



SmartCabinet™ ID

User Manual

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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

1 Important Safety Instructions	5
1.1 Vertiv™ SmartCabinet™ ID Safety Guidelines	5
1.2 Vertiv™ Geist™ rPDU Safety Guidelines	6
1.3 Vertiv™ Liebert® GXT5 Safety Guidelines	8
2 Product Overview	11
2.1 Product Features	11
2.2 Appearance and Components	11
2.3 Accessories	15
2.4 Model Nomenclature	15
2.5 Product Specifications	17
2.6 Environmental Requirements	21
2.7 Clearance Requirements	21
3 Pre-installation Preparation	25
3.1 Installation Tools (Not Provided)	25
3.2 Cables (Not Provided)	25
3.3 Circuit Breakers (Not Provided)	31
3.4 Moving, Unpacking, and Lifting the Cabinet	32
3.4.1 Moving the Packaged Cabinet	32
3.4.2 Unpacking the Cabinet	33
3.4.3 Removing the Cabinet from Pallet	33
3.5 Moving, Unpacking, and Lifting the Condensing Unit	37
3.5.1 Moving the Packaged Condensing Unit	37
3.5.2 Unpacking the Condensing Unit	37
3.5.3 Lifting the Condensing Unit	42
4 Installation	43
4.1 Installing the UPS (Optional)	43
4.2 Installing the PDU (Optional)	45
4.3 Installing the Condensing Unit	48
4.3.1 Installing the Condensing Unit on the Top of the Cabinet	49
4.3.2 Installing the Condensing Unit in an Outdoor Environment	52
4.4 Routing the Condensate Drainage Pipe	59
4.5 Installing the Intelligent Doorlock (Optional)	61
4.5.1 Removing the Existing Doorlock	61
4.5.2 Installing the Intelligent Doorlock	68
4.6 Connecting Power Supply Cables and Ethernet Cables	75
4.6.1 Cable Access Location on Top Panel	75
4.6.2 Routing Cable through Cable Gland (Main Ground Input, System Main Input, and Network Input)	76

- 4.6.3 Routing Cable through Cable Gland (Air Conditioning Cable) 76
- 4.6.4 Connecting Main Power Supply for the Cabinet 78
- 4.6.5 Connecting Power Cables and Ethernet Cable for Evaporator and Condensing Unit 98
- 4.6.6 Connecting Ethernet Cables for UPS (Optional) 104
- 4.6.7 Connecting Power Cables and Ethernet Cables for PDUs 105
- 4.6.8 Connecting Grounding Cables 109
- 4.6.9 Connecting Ethernet Cable for Computer 110
- 5 Commissioning 111**
- 5.1 Inspection 111
- 5.2 Charging Extra Refrigerant and Lubricating Oil to the Air Conditioner 111
 - 5.2.1 General Data for Charging Refrigerant and Lubricating Oil (UL Models) 112
 - 5.2.2 General Data for Charging Refrigerant and Lubricating Oil (CE Models) 113
 - 5.2.3 Evacuating the Line Set (UL Models) 114
 - 5.2.4 Evacuating the Line Set and the Units (CE Models) 115
 - 5.2.5 Charging Extra Lubricating Oil 116
 - 5.2.6 Charging Extra R410A Refrigerant (UL Models) 117
 - 5.2.7 Charging R410A Refrigerant (CE Models) 117
- 5.3 Covering Connectors and Pipes with Thermal Insulation Materials 118
- 5.4 Powering ON the Cabinet 118
- 5.5 Powering OFF the Cabinet 122
- 6 Operation 123**
- 6.1 Home Page 123
- 6.2 Thermal 124
- 6.3 Power 126
- 6.4 ENV 128
- 6.5 Alarm 129
- 6.6 Log 130
- 6.7 Settings 131
- 7 Configuring IP Addresses for Devices 133**
- 7.1 Setting the IP Address for LCD 134
- 7.2 Setting IP Addresses for Vertiv™ Liebert® GXT5 UPS and Vertiv™ Geist™ PDU on Web UI 135
- 7.3 Configuring the IP Address for Vertiv™ Liebert® GXT5 UPS 136
- 7.4 Configuring the IP Address for Vertiv™ Geist™ PDU 144
- 7.5 Configuring the IP Address for the Intelligent Doorlock (Optional) 148
- 8 Web UI 155**
- 8.1 Preparation 155
 - 8.1.1 Configuring IP Address for the Computer 155
 - 8.1.2 Checking IE General Settings 156
 - 8.1.3 Checking IE LAN Settings 157
 - 8.1.4 Checking IE Security 158

8.2 Home Page	163
8.2.1 Login	163
8.2.2 Home Page	164
8.3 Function Menu	165
8.3.1 Cabinet Data	165
8.3.2 Alarm Mgmt.	166
8.3.3 Data & History	167
8.3.4 Device Options	168
8.3.5 System Settings	169
8.3.6 Help	172
9 Maintenance	173
9.1 Troubleshooting	173
9.2 Maintenance	174
9.2.1 Maintenance Schedule	174
9.2.2 Refrigerant Leak Detection (F-Gas)	175
Appendices	179
Appendix A: Technical Support and Contacts	179
Appendix B: PMB Overview	180
Appendix C: Submittals Drawings	182
Appendix D: Hazardous Substances	191
Appendix E: FCC Compliance Statement	192

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1 Important Safety Instructions

Save These Instructions

1.1 Vertiv™ SmartCabinet™ ID Safety Guidelines

This manual contains important safety instructions that should be followed during the installation and maintenance of the Vertiv SmartCabinet™ ID. Read this manual thoroughly before attempting to install or operate this cabinet.

Only skilled persons should move, install or service this equipment. Any operation that requires opening doors or equipment panels must be carried out only by the skilled person.

Adhere to all warnings, cautions, notices and installation, operating and safety instructions on the cabinet and in this manual. Follow all installation, operation and maintenance instructions and all applicable national and local building, electrical and plumbing codes.

To identify the cabinet model and serial number for assistance or spare parts, locate the identification label on the cabinet.



WARNING! Risk of improper wiring, piping, moving, lifting, and handling. Can cause equipment damage, serious injury or death. Only skilled personnel wearing appropriate OSHA-approved personal protection equipment (PPE) should attempt to move, lift, remove packaging from or prepare the cabinet for installation.



WARNING! Some parts of the cabinet have high voltage. Special tools must be used when operating the cabinet. Direct or indirect contact with these parts through damp objects can cause injury, or death.



WARNING! Before connecting cables, confirm whether the labels match site requirements. Ethernet cables should be bound separately from the cables with strong current or high voltage.



WARNING! The installation and routing of cables must comply with local and national codes and regulations. The cables with large leakage currents must be grounded before the cabinet is powered on.



WARNING! Risk of contact with high speed rotating fan blades. Can cause serious injury or death. Open all local and remote electric power-supply disconnect switches, verify with a voltmeter that power is off, and verify that all fan blades have stopped rotating before working in the cabinet or on the fan assembly.



WARNING! Risk of hair, clothing and jewelry entanglement with high speed rotating fan blades. Can cause equipment damage, serious injury or death. Keep hair, jewelry and loose clothing secured and away from rotating fan blades during operation.



WARNING! Risk of contact with extremely hot and/or cold surfaces. Can cause injury. Verify that all components have reached a temperature that is safe for human contact or wears appropriate, OSHA-approved PPE before working within the electric connection cabinet. Perform maintenance only when the cabinet is de-energized and component temperatures have become safe for human contact.



WARNING! Risk of electric shock. Only qualified professionals may disconnect the power supply connectors between the main's electricity and cabinet.



WARNING! Operation of this equipment in a residential environment could cause radio interference.



CAUTION: High touch current. The protective conductor current of the cabinet is 19 mA. The cabinet must be connected to the earth before connecting to a power supply.



CAUTION: Avoid touching or having skin contact with the residual gas and oils in the compressor. Wear long rubber gloves to handle contaminated parts. The air conditioning system contains refrigerant. The release of refrigerant is harmful to the environment.



CAUTION: If jumpers are used for troubleshooting, make sure to remove the jumpers after troubleshooting. If the connected jumpers are not removed, they may bypass certain control functions causing damage to the cabinet.

NOTICE

The plug on the power supply cable can be used as the disconnect device. The socket/outlet or appliance the coupler must be installed near the equipment and must be easily accessible to disconnect for service.

1.2 Vertiv™ Geist™ rPDU Safety Guidelines

- The Geist™ rack PDU is designed for information technology equipment in a restricted access location. Only service personnel should install and access the Geist™ rack PDU. The Geist™ rack PDU is not intended for use with life support or other designated critical devices. If uncertain about its intended application, consult your local dealer or Vertiv representative.
- Follow nameplate ratings when connecting equipment to the branch circuit. Maximum load must not exceed the rating shown on the Geist™ rack PDU nameplate. Take into consideration the effect that overloading of the circuits might have on overcurrent protection and supply wiring.
- The rated line voltage must not exceed the specifications on the Geist™ rPDU's accompanying documentation.
- Operate the Geist™ rack PDU in an indoor environment only in the appropriate ambient temperature range.
- Install the Geist™ rack PDU in a clean environment, free of conductive contaminants, moisture, flammable liquids, gases, and corrosive substances.
- The Geist™ rack PDU must be installed in a restricted access location. A restricted access location is an area where access is possible only through the use of a tool or lock and key or other means of security, and is controlled by the authority responsible for the location.

- The Vertiv™ Geist™ rack PDU has no user serviceable parts, other than the field replaceable plastic carrier (not installed on all models) that is designed to be field replaceable by qualified service personnel only. Under no circumstances attempt to gain internal access due to the risk of electric shock or burn.
- Refer any unexpected behavior or unusual fault conditions to your local dealer or Vertiv representative.
- Vertiv recommends powering only devices with safety agency approval from the Geist™ rack PDU.
- For permanently connected Geist™ rack PDUs (hard-wired versions), a readily accessible disconnect device must be incorporated external to the equipment.
- For Geist™ rack PDUs with integral plugs, the socket/outlet or appliance coupler must be installed near the equipment and must be easily accessible to disconnect for service.



WARNING! Observe all cautions and warnings. Failure to do so may result in serious injury or death. Geist™ Rack PDU units contain no user serviceable parts, other than the field replaceable plastic carrier (not installed on all models) that is designed to be field replaceable by qualified service personnel only. For service or technical support, contact your local Vertiv representative. Do not attempt to service this product yourself.



WARNING! Each rack must have its own protective earth conductor. Do not daisy the chain protective earth circuit using the multiple protective earthing connection points. Protective earthing connections shall be such that disconnection of a protective earth at one point in a unit or a system does not break the protective earthing connection to other parts or units in a system, unless the relevant hazard is removed at the same time.



CAUTION: Connecting a Geist™ rack PDU to a power supply with an incorrect rating in voltage or amperes may damage the connected equipment and your Geist™ rack PDU. For questions about the power supply connections, contact your Vertiv representative.



CAUTION: Ensure that the ratings of the electric circuit of each connected device meet the specified rating at each branch and receptacle.



CAUTION: All configuration steps must be completed before attempting to start equipment connected to the PDU.

NOTE: For power management purposes, record the receptacle where each piece of equipment is connected. Receptacles on the Geist™ rack PDU have a numeric designation. The Geist™ rack PDU identifies the receptacles with numbers and are grouped by a branch with a letter referring to the proper circuit breaker.

1.3 Vertiv™ Liebert® GXT5 Safety Guidelines

UPS Safety Notes

The UPS contains no user serviceable parts except the battery pack. Do not remove the cover. Removing the cover may result in electric shock and will invalidate any implied warranty. The UPS has an internal battery, so the output receptacles of the UPS may carry live voltage even if the UPS is not connected to mains input power.

Before moving or rewiring the UPS, disconnect mains input power and the battery and make sure that the UPS is completely shut down. Otherwise, the output terminal may carry live voltage, presenting an electric shock hazard. To ensure human safety and normal UPS operation, the UPS must be properly grounded before use. When the UPS is connected to an IT power distribution system, the short circuit protection device must be installed on the neutral line. Install and use the UPS in the following environments:

- Temperature: 32 °F - 122 °F (0 °C - 50 °C); relative humidity: 0% to 95%
- Out of direct sunlight
- Away from heat source
- Stable surface, not subject to vibrations or shocks
- Away from dust and other particulates
- Away from corrosive substances, salts and flammable gases

Keep the air inlet and outlet of the UPS unobstructed. Poor ventilation will increase the UPS internal temperature and can shorten the life of the UPS and its batteries. Keep liquid and other foreign objects away from the UPS. In case of fire, use a dry chemical fire extinguisher to put out the fire. Using a fluid fire extinguisher may cause electric shock. This UPS is not intended for use with life support and other designated critical devices. Maximum load must not exceed that shown on the UPS rating label. This UPS is designed for data processing equipment. If uncertain, consult your local dealer or company representative.

NOTE: Proper ventilation is required.

Electromagnetic Compatibility

This UPS complies with the limits for a Class A digital device. Operating this device in a residential area is likely to cause harmful interference that users must correct at their own expense. This UPS complies with the requirements of EMC Directive 2014/30/ EU and the published technical standards. Continued compliance requires installation in accordance with these instructions and the use of accessories approved by Vertiv.

Battery Safety



CAUTION: Do not dispose of the battery in a fire. The battery may explode. Do not open or damage the battery. Released electrolyte is harmful to the skin and eyes. If electrolyte comes into contact with the skin, wash the affected area immediately with plenty of clean water and get medical attention.



CAUTION: A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:

- Remove watches, rings, and other metal objects.
- Use tools with insulated handles.
- Wear rubber gloves and boots.
- Do not lay tools or metal parts on top of batteries.
- Disconnect the charging source prior to connecting or disconnecting battery terminals.
- Determine if the battery is inadvertently grounded. If it is inadvertently grounded, remove the source of the ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock will be reduced if grounds are removed during installation and maintenance (applicable to a UPS and a remote battery supply not having a grounded supply circuit).

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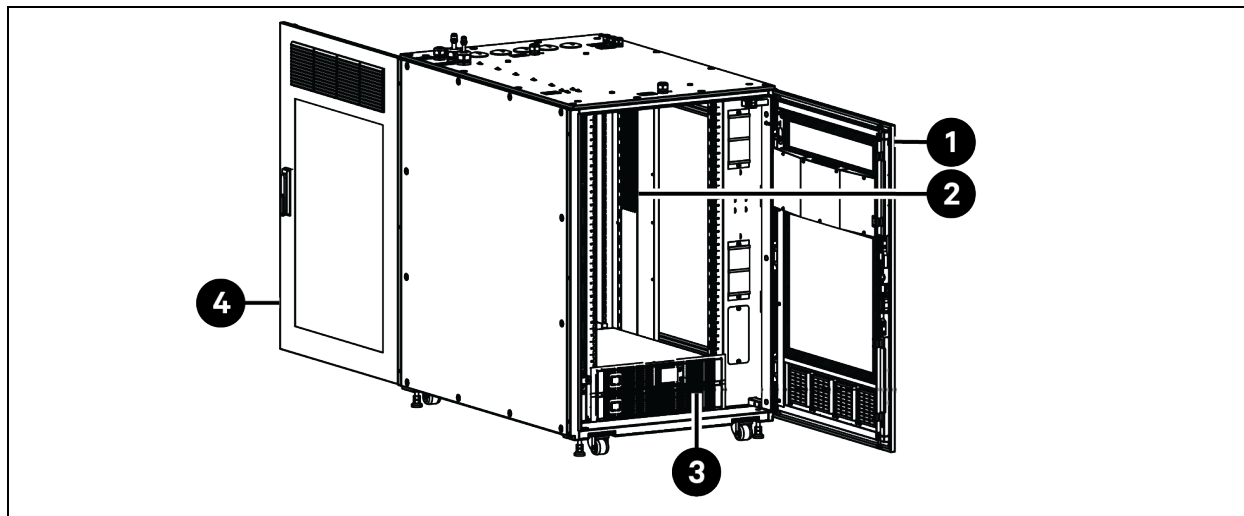
2 Product Overview

2.1 Product Features

Vertiv™ SmartCabinet™ ID is an IP54-rated, fully enclosed cabinet, integrated with the air conditioner, Uninterruptible Power Supply (UPS) (optional), Power Management Block (PMB), optional Power Distribution Unit (PDU), and emergency fan. The PMB and air conditioner are positioned along the side panel, leaving maximized rack mounting space for IT equipment. The hot aisle and cold aisle are contained in the cabinet, providing a clean environment for critical devices. The cabinet can be monitored and managed through a 9-inch LCD screen and web user interface (UI).

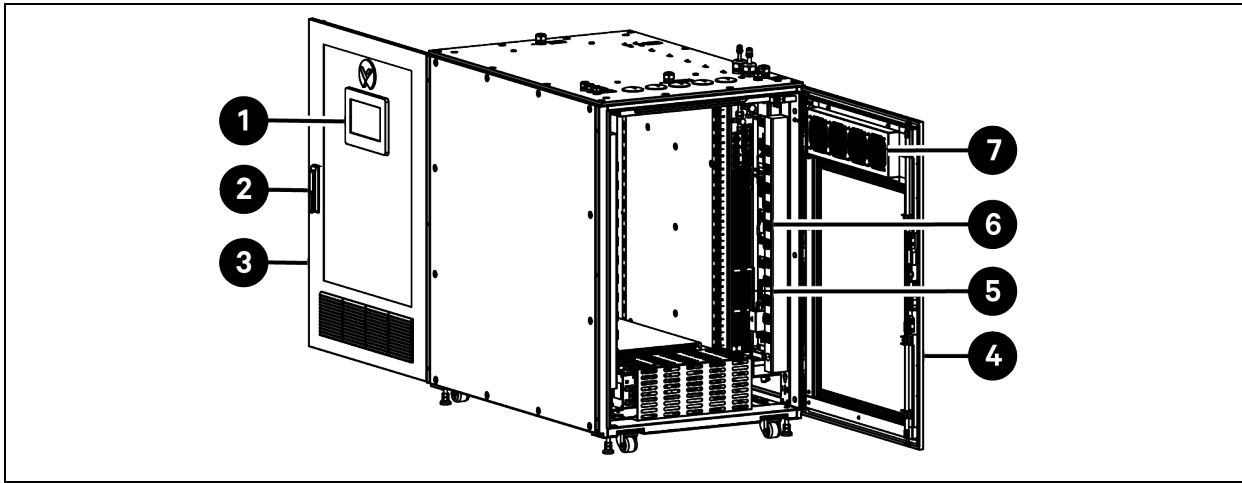
2.2 Appearance and Components

Figure 2.1 Front View of Vertiv™ SmartCabinet™ ID (VS3354 as an Example)



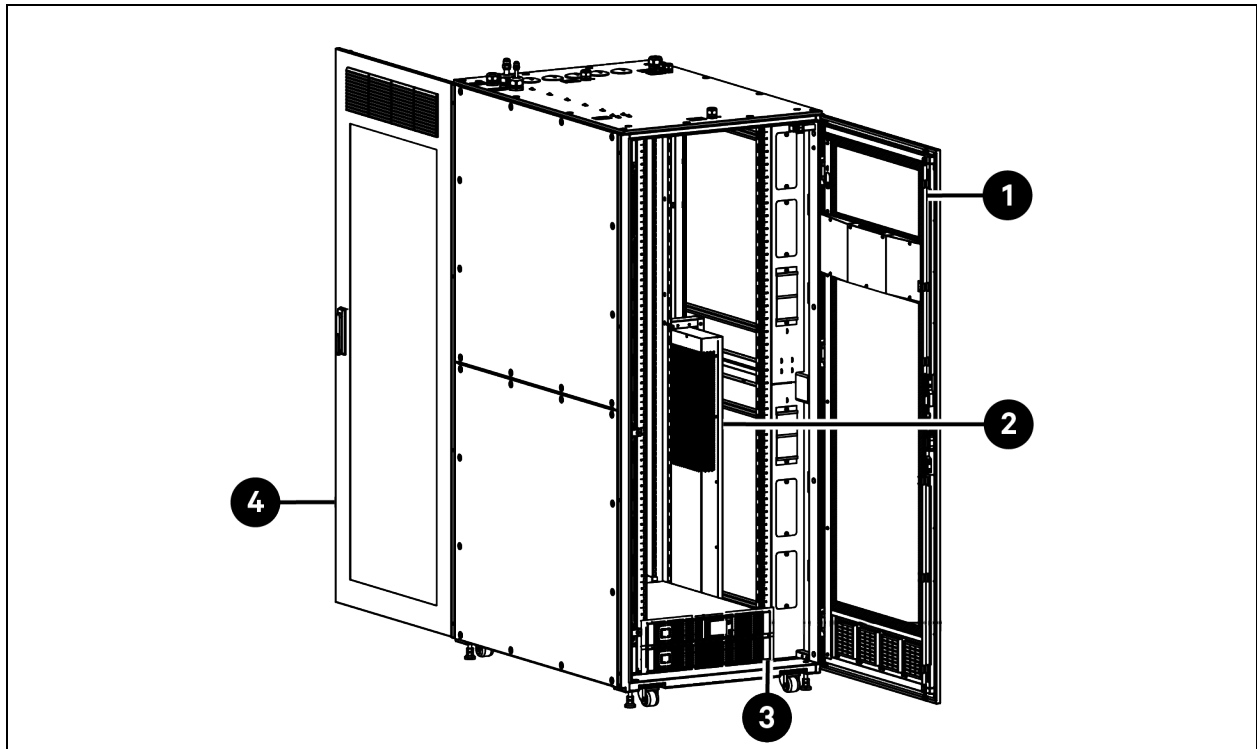
Item	Description	Item	Description
1	Front door	3	UPS
2	PMB	4	Rear door

Figure 2.2 Rear View of Vertiv™ SmartCabinet™ ID (VS3354 as an Example)



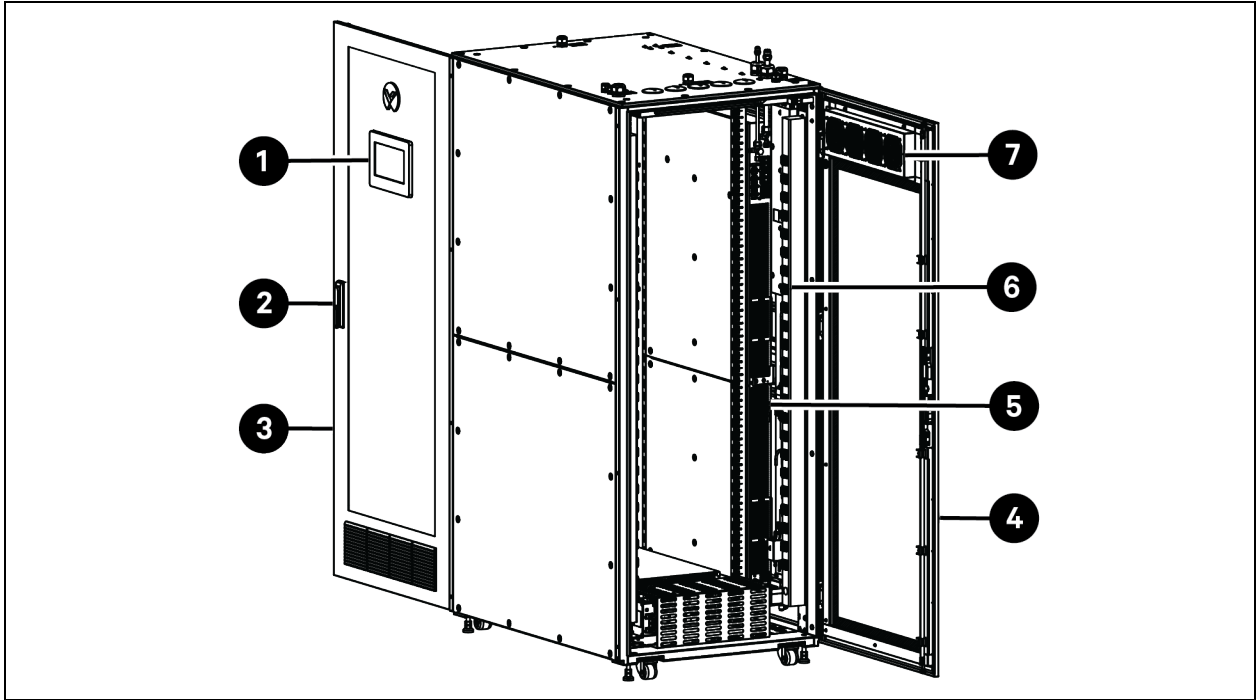
Item	Description	Item	Description
1	LCD screen	5	Evaporator
2	Door lock	6	PDU
3	Front door	7	Emergency fan
4	Rear door		

Figure 2.3 Front View of Vertiv™ SmartCabinet™ ID (VS3750 as an Example)



Item	Description	Item	Description
1	Front door	3	UPS
2	PMB	4	Rear door

Figure 2.4 Rear View of Vertiv™ SmartCabinet™ ID (VS3750 as an Example)



Item	Description	Item	Description
1	LCD screen	5	Evaporator
2	Door lock	6	PDU
3	Front door	7	Emergency fan
4	Rear door		

2.3 Accessories

The accessories provided with the unit are illustrated in **Figure 2.5** below.

Figure 2.5 Accessories

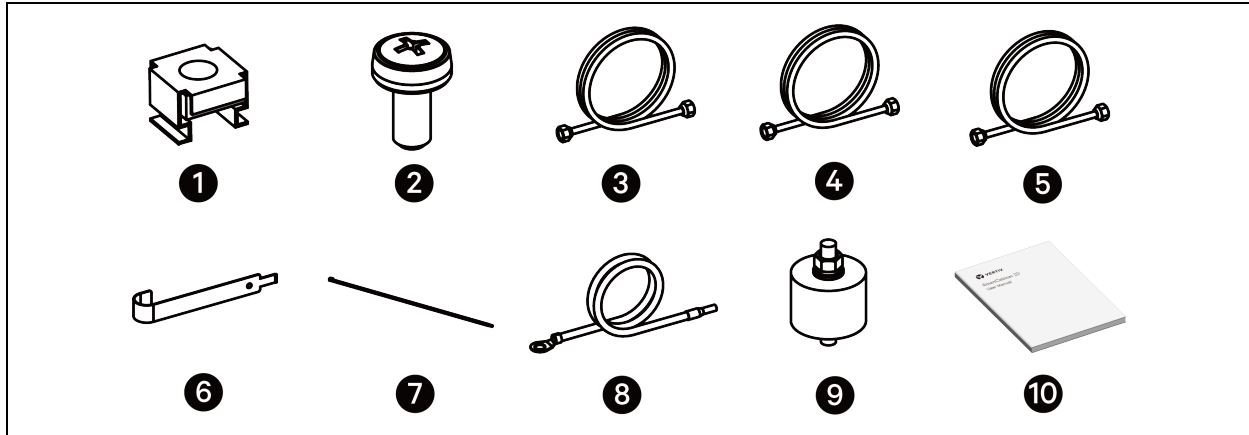


Table 2.1 Accessories

Item	Component	Quantity	Cabinet Model
1	M6 floating nut	30	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I
2	M6 x 16 slotted flat head screw	30	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I
3	ø 9.52 mm (3/8 in) copper liquid pipe (length: 5 m (16.4 ft))	1	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I
4	ø 12.7 mm (1/2 in) copper gas pipe (length: 5 m (16.4 ft))	1	VS3354, VS3350, VS3354I, VS3350I
5	ø 16 mm (5/8 in) copper gas pipe (length: 5 m (16.4 ft))	1	VS3750, VS3750I
6	Cage nut tool	1	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I
7	Tie wrap	20	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I
8	W34 cable	1	VS3354I, VS3350I, VS3750I
9	Kit for fixing the condensing unit on the top of the cabinet	4	VS3354, VS3350, VS3354I, VS3350I
10	Vertiv™ SmartCabinet™ ID User Manual	1	VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I

2.4 Model Nomenclature

Table 2.2 below describes the model number of the Vertiv™ SmartCabinet™ ID.

Table 2.2 Vertiv™ SmartCabinet™ ID Model Number Digit Definitions

Digit	Variable	Description
1	V	Unit family: Vertiv System
2	S	
3	1, 2, 3, 4	Unit series: <ul style="list-style-type: none"> 1: clean environment (whitespace, retail), no NEMA or IP rating

Table 2.2 Vertiv™ SmartCabinet™ ID Model Number Digit Definitions (continued)

Digit	Variable	Description
		<ul style="list-style-type: none"> 2: commercial environment (distribution centers), NEMA2 or IP11 3: industrial environment, NEMA 3 or IP54 4: outdoor environment, NEMA 4 or IP65
4	3,7	Cooling capacity: <ul style="list-style-type: none"> 3: 3.5 kW 7: 7 kW
5	0,5	Width of rack: <ul style="list-style-type: none"> 0: 600 mm 5: 800 mm
6	0,4	Height: <ul style="list-style-type: none"> 0: 42 U 4: 24 U
7	Blank, I	Region/Country code: <ul style="list-style-type: none"> Blank: NAM, 110 - 208 V I: international, 230 - 400 V

Table 2.3 below describes the model number of the evaporator.

Table 2.3 Evaporator Model Number Digit Definitions

Digit	Variable	Description
1	Z	Zero U solution
2	R	Rack cooling module
3	C	
4	0	<ul style="list-style-type: none"> 03: 3.5 kW
5	3,7	<ul style="list-style-type: none"> 07: 7 kW
6	U, C	<ul style="list-style-type: none"> U: 208 V / 230 V, 1 phase, 60 Hz (UL) C: 230 V, 1 phase, 50 Hz / 60 Hz (CE)

Table 2.4 below describes the model number of the condensing unit.

Table 2.4 Condensing Unit Model Number Digit Definitions

Digit	Variable	Description
1	Z	Zero U solution
2	C	<ul style="list-style-type: none"> CC: standard condensing unit
3	C, L	<ul style="list-style-type: none"> CL: low ambient condensing unit
4	0	<ul style="list-style-type: none"> 03: 3.5 kW
5	3,7	<ul style="list-style-type: none"> 07: 7 kW
6	U, C	<ul style="list-style-type: none"> U: 208 V / 230 V, 1 phase, 60 Hz (UL) C: 230 V, 1 phase, 50 Hz / 60 Hz (CE)

2.5 Product Specifications

Table 2.5 Vertiv™ SmartCabinet™ ID Specifications

Model	VS3354	VS3350	VS3750	VS3354I	VS3350I	VS3750I
Shipping dimension (W x D x H) mm (in)	1416 x 1016 x 1472 (55.7 x 40 x 58)	1416 x 1016 x 2272 (55.7 x 40 x 89.4)	1416 x 1016 x 2272 (55.7 x 40 x 89.4)	1416 x 1016 x 1472 (55.7 x 40 x 58)	1416 x 1016 x 2272 (55.7 x 40 x 89.4)	1416 x 1016 x 2272 (55.7 x 40 x 89.4)
Unit dimension (W x D x H) mm (in)	800 x 1200 x 1200 (31.5 x 47.2 x 47.2)	800 x 1200 x 2000 (31.5 x 47.2 x 78.7)	800 x 1200 x 2000 (31.5 x 47.2 x 78.7)	800 x 1200 x 1200 (31.5 x 47.2 x 47.2)	800 x 1200 x 2000 (31.5 x 47.2 x 78.7)	800 x 1200 x 2000 (31.5 x 47.2 x 78.7)
Shipping weight kg (lb)	400 (881.8)	500 (1102.3)	500 (1102.3)	400 (881.8)	500 (1102.3)	500 (1102.3)
Unit weight kg (lb)	230 (507.1)	300 (661.4)	300 (661.4)	230 (507.1)	300 (661.4)	300 (661.4)
Cooling capacity kW (kBtu/h)	3.5 (11.9)	3.5 (11.9)	7.0 (23.9)	3.5 (11.9)	3.5 (11.9)	7.0 (23.9)
Power supply (PMB)	L1+L2+G, 208/230 VAC, 60 Hz	L1+L2+G, 208/230 VAC, 60 Hz	L1+L2+G, 208/230 VAC, 60 Hz	L+N+PE, 230 VAC, 50/60 Hz	L+N+PE, 230 VAC, 50/60 Hz	L+N+PE, 230 VAC, 50/60 Hz
Power supply (UPS)	L1+L2+N+G, 208/230 VAC, 60 Hz	L1+L2+N+G, 208/230 VAC, 60 Hz	L1+L2+N+G, 208/230 VAC, 60 Hz	L+N+PE, 230 VAC, 50/60 Hz	L+N+PE, 230 VAC, 50/60 Hz	L+N+PE, 230 VAC, 50/60 Hz
Noise dB(A) at 2m	< 63 (without condensing unit)	<63 (without condensing unit)	< 66 (without condensing unit)	<63 (without condensing unit)	< 63 (without condensing unit)	< 66 (without condensing unit)
Compliance approval	UL			CE		
Color	RAL7021					
International protection code	IP54					
Static load /load of the casters for relocation kg (lb)	1300 (2866)/1000 (2204.6)					
Overvoltage category	Level 2					
Pollution degree	Level 2					
Earthing system	TT and TN					

NOTE: Noise value represents sound pressure level at 2 m from the unit.

NOTE: If the Vertiv SmartCabinet™ ID is used in offices, you can contact Vertiv to further reduce the noise. By lowering the maximum speed of the indoor fan, the noise can be reduced to 55 dB(A) (for VS3354, VS3350, VS3354I, and VS3350I) and 60 dB(A) (for VS3750 and VS3750I) at the maximum, which would bring around 5% decline in cooling capacity.

Table 2.6 Air Conditioner Specifications (UL Models)

Parameters	Specification					
Model	ZRC03U	ZRC07U	ZCC03U	ZCC07U	ZCL03U	ZCL07U
Type	Evaporator		Standard condensing unit		Low ambient condensing unit	
Compliance approval	UL 1995					
Rated power supply	208/230 VAC, 60 Hz					
Voltage tolerance	187 - 253 VAC					
Cooling capacity kW (kBtu/h)	3.5 (11.9)	7.0 (23.9)	-	-	-	-
Air volume m ³ /h (CFM)	750 (441.4)	1500 (882.9)	-	-	-	-
Coefficient of Performance (COP) W/W	2.9	2.9	-	-	-	-
Shipping dimension (W x D x H) mm (in)	-	-	930 x 440 x 755 (36.6 x 17.3 x 29.7)	930 x 560 x 1250 (36.6 x 22 x 49.2)	1310 x 440 x 755 (51.6 x 17.3 x 29.7)	1140 x 510 x 1250 (44.9 x 20.1 x 49.2)
Unit dimension (W x D x H) mm (in)	95 x 740 x 900 (3.7 x 29.1 x 35.4)	95 x 740 x 1600 (3.7 x 29.1 x 63)	786 x 282 x 527 (30.9 x 11.1 x 20.7)	786 x 355 x 1000 (30.9 x 14 x 39.4)	1163 x 282 x 527 (45.8 x 11.1 x 20.7)	990 x 355 x 1000 (39 x 14 x 39.4)
Color	RAL 7021		RAL 7035			
International protection code	-		IPX4 (IEC 60529)			
Shipping weight kg (lb)	-	-	70 (154.3)	131 (288.8)	95 (209.4)	138 (304.2)
Unit weight kg (lb)	33 (72.8)	55 (121.3)	48 (105.8)	85 (187.4)	68 (149.9)	106 (233.7)
Operation temperature range °C (°F)	18 to 45 (64.4 to 113)		-15 to 48 (5 to 118)		-35 to 48 (-31 to 118)	

Table 2.7 Air Conditioner Specifications (CE Models)

Parameters	Specification					
Model	ZRC03C	ZRC07C	ZCC03C	ZCC07C	ZCL03C	ZCL07C
Type	Evaporator		Standard condensing unit		Low ambient condensing unit	
Compliance approval	CE, UKCA					
Rated power supply	230 VAC, 50/60 Hz					
Voltage tolerance	207 - 253 VAC					

Table 2.7 Air Conditioner Specifications (CE Models) (continued)

Parameters	Specification					
Cooling capacity kW (kBtu/h)	3.5 (11.9)	7.0 (23.9)	-	-	-	-
Air volume m ³ /h (CFM)	750 (441.4)	1500 (882.9)	-	-	-	-
Coefficient of Performance (COP) W/W	2.9	2.9	-	-	-	-
Shipping dimension (W x D x H) mm (in)	-	-	930 x 440 x 755 (36.6 x 17.3 x 29.7)	930 x 560 x 1250 (36.6 x 22 x 49.2)	1310 x 440 x 755 (51.6 x 17.3 x 29.7)	1140 x 510 x 1250 (44.9 x 20.1 x 49.2)
Unit dimension (W x D x H) mm (in)	95 x 740 x 900 (3.7 x 29.1 x 35.4)	95 x 740 x 1600 (3.7 x 29.1 x 63)	786 x 282 x 527 (30.9 x 11.1 x 20.7)	786 x 355 x 1000 (30.9 x 14 x 39.4)	1163 x 282 x 527 (45.8 x 11.1 x 20.7)	990 x 355 x 1000 (39 x 14 x 39.4)
Color	RAL 7021		RAL 7035			
International protection code	-		IPX4 (IEC 60529)			
Shipping weight kg (lb)	-	-	70 (154.3)	131 (288.8)	95 (209.4)	138 (304.2)
Unit weight kg (lb)	33 (72.8)	55 (121.3)	48 (105.8)	85 (187.4)	68 (149.9)	106 (233.7)
Operation temperature range °C (°F)	18 to 45 (64.4 to 113)		-15 to 48 (5 to 118)		-35 to 48 (-31 to 118)	

NOTE: The cooling capacity and COP are for the evaporator equipped with a standard condensing unit. They are measured when the indoor dry bulb temperature is 35 °C (95 °F), the indoor wet bulb temperature is 20 °C (68 °F), and the outdoor temperature is 35 °C (95 °F).

NOTE: At the same working conditions, the low ambient condensing unit has a reduced capacity compared with the standard condensing unit.

Table 2.8 Association between Cabinet and Condensing Unit

Model	Standard condensing unit ZCC03C	Standard condensing unit ZCC07C	Standard condensing unit ZCC03U	Standard condensing unit ZCC07U	Low ambient condensing unit ZCL03C	Low ambient condensing unit ZCL07C	Low ambient condensing unit ZCL03U	Low ambient condensing unit ZCL07U
Cabinet VS3354	-	-	X	-	-	-	X	-
Cabinet VS3354I	X	-	-	-	X	-	-	-
Cabinet VS3350	-	-	X	-	-	-	X	-

Table 2.8 Association between Cabinet and Condensing Unit (continued)

Model	Standard condensing unit ZCC03C	Standard condensing unit ZCC07C	Standard condensing unit ZCC03U	Standard condensing unit ZCC07U	Low ambient condensing unit ZCL03C	Low ambient condensing unit ZCL07C	Low ambient condensing unit ZCL03U	Low ambient condensing unit ZCL07U
Cabinet VS3350I	X	-	-	-	X	-	-	-
Cabinet VS3750	-	-	-	X	-	-	-	X
Cabinet VS3750I	-	X	-	-	-	X	-	-

NOTE: X indicates that the condensing unit can be used with the cabinet.

Table 2.9 IT Equipment Capacity

IT Capacity Table (kW)		UPS			
Wiring Method	Cooling Capacity	3 kVA (2 U)	6 kVA (4 U)	8 kVA (6 U)	10 kVA (6 U)
Connection A, UPS to PDU and PMB	3.5 kW	Not compatible	3 kW	3 kW	3 kW
	7 kW	Not compatible	Not compatible	Not compatible	6.5 kW
Connection B, UPS to PDU	3.5 kW	3 kW	3 kW	3 kW	3 kW
	7 kW	3 kW	6 kW	6.5 kW	6.5 kW

Table 2.10 UPS POD RDU Configuration

Cabinet Model	UPS	POD	RDU101
VS3354I, VS3350I	GXT5-3000IRT2UXLE	-	RDU101 is not provided with the cabinet.
	GXT5-6000IRT5UXLE	-	RDU101 is not provided with the cabinet.
VS3750I	GXT5-10KIRT5UXLE	-	RDU101 is not provided with the cabinet.
VS3354, VS3350	GXT5-3KL620RT2UXL	MP2-220N	RDU101 is provided with the cabinet.
	GXT5-6000MVRT4UXLN	PD5-006	RDU101 is provided with the cabinet.
VS3750	GXT5-10KMVRT6UXLN	PD2-103	RDU101 is provided with the cabinet.

NOTE: If you are going to use our guidance for the UPS and rPDU recommendations, in order to ensure proper cabling you need to use the POD's that are called out.

Table 2.11 PMB Maximum Power Consumption

Operating Mode of The Unit	VS3354I, VS3350I, VS3354, VS3350		VS3750I, VS3750	
	Power, W	Current, A	Power, W	Current, A
The Unit Operates in Cooling Mode	1852	9.0	3536	17
The Unit Operates in Emergency Mode	230	12	370	1.9

2.6 Environmental Requirements

Table 2.12 Storage Conditions

Item	Requirement
Room environment	Storing the unit in its original packing in a clean indoor environment free of dust
Ambient humidity	≤ 95% RH at 40 °C (104 °F)
Ambient temperature	-40 °C to 70 °C (-40 °F to 158 °F)

Table 2.13 Operating Condition

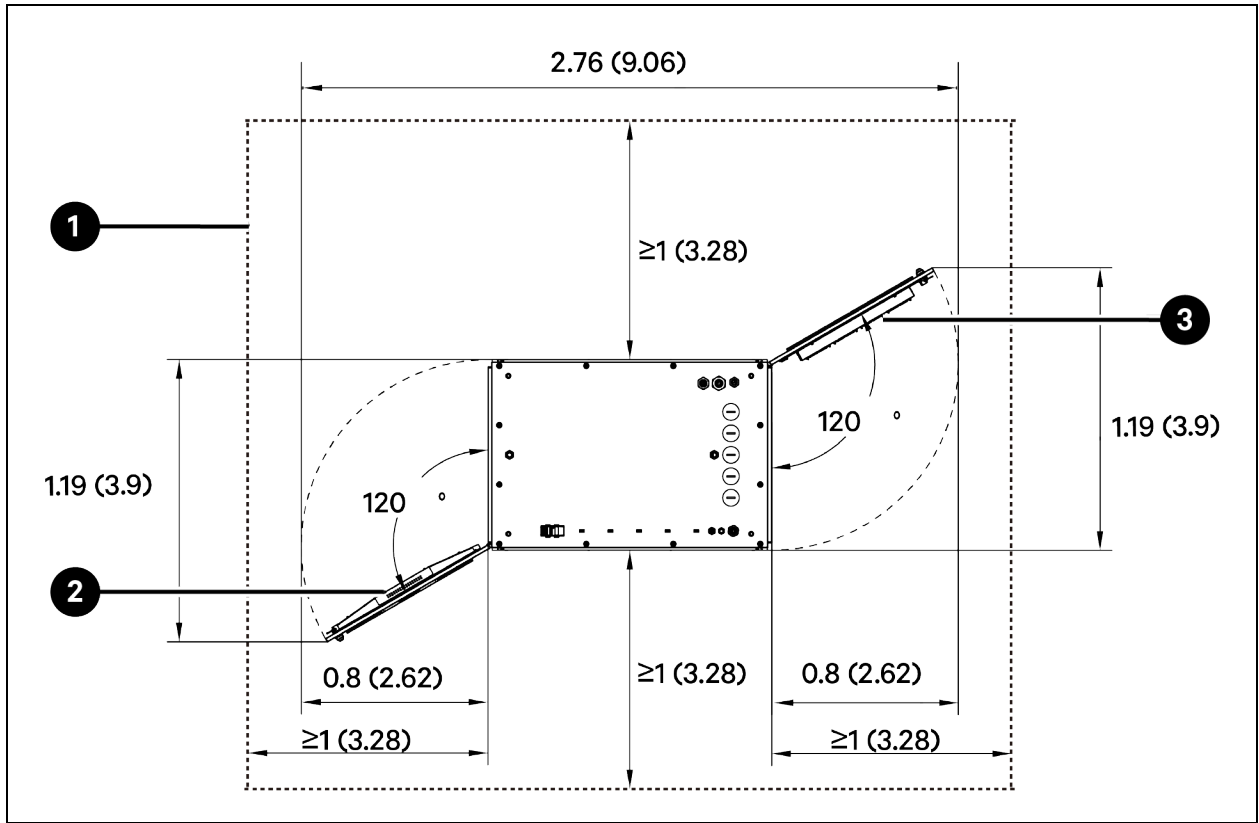
Item	Requirement
Installation location	<ul style="list-style-type: none"> Level ground Ceiling of the room is higher than 2.4 m (7.9 ft) Equivalent length between the cabinet and the condensing unit ≤ 50 m (164 ft) Vertical height difference (H): -5 m ≤ H ≤ 15 m (-16.4 ft ≤ H ≤ 49.2 ft)
Ambient temperature	For cabinet: 0 °C to 40 °C (32 °F to 104 °F)
	For evaporator: 18 °C to 45 °C (64.4 °F to 113 °F)
	For standard condensing unit: -15 °C to 48 °C (5 °F to 118.4 °F)
	For low ambient condensing unit: -35 °C to 48 °C (-31 °F to 118.4 °F)
Ambient humidity	For cabinet: 5% RH to 90% RH (no condensation)
	For evaporator: 17% RH to 60% RH
Altitude	< 3000 m (9842.5 ft). If the altitude is higher than 1000 m (3280.8 ft), contact Vertiv.
<p>NOTE: Condensate water may appear on the surface of the front door and on the LCD screen. This is normal and does not affect the functioning of the cabinet.</p>	

NOTE: The cabinet is for a standard environment. It is not designed for special ATEX, seismic, or corrosion environments. Keep the cabinet away from flames, heat sources, direct sunlight, corrosive gas, and organic solvents.

2.7 Clearance Requirements

Leave enough space for installation, maintenance, and repair. The clearance required for accessing and maintaining the cabinet is shown in **Figure 2.6** on the next page.

Figure 2.6 Clearance Requirements for Cabinet (Viewing from the Top of Unit m (ft))



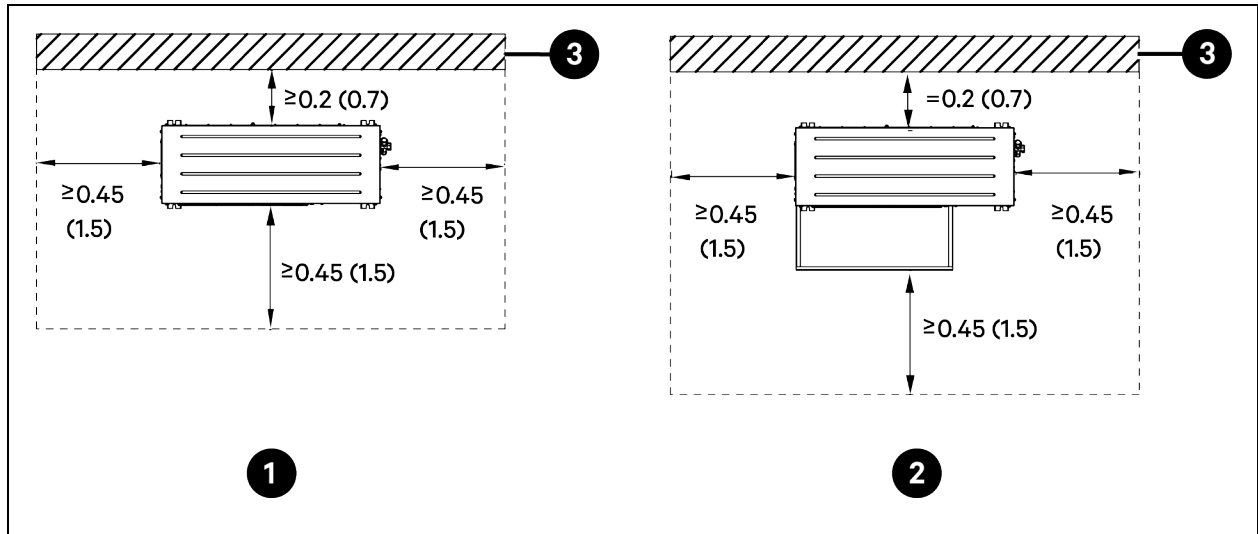
Item	Description	Item	Description
1	Access and maintenance area	3	Rear door
2	Front door		

Figure 2.6 above also applies to the condensing unit which is installed on the top of the cabinet. This clearance ensures that there is enough space for air circulation.

The clearance required for accessing and maintaining the condensing unit outdoors is shown in Figure 2.7 on the facing page.

- For the standard condensing unit without air deflector, the distance to the wall should be equal to or larger than 0.2 m (0.7 ft).
- For the standard condensing unit with air deflector, the distance to the wall should be from 0.15 m (0.5 ft) to 0.25 m (0.8 ft).

Figure 2.7 Clearance Requirements for Condensing Unit m (ft)



Item	Description	Item	Description
1	Standard condensing unit	3	Wall
2	Standard condensing unit with air deflector		

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3 Pre-installation Preparation

3.1 Installation Tools (Not Provided)

Prepare the following tools for the installation process:

- Razor knife
- Phillips head screwdriver
- Adjustable wrench
- Level
- Floating nut wrench
- Ladder

3.2 Cables (Not Provided)

Prepare cables as shown in **Table 3.1** below.

Table 3.1 Cable Specifications

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
VS3354, VS3350	Power connection A: Mains electricity is connected to UPS. UPS provides power to PMB and IT equipment	Input power cable for UPS	30 A	10 AWG x 4C	L14-30R	-	14-30P, 14-50P, 14-60P, L14-30P, L14-50P, or L14-60P	-
VS3750		Input power cable for terminal block	52 A	6 AWG x 4C	M6 ring terminal	2.49 Nm (1.84 lb-ft)	14-60P or L14-60P	100 mm (3.9 in)
		Input power cable for UPS	-	-	-	2.26 Nm (1.67 lb-ft)	-	-
VS3354I, VS3350I		Input power cable for UPS	28 A	3 x 4 mm ²	Cord terminal	2.26 Nm (1.67 lb-ft)	-	100 mm (3.9 in)
VS3750I		Input power cable for terminal block	49 A	3 x 6 mm ²	M6 ring terminal	2.49 Nm (1.84 lb-ft)	-	100 mm (3.9 in)
		Input power cable for	-	-	-	2.26 Nm (1.67 lb-ft)	-	-

Table 3.1 Cable Specifications (continued)

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
		UPS						
VS3354, VS3350	Power connection B: Mains electricity is connected to UPS and PMB. UPS provides power to IT equipment	Input power cable for UPS	18 A	12 AWG x 4C	L14-30R	-	14-30P, 14-50P, 14-60P, L14-30P, L14-50P, or L14-60P	-
		Input power cable for PMB	11 A	14 AWG x 3C	L6-20R	-	6-20P, 6-30, 6-50P, L6-20P, L6-30, 6-50P, L6-60P	-
VS3750		Input power cable for terminal block	37 A	8 AWG x 4C	M6 ring terminal	2.49 Nm (1.84 lb-ft)	L14-50P or L14-60P	100 mm (3.9 in)
		Input power cable for UPS	-	-	-	2.26 Nm (1.67 lb-ft)	-	-
		Input power cable for PMB	20 A	12 AWG x 3C	L6-30R	-	6-30P, 6-50P, L6-30, 6-50P, or L6-60P	-
VS3354I, VS3350I		Input power cable for UPS	17 A	3 x 2.5 mm ²	Cord terminal	2.26 Nm (1.67 lb-ft)	-	100 mm (3.9 in)
		Input power cable for PMB	10 A	3 x 1.5 mm ²	M6 ring terminal	3.24 Nm (2.39 lb-ft)	-	-
VS3750I		Input power cable for terminal block	34 A	3 x 6 mm ²	M6 ring terminal	2.49 Nm (1.84 lb-ft)	-	100 mm (3.9 in)
		Input power cable for UPS	-	-	-	2.26 Nm (1.67 lb-ft)	-	-
	Input power cable for PMB	18 A	3 x 2.5 mm ²	M6 ring terminal	3.24 Nm (2.39 lb-ft)	-	-	
VS3354I, VS3350I, VS3750I	General	Input power cable for PDU	16 A	3 x 1.5 mm ²	C19	-	-	-

Table 3.1 Cable Specifications (continued)

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
VS3354, VS3350	General	Input power cable for PDU	16 A	14 AWG x 3C	L6-20P	-	-	-
VS3750	General	Input power cable for PDU	32 A	12 AWG x 3C	L6-30P	-	-	-
VS3354, VS3350	ZCC03U or ZCL03U condensing unit	Ethernet cable between evaporator and condensing unit	-	24 AWG x 4 pairs CAT5	RJ45	-	-	-
		Power supply cable for PMB to provide power to condensing unit	10 A	16 AWG	Connecting to PMB: M6 ring terminal for L1, L2, and G Connecting to condensing unit: cord terminal for L1 and L2. M5 ring terminal for G	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)
		Power supply cable for PMB to provide power to condenser fan	5 A	18 AWG	Connecting to PMB: M6 ring terminal for L1, L2, and G Connecting to condensing unit: cord terminal for 2L1 and 2L2. M5 ring terminal for G	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)
VS3354I, VS3350I	ZCC03C or ZCL03C condensing	Ethernet cable between	-	24 AWG x 4 pairs CAT5	RJ45	-	-	-

Table 3.1 Cable Specifications (continued)

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
	unit	evaporator and condensing unit						
		Power supply cable for PMB to provide power to condensing unit	10 A	1.5 mm ²	Connecting to PMB: M6 ring terminal for L, N, and PE Connecting to condensing unit: cord terminal for L and N. M5 ring terminal for PE	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)
		Power supply cable for PMB to provide power to condenser fan	5 A	1 mm ²	Connecting to PMB: M6 ring terminal for L, N, and PE Connecting to condensing unit: Cord terminal for 2L and 2N. M5 ring terminal for PE	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)
VS3750	ZCC07U or ZCL07U condensing unit	Ethernet cable between evaporator and condensing unit	-	24 AWG × 4 pairs CAT5	RJ45	-	-	-
		Power supply cable for PMB to provide power to condensing	16 A	14 AWG	Connecting to PMB: M6 ring terminal for L1, L2, and G	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft)	-	100 mm

Table 3.1 Cable Specifications (continued)

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
		unit			Connecting to condensing unit: cord terminal for L1 and L2. M5 ring terminal for G	Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)		
		Power supply cable for PMB to provide power to condenser fan	5 A	18 AWG	Connecting to PMB: M6 ring terminal for L1, L2, and G Connecting to condensing unit: cord terminal for 2L1 and 2L2. M5 ring terminal for G	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm
VS3750I	ZCC07C or ZCL07C condensing unit	Ethernet cable between evaporator and condensing unit	-	24 AWG × 4 pairs CAT5	RJ45	-	-	-
		Power supply cable for PMB to provide power to condensing unit	16 A	2.5 mm ²	Connecting to PMB: M6 ring terminal for L, N, and PE Connecting to condensing unit: cord terminal for L and N. M5 ring terminal for PE	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)

Table 3.1 Cable Specifications (continued)

Cabinet Model	Usage Scenario	Cable	Cable Maximum Current	Cable Size	Cable Terminal Specification (connecting to cabinet)	Torque Value (connecting cable terminal to cabinet)	Cable Terminal Specification (connecting to the other end)	Wire Insulation Strip Length (the length of the outer insulation material to be removed from each end of the cable)
		Power supply cable for PMB to provide power to condenser fan	5 A	1 mm ²	Connecting to PMB: M6 ring terminal for L, N, and PE Connecting to condensing unit: cord terminal for 2L and 2N. M5 ring terminal for PE	Torque value for M6 ring terminal: 3.24 Nm (2.39 lb-ft) Torque value for cord terminal: 2 Nm (1.47 lb-ft) Torque value for M5 ring terminal: 1.76 - 2.35 Nm (1.3 - 1.73 lb-ft)	-	100 mm (3.9 in)
VS3354, VS3350, VS3750	General	Grounding cable for the cabinet	-	8 AWG	M8 ring terminal	13 - 15 Nm (9.59 - 11.1 lb-ft)	-	-
VS3354I, VS3350I, VS3750I	General	Grounding cable for the cabinet	-	6 mm ²	M8 ring terminal	13 - 15 Nm (9.59 - 11.1 lb-ft)	-	-
VS3354, VS3350, VS3354I, VS3350I, VS3750, VS3750I	General	Ethernet cable between cabinet and computer	-	24 AWG × 4 pairs CAT5	RJ45	-	-	-



CAUTION: To reduce the risk of fire and electric shock, connect this unit to a receptacle wired for 208 or 230 volts of alternating current.

NOTE: The cables and terminals should meet the requirements of national and local codes and regulations. The length of the cable is determined according to site requirements.

NOTE: All the multicore power cables must contain a ground wire (green or yellow-green).

NOTE: The operation of cutting wires and crimping terminals should meet terminal crimping process requirements. Take care to prevent cutting of wire conductors, uneven stripping length, and insufficient cutting of the insulation. After the terminal is crimped, there must be no cracks, burrs, etc.

NOTE: The stripping length should meet terminal crimping process requirements. Use the OT terminal that fits the wire. When putting the OT terminal onto the exposed wire core, leave 1 mm (0.039 in) gap between one edge of the bare crimp terminal and the cut section of the insulation layer, and make sure the wire core is slightly longer over the other edge of the bare crimp terminal. Choose the heat shrink tubing that fits the diameter of the wire and the diameter of the bare crimp terminal. The heat shrink tubing must completely cover the bare crimp terminal and must extend at least 3 mm (0.1 in) onto the wire insulation layer. After the crimping, make sure the wire core is not exposed.

NOTE: For VS3354, VS3350, and VS3750, the cable wires that can be used are: S, SE, SJ, SJE, SJO, SJOO, SJT, SJTO, SJTOO, SO, SOO, ST, STO, STOO, PPE, and W. The power supply cord for each unit shall have a minimum length of 1.5 m (5 ft) and it shall not be longer than 4.5 m (15 ft) measured from the face of the attachment plug cap to the point on the flexible cord where it enters the enclosure of the unit, including any strain relief means outside the enclosure. Use only listed plugs of ANSI/NEMA type according to the UPS and PMB configuration. The current capacity of the plug shall be at least of 125% of the rated current.

3.3 Circuit Breakers (Not Provided)

Prepare circuit breakers as shown in **Table 3.2** below.

Table 3.2 Circuit Breakers (Not Provided)

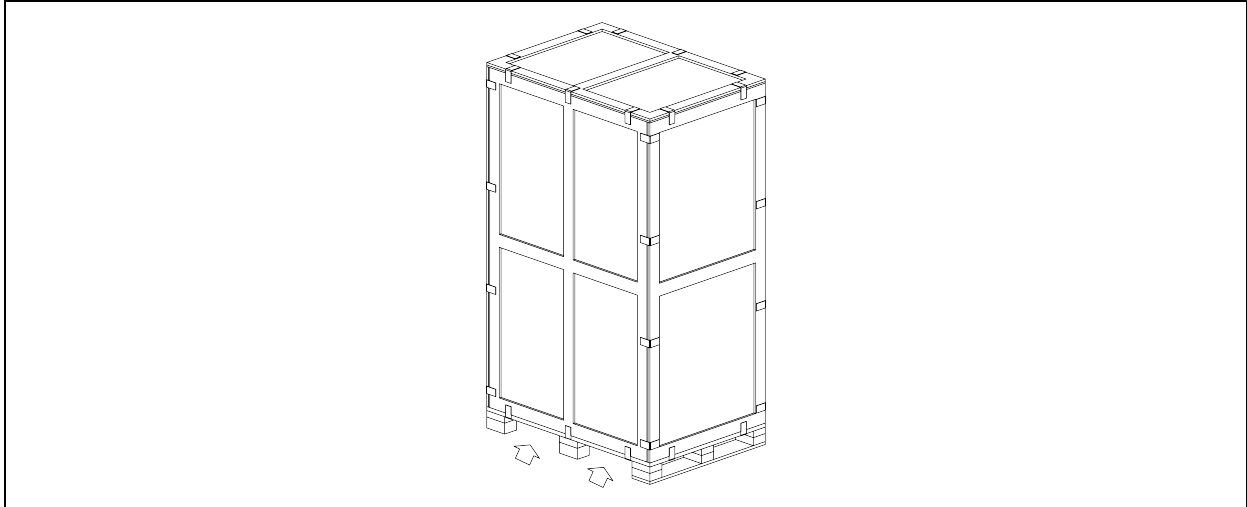
Unit Model	Power Connection	Circuit Breaker
VS3354 VS3350	Power connection A: Mains electricity is connected to UPS. UPS provides power to PMB and IT equipment.	UPS: 2P 40A circuit breaker
VS3750		UPS: 2P 80A circuit breaker
VS3354I VS3350I		UPS: 1P 50A circuit breaker
VS3750I		UPS: 1P 63A circuit breaker
VS3354 VS3350		Power connection B: Mains electricity is connected to UPS and PMB. UPS provides power to IT equipment.
VS3750	UPS: 2P 80A circuit breaker PMB: 2P 40A circuit breaker	
VS3354I	UPS: 1P 50A circuit breaker	
VS3350I	PMB: 1P 25A circuit breaker	
VS3750I	UPS: 1P 63A circuit breaker	
	PMB: 1P 40A circuit breaker	

3.4 Moving, Unpacking, and Lifting the Cabinet

3.4.1 Moving the Packaged Cabinet

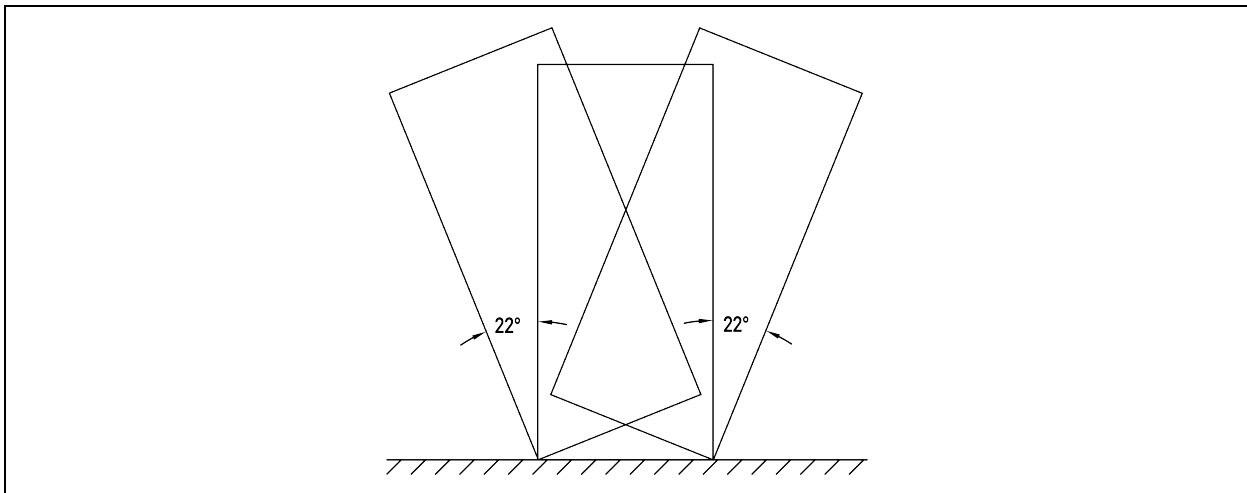
Keep the packaged cabinet upright and do not place it outdoors. Transport the packaged cabinet with a forklift or pallet jack. When using a forklift or pallet jack, make sure that the forks (if adjustable) are spread to the widest allowable distance that is suitable for the pallet length and can fit under the pallet.

Figure 3.1 Inserting Forks



When moving the packaged cabinet, align the fork arms with the center of gravity and do not tilt the cabinet more than 22 degrees in any direction to prevent it from falling over.

Figure 3.2 Tilt Cabinet (Less Than 22 Degrees)



3.4.2 Unpacking the Cabinet

To unpack the cabinet:

1. Open the *butterfly locks* on the wooden box.
2. Remove the *side wooden panels*, the *top wooden panel*, and the *cushioning* from the cabinet.
3. Remove the *bag* from the cabinet.

NOTE: For aesthetic reasons to avoid bubbles in the protective plastic film, once the installation is fully completed, the protective plastic film can optionally be removed from the front and rear doors.

3.4.3 Removing the Cabinet from Pallet

You can remove the cabinet from the pallet by lifting the cabinet using a crane or by moving it along ramps.

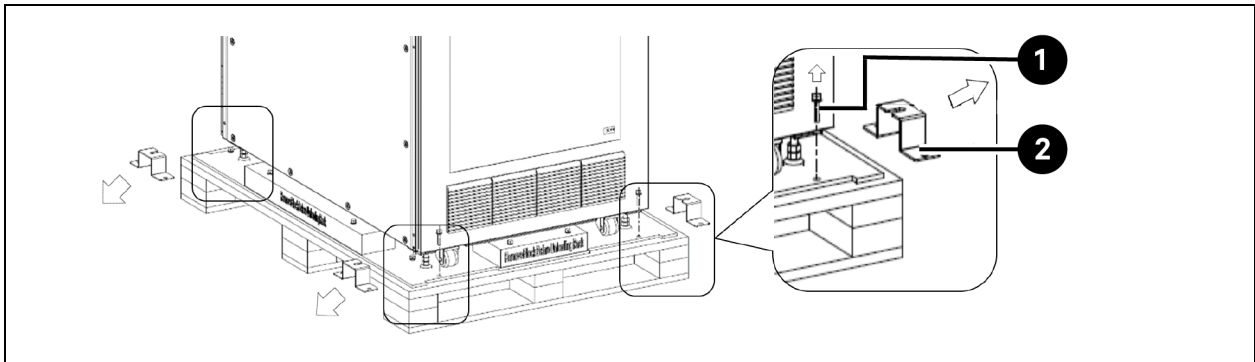
NOTE: The VR ramp (part number VRA9400), which can be used with the cabinet, is not provided with the cabinet.

Removing the cabinet using a crane

To remove the cabinet using a crane:

1. On each leveling foot, loosen the fixing nut by rotating it in the counterclockwise direction.
2. Remove two *M8 x 40 bolts* that secure each shipping bracket to the pallet. Then remove four *shipping brackets* from the pallet.

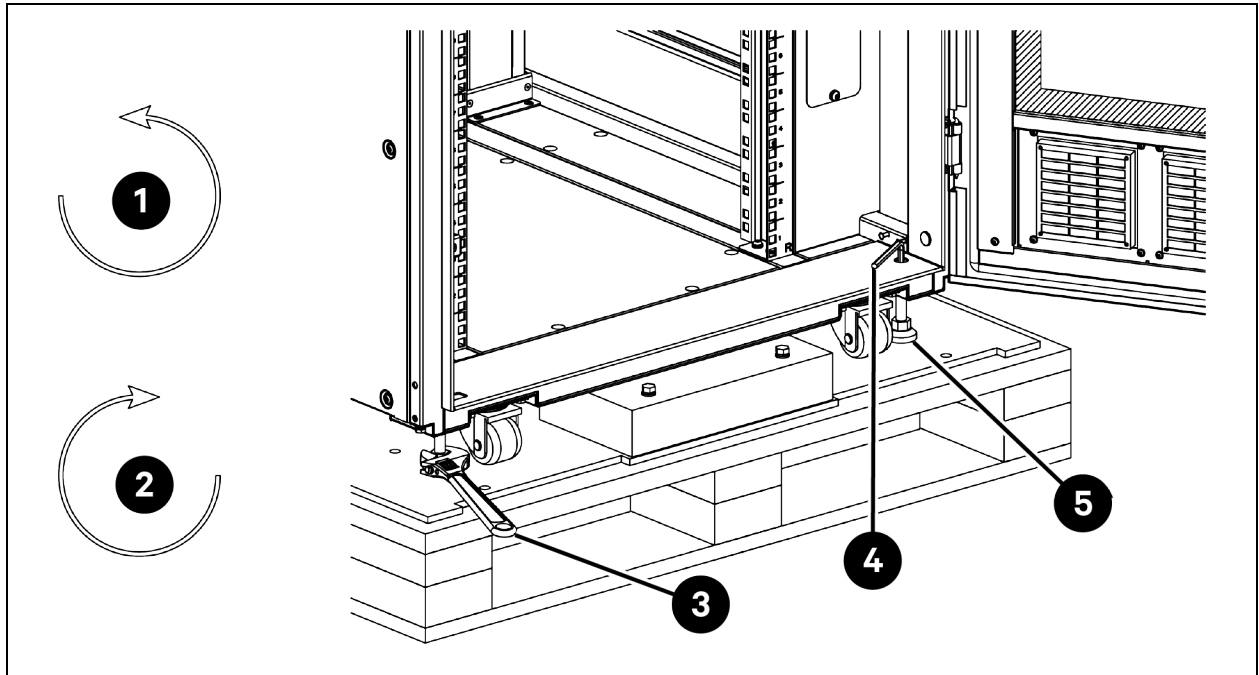
Figure 3.3 Removing Shipping Brackets



Item	Description
1	M8 x 40 bolt (8 pieces)
2	Shipping bracket (4 pieces)

3. Lift the *leveling feet* by rotating the hex bolt on each foot in a counterclockwise direction, to make the casters into contact with the pallet. Then tighten the *fixing nut* by rotating it in a clockwise direction.

Figure 3.4 Lifting the Leveling Feet

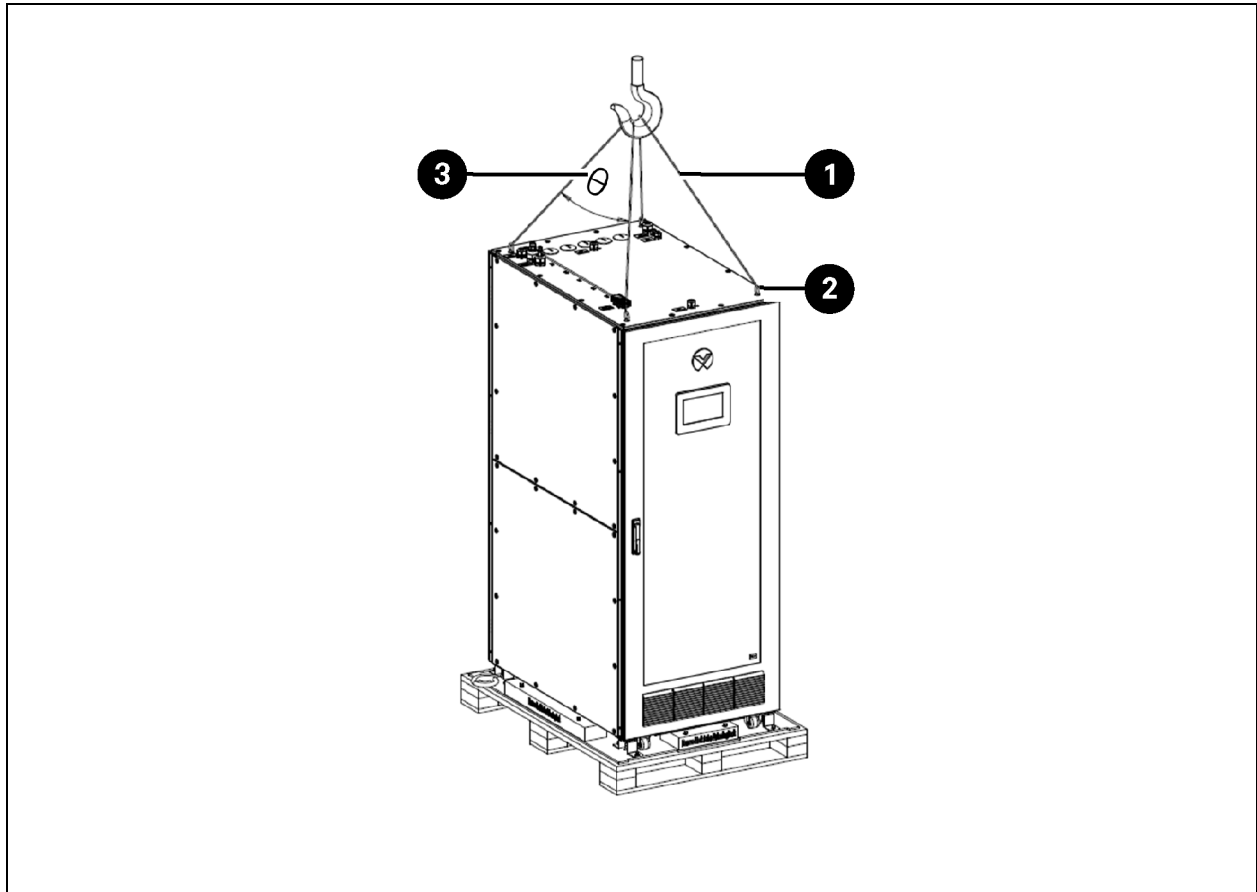


Item	Description	Item	Description
1	Counterclockwise rotation to adjust feet up	4	Adjusting feet from inside the cabinet using a Torx L-key
2	Clockwise rotation to adjust feet down	5	Hex bolt on the leveling feet
3	Adjusting feet beneath the cabinet with an adjustable wrench		

4. Fasten the *M12 eye bolts* in the screw holes on the four corners of the cabinet top panel. Tie two *hoisting cables* (each 1.9 m (6.2 ft) long) to the eye bolts in diagonal lines. Make sure that the angle between the two cables is less than or equal to 70 degrees.

- Use a *crane* to lift the cabinet from the pallet and place it at its installation site.

Figure 3.5 Lifting the Cabinet from Pallet



Item	Description	Item	Description
1	Hoisting cable, each 1.9 m (6.23 ft) long	3	Angle is less than or equal to 70 degrees
2	M12 eye bolt		

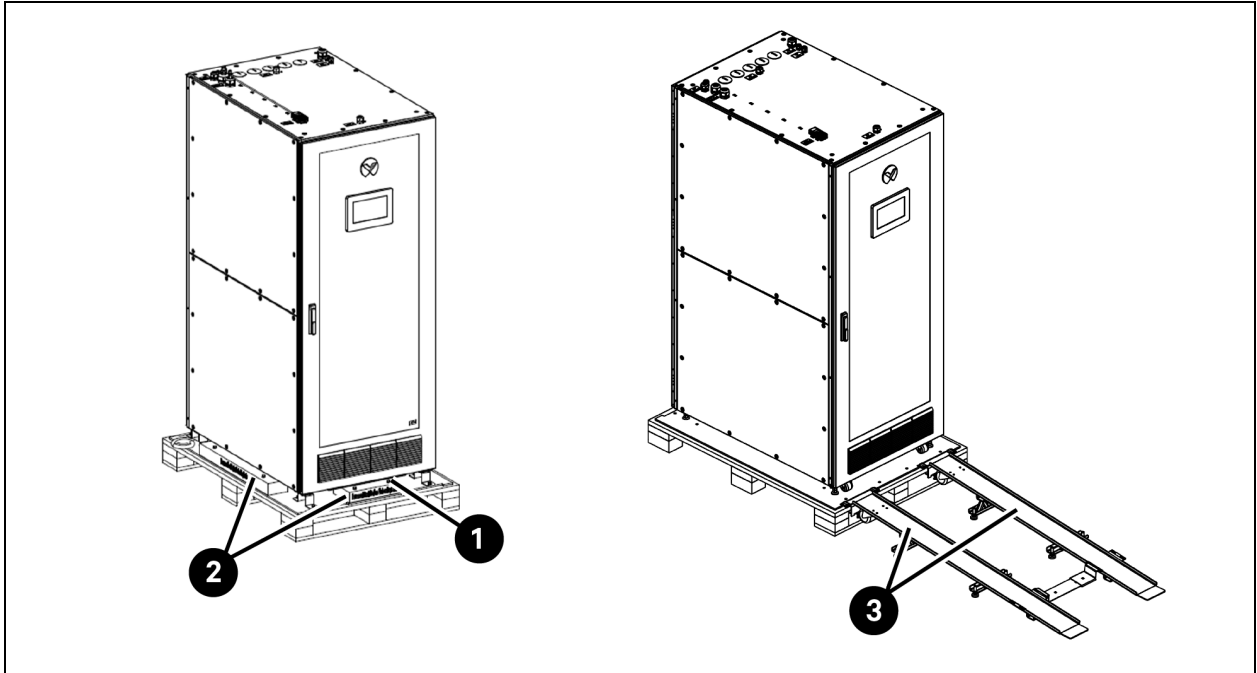
Removing the cabinet using ramps

To removing the cabinet using ramps:

- Remove four *shipping brackets* from the pallet. For details, see step 1 in [Removing the cabinet using a crane](#) on page 33.
- Lower the *leveling feet* by rotating the hex bolt on each foot in a clockwise direction. Then tighten the fixing nut by rotating it in a clockwise direction.
- Remove two *M8 x 90 bolts* from each wood block and then remove four *wood blocks* from under the cabinet.
- Loosen the *fixing nuts*. Lift the *leveling feet* by rotating the hex bolt on each foot in a counterclockwise direction, to make the casters into contact with the pallet and then tighten the *fixing nuts*.
- Install the *ramps* on the pallet. For details, see *Vertiv Ramp Quick Installation Guide*.

6. Move the *cabinet* down the pallet along the ramps and place it at its final installation site.

Figure 3.6 Removing the Cabinet Using Ramps



Item	Description	Item	Description
1	M8 x 90 bolt (8 pieces)	3	Ramp
2	Wood block (4 pieces)		

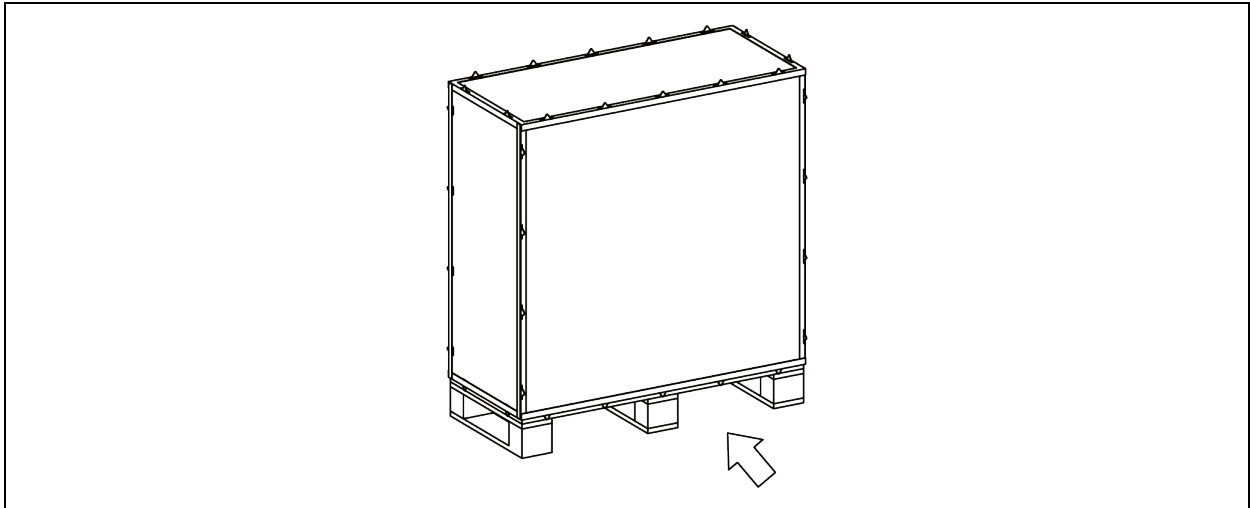
3.5 Moving, Unpacking, and Lifting the Condensing Unit

3.5.1 Moving the Packaged Condensing Unit

Keep the packaged condensing unit upright and do not place it outdoors. Transport the package condensing unit with a forklift or pallet jack. When using a forklift or pallet jack, make sure that the forks (if adjustable) are spread to the widest allowable distance that is suitable for the pallet length and can fit under the pallet.

When moving the packaged condensing unit, align the fork arms with the center of gravity and do not tilt the condensing unit more than 22 degrees in any direction to prevent it from falling over.

Figure 3.7 Inserting Forks in this Direction



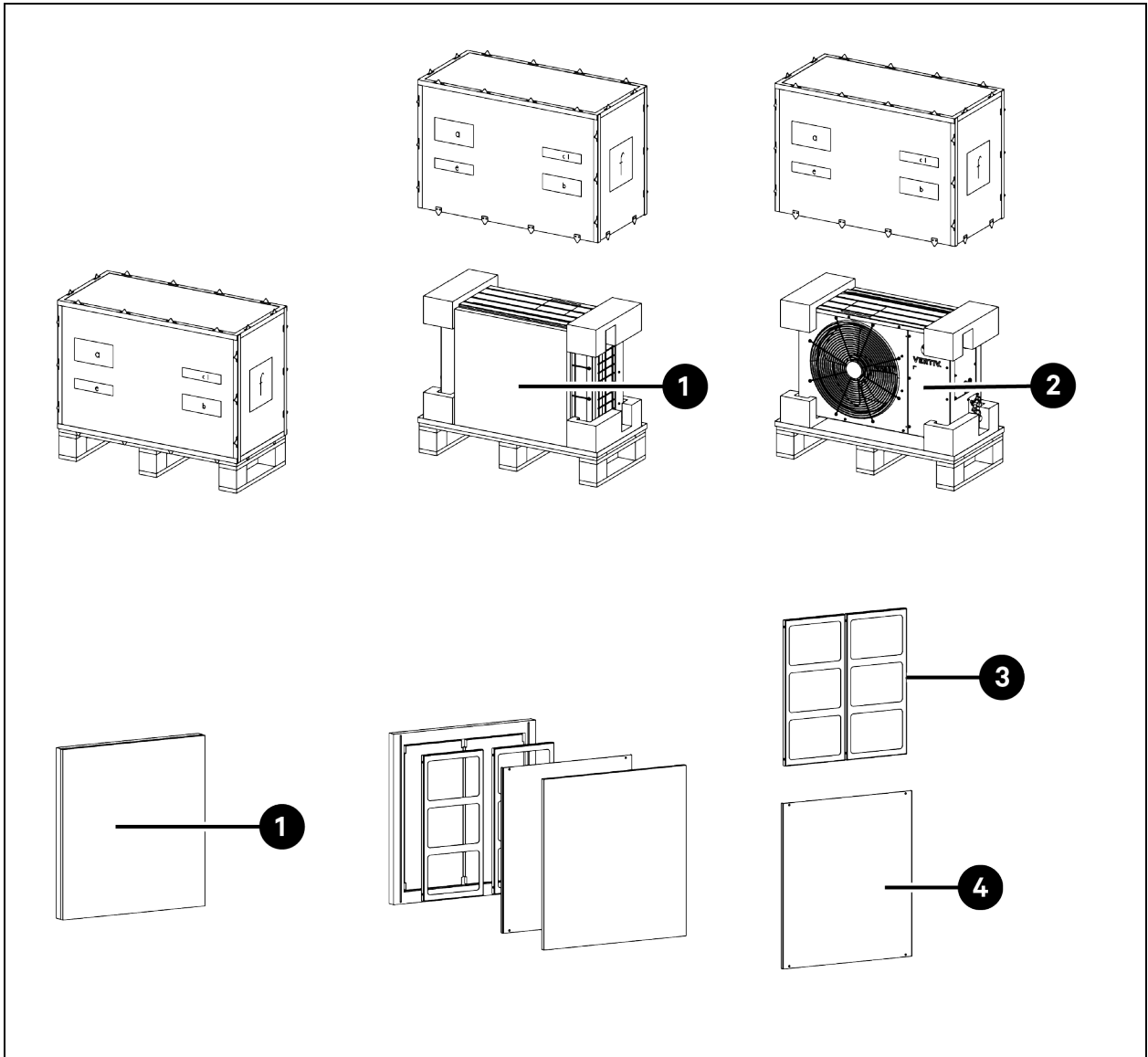
3.5.2 Unpacking the Condensing Unit

To unpack the condensing unit:

1. Pull straight the *latches* on the wooden box.
2. Remove the *side wooden panels*, the *top wooden panel*, and the *cushioning* from the cabinet.
 - a. For standard condensing units (ZCC03U, ZCC07U, ZCC03C, and ZCC07C), remove the *air deflector package*. For ZCC03U and ZCC03C, the air deflector package includes two side panels, one front panel, and M5 x 10 pan head screws. For ZCC07U and ZCC07C, the air deflector package includes two side panels, one front panel, two fastening brackets, and M5 x 10 pan head screws.
 - b. For low ambient condensing units (ZCL03U and ZCL07U), there is no air deflector package.

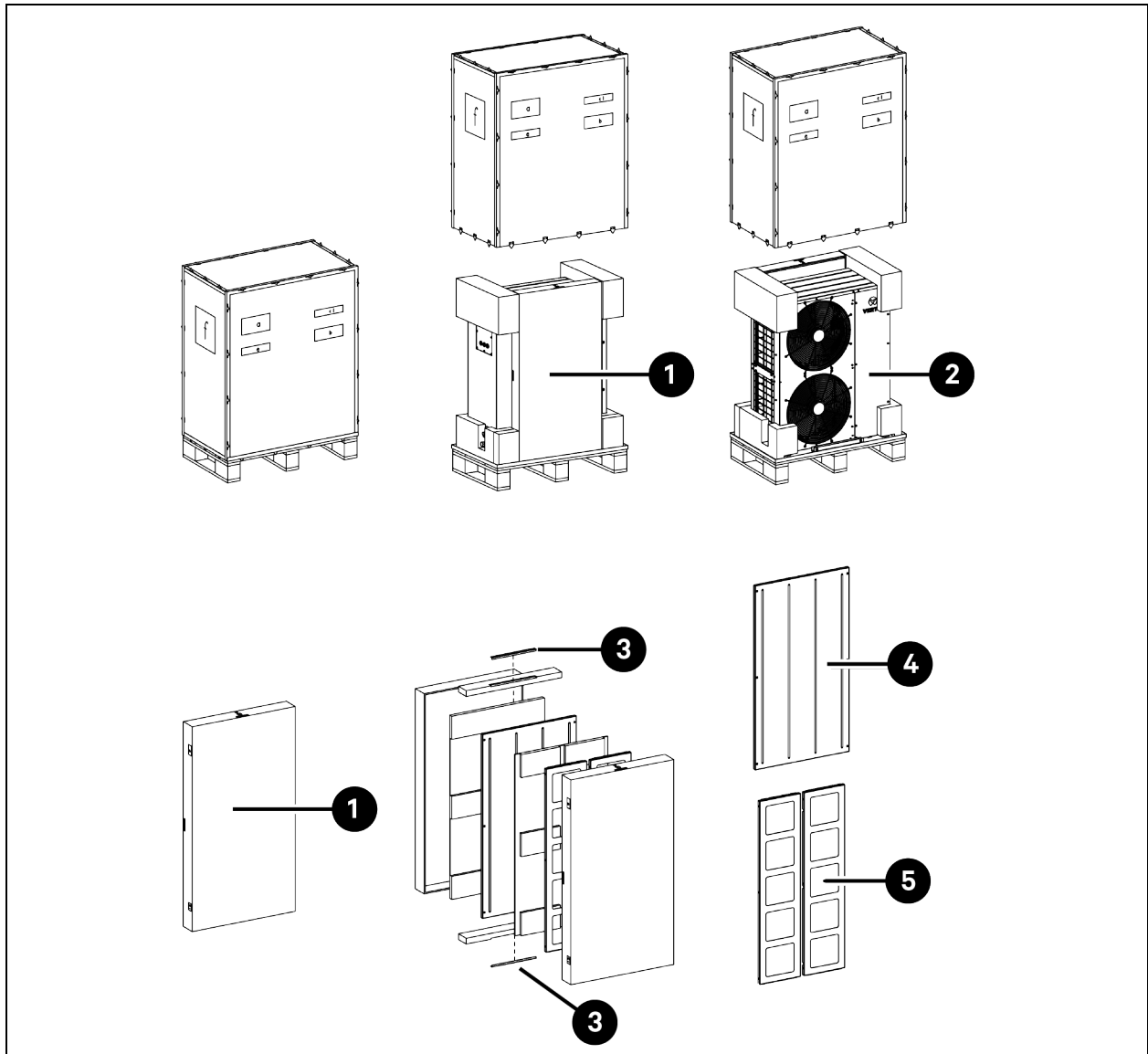
- Remove the *bag* from the condensing unit.

Figure 3.8 Unpacking Standard Condensing Units (ZCC03U and ZCC03C)



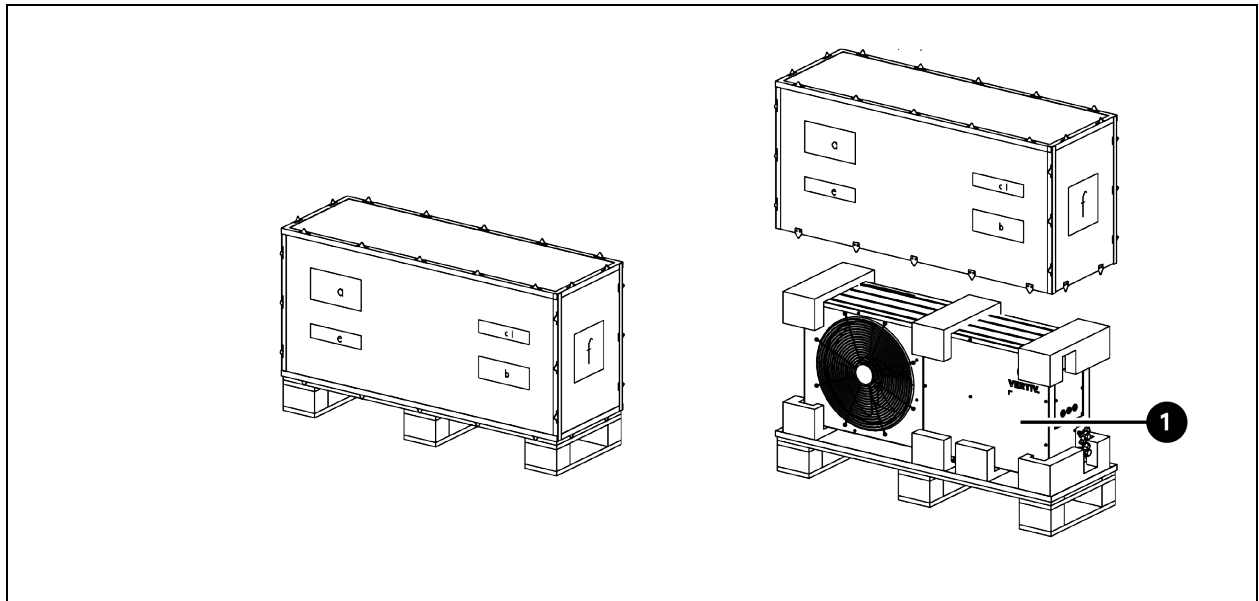
Item	Description	Item	Description
1	Air deflector package	3	Side panel (2 pieces)
2	Condensing unit	4	Front panel (1 piece)

Figure 3.9 Unpacking Standard Condensing Units (ZCC07U and ZCC07C)



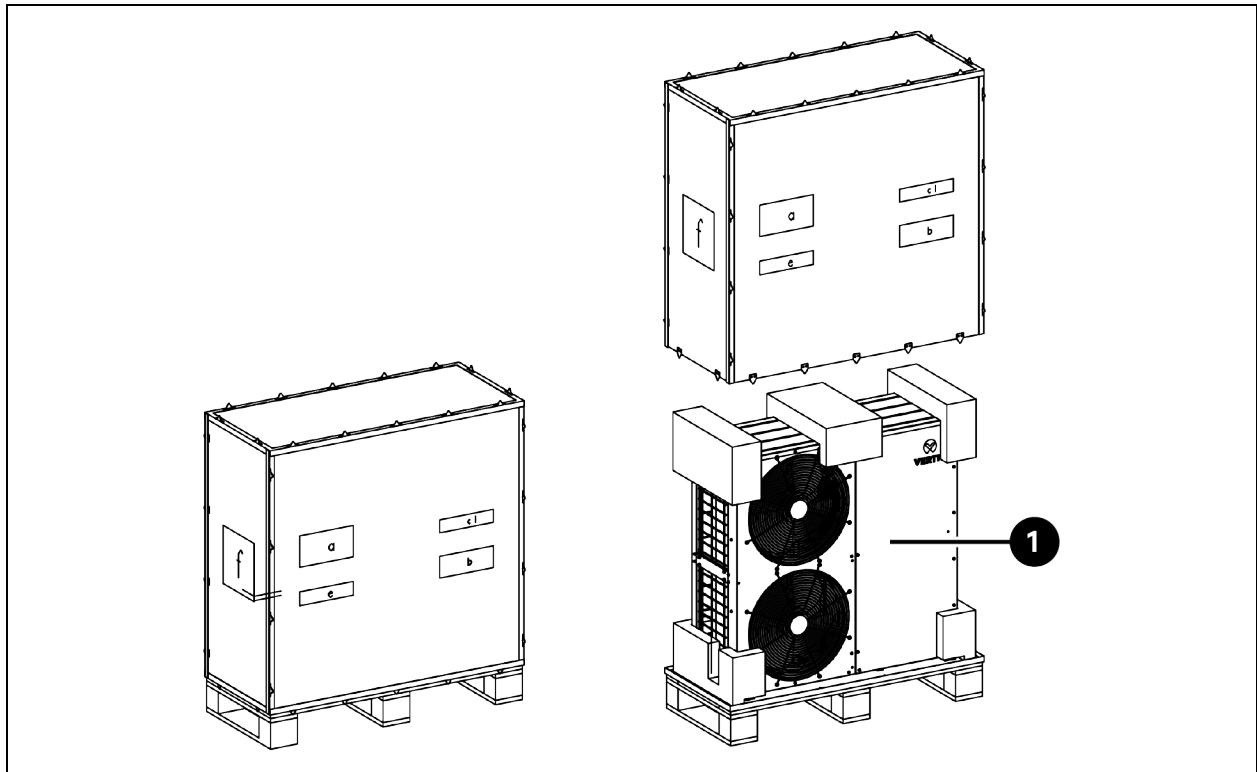
Item	Description	Item	Description
1	Air deflector package	4	Front panel (1 piece)
2	Condensing unit	5	Side panel (2 pieces)
3	Fastening bracket (2 pieces)		

Figure 3.10 Unpacking Low Ambient Condensing Units (ZCL03U and ZCL03C)



Item	Description
1	Condensing unit

Figure 3.11 Unpacking Low Ambient Condensing Units (ZCL07U and ZCL07C)

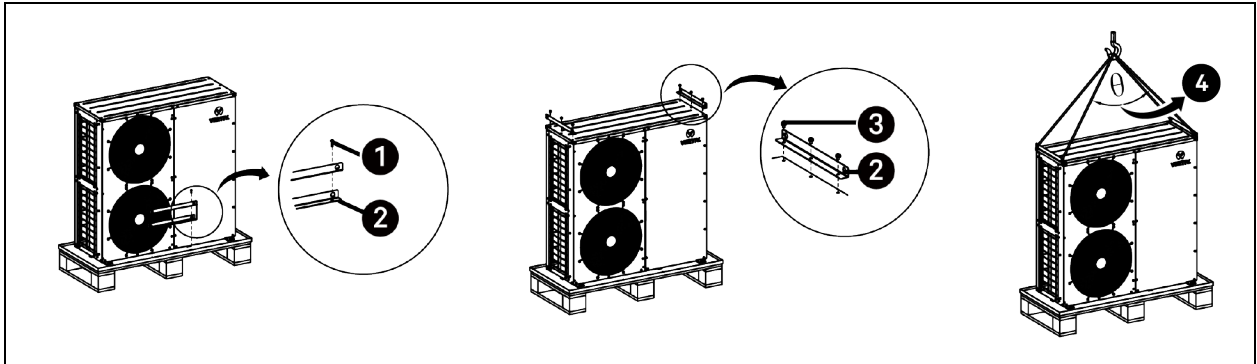


Item	Description
1	Condensing unit

3.5.3 Lifting the Condensing Unit

1. Move the 7 kW condensing units (ZCC07U, ZCL07U, ZCC07C, and ZCL07C) by lifting them from the pallet.
2. Remove two *brackets* from the pallet by removing two screws.
3. On the top panel of the condensing unit, remove six *pan head screws* and install the two *brackets* on the top panel with these screws.
4. Tie two *hoisting cables* to the brackets.
5. Make sure that the angle between two cables is less than or equal to 70 degrees.

Figure 3.12 Lifting 7 kW Condensing Units (ZCC07U, ZCL07U, ZCC07C, and ZCL07C)



Item	Description	Item	Description
1	Screw (2 pieces)	3	Pan head screw (6 pieces)
2	Bracket (2 pieces)	4	Angle is less than or equal to 70 degrees

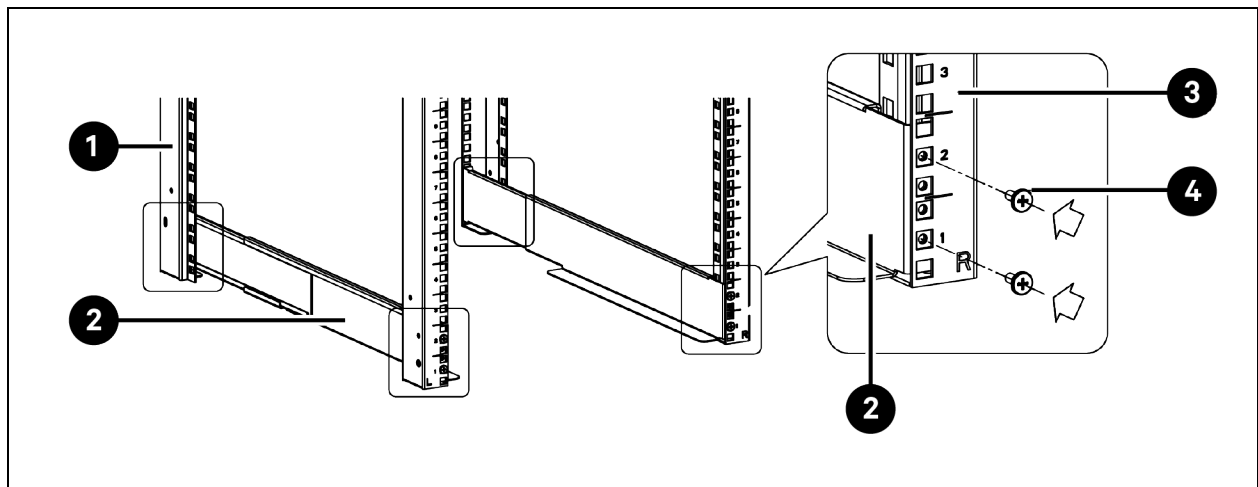
4 Installation

4.1 Installing the UPS (Optional)

Installing Rails

Adjust the length of the rail based on the distance between the front and rear vertical posts. Fix each rail on the bottom two rack units with four M5 x 12 Phillips screws.

Figure 4.1 Installing Rails

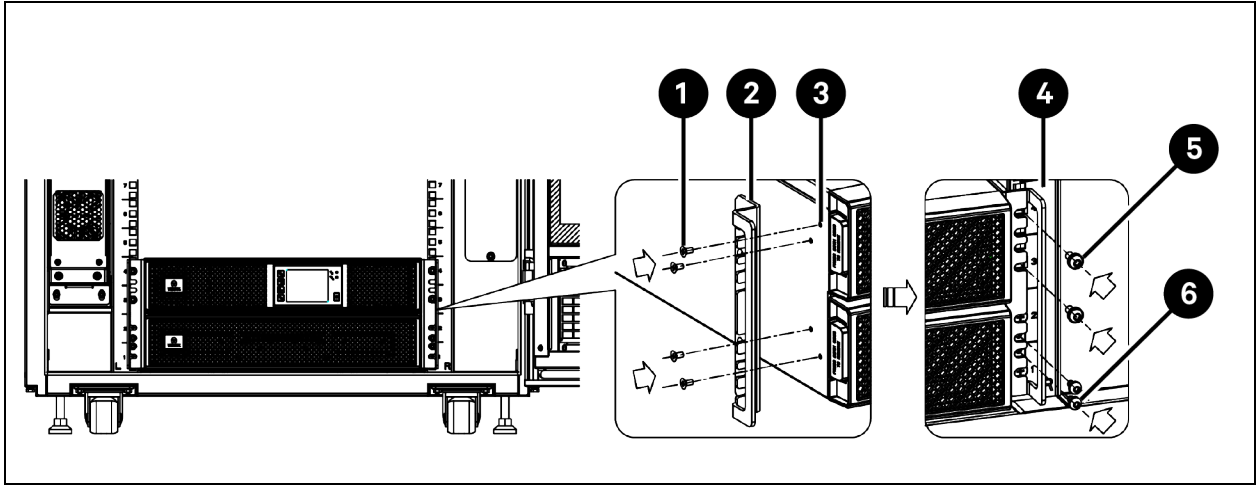


Item	Description	Item	Description
1	Rear left vertical post	3	Front right vertical post
2	Rail	4	M5 x 12 Phillips screw (8 pieces)

Installing the UPS

Install two hangers on the UPS by fixing each hanger with four M4 x 8 Phillips screws. Insert the UPS between the vertical posts and fix its hangers on the rails by fixing each hanger with two M6 x 20 Torx screws and two M5 x 16 Torx screws.

Figure 4.2 Installing the UPS



Item	Description	Item	Description
1	M4 x 8 Phillips screw (8 pieces)	4	Vertical post
2	Hanger	5	M6 x 20 Torx screw (4 pieces)
3	Hole on UPS	6	M5 x 16 Torx screw (4 pieces)

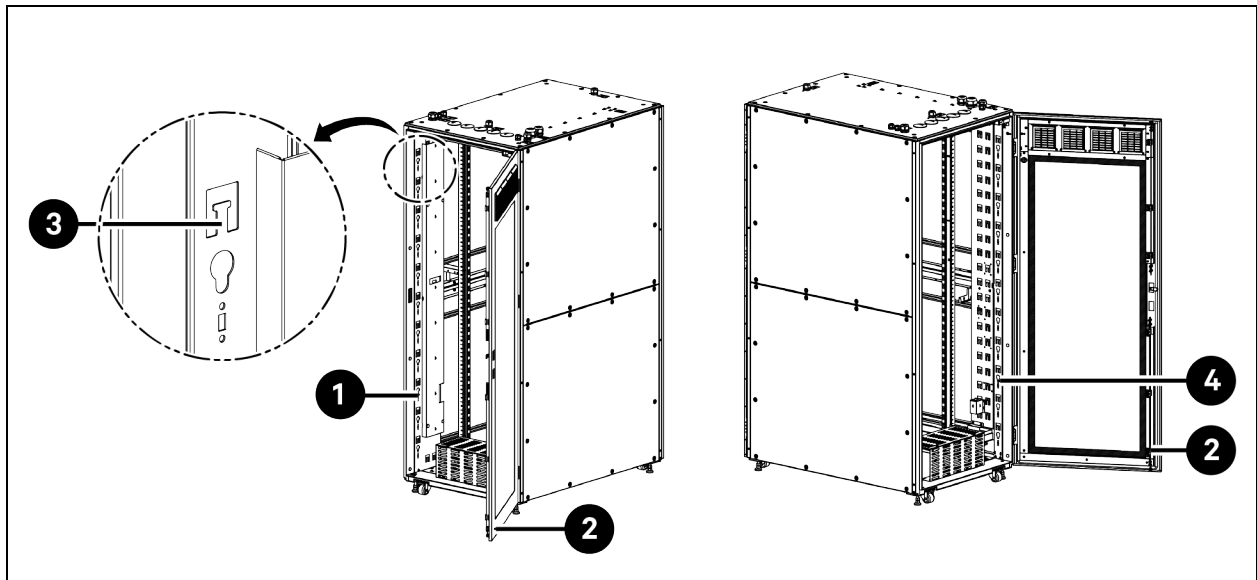
4.2 Installing the PDU (Optional)

Install the PDU on the rear mounting rail. If two PDUs are to be installed, install one on the left mounting rail (if you are facing the rear door), and the other on the right mounting rail.

To install the PDU:

1. Open the *rear door*.
2. On the left mounting rail, pass the tie wrap through the cut out illustrated in **Figure 4.3** below.
 - a. For the VS3354 and VS3354I cabinets, use the second cut out counting from the top and the second cut out counting from the bottom.
 - b. For the VS3350, VS3750, VS3350I, and VS3750I cabinets, use the third cut out counting from the top and the third cut out counting from the bottom.

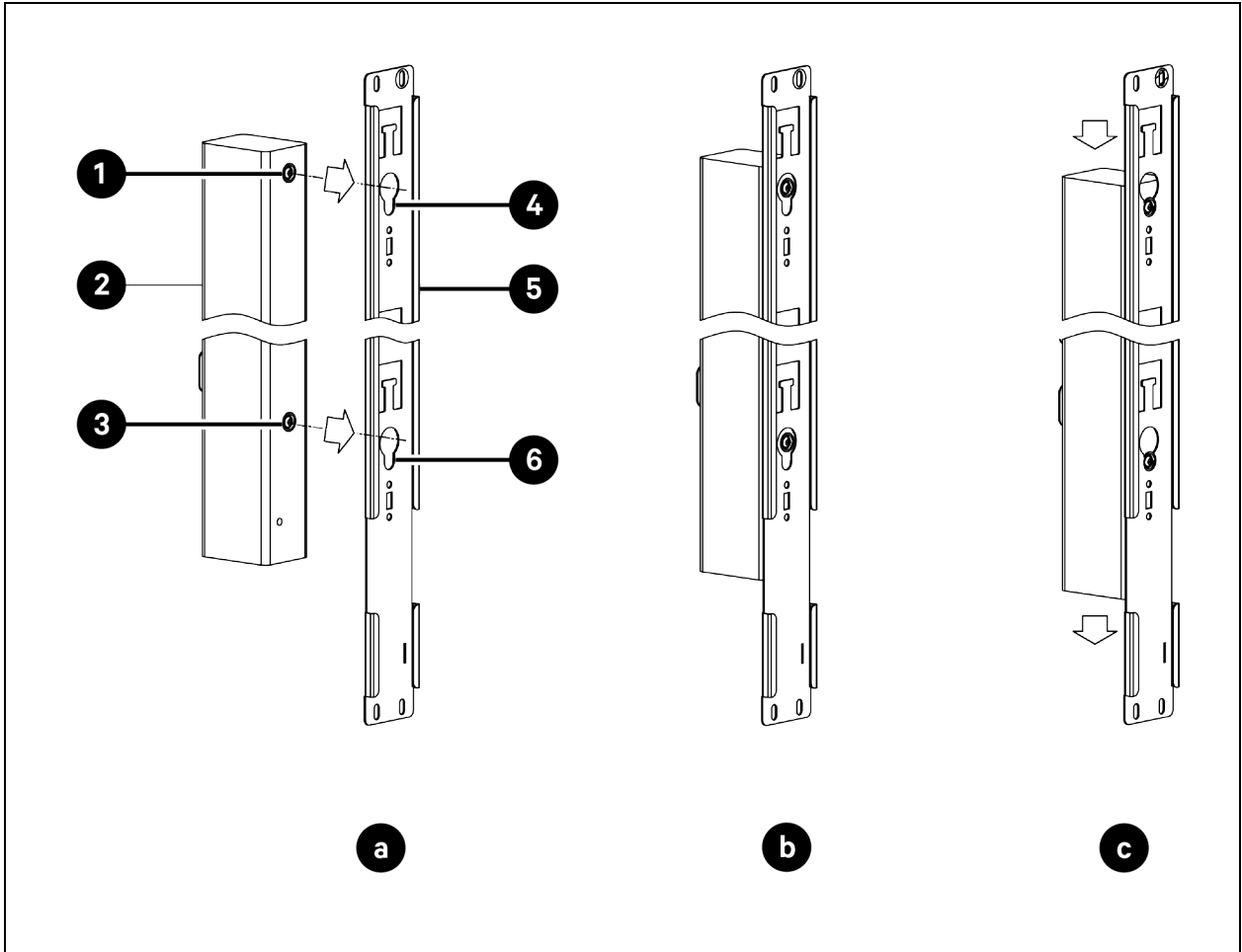
Figure 4.3 Installing the PDU on the Rear Mounting Rail



Item	Description	Item	Description
1	Left mounting rail for installing PDU1	3	Cut out for placing the tie wrap
2	Rear door	4	Right mounting rail for installing PDU2

3. Install the *PDU* along the mounting rail. Make sure that the end with the socket is placed near the bottom of the mounting rail.
 - a. Slide both *mounting pegs* into the slots on the rail.
 - b. Press the *PDU* onto the rail.
 - c. Push the *PDU* downward until it locks into position.

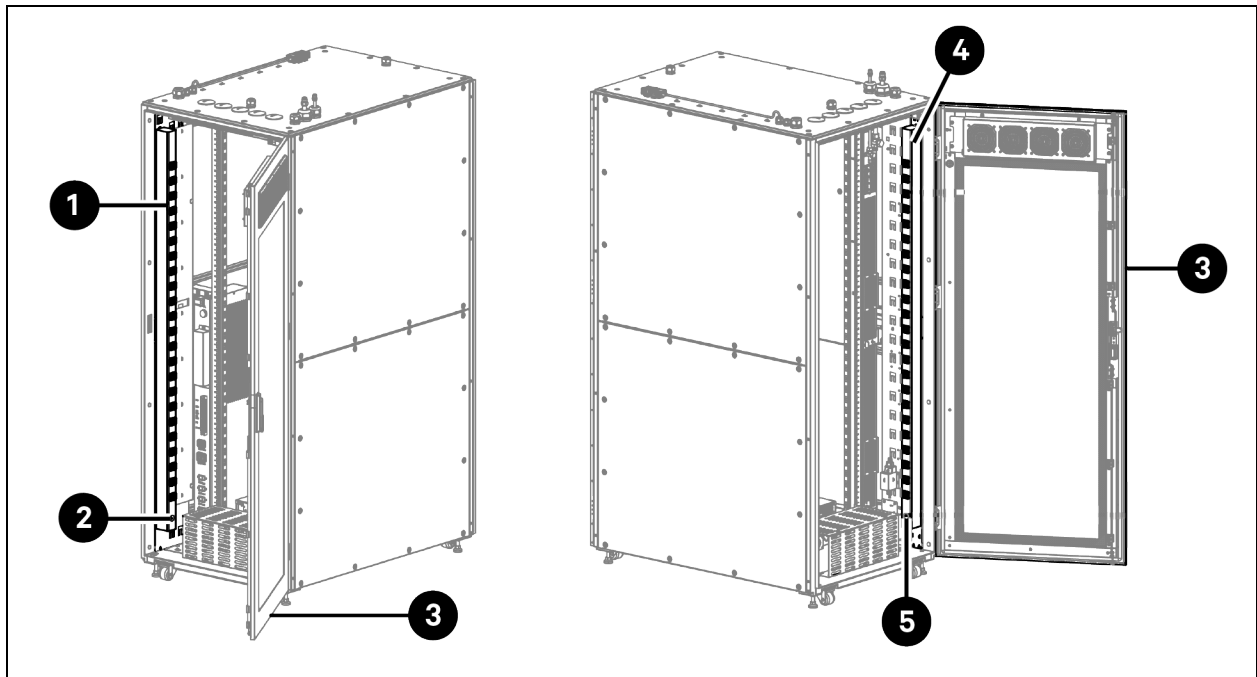
Figure 4.4 Installing the PDU



Item	Description	Item	Description
1	Mounting peg on the upper side of the PDU	4	Mounting slot on the upper side of the rail
2	PDU	5	Mounting rail
3	Mounting peg on the lower side of the PDU	6	Mounting slot on the lower side of the rail

4. Bind the two *tie wraps*, one near the top and the other near the bottom to further fix the PDU.

Figure 4.5 Installed PDU1 and PDU2

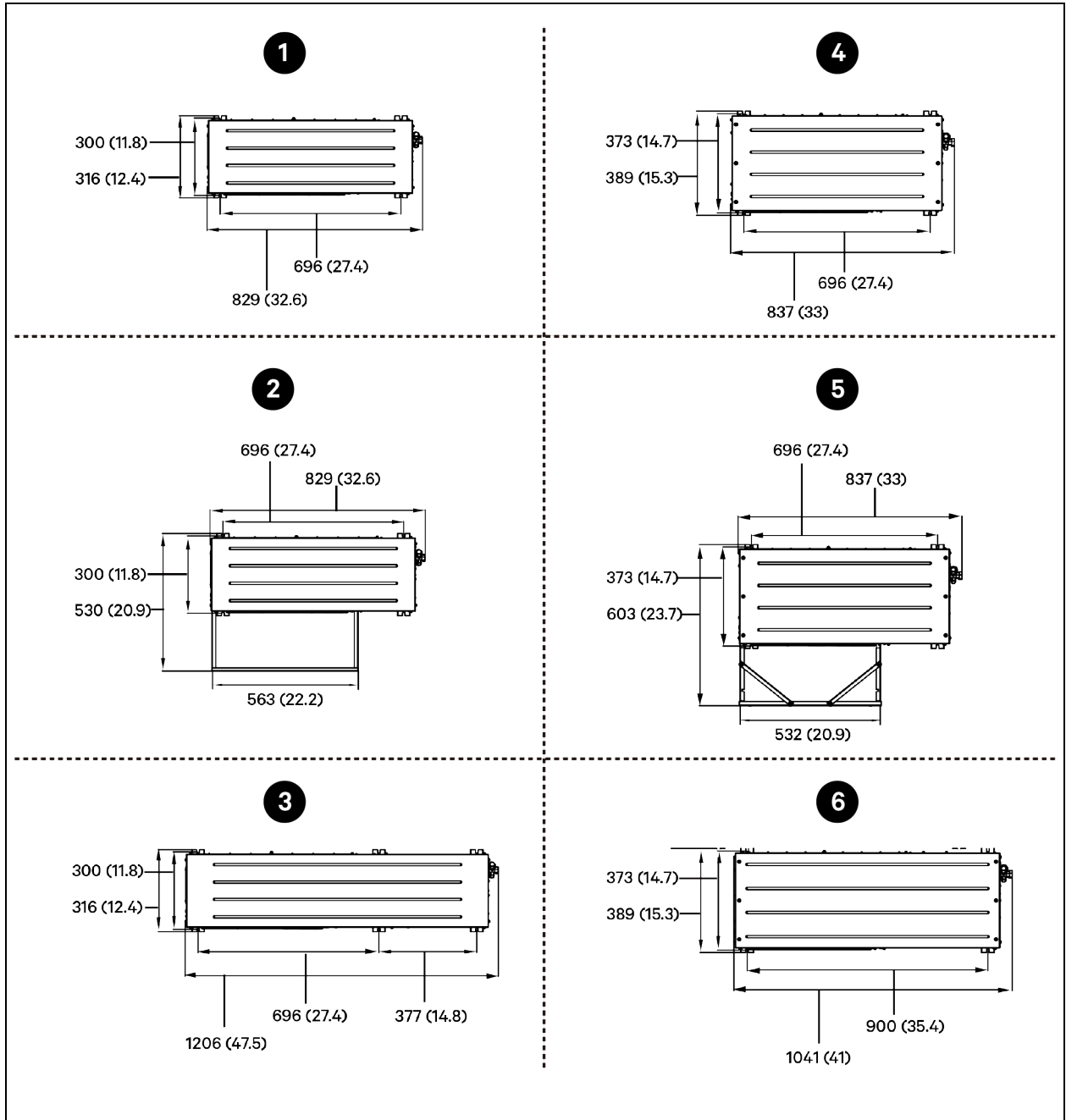


Item	Description	Item	Description
1	PDU1	4	PDU2
2	Socket on PDU1	5	Socket on PDU2
3	Rear door		

4.3 Installing the Condensing Unit

The evaporator of the air conditioner has been pre-installed in the cabinet. The condensing unit is shipped separately from the cabinet. You need to install the condensing unit on site.

Figure 4.6 Installation Dimensions of the Condensing Unit (Viewing from Top, mm (in))



Item	Description
1	ZCC03U and ZCC03C standard condensing unit
2	ZCC03U and ZCC03C standard condensing unit with air deflector
3	ZCL03U and ZCL03C low ambient condensing unit
4	ZCC07U and ZCC07C standard condensing unit
5	ZCC07U and ZCC07C standard condensing unit with air deflector
6	ZCL07U and ZCL07C low ambient condensing unit

4.3.1 Installing the Condensing Unit on the Top of the Cabinet

The standard condensing units of VS3354, VS3350, VS3354I, and VS3350I can be installed on the top of the cabinet. To install the condensing units on VS3350 and VS3350I, the height of the ceiling should be equal to or larger than 3.5 m (11.5 ft).

NOTE: When the standard condensing unit is installed on the top of the cabinet, it cannot be installed with an air deflector. When the standard condensing unit is installed in an indoor environment, it is not necessary to install the air deflector.

NOTE: The low ambient condensing unit cannot be installed on the top of the cabinet.

NOTE: The condensing unit must be installed vertically with its connectors on the same side of the cabinet's rear door. The following installation process takes the VS3354 cabinet as an example.

NOTE: Ensure that there is enough air circulation to prevent heat from gathering in the room.

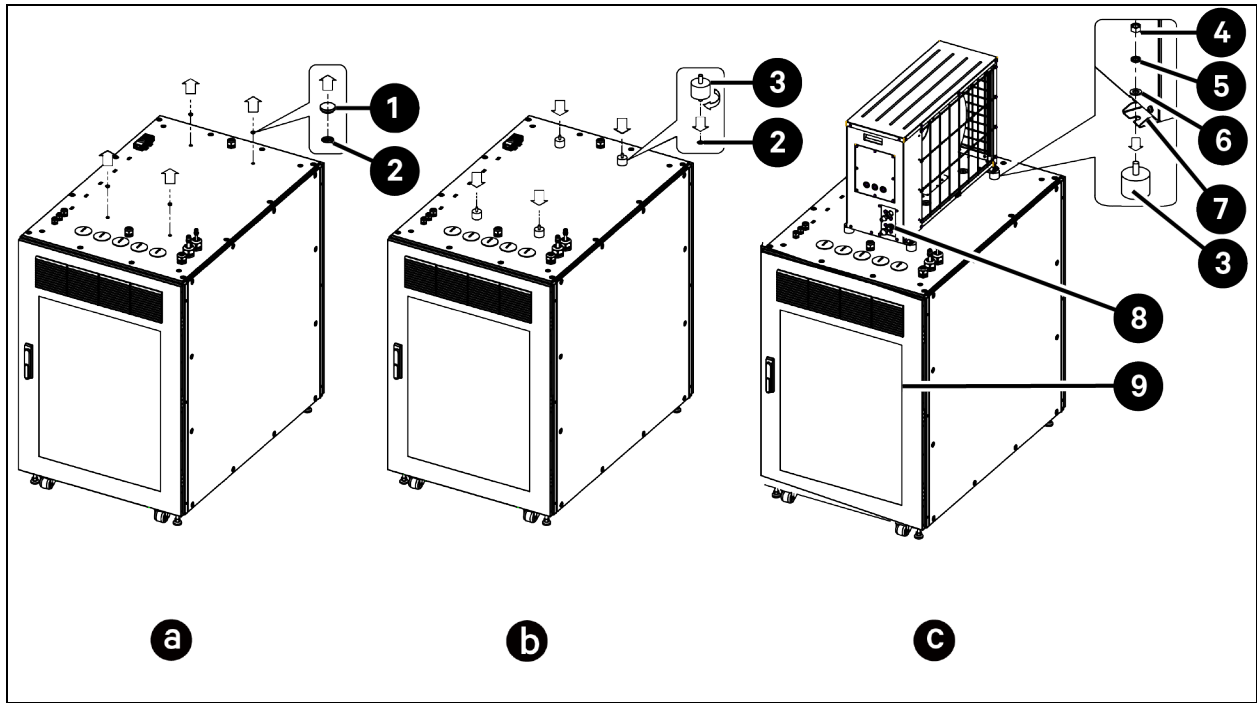
To install the condensing unit on the top of the cabinet and connect liquid pipe and gas pipe:

1. Install the *standard condensing unit* on the top of the cabinet.
 - a. Remove the four *sealing plugs* from the M8 threaded inserts on the cabinet top panel using a slotted screwdriver.
 - b. From the accessories bag, take out the kit for fixing the condensing unit on the cabinet top panel.
 - c. Install four *vibration damping mounts* in the M8 threaded inserts and fasten the mounts.
 - d. Place the *condensing unit* on the top panel, aligning base stand brackets with vibration damping mounts. After the condensing unit is level, install the M8 flat washer, M8 spring washer, and M8 Torx screw on each vibration damping mount. Fasten the *M8 Torx screws* with a torque of 13 to 15 Nm (9.6 to 11.1 lb-ft).



WARNING! The condensing unit must be secured tightly onto the cabinet. Falling over the condensing unit can cause equipment damage, serious injury, or death.

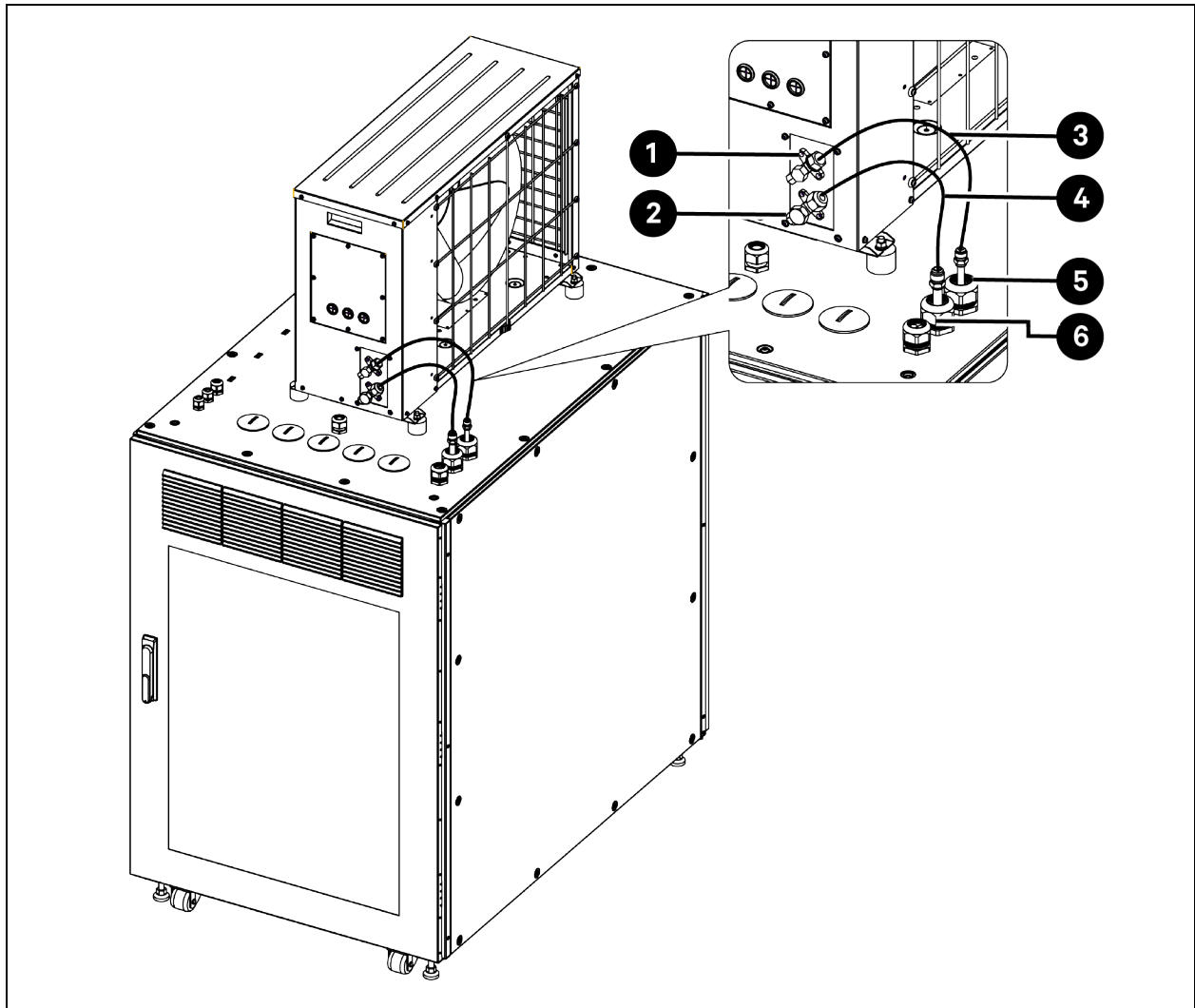
Figure 4.7 Installing the Condensing Unit on the Top of the Cabinet



Item	Description	Item	Description
1	Sealing plug (4 pieces)	6	M8 flat washer (4 pieces)
2	M8 threaded insert (4 pieces)	7	Condensing unit base stand bracket
3	Vibration damping mount (4 pieces)	8	Connectors for liquid and gas pipes
4	M8 Torx screw (4 pieces)	9	Rear door
5	M8 spring washer (4 pieces)		

2. Liquid pipe (9.52 mm (3/8 in)) and gas pipe (12.7 mm (1/2 in)), each 5 m (16.4 ft) long, are provided in the accessories bag. Connect one end of the liquid pipe to the liquid pipe connector on the cabinet top panel and the other end to the liquid pipe connector on the condensing unit. Connect one end of the gas pipe to the gas pipe connector on the cabinet top panel and the other end to the gas pipe connector on the condensing unit. The pipes can be cut to suit the distance between the cabinet and the condensing unit.

Figure 4.8 Connecting Gas Pipe and Liquid Pipe between Cabinet and Condensing Unit



Item	Description	Item	Description
1	Liquid pipe connector on condensing unit <ul style="list-style-type: none"> Connecting to \varnothing 9.52 mm (3/8 in) liquid pipe Coupling size: 5/8" - 18 UNF Torque value: 30 - 35 Nm (22.1 - 25.8 lb-ft) 	4	Gas pipe (pipe size: 1/2")
2	Gas pipe connector on condensing unit <ul style="list-style-type: none"> Connecting to \varnothing 12.7 mm (1/2 in) gas pipe Coupling size: 3/4" - 16 UNF Torque value: 40 - 45 Nm (29.5 - 33.2 lb-ft) 	5	Liquid pipe connector on cabinet top panel <ul style="list-style-type: none"> Connecting to \varnothing 9.52 mm (3/8 in) liquid pipe Coupling size: 5/8" - 18 UNF Torque value: 30 - 35 Nm (22.1 - 25.8 lb-ft)
3	Liquid pipe (pipe size: 3/8")	6	Gas pipe connector on cabinet top panel <ul style="list-style-type: none"> Connecting to \varnothing 12.7 mm (1/2 in) gas pipe

Item	Description	Item	Description
			<ul style="list-style-type: none"> Coupling size: 3/4" - 16 UNF Torque value: 40 - 45 Nm (29.5 - 33.2 lb-ft)

4.3.2 Installing the Condensing Unit in an Outdoor Environment

NOTE: When the standard condensing unit is installed in an outdoor environment and the temperature can be down to 0 °C (32 °F) or below, you need to install the air deflector on the condensing unit. The air deflector can help ensure the stability and reliability of the standard condensing unit running in a low-temperature environment. The standard condensing unit is shipped with an air deflector.

NOTE: When the standard condensing unit is installed in an outdoor environment and the temperature is always above 0 °C (32 °F), it is not necessary to install the air deflector.

NOTE: The low ambient condensing unit is not shipped with an air deflector.

Installing Air Deflector

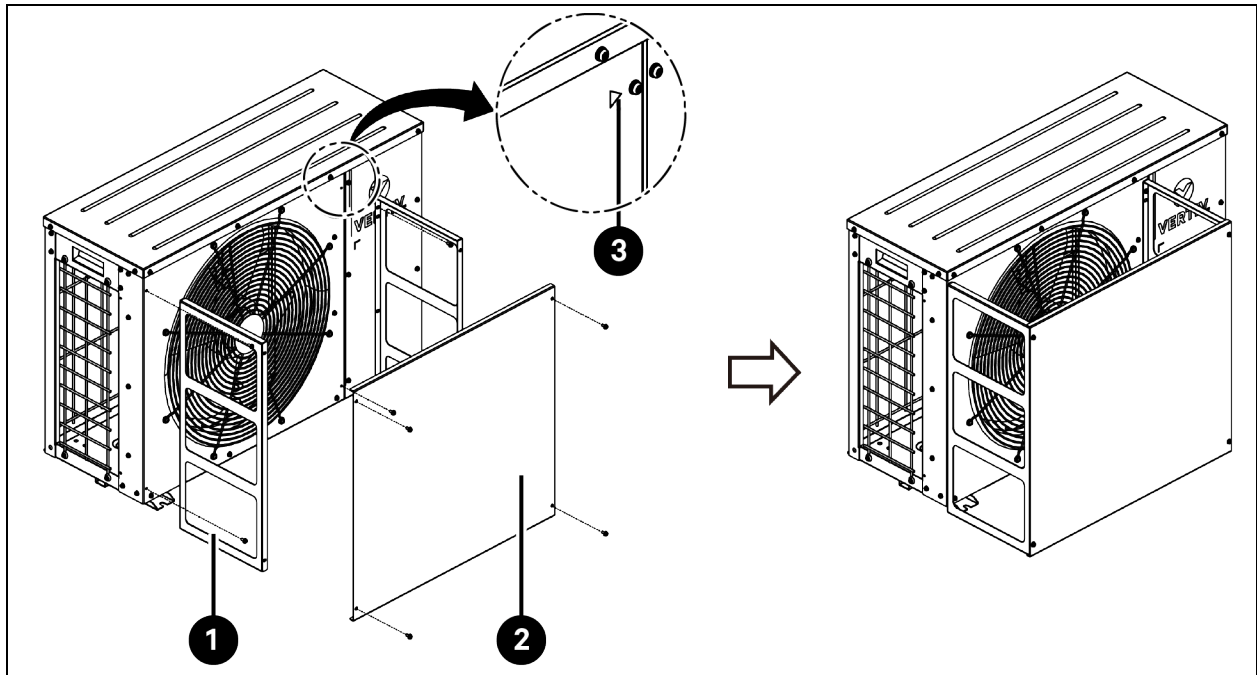
To install the air deflector for standard condensing units ZCC03U and ZCC03C:

1. On the condensing unit, remove four *M4 x 10 pan head screws* with triangular marks beside them. Save the screws for later use.
2. Install two *side panels* on the condensing unit. Fix each side panel with two *M4 x 10 pan head screws* removed from the previous step.
3. Install the *front panel* on the side panels with four *M4 x 10 pan head screws*.

Table 4.1 Size of Air Deflector

Standard Condensing Unit	Air Deflector Dimension (W x D x H) mm (In)
ZCC03C and ZCC03U	233 x 563 x 500 (9.2 x 22.2 x 19.7)
ZCC07C and ZCC07U	233 x 961 x 532 (9.2 x 37.8 x 20.9)

Figure 4.9 Installing Air Deflector for Standard Condensing Units (ZCC03U and ZCC03C)

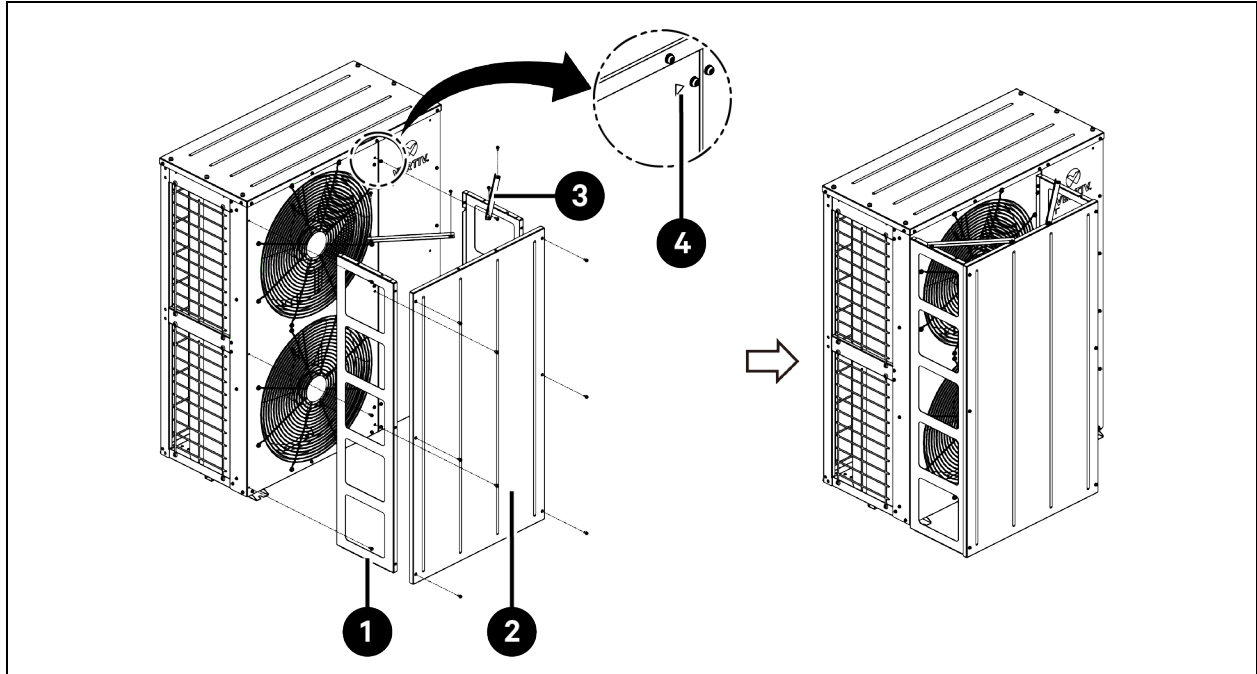


Item	Description	Item	Description
1	Side panel (2 pieces)	3	Triangular mark indicating the screw to remove
2	Front panel (1 piece)		

To install the air deflector for standard condensing units (ZCC07U and ZCC07C):

1. On the condensing unit, remove six *M4 x 10 pan head screws* with triangular marks beside them. Save the screws for later use.
2. Install two *side panels* on the condensing unit. Fix each side panel with three *M4 x 10 pan head screws* removed from the previous step.
3. Install the *front panel* on the side panels with six *M4 x 10 pan head screws*.
4. Install two *fastening brackets* on the top frames of the side panels and on the front panel. Fix each fastening bracket with two *M4 x 10 pan head screws*.

Figure 4.10 Installing Air Deflector for Standard Condensing Units (ZCC07U and ZCC07C)



Item	Description	Item	Description
1	Side panel (2 pieces)	3	Fastening bracket (2 pieces)
2	Front panel (1 piece)	4	Triangular mark indicating the screw to remove

Installing the Condensing Unit

NOTE: When the temperature is -15 °C (5 °F) or below, you must use the low ambient condensing unit.

NOTE: The condensing unit must be installed vertically. Place the condensing unit on a base which is at least 50 mm (1.97 in) higher than the ground and 50 mm (1.97 in) wider than the condensing unit. For the condensing unit with an air deflector, the base should also withstand the air deflector. For the size of the condensing unit and air deflector, see **Figure 4.6** on page 48. Fix the condensing unit to the base with expansion bolts.

NOTE: Do not install the condensing unit in an environment where snow may accumulate and where noise levels are considered crucial. Keep it in a clean environment, free of debris, dust, and foreign matter. The surroundings should not contain steam, hot gas, or exhaust gas.

NOTE: Install an oil trap every 7.5 m (24.6 ft) of the vertical gas pipe.

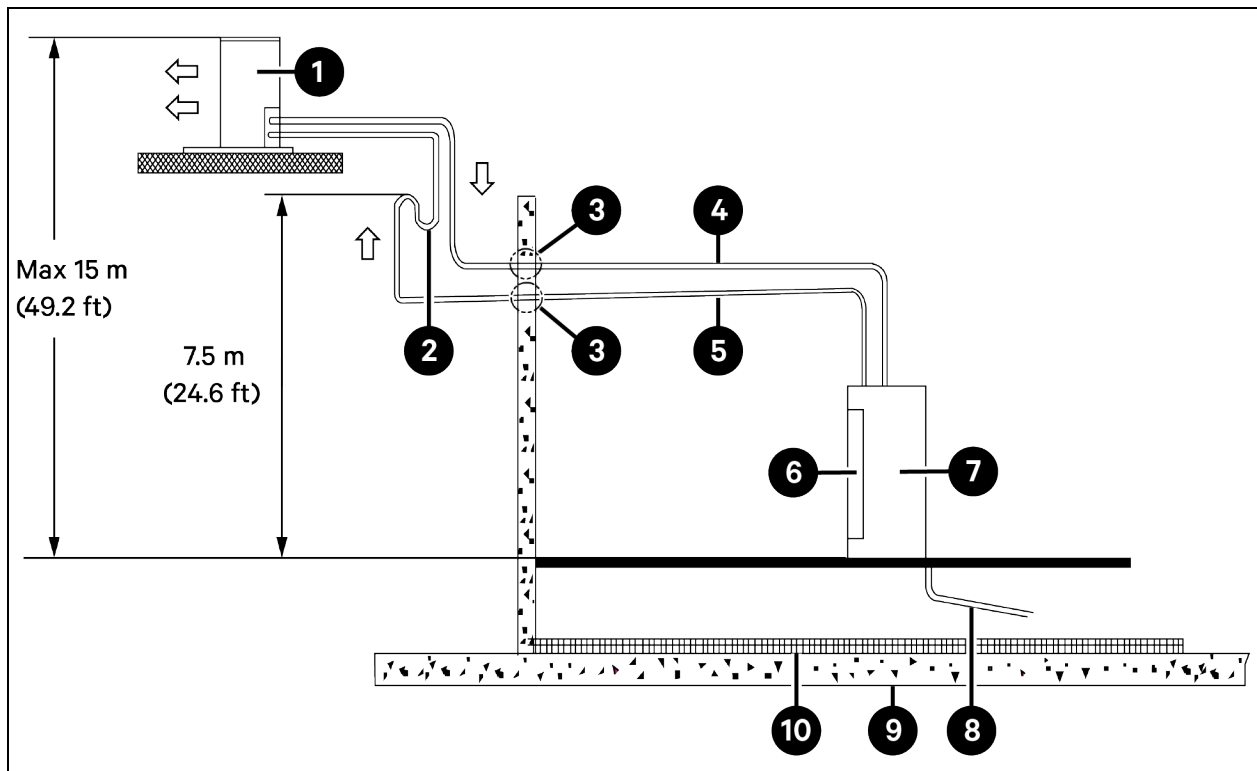
NOTE: The air conditioner has been pre-charged with FV50S base lubricating oil in factory. When the liquid pipe is longer than 10 m (32.8 ft), you need to add extra lubricating oil. You can fill the oil into the gas pipe before connecting the pipe between evaporator and condensing unit. For the amount of extra lubricating oil to charge, see **General Data for Charging Refrigerant and Lubricating Oil (UL Models)** on page 112 and **General Data for Charging Refrigerant and Lubricating Oil (CE Models)** on page 113.

The copper liquid pipe and gas pipe (each 5 m (16.4 ft) long) are provided in the accessories bag. If longer pipes are needed, use type ACR copper pipes and take into account the effect of pipe diameter on system pressure drop. The pressure drop of the refrigerant liquid through the pipe during the unit operation should not exceed 40 kPa (5 psi - 6 psi). For details, consult Vertiv technical support.

Maintain a minimum distance of 20 mm (0.8 in) between the gas pipe and liquid pipe. If this is not possible, insulate both pipes. Support both horizontal and vertical pipes with vibration damping clamps (including rubber gaskets). It is recommended to place clamps every 1.5 m to 2 m (4.9 ft to 6.6 ft).

Condensing Unit Placed Higher than the Cabinet

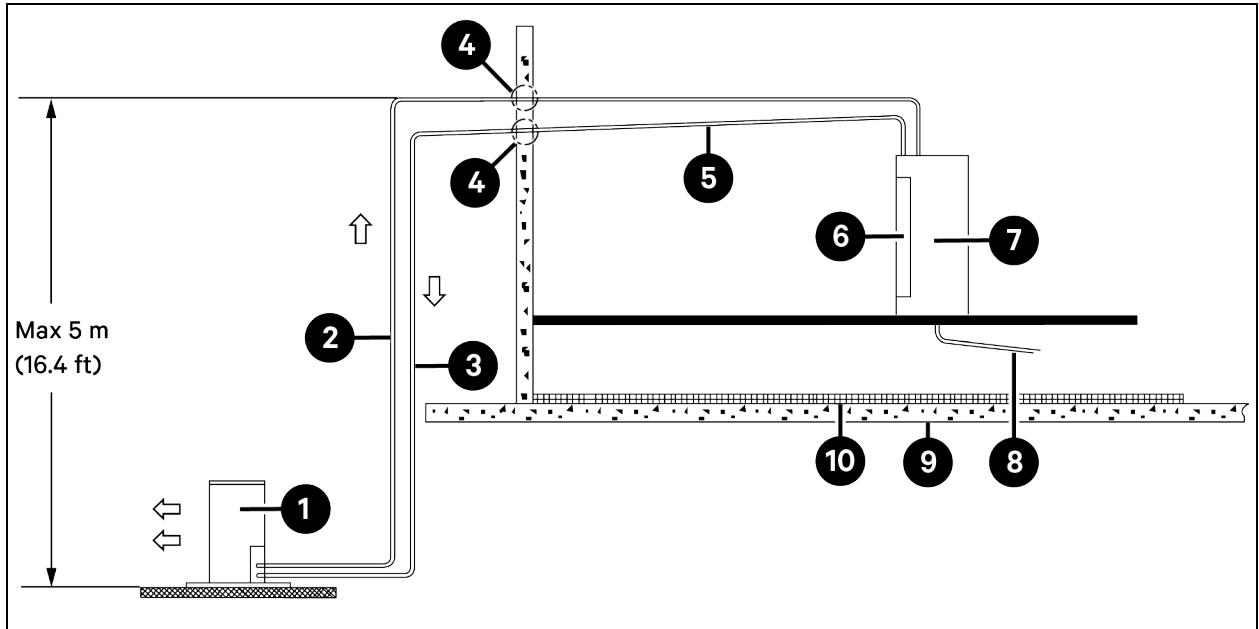
Figure 4.11 Condensing Unit Placed Higher than the Cabinet



Item	Description	Item	Description
1	Condensing unit	6	Evaporator
2	Oil trap	7	Cabinet
3	Wall bushing	8	Condensate drainage pipe with downward gradient
4	Liquid pipe	9	Floor
5	Gas pipe with 1% downward gradient	10	Heat insulation material

Condensing Unit Placed Lower than the Cabinet

Figure 4.12 Condensing Unit Placed Lower than the Cabinet



Item	Description	Item	Description
1	Condensing unit	6	Evaporator
2	Liquid pipe	7	Cabinet
3	Gas pipe	8	Condensate drainage pipe with downward gradient
4	Wall bushing	9	Floor
5	Gas pipe with 1% downward gradient	10	Heat insulation material

Table 4.2 Vertical Distance between Cabinet and Condensing Unit


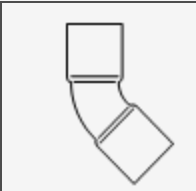

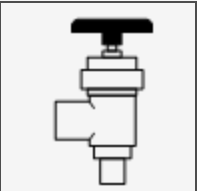
Relative Position	Value
Condensing unit placed higher than the cabinet	Maximum: 15 m (49.21 ft)
Condensing unit placed lower than the cabinet	Maximum: 5 m (16.40 ft)

Connect one end of the liquid pipe to the liquid pipe connector on cabinet top panel, and the other end to the liquid pipe connector on condensing unit. Connect one end of the gas pipe to the gas pipe connector on cabinet top panel, and the other end to the gas pipe connector on condensing unit.

Table 4.3 Data for Connecting Pipes

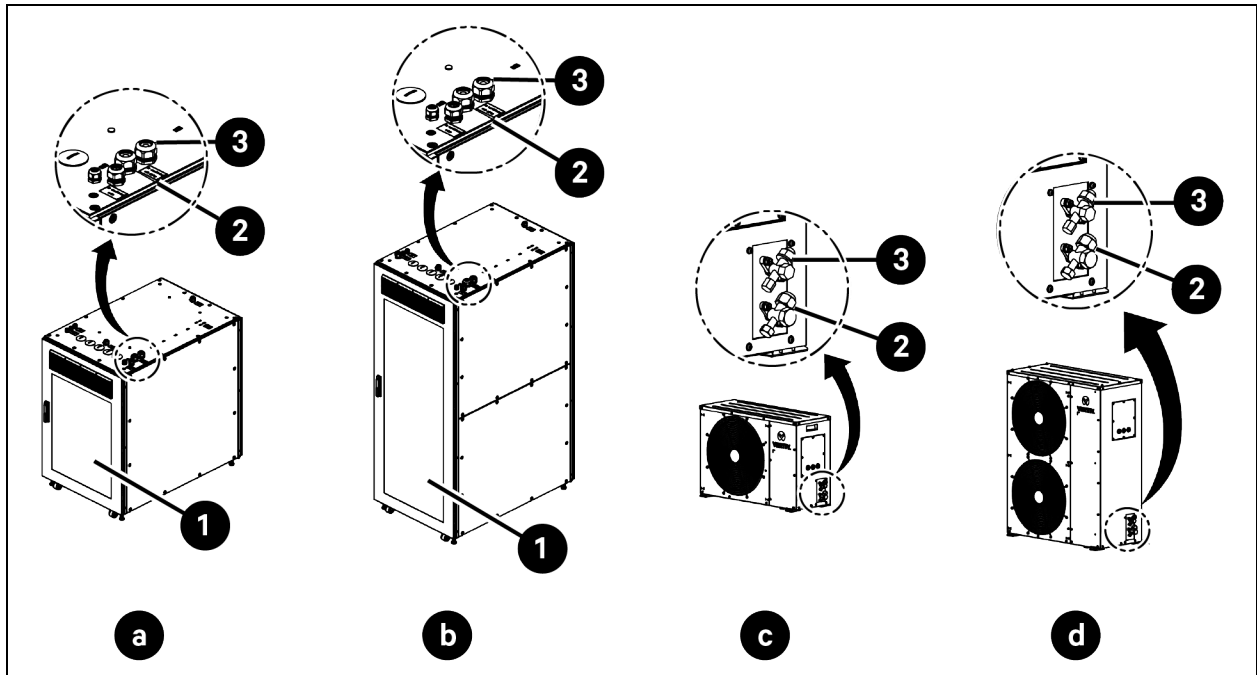
Cabinet Model	Condensing Unit Model	Connecting Pipe	Pipe Length (L) m (ft)	Pipe External Diameter x Pipe Thickness mm (in)
VS3354	ZCC03U	Liquid pipe	0 < L ≤ 10 (32.8)	ø 9.52 (3/8) x 0.8 (0.03)
VS3350	ZCL03U		10 (32.8) < L ≤ 50 (164.0)	ø 9.52 (3/8) x 0.8 (0.03)
VS3354I	ZCC03C	Gas pipe	0 < L ≤ 10 (32.8)	ø 12.7 (1/2) x 1 (0.04)
VS3350I	ZCL03C		10 (32.8) < L ≤ 50 (164.0)	ø 12.7 (1/2) x 1 (0.04)
VS3750 VS3750I	ZCC07U	Liquid pipe	0 < L ≤ 10 (32.8)	ø 9.52 (3/8) x 0.8 (0.03)
	ZCL07U		10 (32.8) < L ≤ 50 (164.0)	ø 12.7 (1/2) x 1 (0.04)
	ZCC07C	Gas pipe	0 < L ≤ 10 (32.8)	ø 16 (5/8) x 1 (0.04)
	ZCL07C		10 (32.8) < L ≤ 50 (164.0)	ø 16 (5/8) x 1 (0.04)

Table 4.4 Equivalent Length for Bends and Valves

Liquid Pipe Outer Diameter mm (in)	Equivalent Length m (ft)			
	90° Bend	45° Bend	180° U Bend	90° Shut off Valve
				
9.52 (3/8)	0.44 (1.44)	0.22 (0.72)	0.65 (2.13)	1.8 (5.91)
12.7 (1/2)	0.50 (1.64)	0.25 (0.82)	0.75 (2.46)	2.1 (6.90)
16.0 (5/8)	0.55 (1.8)	0.27 (0.88)	0.85 (2.79)	2.4 (7.87)

NOTE: Pipe length = Actual length + Equivalent length of piping components

Figure 4.13 Gas Pipe and Liquid Pipe Connectors on Cabinet and Condensing Unit



Item	Description	Item	Description
a	VS3354, VS3354I	1	Rear door
b	VS3350, VS3750, VS3350I, VS3750I	2	Gas pipe connector
c	ZCC03U, ZCL03U, ZCC03C, ZCL03C	3	Liquid pipe connector
d	ZCC07U, ZCL07U, ZCC07C, ZCL07C		

The torque for tightening the connectors on cabinet top panel and condensing unit is shown in Table 4.5 below.

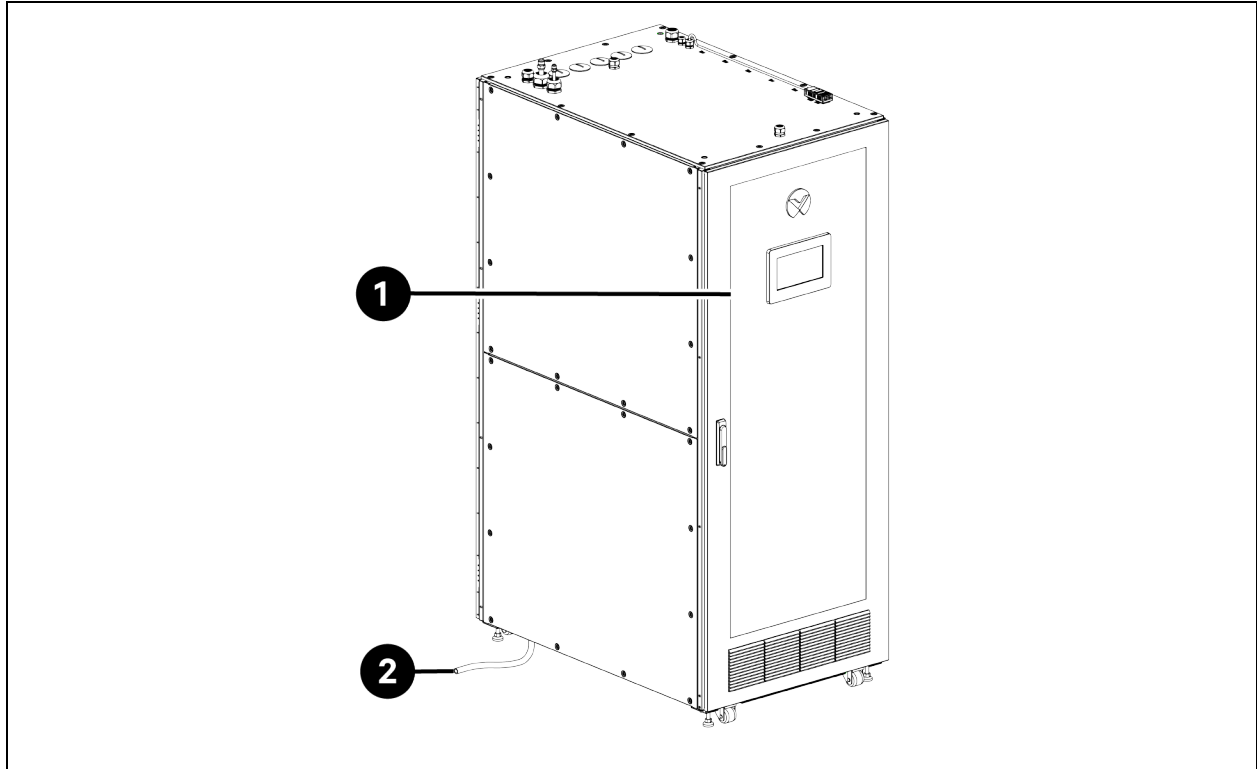
Table 4.5 Torque Value for Tightening the Piping Connections

Cabinet Model	Condensing Unit Model	Pipe Size	Coupling Size	Torque Value Nm (lb-ft)
VS3354	ZCC03U	3/8" liquid pipe	5/8" - 18 UNF	30 - 35 (22.1 - 25.8)
VS3350	ZCL03U			
VS3354I	ZCC03C	1/2" gas pipe	3/4" - 16 UNF	40 - 45 (29.5 - 33.2)
VS3350I	ZCL03C			
VS3750	ZCC07U	3/8" liquid pipe	5/8" - 18 UNF	30 - 35 (22.1 - 25.8)
	ZCL07U			
VS3750I	ZCC07C	5/8" gas pipe	7/8" - 14 UNF	50 - 55 (36.9 - 40.6)
	ZCL07C			

4.4 Routing the Condensate Drainage Pipe

The condensate water is drained by the gravity drainage pipe by default. The gravity drainage pipe (1 m (3.3 ft) long) has been factory wired from the drain pan to the outside of the cabinet. Remove the tie wrap that fix the pipe to the leveling foot and connect the pipe to the water drainage system.

Figure 4.14 Routing the Condensate Drainage Pipe



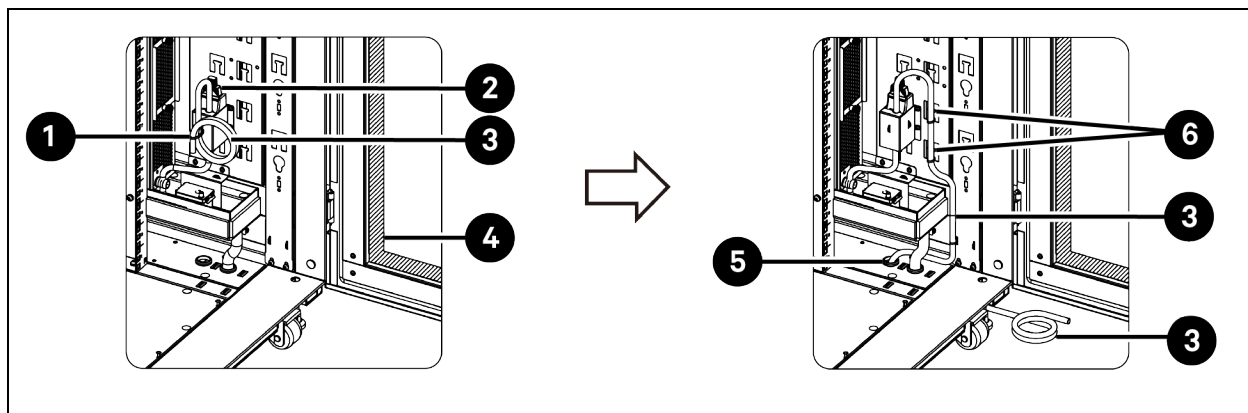
Item	Description
1	Front door
2	Condensate drainage pipe

If pump drainage is required, route the pump drainage pipe as follows:

1. Open the *rear door*.
2. Block the *gravity drainage pipe*. Fold the *gravity condensate drain line* back on itself a few times to block the drain and secure it with the necessary tie wraps provided.
3. Cut the *tie wrap* that binds the pump drainage pipe. Route the pipe as shown in **Figure 4.15** on the next page **Figure 4.15** on the next page and tie the pipe to the tie mounts. Route the pipe out of the cabinet from the outlet on the bottom panel. Connect the pipe to the water drainage system.

NOTE: The maximum lift of the pump is 7 m (23 ft).

Figure 4.15 Routing Pump Drainage Pipe



Item	Description	Item	Description
1	Tie wrap	4	Rear door
2	Pump	5	Outlet on bottom panel for pump drainage pipe
3	Pump drainage pipe	6	Tie mount

4.5 Installing the Intelligent Doorlock (Optional)

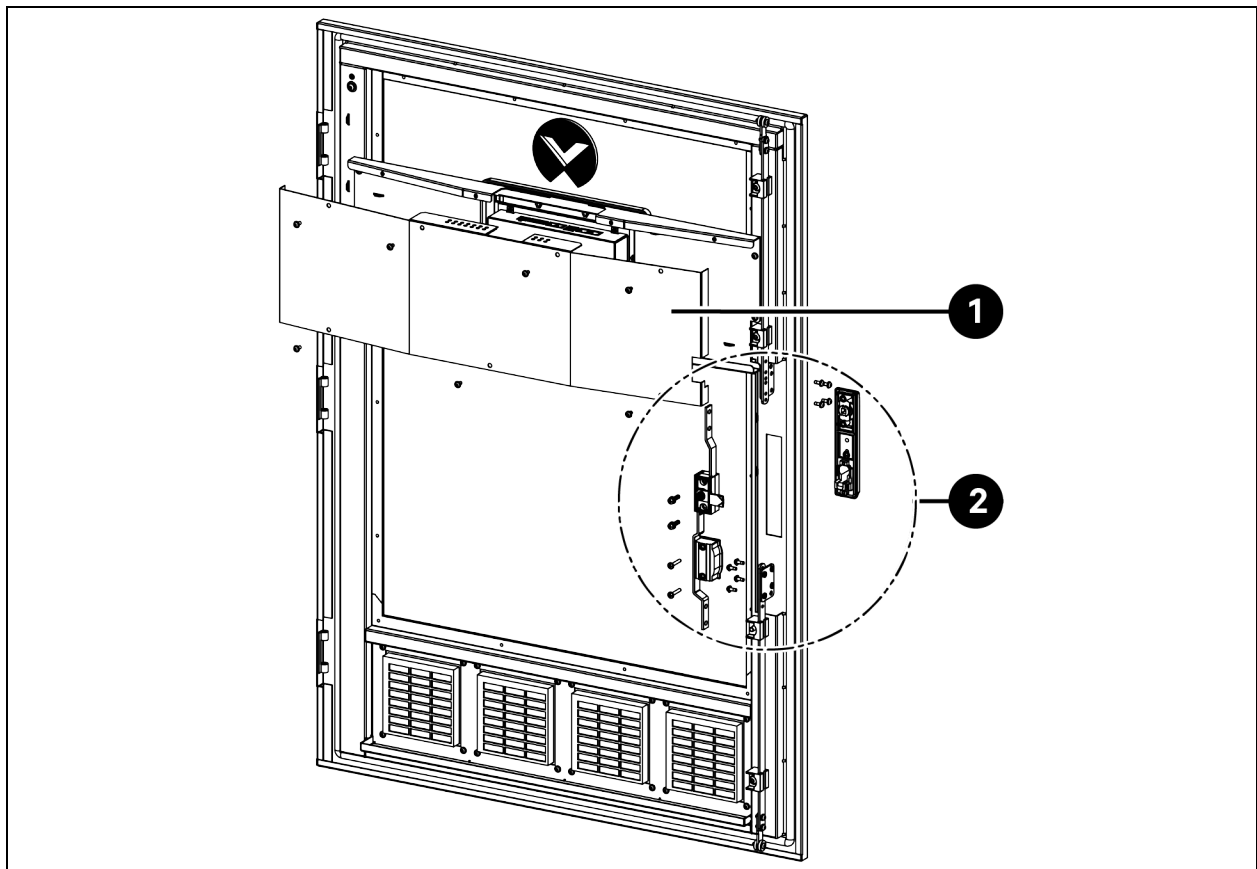
To install the intelligent doorlock (TANlock intelligent doorlock), you need to first remove the existing doorlock from the cabinet.

4.5.1 Removing the Existing Doorlock

Removing the Existing Doorlock from the Front Door of Vertiv™ SmartCabinet™ ID VS3354

To remove the existing doorlock from the front door of Vertiv™ SmartCabinet™ ID VS3354, remove the doorlock first and then remove the HMI cover.

Figure 4.16 Removing the Doorlock and the HMI Cover from the Front Door

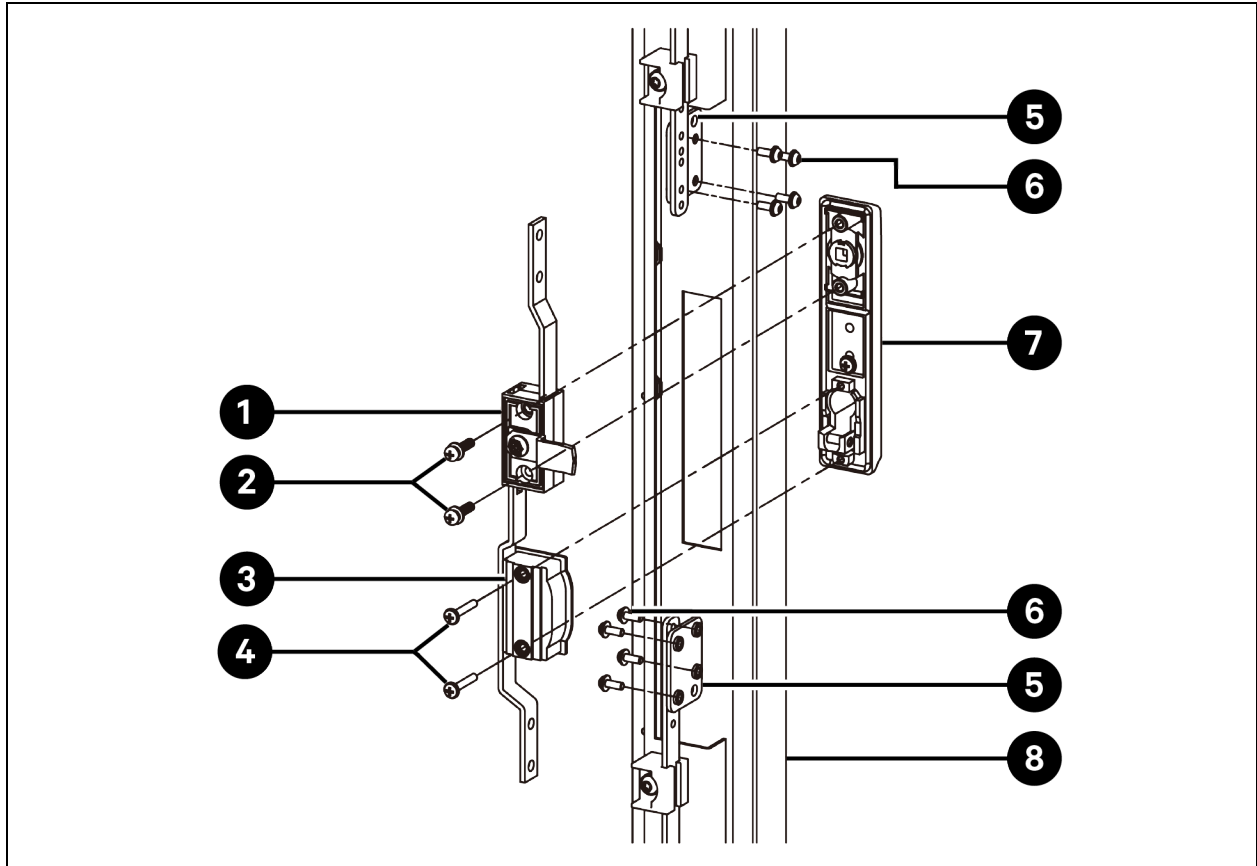


Item	Description
1	Removing the HMI cover
2	Removing the doorlock

To remove the doorlock:

1. Hold the *rod control* and the *doorlock handle* in case they drop during the removal process. Remove two *M5 × 18 Phillips screws* from the rod control. Remove two *M4 × 25 Phillips screws* from the doorlock rear cover. Remove the *doorlock handle*.
2. Remove four *M4 × 12 Torx screws* from the upper rod and remove the rod connection bracket. Remove four *M4 × 12 Torx screws* from the lower rod and remove the rod connection bracket. Remove the *rod control*. Save two rod connection brackets and four screws for later use.

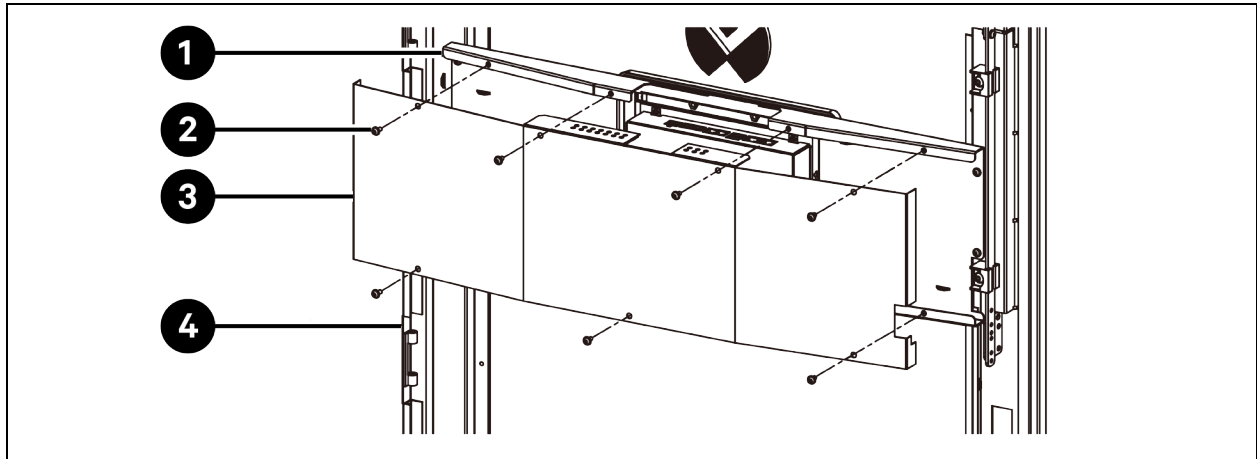
Figure 4.17 Removing the Doorlock from the Front Door



Item	Description	Item	Description
1	Rod control	5	Rod connection bracket (2 pieces)
2	M5 × 18 Phillips screw (2 pieces)	6	M4 × 12 Torx screw (8 pieces)
3	Doorlock rear cover	7	Doorlock handle
4	M4 × 25 Phillips screw (2 pieces)	8	Front door

To remove the HMI cover, remove seven M4 × 10 Torx screws from the HMI cover and remove the cover from the HMI installation plate. Save the screws and the cover for later use.

Figure 4.18 Removing the HMI Cover from the Front Door

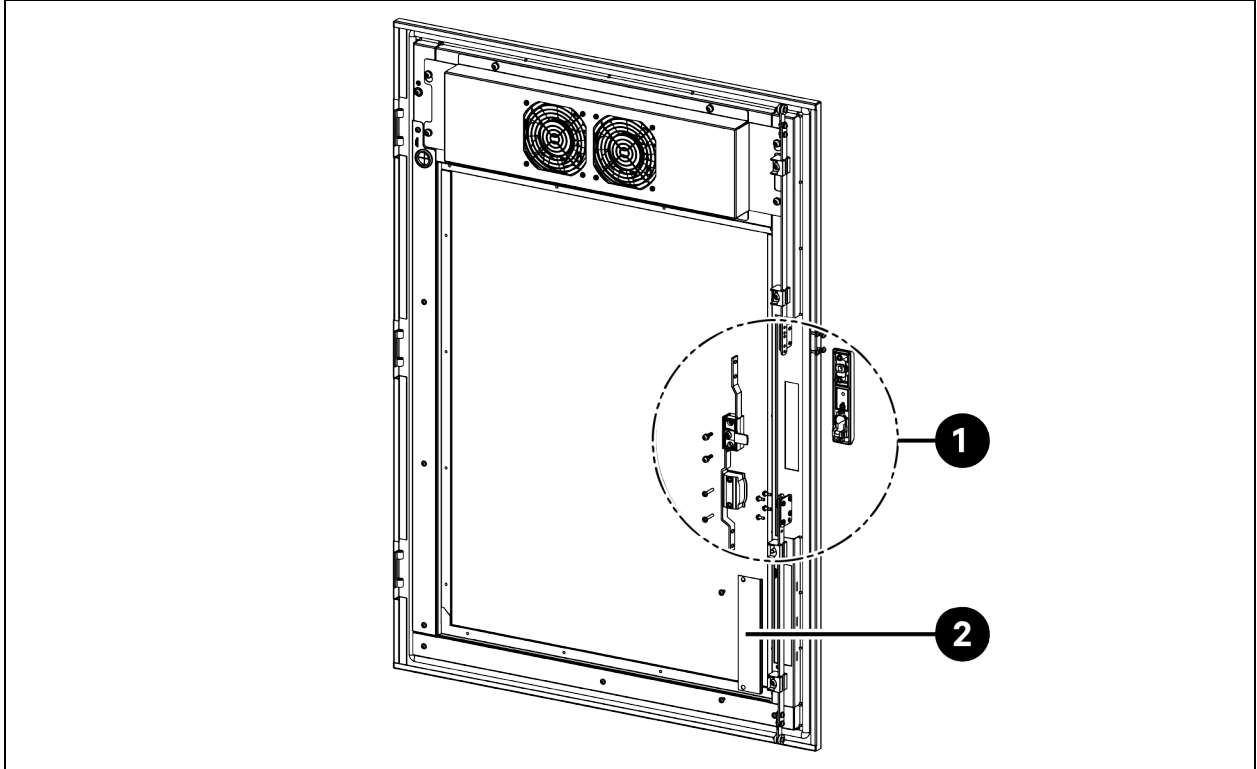


Item	Description	Item	Description
1	HMI installation plate	3	HMI cover
2	M4 × 10 Torx screw (7 pieces)	4	Front door

Removing the Existing Doorlock from the Rear Door of Vertiv™ SmartCabinet™ ID VS3354

To remove the existing doorlock from the rear door of Vertiv™ SmartCabinet™ ID VS3354, remove the doorlock first and then remove the cable cover.

Figure 4.19 Removing the Doorlock and the Cable Cover from the Rear Door



Item	Description
1	Doorlock
2	Cable cover

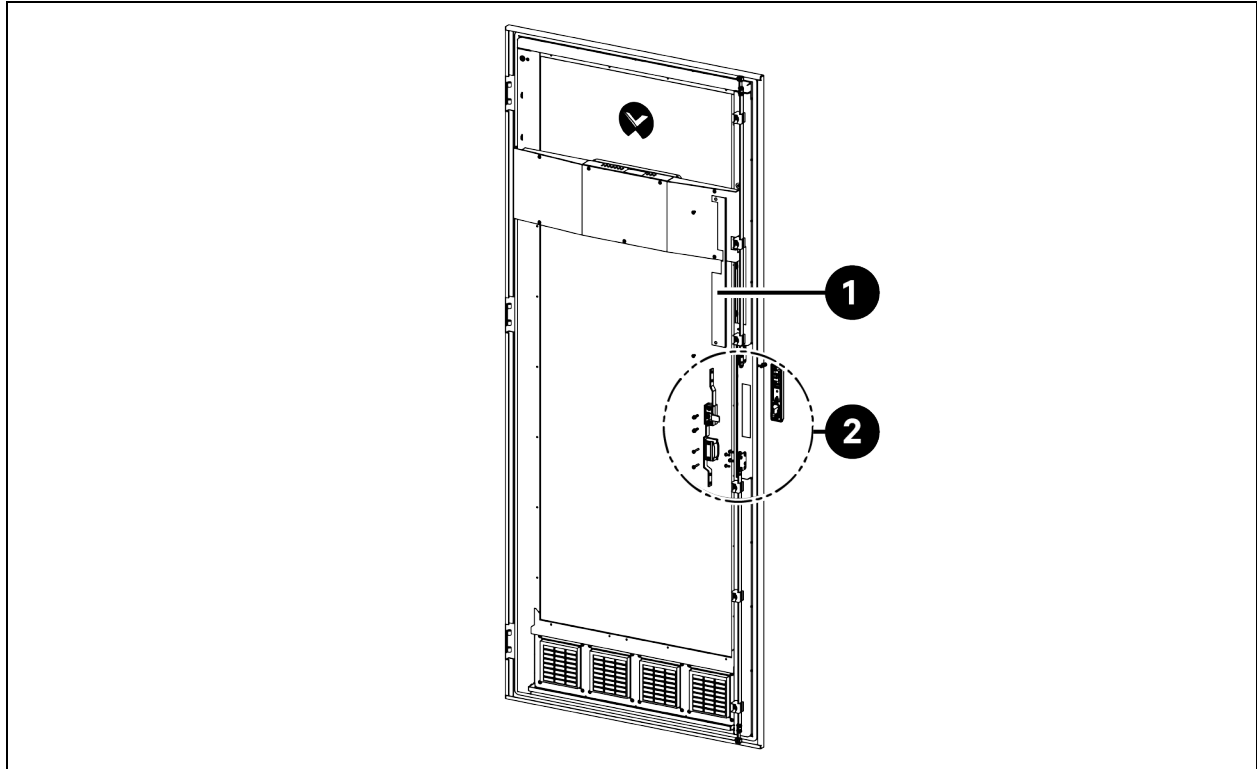
To remove the doorlock, refer to the process in **Figure 4.17** on page 62.

To remove the cable cover, remove two M4 × 10 Torx screws from the cable cover and remove the cover. Save the screws and the cover for later use.

Removing the Existing Doorlock from the Front Door of Vertiv™ SmartCabinet™ ID VS3750

To remove the existing doorlock from the front door of Vertiv™ SmartCabinet™ ID VS3750, remove the doorlock first and then remove the cable cover.

Figure 4.20 Removing the Doorlock and the Cable Cover from the Front Door

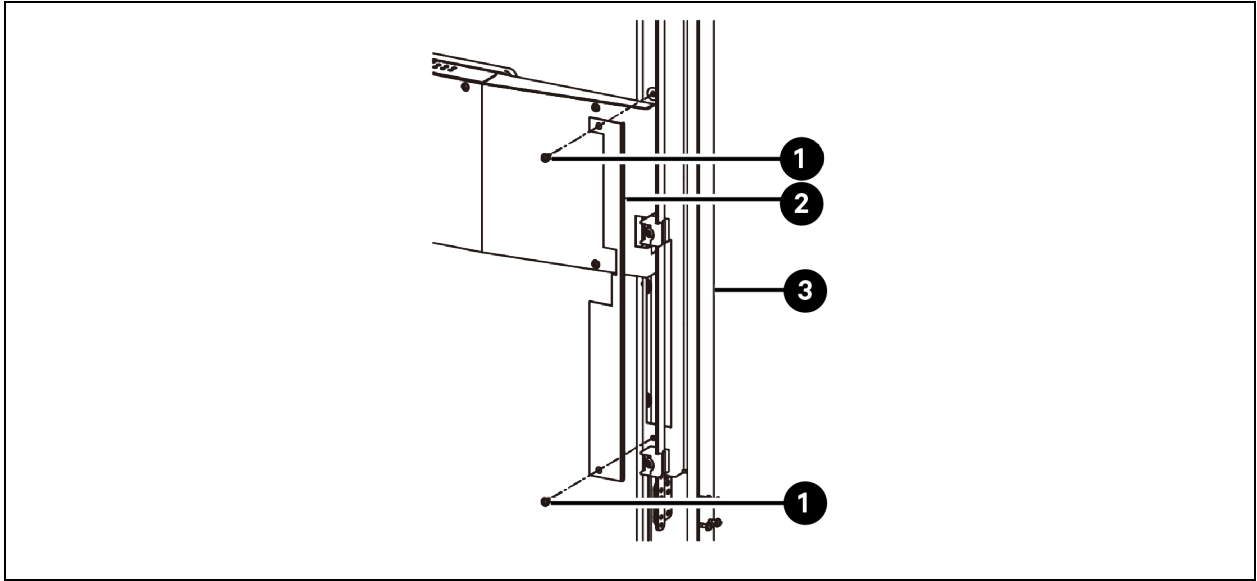


Item	Description
1	Cable cover
2	Doorlock

To remove the doorlock, refer to the process in **Figure 4.17** on page 62.

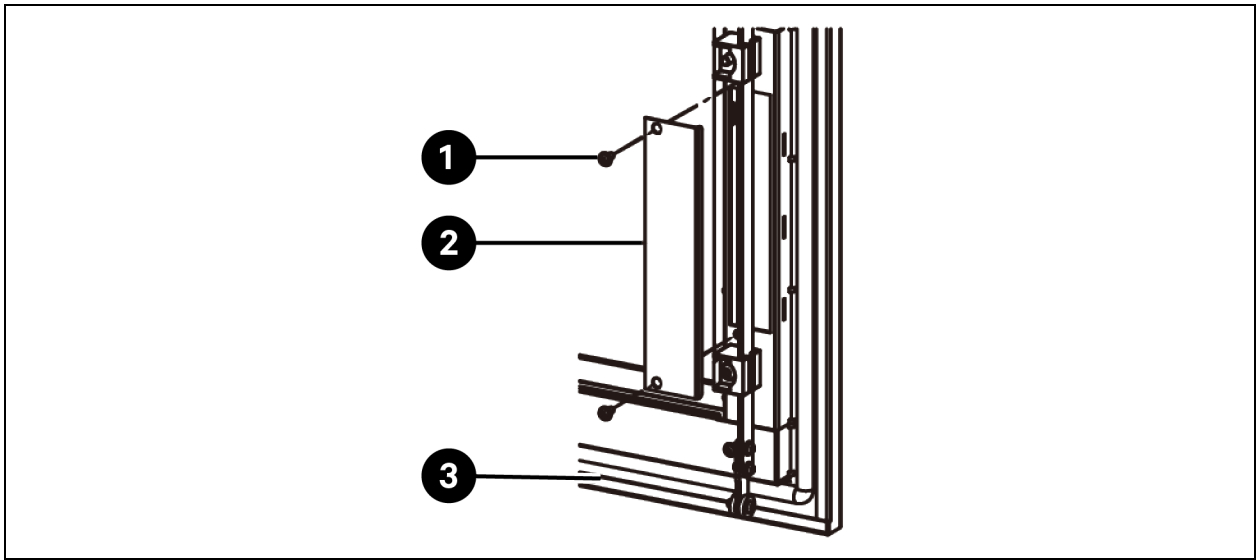
To remove the cable cover, remove two *M4 × 10 Torx screws* from the cable cover and remove the cover. Save the screws and the cover for later use.

Figure 4.21 Removing the Cable Cover from the Front Door



Item	Description	Item	Description
1	M4 × 10 Torx screw (2 pieces)	3	Front door
2	Cable cover		

Figure 4.22 Removing the Cable Cover from the Rear Door

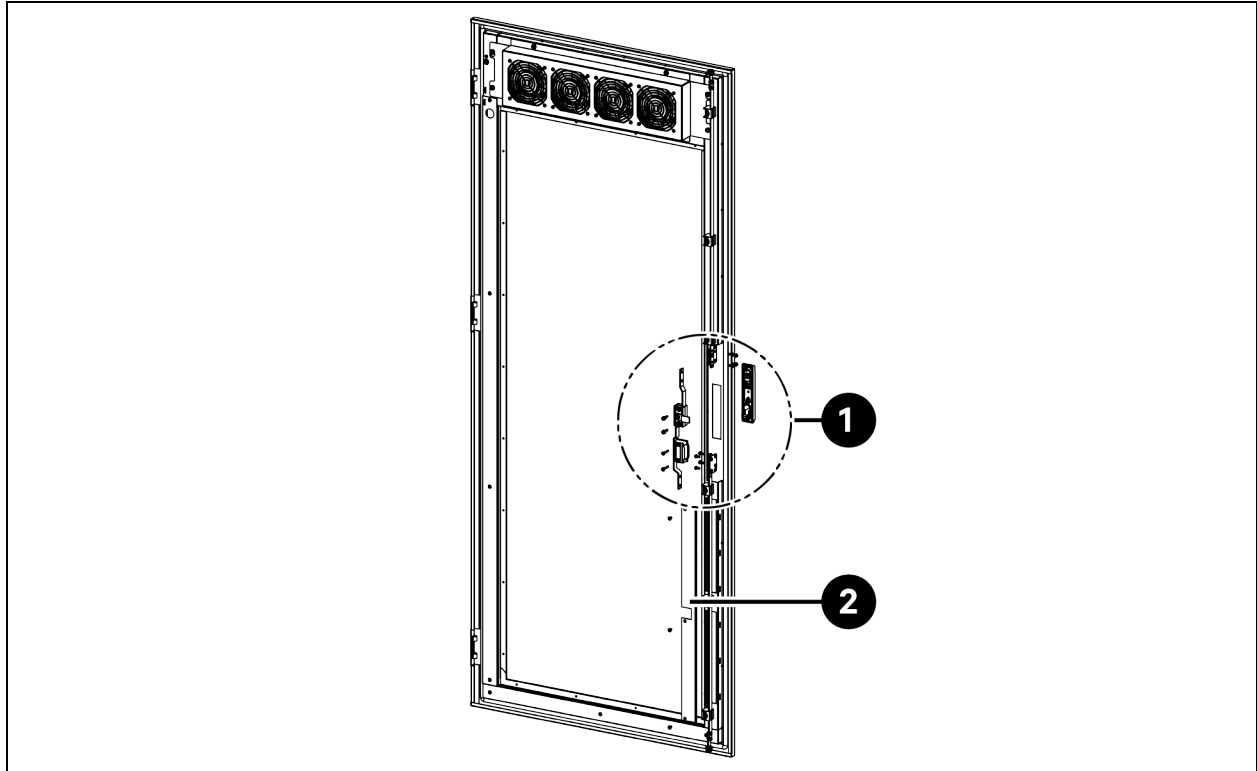


Item	Description	Item	Description
1	M4 × 10 Torx screw (2 pieces)	3	Rear door
2	Cable cover		

Removing the Existing Doorlock from the Rear Door of Vertiv™ SmartCabinet™ ID VS3750

To remove the existing doorlock from the rear door of Vertiv™ SmartCabinet™ ID VS3750, remove the doorlock first and then remove the cable cover.

Figure 4.23 Removing the Doorlock and the Cable Cover from the Rear Door

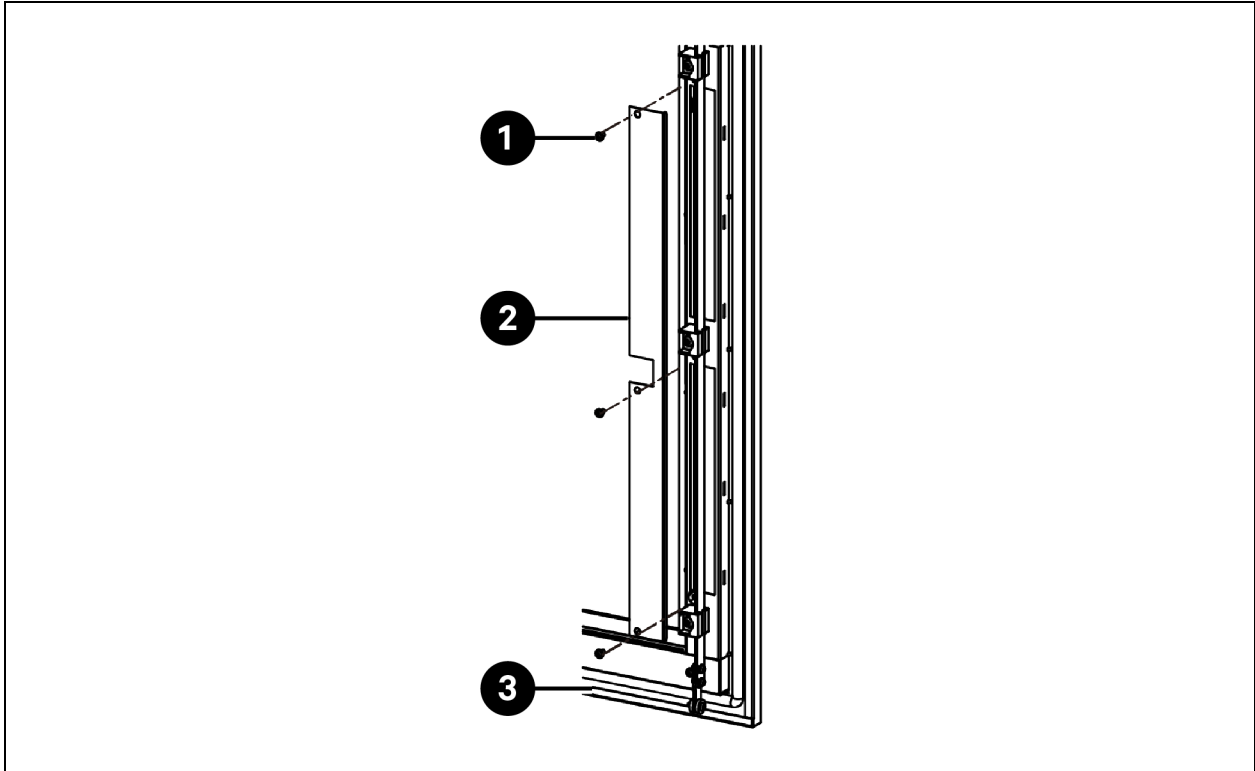


Item	Description
1	Doorlock
2	Cable cover

To remove the doorlock, refer to the process in **Figure 4.17** on page 62.

To remove the cable cover, remove three M4 × 10 Torx screws from the cable cover and remove the cover. Save the screws and the cover for later use.

Figure 4.24 Removing the Cable Cover from the Rear Door



Item	Description	Item	Description
1	M4 × 10 Torx screw (3 pieces)	3	Rear door
2	Cable cover		

4.5.2 Installing the Intelligent Doorlock

Installing the Intelligent Doorlock on the Front Door of Vertiv™ SmartCabinet™ ID VS3354

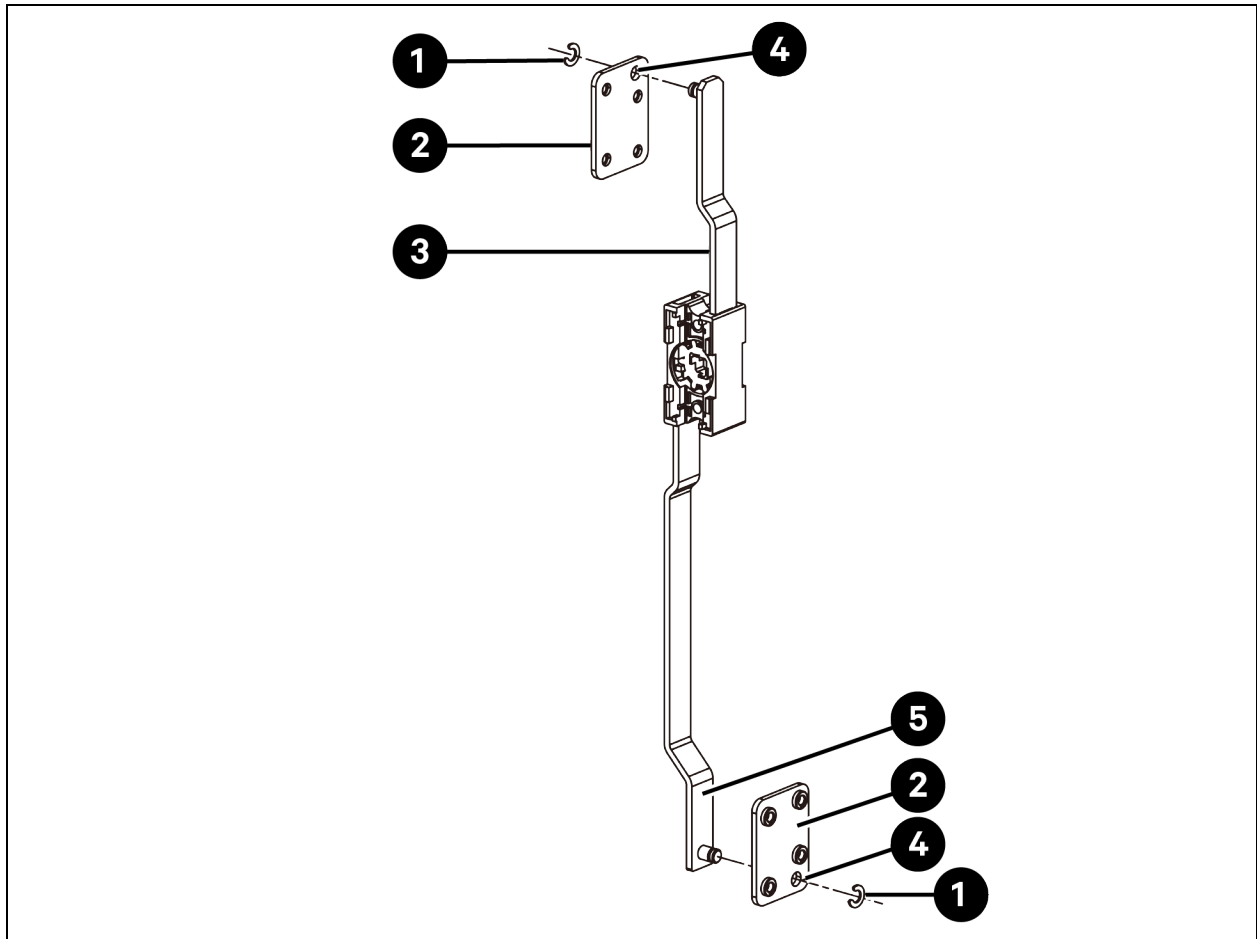
To install the intelligent doorlock on the front door of Vertiv™ SmartCabinet™ ID VS3354, install the rod connection brackets on the rod, install the rod control and the intelligent doorlock on the front door, connect the Ethernet cable to the intelligent doorlock, and then install the HMI cover.

To install the rod connection brackets on the rod:

1. Place each rod connection bracket on the axis of the rod through the reserved hole. Make sure that the side of the bracket with four press-in nuts do not face the rod.
2. Click the *retaining ring* on the axis slot to fix the connection bracket to the rod.

NOTE: The brackets for the upper rod and the lower rod are installed in different orientations, as shown in **Figure 4.25** on the facing page.

Figure 4.25 Installing the Rod Connection Brackets on the Rod

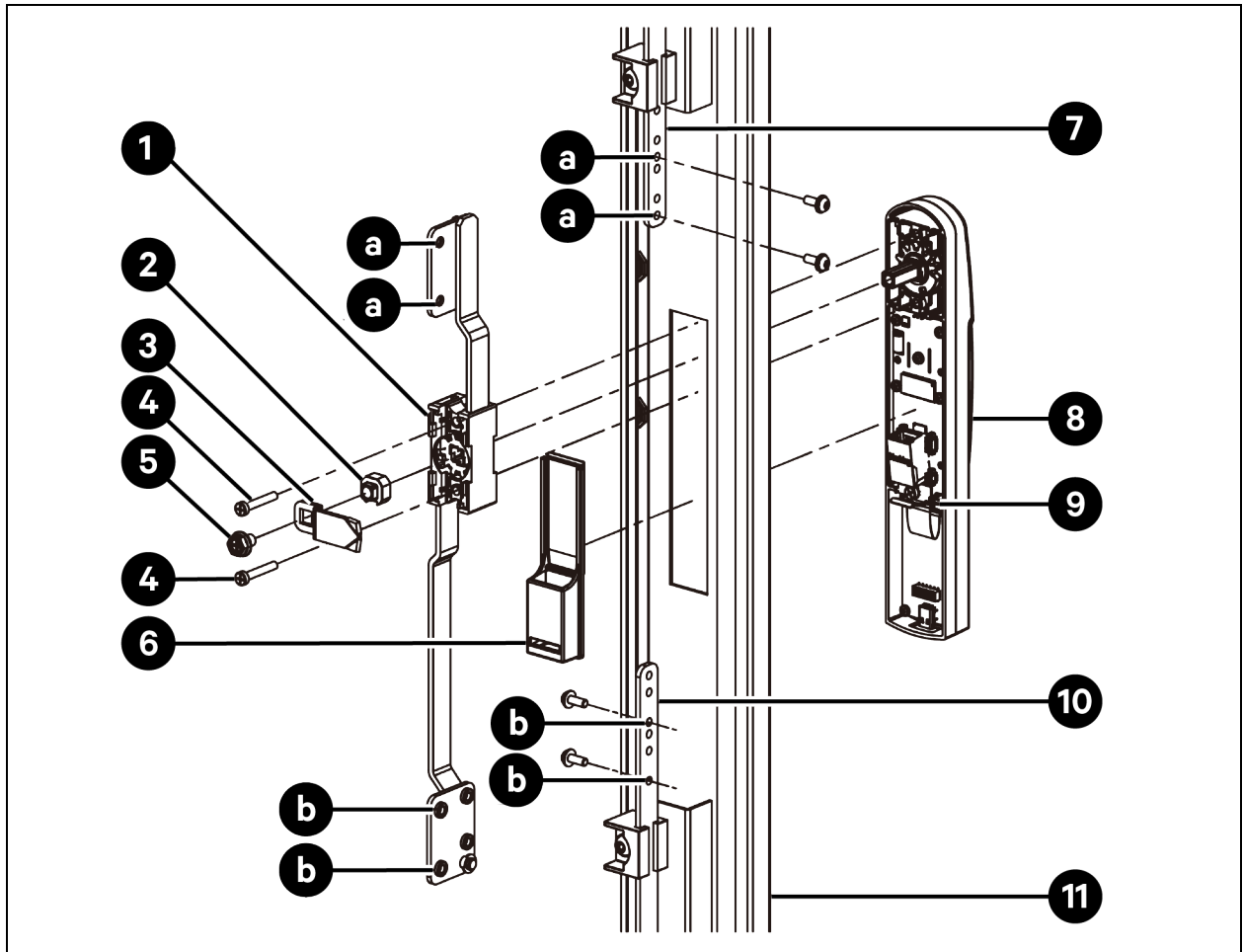


Item	Description	Item	Description
1	Retaining ring (2 pieces)	4	Reserved hole
2	Rod connection bracket (2 pieces)	5	Lower rod
3	Upper rod		

To install the doorlock rod control and the intelligent doorlock on the front door:

1. Place the *intelligent doorlock* on the cutout of the rear door. Place the *cover cap* on the doorlock back side to make the cap hang on the retaining plate.
2. Place the *rod control* on the doorlock back side. Use the *M6 × 8 Phillips screw*, the *latch*, and the *kit* to fasten the rod control to the doorlock. Use two *M6 × 8 Phillips screws* to further fix the rod control to the doorlock.
3. Fasten the *rod connection bracket* to the upper lever using two *M4 × 12 Torx screws* (saved from removing the doorlock). The two holes on the bracket should be aligned with the two holes marked 1 on the upper lever. Fasten the rod connection bracket to the lower lever using two *M4 × 12 Torx screws*. The two holes on the bracket should be aligned with the two holes marked 3 on the lower lever.

Figure 4.26 Installing the Doorlock Rod Control and the Intelligent Doorlock

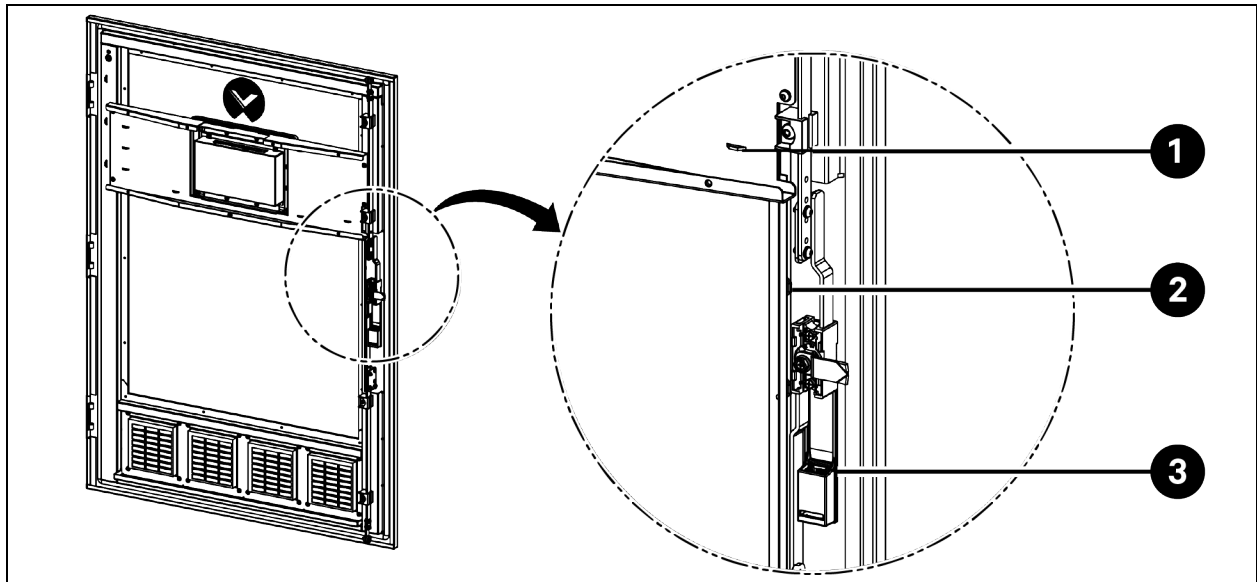


Item	Description	Item	Description
1	Rod control	8	Intelligent doorlock
2	Kit	9	Retaining plate
3	Latch	10	Lower lever
4	M4 × 25 Phillips screw (2 pieces)	11	Front door
5	M6 × 16 Phillips screw (1 piece)	a	Aligning the two holes on the bracket with the two holes marked 1 on the upper lever
6	Cover cap	b	Aligning the two holes on the bracket with the two holes marked 3 on the lower lever
7	Upper lever		

To connect the Ethernet cable to the intelligent doorlock, connect the Ethernet cable that has been placed in factory to the POE port of the intelligent doorlock and fix the cable to the cable tie mount.

NOTE: Make sure that the Ethernet cable is routed along the channel when connecting it to the POE port.

Figure 4.27 Connecting the Ethernet Cable to the Intelligent Doorlock



Item	Description	Item	Description
1	Cable tie mount	3	POE port
2	Channel where the Ethernet cable has been placed in factory		

To install the HMI cover, reverse the process of removing the HMI cover, as shown in **Figure 4.18** on page 63.

Installing the Intelligent Doorlock on the Rear Door of Vertiv™ SmartCabinet™ ID VS3354

To install the intelligent doorlock on the rear door of Vertiv™ SmartCabinet™ ID VS3354, install the rod connection brackets on the rod control, install the rod control and the intelligent doorlock on the rear door, connect the Ethernet cable to the intelligent doorlock, and then install the cable cover.

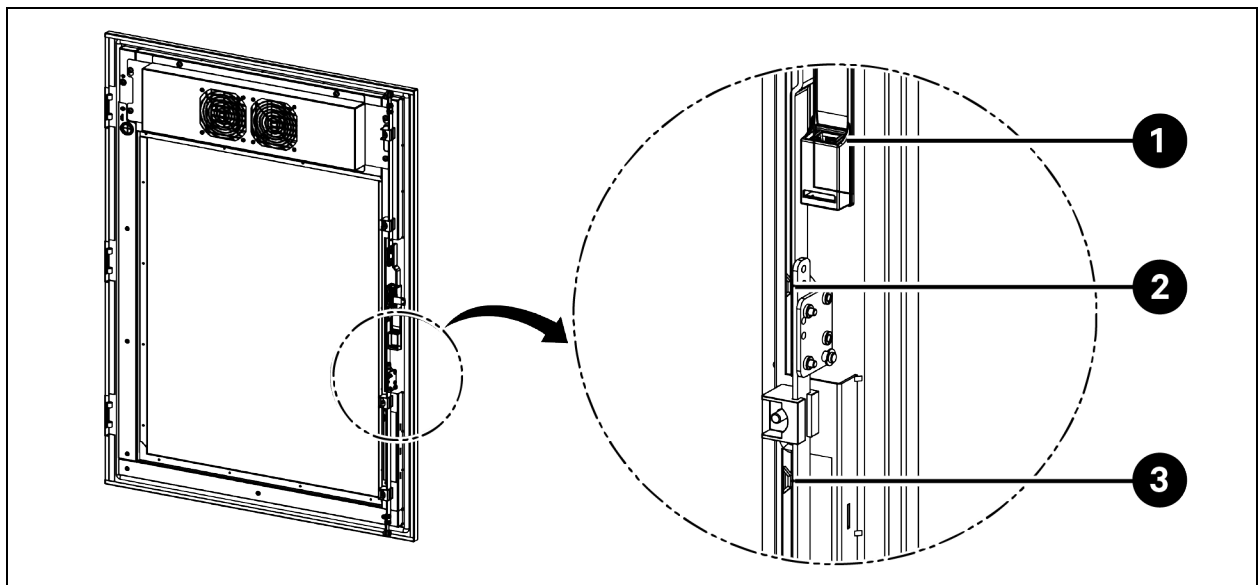
To install the rod connection brackets on the rod control, refer to the process in **Figure 4.25** on page 69.

To install the rod control and the intelligent doorlock on the rear door, refer to the process in **Figure 4.26** on page 70.

To connect the Ethernet cable to the intelligent doorlock, connect the Ethernet cable that has been placed in factory to the POE port of the intelligent doorlock and fix the cable to the cable tie mount.

NOTE: Make sure that the Ethernet cable is routed along the channel when connecting it to the POE port.

Figure 4.28 Connecting the Ethernet Cable to the Intelligent Doorlock



Item	Description	Item	Description
1	POE port	3	Channel where the Ethernet cable has been placed in factory
2	Cable tie mount		

To install the cable cover, reverse the process of removing the cable cover as shown in **Figure 4.22** on page 66.

Installing the Intelligent Doorlock on the Front Door of Vertiv™ SmartCabinet™ ID VS3750

To install the intelligent doorlock on the front door of Vertiv™ SmartCabinet™ ID VS3750, install the rod connection brackets on the rod control, install the rod control and the intelligent doorlock on the front door, connect the Ethernet cable to the intelligent doorlock, and then install the cable cover.

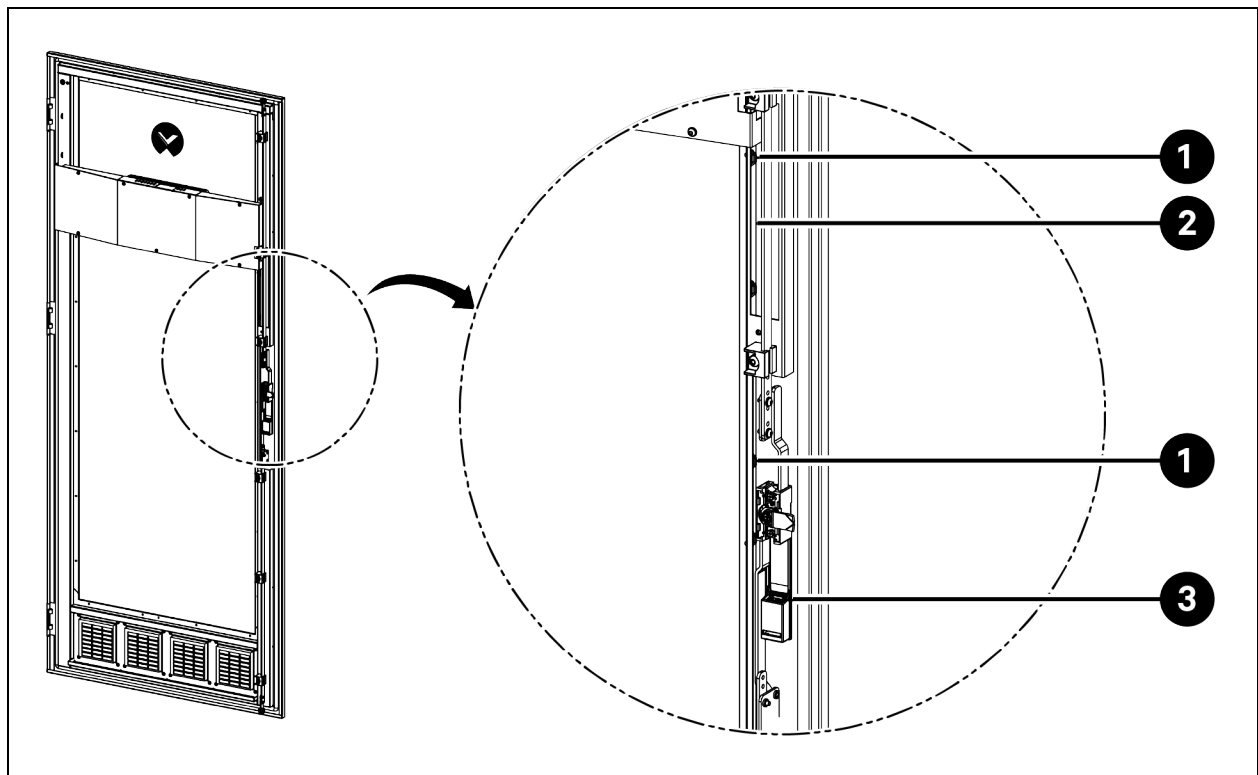
To install the rod connection brackets on the rod control, refer to the process in **Figure 4.25** on page 69.

To install the rod control and the intelligent doorlock on the front door, refer to the process in **Figure 4.26** on page 70.

To connect the Ethernet cable to the intelligent doorlock, connect the Ethernet cable that has been placed in factory to the POE port of the intelligent doorlock and fix the cable to the cable tie mount.

NOTE: Make sure that the Ethernet cable is routed along the channel when connecting it to the POE port.

Figure 4.29 Connecting the Ethernet Cable to the Intelligent Doorlock



Item	Description	Item	Description
1	Cable tie mount	3	POE port
2	Channel where the Ethernet cable has been placed in factory		

To install the cable cover, reverse the process of removing the cable cover as shown in **Figure 4.21** on page 66.

Installing the Intelligent Doorlock on the Rear Door of Vertiv™ SmartCabinet™ ID VS3750

To install the intelligent doorlock on the rear door of Vertiv™ SmartCabinet™ ID VS3750, install the rod connection brackets on the rod control, install the rod control and the intelligent doorlock on the rear door, connect the Ethernet cable to the intelligent doorlock, and then install the cable cover.

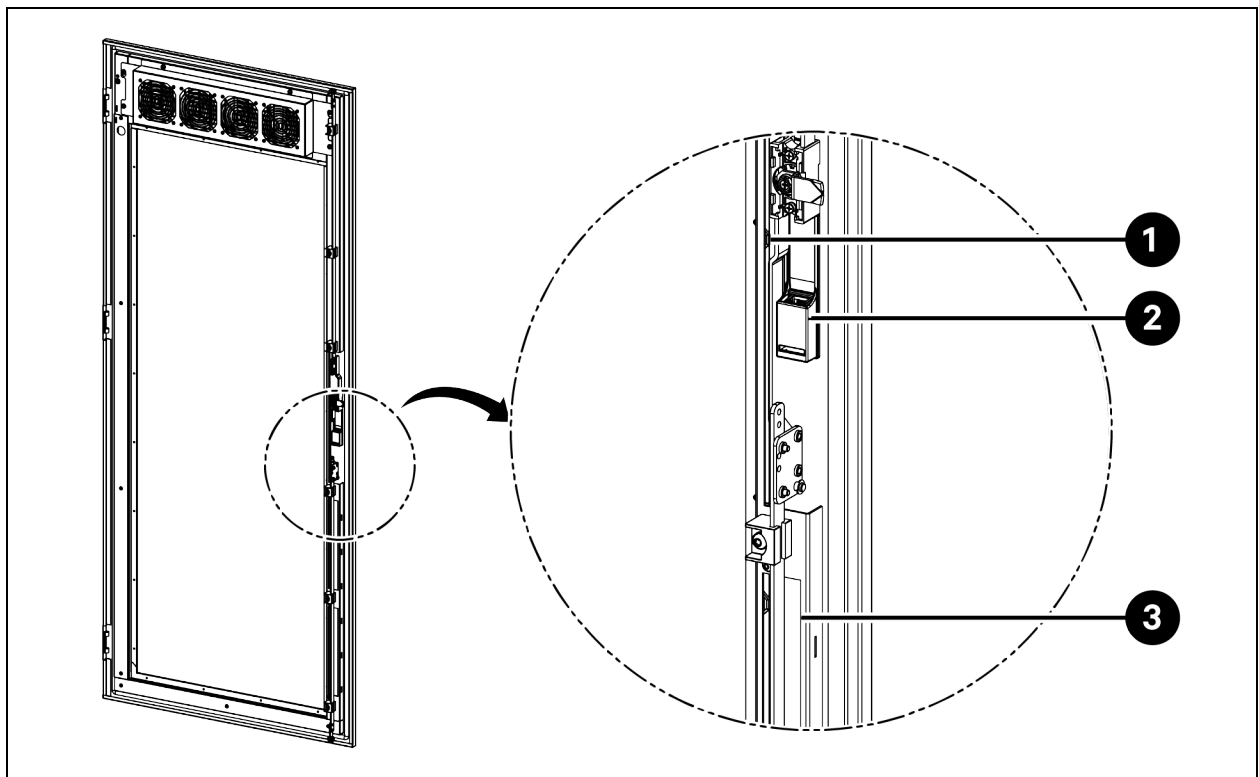
To install the rod connection brackets on the rod control, refer to the process in **Figure 4.25** on page 69.

To install the rod control and the intelligent doorlock on the rear door, refer to the process in **Figure 4.26** on page 70.

To connect the Ethernet cable to the intelligent doorlock, connect the Ethernet cable that has been placed in factory to the POE port of the intelligent doorlock and fix the cable to the cable tie mount.

NOTE: Make sure that the Ethernet cable is routed along the channel when connecting it to the POE port.

Figure 4.30 Connecting the Ethernet Cable to the Intelligent Doorlock



Item	Description	Item	Description
1	Cable tie mount	3	Channel where the Ethernet cable has been placed in factory
2	POE port		

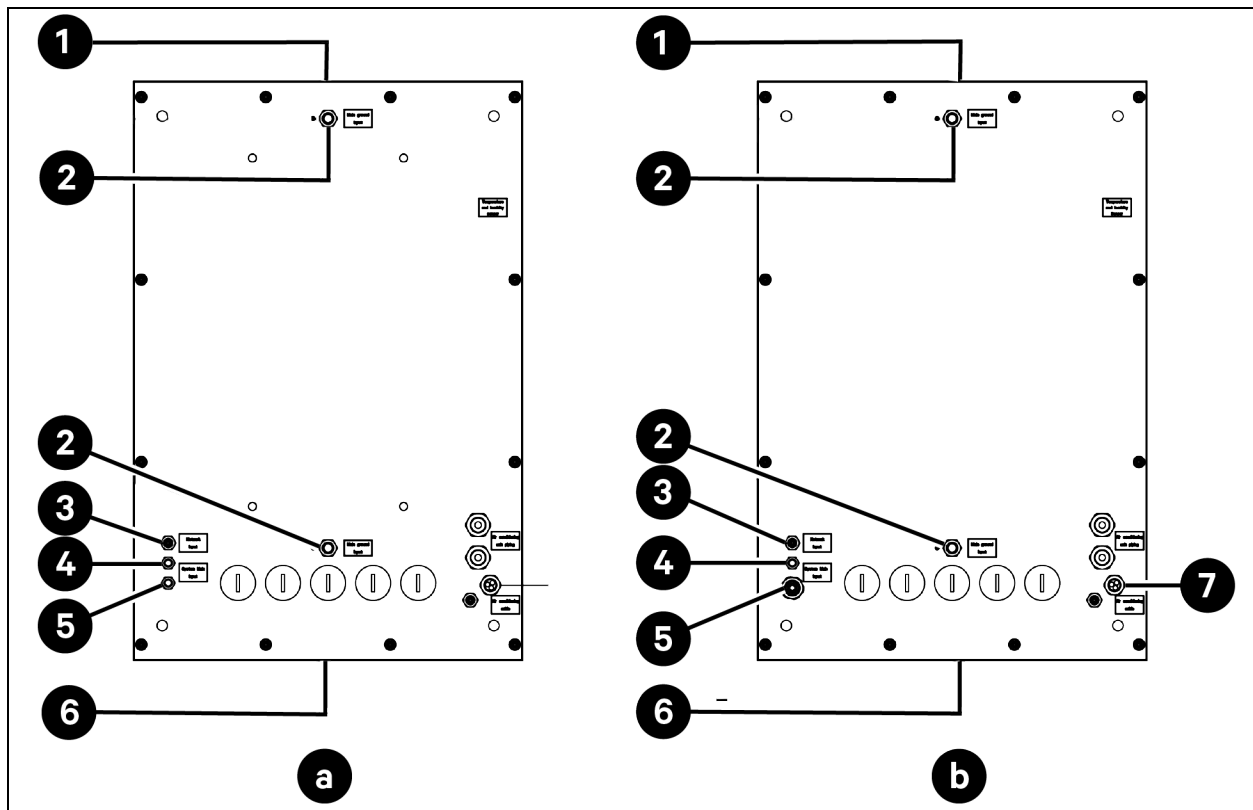
To install the cable cover, reverse the process of removing the cable cover as shown in **Figure 4.24** on page 68.

4.6 Connecting Power Supply Cables and Ethernet Cables

NOTE: It is recommended to install an external circuit breaker between the mains electricity and the cabinet. Before connecting power supply cables and Ethernet cables, make sure that the external circuit breaker is open.

4.6.1 Cable Access Location on Top Panel

Figure 4.31 Cable Access Location on Top Panel



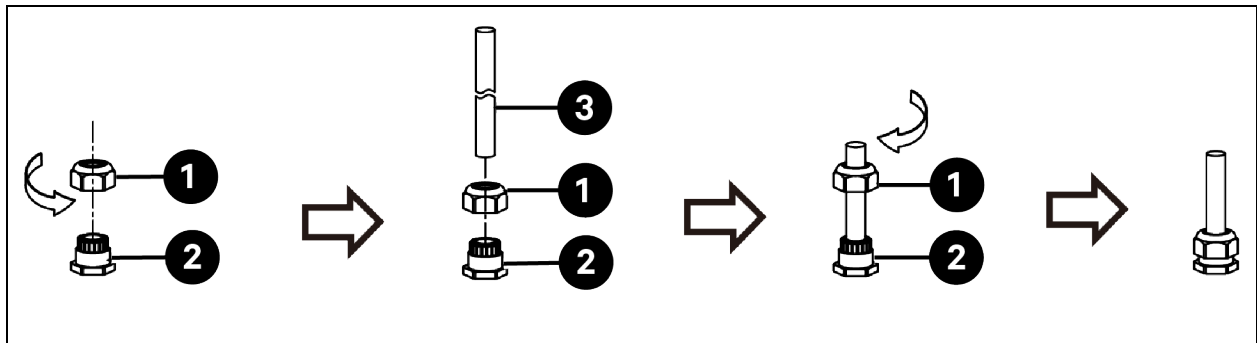
Item	Description	Item	Description
a	VS3354, VS3350, VS3354I, and VS3350I	4	System main input (for PMB)
b	VS3750 and VS3750I	5	System main input (for UPS)
1	Front door	6	Rear door
2	Main ground input	7	Air conditioning cable
3	Network input		

4.6.2 Routing Cable through Cable Gland (Main Ground Input, System Main Input, and Network Input)

To route cable through cable gland (main ground input, system main input, and network input):

1. On the top panel of the cabinet, remove the *cap* from the cable gland by rotating the cap in a counterclockwise direction with an adjustable wrench.
2. Insert the *cap* into the cable gland.
3. Insert the *cap* into the cable gland.
4. Reinstall the *cap* on the cable gland by rotating the cap in clockwise direction with an adjustable wrench.

Figure 4.32 Routing Cable through Cable Gland (Main Ground Input, System Main Input, and Network Input)



Item	Description	Item	Description
1	Cap	3	Cable
2	Cable gland		

4.6.3 Routing Cable through Cable Gland (Air Conditioning Cable)

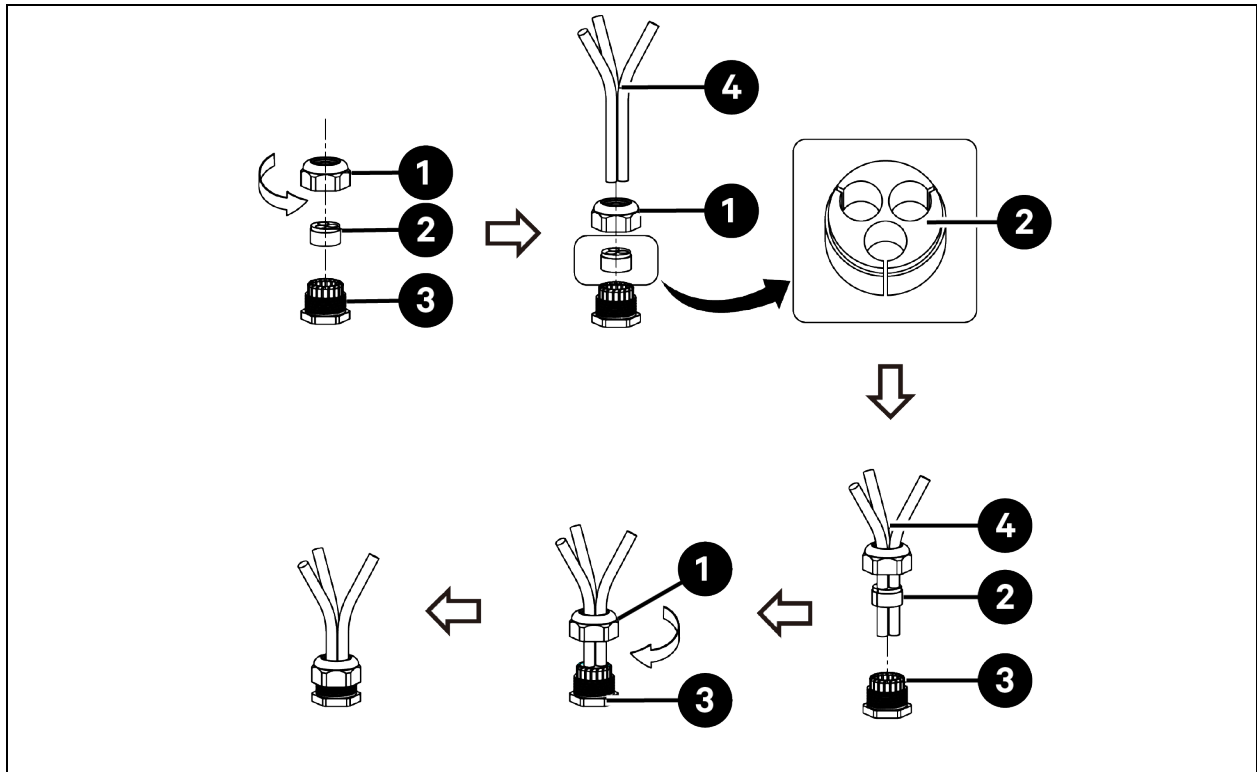
The following three cables are routed through one cable gland (air conditioning cable):

- The power supply cable for PMB to provide power to condenser fan.
- The power supply cable for PMB to provide power to condensing unit.
- The Ethernet cable between evaporator and condensing unit.

To route these cables:

1. Remove the *cap* from the cable gland (air conditioning cable), by rotating the cap in a counterclockwise direction with an adjustable wrench.
2. Pull the pass through rubber plug out of the cable gland. The plug has three holes. Cut three openings on the outer wall of the plug so that each hole has an opening.
3. Insert the *cables* into the cap, and then insert each cable into the hole of the plug.
4. Insert the *cables* into the cable gland.
5. Push the pass through rubber plug into the cable gland.
6. Install the *cap* on the cable gland by rotating the cap in a clockwise direction with an adjustable wrench.

Figure 4.33 Routing Air Conditioner Cables through Cable Gland



Item	Description	Item	Description
1	Cap	3	Cable gland (air conditioning cable)
2	Pass-through rubber plug	4	<ul style="list-style-type: none"> Power supply cable for PMB to provide power to condensing unit Power supply cable for PMB to provide power to condenser fan Ethernet cable between evaporator and condensing unit

4.6.4 Connecting Main Power Supply for the Cabinet

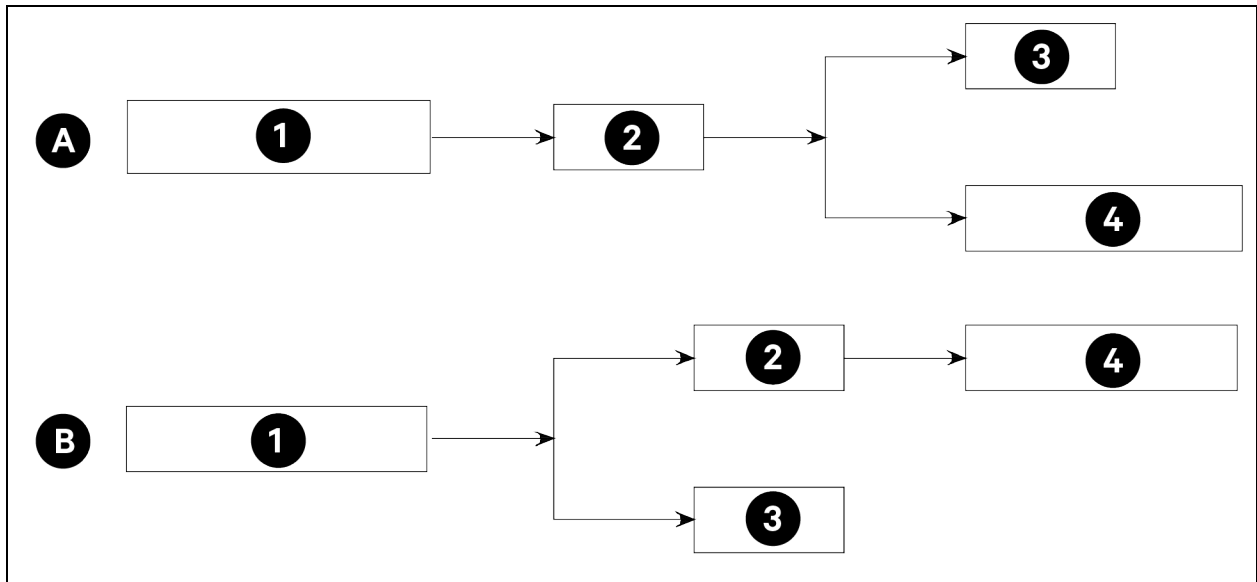
! **WARNING!** Risk of electric shock. Only qualified professionals may disconnect the power supply connectors between the main's electricity and cabinet.

! **CAUTION:** High touch current. The protective conductor current of the cabinet is 19 mA. The cabinet must be connected to the earth before connecting to the power supply.

There are two ways for connecting the main power supply:

- **Power connection A:** Mains electricity is connected to UPS. UPS provides power to PMB and IT equipment.
- **Power connection B:** Mains electricity is connected to UPS and PMB. UPS provides power to IT equipment.

Figure 4.34 Power Connection A and B



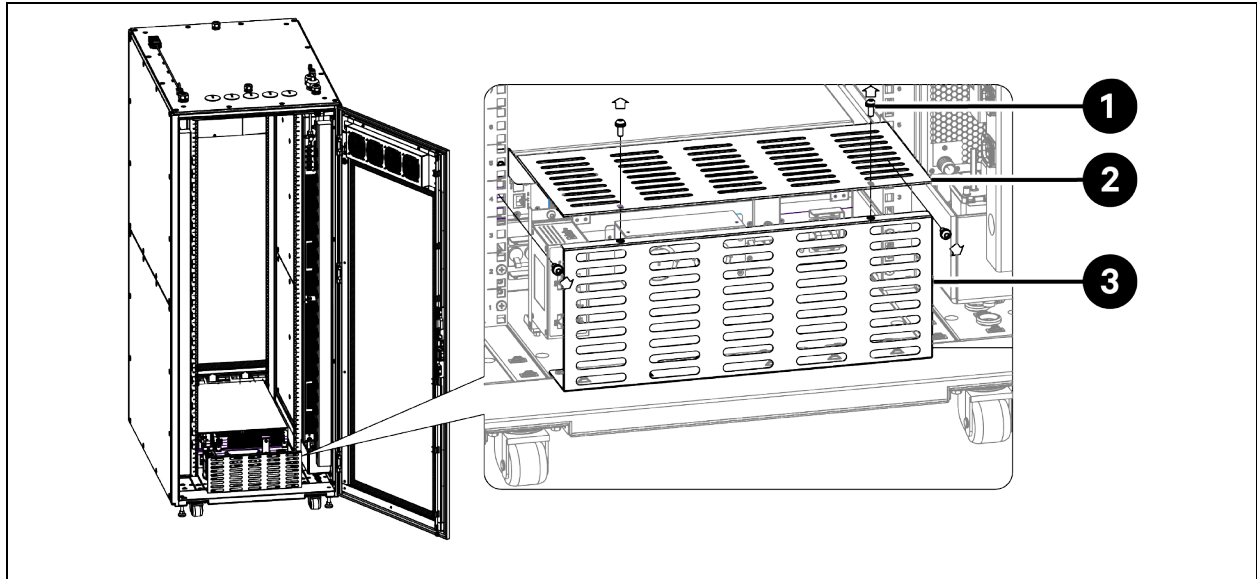
Item	Description
1	Mains electricity
2	UPS
3	PMB
4	IT Equipment

Power Connection A for VS3354I and VS3350I with 6 kVA UPS (GXT5-6000IRT5UXLE)

To connect power cables:

1. Remove four *M6 x 16 Torx* screws from the horizontal cable management panel and remove the panel.

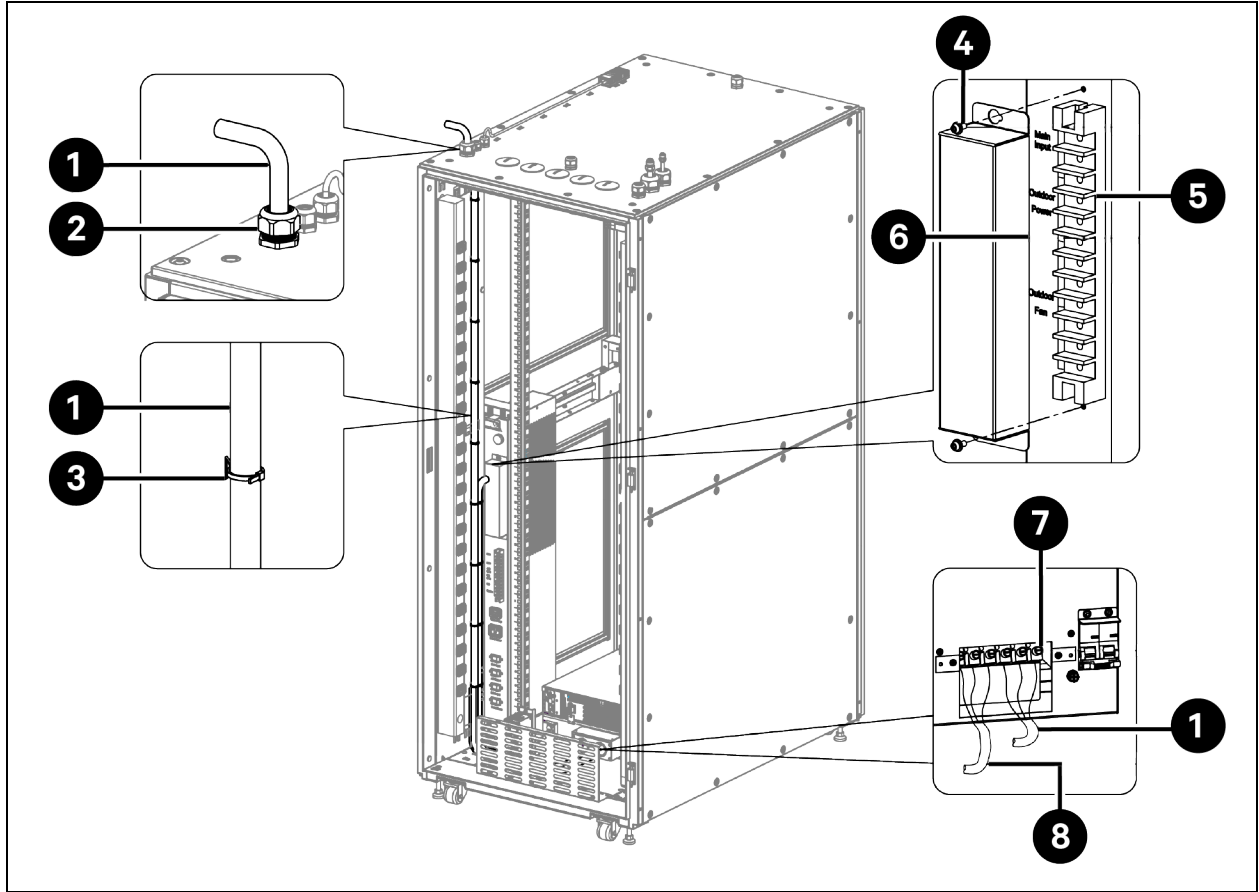
Figure 4.35 Removing the Horizontal Cable Management Panel



Item	Description	Item	Description
1	M6 x 16 Torx screw (4 pieces)	3	Vertical cable management panel
2	Horizontal cable management panel		

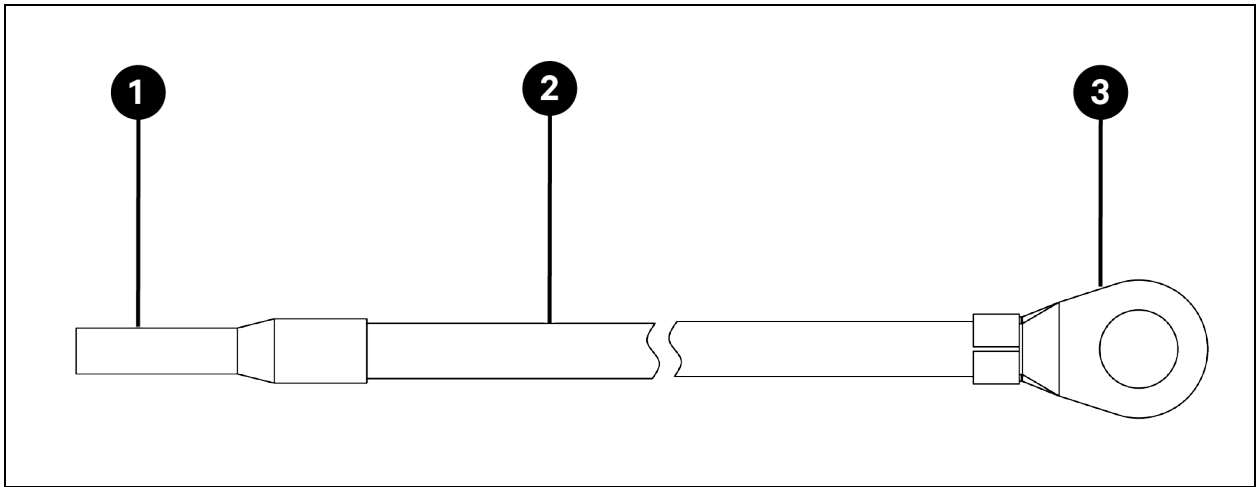
2. Connect the *main power supply cable* to UPS.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25.
 - b. Route the *power cable* through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through the cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76.
 - c. Tie the *power cable* to the cable cover panel near the left vertical post. Connect the cable to the UPS input terminals.
3. Connect the *power cable* between UPS and PMB.
 - a. Take out the *W34 power cable* from the accessories bag.
 - b. Connect the *cord end of the cable* to the UPS output terminals on UPS.
 - c. Remove two *M4 x 10 Torx* screws to remove the cover from PMB, and connect the OT end of the cable to the PMB main input terminals. Reinstall the cover.

Figure 4.36 Power Connection A for VS3354I and VS3350I with 6 kVA UPS (GXT5-6000IRT5UXLE)



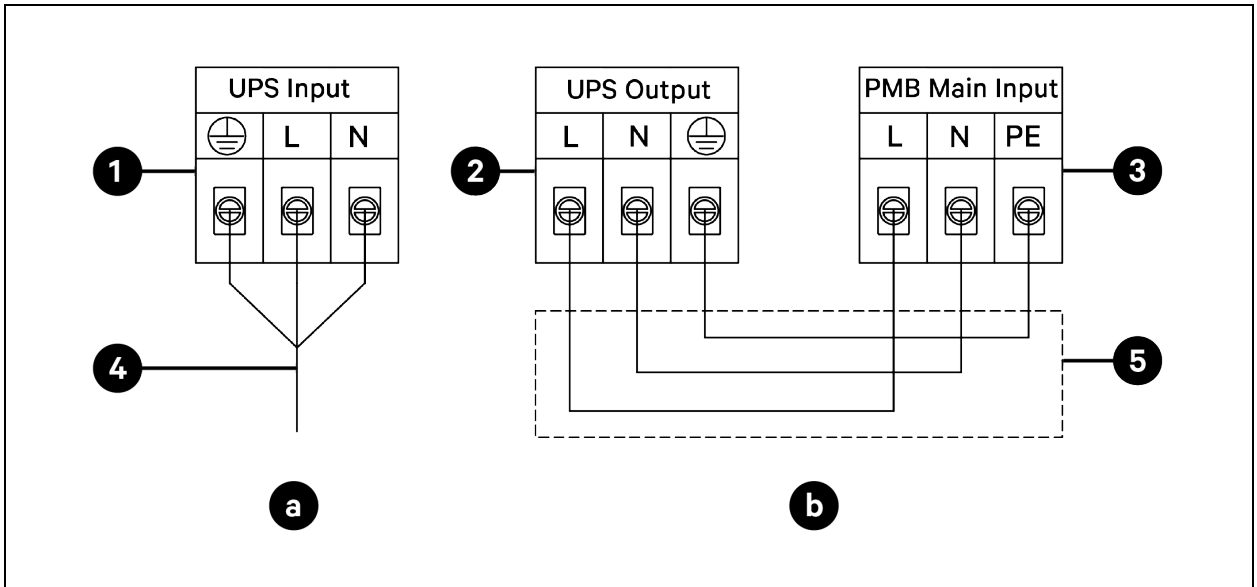
Item	Description	Item	Description
1	Main power supply cable for UPS	5	PMB
2	Cable gland (system main input for UPS)	6	Cover
3	Tie wrap	7	UPS
4	M4 x 10 Torx screw (2 pieces)	8	W34 power cable from UPS to PMB

Figure 4.37 W34 Power Cable between UPS and PMB



Item	Description	Item	Description
1	Cord end	3	OT end
2	W34 power cable		

Figure 4.38 UPS and PMB Power Terminals



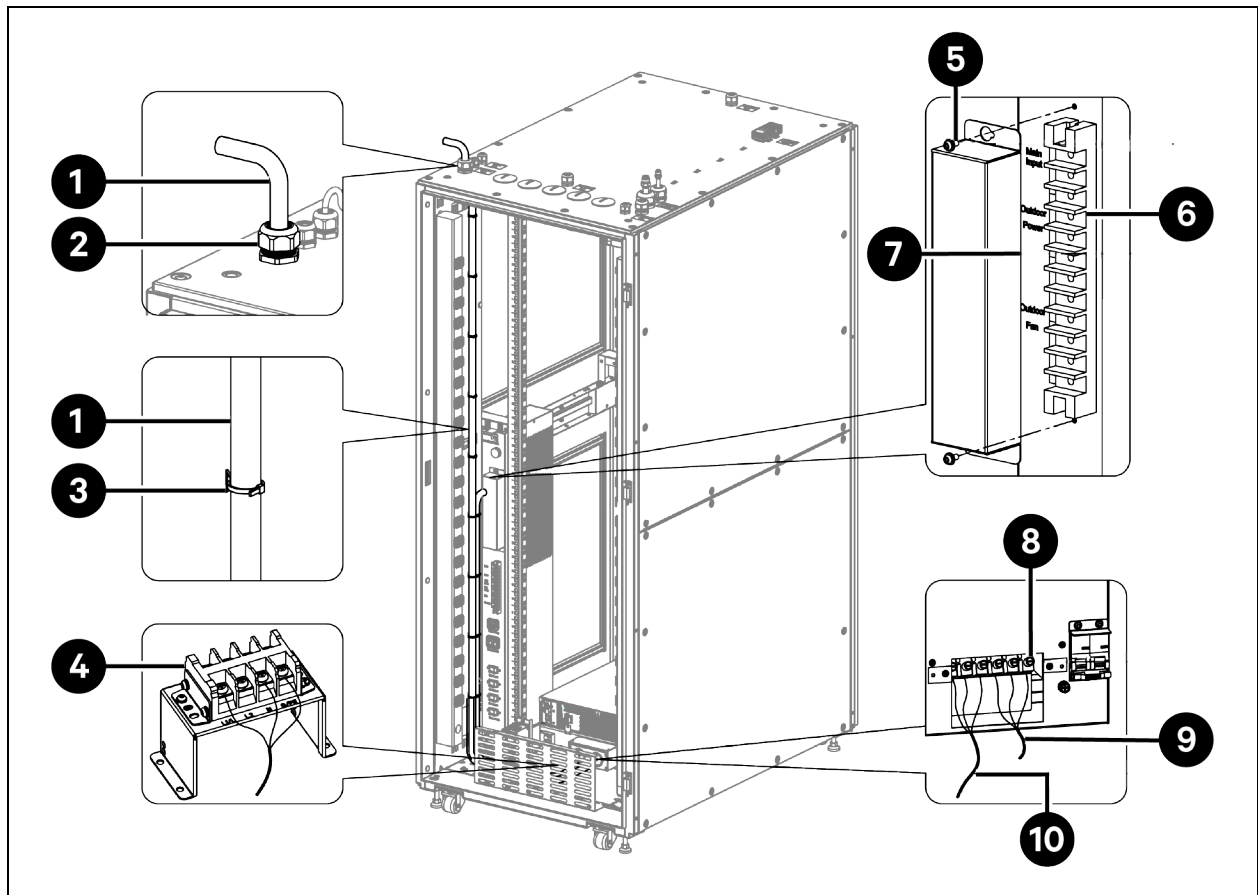
Item	Description	Item	Description
a	Connecting main power supply cable to UPS	3	PMB Main Input terminals
b	Connecting power cable between UPS and PMB	4	Main power supply cable for UPS
1	UPS Input terminals	5	W34 power cable from UPS to PMB
2	UPS Output terminals		

Power Connection A for VS3750I with 10 kVA UPS (GXT5-10KIRT5UXLE)

To connect power cables:

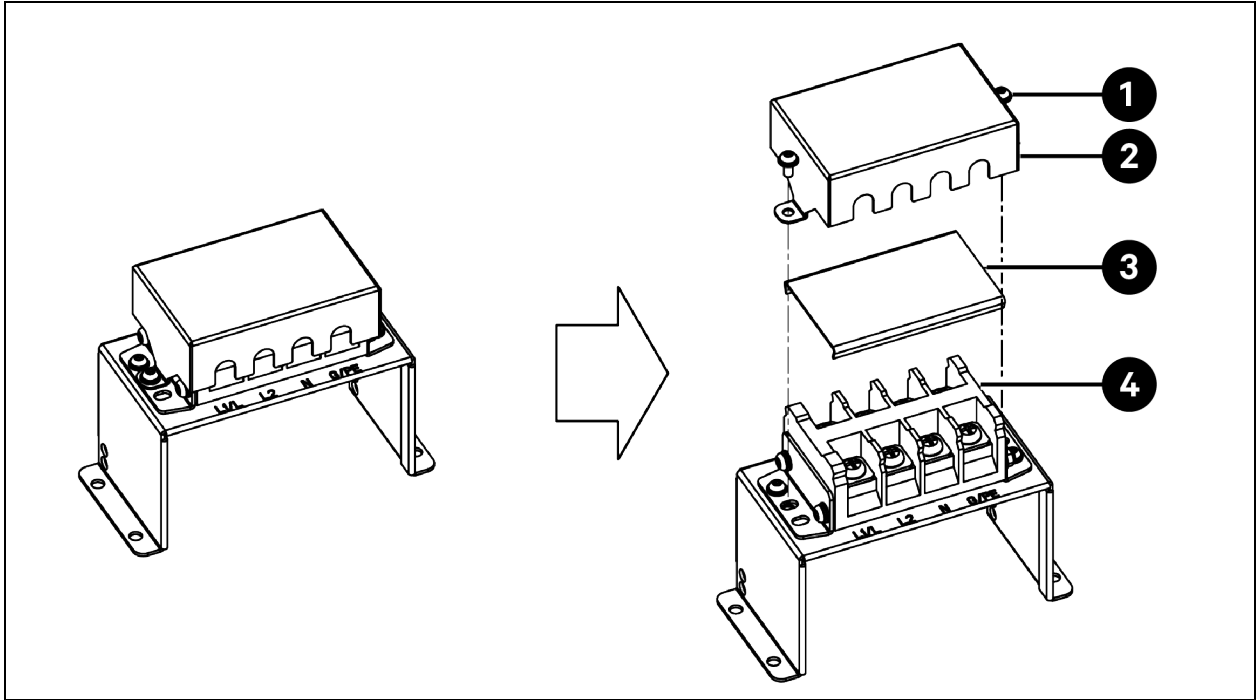
1. Remove the horizontal *cablE management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the *main power supply cable* to the terminal block, and connect the *cablE* from the terminal block to the UPS.
 - a. The terminal block is factory installed and is located behind the vertical cable management panel. Remove the *protective cover* and the *transparent cover* from the terminal block, as shown in **Figure 4.40** on page 84. Save the *covers* and *screws* for later use. One side of the terminal block is not connected with cable, and this side needs to be connected with main power supply cable. The other side of the terminal block has been connected with cable in factory and this cable is to be connected to the UPS.
 - b. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25. Route the *cablE* through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76. Tie the *cablE* to the cable cover panel near the left vertical post. Connect the cable to the terminal block input terminals.
 - c. From the other side of the terminal block, connect the *factory reserved power cable* to the UPS input terminals.
 - d. Install the *transparent cover* and the *protective cover back* to the terminal block.
3. Connect the *power cable* between UPS and PMB.
 - a. Take out the *W34 power cable* from the accessories bag.
 - b. Connect the *cord end of the cable* to the UPS output terminals on UPS.
 - c. Remove two *M4 x 10 Torx screws* to remove the cover from PMB, and connect the OT end of the cable to the PMB main input terminals. Reinstall the *cover*.

Figure 4.39 Power Connection A for VS3750I with 10 kVA UPS (GXT5-10KIRT5UXLE)



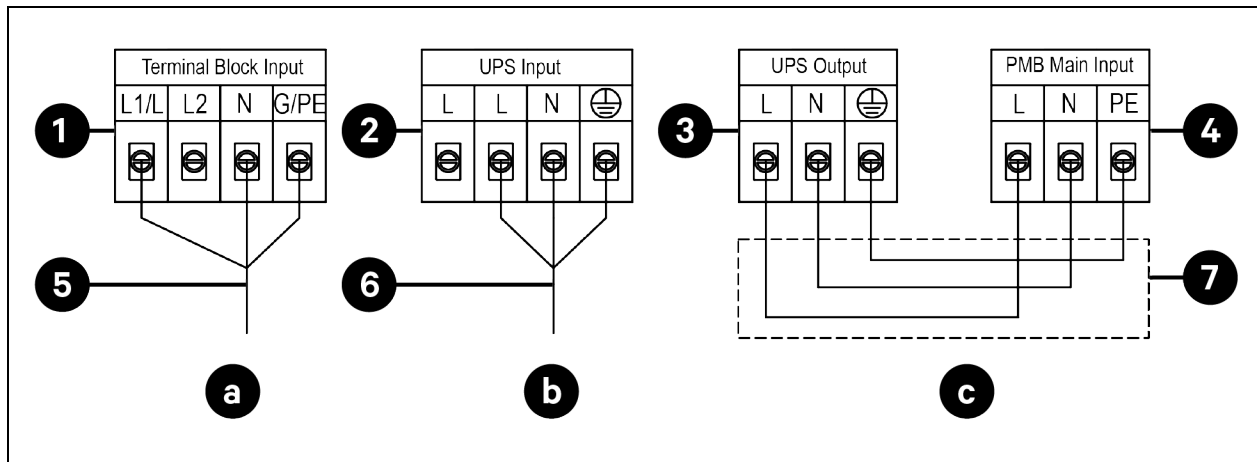
Item	Description	Item	Description
1	Main power supply cable for terminal block	6	PMB
2	Cable gland (system main input for UPS)	7	Cover
3	Tie wrap	8	UPS
4	Terminal block	9	Power cable from terminal block to UPS
5	M4 x 10 Torx screw (2 pieces)	10	W34 power cable from UPS to PMB

Figure 4.40 Removing Covers from the Terminal Block



Item	Description	Item	Description
1	M4 × 10 Torx screw (2 pieces)	3	Transparent cover
2	Protective cover	4	Terminal block

Figure 4.41 Terminal Block, UPS, and PMB Power Terminals



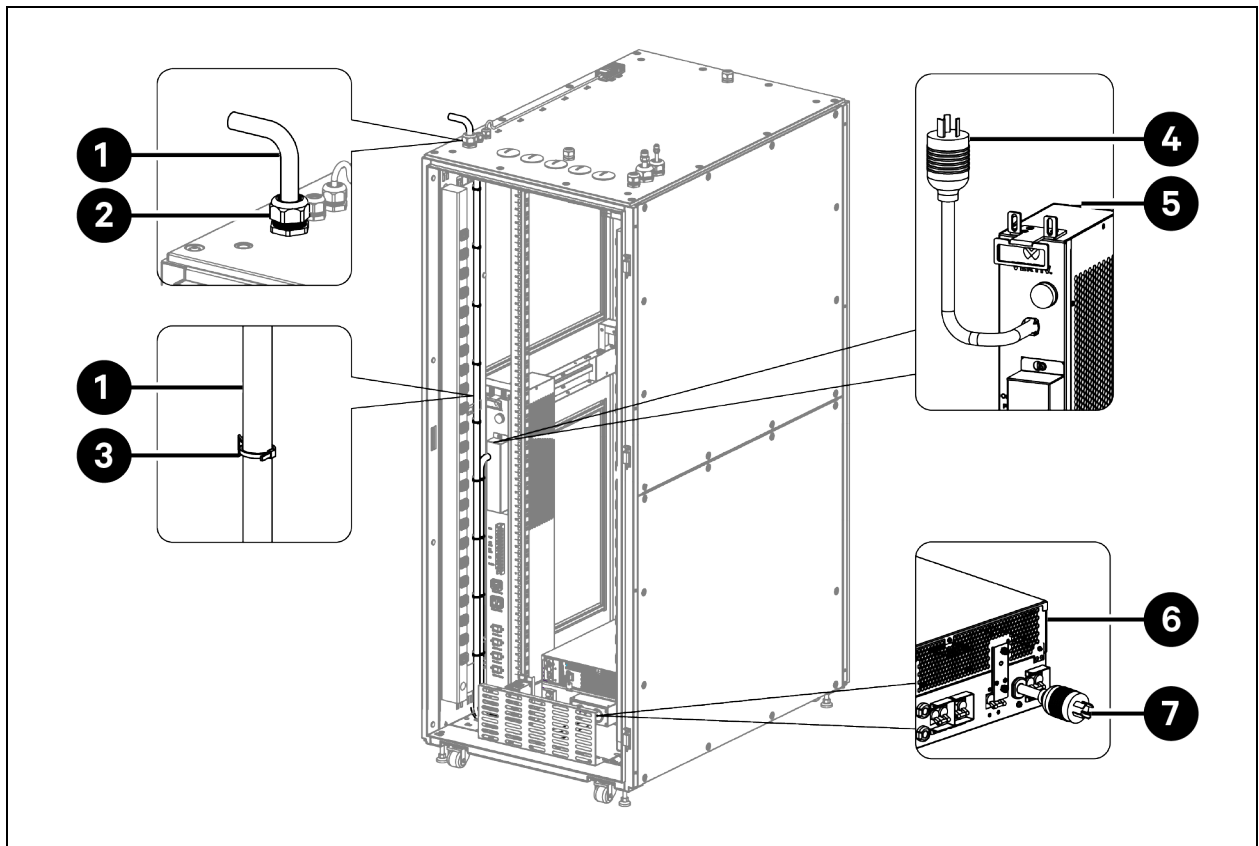
Item	Description	Item	Description
a	Connecting main power supply cable to terminal block	3	UPS Output terminals
b	Connecting power cable from terminal block to UPS	4	PMB Main Input terminals
c	Connecting power cable between UPS and PMB	5	Main power supply cable for terminal block
1	Terminal Block Input terminals	6	Power cable from terminal block to UPS
2	UPS input terminals	7	W34 power cable from UPS to PMB

Power Connection A for VS3354 and VS3350 with 6 kVA UPS (GXT5-6000MVRT4UXLN)

To connect power cables:

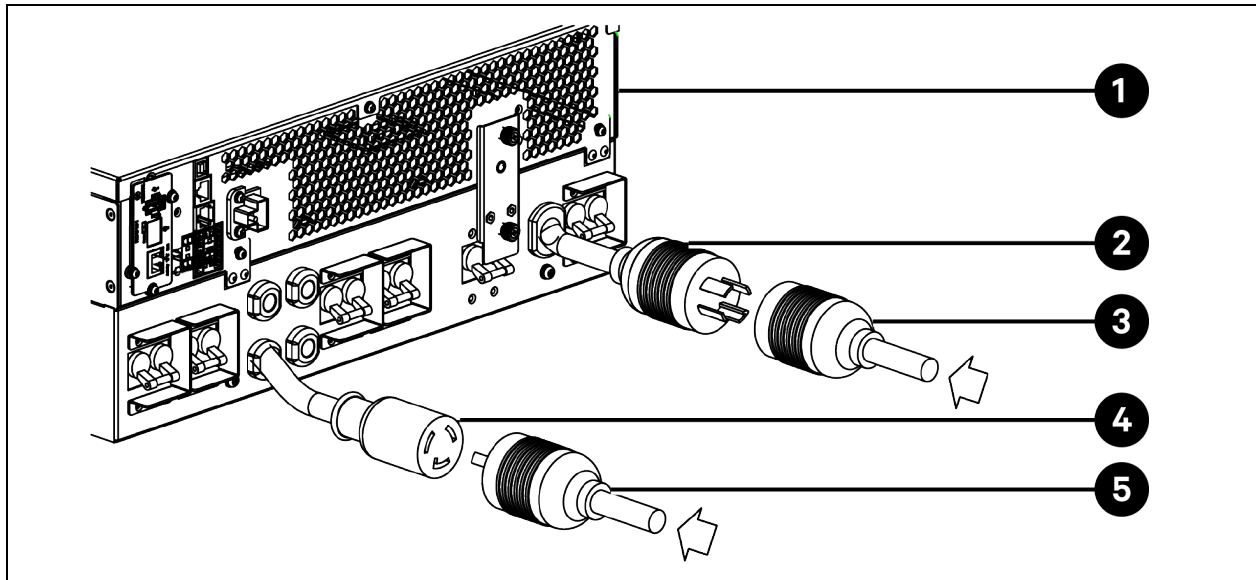
1. Remove the horizontal *cable management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the main power supply cable to UPS.
 - a. Prepare a power cable. For cable specifications, see **Table 3.1** on page 25.
 - b. Connect the cable's L14-30R connector to the L14-30P UPS power input connector.
 - c. Route the other end of the cable out of the cabinet through cable gland (system main input for UPS) and connect it to the mains electricity. For cable access location, see [Cable Access Location on Top Panel](#) on page 75.
3. Connect the L6-20P PMB power input connector to the L6-20R UPS power output connector.

Figure 4.42 Power Connection A for VS3354 and VS3350 with 6 kVA UPS (GXT5-6000MVRT4UXLN)



Item	Description	Item	Description
1	Main power supply cable for UPS	5	PMB
2	Cable gland (system main input for UPS)	6	UPS
3	Tie wrap	7	L14-30P UPS power input connector
4	L6-20P PMB power input connector		

Figure 4.43 UPS Power Connectors



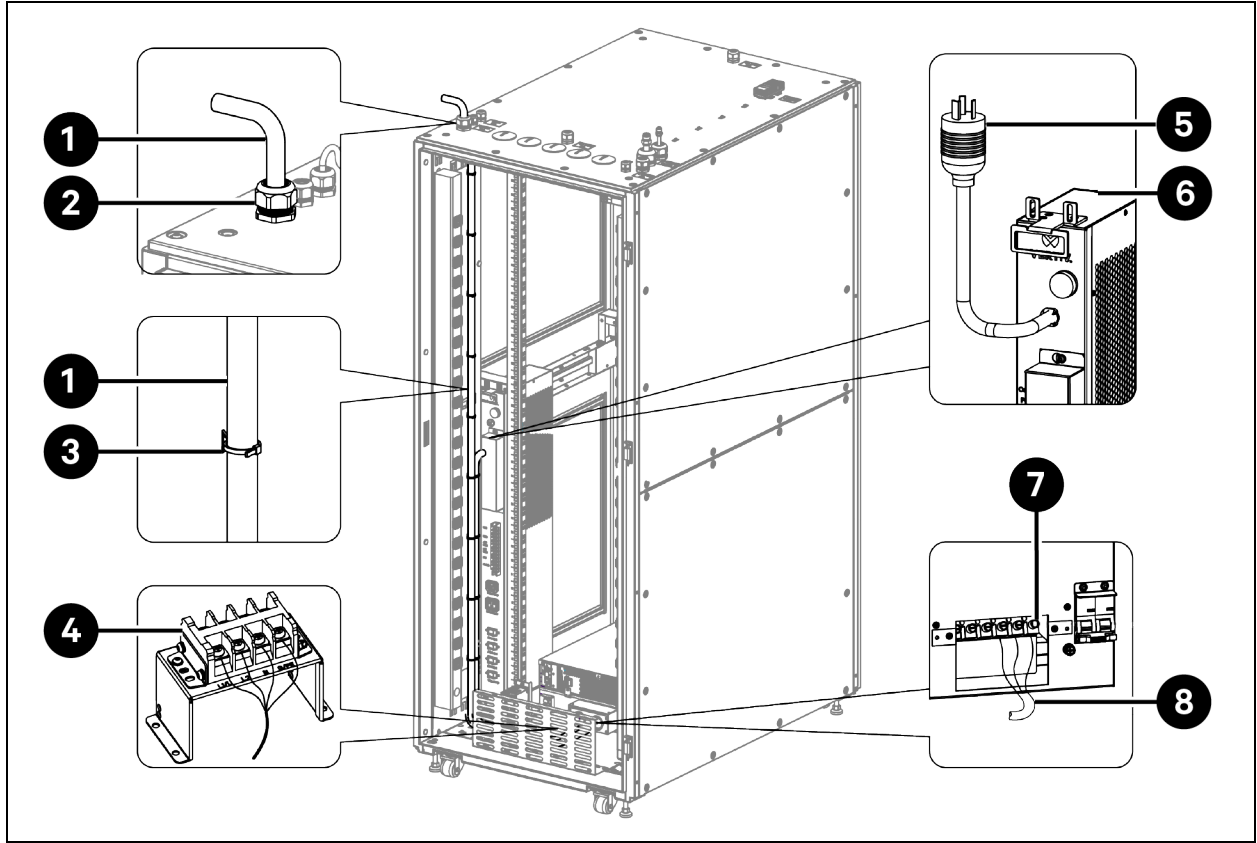
Item	Description	Item	Description
1	UPS	4	L6-20R UPS power output connector
2	L14-30P UPS power input connector	5	L6-20P PMB power input connector
3	L14-30R main power supply connector		

Power Connection A for VS3750 with 10 kVA UPS (GXT5-10KMVRT6UXLN)

To connect power cables:

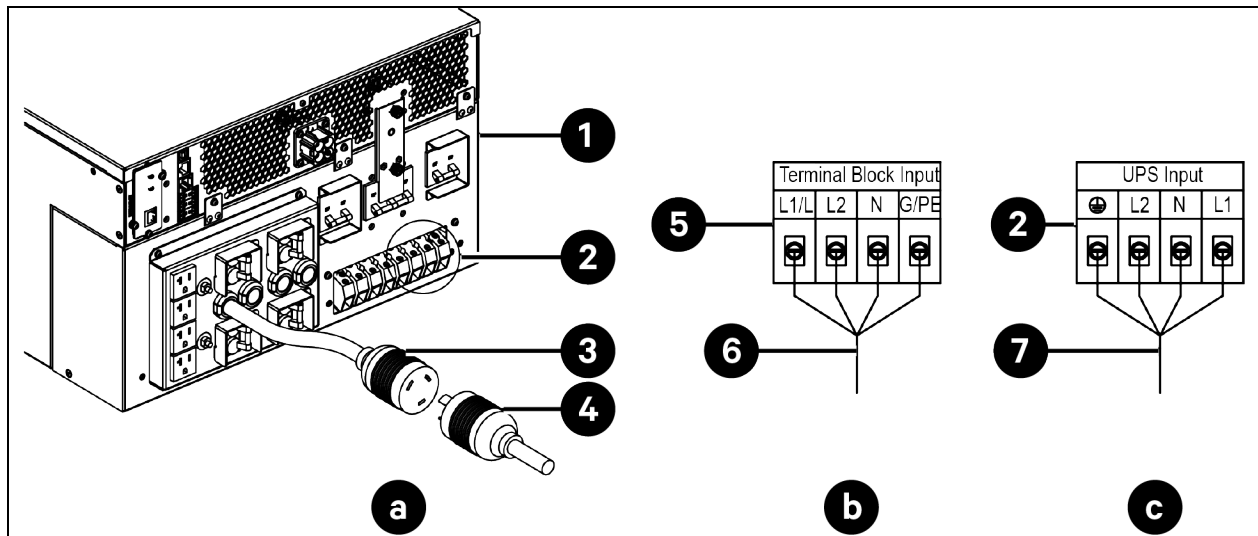
1. Remove the horizontal *cable management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the *main power supply cable* to the terminal block, and connect the cable from the terminal block to the UPS.
 - a. The terminal block is factory-installed and is located behind the vertical cable management panel. Remove the *protective cover* and the *transparent cover* from the terminal block, as shown in **Figure 4.40** on page 84. Save the *covers* and *screws* for later use. One side of the terminal block is not connected with cable, and this side needs to be connected with main power supply cable. The other side of the terminal block has been connected with cable in factory and this cable is to be connected to the UPS.
 - b. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25. Route the *cable* through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76. Tie the *cable* to the cable cover panel near the left vertical post. Connect the cable to the terminal block input terminals.
 - c. From the other side of the terminal block, connect the factory reserved power cable to the UPS input terminals.
 - d. Install the *transparent cover* and the *protective cover* back to the terminal block.
3. Connect the L6-30R UPS power output connector to the L6-30P PMB power input connector.

Figure 4.44 Power Connection A for VS3750 with 10 kVA UPS (GXT5-10KMVRT6UXLN)



Item	Description	Item	Description
1	Main power supply cable for terminal block	5	L6-30P PMB power input connector
2	Cable gland (system main input for UPS)	6	PMB
3	Tie wrap	7	UPS
4	Terminal block	8	Power cable from terminal block to UPS

Figure 4.45 UPS Power Terminals and Connector and Terminal Block Input Terminals



Item	Description	Item	Description
a	Connecting power cable from UPS to PMB	3	L6-30R UPS power output connector
b	Connecting main power supply cable to terminal block	4	L6-30P PMB power input connector
c	Connecting power cable from terminal block to UPS	5	Terminal Block Input terminals
1	UPS	6	Main power supply cable for terminal block
2	UPS Input terminals	7	Power cable from terminal block to UPS

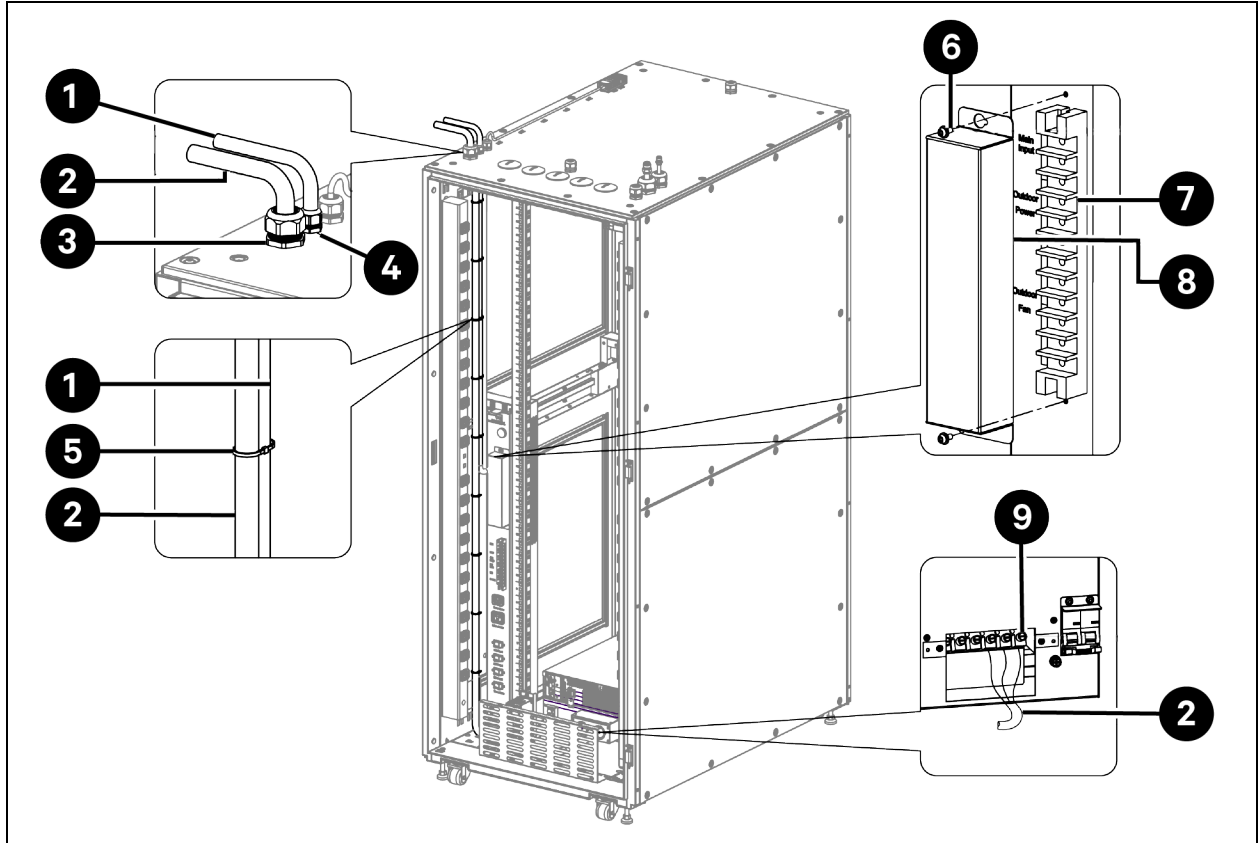
Power Connection B for VS3354I and VS3350I with 3 kVA UPS (GXT5-3000IRT2UXLE) / 6 kVA UPS (GXT5-6000IRT5UXLE)

To connect power cables:

1. Remove the horizontal *cable management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the *main power supply cable* to UPS.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25.
 - b. Route the *cable* through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76.
 - c. Tie the *cable* to the cable cover panel near the left vertical post. Connect the *cable* to the **UPS Input** terminals.
3. Connect the *main power supply cable* to PMB.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25.
 - b. Route the *cable* through the cable gland (system main input for PMB) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76.

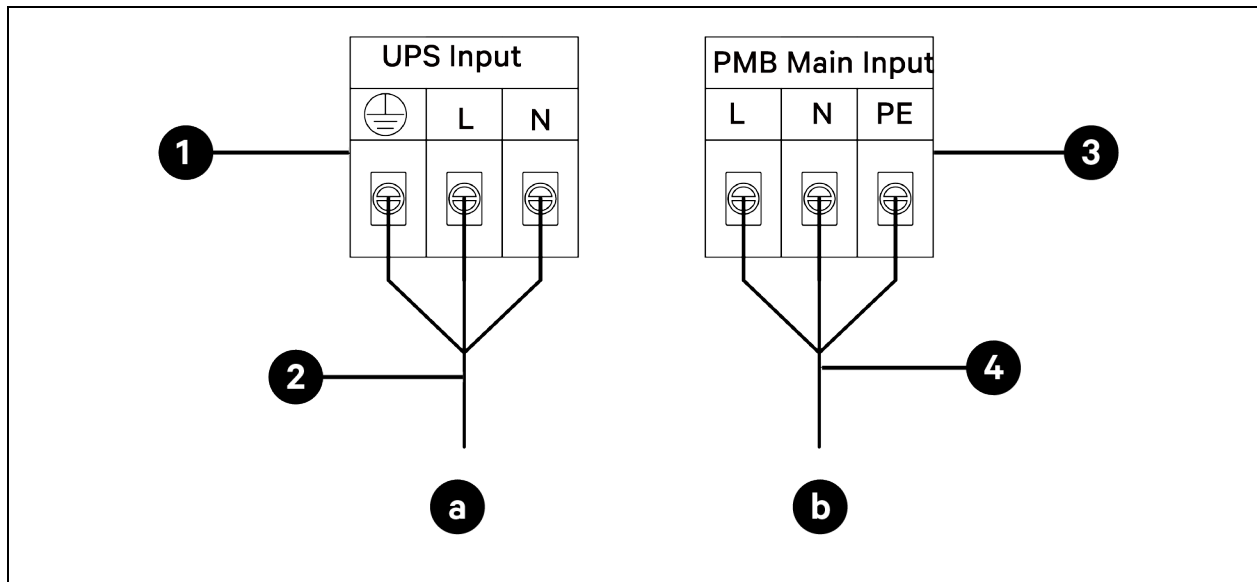
- c. Remove two M4 x 10 Torx screws to remove the cover from PMB. Connect the cable to the PMB main input terminals. Reinstall the cover.

Figure 4.46 Power Connection B for VS3354I and VS3350I with 3 kVA UPS (GXT5-3000IRT2UXLE) / 6 kVA UPS (GXT5-6000IRT5UXLE)



Item	Description	Item	Description
1	Main power supply cable for PMB	6	M4 x 10 Torx screw (2 pieces)
2	Main power supply cable for UPS	7	PMB
3	Cable gland (main system input for UPS)	8	Cover
4	Cable gland (main system input for PMB)	9	UPS
5	Tie wrap		

Figure 4.47 UPS and PMB Power Terminals



Item	Description	Item	Description
a	Connecting main power supply cable to UPS	2	Main power supply cable for UPS
b	Connecting main power supply cable to PMB	3	PMB Main Input terminals
1	UPS Input terminals	4	Main power supply cable for PMB

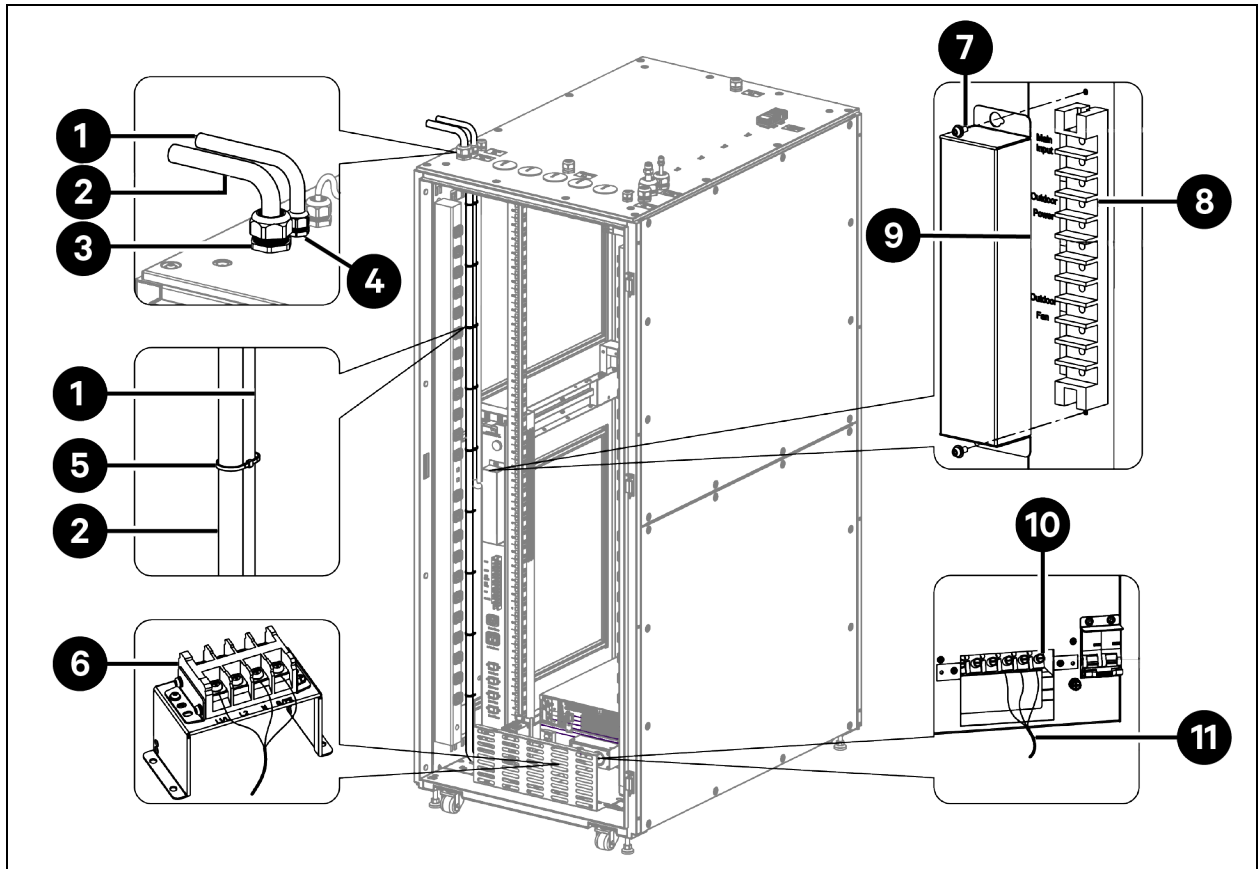
Power Connection B for VS3750I with 10 kVA UPS (GXT5-10KIRT5UXLE)

To connect power cables:

1. Remove the horizontal *cable management panel*. For details, see [Figure 4.35](#) on page 79.
2. Connect the *main power supply cable* to the terminal block, and connect the cable from the terminal block to the UPS.
 - a. The terminal block is factory installed and is located behind the vertical cable management panel. Remove the *protective cover* and the *transparent cover* from the terminal block, as shown in [Figure 4.40](#) on page 84. Save the *covers* and *screws* for later use. One side of the terminal block is not connected with cable, and this side needs to be connected with main power supply cable. The other side of the terminal block has been connected with cable in factory and this cable is to be connected to the UPS.
 - b. Prepare a *power cable*. For cable specifications, see [Table 3.1](#) on page 25. Route the *power cable* through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76. Tie the *power cable* to the cable cover panel near the left vertical post. Connect the cable to the terminal block input terminals.
 - c. From the other side of the terminal block, connect the factory reserved power cable to the UPS input terminals.
 - d. Install the *transparent cover* and the *protective cover* back to the terminal block.
3. Connect the main power supply cable to PMB.

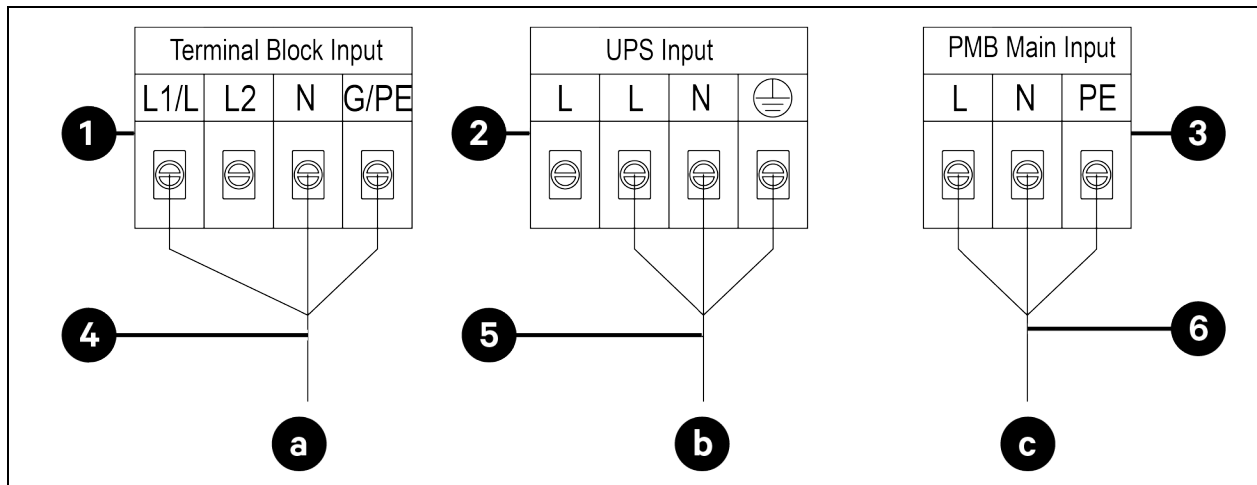
- a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25.
- b. Remove two *M4 x 10 Torx screws* to remove the cover from PMB. Route the *cable* through the cable gland (main system input for PMB) to the PMB main input terminals. Reinstall the cover. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76.

Figure 4.48 Power Connection B for VS3750I with 10 kVA UPS (GXT5-10KIRT5UXLE)



Item	Description	Item	Description
1	Main power supply cable for PMB	7	M4 x 10 Torx screw (2 pieces)
2	Main power supply cable for terminal block	8	PMB
3	Cable gland (main system input for UPS)	9	Cover
4	Cable gland (main system input for PMB)	10	UPS
5	Tie wrap	11	Power supply cable from terminal block to UPS
6	Terminal block		

Figure 4.49 Terminal Block, UPS, and PMB Power Terminals



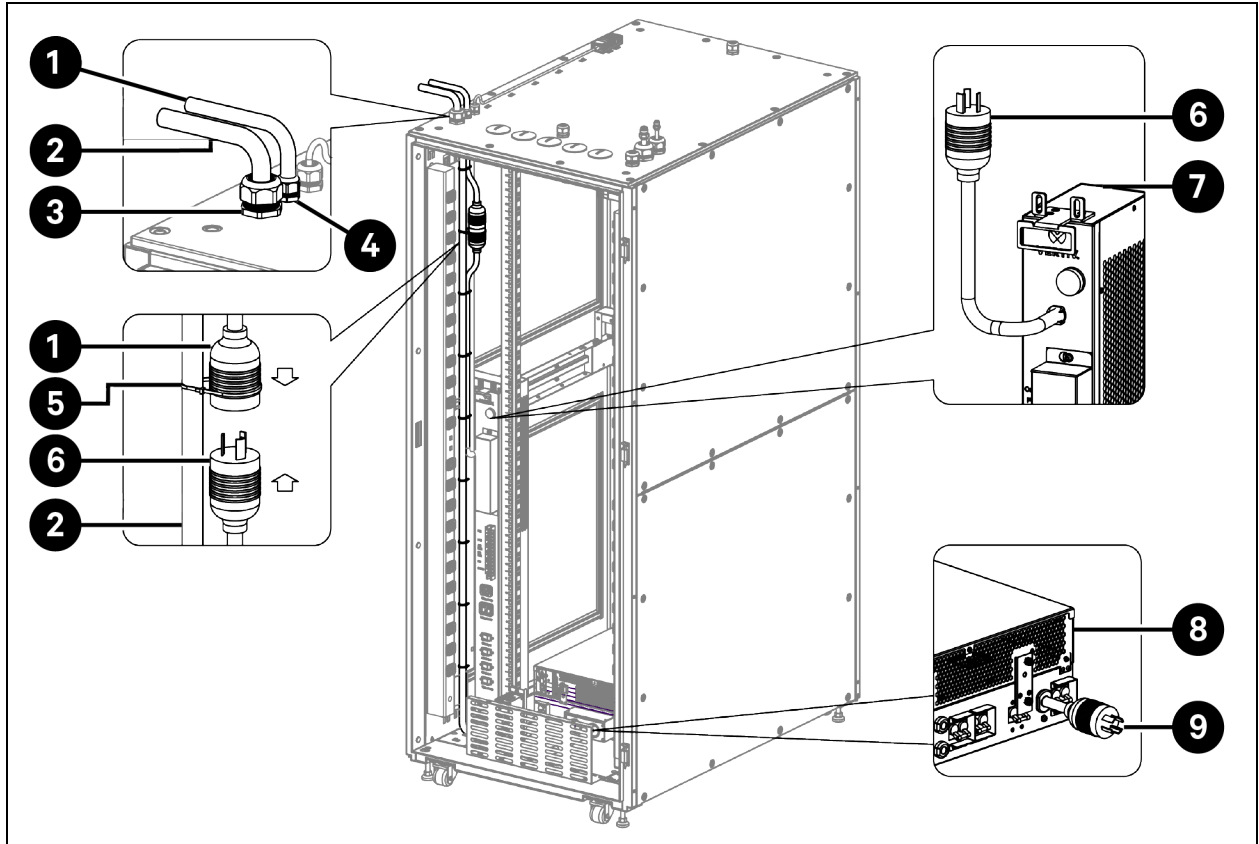
Item	Description	Item	Description
a	Connecting main power supply cable to terminal block	3	PMB Main Input terminals
b	Connecting power cable from terminal block to UPS	4	Main power supply cable to terminal block
c	Connecting main power supply cable to PMB	5	Power cable from terminal block to UPS
1	Terminal Block Input terminals	6	Main power supply cable to PMB
2	UPS Input terminals		

Power Connection B for VS3354 and VS3350 with 3 kVA UPS (GXT5-3KL620RT2UXL) / 6 kVA UPS (GXT5-6000MVRT4UXLN)

To connect power cables:

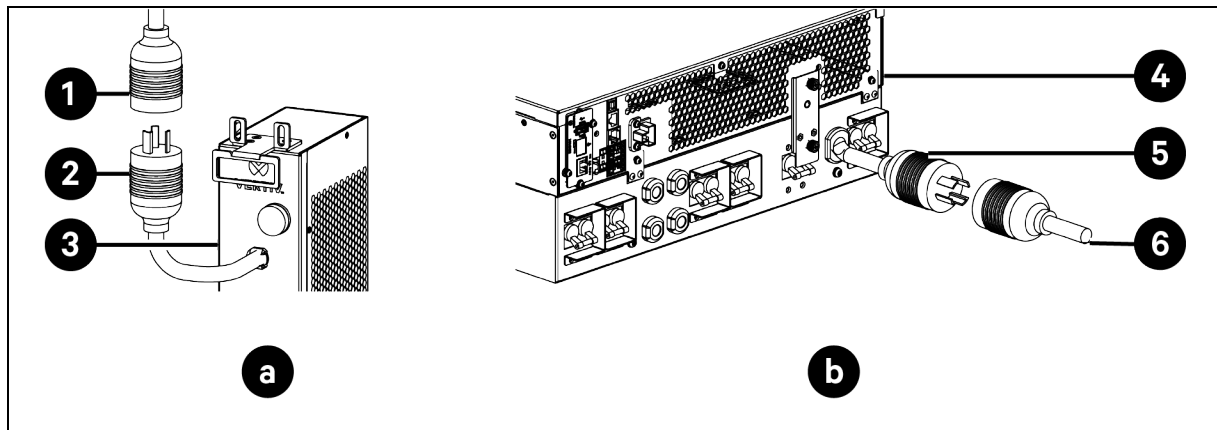
1. Remove the *horizontal cable management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the *main power supply cable* to UPS.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25.
 - b. Connect the cable's *L14-30R connector* to the L14-30P UPS power input connector.
 - c. Route the other end of the cable out of the cabinet through the cable gland (system main input for UPS) and connect it to the mains electricity. For cable access location, see [Cable Access Location on Top Panel](#) on page 75.
3. Connect the *main power supply cable* to PMB.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25
 - b. Connect the cable's *L6-20R connector* to the L6-20P PMB power input connector and use a tie wrap to fix the connector.
 - c. Route the other end of the cable out of the cabinet through the cable gland (system main input for PMB) and connect it to the mains electricity. For cable access location, see [Cable Access Location on Top Panel](#) on page 75.

Figure 4.50 Power Connection B for VS3354 and VS3350 with 3 kVA UPS (GXT5-3KL620RT2UXL) / 6 kVA UPS (GXT5-6000MVRT4UXLN)



Item	Description	Item	Description
1	Main power supply cable for PMB, with L6-20R connector	6	L6-20P PMB power input connector
2	Main power supply cable for UPS, with L14-30R connector	7	PMB
3	Cable gland (system main input for UPS)	8	UPS
4	Cable gland (system main input for PMB)	9	L14-30P UPS power input connector
5	Tie wrap		

Figure 4.51 UPS and PMB Power Connectors



Item	Description	Item	Description
a	Connecting main power supply cable to PMB	3	PMB
b	Connecting main power supply cable to UPS	4	UPS
1	Main power supply cable for PMB, with L6-20R connector	5	L14-30P UPS power input connector
2	L6-20P PMB power input connector	6	Main power supply cable for UPS, with L14-30R connector

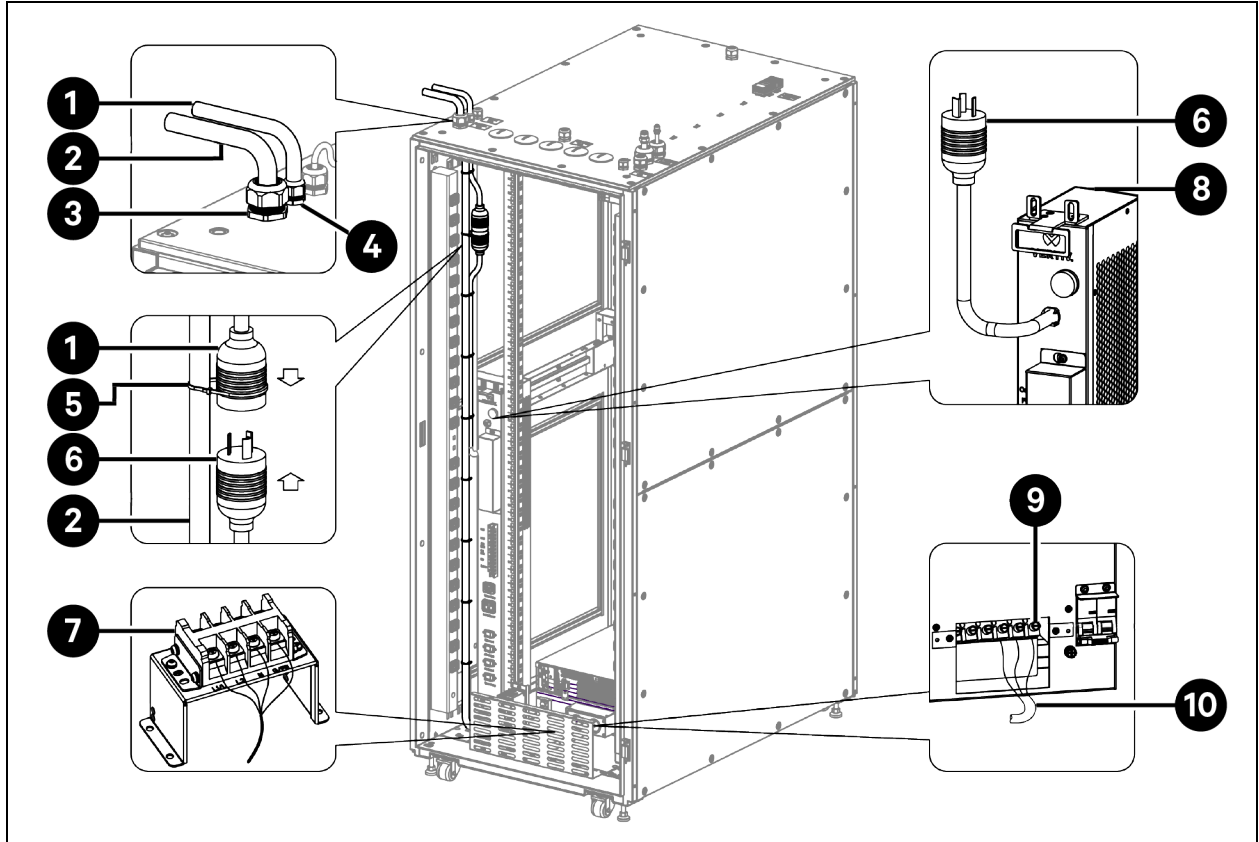
Power Connection B for VS3750 with 10 kVA UPS (GXT5-10KMVRT6UXLN/GXT5-8000MVRT6UXLN)

To connect power cables:

1. Remove the *horizontal cable management panel*. For details, see **Figure 4.35** on page 79.
2. Connect the *main power supply cable* to the terminal block and connect the cable from the terminal block to the UPS.
 - a. The terminal block is factory installed and is located behind the vertical cable management panel. Remove the *protective cover* and the *transparent cover* from the terminal block, as shown in **Figure 4.40** on page 84. Save the *covers* and *screws* for later use. One side of the terminal block is not connected with cable, and this side needs to be connected with main power supply cable. The other side of the terminal block has been connected with cable in factory and this cable is to be connected to the UPS.
 - b. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25. Route the cable through the cable gland (system main input for UPS) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76. Tie the *power cable* to the cable cover panel near the left vertical post. Connect the cable to the terminal block input terminals.
 - c. From the other side of the terminal block, connect the factory-reserved power cable to the UPS input terminals.
 - d. Install the *transparent cover* and the *protective cover* back to the terminal block.
3. Connect the *main power supply cable* to PMB.
 - a. Prepare a *power cable*. For cable specifications, see **Table 3.1** on page 25

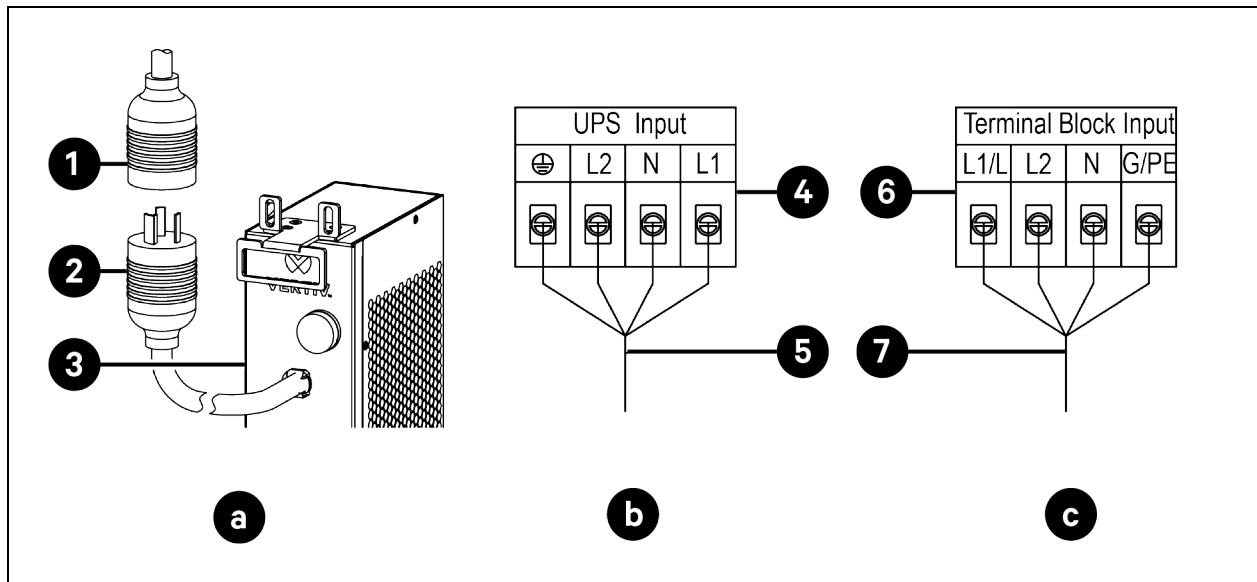
- b. Connect the cable's *L6-30R* connector to the L6-30P PMB power input connector and use a tie wrap to fix the connector.
- c. Route the other end of the cable out of the cabinet through the cable gland (system main input for PMB) and connect it to the mains electricity. For cable access location, see [Cable Access Location on Top Panel](#) on page 75.

Figure 4.52 Power Connection B for VS3750 with 10 kVA UPS (GXT5-10KMVRT6UXLN/GXT5-8000MVRT6UXLN)



Item	Description	Item	Description
1	Main power supply cable for PMB, with L6-30R connector	6	L6-30P PMB power input connector
2	Main power supply cable for terminal block	7	Terminal block
3	Cable gland (system main input for UPS)	8	PMB
4	Cable gland (system main input for PMB)	9	UPS
5	Tie wrap	10	Power supply cable from terminal block to UPS

Figure 4.53 PMB Power Connector, UPS Power Terminals, and Terminal Block Input Terminals



Item	Description	Item	Description
a	Connecting main power supply cable to PMB	3	PMB
b	Connecting power supply cable from terminal block to UPS	4	UPS
c	Connecting main power supply cable to terminal block	5	Power supply cable from terminal block to UPS
1	Main power supply cable for PMB, with L6-30R connector	6	Terminal block
2	L6-30P PMB power input connector	7	Main power supply cable to terminal block

4.6.5 Connecting Power Cables and Ethernet Cable for Evaporator and Condensing Unit

NOTE: For cable specifications, see **Table 3.1** on page 25.

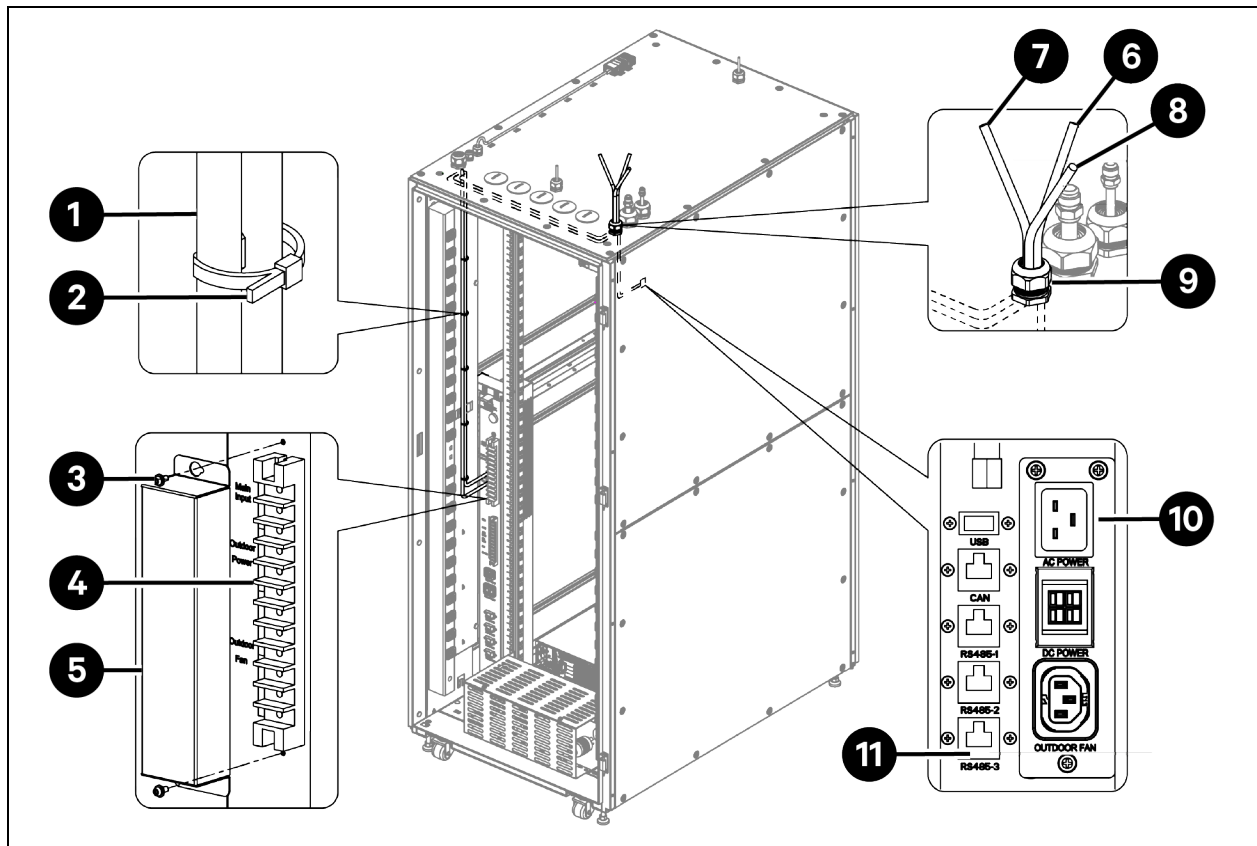
NOTE: For cable access location, see **Cable Access Location on Top Panel** on page 75.

NOTE: For how to route the cable through cable gland, see **Routing Cable through Cable Gland (Air Conditioning Cable)** on page 76.

To connect power cables and Ethernet cable:

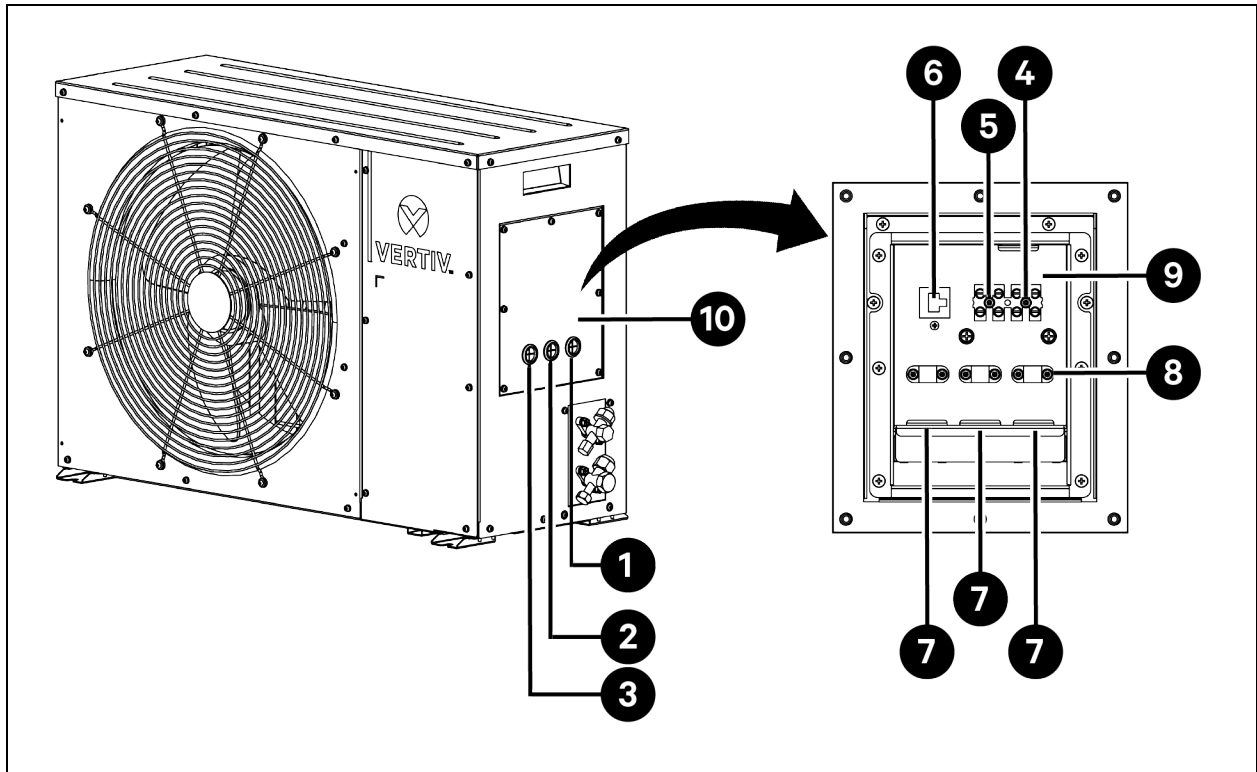
1. Prepare two *power cables* for connecting PMB and condensing unit. Prepare an *Ethernet cable* for connecting evaporator and condensing unit.
2. Connect the *power cable* for PMB to provide power to condenser fan.
 - a. Remove the *PMB terminal block cover*, connect one end of the cable to the outdoor fan terminals on PMB terminal block and route the other end out of the cabinet through the cable gland (air conditioning cable).
 - b. Remove the *electrical box cover* from the condensing unit. Remove three *wire fixing clamps* from the panel for later use. Route the *cable* through grommet 1 on electrical box cover (use a knife to cross cut the grommet before inserting the cable). Route the *cable* through the grommet on panel bottom (use a knife to cross cut the grommet before inserting the cable), as shown in **Figure 4.55** on page 100.
 - c. Connect the *cable* to condenser fan power input terminals on the condensing unit's electrical panel. Connect to 2L and 2N for ZCC03C, ZCC07C, ZCL03C, and ZCL07C, as shown in **Figure 4.57** on page 102. Connect to 2L1 and 2L2 for ZCC03U, ZCC07U, ZCL03U, and ZCL07U, as shown in **Figure 4.56** on page 101.
 - d. Fix the *cable* with the wire fixing clamp.
3. Connect the *power cable* for PMB to provide power to condensing unit.
 - a. Connect one end of the cable to the outdoor power terminals, and route the other end out of the cabinet through the cable gland (air conditioning cable).
 - b. Route the *cable* through grommet 2 on box cover. Then route the cable through the grommet on panel bottom.
 - c. Connect the *cable* to the power input terminals on the condensing unit's electrical panel. Connect to L and N for ZCC03C, ZCC07C, ZCL03C, and ZCL07C, as shown in **Figure 4.57** on page 102. Connect to L1 and L2 for ZCC03U, ZCC07U, ZCL03U, and ZCL07U, as shown in **Figure 4.56** on page 101.
 - d. Fix the *cable* with the wire fixing clamp.
4. Connect the *Ethernet cable* between evaporator and condensing unit.
 - a. Connect one end of the ethernet cable to the RS485-3 port on the evaporator electrical panel and route the other end out of the cabinet through the cable gland (air conditioning cable), as shown in **Figure 4.54** on the facing page.
 - a. Route the *cable* through grommet 3 on box cover. Then route the *cable* through the grommet on panel bottom.
 - b. Connect the *cable* to the compressor communication port on the condensing unit electrical panel. Fix the *cable* with the wire fixing clamp, as shown in **Figure 4.55** on page 100.
5. Reinstall the *condensing unit electrical box cover*.
6. Reinstall the *PMB terminal block cover*.

Figure 4.54 Connecting Power Cables and Ethernet Cable between PMB and Condensing Unit



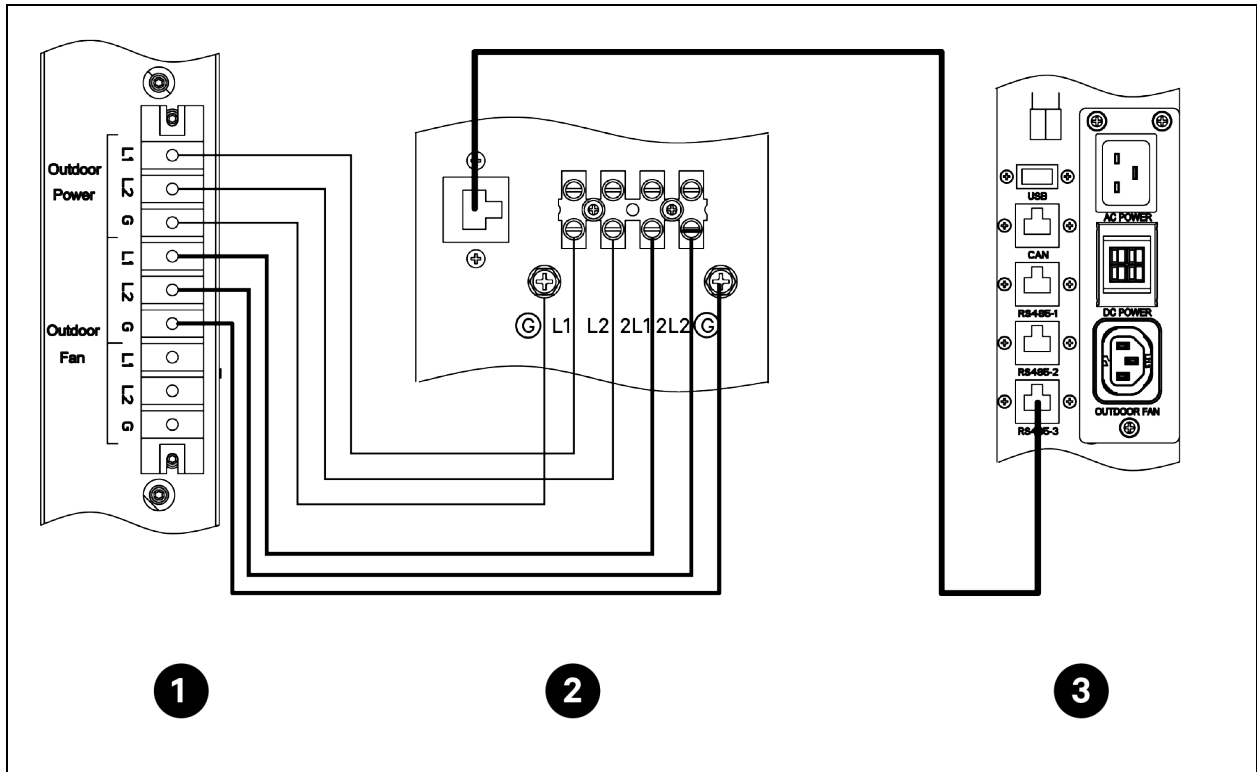
Item	Description	Item	Description
1	Power supply cables connecting PMB and condensing unit	7	Power supply cable for PMB to provide power to condensing unit
2	Tie wrap	8	Ethernet cable between evaporator and condensing unit
3	M4 x 10 Torx screw (2 pieces)	9	Cable gland (air conditioning cable)
4	PMB terminal block	10	Electrical panel of evaporator
5	PMB terminal block cover	11	RS485-3 port (for evaporator to communicate with condensing unit)
6	Power supply cable for PMB to provide power to condenser fan		

Figure 4.55 Electrical Panel of Condensing Unit



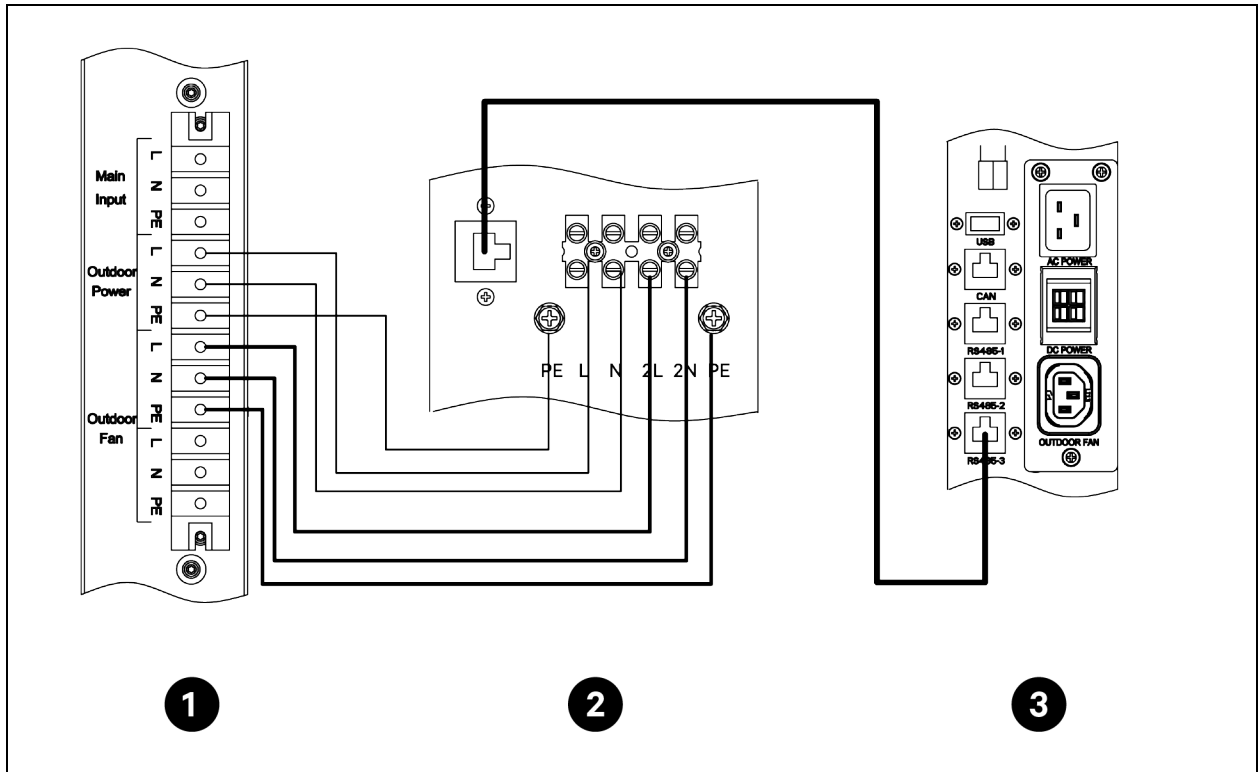
Item	Description	Item	Description
1	Grommet 1	6	RS485 communication port
2	Grommet 2	7	Grommets on electrical panel bottom
3	Grommet 3	8	Wire fixing clamps
4	Condenser fan power input terminals <ul style="list-style-type: none"> • 2L and 2N for ZCC03C, ZCC07C, ZCL03C, and ZCL07C • 2L1 and 2L2 for ZCC03U, ZCC07U, ZCL03U, and ZCL07U 	9	Electrical panel
5	Condensing unit power input terminals <ul style="list-style-type: none"> • L and N for ZCC03C, ZCC07C, ZCL03C, and ZCL07C • L1 and L2 for ZCC03U, ZCC07U, ZCL03U, and ZCL07U 	10	Electrical box cover

Figure 4.56 Power Cable and Ethernet Cable Connection for PMB, Condensing Unit, and Evaporator (UL Models)



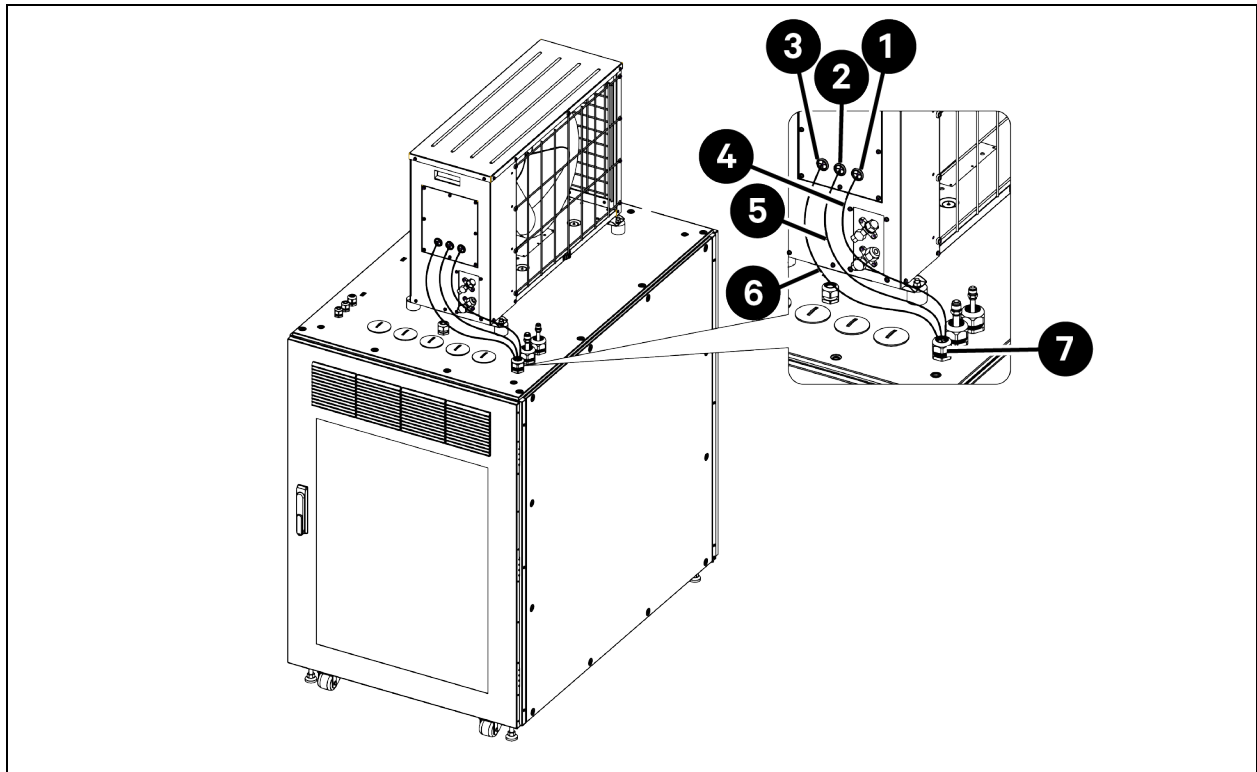
Items	Description
1	PMB (Cabinet VS3354, VS3350, and VS3750)
2	Condensing unit (ZCC03U, ZCC07U, ZCL03U, and ZCL07U)
3	Evaporator (ZRC03U and ZRC07U)

Figure 4.57 Power Cable and Ethernet Cable Connection for PMB, Condensing Unit, and Evaporator (CE Models)



Items	Description
1	PMB (Cabinet VS3354I, VS3350I, and VS3750I)
2	Condensing unit (ZCC03C, ZCC07C, ZCL03C, and ZCL07C)
3	Evaporator (ZRC03C and ZRC07C)

Figure 4.58 Connecting Cables to Condensing Unit when Placed on the Top of Cabinet

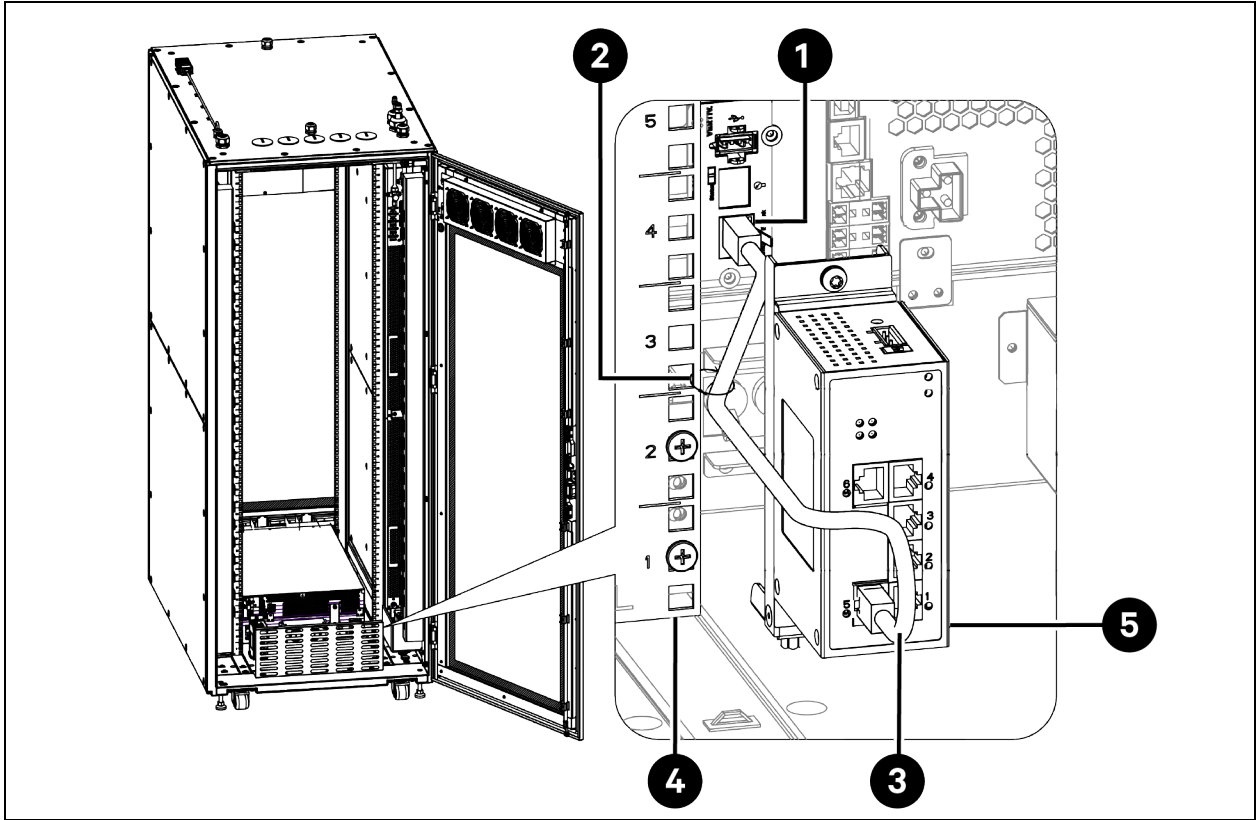


Item	Description	Item	Description
1	Grommet 1	5	Power cable (for PMB to provide power to condensing unit)
2	Grommet 2	6	Ethernet cable
3	Grommet 3	7	Cable gland (air conditioning cables)
4	Power cable (for PMB to provide power to condenser fan)		

4.6.6 Connecting Ethernet Cables for UPS (Optional)

The W46 cable has been connected to the switch in factory. Plug the other end of the W46 cable to the active link port on UPS.

Figure 4.59 Connecting Ethernet Cables for UPS



Item	Description	Item	Description
1	Active Link port on UPS	4	EIA rail
2	Tie wrap	5	Switch
3	W46 cable		

4.6.7 Connecting Power Cables and Ethernet Cables for PDUs

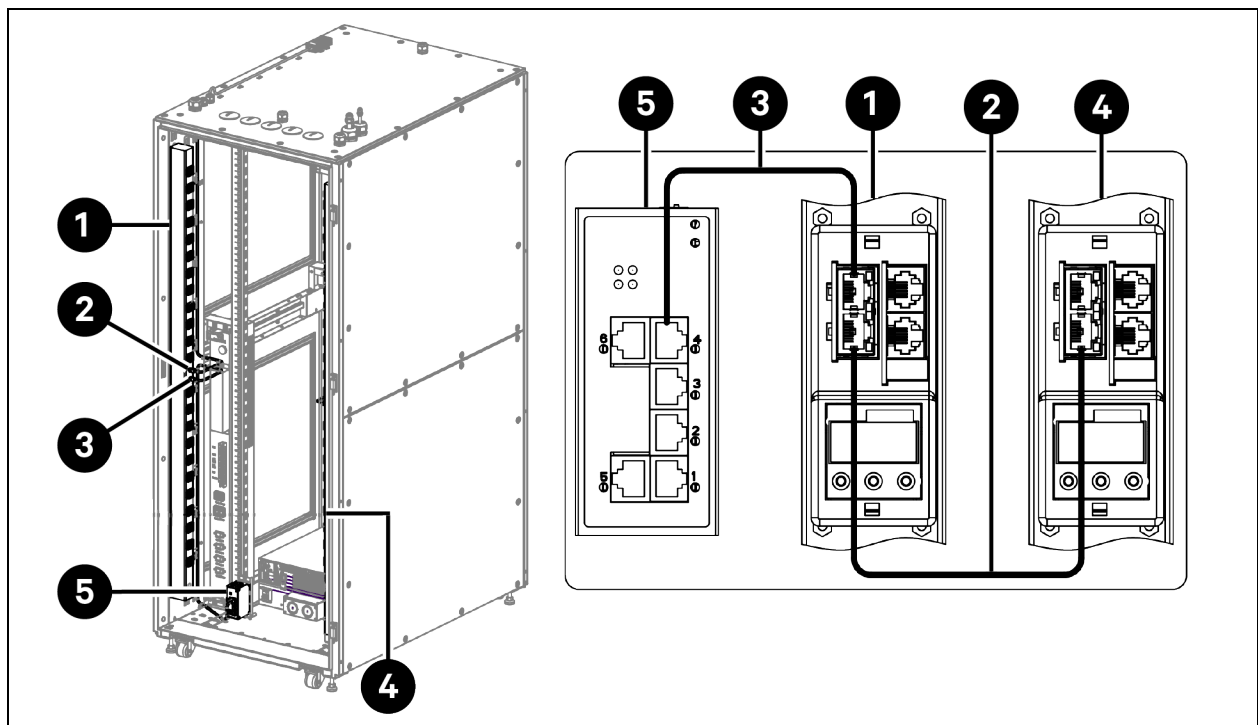


WARNING! When using PDUs, pay attention to the power distribution capacity of a single PDU and the current limit of each PDU output port. It is prohibited to use an over-rated load.

Connecting Ethernet Cables for PDUs (Optional)

The W51 and W52 Ethernet cables have been routed inside the cabinet in factory. They are used for the PDUs with networking function. One end of the W51 cable has been connected to the switch. Connect the other end to PDU1. Connect the W52 cable between PDU1 and PDU2.

Figure 4.60 Connecting Ethernet Cables for PDUs

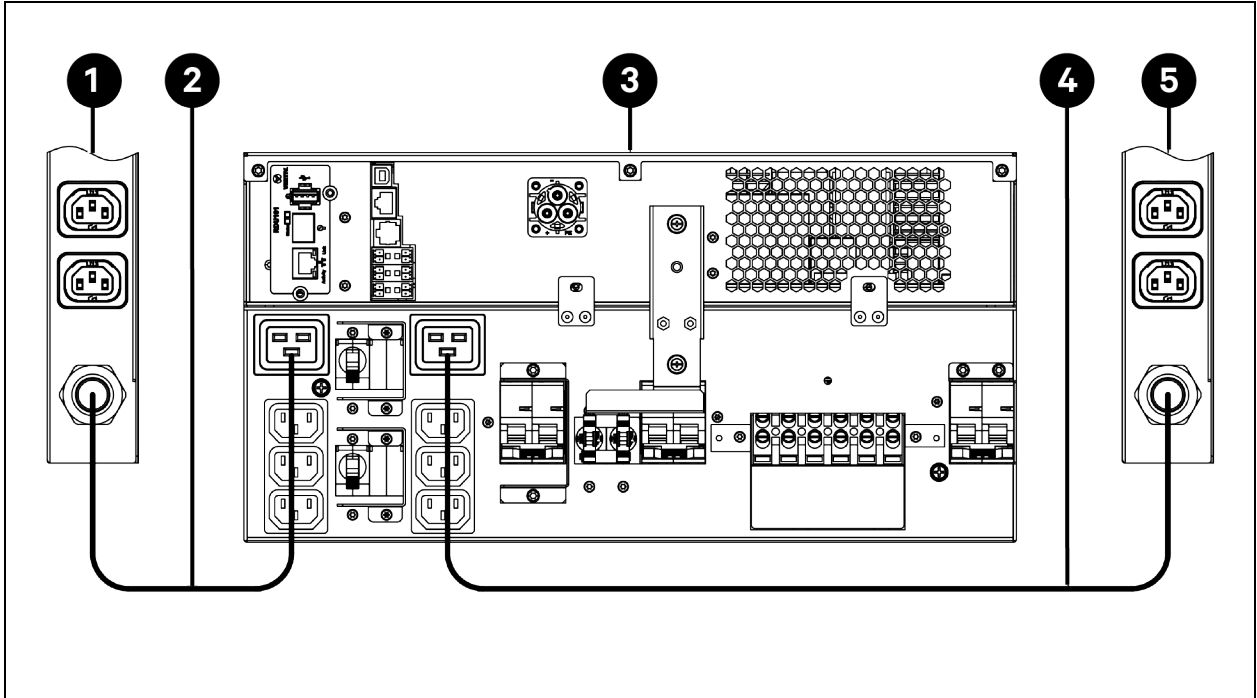


Item	Description	Item	Description
1	PDU1	4	PDU2
2	W52 Ethernet cable between PDU1 and PDU2	5	Switch
3	W51 Ethernet cable between PDU1 and switch		

Connecting Power Cables for PDUs

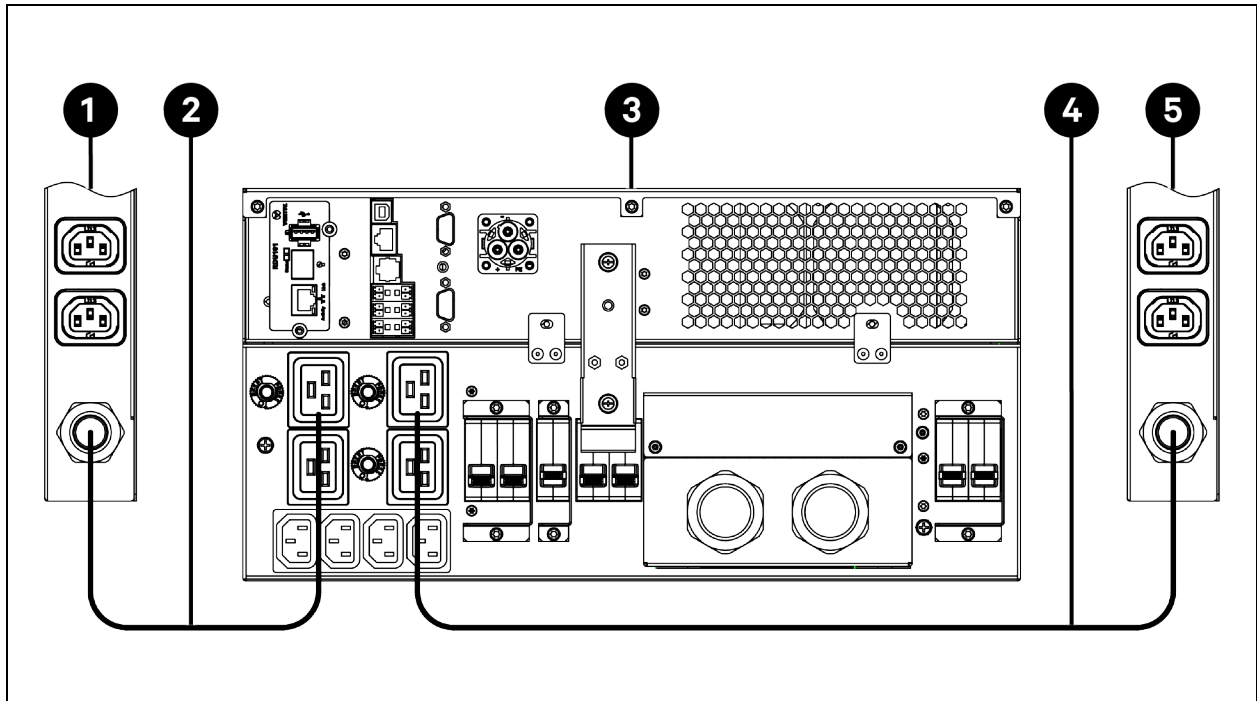
Prepare power cables and connect them between PDUs and UPS. For cable specifications, see **Table 3.1** on page 25.

Figure 4.61 Connecting Power Cables for PDUs (VS3354I and VS3350I Cabinets with 6 kW UPS GXT5-6000MVRT4UXLN)



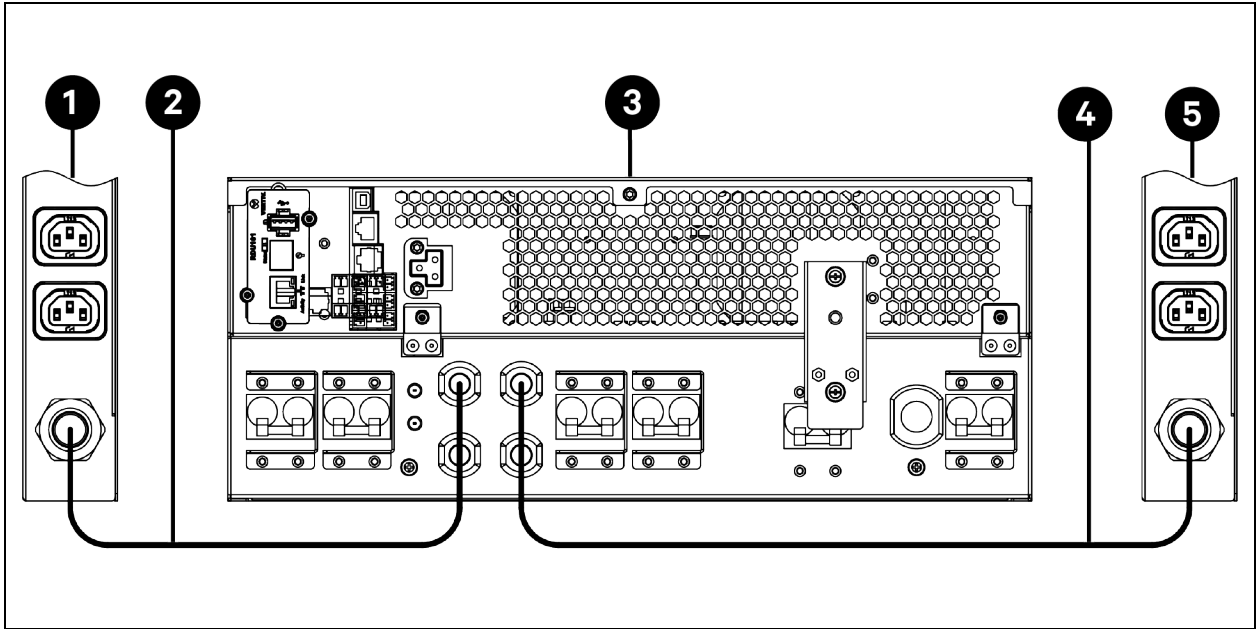
Item	Description	Item	Description
1	PDU1	4	Power cable between UPS and PDU2
2	Power cable between PDU1 and UPS	5	PDU2
3	UPS with C19 socket		

Figure 4.62 Connecting Power Cables for PDUs (VS3750I Cabinet with 10 kW UPS GXT5-10KIRT5UXLE)



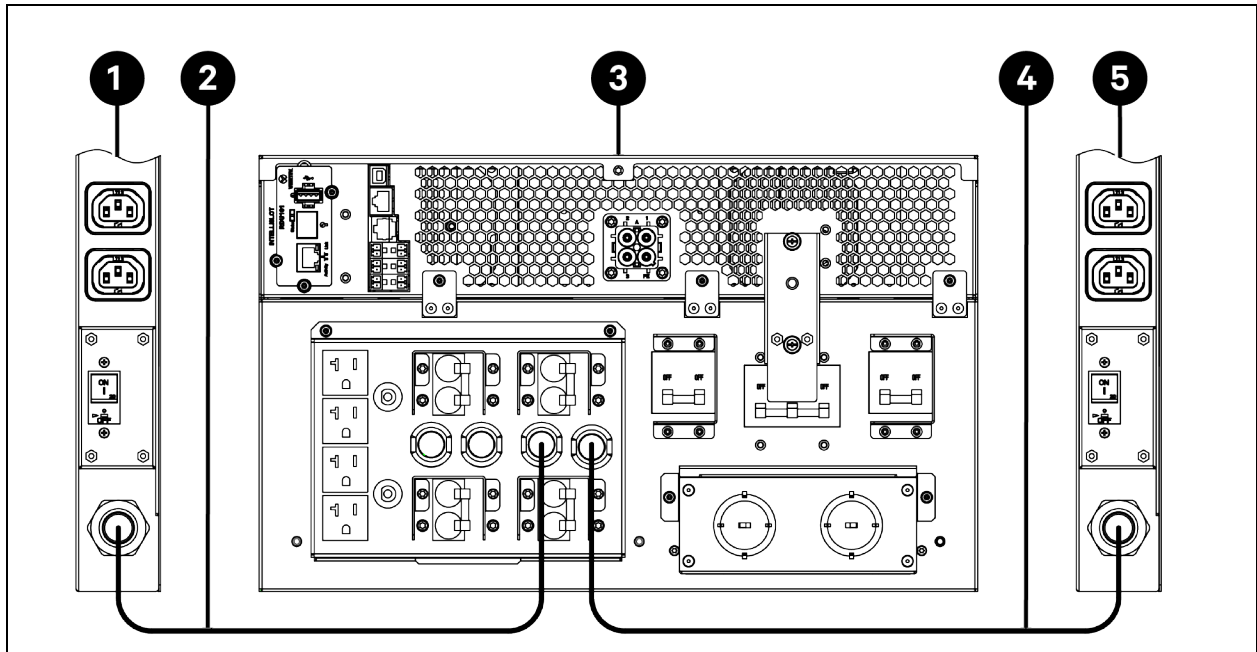
Item	Description	Item	Description
1	PDU1	4	Power cable between UPS and PDU2
2	Power cable between PDU1 and UPS	5	PDU2
3	UPS with C19 socket		

Figure 4.63 Connecting Power Cables for PDUs (VS3354 and VS3350 Cabinets with 6 kW UPS GXT5-6000MVRT4UXLN)



Item	Description	Item	Description
1	PDU1	4	Power cable between UPS and PDU2
2	Power cable between PDU1 and UPS	5	PDU2
3	UPS with L6-30R connector		

Figure 4.64 Connecting Power Cables for PDUs (VS3750 Cabinet with GXT5-10KMVRT6UXLN/GXT5-8000MVRT6UXLN)



Item	Description	Item	Description
1	PDU1	4	Power cable between UPS and PDU2
2	Power cable between PDU1 and UPS	5	PDU2
3	UPS with L6-30R connector		

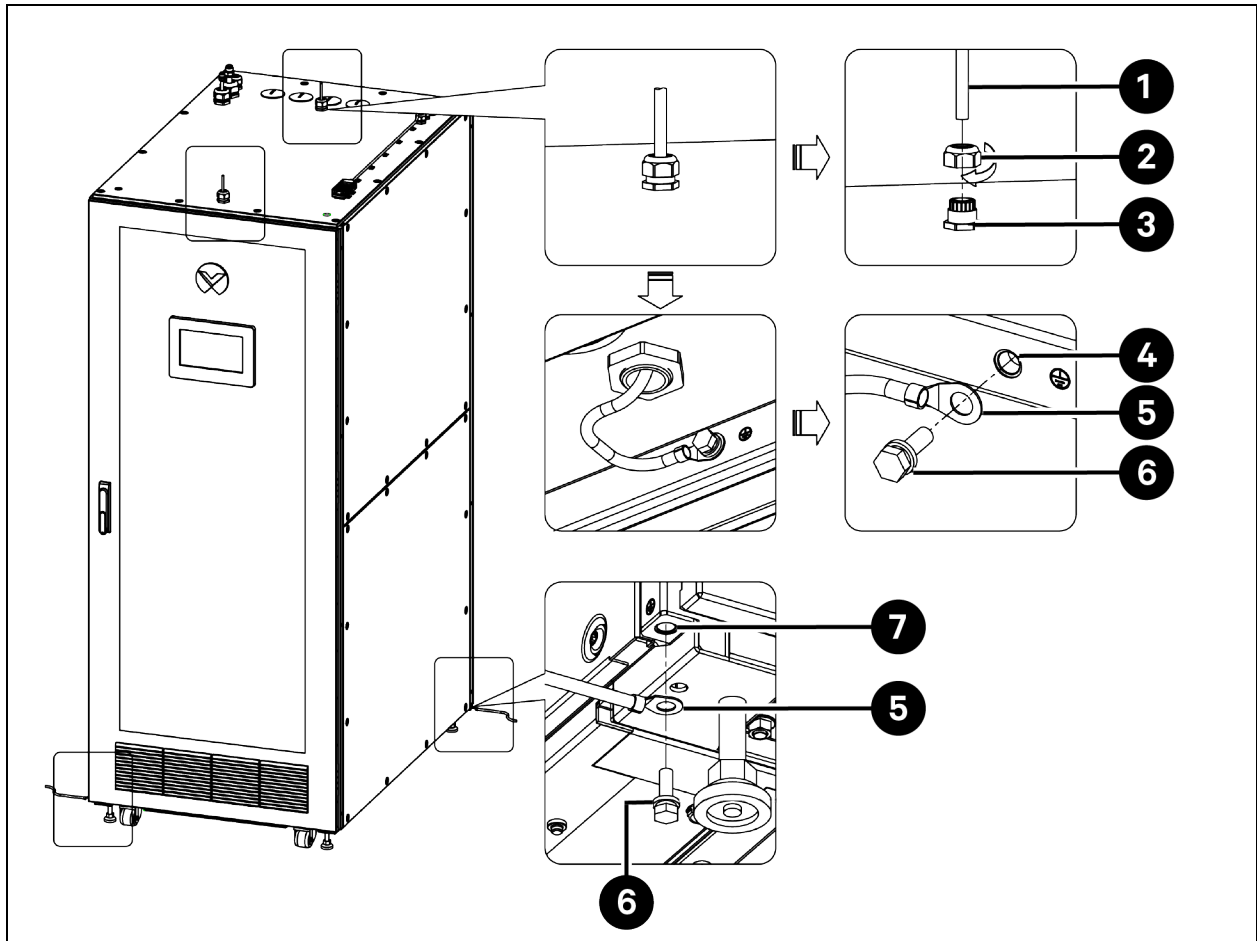
4.6.8 Connecting Grounding Cables

Prepare a grounding cable. For cable specifications, see **Table 3.1** on page 25. There are four grounding points: two at the bottom of the cabinet and two at the top of the front door and rear door. Connect the grounding cable to the grounding point with M8 screw. Connect the other end of the cable to the copper grounding bar in the equipment room.

NOTE: There are four total grounding points. Use at least one grounding point.

NOTE: It is recommended to use wrench to fasten the M8 screw with a torque of 13 to 15 Nm (9.6 to 11.1 lb-ft).

Figure 4.65 Connecting Grounding Cables



Item	Description	Item	Description
1	Grounding cable	5	Grounding cable terminal
2	Cable gland nut	6	M8 × 25 hex screw
3	Cable gland mount	7	Grounding hole on bottom panel
4	Grounding hole on top panel		

4.6.9 Connecting Ethernet Cable for Computer

To connect the Ethernet cable between the cabinet and the computer:

1. Prepare an *Ethernet cable*. For cable specifications, see **Table 3.1** on page 25.
2. Route the *cable* through the cable gland (network input) on top panel into the cabinet. For cable access location, see [Cable Access Location on Top Panel](#) on page 75. For how to route the cable through cable gland, see [Routing Cable through Cable Gland \(Main Ground Input, System Main Input, and Network Input\)](#) on page 76.
3. Connect one end of the cable to the switch in the cabinet, and connect the other end to the computer.

5 Commissioning

5.1 Inspection

Before using the Vertiv™ SmartCabinet™ ID, check that:

- The voltage and frequency of the mains electricity match the requirements of the cabinet.
- All power supply cables are correctly connected and there is no short circuit.
- All Ethernet cables are correctly connected.
- Line set between the evaporator and the condensing unit is correctly connected.
- All valves in the line set are at their required open or closed position.
- The condensate water drainage pipe is correctly connected and there is no leakage.

5.2 Charging Extra Refrigerant and Lubricating Oil to the Air Conditioner



WARNING! Only qualified personnel can charge refrigerant and lubricating oil to the air conditioner. Risk of over pressurization of the refrigeration system. It can cause explosive discharge of high pressure refrigerant, loss of refrigerant, environmental pollution, equipment damage, injury, or death. The air conditioner contains fluids and gases under high pressure. Use extreme caution when charging the refrigerant system. Do not pressurize the system higher than the design pressure marked on the unit's nameplate.



CAUTION: Risk of oil contamination with water. It can cause damage to the equipment. The air conditioner requires the use of PVE (FV50S or FVC68D) oil. PVE oil absorbs water at a much faster rate when exposed to air than previously used oils. Because water is the enemy of a reliable refrigeration system, extreme care must be used when opening systems during installation or service. If water is absorbed into the PVE oil, it will not be easily removed and will not be removed through the normal evacuation process. If the oil is too wet, it may require an oil change. PVE oils also have a property that makes them act as a solvent in a refrigeration system. Maintaining system cleanliness is extremely important because the oil will tend to bring any foreign matter back to the compressor.



CAUTION: Risk of improper refrigerant charging. It can cause damage to the equipment. Refrigerant charge must be weighed into air-cooled compressorized systems before they are started. Starting compressors without proper refrigerant charging can cause the compressors to operate at less than 5 °F (-15 °C) evaporator temperature and at less than 20 psig (138 kPa). Operation for extended periods at less than 20 psig (138 kPa) can cause premature compressor failure.

5.2.1 General Data for Charging Refrigerant and Lubricating Oil (UL Models)

NOTE: For the UL version air conditioners, they have been pre-charged with R410A refrigerant in factory. When the liquid pipe between the evaporator and the condensing unit is shorter than 5 m (16.4 ft), you do not need to add extra refrigerant. When the liquid pipe is longer than 5 m (16.4 ft), you need to add extra refrigerant. The air conditioner is to be charged with R410A only.

NOTE: R410A is a mixed refrigerant. When charging the air conditioner with mixed refrigerant, charge only liquid refrigerant.

NOTE: The air conditioner has been pre-charged with base lubricating oil (FV50S) in factory. When the liquid pipe between the evaporator and the condensing unit is shorter than 10 m (32.8 ft), you do not need to add extra lubricating oil. When the liquid pipe is longer than 10 m (32.8 ft), you need to add extra lubricating oil. It is recommended to charge the FV50S lubricating oil. If this type of oil cannot be obtained, you can use FVC68D which can be mixed with FV50S in any ratio.

The base amount of R410A refrigerant and FV50S lubricating oil pre-charged in factory is listed in **Table 5.1** below.

Table 5.1 Base R410A Refrigerant Charge and FV50S Base Lubricating Oil Charge (UL Models)

Unit Type	Base Refrigerant Charge kg (lb)			Base Lubricating Oil Charge ml (oz)		
	Evaporator	Condensing Unit	Total	Evaporator	Condensing Unit	Total
ZRC03U evaporator and ZCC03U condensing unit	0.3 (0.66)	1.05 (2.3)	1.35 (3.0)	0	270 (9.1)	270 (9.1)
ZRC03U evaporator and ZCL03U condensing unit	0.3 (0.66)	3.4 (7.50)	3.70 (8.16)	0	970 (32.8)	970 (32.8)
ZRC07U evaporator and ZCC07U condensing unit	0.6 (1.32)	1.6 (3.53)	2.20 (4.85)	0	670 (22.7)	670 (22.7)
ZRC07U evaporator and ZCL07U condensing unit	0.6 (1.32)	5.6 (12.35)	6.20 (13.67)	0	1370 (46.3)	1370 (46.3)

The extra charge of the R410A refrigerant and FV50S lubricating oil can be calculated using the following equations:

Additional Refrigerant Charge (kg) = Refrigerant charge per meter of liquid pipe (kg/m) × [Total length of liquid pipe (m) – 5.0 (m)]

Additional Refrigerant Charge (lb) = Refrigerant charge per foot of liquid pipe (lb/ft) × [Total length of liquid pipe (ft) – 16.4 (ft)]

Additional Lubricating Oil Charge (ml) = Lubricating oil charge per meter of liquid pipe (ml/m) × [Total length of liquid pipe (m) – 10.0 (m)]

Additional Lubricating Oil Charge (oz) = Lubricating oil charge per foot of liquid pipe (oz/ft) × [Total length of liquid pipe (ft) – 32.8 (ft)]

Where refrigerant charge per meter (foot) of liquid pipe and lubricating oil charge per meter (foot) of liquid pipe are listed in **Table 5.2** on the facing page.

Table 5.2 R410A Refrigerant and FV50S Lubricating Oil Charge per Meter (Foot) of Liquid Pipe

Liquid Pipe Diameter x Thickness mm (in)	Refrigerant Charge per Meter of Liquid Pipe (kg/m)	Refrigerant Charge per Foot of Liquid Pipe (lb/ft)	Lubricating Oil Charge per Meter of Liquid Pipe (ml/m)	Lubricating Oil Charge per Foot of Liquid Pipe (oz/ft)
9.52 (3/8) x 0.8 (0.03)	0.063	0.043	13	0.13
12.7 (1/2) x 1 (0.04)	0.088	0.060	21	0.22

5.2.2 General Data for Charging Refrigerant and Lubricating Oil (CE Models)

NOTE: For the CE version air conditioners, they have not been pre-charged with any refrigerant in factory, the R410A refrigerant should be charged on site, the unit is charged with about 0.2 MPa (2 bar) nitrogen. When the liquid pipe between the evaporator and the condensing unit is shorter than 5 m (16.4 ft), the refrigerant should be charged based on the following Base Refrigerant Charge shown in **Table 5.3** below. When the liquid pipe is longer than 5 m (16.4 ft), the extra refrigerant should be added in addition to the Base Refrigerant Charge.

NOTE: The air conditioner is to be charged with R410A only and R410A is a mixed refrigerant. When charging the air conditioner with mixed refrigerant, charge only liquid refrigerant.

NOTE: The air conditioner has been pre-charged with base lubricating oil (FV50S) in factory. When the liquid pipe between the evaporator and the condensing unit is shorter than 10 m (32.8 ft), you do not need to add extra lubricating oil. When the liquid pipe is longer than 10 m (32.8 ft), you need to add extra lubricating oil. It is recommended to charge the FV50S lubricating oil. If this type of oil cannot be obtained, you can use FVC68D which can be mixed with FV50S in any ratio.

Table 5.3 Base R410A Refrigerant Charge and FV50S Base Lubricating Oil Charge (CE Models)

Unit Type	Base Refrigerant Charge kg (lb)	Base Lubricating Oil Charge ml (oz)		
		Evaporator	Condensing Unit	Total
ZRC03C evaporator and ZCC03C condensing unit	1.35 (3.0)	0	270 (9.1)	270 (9.1)
ZRC03C evaporator and ZCL03C condensing unit	3.70 (8.16)	0	970 (32.8)	970 (32.8)
ZRC07C evaporator and ZCC07C condensing unit	2.20 (4.85)	0	670 (22.7)	670 (22.7)
ZRC07C evaporator and ZCL07C condensing unit	6.20 (13.67)	0	1370 (46.3)	1370 (46.3)

The extra charge of the R410A refrigerant and FV50S lubricating oil can be calculated using the following equations:

Additional Refrigerant Charge (kg) = Refrigerant charge per meter of liquid pipe (kg/m) × [Total length of liquid pipe (m) – 5.0 (m)]

Additional Refrigerant Charge (lb) = Refrigerant charge per foot of liquid pipe (lb/ft) × [Total length of liquid pipe (ft) – 16.4 (ft)]

Additional Lubricating Oil Charge (ml) = Lubricating oil charge per meter of liquid pipe (ml/m) × [Total length of liquid pipe (m) – 10.0 (m)]

Additional Lubricating Oil Charge (oz) = Lubricating oil charge per foot of liquid pipe (oz/ft) × [Total length of liquid pipe (ft) – 32.8 (ft)]

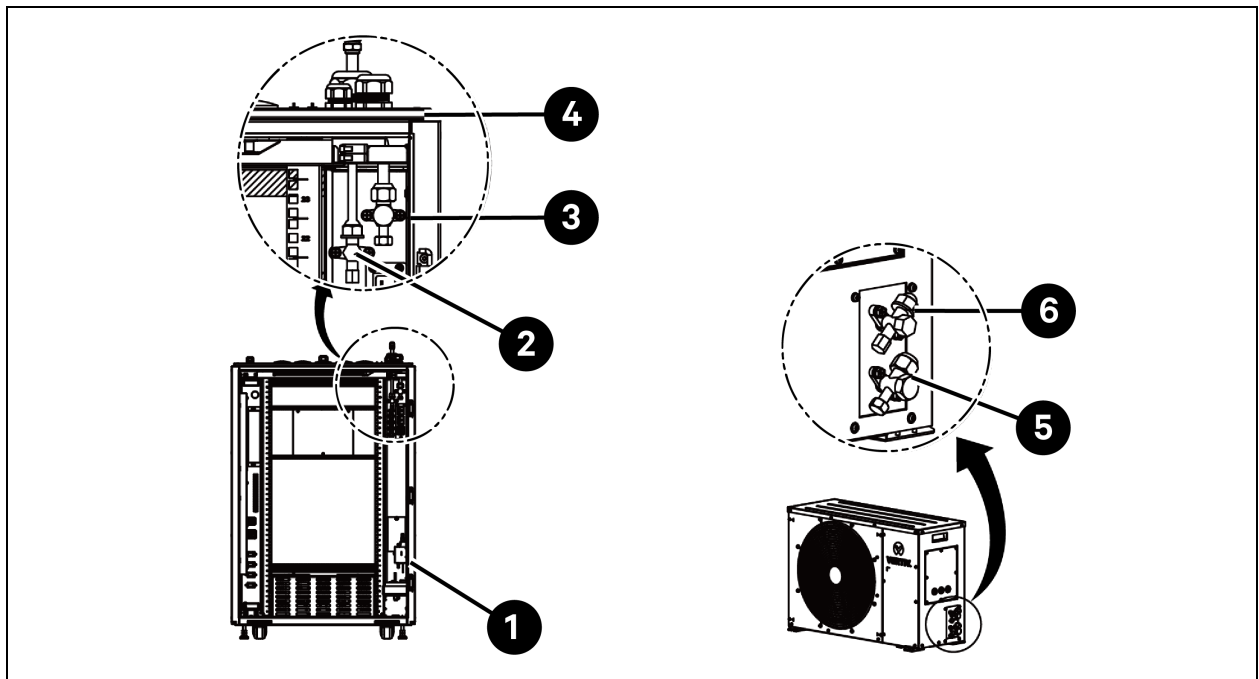
Where refrigerant charge per meter (foot) of liquid pipe and lubricating oil charge per meter (foot) of liquid pipe are listed in **Table 5.2** on the previous page.

5.2.3 Evacuating the Line Set (UL Models)

NOTE: For the UL version air conditioners, the evaporator and the condensing unit have been pre-charged with R410A refrigerant in factory. Here you only need to evacuate the liquid pipe and the gas pipe between the evaporator and the condensing unit.

NOTE: Before evacuating the line set, make sure that the connectors on the condensing unit and the connectors on the evaporator are closed. Open the cabinet rear door, and the connectors on the evaporator are located under the top panel to access the connectors on evaporator, as shown in **Figure 5.1** below.

Figure 5.1 Connectors on Evaporator and Condensing Unit

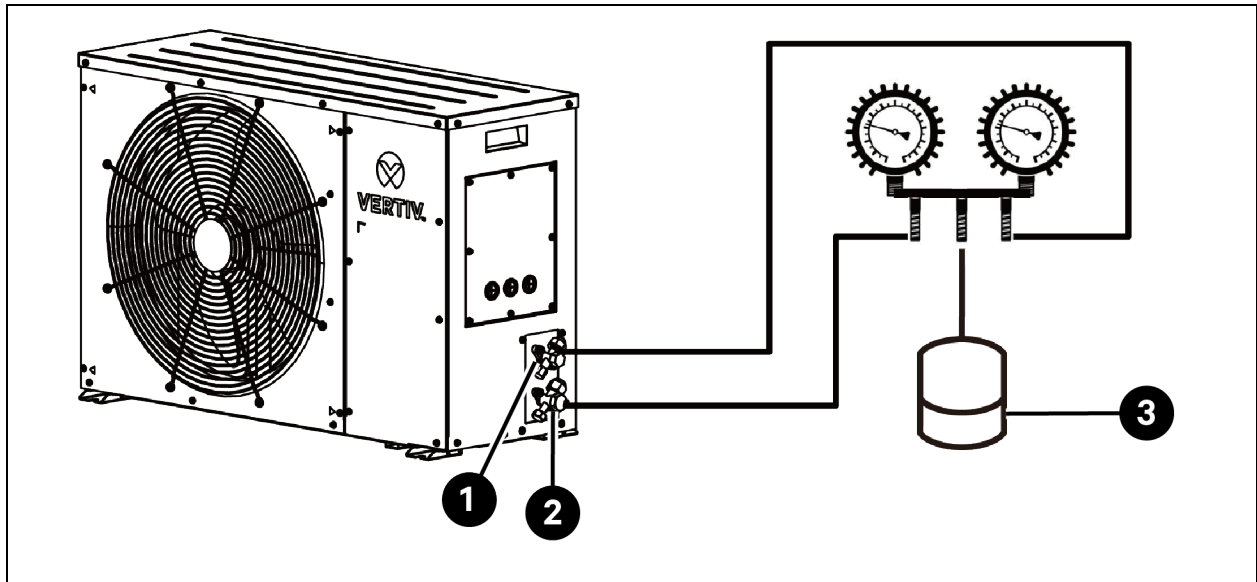


Item	Description	Item	Description
1	Cabinet rear door	4	Cabinet top panel
2	Liquid pipe connector on evaporator	5	Gas pipe connector on condensing unit
3	Gas pipe connector on evaporator	6	Liquid pipe connector on condensing unit

To evacuate the line set:

1. On the condensing unit, remove Schrader valve caps from the gas pipe and liquid pipe connectors on the condensing unit. Connect the low and high sides of the *manifold gauge* to the Schrader valves.
2. Connect a *nitrogen tank* to the hose in the center of the gauge. Fill the line set with 2.8 MPa(a) (406.1 psig) nitrogen.
3. Wait for at least three hours and check for any leakage in the piping and connections. If there is no leakage, remove the nitrogen tank and connect a vacuum pump to evacuate the line set. The absolute pressure after evacuation should be below 65 Pa(a) or 500 microns.

Figure 5.2 Evacuating the Gas Pipe and Liquid Pipe



Item	Description	Item	Description
1	Liquid pipe connector on condensing unit	3	Vacuum pump
2	Gas pipe connector on condensing unit		

5.2.4 Evacuating the Line Set and the Units (CE Models)

NOTE: For the CE version air conditioners, the evaporator and the condensing unit have been evacuated and pre-charged with about 0.2 MPa (2 bar) nitrogen in factory. Before installing the unit, confirm that the unit is still filled with sufficient nitrogen. If there is no pressure inside the unit, there may be a leak in the unit that needs to be troubleshoot.

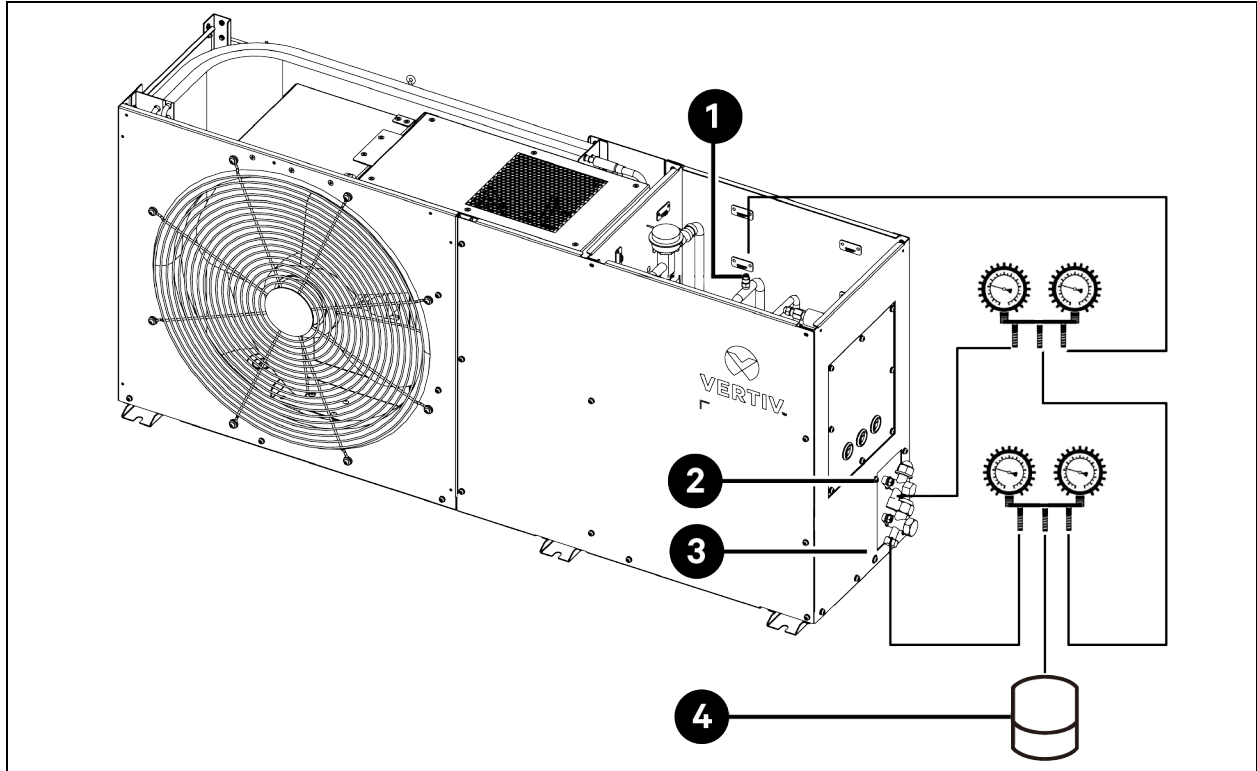
NOTE: Before evacuating the line set, make sure that the connectors on the condensing unit and the connectors on the evaporator are kept closed. Open the cabinet rear door, and the connectors on the evaporator are located under the top panel to access the connectors on evaporator, as shown in **Figure 5.1** on the previous page.

To evacuate the line set and the units:

1. On the condensing unit, remove Schrader valve caps from the gas pipe and liquid pipe connectors on the condensing unit. Connect the low and high sides of the manifold gauge to the Schrader valves. See **Figure 5.2** above.
2. Connect a nitrogen tank to the hose in the center of the gauge. Fill the line set with 2.8 MPa(a) (406.1 psig) nitrogen.
3. Wait for at least three hours and check for any leakage in the piping and connections. If there is no leakage, remove the nitrogen tank.
4. Open all the connectors on the evaporator and the condensing unit and keep all the units and pipes are in the same system.
5. Connect a vacuum pump to evacuate the whole refrigerant system. The absolute pressure after evacuation should be below 65 Pa(a) or 500 microns.

NOTE: If the low ambient condensing unit is installed, the reserved Schrader valve near the receiver need to be evacuated together. Remove the top panel by removing fourteen M4 x 10 pan head screws. Connect the manifold gauges to the reserved Schrader valve near the receiver and to the two Schrader valves on the connectors, as shown in **Figure 5.3** below.

Figure 5.3 Evacuating the Low Ambient Condensing Unit



Item	Description	Item	Description
1	Reserved Schrader valve near receiver	3	Gas pipe connector
2	Liquid pipe connector	4	Vacuum pump

5.2.5 Charging Extra Lubricating Oil

NOTE: The air conditioner has been pre-charged with base lubricating oil (FV50S) in factory. When the liquid pipe between the evaporator and the condensing unit is shorter than 10 m (32.8 ft), you do not need to add extra lubricating oil. When the liquid pipe is longer than 10 m (32.8 ft), you need to add extra lubricating oil. It is recommended to charge the FV50S lubricating oil. If this type of oil cannot be obtained, you can use FVC68D which can be mixed with FV50S in any ratio. For the amount of extra charge, see [General Data for Charging Refrigerant and Lubricating Oil \(UL Models\)](#) on page 112 and [General Data for Charging Refrigerant and Lubricating Oil \(CE Models\)](#) on page 113.

After evacuating the line set, remove the vacuum pump and connect the lubricating oil tank to make the oil draw to the line set. Repeat this procedure (evacuating and then adding oil) several times until desired amount of oil is added.

5.2.6 Charging Extra R410A Refrigerant (UL Models)

NOTE: For the UL version air conditioners, they have been pre-charged with R410A refrigerant in factory. When the liquid pipe between the evaporator and the condensing unit is shorter than 5 m (16.4 ft), you do not need to add extra refrigerant. When the liquid pipe is longer than 5 m (16.4 ft), you need to add extra refrigerant. The air conditioner is to be charged with R410A only. For the amount of extra charge, see [General Data for Charging Refrigerant and Lubricating Oil \(UL Models\)](#) on page 112.

NOTE: R410A is a mixed refrigerant. When charging the air conditioner with mixed refrigerant, charge only liquid refrigerant.

NOTE: Do not over charge or under charge the system. Otherwise the performance of the air conditioner will be affected.

To charge the R410A refrigerant:

1. Remove the *vacuum pump* and connect the *R410A refrigerant tank* to the gauge. Purge manifold tank hose to remove air between refrigerant tank and manifold gauges.
2. Keep the refrigerant tank inverted to pull liquid refrigerant from the tank and place on scale. Once tank is on scale open the manifold gauge and start adding liquid refrigerant to both the liquid pipe and gas pipe. Keep tank inverted to ensure liquid refrigerant is being drawn from the refrigerant tank.
3. When the desired amount of refrigerant is charged, close the valves on the manifold gauge and the refrigerant tank and remove the tank.

NOTE: If the static charge cannot charge enough refrigerant because the refrigerant tank pressure is insufficient, then the compressor can be turned on for charging. In this case, the remaining refrigerant must be charged via the Schrader valve of gas pipe connector (low pressure side), and the other Schrader valves must be kept closed or removed.

5.2.7 Charging R410A Refrigerant (CE Models)

NOTE: For the CE version air conditioners, they have not been pre-charged with any refrigerant in factory, the R410A refrigerant should be charged on site. When the liquid pipe between the evaporator and the condensing unit is shorter than 5 m (16.4 ft), only the base refrigerant should be charged based on the Base Refrigerant Charge shown in **Table 5.3** on page 113. When the liquid pipe is longer than 5 m (16.4 ft), the extra refrigerant should be added in addition to the Base Refrigerant Charge. For the amount of extra charge, see [General Data for Charging Refrigerant and Lubricating Oil \(CE Models\)](#) on page 113.

NOTE: R410A is a mixed refrigerant. When charging the air conditioner with mixed refrigerant, charge only liquid refrigerant.

NOTE: Do not over charge or under charge the system. Otherwise the performance of the air conditioner will be affected.

To charge the R410A refrigerant:

1. Remove the vacuum pump and connect the R410A refrigerant tank to the gauge. Purge manifold tank hose to remove air between refrigerant tank and manifold gauges.
2. Keep the refrigerant tank inverted to pull liquid refrigerant from the tank and place on scale. Once tank is on scale open the manifold gauge and start adding liquid refrigerant to both the liquid pipe and gas pipe. Keep tank inverted to ensure liquid refrigerant is being drawn from the refrigerant tank.
3. When the desired amount of refrigerant is charged, close the valves on the manifold gauge and the refrigerant tank and remove the tank.

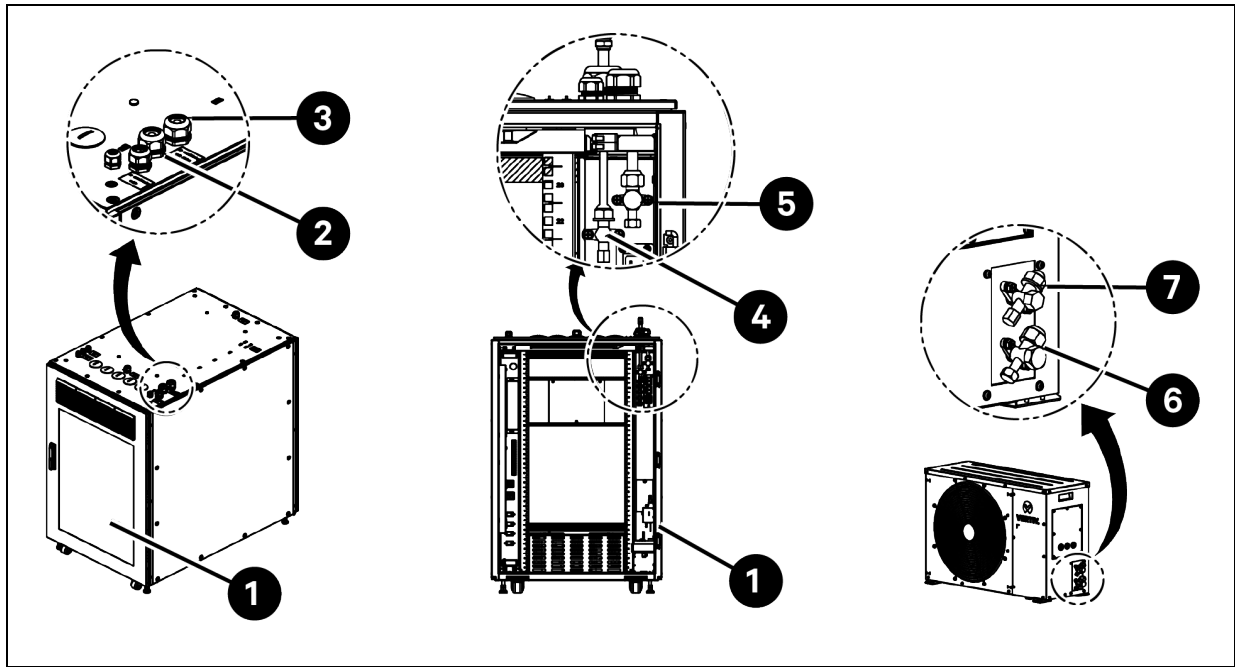
NOTE: If the static charge cannot charge enough refrigerant because the refrigerant tank pressure is insufficient, then the compressor can be turned on for charging. In this case, the remaining refrigerant must be charged via the Schrader valve of gas pipe connector (low pressure side), and the other Schrader valves must be kept closed or removed.

5.3 Covering Connectors and Pipes with Thermal Insulation Materials

Before powering on the cabinet, open the two connectors on the condensing unit and open the two connectors on the evaporator inside the cabinet. After that, cover the two connectors on the condensing unit, two connectors on the cabinet top panel, and two connectors on the evaporator with thermal insulation materials. Then cover the gas pipe and liquid pipe with thermal insulation materials.

NOTE: Covering the connectors and pipes with thermal insulation materials is very important. Otherwise, the condensate water may accumulate on the connectors and pipes and drop onto the surface of critical devices, causing damages to the critical devices.

Figure 5.4 Connectors on Cabinet, Evaporator, and Condensing Unit



Item	Description	Item	Description
1	Cabinet rear door	5	Gas pipe connector on evaporator
2	Gas pipe connector on cabinet top panel	6	Gas pipe connector on condensing unit
3	Liquid pipe connector on cabinet top panel	7	Liquid pipe connector on condensing unit
4	Liquid pipe connector on evaporator		

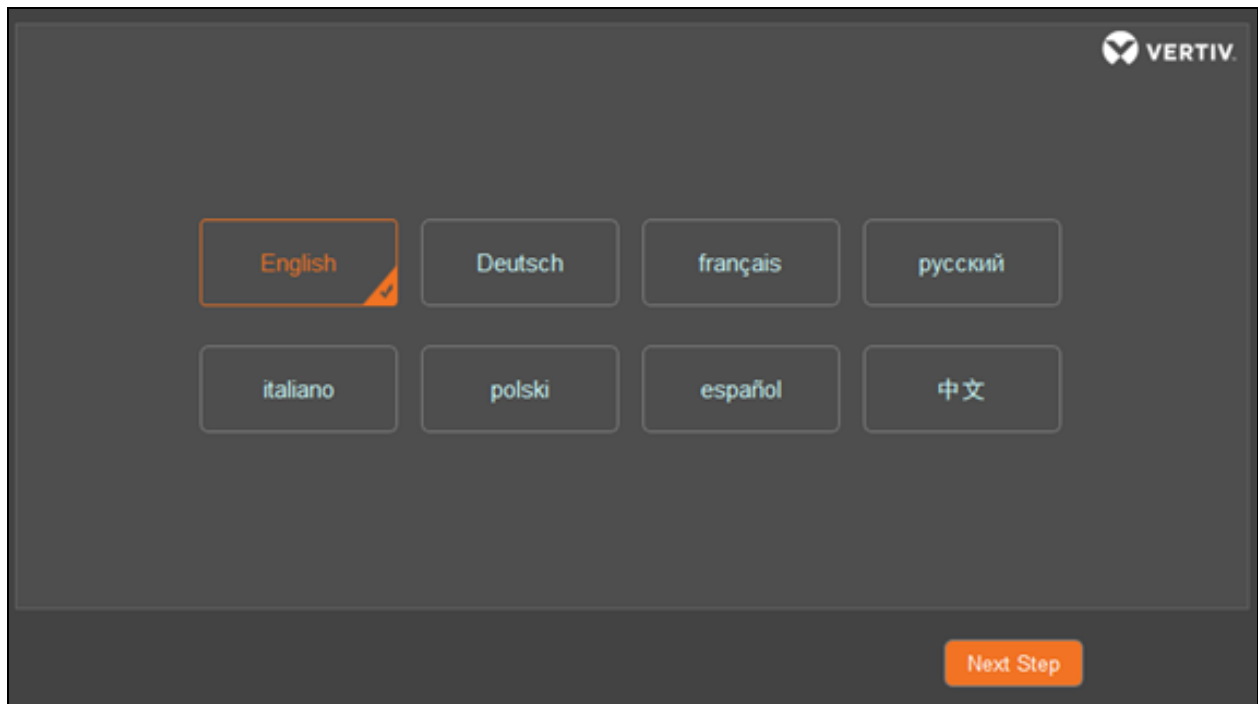
5.4 Powering ON the Cabinet

NOTE: The startup of the cabinet must be performed by trained and authorized professional.

NOTE: For detailed operations on the UPS LCD screen, see the UPS user manual provided with the cabinet.

To power on the cabinet:

1. Close the *external circuit breaker*.
2. Close the *input circuit breaker* on UPS. The LCD screen on the UPS initializes.
3. Close the *output circuit breaker* on UPS.
4. Close the *Main Input circuit breaker* on PMB. The indicator of the PMB is illuminated.
5. Close the *A/C Indoor and A/C Outdoor circuit breakers* on PMB.
6. Wait till the 9-inch LCD screen on the cabinet front door initializes. On the displayed language selection screen, press your preferred language and press *Next Step*.

Figure 5.5 Language Selection Screen

7. Configure Cabinet Locks, Power Connection Method, PDU Type, PDU Qty, UPS Type, and Emergency Fan, and press *Save*. A password input dialog box is displayed. Input 1234 (default password) and press *Enter*. A message is displayed indicating that the system will reboot in 180 seconds.

Figure 5.6 Configuration Screen 1

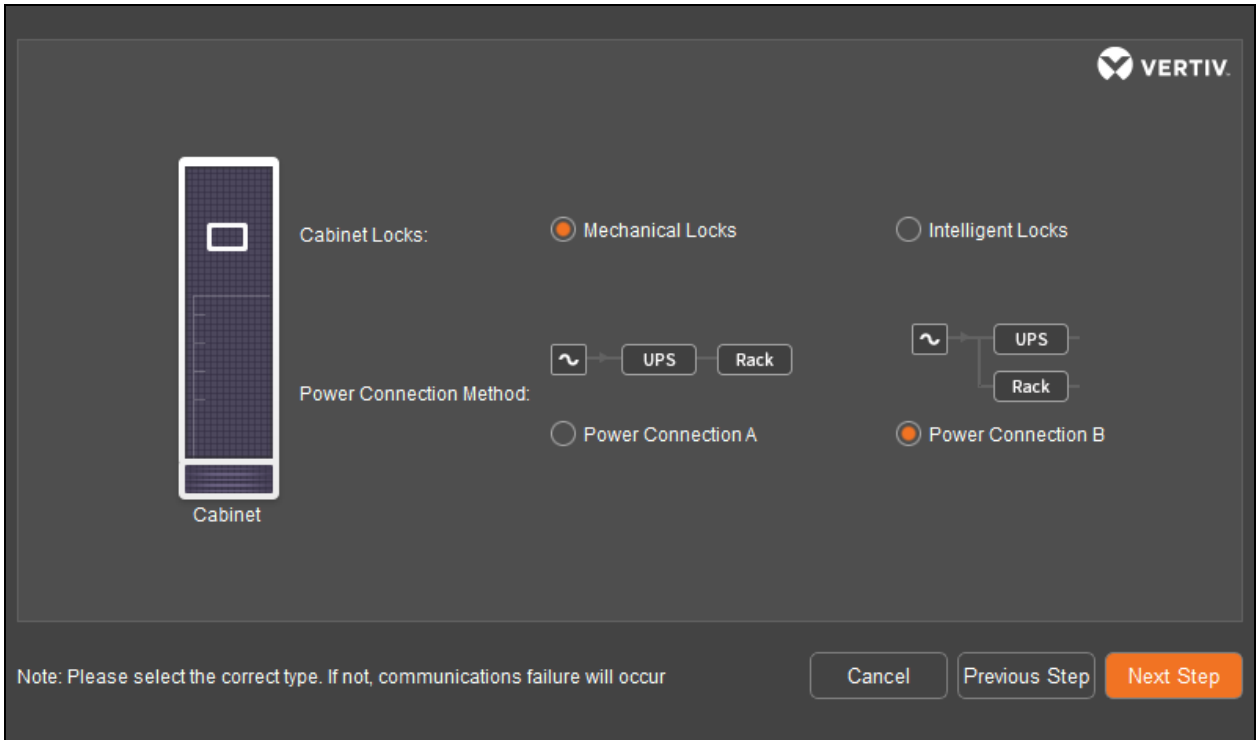
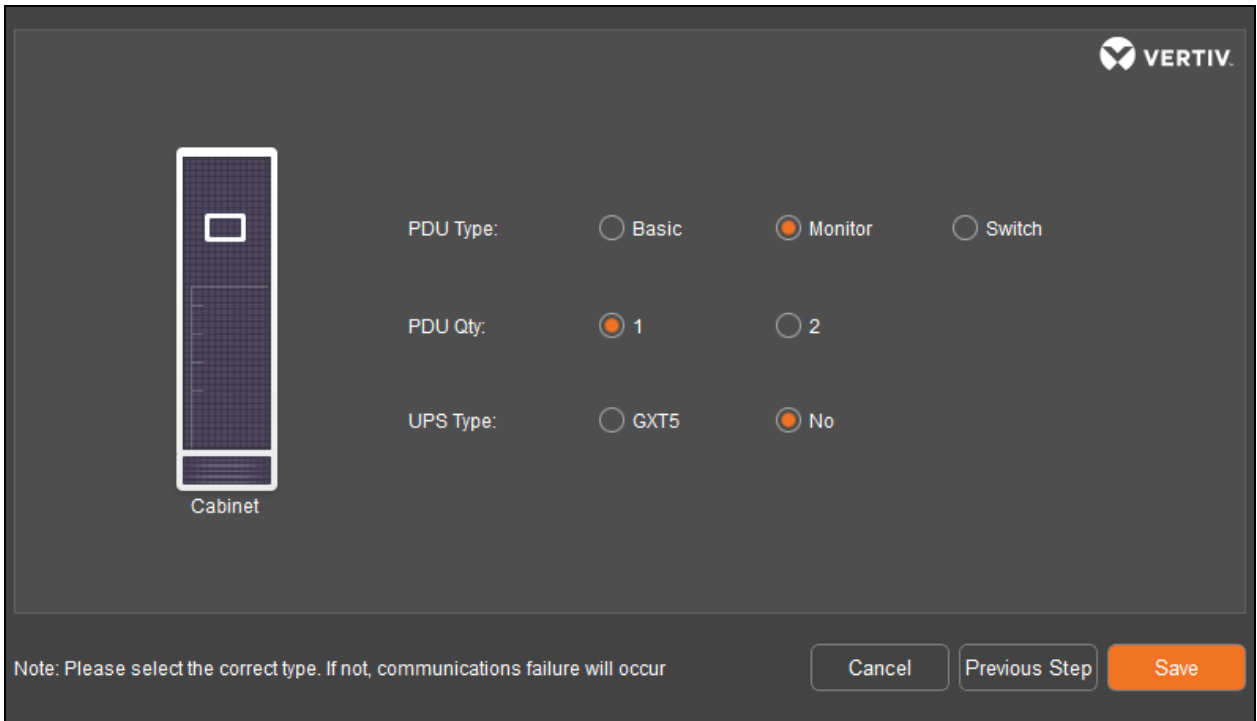
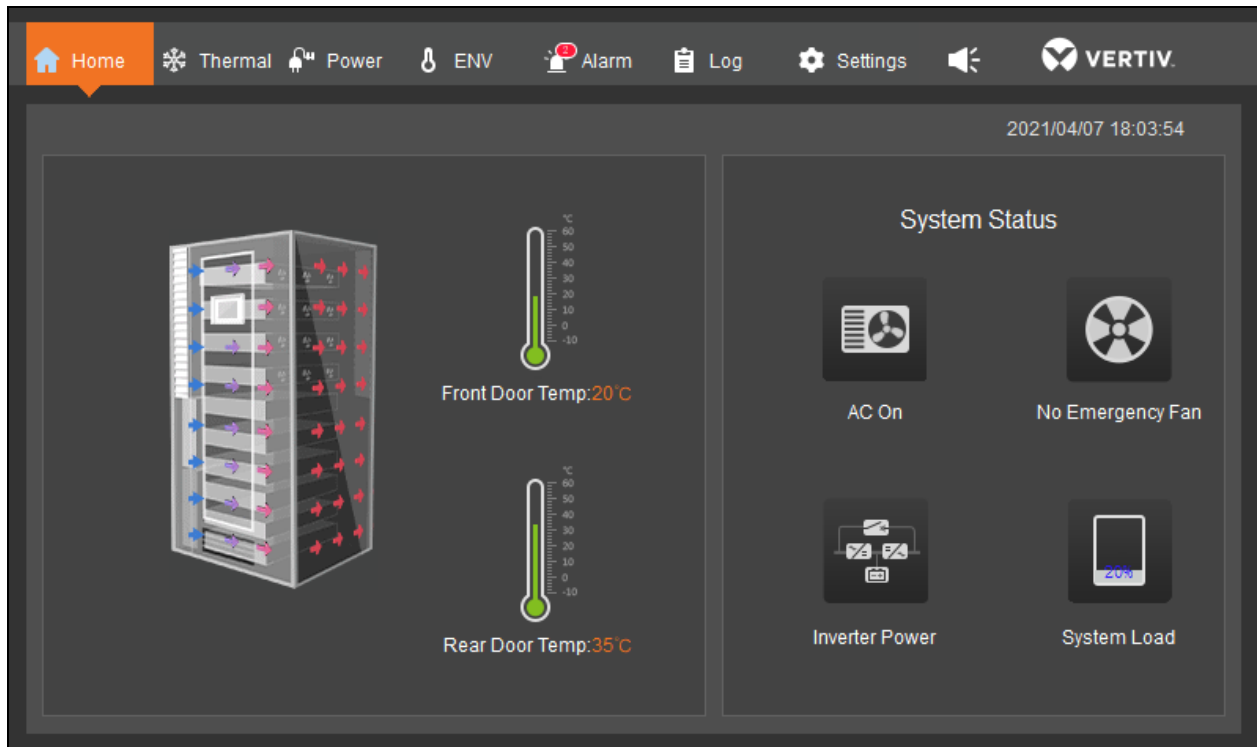


Figure 5.7 Configuration Screen 2



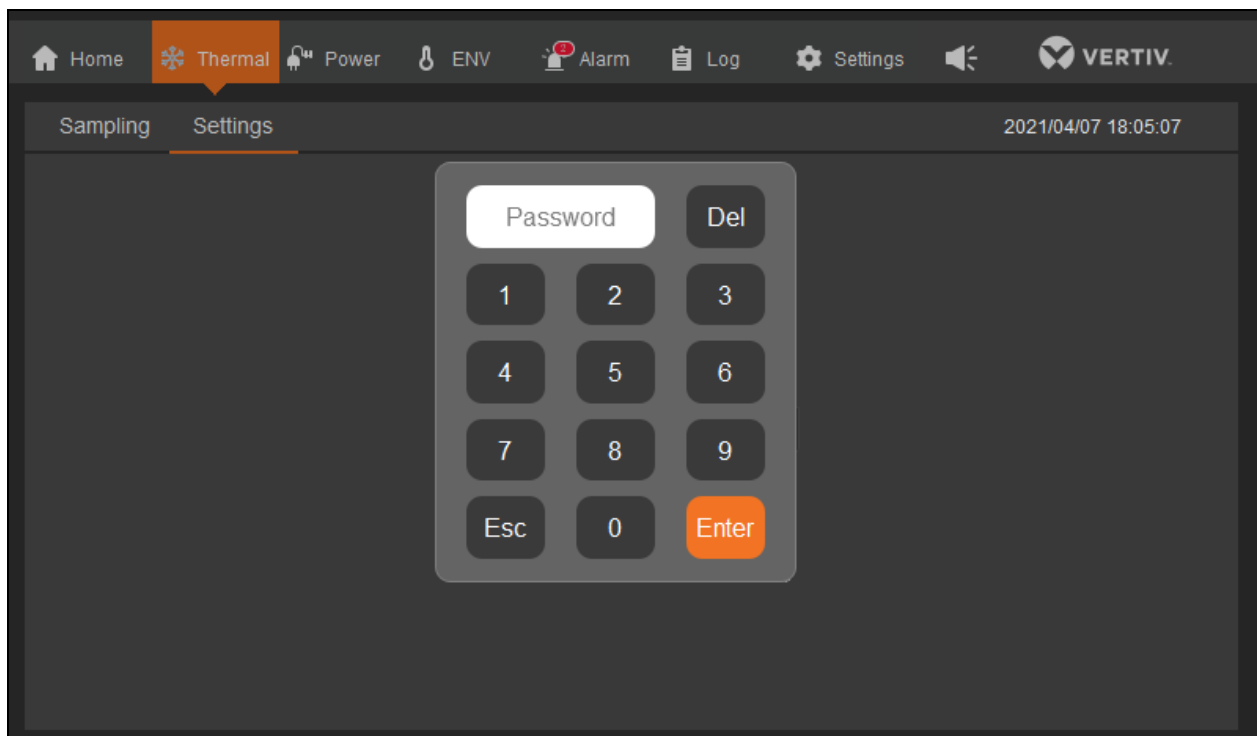
8. After the system reboots, the home page is displayed. Check that the system status is normal.

Figure 5.8 Home Page



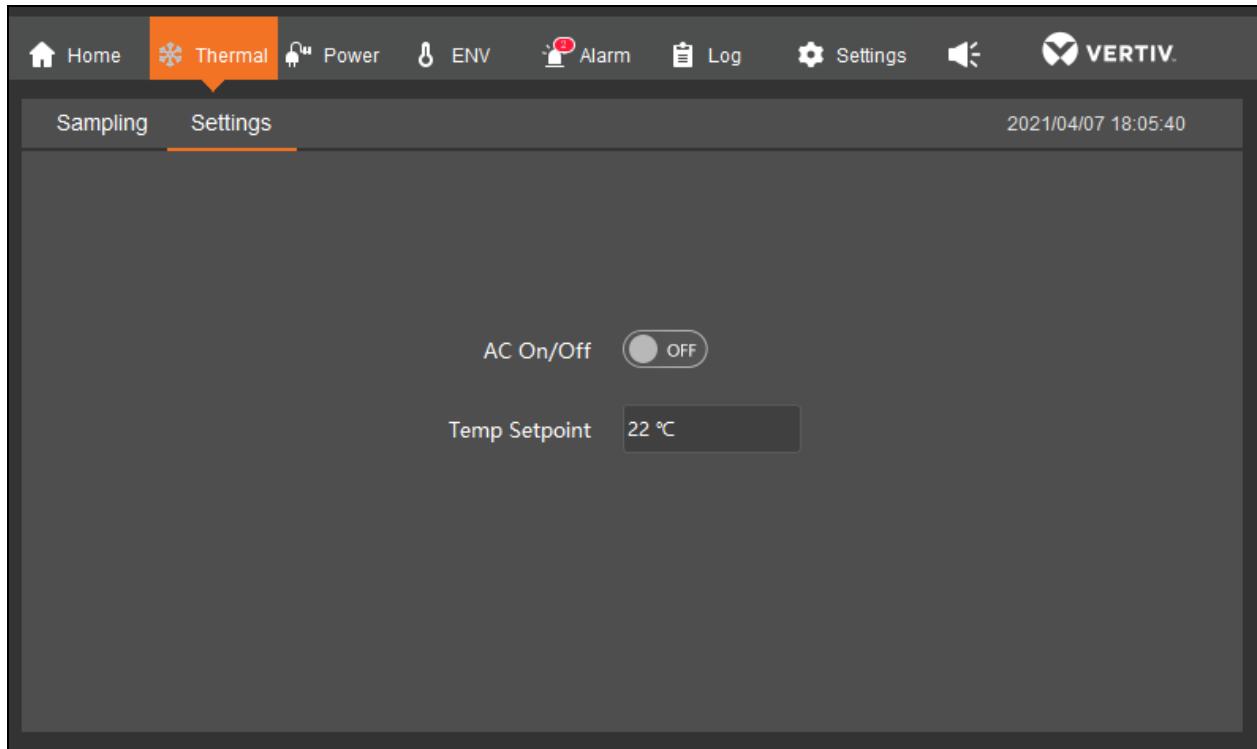
9. In the menu bar, press *Thermal* and *Settings*. Input 1234 (default password) and press *Enter*.

Figure 5.9 Thermal Settings Page 1



- Switch on the *AC On/Off* button to power on the air conditioner. In the displayed Turn on AC dialog box, press *OK*.

Figure 5.10 Thermal Settings Page 2



- Power on *IT equipment*.

5.5 Powering OFF the Cabinet

NOTE: Before powering off the cabinet, make sure that all IT equipment is powered off.

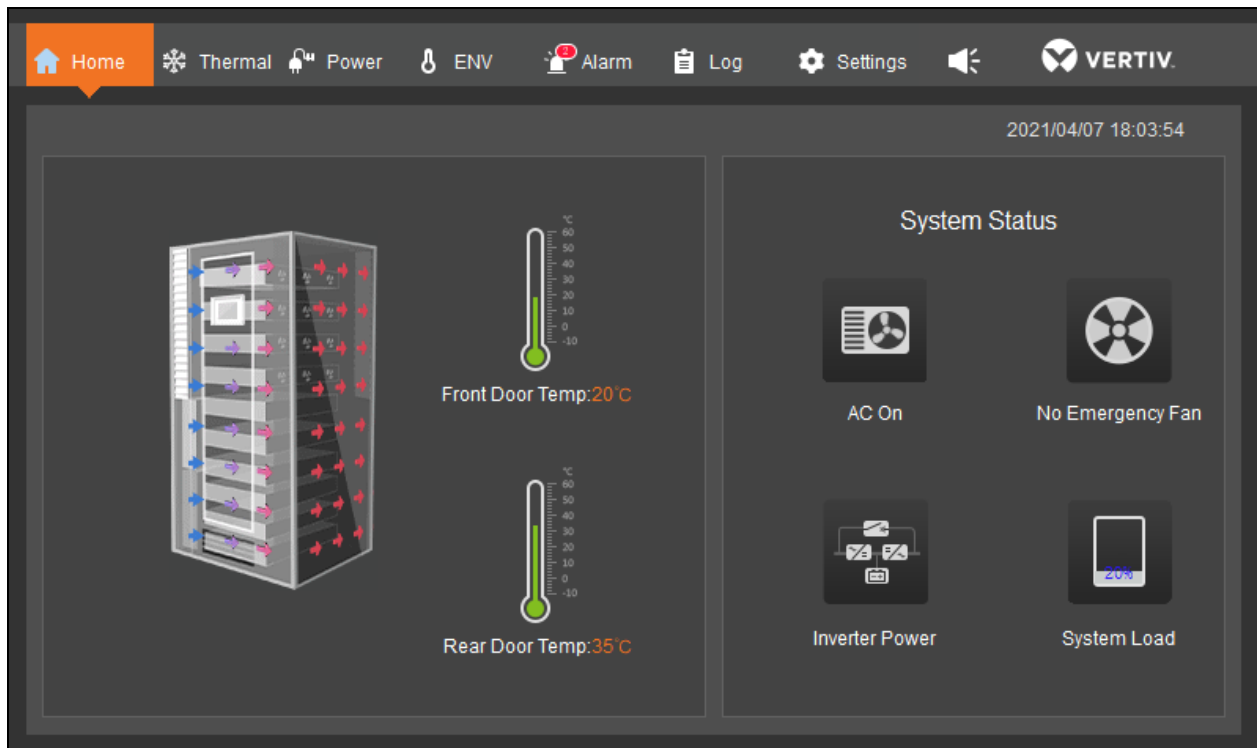
- In the home page of the LCD screen, press *Thermal > Settings*. Input *1234* (default password) and press *Enter*. Switch off the *AC On/Off* button to power off the air conditioner.
- After the air conditioner stops providing cool air, open the *A/C Indoor* and *A/C Outdoor circuit breakers* on *PMB*.
- Open the *Main Input circuit breaker* on *PMB*.
- Press and hold the *power on/off button* on *UPS LCD*, select *Yes*, and then press *Enter* to power off the *UPS*.
- Open the *input circuit breaker* and *output circuit breaker* on *UPS*.
- Check that all devices have been powered off, and then close the front and rear cabinet doors.

6 Operation

6.1 Home Page

On the home page of the LCD screen, the front door temperature, rear door temperature, and system status are displayed.

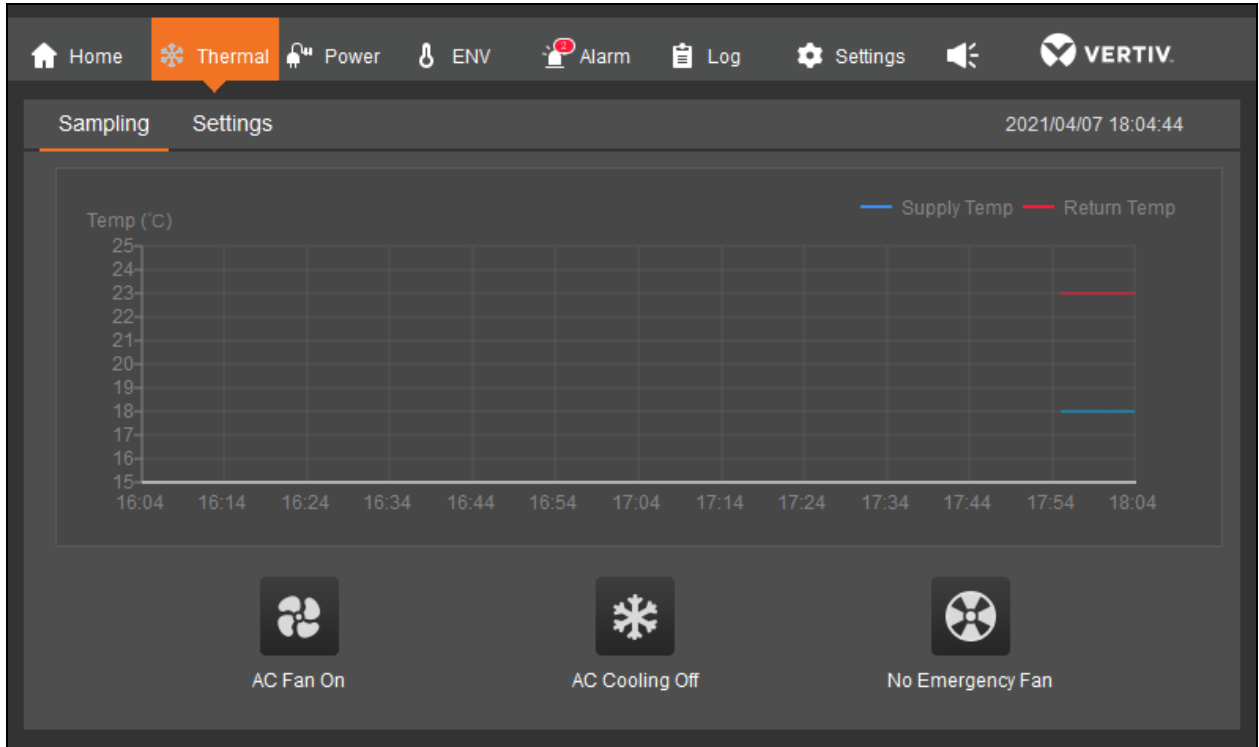
Figure 6.1 Home Page of the LCD Screen



6.2 Thermal

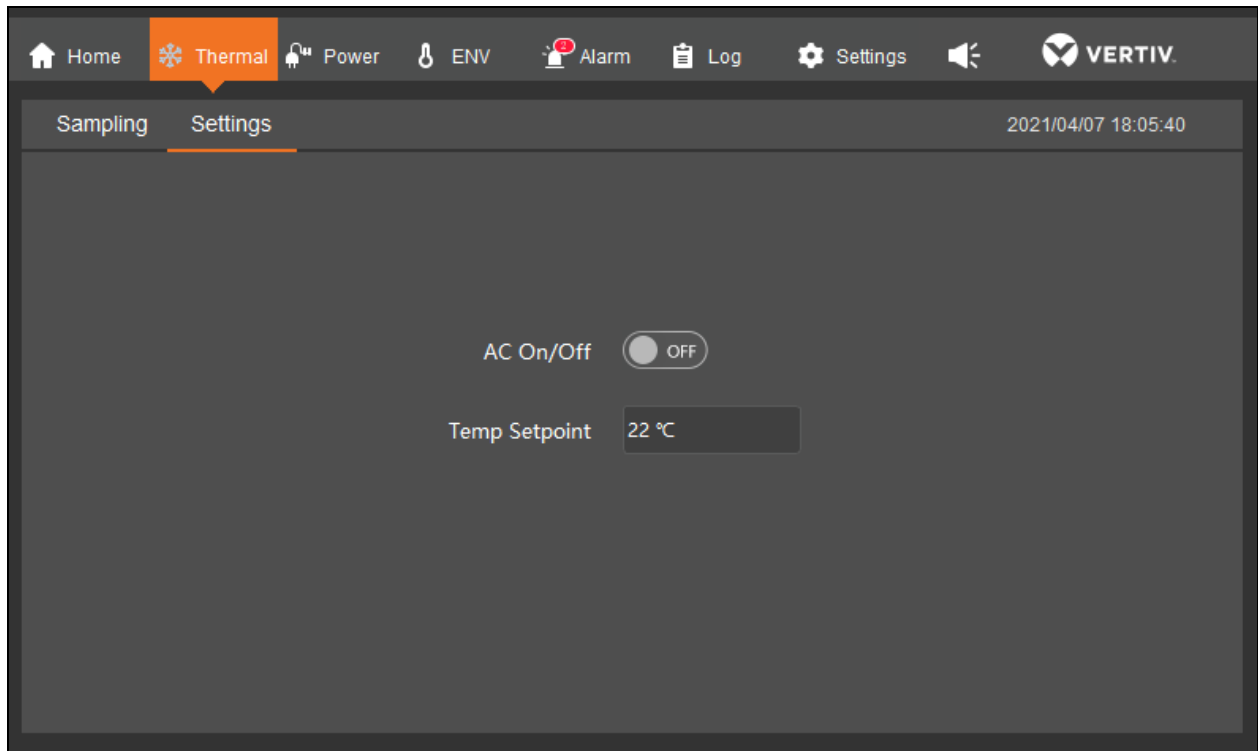
Press *Thermal*. On the Sampling page, the supply air temperatures are displayed in a line curve and the line curve is refreshed every 20 seconds. The ON and OFF state of the AC fan, AC cooling, and emergency fan are displayed at the bottom.

Figure 6.2 Thermal Sampling Page



To enter the Settings page, you need to input password. If you input 1234 (default password), you can power ON/OFF the air conditioner and set *Temp Setpoint*. If you input 1490 (the level-3 password for the air conditioner), you can check active alarms, history alarms, system status, and version number. You can also check and set temperature/humidity parameters.

Figure 6.3 Thermal Sampling Page

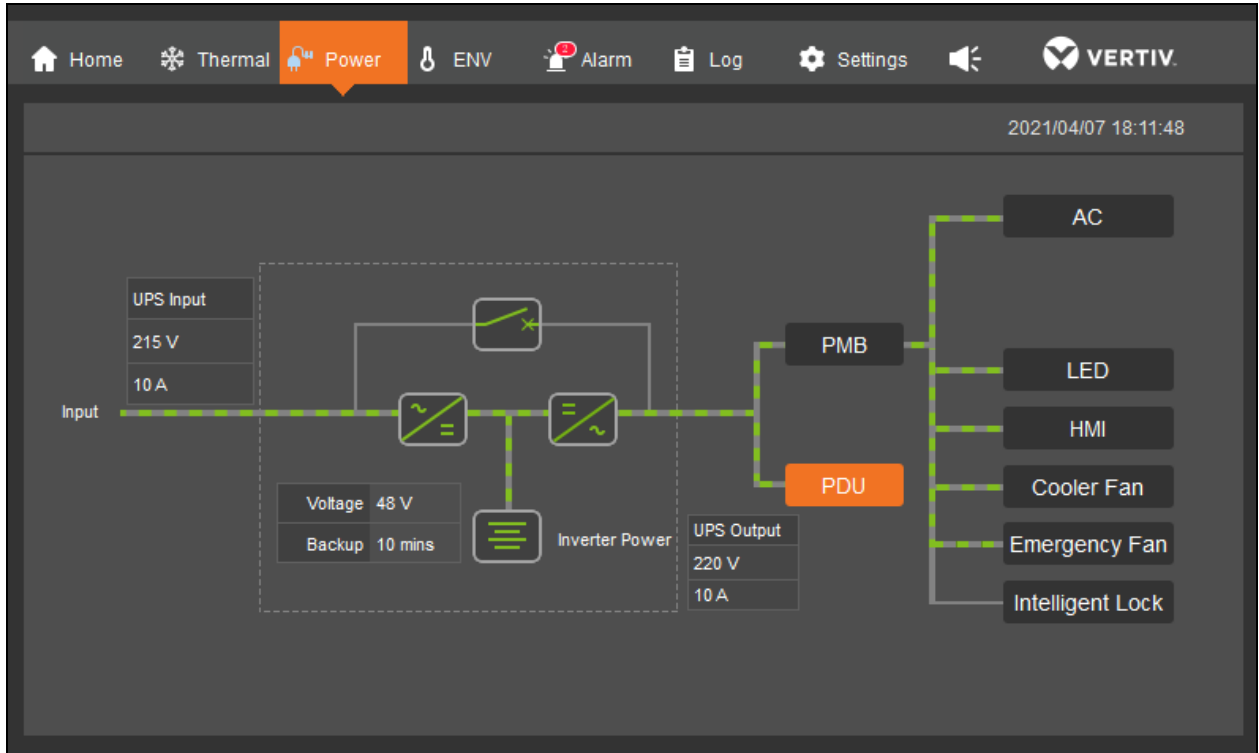


NOTE: The air conditioner operates at supply air control mode by default and Temp Setpoint indicates the desired temperature of the supply air in this mode.

6.3 Power

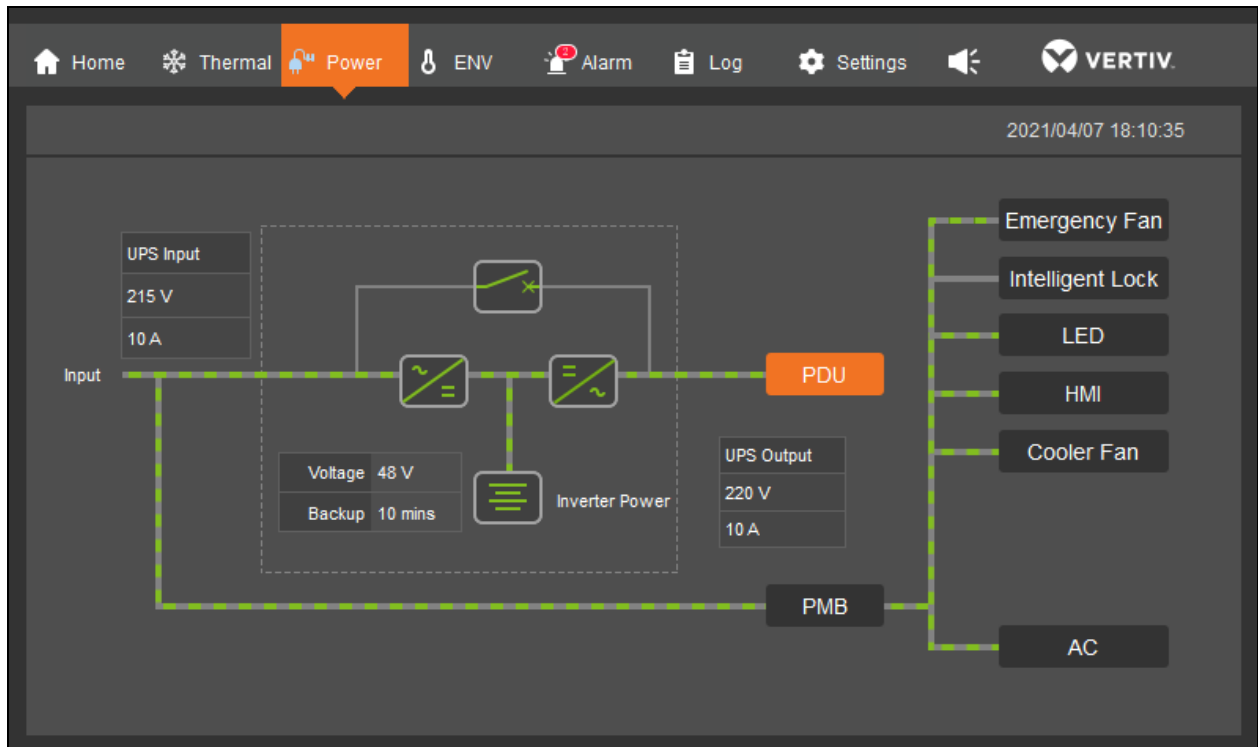
On the Power page, you can check power connections. If power connection A is used, mains electricity is connected to UPS. UPS provides power to PMB and IT equipment.

Figure 6.4 Power Page Screen for connection A



If power connection B is used, mains electricity is connected to UPS and PMB. UPS provides power to IT equipment.

Figure 6.5 Power Page Screen for connection B

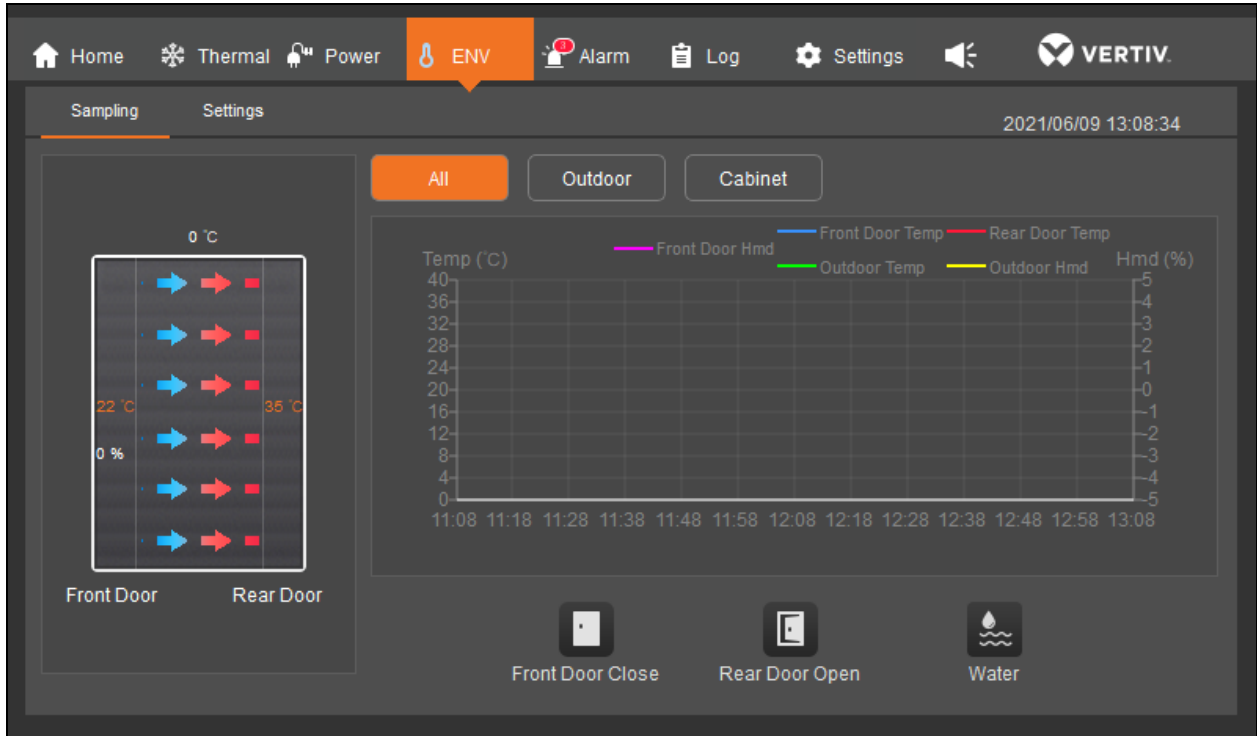


If a PDU is installed, you can check the status of the PDU by pressing the PDU icon.

6.4 ENV

On the ENV page, you can check the temperature/ humidity at the Front Door, the temperature at the Rear Door, and the temperature/ humidity outside the cabinet. The data collected in the past two hours is displayed in line curves. The door open/closed state and water leakage state are displayed at the bottom.

Figure 6.6 ENV Page



Press *Settings* and input password 1234 (default password). You can set environment parameters for front door and rear door.

6.5 Alarm

On the Alarm page, you can check active alarms and history alarms. Each record shows alarm content, severity (low, moderate, and critical), and its generated time.

When an alarm occurs, the alarm buzzer will sound for five minutes. You can press the sound button on the menu bar to close the buzzer.

In history alarm, the alarms triggered in the past week are listed. You can filter the alarms by AC, UPS, PDU, ENV, and more.

Figure 6.7 Alarm Page

The screenshot shows the Alarm page interface. At the top, there is a navigation menu with icons for Home, Thermal, Power, ENV, Alarm (highlighted), Log, Settings, and a speaker icon. The VERTIV logo is in the top right corner. Below the navigation menu, there are tabs for 'Active' and 'History' (selected). The date and time '2021/04/07 18:15:44' are displayed in the top right. A 'Filter Alarms:' section contains buttons for 'All' (selected), 'AC', 'UPS', 'PDU', 'ENV', and 'Others'. Below this is a table with the following data:

Index	Alarm Info	Alarm Start Time	Alarm End Time
1	Front Door Overtime Is Not Closed Alarm	2021-02-10 15:22:21	2021-02-10 15:40:09
2	PMB Emergency Fan Open Alarm	2021-02-10 15:19:22	2021-02-10 15:21:31

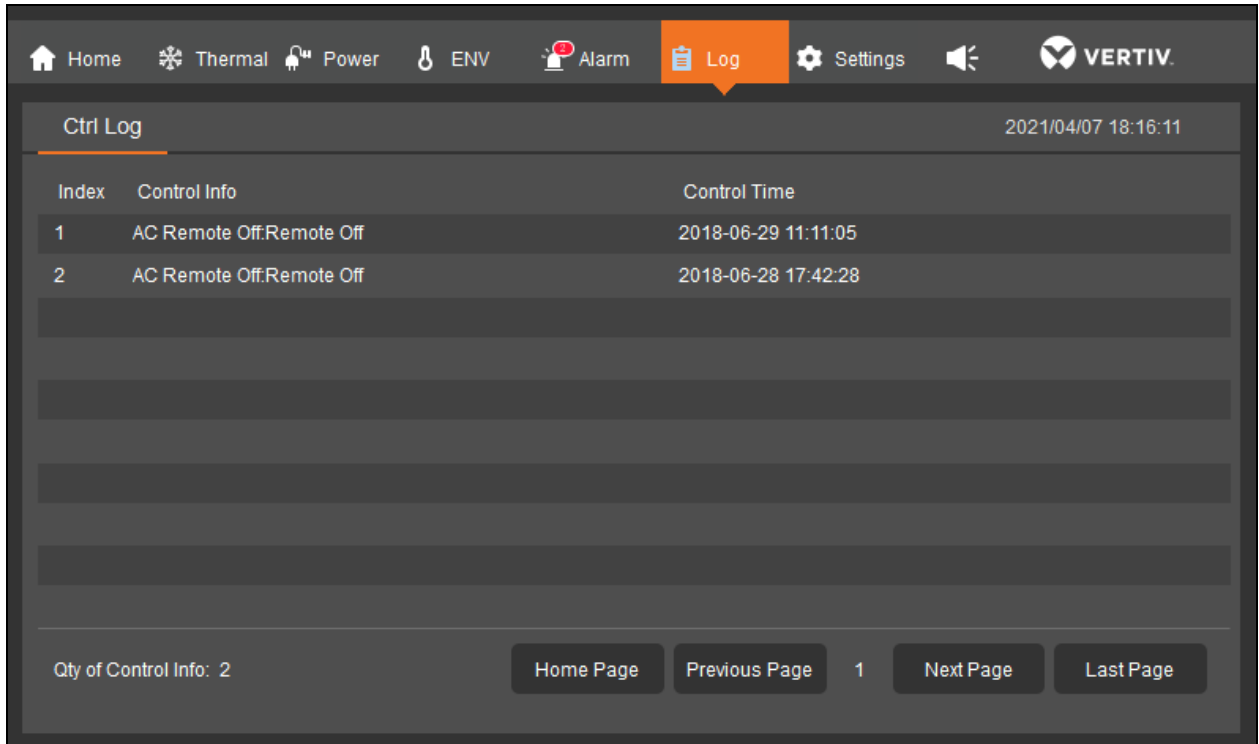
At the bottom of the page, it shows 'Historical Alarm Qty: 2' and a pagination control with buttons for 'Home Page', 'Previous Page', '1', 'Next Page', and 'Last Page'.

6.6 Log

On the Log page, you can check the control operations issued from the LCD screen in the past week, such as powering on and off the air conditioner and setting supply air and return air temperatures. The time when an action is issued can also be displayed.

For the control actions issued from the Vertiv™ SmartCabinet™ ID Monitoring Unit web page, you need to check from the web page.

Figure 6.8 Log Page



6.7 Settings

On the Settings page, you can set:

- **Language:** You can choose from English, German, French, Russian, Italian, Polish, Spanish, and Chinese.
- **Password:** You can change the default password (1234). The new password should be four digit numbers.

Figure 6.9 Settings Page

The screenshot shows the Settings page of the Vertiv SmartCabinet ID. The top navigation bar includes Home, Thermal, Power, ENV, Alarm, Log, Settings (highlighted), and a speaker icon. The VERTIV logo is on the right. Below the navigation bar, there are tabs for Language, Password (selected), Network, System, and Config. The date and time 2021/04/25 19:56:48 are displayed in the top right corner. The main content area contains three password input fields: Old Password, New Password, and Confirm Password, each with four dots representing the password. At the bottom, there are two buttons: Cancel and Save.

- **Network:** You can set the IP address, subnet mask, and default gateway of the cabinet.
- **System:** You can check the software and hardware version of the system and restore factory settings. The alarm buzzer will not sound in maintenance mode. To enable it, select *No* for *Maintenance Mode*.
- **Configuration:** You can configure the intelligent lock, power supply method, PDU, and UPS.

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7 Configuring IP Addresses for Devices

The IP addresses of the LCD, UPS, and PDUs need to be configured, so that these IP addresses are in the same network segment. **Table 7.1** below lists the IP addresses to set for devices in the following process. You can also set the IP addresses into other values, according to your site requirements.

NOTE: The IP addresses of the LCD, UPS, and PDUs should be in the same network segment.

Table 7.1 IP Addresses to Set for Devices

Device	New IP Address
LCD	10.163.236.44
UPS	10.163.236.43
PDU1	10.163.236.40
PDU2	10.163.236.41

After the Vertiv™ SmartCabinet™ ID is powered on, the UPS communications failure alarm and the PDU communications failure alarm will be triggered. These alarms will be cleared after the IP addresses for Vertiv™ Liebert® GXT5 UPS and Vertiv™ Geist™ rPDU are configured.

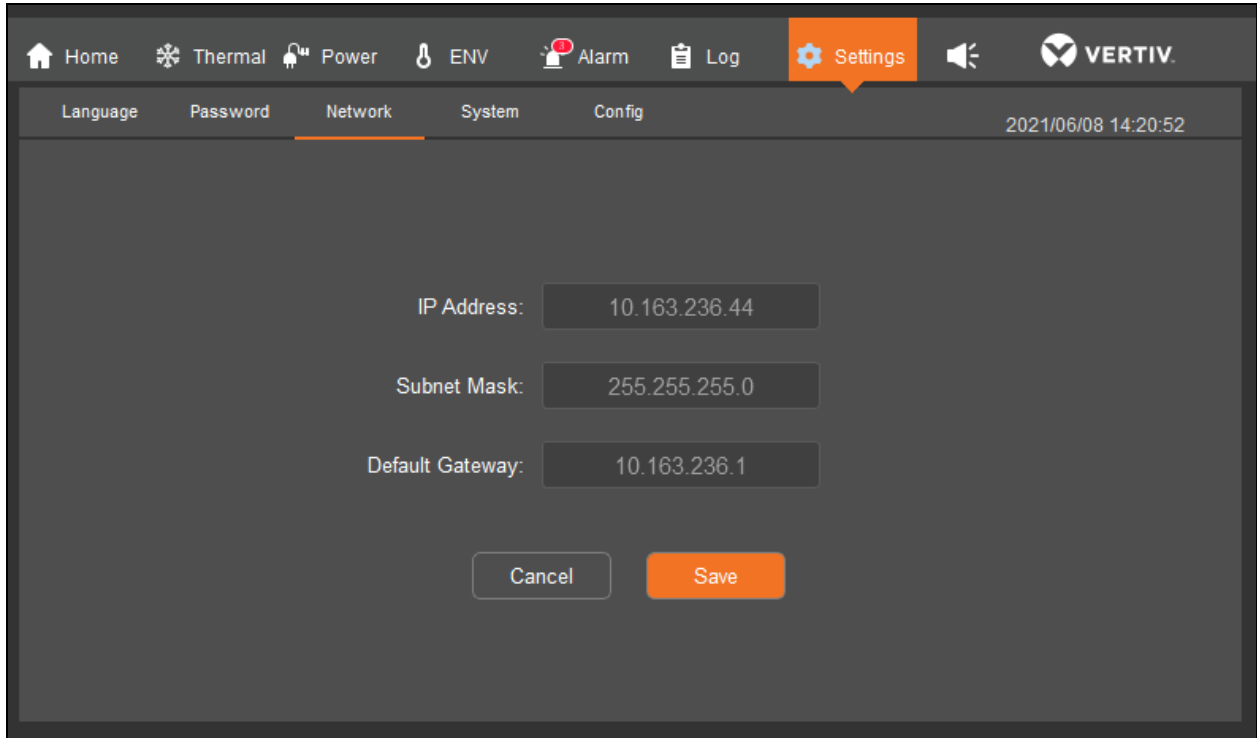
Figure 7.1 Alarm Page

The screenshot displays the Alarm page interface. At the top, a navigation bar includes icons for Home, Thermal, Power, ENV, Alarm (highlighted), Log, Settings, and a speaker icon. The main content area has tabs for 'Active' and 'History'. The 'Active' tab is selected, showing a table of active alarms. The table has columns for Index, Alarm Info, Alarm Severity, and Alarm Time. There are three active alarms listed: 1. PDU_GEIST_1 Communication Failure (Moderate severity, 2021-02-10 15:13:02), 2. PDU_GEIST_2 Communication Failure (Moderate severity, 2021-02-10 13:28:09), and 3. UPS_GXT5 Communication Failure (Moderate severity, 2021-02-10 13:28:09). At the bottom, there is a status bar showing 'Active Alarms: 3' and navigation buttons for Home Page, Previous Page, Next Page, and Last Page.

7.1 Setting the IP Address for LCD

On the home page of the LCD screen, press *Settings > Network*. Enter *10.163.236.44* for IP Address, *255.255.255.0* for *Subnet Mask*, and *10.163.236.1* for *Default Gateway*. Press *Save* and the system will restart. After that, you can access the web UI of the Vertiv™ SmartCabinet™ ID through the configured IP Address *10.163.236.44*.

Figure 7.2 Setting the IP Address for LCD

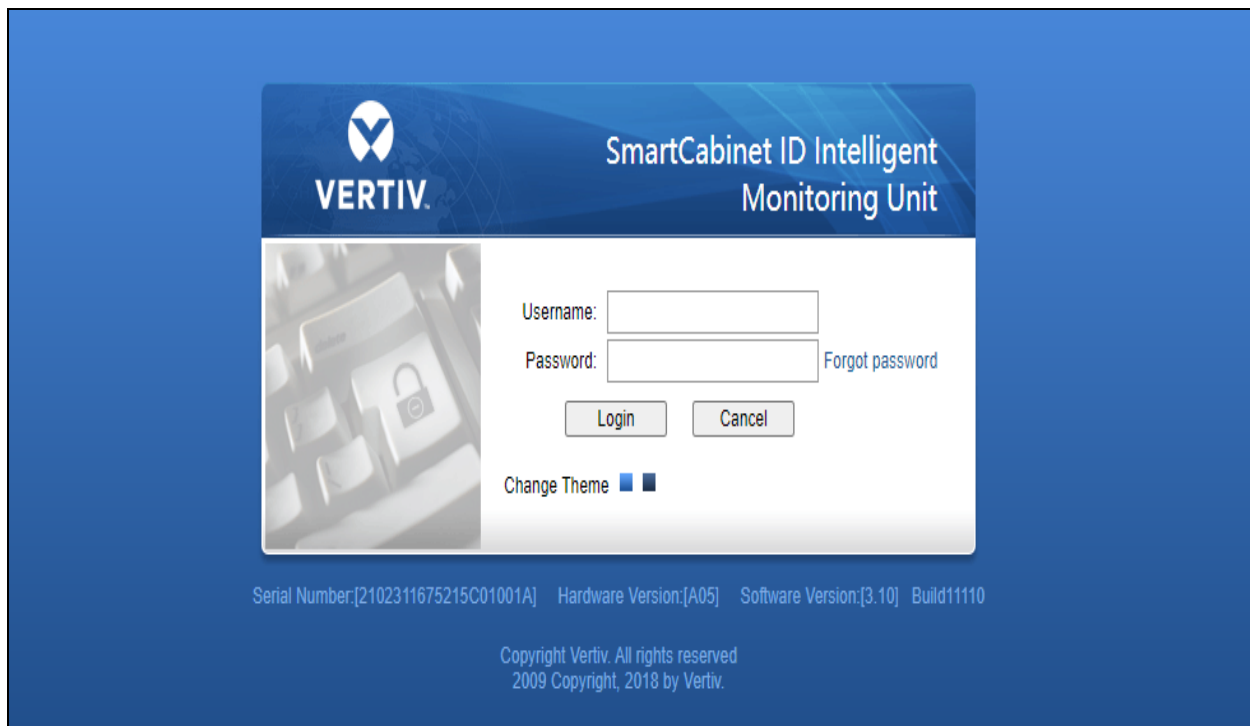


7.2 Setting IP Addresses for Vertiv™ Liebert® GXT5 UPS and Vertiv™ Geist™ PDU on Web UI

Open a web browser and enter the IP address (<https://10.163.236.44>) configured for the LCD. The login page of the Vertiv™ SmartCabinet™ ID Intelligent Monitoring Unit is displayed. Enter *admin* for *User Name* and *Vertiv123* for *Password*, and click *Login*. After logging into the system, you are required to change the default password.

NOTE: The web UI supports Internet Explorer 11, Microsoft Edge, Mozilla Firefox, Google Chrome, and Apple Safari. It is recommended to use Google Chrome.

Figure 7.3 Vertiv™ SmartCabinet™ ID Intelligent Monitoring Unit



Setting the IP Address for Liebert® GXT5 UPS

On the home page of the web UI, select *Device Options > Device Mgmt.* On the *Add/Modify/Delete Device* tab page, under *Modify Settings*, select *UPS* for *Device Type* and input the IP address (such as *10.163.236.43*) in the *Parameter* field. Click *Modify* and the system will restart. You need to input password for the system to restart.

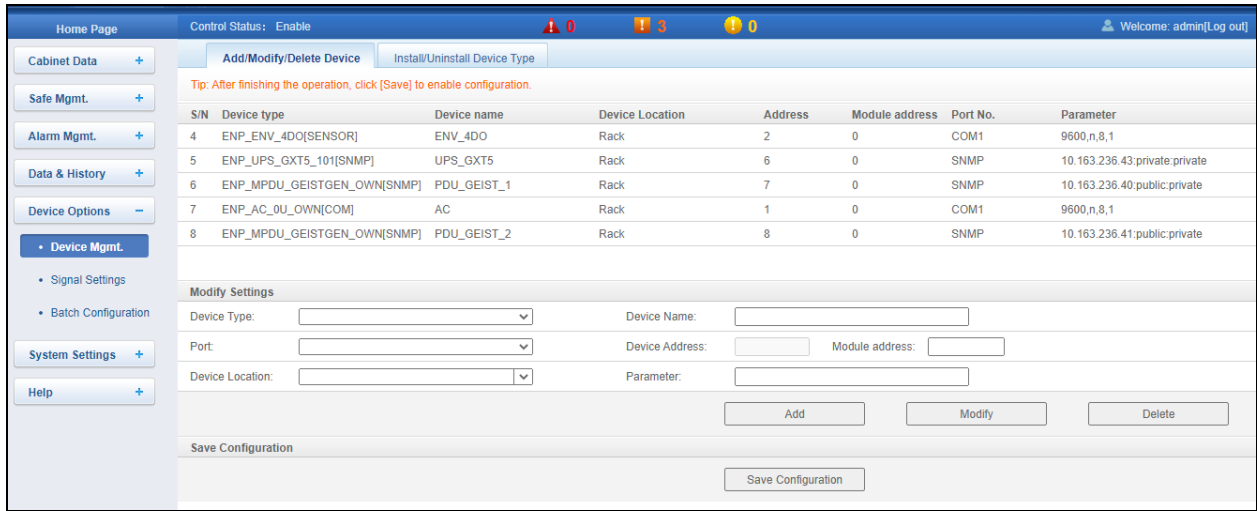
NOTE: The IP address set for the UPS must be in the same network segment as the IP address of the LCD.

Setting the IP Address for Geist™ PDU

Select *PDU* for *Device Type* and input the IP address (such as *10.163.236.40*) in the *Parameter* field. Click *Modify* and the system will restart. If there are two PDUs, you can set the IP address for the other PDU as *10.163.236.41*.

NOTE: The IP address set for the PDU must be in the same network segment as the IP address of the LCD.

Figure 7.4 Setting the IP Address for Vertiv™ Geist™ PDU

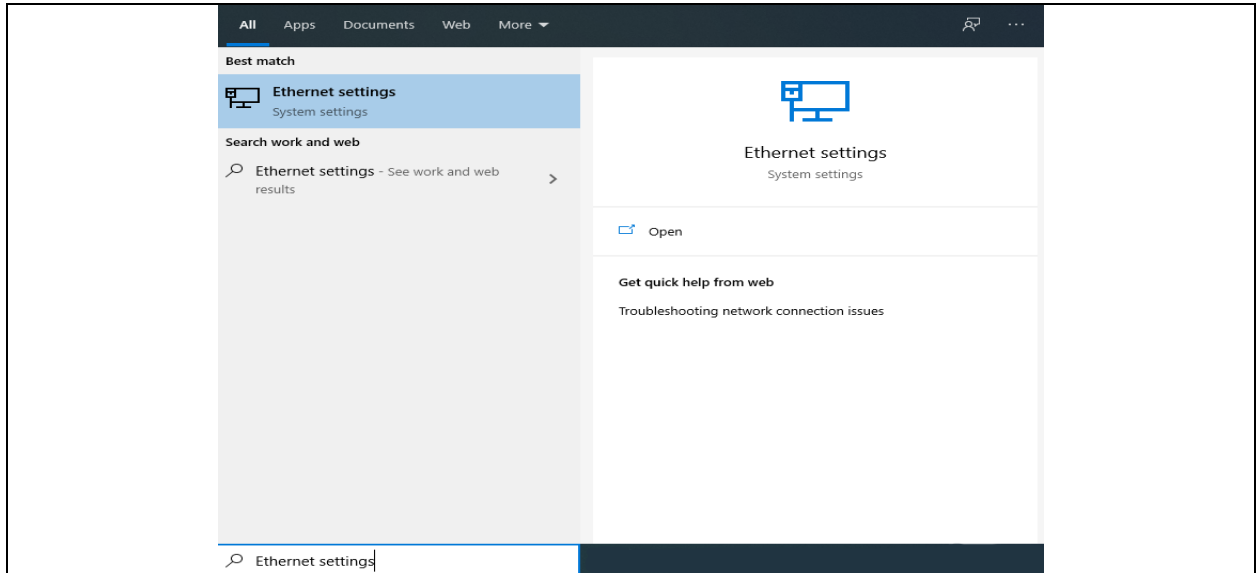


7.3 Configuring the IP Address for Vertiv™ Liebert® GXT5 UPS

To configure the IP address for Liebert® GXT5-UPS:

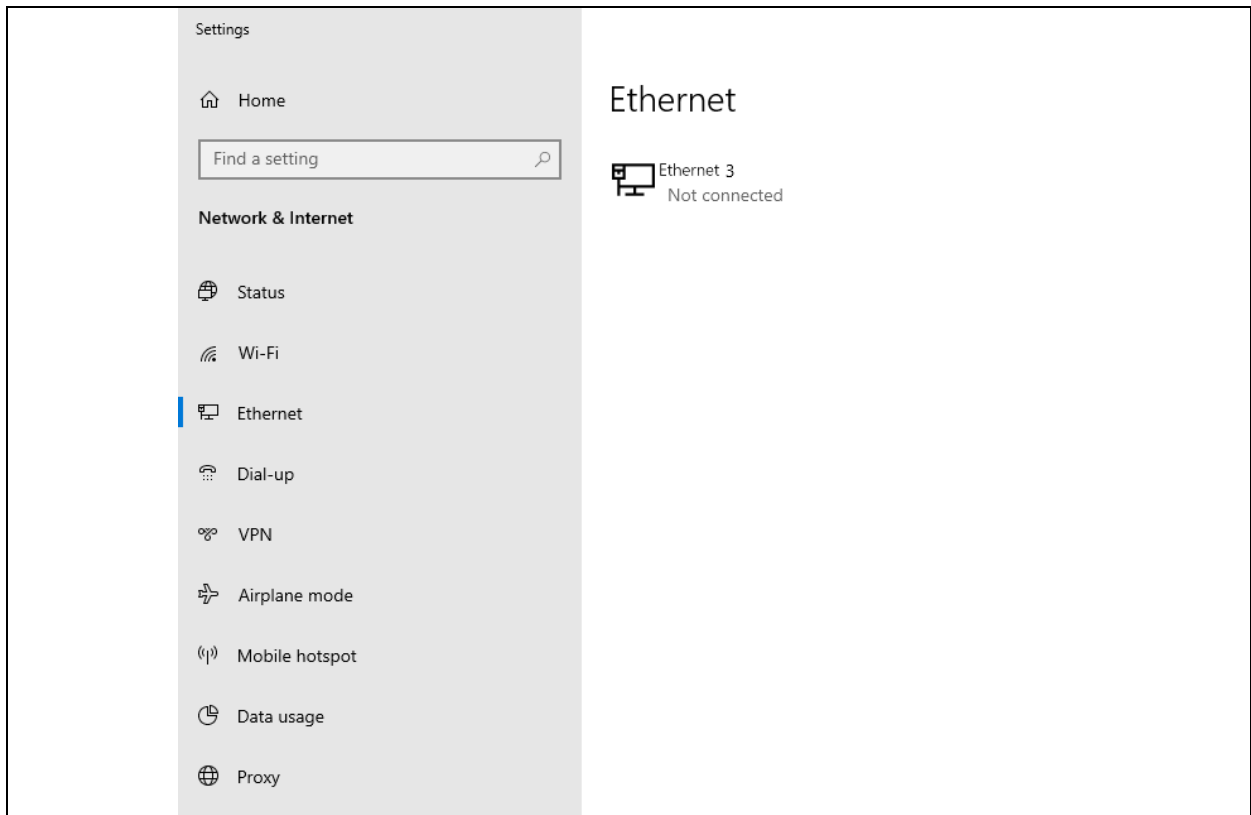
1. Connect a computer to the Liebert® GXT5-UPS with an Ethernet cable.
2. Configure network for the computer. The process below shows the operation in Windows 10 Operating System.
 - a. Enter *Ethernet settings* in the Windows search field located next to Start in the bottom left corner of the screen.

Figure 7.5 Configuring the IP Address for Liebert® GXT5 UPS



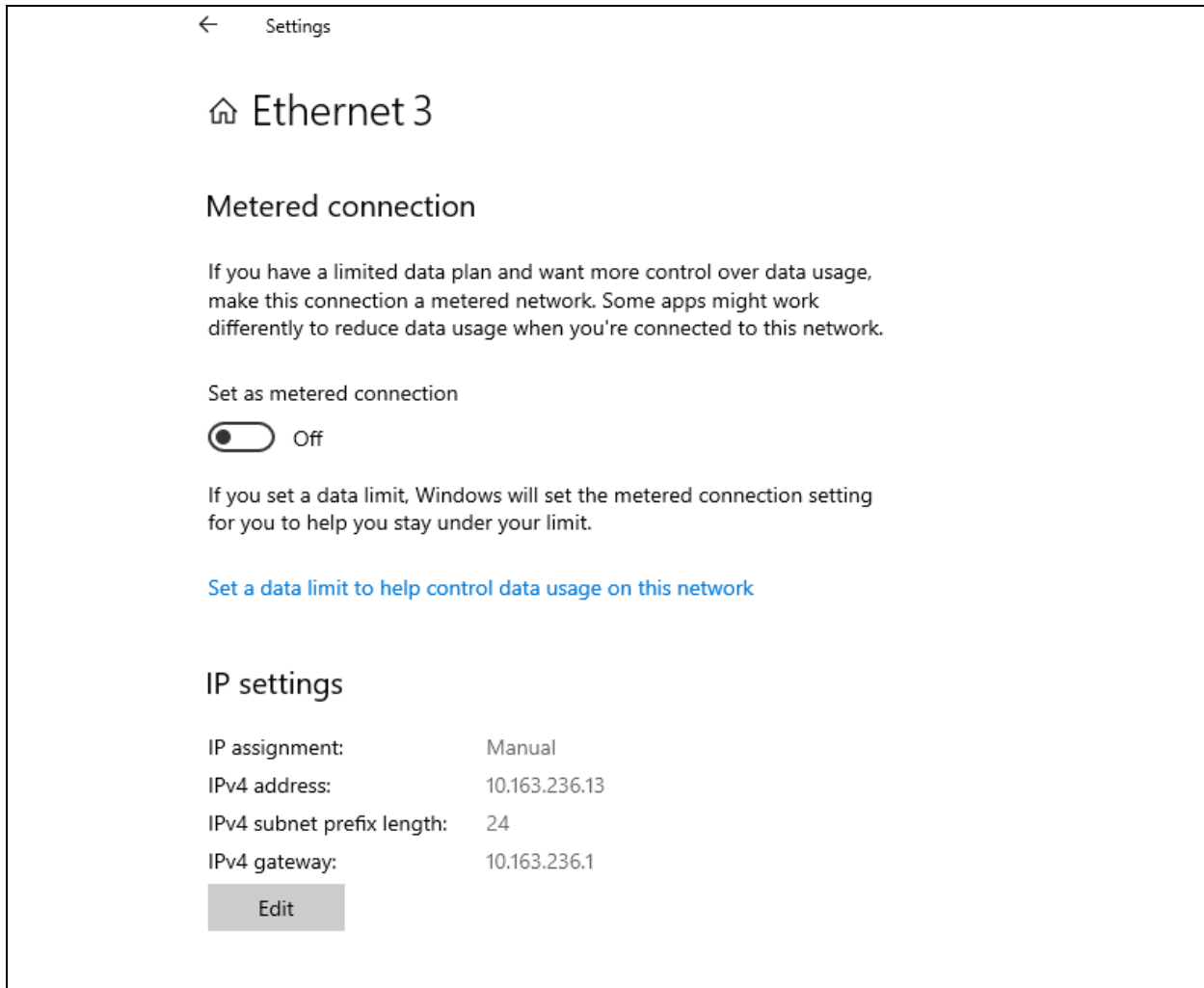
- b. In the Ethernet settings window, click the *local network* under Ethernet.

Figure 7.6 Ethernet Settings Window



- c. Click *Edit* under IP settings.

Figure 7.7 Ethernet Settings Window



- d. Under Edit IP settings, choose *Manual*, and turn on *IPv4*. Enter *169.254.24.x* for IP address, *24* for Subnet prefix length, and *169.254.24.1* for Gateway. Click *Save*.

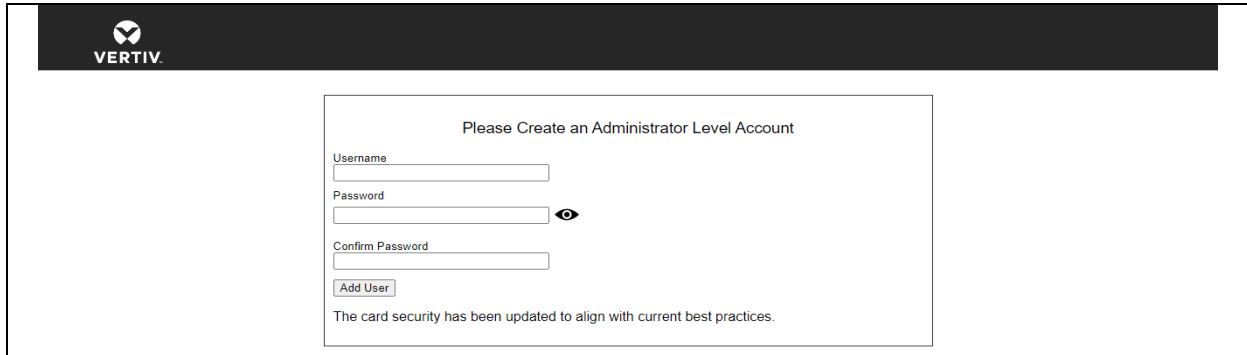
NOTE: For IP address *169.254.24.x*, *x* can be any integer ranging from 2 to 253, except 7.

Figure 7.8 IP settings Page

The screenshot displays the 'Edit IP settings' interface. At the top, a dropdown menu is set to 'Manual'. Below this, the 'IPv4' section is active, indicated by a blue toggle switch labeled 'On'. The 'IP address' field contains '169.254.24.6', the 'Subnet prefix length' field contains '24', and the 'Gateway' field contains '169.254.24.1'. There are empty input fields for 'Preferred DNS' and 'Alternate DNS'. At the bottom, the 'IPv6' section is visible but inactive. Two buttons, 'Save' and 'Cancel', are located at the bottom right of the settings panel.

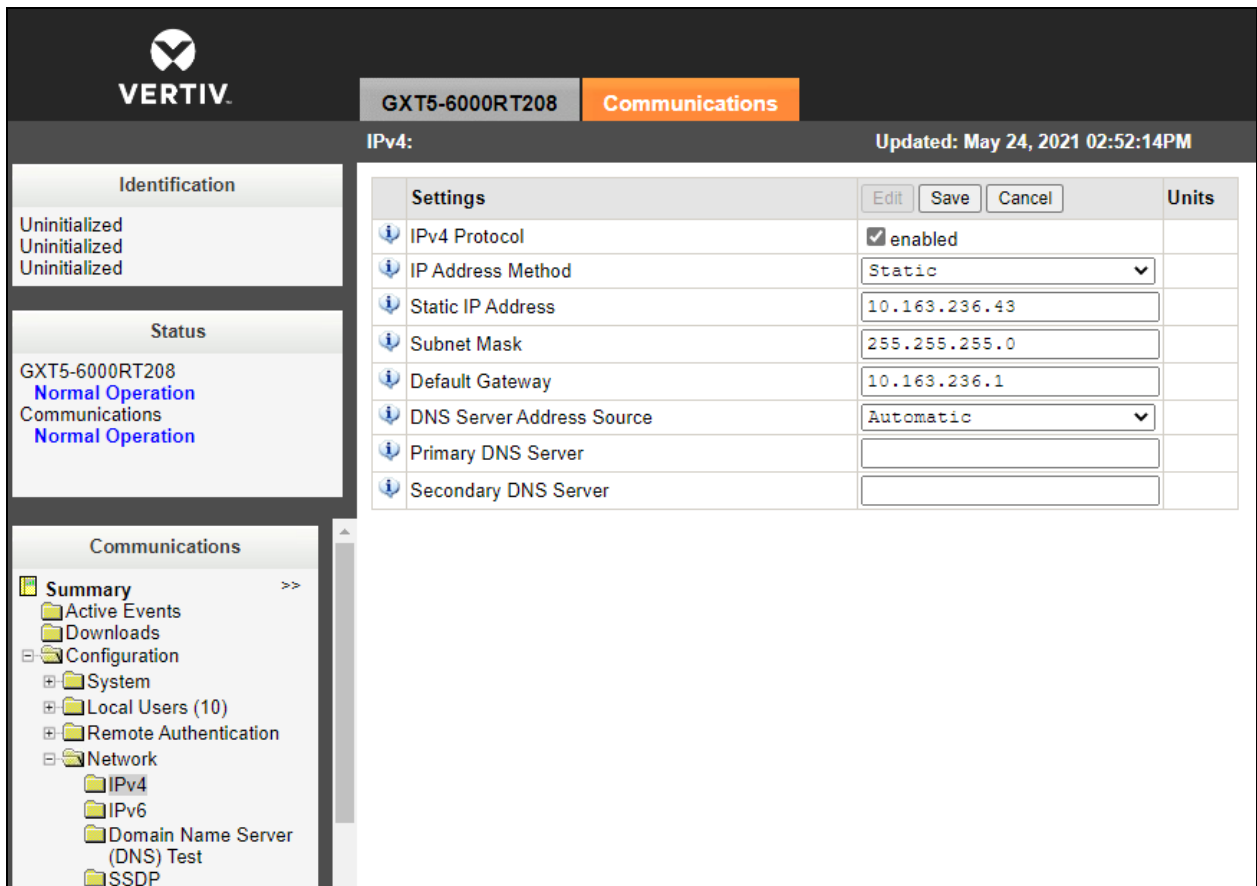
- Open a *web browser* and enter the default IP address (169.254.24.7) of the UPS. Enter *Username* and *Password* to add an administrator level account, and click *Add User*. The system will restart.

Figure 7.9 Administrator Level Account Page



- After login, click the *Communications* tab. On the left navigation pane under Configuration, select *Network > IPv4*. On the Settings table, click *Edit*. Select *Static* for IP Address Method, enter the *IP address* of the UPS set in [Setting IP Addresses for Vertiv™ Liebert® GXT5 UPS and Vertiv™ Geist™ PDU on Web UI](#) on page 135 (10.163.236.43) for Static IP Address and 10.163.236.1 for Default Gateway. Click *Save*.

Figure 7.10 Home Page



Settings	Edit	Save	Cancel	Units
IPv4 Protocol	<input checked="" type="checkbox"/>			enabled
IP Address Method				Static
Static IP Address				10.163.236.43
Subnet Mask				255.255.255.0
Default Gateway				10.163.236.1
DNS Server Address Source				Automatic
Primary DNS Server				
Secondary DNS Server				

- On the left navigation pane, click *Protocols*. In the *Settings* table, click *Edit* and select *enabled* for SNMP Protocol. Click *Save*.

Figure 7.11 Communication Tab Page

The screenshot displays the Vertiv web interface for the GXT5-6000RT208 device, specifically the Communications tab. The interface is divided into a left navigation pane and a main content area.

Left Navigation Pane:

- Identification:** Shows three 'Uninitialized' items.
- Status:** Shows the device name 'GXT5-6000RT208', a 'Normal with Warning' status, and 'Normal Operation' for Communications.
- Communications:** A tree view showing 'Summary' (expanded), 'Active Events', 'Downloads', 'Configuration', 'Protocols' (expanded), 'BACnet', and 'Modbus'.

Main Content Area:

The main area is titled 'Protocols' and shows a table of settings. The table has columns for 'Settings', 'Edit', 'Save', 'Cancel', and 'Units'. The 'Updated' timestamp is 'May 28, 2021 02:46:51PM'.

Settings	Edit	Save	Cancel	Units
BACnet Protocol	<input type="checkbox"/>	enabled		
Modbus Protocol	<input type="checkbox"/>	enabled		
SNMP Protocol	<input checked="" type="checkbox"/>	enabled		

- On the left navigation pane, select *SNMP > SNMPv1 Trap (20) > SNMPv1 Trap [1]* under Protocols. In the Settings table, click *Edit*. Enter the IP address of the LCD set in [Setting the IP Address for LCD](#) on page 134 (10.163.236.44) for SNMP Trap Target, 162 for SNMP Trap Port, and select *private* for SNMP Trap Community String. Click *Save*.

Figure 7.12 Communication Tab Page

The screenshot shows the Vertiv SmartCabinet ID web interface. At the top, the device name is GXT5-6000RT208 and the active tab is Communications. The main content area is titled 'SNMPv1 Trap [1]:' and shows it was updated on May 24, 2021 at 04:03:36PM. On the left, there is a navigation pane with a tree view showing the path: Communications > Protocols > SNMP > SNMPv1 Trap (20) > SNMPv1 Trap [1].

The main settings area contains a table with the following data:

Settings	Edit	Save	Cancel	Units
SNMP Trap Target	<input type="text" value="10.163.236.44"/>			
SNMP Trap Port	<input type="text" value="162"/>			
SNMP Trap Community String	<input type="text" value="private"/>			

Additional interface elements include an 'Identification' section with three 'Uninitialized' labels, a 'Status' section showing 'Normal with Warning' for Communications and 'Normal Operation' for the device, and a 'Summary' section in the navigation pane.

- On the left navigation pane, select *SNMP > SNMPv1/v2c Access (20) > SNMPv1/v2c Access [1]* under Protocols. In the Settings table, click **Edit**. Enter the IP address of the LCD set in [Setting the IP Address for LCD](#) on page 134 (10.163.236.44) for SNMP Access Host, select *Read/Write* for SNMP Access Type, and select *private* for SNMP Access Community String. Click **Save**.

Figure 7.13 Communication Tab Page

The screenshot displays the Vertiv SmartCabinet ID user interface. The top navigation bar shows the device name "GXT5-6000RT208" and the "Communications" tab. The main content area is titled "SNMPv1/v2c Access [1]" and shows the configuration for a specific access entry. The left navigation pane is expanded to show the "SNMPv1/v2c Access [1]" entry under the "SNMP" protocol.

Identification
Uninitialized
Uninitialized
Uninitialized

Status
GXT5-6000RT208
Normal Operation
Communications
Normal Operation

Communications

- Summary >>
- Active Events
- Downloads
- Configuration
- Protocols
 - BACnet
 - Modbus
 - SNMP
 - SNMPv3 User (20)
 - SNMPv1 Trap (20)
 - SNMPv1/v2c Access (20)
 - SNMPv1/v2c Access [1]
 - SNMPv1/v2c Access [2]

Settings (Updated: June 8, 2021 02:56:20PM)

Settings	Edit	Save	Cancel	Units
SNMP Access Host				
SNMP Access Type				
SNMP Access Community String				

8. On the left navigation pane, click *Support*. In the Commands table, click *Enable* and then click *Restart*.

Figure 7.14 Communication Tab Page

The screenshot shows the Vertiv web interface for device GXT5-6000RT208. The 'Communications' tab is active. The left navigation pane shows the following structure:

- Identification
 - Uninitialized
 - Uninitialized
 - Uninitialized
- Status
 - GXT5-6000RT208
 - Normal Operation
 - Communications
 - Normal with Warning
- Communications
 - Summary >>
 - Active Events
 - Downloads
 - Configuration
 - Protocols
 - Status
 - Support
 - Active Networking
 - Firmware Update
 - Configuration Export/Import

The main content area shows the 'Support' section with the following table:

Status	Value	Units
Agent Date and Time	2020-05-16 22:05:06	
Agent Model	RDU1xx Platform	
Agent App Firmware Version	1.2.2.0	
Agent App Firmware Label	RDU101_1.2.2.0_0000006	
Agent Boot Firmware Version	20190613164719	
Agent Boot Firmware Label	Boot 20190613164719	
Agent Serial Number	02DE	
Agent Manufacture Date	2019-09	
Agent Hardware Version	0	
Agent GDD Version	130657	
FDM Version	1083	
Product Sequence ID	11.1	
Device-Assigned Label	Not assigned	

Below the table are two sections:

- Commands:** Includes buttons for 'Enable', 'Cancel', 'Restart', and 'Reset to Factory Defaults'.
- Diagnostics:** Includes buttons for 'Enable', 'Cancel', and 'Get File'.

9. Wait for three to five minutes and then you can access the Vertiv™ Liebert® GXT5-UPS with the configured IP address (10.163.236.43).

7.4 Configuring the IP Address for Vertiv™ Geist™ PDU

To configure the IP address for Geist™ PDU:

1. Connect a computer to the Geist™ PDU with an Ethernet cable.
2. Configure network for the computer. The process below shows the operation in Windows 10 Operating System.
 - a. Enter *Ethernet settings* in the Windows search field located next to Start in the bottom left corner of the screen.
 - b. In the Ethernet settings window, click the local network under *Ethernet*.
 - c. Click *Edit* under IP settings.
 - d. Under Edit IP settings, choose *Manual*, and turn on *IPv4*. Enter 192.168.123.x for IP address, 24 for Subnet prefix length, and 192.168.123.1 for Gateway. Click *Save*.

NOTE: For IP address 192.168.123.x, x can be any integer ranging from 2 to 253, except 123.

3. Open a *web browser* and enter the default *IP address (192.168.123.123)* of the PDU. Enter *Username* and *Password* to add an administrator level account, and click *Submit*. The system will restart.

Figure 7.15 Admin User Configuration

4. After login, select *System > Network*. Under Interfaces, click the *add button* in the IP Address and Prefix table header.

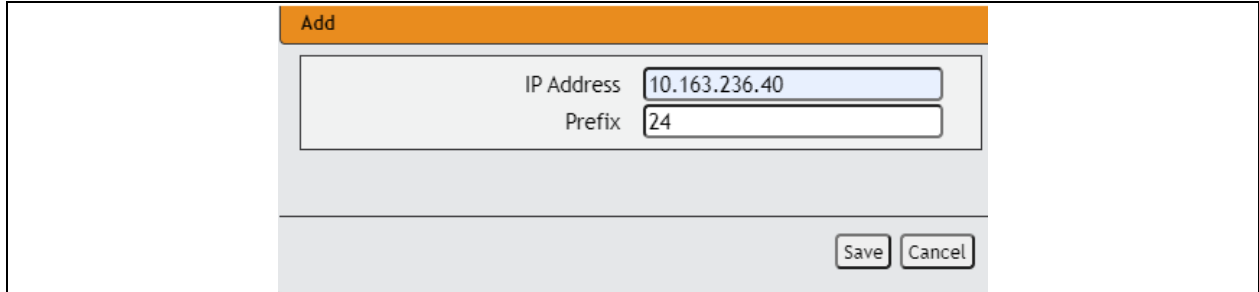
Figure 7.16 System Network Page

Label	MAC Address	DHCP	Link state	Uptime
Bridge 0	00:19:85:0a:fa:e4	Enabled	Up	439286

IP Address	Prefix
192.168.123.123	24
10.163.236.40	16
fe80::219:85ff:fe0a:fae4	64

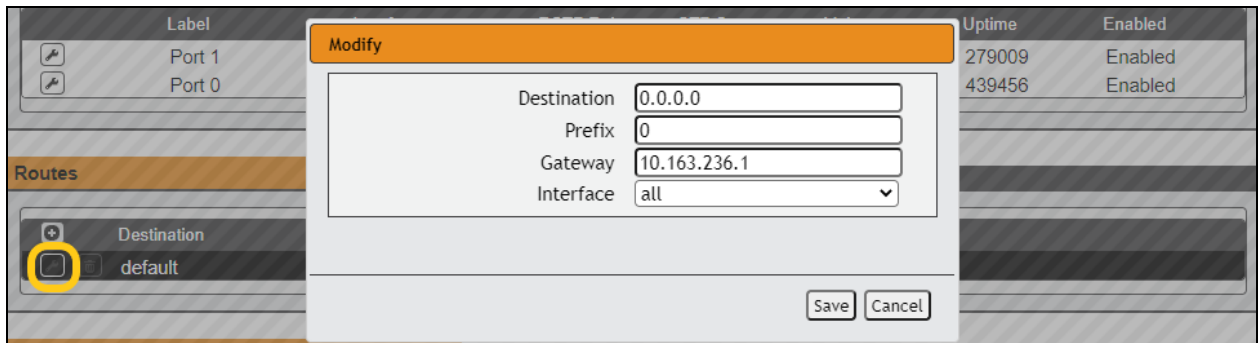
5. In the displayed window, enter the IP address of the PDU configured in [Setting IP Addresses for Vertiv™ Liebert® GXT5 UPS and Vertiv™ Geist™ PDU on Web UI](#) on page 135(10.163.236.40) for IP Address and 24 for Prefix. Click Save.

Figure 7.17 IP Address Page



6. Under *Routes*, click the *modify* button. In the displayed window, enter 0.0.0.0 for Destination, 0 for Prefix, and 10.163.236.1 for Gateway.

Figure 7.18 Modify Page



7. Select *System > SNMP*. Under Traps, in the Host, Port, and Version table header, click the *add button*.

Figure 7.19 System Page

The screenshot shows the Vertiv System Page with the 'System' menu open. The 'SNMP' option is highlighted. Below the menu, the 'Traps' section is visible, showing a table with columns for Host, Port, and Version. An 'Add' button is circled in yellow in the top-left corner of the Traps table.

Type	Name	Authentication	Privacy
V1/V2c Read Community	public	—	—
V1/V2c Write Community	private	—	—
V1/V2c Trap Community	private	—	—
V3 Read		None	None
V3 Read/Write		None	None
V3 Trap		None	None

Host	Port	Version
10.163.236.44	162	2c
10.163.230.238	162	2c

In the displayed window, enter the *IP address* of the LCD configured in [Setting the IP Address for LCD](#) on page 134(10.163.236.44) for Host. Click Save.

Figure 7.20 Add SNMP Page

The 'Add' dialog box shows the following configuration:

- Host: 10.163.236.44
- Port: 162
- Version: v2c

Buttons: Save, Cancel

You can access the Geist PDU with the configured IP address (10.163.236.40).

7.5 Configuring the IP Address for the Intelligent Doorlock (Optional)

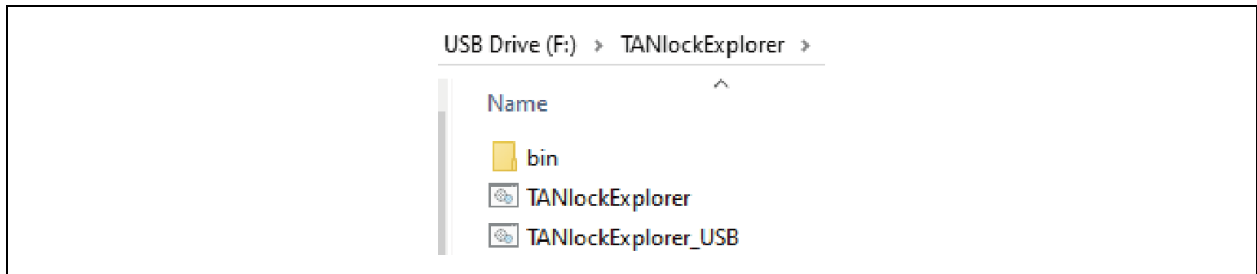
The default IP address and subnet mask is 192.168.0.90/255.255.255.0. Initial setup is completed using the TANlockExplorer tool. It is a Windows based configuration tool to set the basic lock details and can be directly run from a USB disk. No specific install or admin permissions are required unless using the USBC-to-Serial interface on the TANlock which requires a device driver to be installed. TANlockExplorer is being replaced with https.

- **TANlockExplorer:** <http://tanlocks.info/tanlockfiles/TANlockExplorer.zip> (MD5: 644F0249C13270A798A4C26C96881B02) Serial
- **Device Driver:** <http://tanlocks.info/tanlockfiles/USB-TAN3-Driver.zip> (MD5: 52C549DD00BACEC53E484ACA995AA834)
- **Curl:** Windows 10 v1803 onwards ships with curl installed. Try `curl -help` to check it is available. <https://curl.haxx.se> for other OS.

The following describes the process of configuring the IP address for TANlock RFID & pin pad intelligent doorlock.

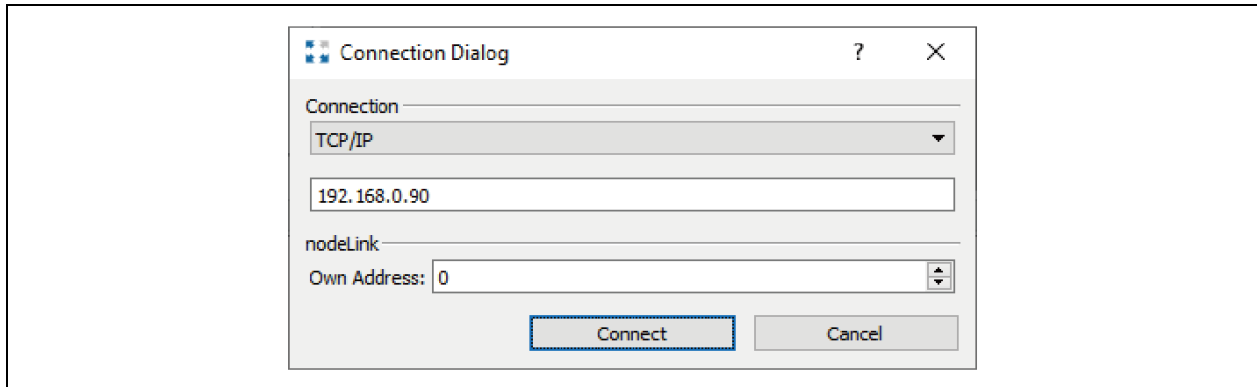
1. Start TANlockExplorer using the batch file. If you require the USB to serial interface use the `_USB` batch file.

Figure 7.21 TANlockExplorer Page

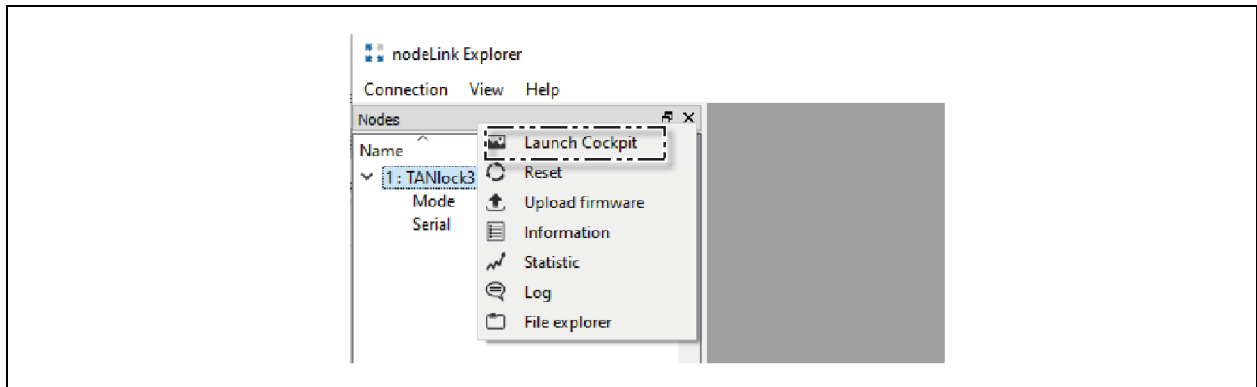


2. Enter the IP address or change the connection type to Serial.

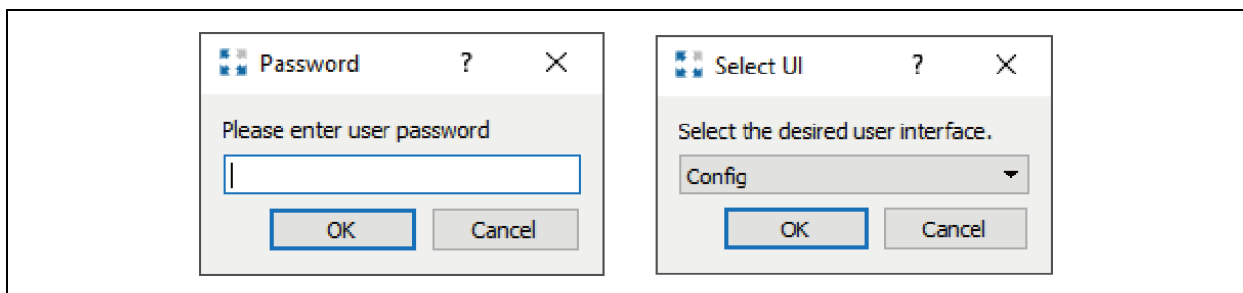
Figure 7.22 Connection Dialog Page



3. Launch the *Cockpit* to start the setup.

Figure 7.23 Launch Cockpit Page

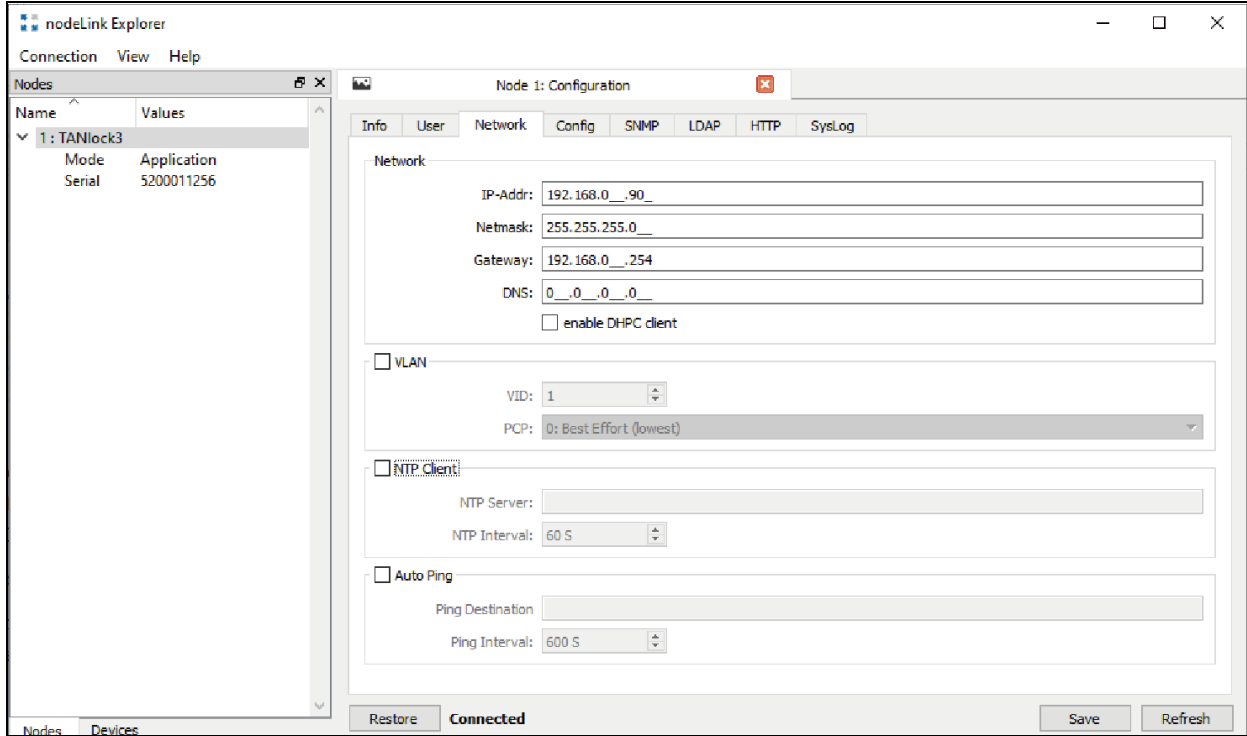
4. Enter the default password: **91174**. Change this during setup.

Figure 7.24 Password Page

5. Set *IP address*.
6. Set *Subnet Mask*.

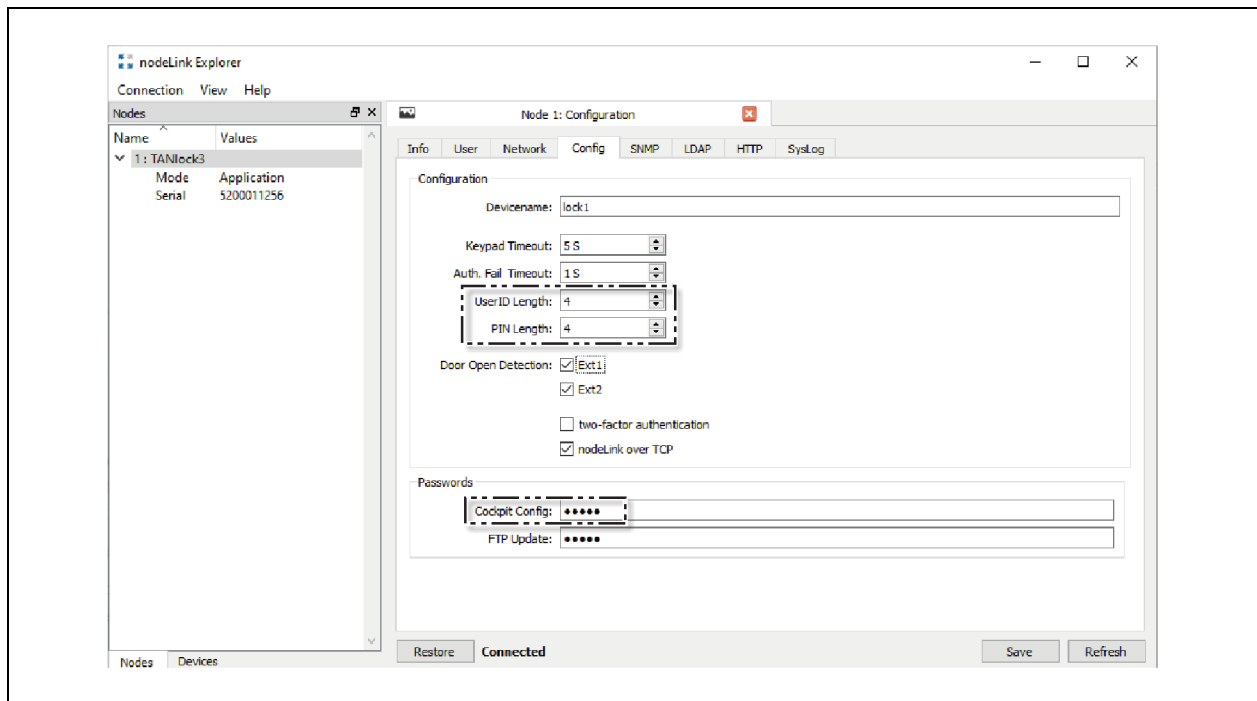
7. Set *Gateway IP address*. DHCP can be used as an alternative to static IP addresses. The lock will be allocated an IP address when it reboots. VLAN is not required. NTP client can be set to the next hop gateway if it can act as a time server.

Figure 7.25 Configuration Page



8. Set *UserID Length* and *PIN Length*. For RFID card, *UserID Length* should be 2 or 3, and *PIN Length* should be 2 or 3. It is recommended to choose 3 as the length value.
 - **Devicename:** *Hostname (FQDN)*.
 - **Keypad timeout:** Time to enter a *PIN* before selecting *OK* button.
 - **Auth Fail timeout:** Time to wait between authentication failures.
 - **Two factor authentication:** Enable to require two authentication events. (Lock reset required.)

Figure 7.26 Configuration Page

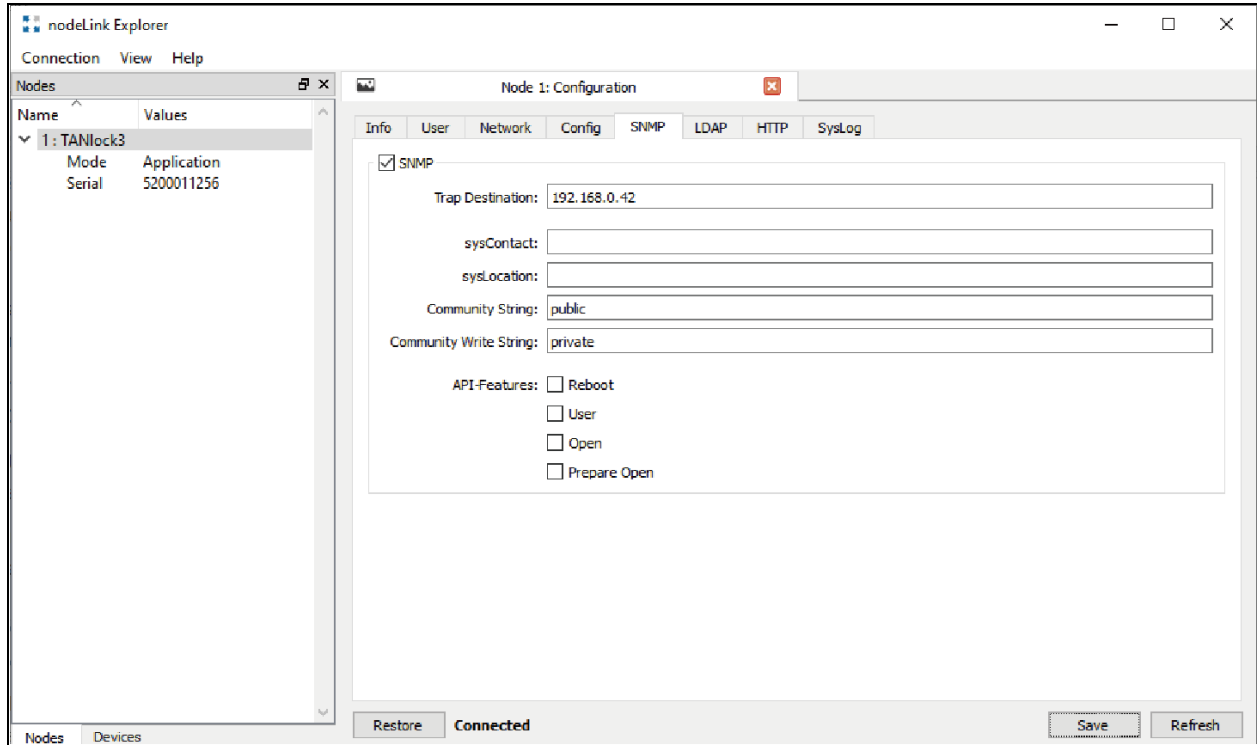


9. Change the *Cockpit Config* password.

- Set *SNMP server IP address*. SNMP traps for unlock/lock change, door sensor status will be sent to this IP address. Default community strings are public and private. Change to the local network environment settings. The network administrator will know these.

Select *Reboot, User, Open, Prepare Open* for API Features, to ensure that Vertiv™ SmartCabinet™ ID Web UI can access the intelligent doorlock.

Figure 7.27 SNMP Configuration Page



- Save *configuration*.
- Reset lock. Any changes to the configuration requires a lock reset/reboot for the changes to take effect. Adding users does not require a reset/reboot.

13. Add a user. For example, input 111 for User ID and 222 for PIN. After setting, you can press 111222 on the pin pad to unlock the door.

Add an RFID card. Start the log event viewer. Swipe an RFID card on the intelligent doorlock, and find the card ID (User: 57b) and password (Pass: 4a8) in the Log. Input 57b for User ID and 4a8 for PIN.

Figure 7.28 User Configuration Page

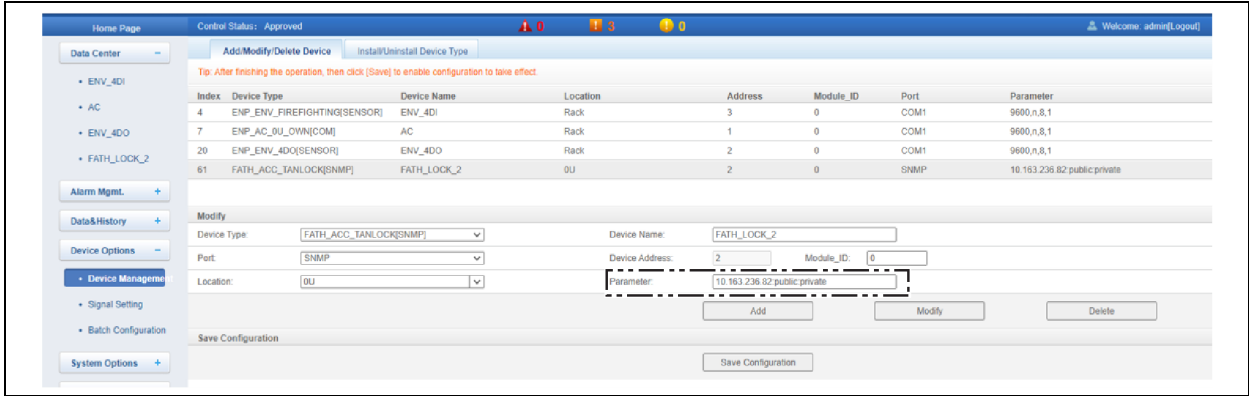
The screenshot displays the nodeLink Explorer interface. The main window is titled 'Node 1: Configuration' and has tabs for 'Info', 'User', 'Network', 'Config', 'SNMP', 'LDAP', 'HTTP', and 'SysLog'. The 'User' tab is active, showing a list of 'Local user IDs' with values 1, 2, and 111. Below this is a 'Create local user' section with input fields for 'User ID: 111' and 'PIN: 222', and a 'Create' button. There is also a 'Delete local user' section with a 'User ID:' field. A context menu is open over the 'Devices' tree on the left, showing options like 'Launch Cockpit', 'Reset', 'Upload firmware', 'Information', 'Statistic', 'Log', and 'File explorer'. At the bottom, the 'Log Node 1 (Connected)' window shows a log table with columns: System time, Timestamp, Line, Module, Context, Function, and Text. A log entry is highlighted with a dashed box, showing 'LOG: auth failure' with 'User: 57b' and 'Pass: 4a8'.

System time	Timestamp	Line	Module	Context	Function	Text
2021-07-02 14:20:13.066	02673231	74	lsystem	main	process_uid	process_uid=752b904a
2021-07-02 14:20:13.066	02673233	98	lsystem	main	process_uid	User: 57b
2021-07-02 14:20:13.066	02673233	99	lsystem	main	process_uid	Pass: 4a8
2021-07-02 14:20:13.066	02673233	102	lsystem	main	process_uid	INPUT => 57b4a8
2021-07-02 14:20:13.066	02673233	312	lock	APP	_on_input	AUTH: input=57b4a8, len=6
2021-07-02 14:20:13.066	02673234	360	lock	APP	_on_input	AUTH: user_id=57b, pin=4a8
2021-07-02 14:20:13.066	02673234	386	lock	APP	_on_input	AUTH: LOCAL request
2021-07-02 14:20:13.066	02673234	398	lock	APP	_on_input	AUTH: MASTER request
2021-07-02 14:20:13.066	02673234	413	lock	APP	_on_input	AUTH: success=FALSE
2021-07-02 14:20:13.109	02673285	131	log	APP	_log_event	LOG: auth failure
2021-07-02 14:20:13.231	02673406	1073	snmpapi	APP	snmpapi_trap..	SNMP_TRAP: event=6
2021-07-02 14:20:13.231	02673406	1042	snmpapi	APP	snmpapi_trap..	SNMP_TRAP: STATE_CHANGED

State: TCP/IP 10.163.236.82:1328 RX: 0 B/s TX: 0 B/s

14. Log in to the Vertiv™ SmartCabinet™ ID WebUI. On the home page, select *Device Options > Device Mgmt.* On the Add/Modify/Delete Device tab, click *FATHlock*. Modify the *IP address* of FATHlock in Parameter, and then click *Save Configuration*.

Figure 7.29 Home Page of Vertiv™SmartCabinet™ ID Web



8 Web UI

8.1 Preparation

In order to use a computer to monitor and manage the cabinet through the web UI, you need to perform the following configurations.

NOTE: The web UI supports Internet Explorer 11, Microsoft Edge, Mozilla Firefox, Google Chrome, and Apple Safari. It is recommended to use Google Chrome. The following procedures show how to configure the Internet Explorer 11.

8.1.1 Configuring IP Address for the Computer

Configure the IP address of the computer so that it is in the same network segment as the IP address the LCD.

NOTE: Check that a computer has been connected to the cabinet. For details on connecting the computer, see [Connecting Ethernet Cable for Computer](#) on page 110.

To configure IP address for the computer:

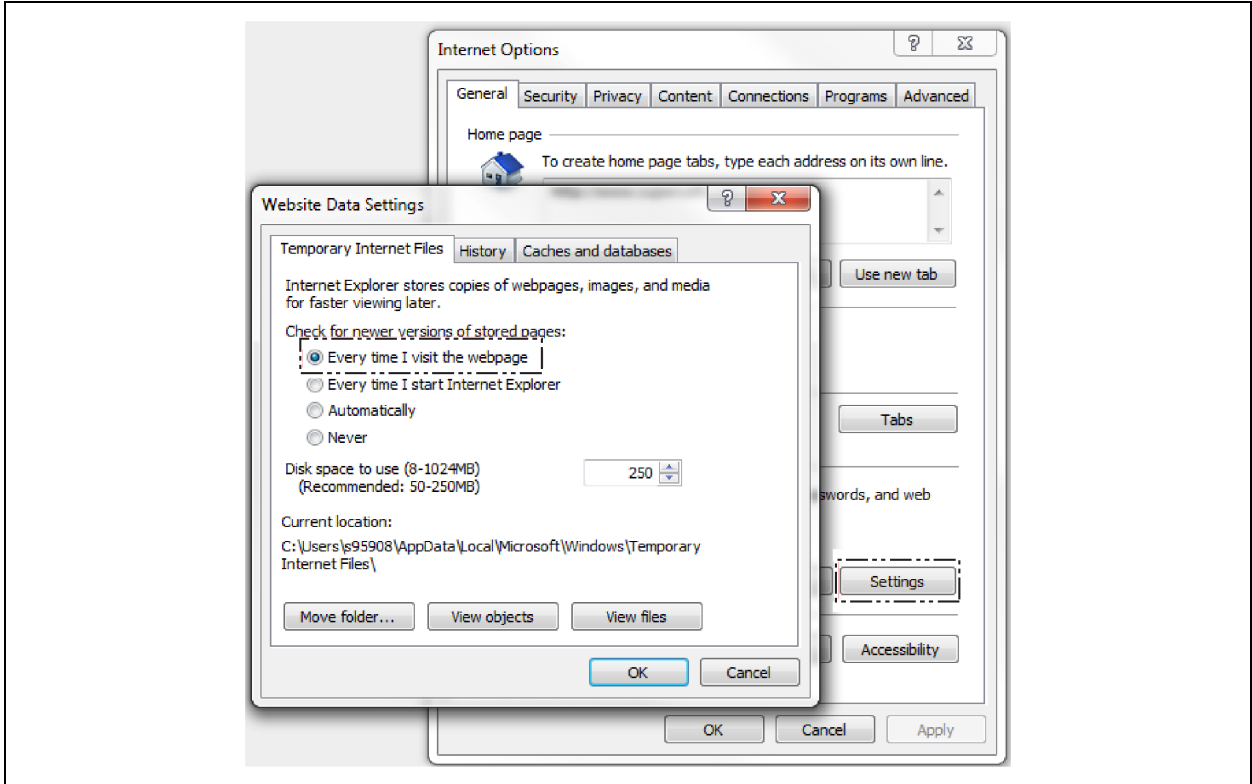
1. Enter *Ethernet settings* in the Windows search field located next to Start in the bottom left corner of the screen.
2. In the Ethernet settings window, click the *local network* under Ethernet.
3. Click *Edit* under IP settings.
4. Under Edit IP settings, choose *Manual*, and turn on *IPv4*. Enter *10.163.236.x* for *IP address*, *24* for Subnet prefix length, and *10.163.236.1* for Gateway. Click *Save*.

NOTE: For IP address *10.163.236.x*, *x* can be any integer ranging from 2 to 253. The IP address cannot be the same as the IP address set for the LCD, the UPS, and the PDUs, as listed in **Table 7.1** on page 133.

8.1.2 Checking IE General Settings

Open the Internet Explorer, select *Tools > Internet options > General > Settings*. On the Temporary Internet Files tab, select *Every time I visit the webpage* and click *OK*.

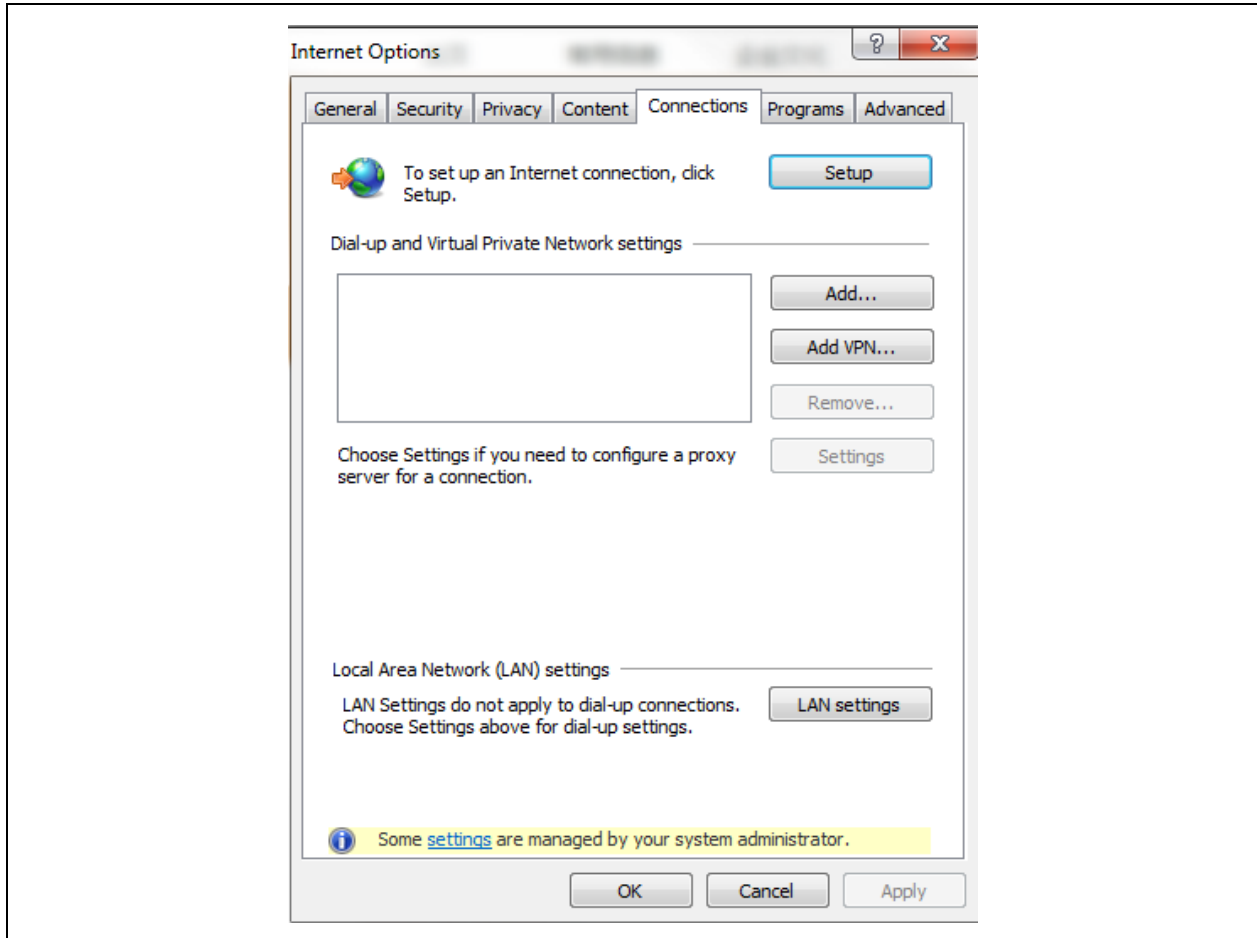
Figure 8.1 Internet Options Page



8.1.3 Checking IE LAN Settings

Check with your system administrator if proxy server is required. If so, open the *Internet Explorer* and select *Tools > Internet options > Connections > LAN settings* to configure the proxy server.

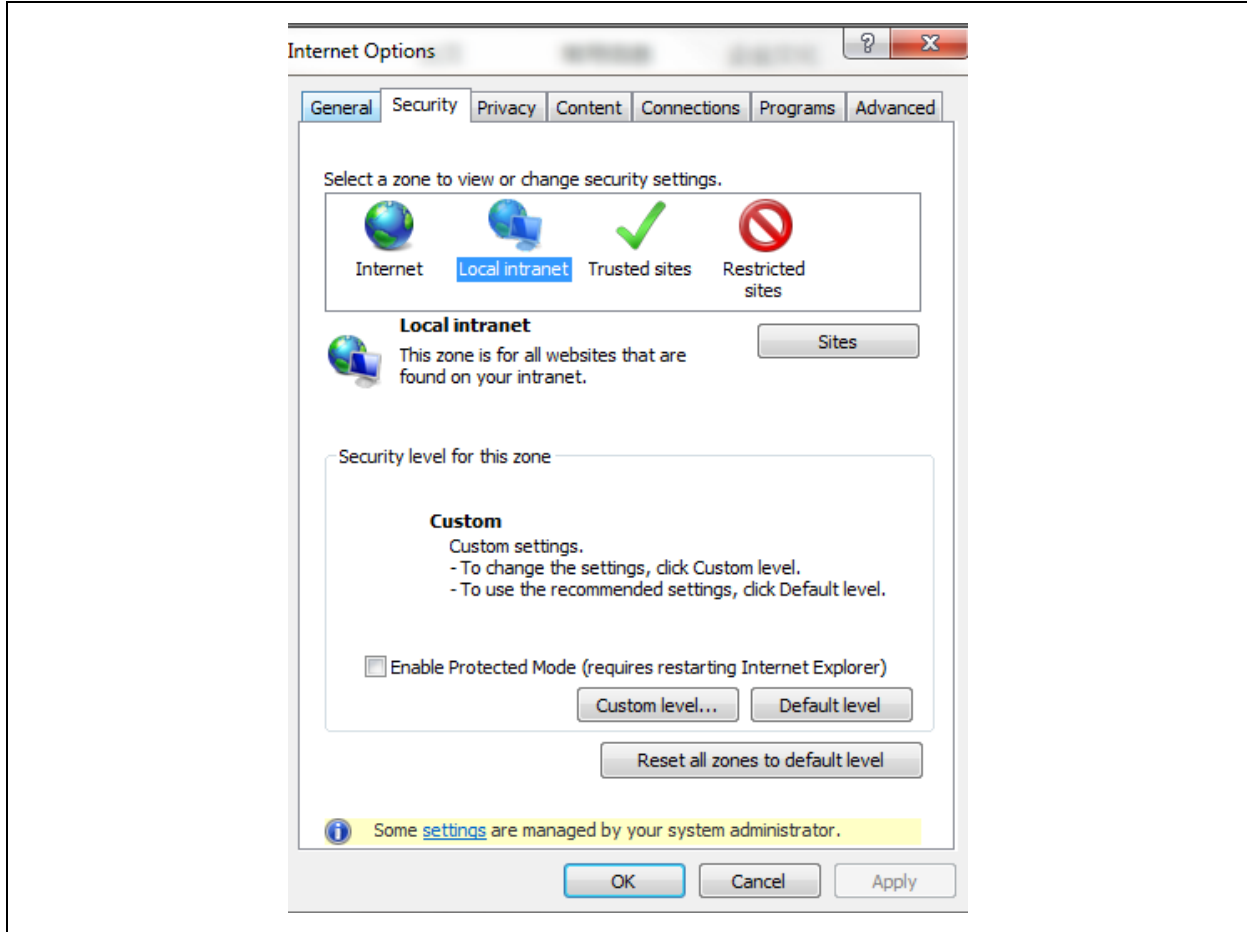
Figure 8.2 Connections Setting Page



8.1.4 Checking IE Security

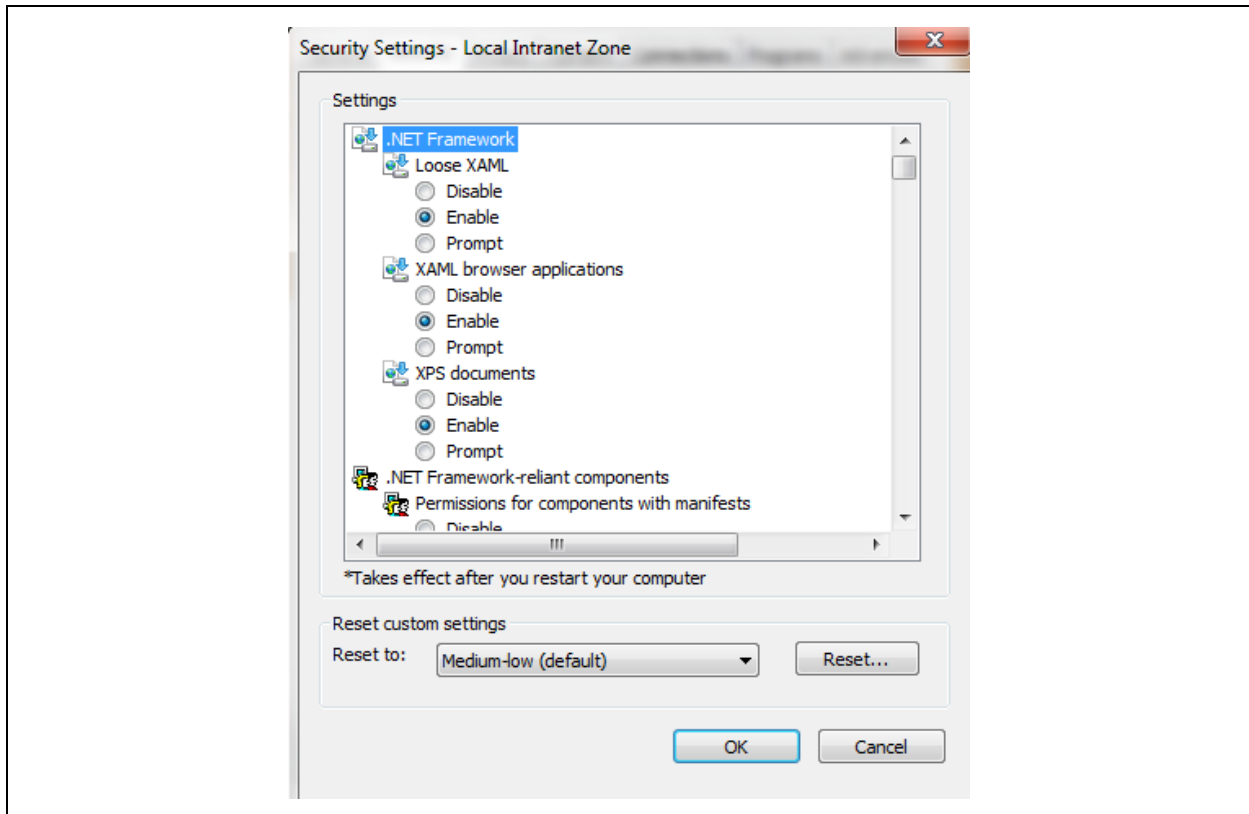
1. Open the *Internet Explorer* and select *Tools > Internet options > Security*. Click *Local intranet*, and then click *Custom level*.

Figure 8.3 Security Settings Page



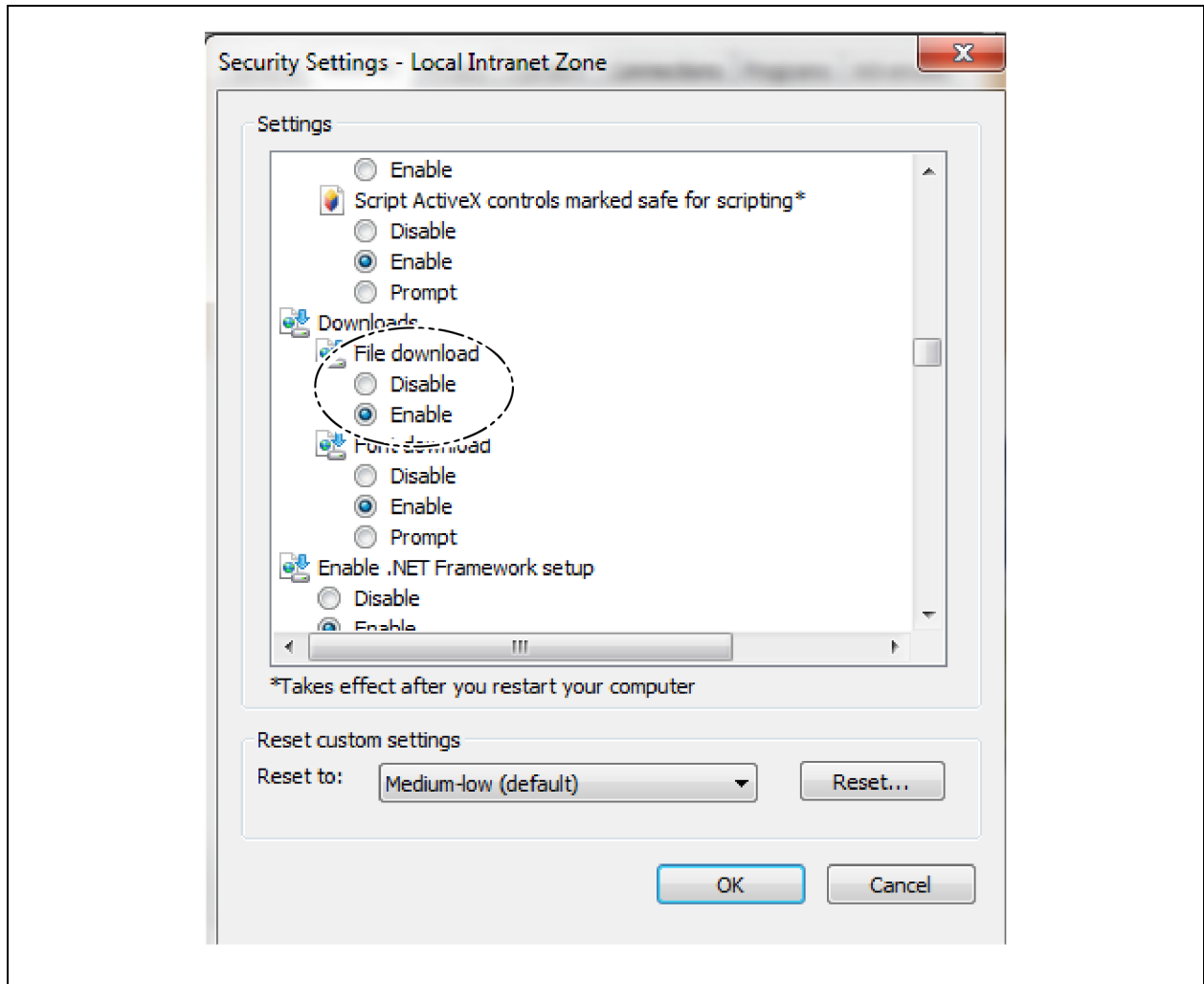
2. Under Reset custom settings, select *Medium-low (default)* and click *Reset*.

Figure 8.4 Security Settings Page



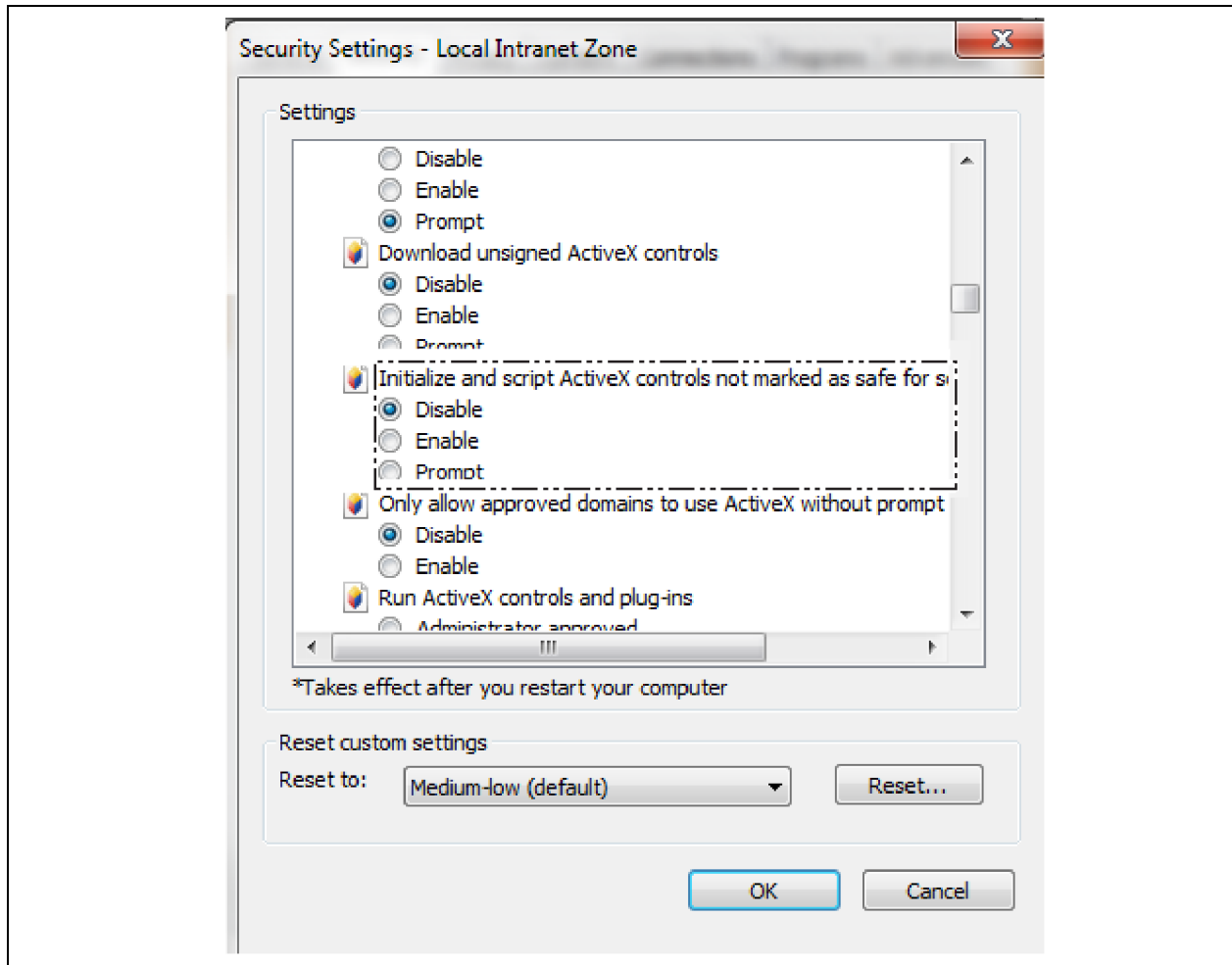
3. Under Downloads, select *Enable* for File download.

Figure 8.5 Security Settings



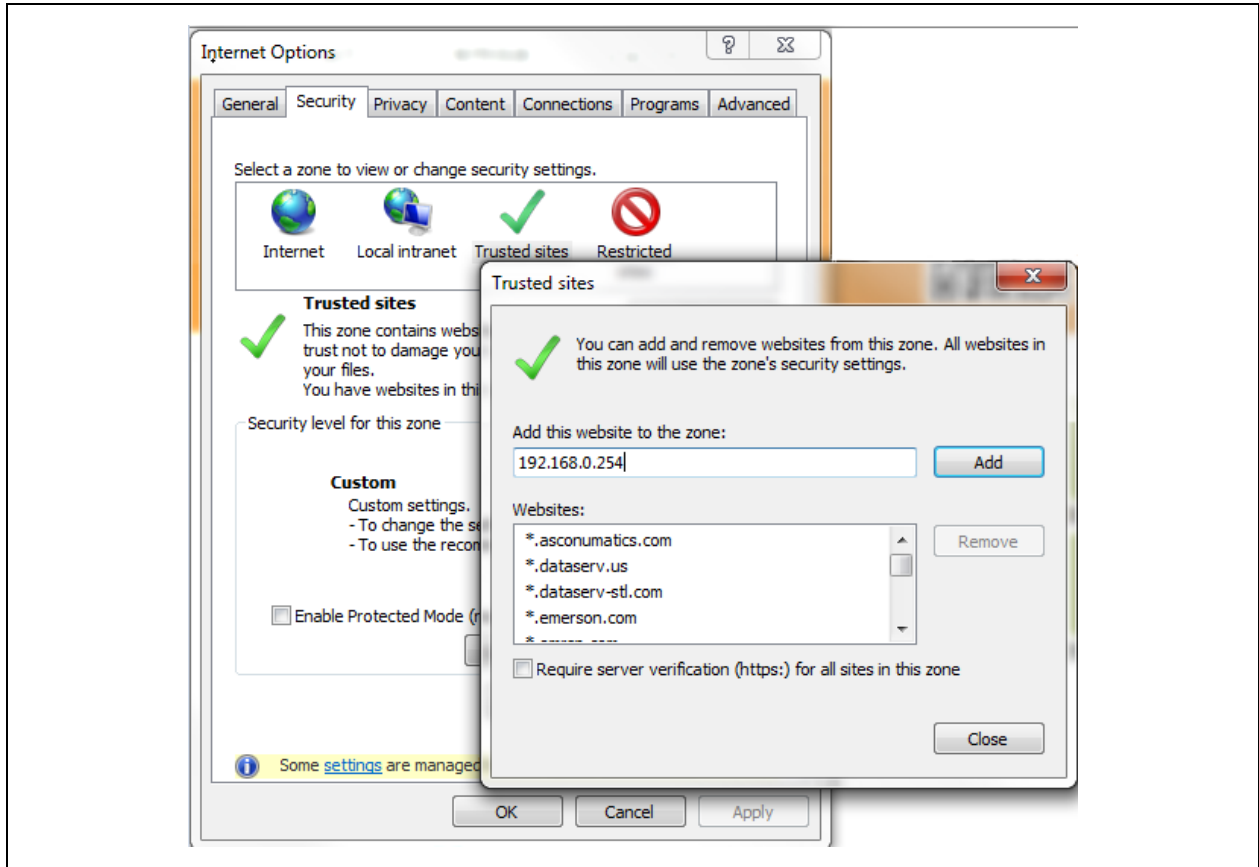
- Under ActiveX controls and plug-ins, select *Disable* for Initialize and script ActiveX controls not marked as safe for scripting and then click *OK*.

Figure 8.6 Security Settings



5. In the Security tab, click *Trusted sites* and add the *IP address* of the cabinet.

Figure 8.7 Internet Option Page



8.2 Home Page

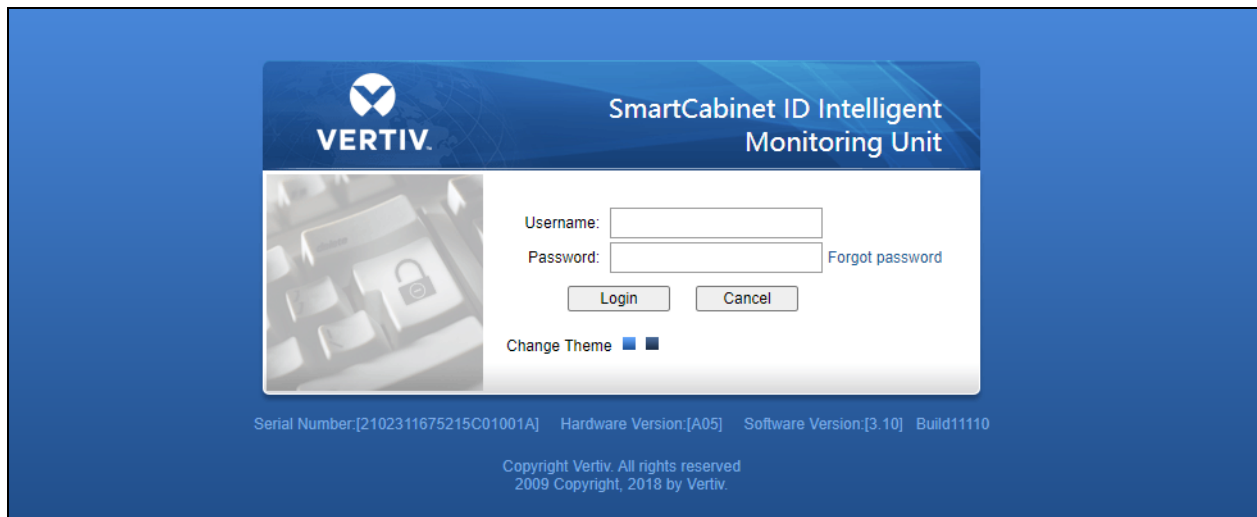
8.2.1 Login

Logging in to the System

Open a *web browser* and enter the *IP address* (*https://10.163.236.44*) that has been configured for the LCD. The login page of the Vertiv™ SmartCabinet™ ID Intelligent Monitoring Unit is displayed. Enter *admin* for *Username* and *Vertiv123* for *Password* and click *Login*.

NOTE: After logging into the system, you are required to change the default password.

Figure 8.8 Vertiv™ SmartCabinet™ ID Intelligent Monitoring Unit



Retrieving Password

If you forget password, you can retrieve it through the web UI or the LCD.

- On the web UI, click *Forgot password* on the login page, enter *Username*, and click *Submit*. To use this way to retrieve password, it is required that email server has been configured. To configure email server, click *Alarm Notifications* under *Alarm Mgmt*. On the *Email Server Configuration* tab, enter *server address* or *domain name* for *Email Server*. Enter *port number*, *username*, *password*, and *sender's email address*, and click *Save Configuration*.

NOTE: The port number is 25 by default. When SSL is selected, the port number will be automatically changed to 465. Ensure that the email server supports SSL before selecting this option.

- On the LCD screen of the cabinet, press *Settings > System > Factory Reset* to restore the password to default password (*Vertiv123*).

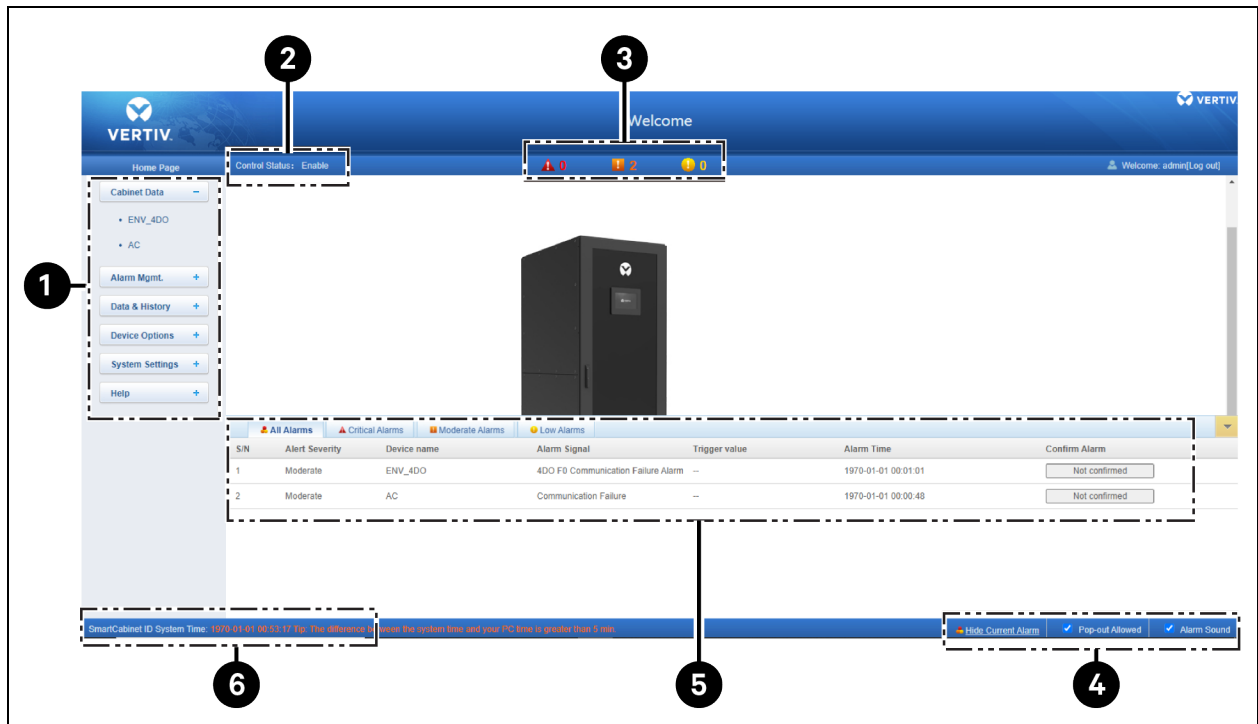
NOTE: *Factory Reset* will restore all the parameters configured on the LCD and on the web UI.

8.2.2 Home Page

Overview

On the home page, you can gain access to function menu (1), alarm notification settings (4), and system time calibration (6). You can also check the control status (2), the number of alarms (3), and the information of active alarms (5).

Figure 8.9 Home Page



NOTE: When the high temperature alarm is triggered, the emergency fan can prevent the temperature in the cabinet from reaching too high. If the alarm is not cleared for a long time, you need to open the front and rear doors of the cabinet and contact the service personnel to troubleshoot the fault.

Selecting Model

Fold the active alarms (5) list, and the Settings button is displayed in the lower right corner. Select *Settings* > *Select Model*. In the displayed window, choose a *model* and click *Select Model* to change model image, click *OK*, and close this window. In the lower right corner of the home page, click *Save Configuration*.

On the home page, select *Settings* > *Set Display*. In the Display Settings dialog box, select *device name* and *device signals*. A maximum of four signals can be selected for each device.

Calibrating System Time

In the system time calibration (6) area, click *Vertiv™ SmartCabinet™ ID System Time*. In the Time Settings pane, select your time zone. Then you can choose either of the following ways to calibrate time:

- Select *Get time automatically from the below time servers*, set *Primary Server*, *Secondary Server*, and *Interval to Calibrate System Time*, and select *Calibrating Protocol*. Click *Apply*.
- Select *Specify Time* and click *Local Host Time* to synchronize local host time with your system. Click *Apply*. Or you can manually set *Date* and *Time*, and click *Apply*.

NOTE: By default, the system time is calibrated by *Specify Time*.

Setting Alarm Notifications

In the lower right corner of the home page, click *View Current Alarm* to view active alarms. If you select *Pop out Allowed*, a pop up window will be displayed when an alarm is triggered. If you select *Alarm Sound*, sound will be displayed upon occurrence.

Clearing System Timeout

The system will be locked after five minutes of inactivity. You can click *[Clear] Time-out* and log in to the system again.

8.3 Function Menu

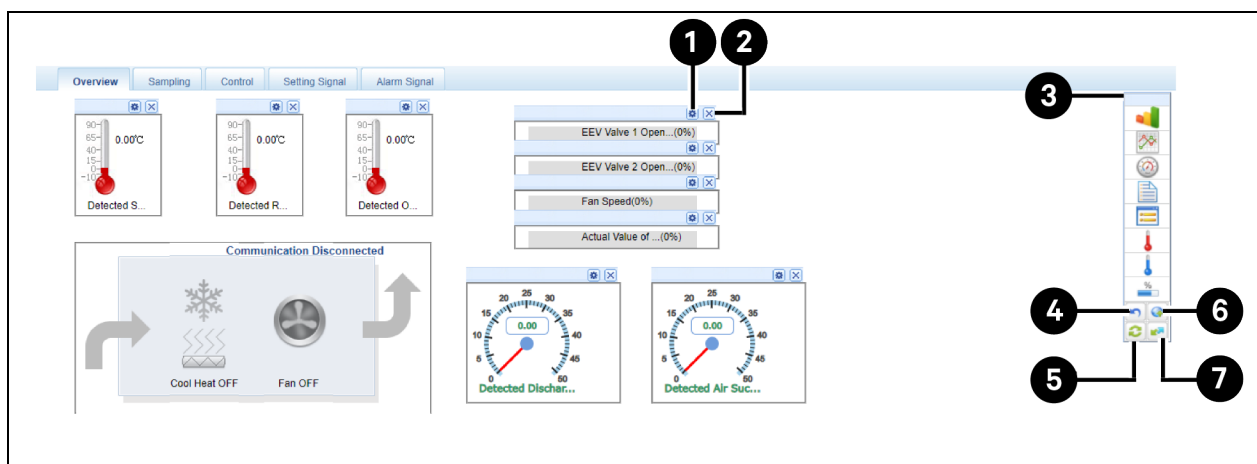
8.3.1 Cabinet Data

On the function menu, select *Cabinet Data > AC*.

On the Overview tab, click *Editing* to customize the overview page. Click the button (1) to edit a control. Click the button (2) to delete a control. You can also drag a control to change its location. The column bar (3) on the right lists all the controls that are available. Click the button (6) to save the changes made to the control. Click the button (7) to apply the settings of this device to another device of the same type. Click the button (5) to restore to default settings. Click the button (4) to exit the editing mode.

NOTE: Some controls cannot be edited or deleted.

Figure 8.10 Overview Page



On the Sampling tab, you can view the values of sampling signals and the time they are collected. On the Control tab, you can change the value of control signals. On the Settings tab, you can set signal values in batches. A maximum of 16 signals can be set at a time.

8.3.2 Alarm Mgmt.

Current Alarms

On the function menu, select *Alarm Mgmt.* > *Current Alarms*. You can view critical alarms, moderate alarms, and low alarms. You can click *Unconfirmed* under Control Alarm to confirm an alarm. Point to the Confirmed icon, and you can see detailed information about the alarm.

Historical Alarms

Click *Historical Alarm* under Alarm Mgmt., select a device for *Device Name*, and set *Start Time* and *End Time*. You can query or download the alarms triggered within the specified period.

Alarm Notifications

Click *Alarm Notifications* under Alarm Mgmt. On the User Alarm Notification Configuration tab, you can set *Language Type* and *Notification by*, and add *Alert Severity*, *Site name*, and *Site IP* to the alarm notification. Choose a *device* under All Devices, select *alarm severity*, and click *Save Configuration* to apply the settings to the device.

NOTE: To set alarm severity, you must first set Notification by.

NOTE: When you select any device under All Devices, Critical will be automatically selected. When you select Low, Moderate will be automatically selected.

Figure 8.11 User Alarm Notification Page

The screenshot displays the 'User Alarm Notif Config' page. It includes a sidebar with navigation options like 'Cabinet Data', 'Alarm Mgmt', and 'Data & History'. The main content area has tabs for 'User Alarm Notif Config', 'Email Server Config', and 'System Status Notif Config'. A tip states: 'Tip: If an alarm goes on and is not turned off, the system will send an alarm notification every 4 hours up to 3 times.' Below this, there are input fields for 'Username' (admin [Administrator]), 'Email', and 'Phone'. The 'Notification by' section has radio buttons for 'Email' (selected), 'SMS', and 'Phone'. A 'Customized Alarm Notif' section contains a table with checkboxes for various devices and their alert severities.

Customized Alarm Notif:	<input type="checkbox"/> Device name	<input type="checkbox"/> Alarm Description	<input type="checkbox"/> Alarm Time	<input type="checkbox"/> Alarm status	<input type="checkbox"/> Alert Severity	<input type="checkbox"/> Site name	<input type="checkbox"/> Site IP
<input type="checkbox"/>	All Devices	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> Critical	<input type="checkbox"/>	Moderate	<input type="checkbox"/> Low
<input type="checkbox"/>	Monitoring Unit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	ENV_4DI	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	AC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	ENV_4DO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>
<input type="checkbox"/>	FATH_LOCK	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>

A 'Save Config' button is located at the bottom right of the table.

On the Email Server Configuration tab, you can configure email server. Enter *server address* or *domain name* for Email Server. Enter *port number*, *username*, *password*, and *sender's email address*, and click *Save Configuration*.

NOTE: The port number is 25 by default. When SSL is selected, the port number will be automatically changed to 465. Ensure that the email server supports SSL before selecting this option.

On the Scheduled System Status Notification Configuration tab, you can set *Notification Scheduled Cycle*, *Interval Of Notification* and *Send Time*. Before setting these functions, make sure that the functions on the Email Server Configuration tab have been set.

NOTE: If you select Alarm Email Configuration, Contact and Service Phone information will be added to the email.

Alarm Actions

Click *Alarm Actions* under Alarm Mgmt. You can view current alarm actions and add an alarm action. Click *Add*, and in the displayed Alarm Actions Configuration window, set parameters in the areas (1), (2), and (3).

- The areas (1) and (2) specify the inputs for an action. The area (3) specify the output of the action. These association is defined by Operator.
- Signal is selected by default and you can add an alarm action by setting Device, Signal Type, Signal Name, and Operator in this mode .
- If you select OutputRegister for output , you can add an output register. This register can then be used as an input register.

Figure 8.12 Alarm Actions Configuration Page

8.3.3 Data & History

Device Information

On the function menu, select *Data & History > Device Information*. On the Device Information List tab, you can view the name, type, and location of all devices in the cabinet. You can also download the list. On the Export SNMP MIB tab, you can export the Management Information Base (MIB) of the Simple Network Management Protocol (SNMP) by device type. On the Asset Inventory tab, you can query device assets by name, serial number, ID range, and expiration date. On the Asset Batch Configuration tab, you can upload or download device asset configuration in batches.

Data History

Click *Data History* under Data & History. On the Data Report tab, you can query data by selecting device name, log type, start time, and end time. You can also download the query results. On the Historical Curve tab, you can view data of a report within the specified period, shown in curves. On the Set Curve Report tab, you can add a report, such as AC Supply Air Temperature, by selecting device and signal.

Log History

Click *Log History* under Data & History. You can query the logs by selecting log type, start time, and end time. You can also download the query results. The query results of system logs and driver logs will not be displayed; they will be downloaded as compressed files.

Clear History

Click *Clear History* under Data & History. You can clear historical alarms, historical data, statistics data, control logs, and system logs.

8.3.4 Device Options

Device Management

On the function menu, select *Device Options > Device Management*. On the Add/Modify/Delete Device tab. You can add, modify, and delete a device.

Figure 8.13 Add/Modify/Delete Device Settings Page

The screenshot displays the 'Add/Modify/Delete Device' settings page in the Vertiv SmartCabinet ID web interface. The page features a navigation sidebar on the left with options like '0U Data', 'Safe Mgmt.', 'Alarm Mgmt.', 'Data&History', 'Device Options', and 'Device Management'. The main content area shows a table of devices with columns for Index, Device Type, Device Name, Location, Address, Module_ID, Port, and Parameter. Below the table is a 'Modify' form with input fields for Device Type, Device Name, Port, Device Address, Module_ID, Location, and Parameter. At the bottom of the form are buttons for 'Add', 'Modify', 'Delete', and 'Save Configuration'.

Index	Device Type	Device Name	Location	Address	Module_ID	Port	Parameter
4	ENP_ENV_4DC[SENSOR]	ENV_4DC	Rack	2	0	COM1	9900.n.8.1
5	ENP_UPS_GXT5_10[SNMP]	UPS_GXT5	Rack	7	0	SNMP	10.183.238.42.private.private
6	ENP_MPOU_GEISTGEN_OWN[SNMP]	PDU_GEIST_1	Rack	8	0	SNMP	10.183.238.40.public.private
7	ENP_AC_OU_OWN[COM]	AC	Rack	1	0	COM1	9900.n.8.1
8	ENP_MPOU_GEISTGEN_OWN[SNMP]	PDU_GEIST_2	Rack	9	0	SNMP	10.183.238.41.public.private

To add a device:

- Select *device type*.
- Enter *device name* or use the *default name*.
- Use the *default port number*.
- Enter *device address* (for some devices, device address cannot be edited). When a device has several modules, you need to enter module IDs.
- Select a *location* or enter the *location*.
- Check if the default value in the Parameter box is correct. If not, change according to device type. You can point to the Parameter box to view the format required and an example of it.

- g. Click *Add* and then click *Save Configuration*. A dialog box will be displayed, indicating that the system will restart after saving the configuration.

NOTE: Device Address must be integers ranging from 1 to 255. Devices in the same port should not have repeated addresses.

NOTE: Module ID must be integers ranging from 1 to 255. Modules of the same device should not have repeated addresses.

NOTE: The devices added through this system cannot be synchronized to the LCD screen.

To modify a device, select a device from the list, change its settings, and then click *Save Configuration*. To delete a device, select a device from the list and click *Delete*.

NOTE: If a device is modified but the configuration is not saved, this device cannot be deleted.

On the Install/Uninstall Device tab, the installed devices are listed. You can click *Select File* to upload the driver package (.iru file) from the computer to install the device. You can click *Uninstall* to uninstall a device. If the device is in use, it cannot be uninstalled.

NOTE: A maximum of 64 devices can be installed. The actual number depends on the type of the device, the size of the driver package, and the remaining space in the system.

NOTE: If a device has been installed in the system, the device of the same type with a lower version cannot be installed to the system.

Signal Settings

Click *Log History* under Data & History. On the Modify Device Name tab, enter a new name for the device, select that device, and click *Apply*. A dialog box will be displayed indicating that the system requires a restart for the settings to take effect. On the Modify Signal tab, enter a new name, storage interval, and storage threshold. Select the device, and click *Apply*. On the Modify Signal Status tab, click a signal in the list and change signal status in the Modify Signal Status area.

NOTE: If an alarm is set to Blocked, when it is triggered, there will be no notification or alarm record. The blocked status will be cleared after 24 hours.

Batch Configuration

Click *Batch Configuration* under Data & History, you can upload configuration files to configure device and signals in batches.

NOTE: Only admin user can perform batch configuration. To enable your browser for this operation, see Help in the Function Menu.

NOTE: The batch configuration file downloaded from the system to the computer is encrypted.

8.3.5 System Settings

Monitoring Unit

On the function menu, select *System Settings > Monitoring Unit*. You can configure sampling signals, settable signals, and alarm signals.

Network Settings

Click *Network Settings* under System Settings. On the Network Settings tab, you can set the IP address, subnet mask, gateway address, DNS1 (primary DNS) address, and DNS2 (backup DNS) address of the Vertiv™ SmartCabinet™ ID. Click *Save parameter* to apply the settings.

NOTE: After changing the IP address, the page will be refreshed and you need to log in to the system again.

On the Access Mgmt. tab, you can enter the IP address of RDU manager to add a visitor.

NOTE: A maximum of three visitors can be added.

On the SNMP Configuration tab, you can configure SNMP V2 and SNMP V3.

- To configure SNMP V2, enter *NMS IP*, set *Trap Level*, and use the default values for Read Community and Write Community.
- To configure SNMP V3, set *NMS IP*, *Trap Level*, *Username*, *User Type*, *Authentication Protocol*, *Encryption Type*, *Verification Key*, and *Encryption Password*.

NOTE: NMP IP indicates the IP address of the host that receives SNMP data from the cabinet.

NOTE: For the current version, only DES encryption is supported.

NOTE: Verification Key and Encryption Password should contain at least eight characters. These values should be the same as the values set in the host.

On the Security Settings tab, you can set web access method and web access security policy.

User Mgmt.

Click *User Mgmt.* under System Settings. On the Web User Management page, you can add, modify, and delete users. Under Modify User, you can click Email Test to verify the email address.

NOTE: Usernames can contain letters (a-z), numbers (0-9), dashes (-), and underscores (_). Usernames must start with a letter or a number.

NOTE: To add or modify a user, you must enter phone number or email address.

NOTE: You cannot delete admin user.

User Level includes Browser, Operator, Engineer, and Administrator. Their permission is listed in the table below:

User Level	Permission
Browser	View data
Operator	Send commands to the cabinet
Engineer	<ul style="list-style-type: none"> • Send commands to the cabinet • Modify parameters • Download data • Modify user information
Administrator	<ul style="list-style-type: none"> • Send commands to the cabinet • Modify parameters • Download data

User Level	Permission
	<ul style="list-style-type: none"> Add, modify, and delete users Upgrade firmware

Restore to Default

Click *Restore to Default* under System Settings. You can reboot Vertiv™ SmartCabinet™ ID, restore the cabinet to default configuration, and restore LCD password.

NOTE: Restoring to default configuration will restore the cabinet to factory settings and clear all historical data.

NOTE: After clicking Restore to Default, wait for one minute while system initializes. Then log in to the Vertiv SmartCabinet™ ID Monitoring Unit .

System Upgrade

Click *System Upgrade* under System Settings. On the System Upgrade tab, you can click *Select File* to upload firmware upgrade package (.rdu file) and then click *Installation* to upgrade the firmware.

NOTE: Incremental upgrade is supported on Vertiv™ SmartCabinet™ ID .

Title Settings

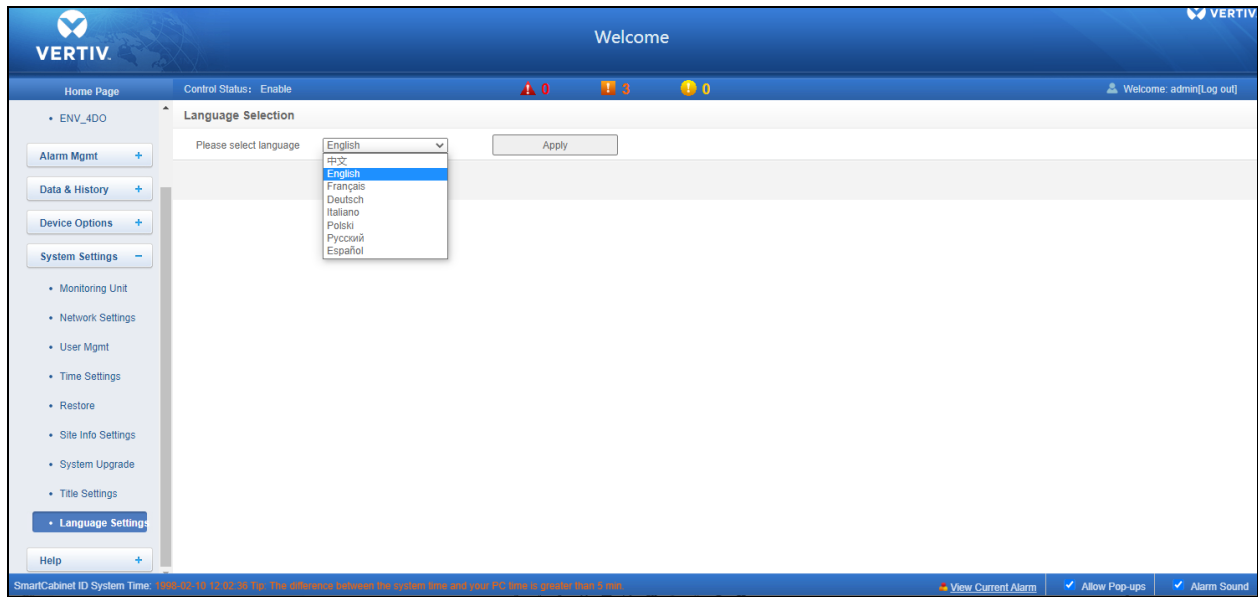
Click *Title Settings* under System Settings. On the Title Settings tab, you can change the system title and logo displayed on the web interface. You can click *Restore to Default* to restore to default logo.

NOTE: GIF, BMP, and JPG format images can be uploaded. The image size should not exceed 500 KB.

Language Settings

Click *Language Settings* under System Settings. You can select the display language for the system. After the system restarts, the language option you select will be applied to both the web user interface and the HMI on the cabinet.

Figure 8.14 Language Selection Page



8.3.6 Help

On the function menu, select *Help* > *Vertiv SmartCabinet™ ID*. You can view the software version of the system and the serial number of the cabinet. You can also download Vertiv SmartCabinet™ ID from the link provided.

9 Maintenance



WARNING! Maintenance and troubleshooting should be performed by trained and authorized personnel. Follow all local and national codes.



WARNING! Disconnect all power supply to the cabinet before maintenance.

9.1 Troubleshooting

Perform the troubleshooting as shown in **Table 9.1** below.

Table 9.1 Troubleshooting

Problems	Measures
Communication failure	Check that the Ethernet cables are correctly connected.
	Check that the IP address of the cabinet is correctly set.
	Check that SNMP configuration is correct.
Failed to launch Vertiv™ SmartCabinet™ ID Monitoring Unit web page	<ul style="list-style-type: none"> Check that the correct IP address is entered. Check that the computer can communicate with the cabinet.
Failed to log in to Vertiv SmartCabinet™ ID Monitoring Unit web page	Check that the computer can communicate with the cabinet.
Air conditioner is not working.	<ul style="list-style-type: none"> Check that the AC Indoor switch on the PMB is turned ON. Refer Appendix A: PMB Overview for more information. On the LCD screen, check that all the air conditioner alarms are cleared.
Condensing unit is not working.	<ul style="list-style-type: none"> Check if the supply air temperature is too low for the condensing unit to start. Check that the Ethernet cable between the cabinet and the condensing unit is correctly connected.
AC communications failure	<ul style="list-style-type: none"> Check that the 4DO board is correctly connected. Check that the AC Indoor switch on the PMB is turned on. Refer Appendix A: PMB Overview for more information. Check that the baud rate of the RS485 port is 9600.
UPS communications failure	<ul style="list-style-type: none"> Check that the RDU101 card is connected to the UPS. Check that UPS communications parameters are correctly set.
PDU communications failure	Check that PDU communications parameters are correctly set.
Sensor communications failure	Check that the sensor has normal power supply and the sensor board is correct set.
High supply air temperature	Check that there is no leakage in the refrigerant line set.
Temperature curve is abnormal	Check that all sensors are connected.

Table 9.1 Troubleshooting (continued)

Problems	Measures
Temperature or humidity is abnormal	Check that all sensors are connected.
A lot of condensate water is observed on cabinet surface	Increase the supply air temperature.
UPS cannot start when the cabinet is powered on	<ul style="list-style-type: none"> Check that UPS power input cable is correctly connected and circuit breaker is closed. Check that UPS input voltage is within the normal range using a multimeter.

9.2 Maintenance

NOTE: PTC heaters are used in the air conditioner. If the fuse of the heater is damaged, the whole PTC heater must be replaced because you cannot maintain or replace only the fuse.

9.2.1 Maintenance Schedule

Conduct monthly, quarterly, biannual and annual checks according to the following guidelines.

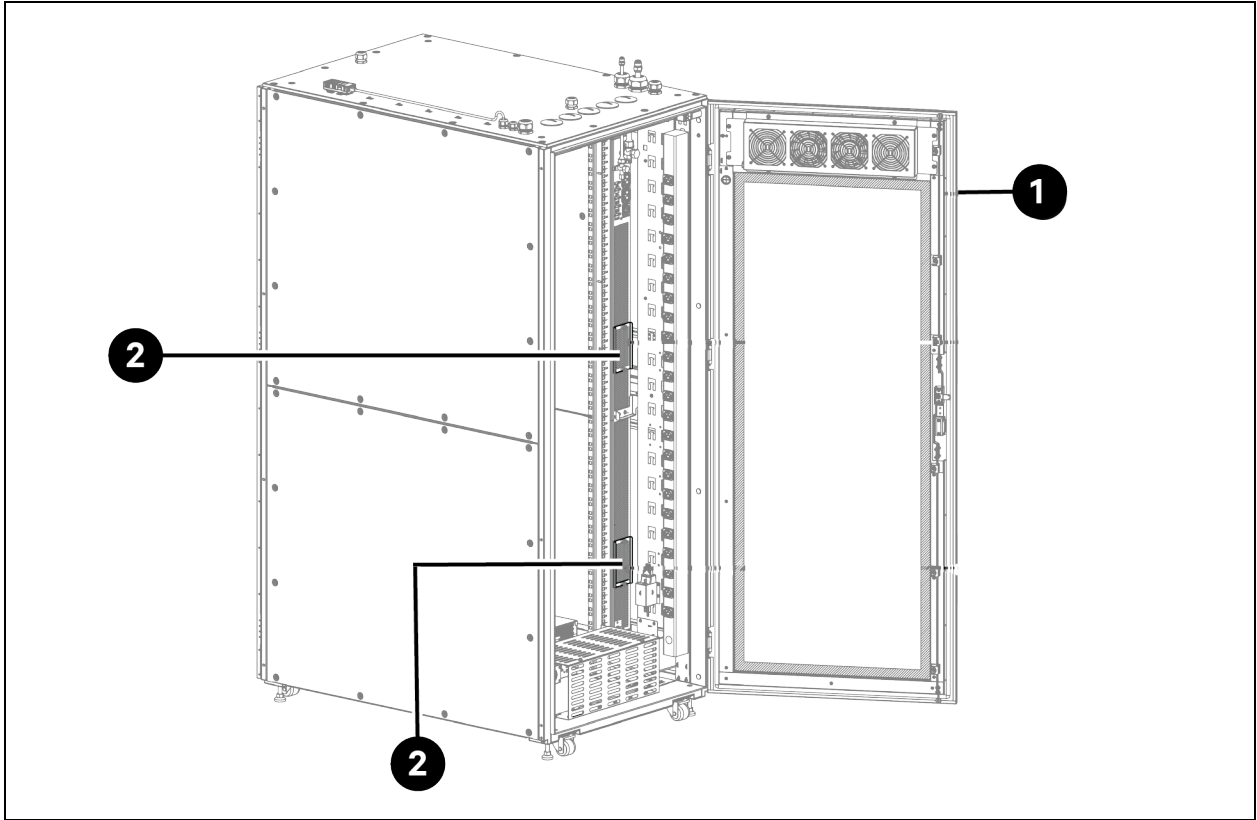
Component	Check Items	Maintenance Period			
		Monthly by user	3 months	6 months	12 months
UPS	Check if there is irregular noise from fans		X		
	Check if the fans are operating normally and the vents are clean		X		
	Check if the operating status of UPS is normal, or conduct regular inspection or maintenance according to the requirements of the UPS			X	
PMB	Check and fasten the circuit connectors and plugs				X
PDU	Check and fasten the circuit connectors and plugs				X
Water Pump	Check if there are impurities and debris in the water tray	X			
	Check if there are any water leaks at the bottom of the water tray or the rack	X			
	Check if the hose pipes are loose or clogging			X	
	Check if the cable is loose and the pump can operate normally			X	
Cooling Unit	Check if there are any alarms for the AC unit	X			
	Check that the AC operating parameters are in the normal range	X			
	Check if there is irregular noise from fans			X	
	Check if there are any signs of oil leakage			X	
	Check if there are any leaks in pipe connectors				X
	Check and fasten the circuit connectors and plugs				X

Component	Check Items	Maintenance Period			
		Monthly by user	3 months	6 months	12 months
Condensing Unit	Check if there are any signs of oil leakage			X	
	Check if there is abnormal vibration and noise from compressor or fans			X	
	Check if the fins cleanness			X	
	Check if there are any leaks in pipe connectors				X
	Check that the fan motors are firmly fixed				X
	Check and fasten the circuit connectors				X
Others	Check that the lights are normal	X			
	Check that the connections of 4DI, 4DO, T&H sensors are tight, and communication is normal		X		
	Check that the function of the electronic locks is normal		X		
	Check that the emergency fans are normal			X	
	Check if the filter of unit is clean			X	

9.2.2 Refrigerant Leak Detection (F-Gas)

NOTE: In European countries, it is mandatory to check for refrigerant leak once a year when the R410A refrigerant charge is between 2.39 kg (5.3 lb) and 23.9 kg (52.7 lb). To check for refrigerant leak, open the rear door and remove the cover two plates, as shown in **Figure 9.1** on the next page.

Figure 9.1 Checking for Refrigerant Leak

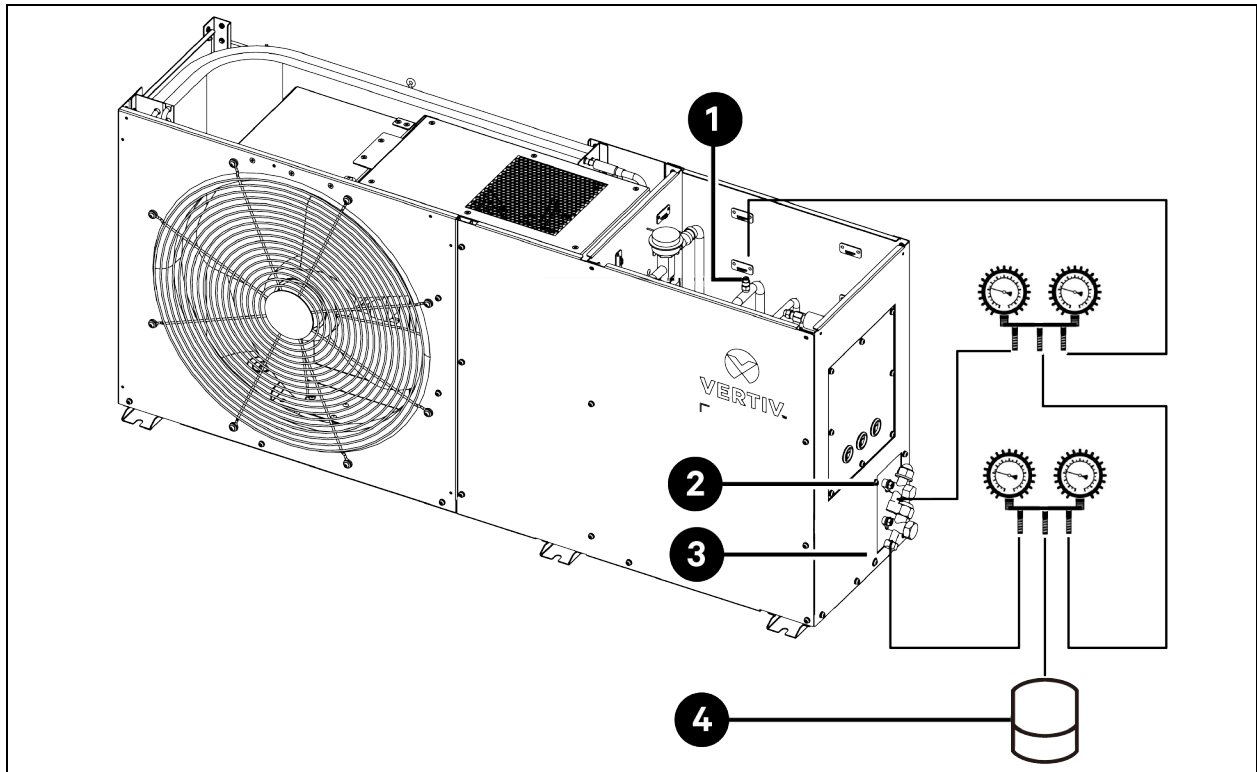


Item	Description
1	Rear door
2	Cover plate for checking refrigerant leak

NOTE: If it is required to evacuate the evaporator and the condensing unit during maintenance, you need to evacuate not only through the connectors on the condensing unit for the low ambient condensing unit but also from the reserved Schrader valve near the receiver.

To evacuate the low ambient condensing unit, remove the top panel by removing fourteen M4 x 10 pan head screws. Connect the manifold gauges to the reserved Schrader valve near the receiver and to the two Schrader valves on the connectors, as shown in **Figure 9.2** on the facing page.

Figure 9.2 Evacuating the Low Ambient Condensing Unit



Item	Description	Item	Description
1	Reserved Schrader valve near receiver	3	Gas pipe connector
2	Liquid pipe connector	4	Vacuum pump

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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

1-800-543-2778

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

Appendix B: PMB Overview

PMB is an integrated power management block that provides power to devices in the cabinet. The following models are used with the cabinet:

- VSA9001 for Vertiv™ SmartCabinet™ ID VS3354 and VS3350
- VSA9002 for Vertiv™ SmartCabinet™ ID VS3750
- VSA9003 for Vertiv™ SmartCabinet™ ID VS3354I and VS3350I
- VSA9004 for Vertiv™ SmartCabinet™ ID VS3750I

Figure 10.1 PMB Appearance

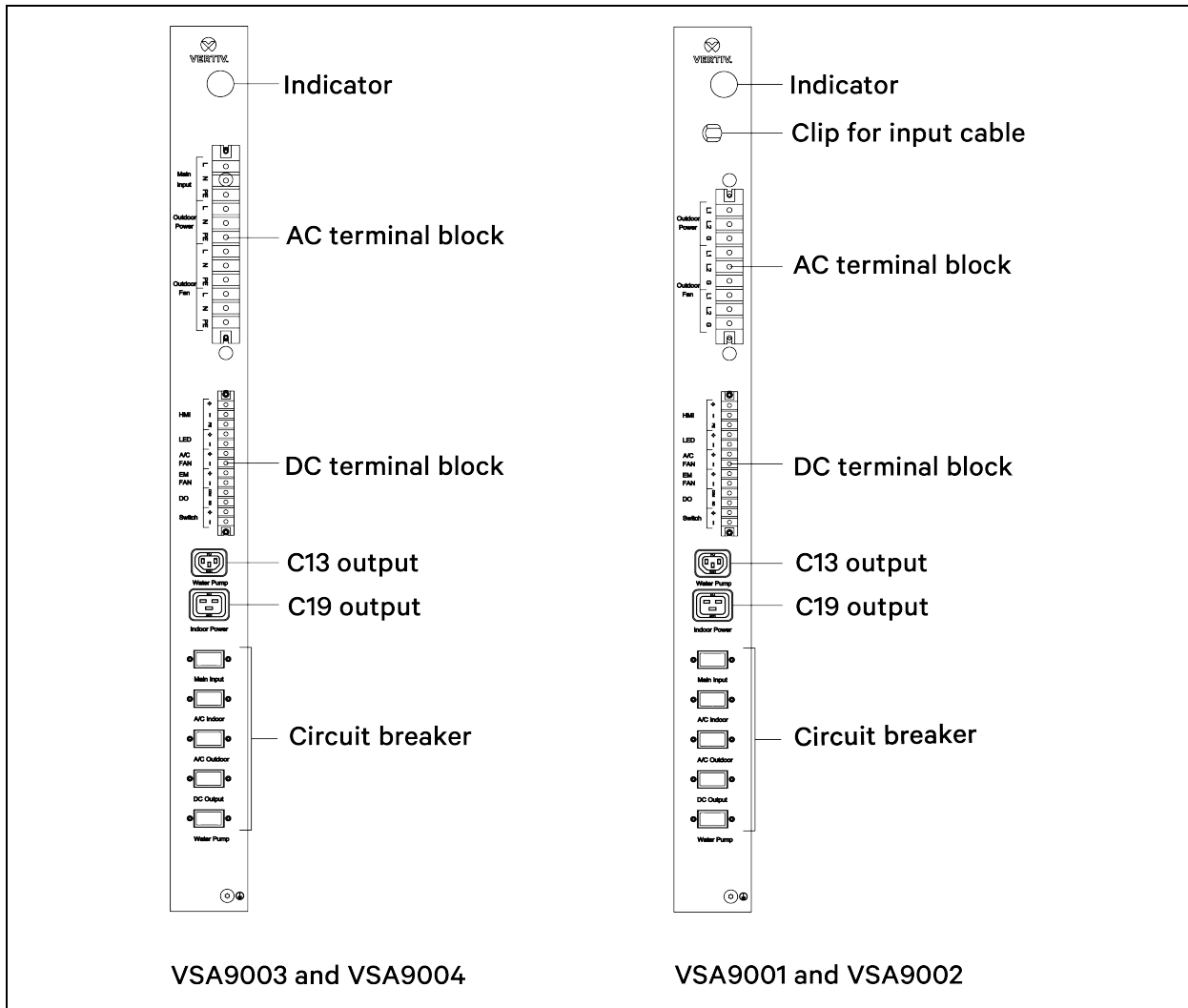


Figure 10.2 PMB Dimensions

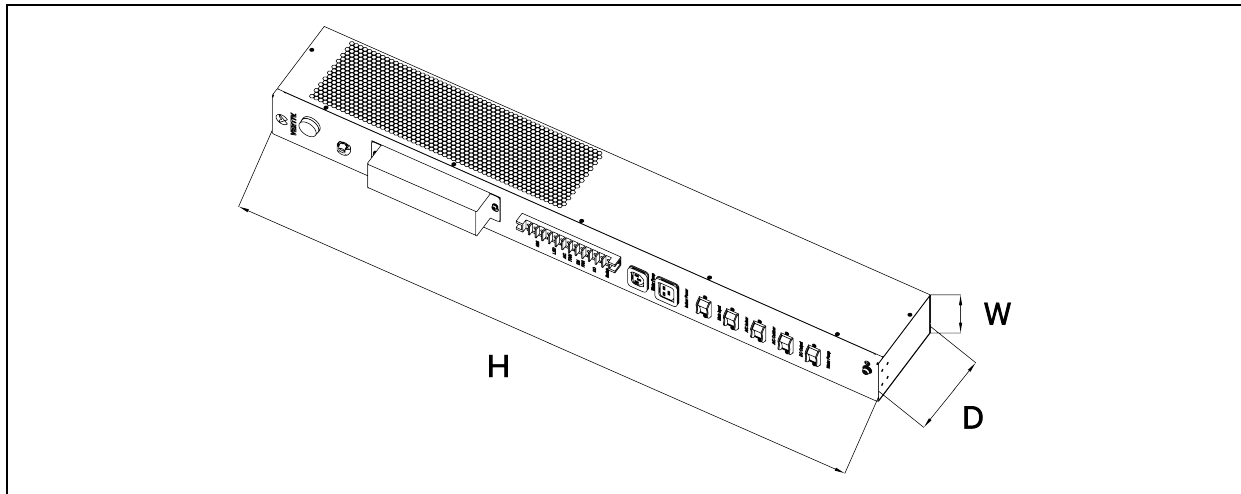


Table 10.1 PMB Dimensions

Model	H mm (in.)	D mm (in.)	W mm (in.)
VSA9001	1000 (39.4)	150 (5.9)	85 (3.3)
VSA9002	1000 (39.4)	250 (9.8)	85 (3.3)
VSA9003	1000 (39.4)	150 (5.9)	85 (3.3)
VSA9004	1000 (39.4)	250 (9.8)	85 (3.3)

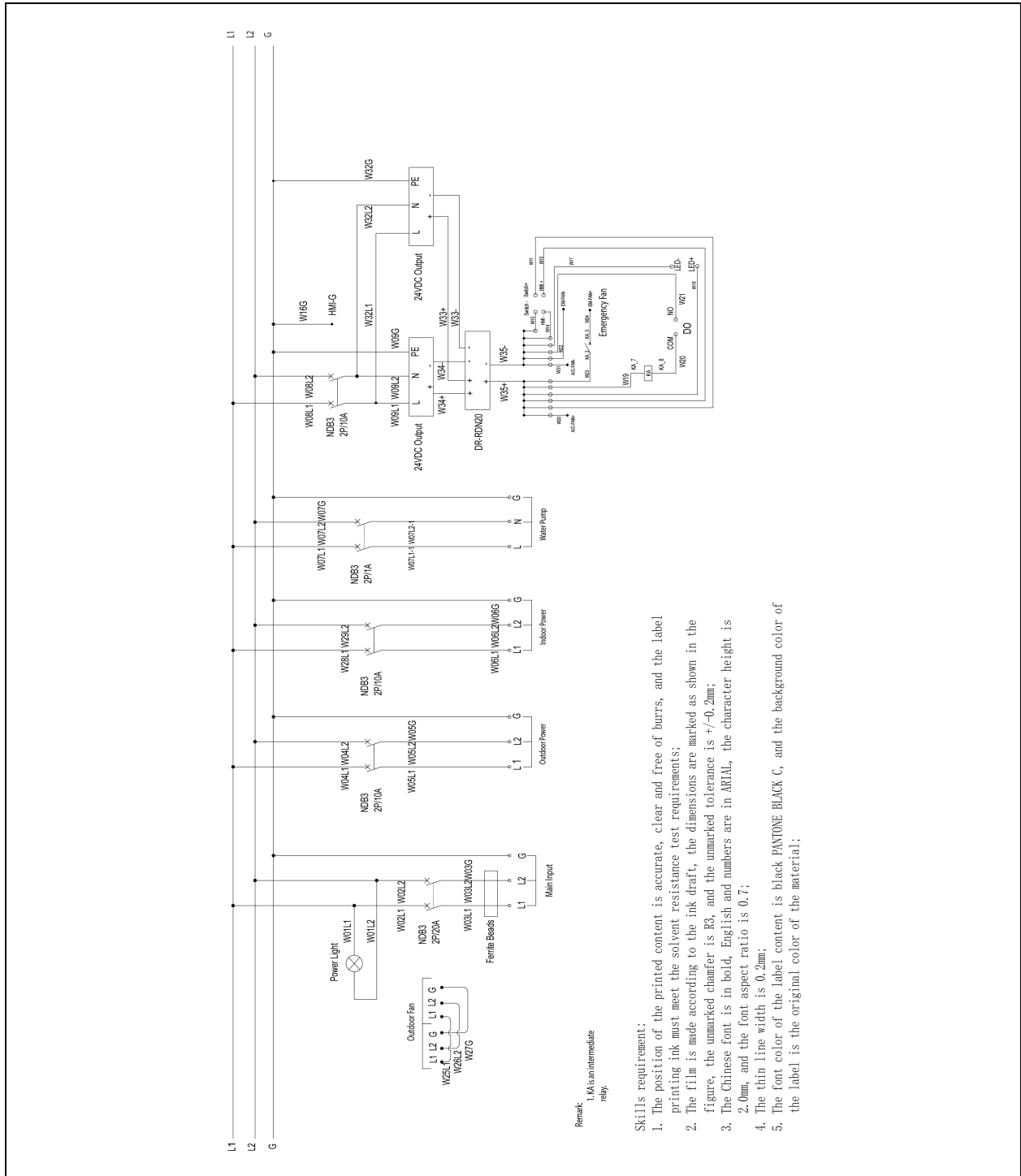
Appendix C: Submittals Drawings

Table 10.2 Submittal Drawings Contents

Document Number	Title
PMB Diagram (VSA9001)	
02330057-DL	NAM-3.5-PMB Schematic
PMB Diagram (VSA9002)	
02330058-DL	NAM-7-PMB Schematic
PMB Diagram (VSA9003)	
02330055-DL	EMEA-3.5-PMB Schematic
PMB Diagram (VSA9004)	
02330056-DL	EMEA-7-PMB Schematic
System Diagram(VS3350 and VS3354)	
02100351-DL	NAM-3.5-System schematic
System Diagram(VS3350I and VS3354I)	
02100354-DL	EMEA-3.5-System schematic
System Diagram(VS3750)	
02100353-DL	NAM-7-System schematic
System Diagram(VS3750I)	
02100356-DL	EMEA-7-System schematic

NOTE: To view a more detailed and high definition version of the submittals drawings, refer to the submittals addendum document in the customer facing assets in the official [Vertiv™ SmartCabinet™ ID Website Page](#).

C.1 PMB Diagram (VSA9001)

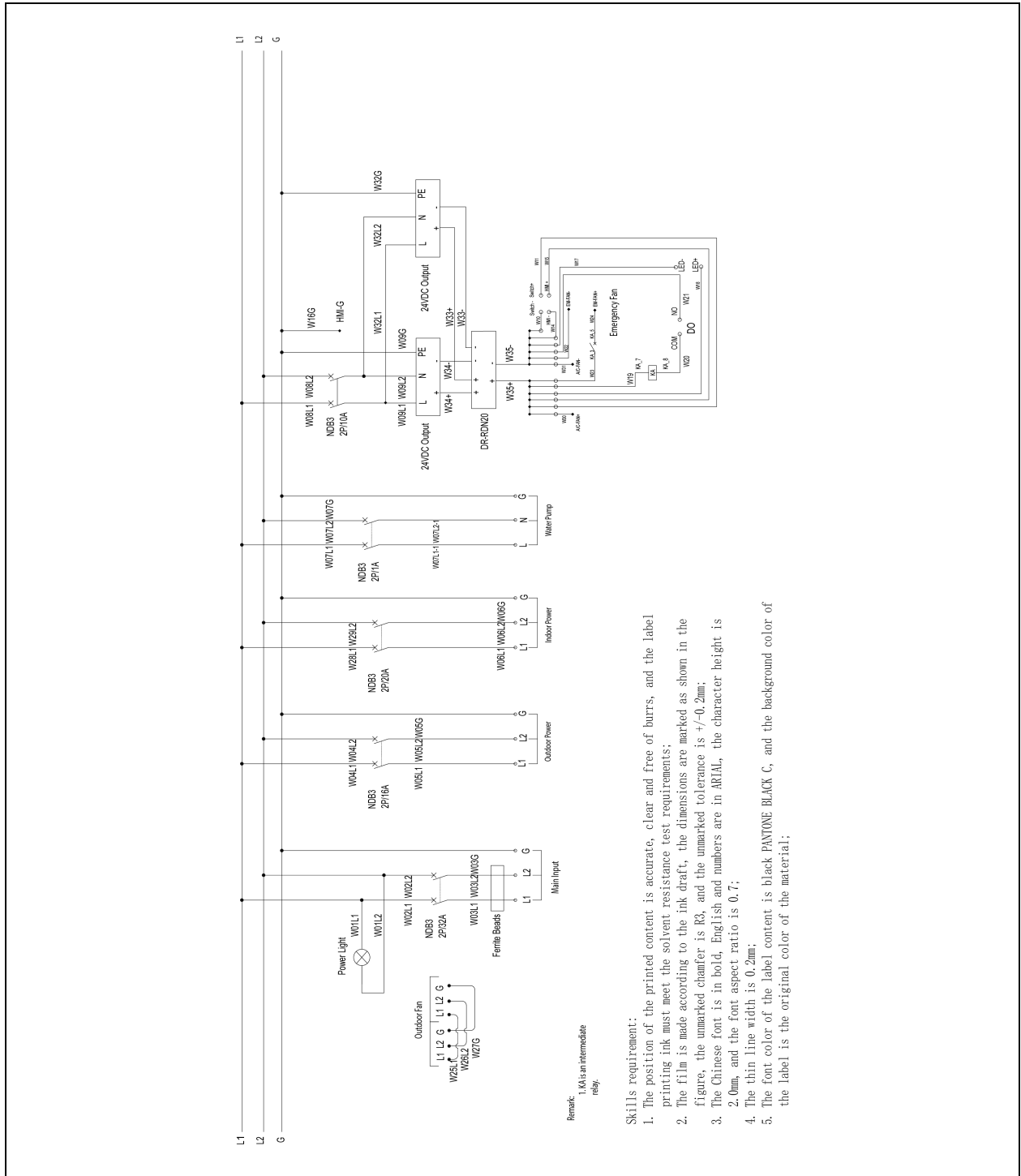


Remark: 1. KA is an intermediate relay.

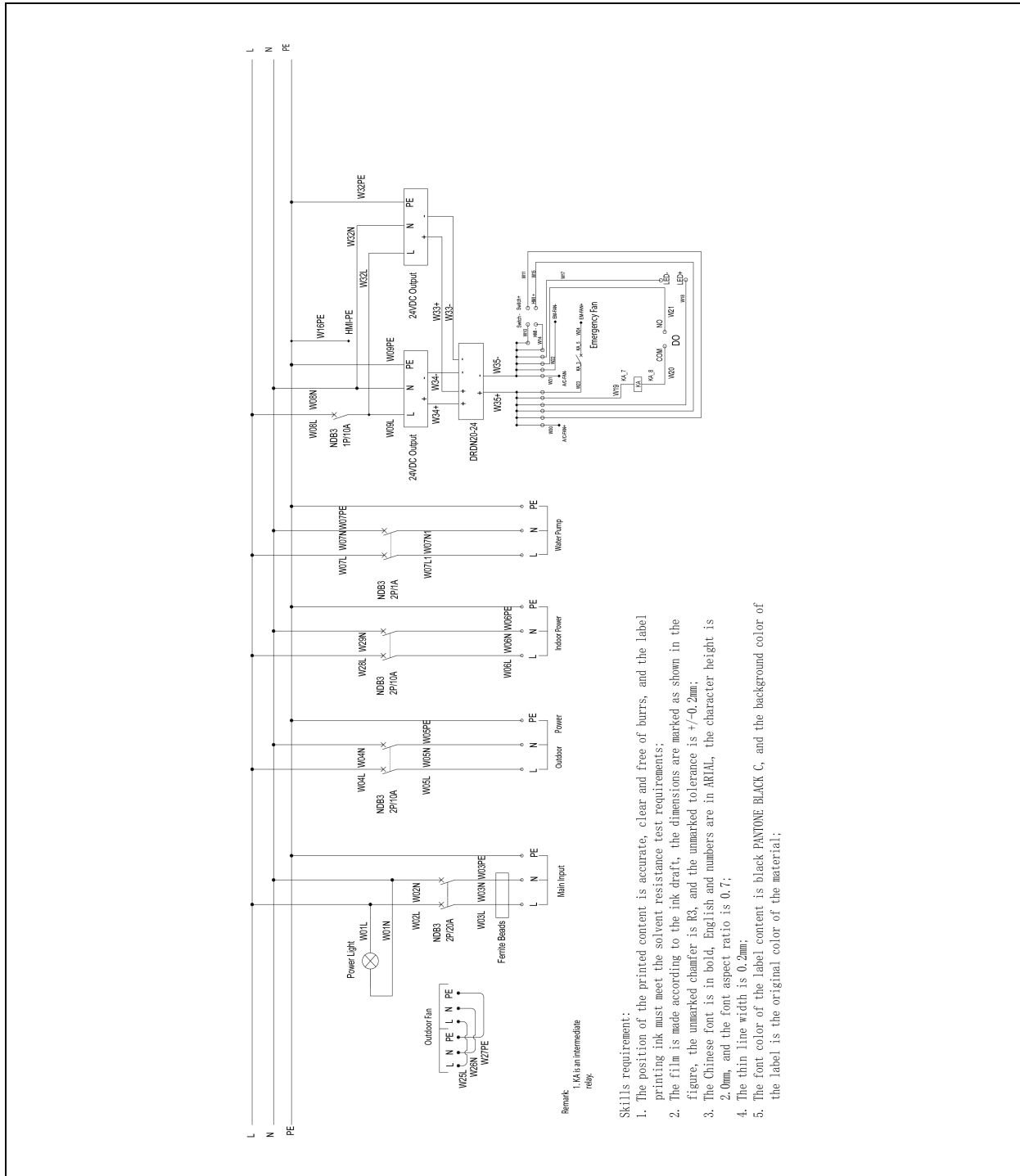
Skills requirement:

1. The position of the printed content is accurate, clear and free of burrs, and the label printing ink must meet the solvent resistance test requirements;
2. The film is made according to the ink draft, the dimensions are marked as shown in the figure, the unmarked chamfer is R3, and the unmarked tolerance is +/-0.2mm;
3. The Chinese font is in bold, English and numbers are in ARIAL, the character height is 2.0mm, and the font aspect ratio is 0.7;
4. The thin line width is 0.2mm;
5. The font color of the label content is black PANTONE BLACK C, and the background color of the label is the original color of the material;

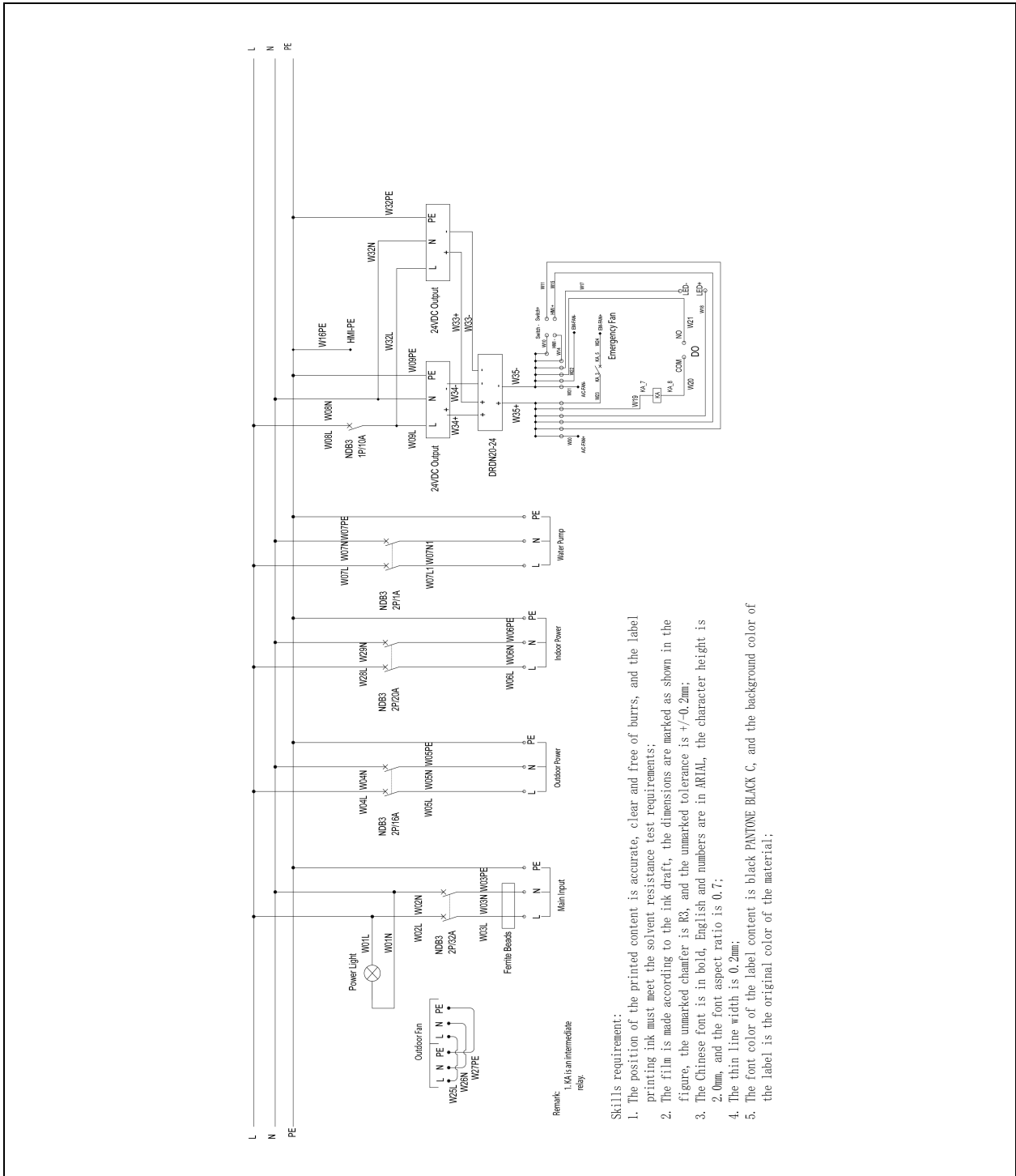
C.2 PMB Diagram (VSA9002)



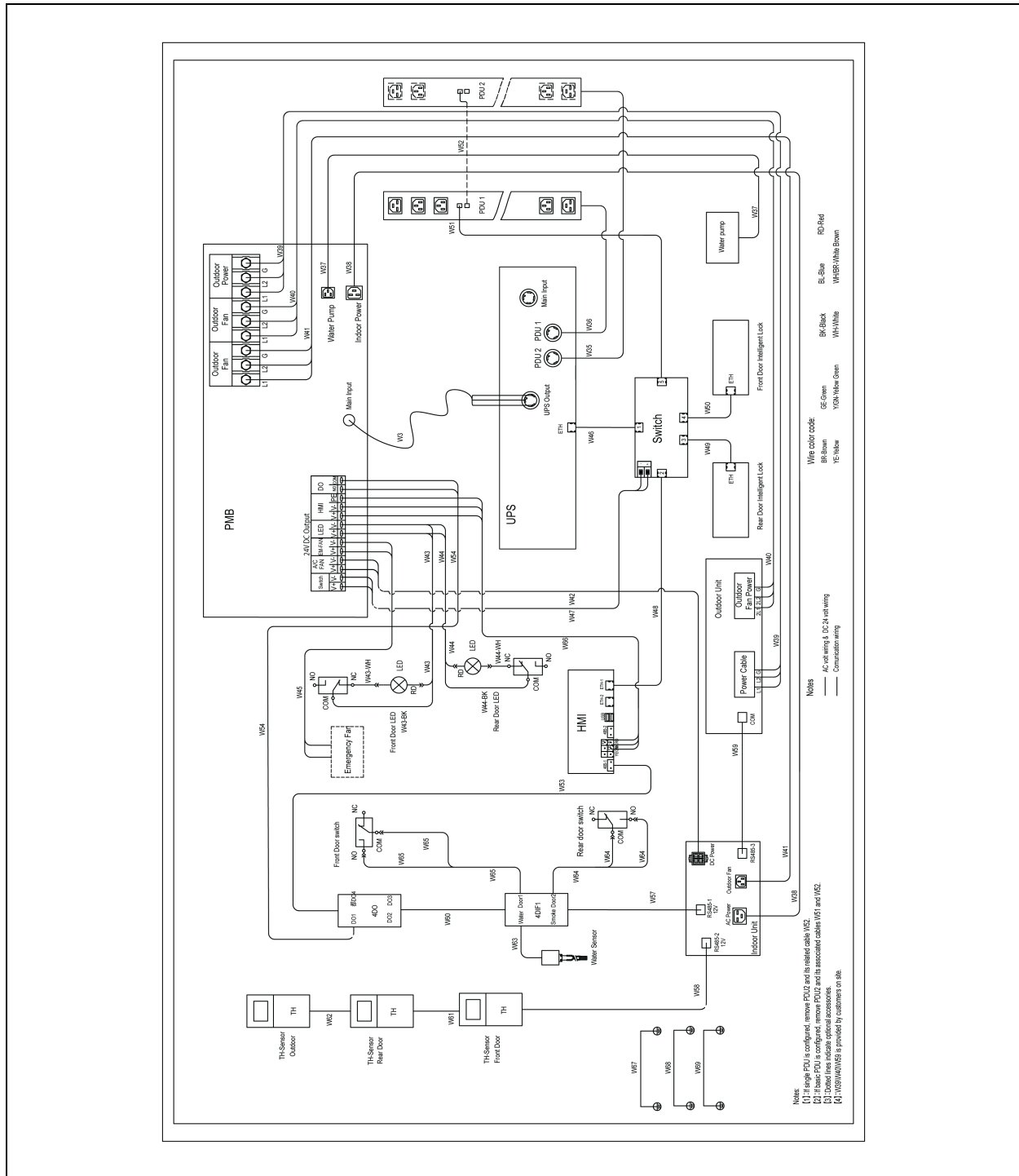
C.3 PMB Diagram (VSA9003)



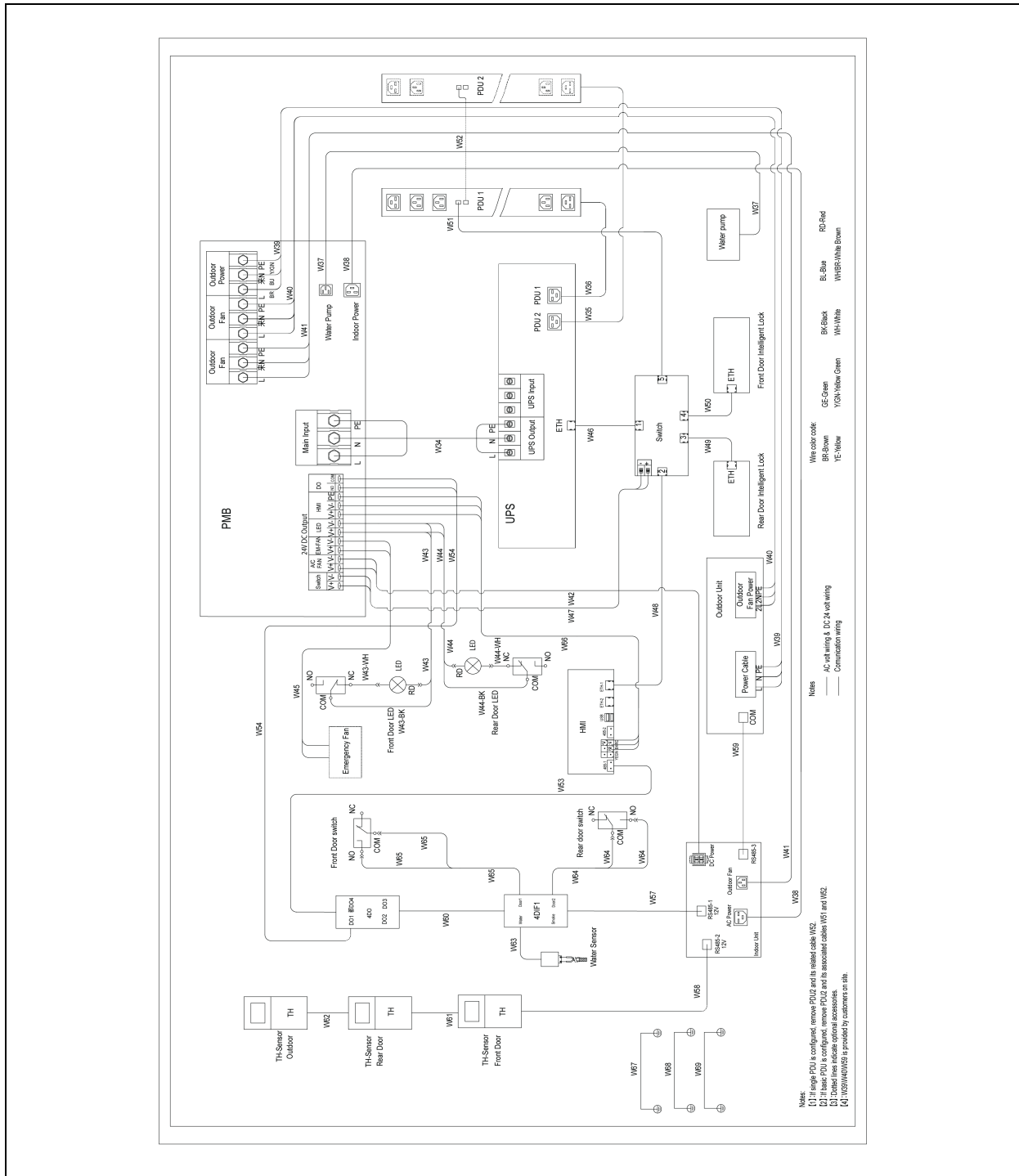
C.4 PMB Diagram (VSA9004)



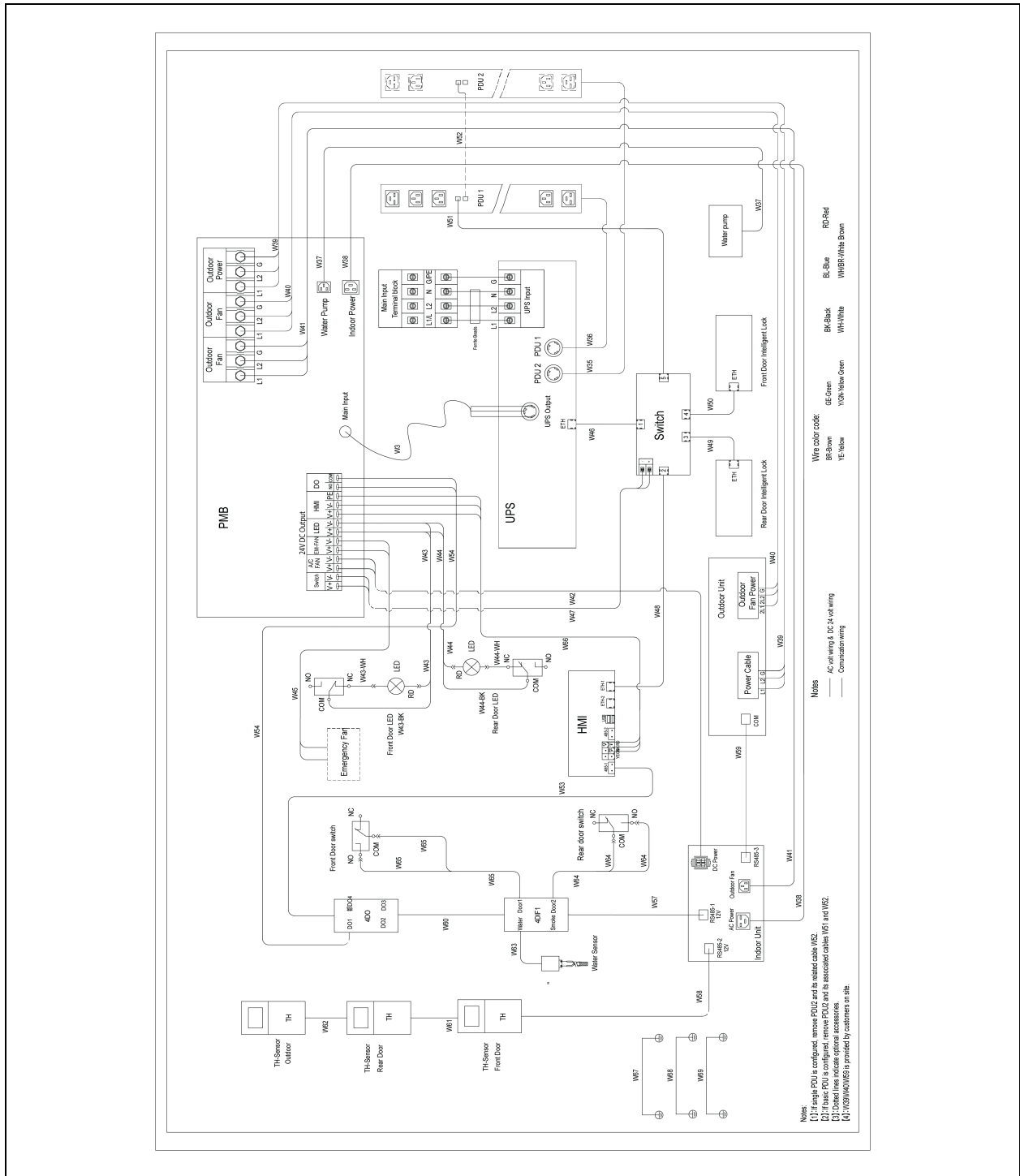
C.5 System Diagram (VS3350 and VS3354)



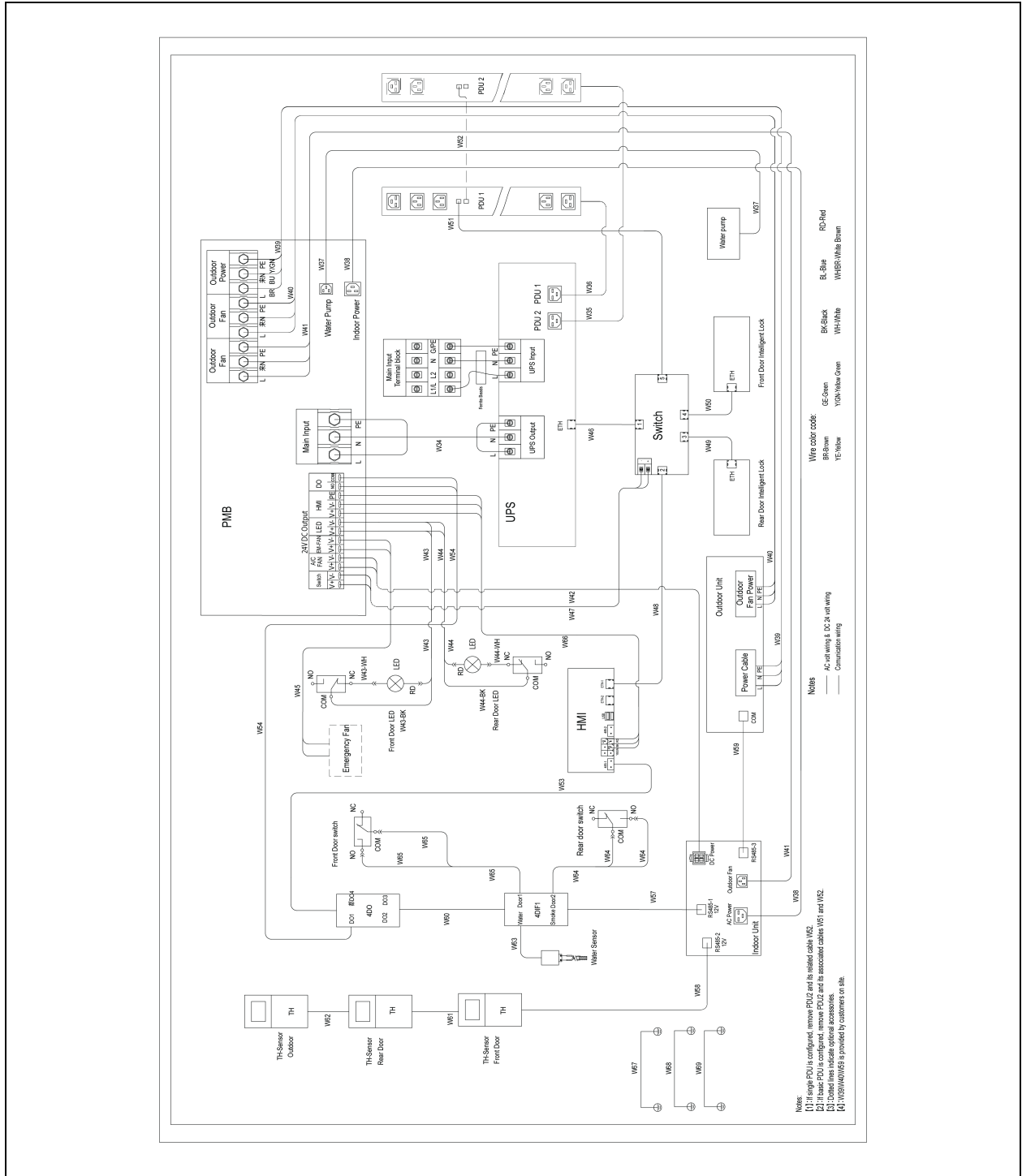
C.6 System Diagram (VS3350I and VS3354I)



C.7 System Diagram (VS3750)



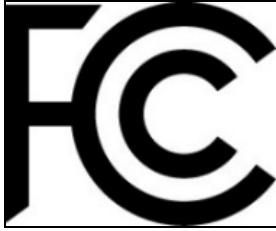
C.8 System Diagram (VS3750I)



Appendix D: Hazardous Substances

Parts	Harmful substance					
	Lead or Plumbum (Pb)	Mercury or Hydrargum (Hg)	Cadmium (Cd)	Hexavalent chromium (Cr6 ⁺)	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Vertiv™ SmartCabinet™ ID	O	O	O	O	O	O
<p>This form is prepared in accordance with the provisions of SJ/T 11363-2006</p> <p>O: Means the content of the hazardous substances in all the average quality materials of the part is within the limits specified in SJ/T-11363 - 2006</p> <p>X: Means the content of the hazardous substances in at least one of the average quality materials of the part is outside the limits specified in SJ/T-11363 - 2006</p>						
<p>Vertiv Co., Ltd. is committed to the design and manufacture of environment-friendly products. It will reduce and eventually eliminate toxic and hazardous substances in the products through unremitting efforts in research. However, limited by the current technical level, the following parts still contain hazardous substance due to the lack of reliable substitute or mature solution</p> <p>Note:</p> <ul style="list-style-type: none"> Copper alloy contains Lead, high temperature solder contains Lead, and the high temperature solder in diode contains Lead Electrical switch contacts contain Cadmium and Cadmium compounds 						
<p>About Environmental Protection Use Period: The Environmental Protection Use Period of the product is marked on the product. Under normal working conditions and normal use of products observing relevant safety precautions, the hazardous substances in the product will not seriously affect the environment, personnel safety or property in the Environmental Protection Use Period starting from the manufacturing date</p>						
<p>Applicable product: LCD screen, PDU, PMB, air conditioner, UPS, emergency fan, cables, and more included in Vertiv™ SmartCabinet™ ID</p>						

Appendix E: FCC Compliance Statement



Unique Identifier: VS3354, VS3350, VS3750, ZRC03U, ZRC07U, ZCC03U, ZCC07U, ZCL03U, ZCL07U

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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