Bypass



Item	Description
1	Removable Gland Plate Type Top and Bottom
2	UIB (UPS Input Breaker)
3	MBB (Maintenance Bypass Breaker)
4	Pad Lock Bracket
5	MIB (Maintenance Isolation Breaker)

1.1 Field Wiring Connections for EXS V-Model

Figure 1.2 Field Wiring Connections for EXS V-Model



Item	Description
1	Cable Entry Area
2	RIB (Rectifier input breaker)
3	BIB (Bypass input breaker)
4	MBB
5	MIB
6	Main Input A
7	Main Input B
8	Main Input C
9	Input Neutral
10	Bypass Input A
11	Bypass Input B
12	Bypass Input C
13	Battery +
14	Battery N
15	Battery -
16	Output A
17	Output B
18	Output C
19	Output Neutral
20	Label 3 UPS Main Input Power Connections
21	Label 2 Bypass Input Power Connections
22	Label 1 UPS Output Power Connections

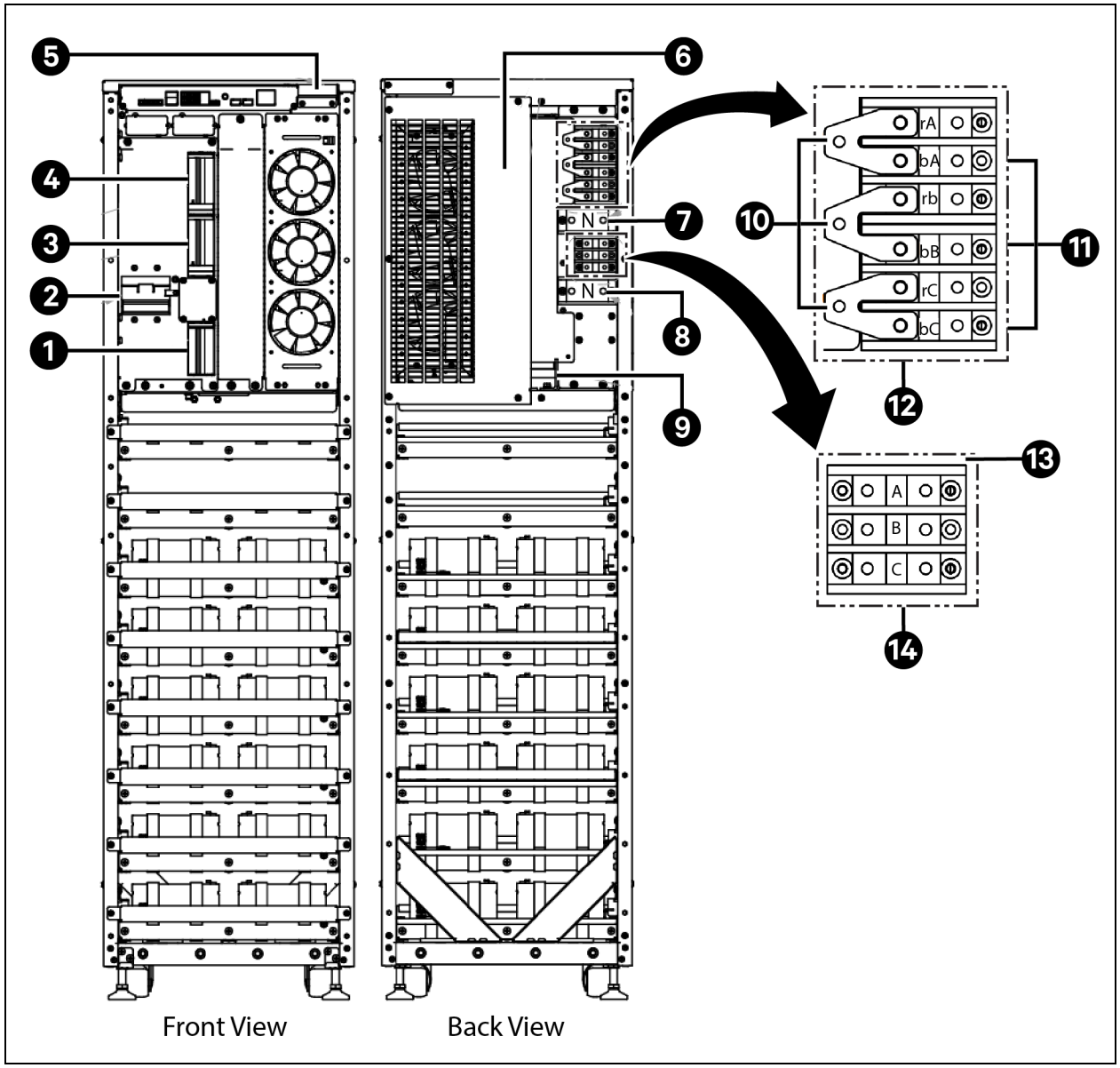
NOTE: All external connections require wiring supplied in the field.

The field connection details for the V-model are described below:

- Label 1 identifies the UPS main input power connections. In a 3-breaker external maintenance bypass with a single-input EXS, the UIB breaker connects to these connections.
- Label 2 identifies the bypass input power connections. In a 3-breaker external maintenance bypass with a dual-input EXS, the UIB breaker connects to these connections. Connect the main input busbars (Label 1) to a separate input breaker supplied in the field.
- Label 3 identifies the UPS output power connections. These connections link to the MIB breaker in the external maintenance bypass.

1.2 Field Connection Details for Vertiv™ Liebert® EXS15 and Vertiv™ Liebert® EXS20 Models

Figure 1.3 Field Connection Details for Vertiv Liebert EXS15 and Vertiv Liebert EXS20 Models

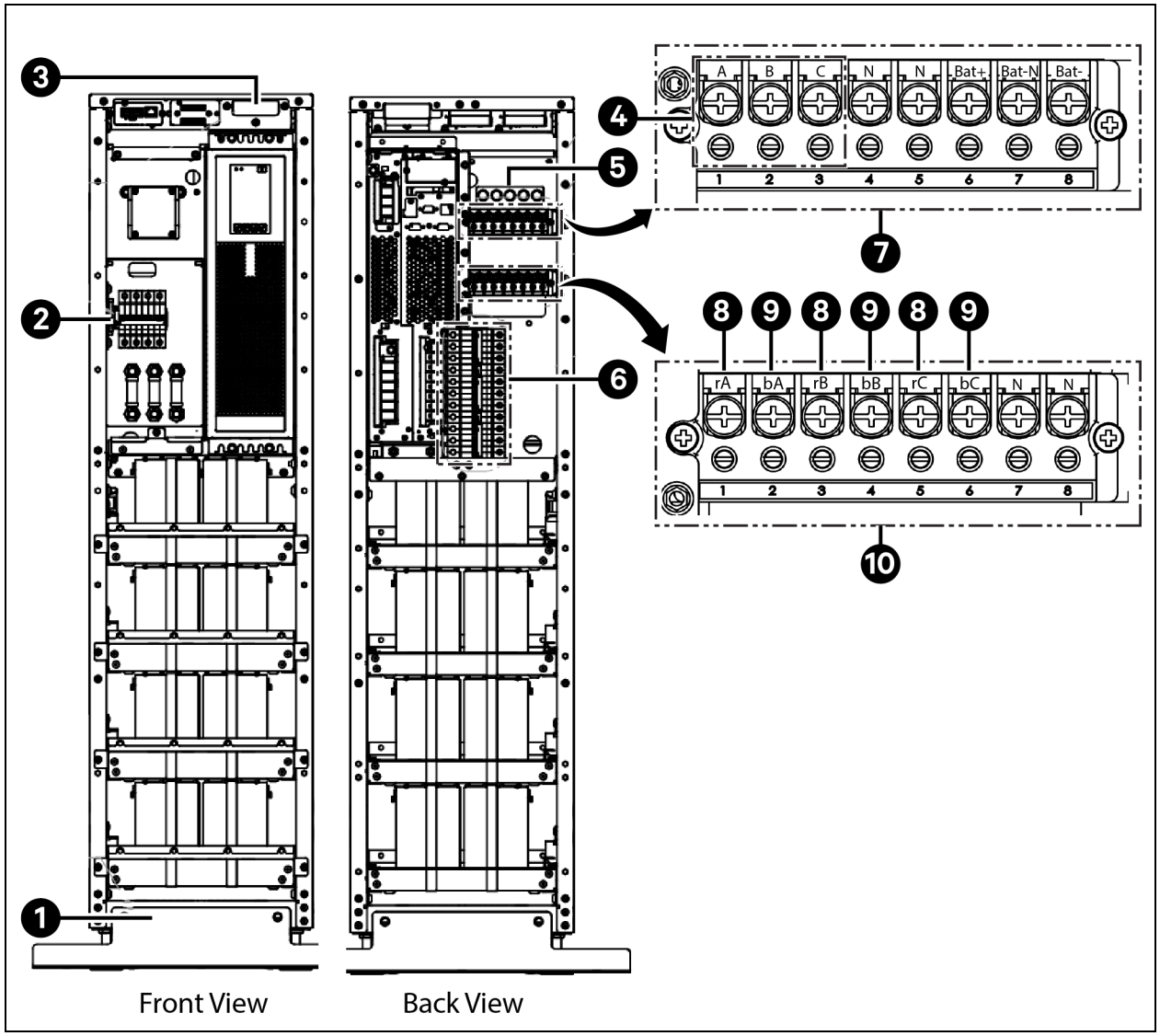


Item	Description
1	MIB
2	MBB
3	BIB
4	RIB
5	Wiring Channel from Rear
6	Cable Entry Area
7	Neutrals
8	Neutrals
9	Ground Busbar
10	Label 1 Single Input Jumpers
11	Label 2 Bypass Input Power Connections
12	AC Input Terminals
13	Label 3 Output Power Connections
14	AC Output Terminals

- Label 1 identifies the single-input jumpers. In a 3-breaker external maintenance bypass with a single-input EXS, the UIB breaker connects to these jumpers.
- Label 2 identifies the bypass input power connections. In a 3-breaker external maintenance bypass with a dual-input EXS, the UIB breaker connects to these connections. Remove the single-input jumpers (Label 1). Connect rA, rB, and rC to a separate input breaker supplied in the field.
- Label 3 identifies the UPS output power connections. These connections link to the MIB breaker in the external maintenance bypass.

1.3 Field Connection Details for Models Starting with Vertiv™ Liebert® EXS10

Figure 1.4 Field Connection Details for Models Starting with Vertiv Liebert EXS10



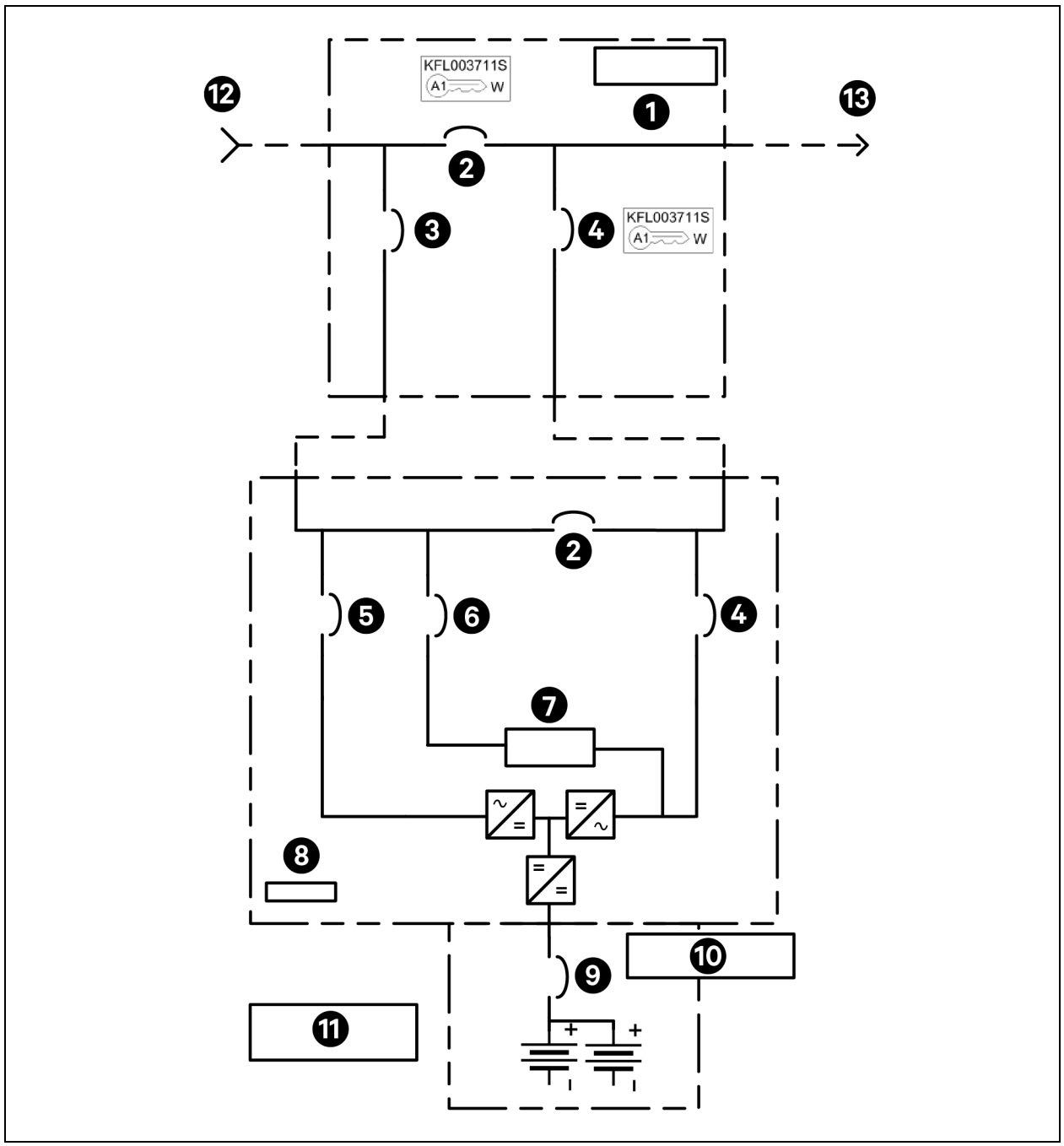
Item	Description
1	Shipping Bracket
2	MBB
3	Wiring Channel from Rear
4	Label 3 UPS Output Power Connections
5	Ground Busbar
6	MIB, RIB, BIB AC Input Terminals
7	AC Output Terminals
8	Label 1 UPS Rectifier Input Power Connections
9	Label 2 Bypass Input Power Connections
10	AC Input Terminal

- Label 1 identifies the UPS rectifier input power connections. In a 3-breaker external maintenance bypass with a single-input EXS, the UIB breaker connects to these connections. When using a single input, the r and b connections are shorted by a jumper. Connect to the jumpers.
- Label 2 identifies the bypass input power connections. In a 3-breaker external maintenance bypass with a dual-input EXS, the UIB breaker connects to these connections. Connect the rectifier input power connections (Label 1) to a separate input breaker supplied in the field.
- Label 3 identifies the UPS output power connections. These connections link to the MIB breaker in the external maintenance bypass.

This page intentionally left blank

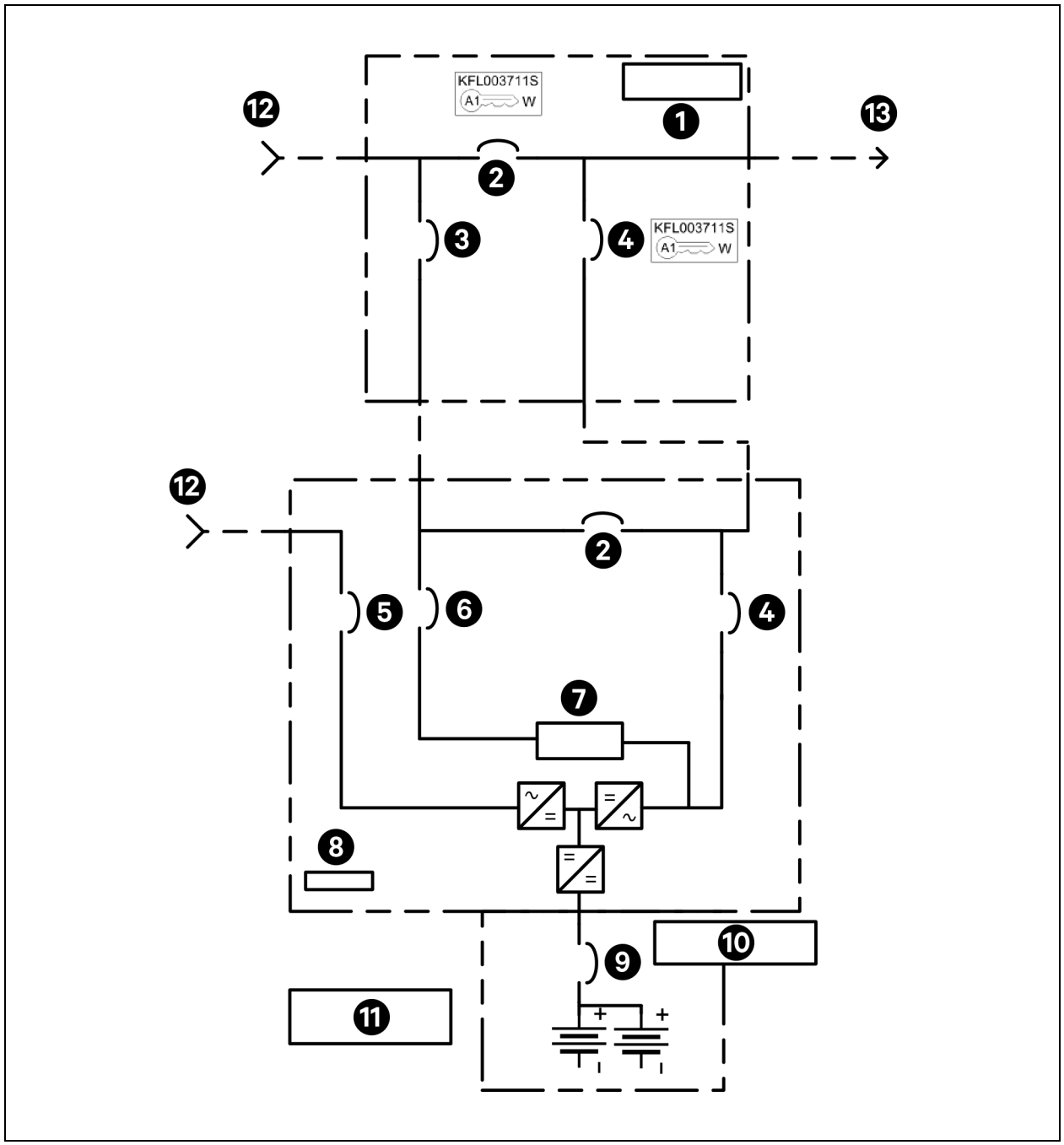
1.4 One-Line Diagrams for EXS System

Figure 2.1 Single-Input EXS System Diagram



Item	Description
1	External Maintenance Bypass
2	MBB
3	UIB
4	MIB
5	RIB
6	BIB
7	Static Bypass
8	EXS UPS
9	BCB
10	External Battery Cabinet
11	Field Supplied Wiring
12	Utility Input (3Ø, 4W, G)
13	Output to Load (3Ø, 4W, G)

Figure 2.2 Dual-Input EXS System Diagram



Item	Description
1	External Maintenance Bypass
2	MBB
3	UIB
4	MIB
5	RIB
6	BIB
7	Static Bypass
8	EXS UPS
9	BCB
10	External Battery Cabinet
11	Field Supplied Wiring
12	Utility Input (3Ø, 4W, G)
13	Output to Load (3Ø, 4W, G)

2 Operation Instructions

This section provides procedures for isolating the EXS UPS using the external maintenance bypass and the internal maintenance bypass.

2.1 Isolating the UPS Using the External Maintenance Bypass

When using an external maintenance bypass with the EXS UPS, use the external maintenance bypass to completely isolate the UPS for maintenance. Do not open or close any of the internal UPS maintenance bypass breakers.

Use the following procedure to isolate the EXS UPS when the system is configured with an external maintenance bypass.

Transfer the UPS to Static Bypass Mode

NOTE: When the UPS is in bypass mode, the load is not protected. It is powered directly by utility power.

To transfer the UPS to the internal (static) bypass and turn it off when the UPS is in normal mode:

Procedure

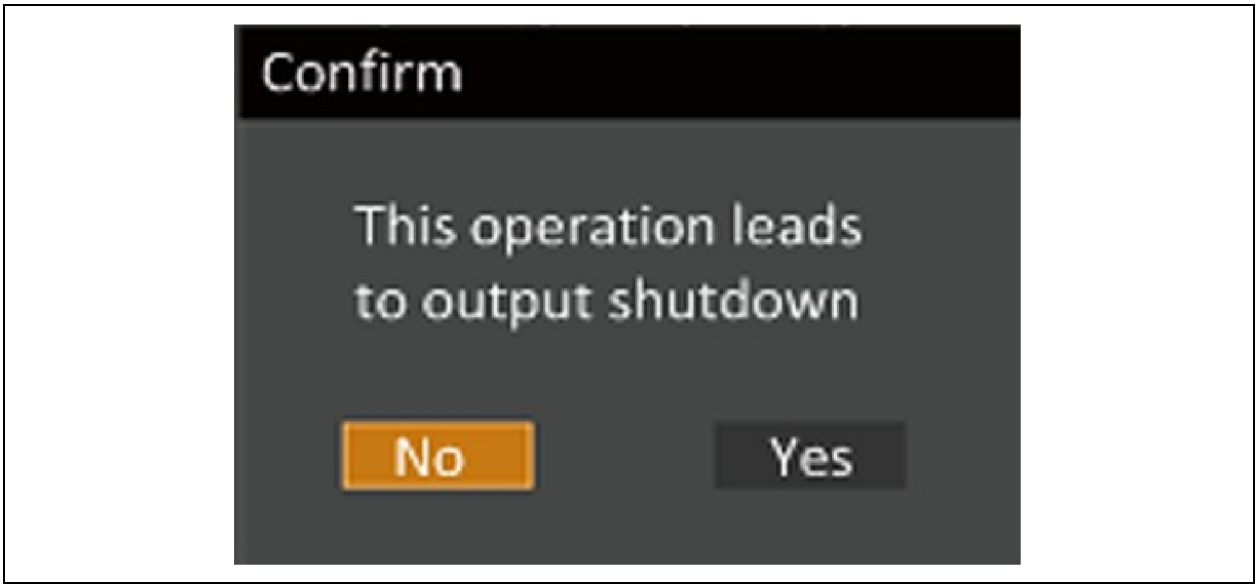
1. Press and hold the Power button for 2 seconds.

- If the bypass power is within normal operating range, the option to turn off the local inverter displays. See Figure 1 on the next page. Confirming this selection initiates a transfer to internal bypass operation.
    a. Use the up/down arrows to select no or yes, or press the ESC to cancel.
    b. Press Enter to confirm the action.
    c. Press Enter again.
    d. Now, the EXS is routing power through the static bypass. The UPS is in bypass mode.

Figure 3.1 Turn Off INV—Bypass Power in Normal Range

- If the bypass power is outside normal operating range, the option to shutdown output displays. See Figure 2 on the next page.
    a. Use the up/down arrows to select no or yes, or press the ESC to cancel.
    b. Press Enter to confirm the action.

Figure 3.2 Output Shutdown—Bypass Power Outside Normal Range



Verify External Maintenance Bypass is in Normal Operation

The following applies to the external maintenance bypass only. Confirm the external bypass is in normal mode before proceeding:

1. Make sure the UIB (UPS Input Breaker) is Closed/On.
2. Make sure the MBB (Maintenance Bypass Breaker) is locked Open/Off, the interlock bolt is extended, and key A1 is captive.
3. Make sure the MIB (Maintenance Isolation Breaker) is closed/On, and the interlock bolt is withdrawn.

Transfer to External Maintenance Bypass

1. Make sure the UPS is already in static bypass mode.
2. Turn key A1 in the interlock on the MBB to unlock it.
3. Close/Turn On the MBB breaker. Key A1 becomes free.
4. Open/Turn Off the MIB breaker.
5. Insert key A1 into the MIB interlock and turn it to lock the MIB in the Open/Off position. Key A1 becomes captive.

6. The UPS is now isolated for routine maintenance.
7. If full isolation is required, do the following:
    - Open the UIB breaker.
    - If external battery cabinets exist, open the EBC breakers.

Return the UPS and External Bypass to Normal Operation

1. If the external maintenance bypass UPS Input Breaker, UIB breaker, and EXS EBC (external battery cabinet) breakers were Opened/Turned-Off for maintenance, close the EBC breakers. To restore input power to the UPS, Close/Turn-On the UIB breaker. Make sure the UPS is in Bypass mode before proceeding. If the unit is not in Bypass mode, see TRANSFER UPS TO STATIC BYPASS (Bypass mode) on page 9.
2. Turn Key A1 in the interlock on the MIB breaker to unlock.
3. Close/Turn-On the MIB breaker. Key A1 is now free.
4. Open/Turn-Off the MBB breaker.
5. Insert Key A1 into the interlock on the MBB breaker and turn it to lock the MBB breaker in the Open/Off position. Key A1 is now held captive.
6. Transfer the UPS from bypass mode to normal mode.

Transfer the UPS to Normal Mode

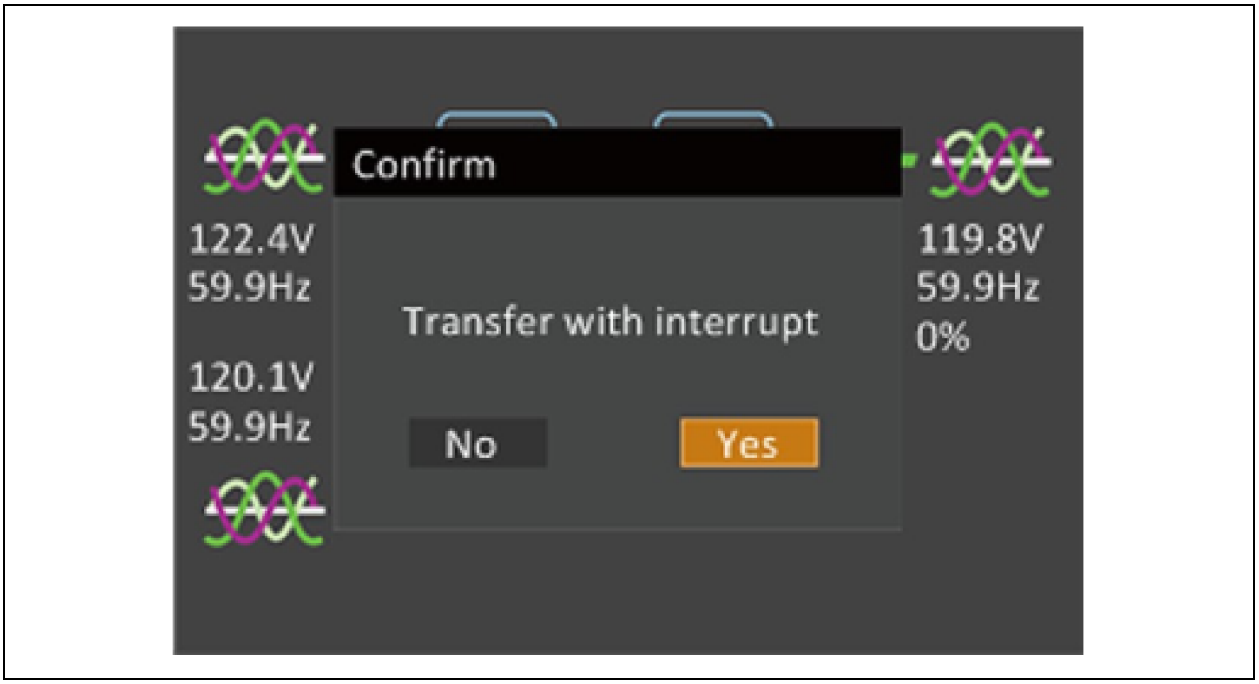
To transfer to the inverter (normal operation) or turn on the UPS when the UPS is on internal bypass mode:

Press and hold the power button for 2 seconds.

- If the UPS is configured for normal operation, the option to turn on the local inverter displays. See Figure 3 on the next page.
    a. Use the up/down arrows to select no or yes, or press the ESC to cancel.
    b. Press Enter to confirm the action.
    c. Press Enter again.
- If the bypass unable to trace alarm occurs, the option to transfer with interrupt displays. See Figure 4 below.
    a. Use the up/down arrows to select no or yes, or press the ESC to cancel.
    b. Press Enter to confirm the action.

Figure 3.3 Turn On Local INV

Figure 3.4 Transfer with Interrupt



The UPS and external maintenance bypass should now be in normal mode.

2.2 Isolating the UPS Using the Internal Maintenance Bypass

The EXS internal bypass can be used to isolate part of the UPS. To use the internal bypass, make sure the Verify External Maintenance Bypass is in Normal Operation on page 14

Use this procedure when your system uses the internal UPS maintenance bypass (no external bypass panel installed).

Transfer the UPS to Maintenance Bypass Mode

The transfer procedure puts the UPS in maintenance bypass mode for safe servicing by a Vertiv service technician.

Follow the procedure below to isolate the EXS UPS when the system is configured with an external maintenance bypass.

NOTE: When the UPS is in bypass mode, the load is not protected. It is powered directly by utility power.

Procedure

1. Press and hold the power button for 2 seconds.
2. Check the option displayed on the screen and follow the correct condition:
    a. If the bypass power is within the normal operating range
        - The display shows Turn Off Local Inverter.
        - Use the Up/Down arrows to select Yes.
        - Press Enter to confirm.
        - Press Enter again.
        - The UPS transfers to internal static bypass and enters bypass mode.
    b. If the bypass power is outside the normal operating range
        - The only option is to turn off the UPS.
3. Open the front door of the unit to gain access to the MBB.
4. Loosen the thumbscrew on the mechanical interlock on the MBB.
5. Slide the interlock to the left and tighten the thumbscrew to secure the interlock in place.
6. Close the MBB.
7. Press and hold the Power button for 2 seconds.
8. Electrically isolate the UPS module from AC power Input by opening the RIB, BIB, and MIB. If external battery cabinets are installed, open the EBC breakers.

Transferring from Maintenance Bypass to Normal Mode

To transfer from maintenance bypass to normal operations:

1. Ensure that the mechanical interlock is still secured in the unlocked position.
2. If external battery cabinets are installed, close the EBC breaker.
3. On the front of the UPS, close RIB, BIB ,and MIB.

NOTE: The UPS performs startup checks and begins operating in internal bypass mode.

4. Verify that the UPS is operating in internal bypass mode before proceeding.

- If the unit is not in bypass mode, see Transfer the UPS to Static Bypass Mode on page 13 for the steps.

WARNING! Risk of improper operation. Failure to have the UPS operating on internal bypass and performing the next step will result in loss of all output power to the connected equipment.

5. On the front of the UPS, open the MBB.
6. Loosen the thumbscrew on the mechanical interlock on the MBB.
7. Slide the interlock to the right and tighten the thumb screw to secure the interlock in place.
8. Close and latch the front door of the UPS.
9. Press and hold the power button for 2 seconds.
10. Select the operation turn on UPS.
    a. Select Turn on UPS.
    b. Press Enter to confirm the action.
    c. Press Enter again.

Appendices

Appendix A: Technical Support and Contacts

A.1 Technical Support/Service in the United States

Vertiv Group Corporation

24x7 dispatch of technicians for all products.

1-800-543-2378

Liebert® Thermal Management Products

1-800-543-2378

Liebert® Channel Products

1-800-222-5877

Liebert® AC and DC Power Products

1-800-543-2378

A.2 Locations

United States

Vertiv Headquarters

505 N Cleveland Ave

Westerville, OH 43082

Europe

Via Leonardo Da Vinci 8 Zona Industriale Tognana

35028 Piove Di Sacco (PD) Italy

Asia

7/F, Dah Sing Financial Centre

3108 Gloucester Road, Wanchai

Hong Kong

This page intentionally left blank

Connect with Vertiv on Social Media

 https://www.facebook.com/vertiv/

 https://www.instagram.com/vertiv/

 https://www.linkedin.com/company/vertiv/

 https://www.x.com/Vertiv/

Vertiv.com | Vertiv Headquarters, 505 N Cleveland Ave, Westerville, OH 43082 USA

SL-80376_REVA_03-26