Galaxy VX

500 (Expandable), 625, and 750 kW 480 V UPS

Installation

07/2017

www.schneider-electric.com

Schneider Electric

Legal Information

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Important Safety Instructions — SAVE THESE INSTRUCTIONS

Read these instructions carefully and look at the equipment to become familiar with it before trying to install, operate, service or maintain it. The following safety messages may appear throughout this manual or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety message indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages with this symbol to avoid possible injury or death.

⚠DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

Failure to follow these instructions can result in injury or equipment damage.

NOTICE

NOTICE is used to address practices not related to physical injury. The safety alert symbol shall not be used with this type of safety message.

Failure to follow these instructions can result in equipment damage.

Please Note

Electrical equipment should only be installed, operated, serviced, and maintained by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

FCC Statement

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.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Safety Precautions

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

All safety instructions in this document must be read, understood and followed.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Read all instructions in the Installation Manual before installing or working on this UPS system.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not install the UPS system until all construction work has been completed and the installation room has been cleaned.

Failure to follow these instructions will result in death or serious injury.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- The product must be installed according to the specifications and requirements as defined by Schneider Electric. It concerns in particular the external and internal protections (upstream breakers, battery breakers, cabling, etc.) and environmental requirements. No responsibility is assumed by Schneider Electric if these requirements are not respected.
- After the UPS system has been electrically wired, do not start up the system. Start-up must only be performed by Schneider Electric.

Failure to follow these instructions will result in death or serious injury.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS system must be installed according to local and national regulations. Install the UPS according to:

- IEC 60364 (including 60364–4–41- protection against electric shock, 60364–4–42 - protection against thermal effect, and 60364–4–43 - protection against overcurrent), **or**
- NEC NFPA 70, **or**
- Canadian Electrical Code (C22.1, Part 1)

depending on which one of the standards apply in your local area.

Failure to follow these instructions will result in death or serious injury.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Install the UPS system in a temperature controlled indoor environment free of conductive contaminants and humidity.
- Install the UPS system on a non-flammable, level and solid surface (e.g. concrete) that can support the weight of the system.

Failure to follow these instructions will result in death or serious injury.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

The UPS is not designed for and must therefore not be installed in the following unusual operating environments:

- Damaging fumes
- Explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from other sources
- Moisture, abrasive dust, steam or in an excessively damp environment
- Fungus, insects, vermin
- Salt-laden air or contaminated cooling refrigerant
- Pollution degree higher than 2 according to IEC 60664-1
- Exposure to abnormal vibrations, shocks, and tilting
- Exposure to direct sunlight, heat sources, or strong electromagnetic fields

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill or cut holes for cables or conduits with the gland plates installed and do not drill or cut holes in close proximity to the UPS.

Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

HAZARD OF ARC FLASH

Do not make mechanical changes to the product (including removal of cabinet parts or drilling/cutting of holes) that are not described in the Installation Manual.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

RISK OF OVERHEATING

Respect the space requirements around the UPS system and do not cover the product's ventilation openings when the UPS system is in operation.

Failure to follow these instructions can result in equipment damage.

NOTICE

RISK OF EQUIPMENT DAMAGE

Do not connect the UPS output to regenerative load systems including photovoltaic systems and speed drives.

Failure to follow these instructions can result in equipment damage.

Electrical Safety

This manual contains important safety instructions that should be followed during the installation and maintenance of the UPS system.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Electrical equipment must be installed, operated, serviced, and maintained only by qualified personnel.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Disconnection devices for AC and DC must be provided by others, be readily accessible, and the function of the disconnect device marked for its function.
- Turn off all power supplying the UPS system before working on or inside the equipment.
- Before working on the UPS system, check for hazardous voltage between all terminals including the protective earth.
- The UPS contains an internal energy source. Hazardous voltage can be present even when disconnected from the mains supply. Before installing or servicing the UPS system, ensure that the units are OFF and that mains and batteries are disconnected. Wait five minutes before opening the UPS to allow the capacitors to discharge.
- The UPS must be properly earthed/grounded and due to a high leakage current, the earthing/grounding conductor must be connected first.

Failure to follow these instructions will result in death or serious injury.

When the UPS input is connected through external isolators that, when opened, isolate the neutral or when the automatic backfeed isolation is provided external to the equipment or is connected to an IT power distribution system, a label must be fitted at the UPS input terminals, and on all primary power isolators installed remotely from the UPS area and on external access points between such isolators and the UPS, by the user, displaying the following text (or equivalent in a language which is acceptable in the country in which the UPS system is installed):

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Risk of voltage backfeed. Before working on this circuit: Isolate the UPS and check for hazardous voltage between all terminals including the protective earth.

Failure to follow these instructions will result in death or serious injury.

Battery Safety

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Battery circuit breakers must be installed according to the specifications and requirements as defined by Schneider Electric.
- Servicing of batteries must only be performed or supervised by qualified personnel knowledgeable of batteries and the required precautions. Keep unqualified personnel away from batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- Do not dispose of batteries in a fire as they can explode.
- Do not open, alter, or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

Failure to follow these instructions will result in death or serious injury.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Batteries can present a risk of electric shock and high short-circuit current. The following precautions must be observed when working on batteries

- Remove watches, rings, or other metal objects.
- Use tools with insulated handles.
- Wear protective glasses, 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 inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electric shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

When replacing batteries, always replace with the same type and number of batteries or battery packs.

Failure to follow these instructions will result in death or serious injury.

NOTICE

RISK OF EQUIPMENT DAMAGE

- Wait until the system is ready to be powered up before installing batteries in the system. The time duration from battery installation until the UPS system is powered up must not exceed 72 hours or 3 days.
- Batteries must not be stored more than six months due to the requirement of recharging. If the UPS system remains de-energized for a long period, Schneider Electric recommends that you energize the UPS system for a period of 24 hours at least once every month. This charges the batteries, thus avoiding irreversible damage.

Failure to follow these instructions can result in equipment damage.

Specifications

Input Specifications

	500 kW	625 kW	750 kW
Connections	L1, L2, L3 + G WYE		
Input voltage (V)	480 -15/+20% at 100% load		
Nominal input voltage (V)	480		
Minimum input voltage (V)	408		
Maximum input voltage (V)	576[1]		
Frequency range (Hz)	40 – 70		
Nominal input current (A)	633	791	950
Maximum input current (A)[2]	728	910	1092
Input current limitation (A)	760	950	1140
Total harmonic distortion (THDI)	<3% at 100% load <4% at 50% load <9% at 25% load		
Input power factor	0.99 at >40% load 0.98 at >20% load 0.97 at >10% load		
Maximum input short-circuit withstand	Icw = 100 kA RMS symmetrical for UPS Icw = 65 kA RMS symmetrical for systems with Galaxy VX maintenance bypass cabinet		
Protection	Backfeed contactors		
Ramp-in	Adaptive 1 – 40 Sec		

Bypass Specifications

	500 kW	625 kW	750 kW
Connection type	L1, L2, L3 + G		
Nominal bypass voltage (V)	480		
Minimum bypass voltage (V)	432		
Maximum bypass voltage (V)	528		
Frequency (Hz)	60		
Frequency Range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.		
Nominal bypass current (A)	606	757	909
Maximum input short-circuit withstand	Icw = 100 kA RMS symmetrical		
Thyristor I^2t	5611		
Protection	Molded switch for backfeed protection		

1. The system can operate at up to 600 V for 1 minute
2. At nominal input voltage and full charge

Output Specifications

	500 kW	625 kW	750 kW
Nominal output voltage (V)	480		
Connections	L1, L2, L3 + G		
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 125% continuous (bypass operation) 1000% for 100 milliseconds (bypass operation)		
Output voltage tolerance	Balanced load: +/- 1% Unbalanced load: +/- 3%		
Dynamic load response	+/- 5% after 2 ms +/- 1% after 50 ms		
Output power factor	1		
Nominal output current (A)	601	752	902
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load[3]		
Output frequency (Hz)	50/60 (synchronized to bypass) 50/60 Hz +/-0.1% (free-running)		
Slew rate (Hz/sec)	Programmable: 0.25, 0.5, 1, 2, 4, 6		
Output performance classification (according to IEC/EN62040-3)	Double-conversion: VFI-SS-111		
Load crest factor	Up to 3 (THDU < 5%)		
Load power factor	0.7 leading to 0.5 lagging without derating		

Battery Specifications

NOTE: Refer to the battery manufacturer's manual for information on installation and maintenance.

	500 kW	625 kW	750 kW
Charging power in % of output power	40% at ≤ 80% load 15% at 100% load		
Maximum charging power (W)	75,000 at 100% load 200,000 at 80% load	93,750 at 100% load 200,000 at 80% load	112,500 at 100% load 240,000 at 80% load
Nominal battery voltage (VDC)	480		
Nominal float voltage (VDC)	546		
End of discharge voltage (full load) (VDC)	384		
End of discharge voltage (no load) (VDC)	420		
Battery current at full load and nominal battery voltage (A)	1091	1364	1637
Battery current at full load and minimum battery voltage (A)	1364	1705	2046
Temperature compensation (per cell)	-3.3 mV per °C for T ≥ 25 °C 0 mV per °C for T < 25 °C		
Ripple current	< 5% C20 (5 minutes backup time)		
Battery test	Manual/automatic (selectable)		

3. Maximum non-linear load is 100 kVA.

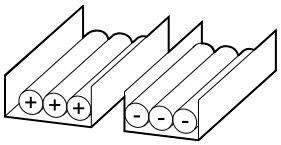
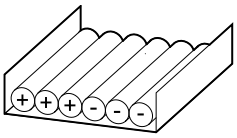
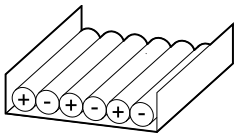
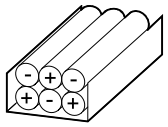
	500 kW	625 kW	750 kW
Deep discharge protection	Yes		
Recharge according to battery temperature	Yes		

Guidance for Organizing Battery Cables

NOTE: For 3rd party batteries, use only high rate batteries for UPS applications.

NOTE: When the battery bank is placed remotely, the organizing of the cables is important to reduce voltage drop and inductance. The distance between the battery bank and the UPS must not exceed 200 m (656 ft). Contact Schneider Electric for installations with a longer distance.

NOTE: To minimize the risk of electromagnetic radiation, it is highly recommended to follow the below guidance and to use grounded metallic tray supports.

Cable Length				
<30 m	Not recommended	Acceptable	Recommended	Recommended
31–75 m	Not recommended	Not recommended	Acceptable	Recommended
76–150 m	Not recommended	Not recommended	Acceptable	Recommended
151–200 m	Not recommended	Not recommended	Not recommended	Recommended

Recommended Breaker and Cable Sizes

⚠CAUTION

HAZARD OF FIRE

- Connect only to a circuit with the below specifications.
- Connect only to a circuit provided with a 1200 A branch circuit overcurrent protection maximum in accordance with the National Electrical Code, ANSI/NFPA70, and the Canadian Electrical Code, Part I, C22.1.

Failure to follow these instructions can result in injury or equipment damage.

NOTE: Overcurrent protection must be provided by others.

NOTE: All wiring must comply with all applicable national and/or electrical codes (National Electrical Code, ANSI/NFPA 70). The maximum allowable conductor size is 600 kcmil.

Cable sizes in this manual are based on Table 310.15 of the National Electrical Code 2014 (NEC) with the following assertions:

- 90 °C conductors (THHN) for 75 °C termination
- Not more than three current carrying conductors in each conduit
- An ambient temperature of 30 °C
- Use of copper conductors
- 100% rated breakers

If the ambient room temperature is greater than 30 °C, larger conductors are to be selected in accordance with the correction factors of the NEC.

Equipment Grounding Conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122.

	625 kW			750 kW		
	Maximum OCPD (A)	**Conductors per Phase (kcmil)**	**Equipment Grounding Conductor[4]**	**Maximum OCPD (A)**	**Conductors per Phase (kcmil)**	**Equipment Grounding Conductor[4]**
Input	1000[5]	3x400	2/0 AWG	1200[5]	3x600	3/0 AWG
Bypass	800[5]	2x600 (3x300)	1/0 AWG	1000[5]	3x400	3/0 AWG
Output	800[5]	2x600 (3x300)	1/0 AWG	1000[5]	3x400	3/0 AWG
Battery	2000[6]	5x500	250 kcmil	2000[5]	5x600	250 kcmil

Recommended Bolt and Lug Sizes

NOTICE

RISK OF EQUIPMENT DAMAGE

Use only UL approved two-hole cable lugs.

Failure to follow these instructions can result in equipment damage.

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
1/0 AWG	M12 x 35 mm	LCCF1/0–12–X	CT930	CD-920–2/0 Black P45
2/0 AWG	M12 x 35 mm	LCCF2/0–12–X	CT930	CD-920–3/0 Orange P50
3/0 AWG	M12 x 35 mm	LCCF3/0–12–X	CT930	CD-920–4/0 Purple P54
250 kcmil	M12 x 35 mm	LCCF250–12–X	CT-940CH/CT-2940	CD-920–300 White P66
300 kcmil	M12 x 35 mm	LCCF300–12–6	CT-940CH/CT-2940	CD-920–350 Red P71
400 kcmil	M12 x 35 mm	LCCF400–12–6	CT-940CH/CT-2940	CD-920–500 Brown P87
500 kcmil	M12 x 35 mm	LCCF500–12–6	CT-940CH/CT-2940	CD-920–500A Pink P99
600 kcmil	M12 x 40 mm	LCCF600–12–6	CT-940CH/CT-2940	CD-920–750 Black P106

Torque Specifications

Bolt size	Torque
M6	5 Nm (3.69 lb-ft)
M8	17.5 Nm (12.91 lb-ft)
M10	30 Nm (22 lb-ft)
M12	50 Nm (36.87 lb-ft)

4. If the conductors are run in conduits, there must be one conductor in each conduit.
5. Long-time setting (I_r) = 1.0
6. Long-time setting (I_r) = 0.9

Environment

	Operating	Storage
Temperature	0 °C to 40 °C (32 °F to 104 °F) 0 °C to 50 °C (32 °F to 122 °F) when derated to 75% power[7]	-15 °C to 40 °C (5 °F to 104 °F) for systems with batteries -25 °C to 55 °C (-13 °F to 131 °F) for systems without batteries
Relative humidity	0 – 95% non-condensing	0 – 95% non-condensing
Altitude derating according to ANSI C57.96–1999	1000 m (3300 ft): 1.000 1500 m (5000 ft): 0.975 2000 m (6600 ft): 0.950 2500 m (8300 ft): 0.925 3000 m (10000 ft): 0.900	0 – 15000 m (0 – 50000 ft)
Audible noise one meter (three feet) from surface	62 dB at 70% load 68 dB at 100% load	
Protection class	IP20	
Color	RAL 9003 white	

Heat Dissipation

Heat Dissipation (BTU/hr) for a 500 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25%	18698	6495	7818	18234
50%	31855	7747	7747	31855
75%	50542	10319	10319	53313
100%	69234	13758	13758	78519

Heat Dissipation (BTU/hr) for a 625 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25% load	23373	6475	9772	22793
50% load	38672	9683	10770	39818
75% load	58008	12898	12898	66641
100% load	81934	15033	17198	98149

Heat Dissipation (BTU/hr) for a 750 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25% load	27351	9742	11727	27351
50% load	46407	11620	12924	47782
75% load	73741	15478	15478	79969
100% load	106625	20637	20637	117778

7. For temperatures between 40 °C and 50 °C , derate the load power rating with 2.5% per °C

UPS Weights and Dimensions

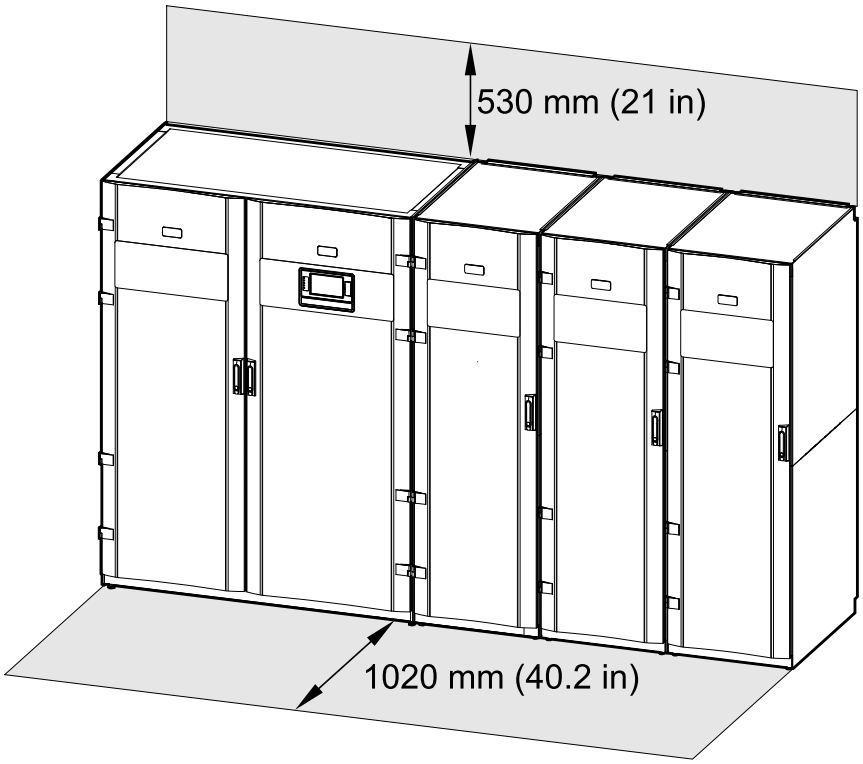
Part Number		Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVX500K750GS GVX500K500GS	In total – Power cabinets – I/O cabinet	2130 (4695) 2x540 (2x1190) 1050 (2315)	1970 (77.6)	2700 (106.3) 2x600 (2x23.6) 1500 (59.1)	900 (35.4)
GVX750K500GS GVX625K625GS GVX750K750GS	In total – Power cabinets – I/O cabinet	2670 (5885) 3x540 (3x1190) 1050 (2315)	1970 (77.6)	3300 (130.0) 3x600 (3x23.6) 1500 (59.1)	900 (35.4)
GVX1000K625GS GVX1000K750GS	In total – Power cabinets – I/O cabinet	3210 (7075) 4x540 (4x1190) 1050 (2315)	1970 (77.6)	3900 (153.5) 4x600 (4x23.6) 1500 (59.1)	900 (35.4)

Clearance

NOTE: Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.

NOTE: The UPS system can be placed up against a wall and there is no requirement for rear or side access.

Front View of the I/O Cabinet and Three Power Cabinets



Introduction

Overview of Configurations

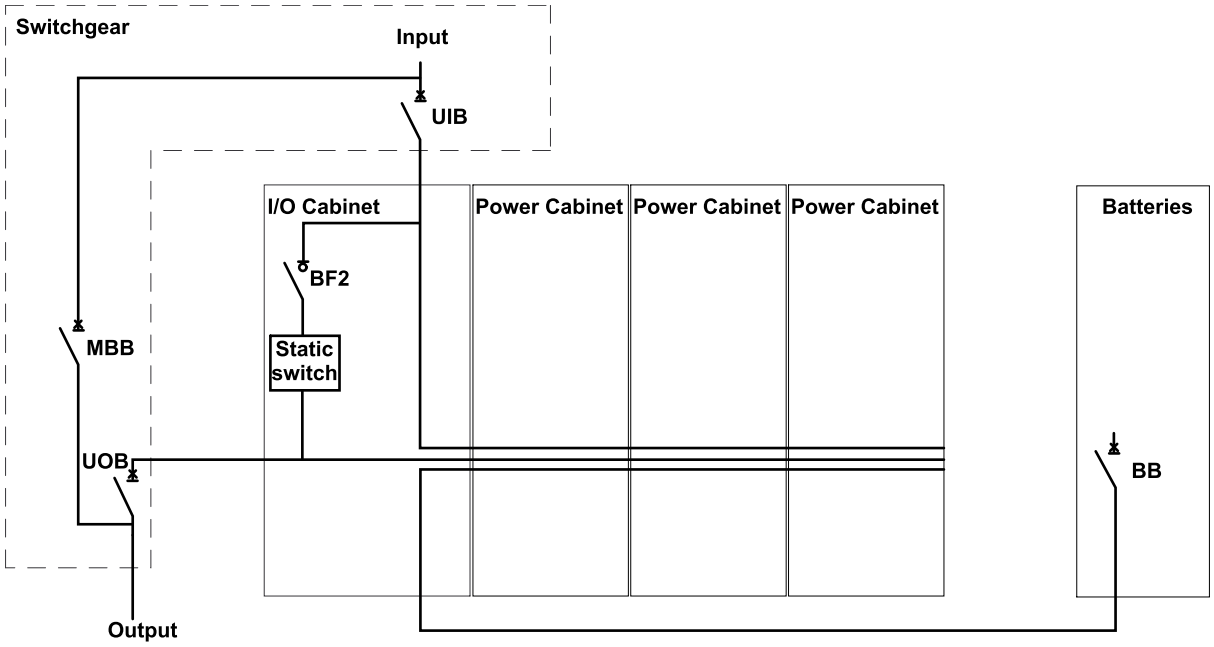
Breakers in the System

UIB	Unit input breaker
SSIB	Static switch input breaker
BB	Battery breaker
MBB	Maintenance bypass breaker
UOB	Unit output breaker
BF2	Backfeed protection switch

Overview of UPSs with 750 kW I/O Cabinet without Maintenance Bypass Cabinet – Single Utility/Mains System

The illustration shows a 750 kW UPS. The principle is the same for the other UPSs with the 750 kW I/O Cabinet.

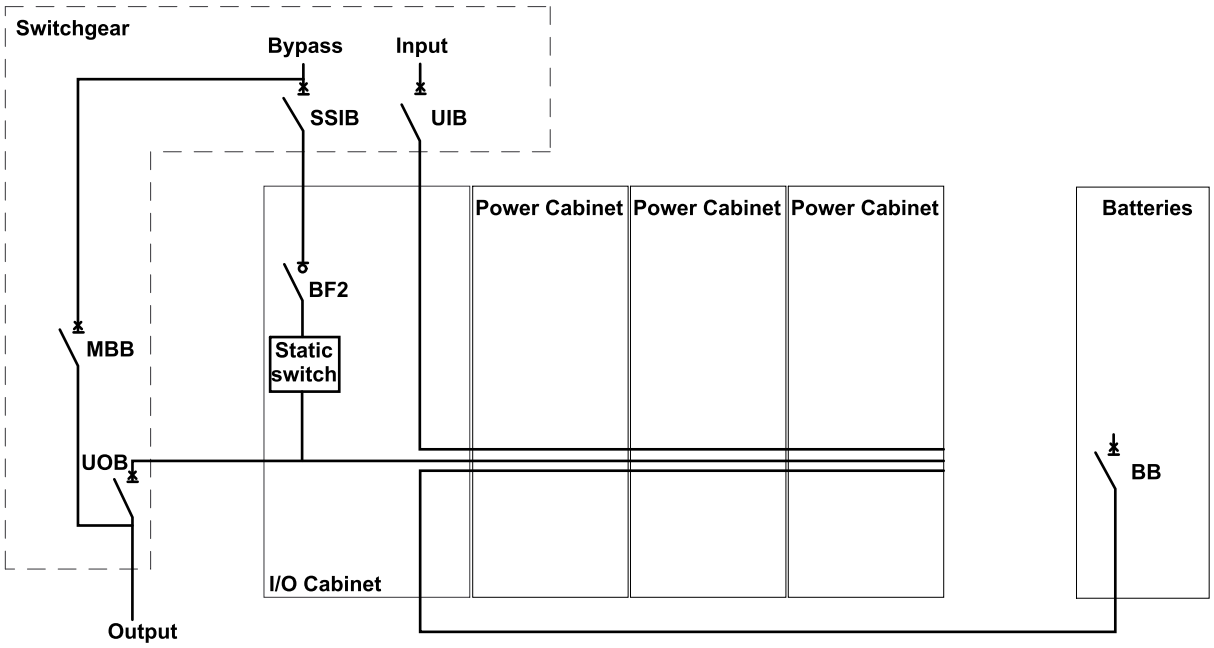
Galaxy VX 750 kW UPS



Overview of UPSs with 750 kW I/O Cabinet without Maintenance Bypass Cabinet – Dual Utility/Mains System

The illustration shows a 750 kW UPS. The principle is the same for the other UPSs with the 750 kW I/O Cabinet.

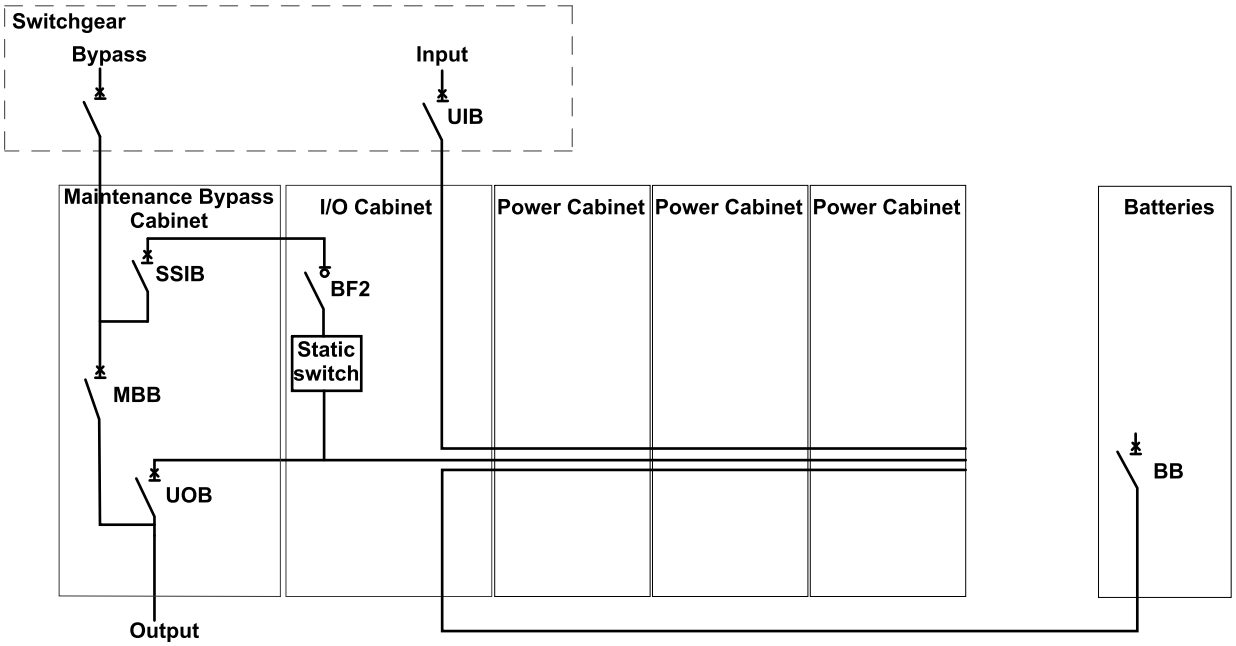
Galaxy VX 750 kW UPS



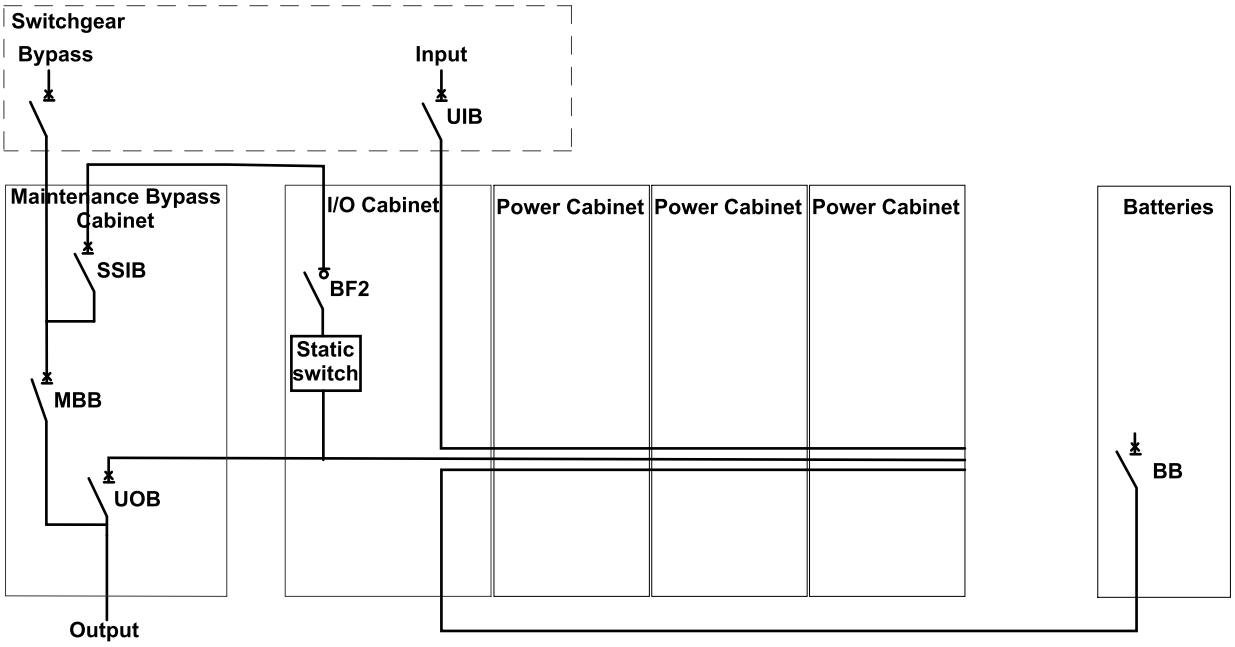
Overview of UPSs with 750 kW I/O Cabinet with Line-Up Maintenance Bypass Cabinet – Dual Utility/Mains System

The illustration shows a 750 kW UPS. The principle is the same for the other UPSs with the 750 kW I/O Cabinet.

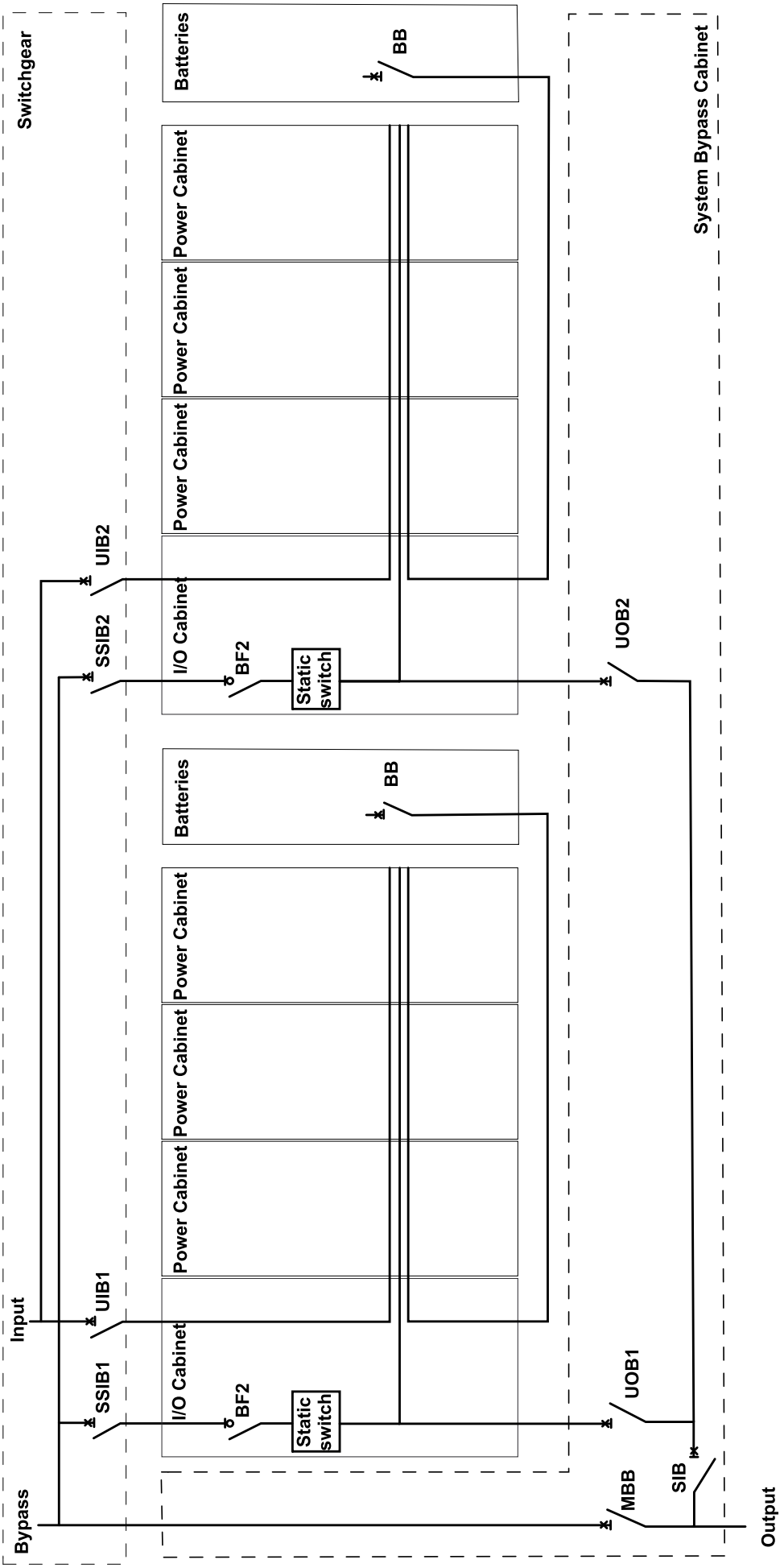
Galaxy VX 750 kW UPS with Line-Up Maintenance Bypass Cabinet



Overview of UPSs with 750 kW I/O Cabinet with Remote Maintenance Bypass Cabinet – Dual Utility/Mains System



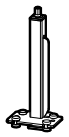
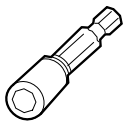
Overview of UPSs with 750 kW I/O Cabinet – Parallel System with Two UPS Units



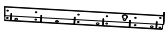
Overview of Supplied Installation Kits

Installation Kits Shipped with the I/O Cabinet

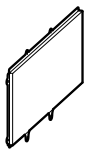
Installation Kit 0M-816661

Part	Used in	Number of units
Jack	*Remove the Cabinets from the Pallet, page 28*	1 
Floor protection plate		1 
Hexagonal socket for drilling machine		1 

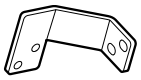
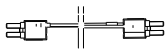
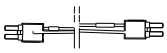
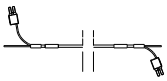
Installation Kit 0M-92447

Part	Used in	Number of Units
Rear anchoring bracket for I/O cabinet	*Mount the Rear Anchoring Brackets, page 33*	1 
Front anchoring bracket for I/O cabinet	*Mount the Front Anchoring Brackets, page 69*	1 
M8 x 20 mm hexagonal torx with washer		9 

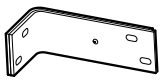
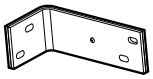
Installation Kit 0M-92448

Part	Used in	Number of Units
Interconnection cover	*Position the Cabinets, page 34*	1 
M6 nut with washer		8 

Installation Kit 0M-92445

Part	Used in	Number of Units
Ground busbar 880–9978 between power cabinet and I/O cabinet	*Install Busbars between the I/O Cabinet and the Power Cabinet, page 46*	1 
M8 x 20 hexagonal torx with washer		9 
M10 x 35 hexagonal torx with washer		4 
Temperature sensor	Refer to the installation manual for your specific battery solution for information on how to install and connect the temperature sensor.	2 
Cable ties for signal cables	*Connect Signal Cables between the I/O Cabinet and the Power Cabinets, page 74*	50
Signal cable 0W11378		1 
Signal cable 0W11384		1 
Signal cable 0W11385		1 
Signal cable 0W12213		1 
Terminator for modbus	*Connect the Modbus Cables, page 96*	2 

Installation Kit 0M-92446

Part	Used in	Number of Units
Interconnection busbar 0M-96982 from I/O cabinet to power cabinet (battery -)	*Install Busbars between the I/O Cabinet and the Power Cabinet, page 46*	1 
Interconnection busbar 0M-97887 from I/O cabinet to power cabinet (battery +)		1 
Interconnection busbar 880-90461 from I/O cabinet to power cabinet (neutral)		1 
Interconnection busbar 880-9719 from I/O cabinet to power cabinet (neutral)		1 
Interconnection busbar 0M-97884 from I/O cabinet to power cabinet (input)		3 
Interconnection busbar 0M-97888 from I/O cabinet to power cabinet (output)		3 
M8 x 25 hexagonal torx with washer		4 
M10 nut with washer		20 
M10 x 35 hexagonal torx with washer		16 

Installation Kit 0M-92449

Part	Used in	Number of Units
Display	Do not install. Installation must be performed by Schneider Electric.	1 
M4x10 torx screw with washer		4 

Installation Kit 0H-0889

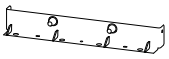
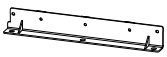
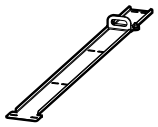
Part	Used in	Number of Units
PBUS 1 cable 0W7995	*Connect the PBUS Cables between Parallel UPS Units, page 93*	1 
PBUS 2 cable 0W7996		1 

Installation Kits Shipped with the Power Cabinet

Installation Kit 0H-0440, 0H-9162, or 0H-9102

NOTE: The part number of the installation kit depends on the power cabinet version.

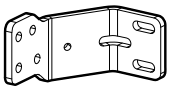
NOTE: These kit parts are shipped in the packaging of the power cabinet.

Part	Used in	Number of Units
Rear anchoring bracket for power cabinet	*Mount the Rear Anchoring Brackets, page 33*	1 
Front anchoring bracket for power cabinet	*Mount the Front Anchoring Brackets, page 69*	1 
Long top baying bracket	*Position the Cabinets, page 34*	1 
M6 x 16 torx screw with washer		15 
M10 nut with washer		24 
M10 x 35 hexagonal torx with washer		12 
Ground interconnection busbar 880–5259 **or**[8] 880–99027 from power cabinet to power cabinet	*Install the Busbars between the Power Cabinets, page 52*	1 
M8 x 20 mm hexagonal torx with washer		4 
Interconnection busbar 880-10146 **or**[8] 880–9720 from power cabinet to power cabinet (neutral)		1 
Interconnection busbar 0M-140035 from power cabinet to power cabinet (battery –)		1 
Interconnection busbar 0M-97886 from power cabinet to power cabinet (output)		3 
Interconnection busbar 0M-819336 from power cabinet to power cabinet (battery +)		1 

8. The part number is dependant on the power cabinet version

Part	Used in	Number of Units
Interconnection busbar 0M-97885 from power cabinet to power cabinet (input)		3 

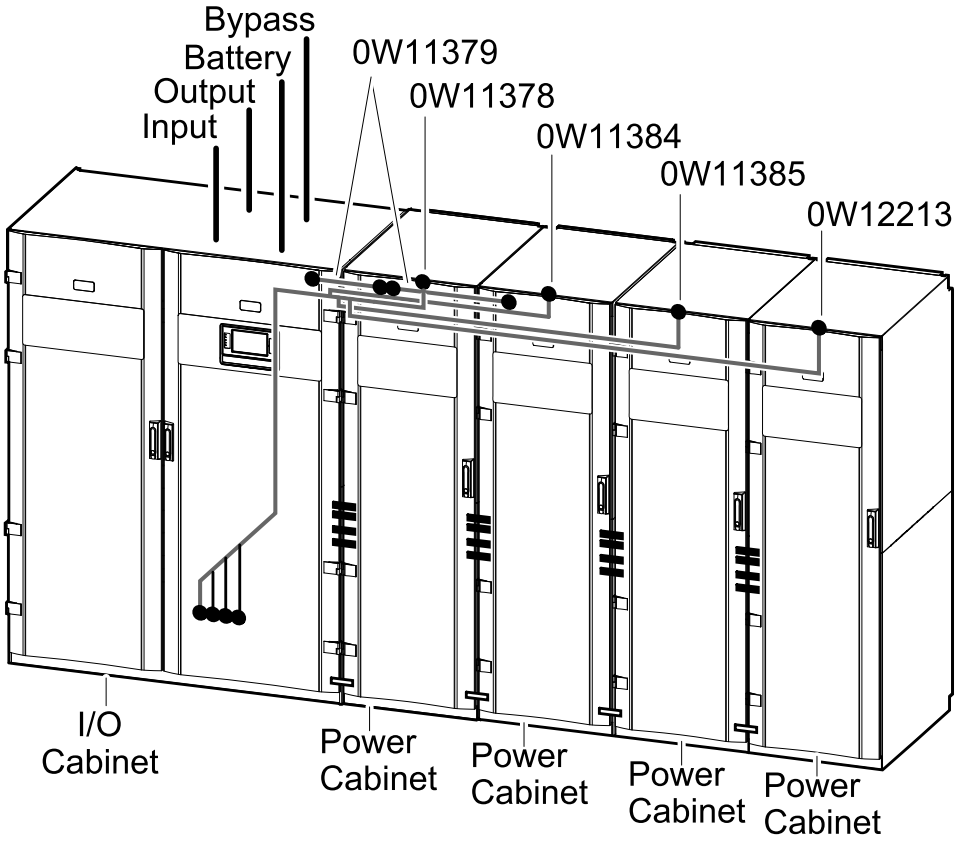
Optional Kit GVXSFOPT1

Part	Used in	Number of Units
Busbar fixture	*Install the Single Utilty/Mains Kit GVXSFOPT1, page 61*	1 
M8 x 25 hexagonal torx with washer		3 
Single utility/mains busbar		3 
M10 x 35 hexagonal torx with washer		12 
M8 nut with washer		9 

Optional Kit SYOPT008

Part	Used in	Number of Units
25 m PBUS 1 cable	*Connect the PBUS Cables between Parallel UPS Units, page 93*	1 
25 m PBUS 2 cable		1 

Installation Procedure



1. *Remove the Cabinets from the Pallet, page 28*.
2. *Mount the Rear Anchoring Brackets, page 33*.
3. *Position the Cabinets, page 34*.
4. *Install Busbars between the I/O Cabinet and the Power Cabinet, page 46*.
5. *Install the Busbars between the Power Cabinets, page 52*.
6. Prepare the I/O Cabinet for power cables. Follow one of the procedures:
   - *Prepare the I/O Cabinet for Power Cables in Top Cable Entry Systems, page 55*.
   - *Prepare the I/O Cabinet for Power Cables in Bottom Cable Entry Systems, page 57*.
7. In single utility/mains systems only: *Install the Single Utilty/Mains Kit GVXSFOPT1, page 61*.
8. *Connect the Power Cables, page 63*.
9. *Mount the Front Anchoring Brackets, page 69*.
10. Prepare the I/O cabinet for signal cables. Follow one of the procedures:
    - *Prepare the I/O Cabinet for Signal Cables in Top Cable Entry Systems, page 70*.
    - *Prepare the I/O Cabinet for Signal Cables in Bottom Cable Entry Systems, page 72*.
11. *Connect Signal Cables between the I/O Cabinet and the Power Cabinets, page 74*.
12. Option: *Connect Signal Cables between the I/O Cabinet and the Switchgear, page 81*.
13. Option: *Connect the Signal Cables for Battery Solutions, page 83*.

14. *Connect the Emergency Power Off (EPO), page 86*.
15. Option: *Connect External Synchronization, page 88*.
16. Option: *Connect Equipment to Input Contacts and Output Relays, page 90*.
17. *Connect the PBUS Cables between Parallel UPS Units, page 93*.
18. Option: *External Communication, page 95*.
19. Option: *Connect the Modbus Cables, page 96*.

Mechanical Installation

Remove the Cabinets from the Pallet

NOTICE
RISK OF EQUIPMENT DAMAGE Ensure that the floor is level and can support the weight of the jack when it carries the cabinet. **Failure to follow these instructions can result in equipment damage.**

NOTICE
RISK OF EQUIPMENT DAMAGE Be careful not to damage the cabinets when using the jack. **Failure to follow these instructions can result in equipment damage.**

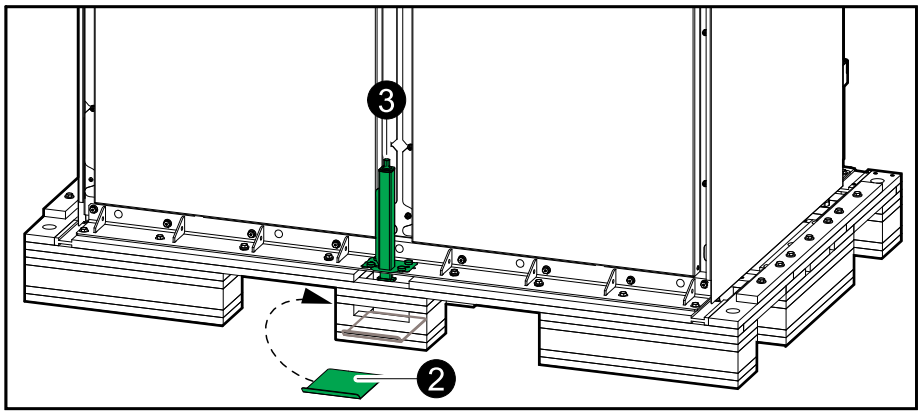
NOTE: The procedure shows the removal of the power cabinet when the procedures are identical for all cabinets.

NOTE: The procedure is identical for the I/O cabinet and the maintenance bypass cabinet.

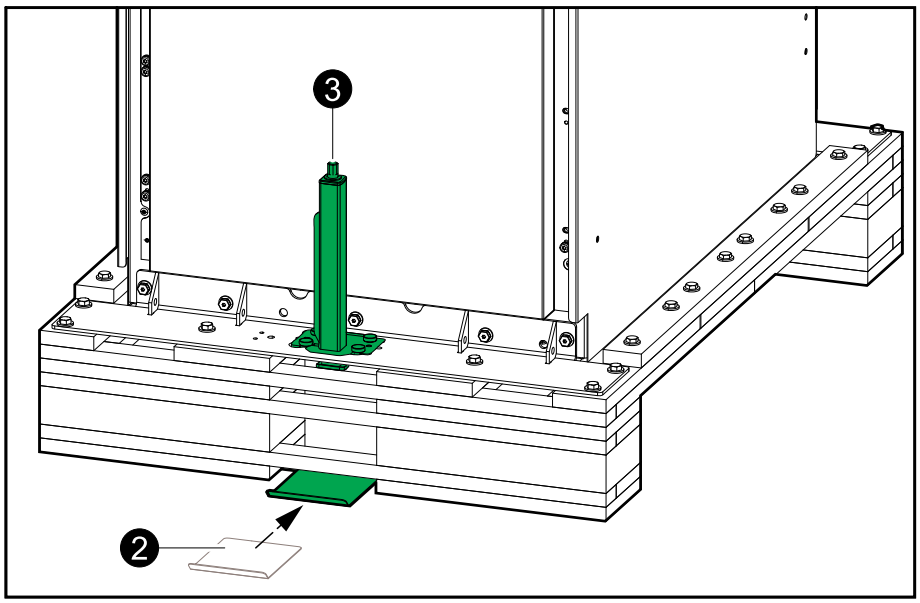
1. Take the installation kit 0M-816661 shipped with the I/O cabinet. Use the jack and the floor protection plate in the kit for all cabinets in this procedure.

2. Place the floor protection plate under the pallet on the rear of the cabinet.

Rear View of the I/O Cabinet



Rear View of the Power Cabinet



3. Place the jack from the installation kit in the hole in the transport bracket on the rear of the cabinet.

⚠WARNING

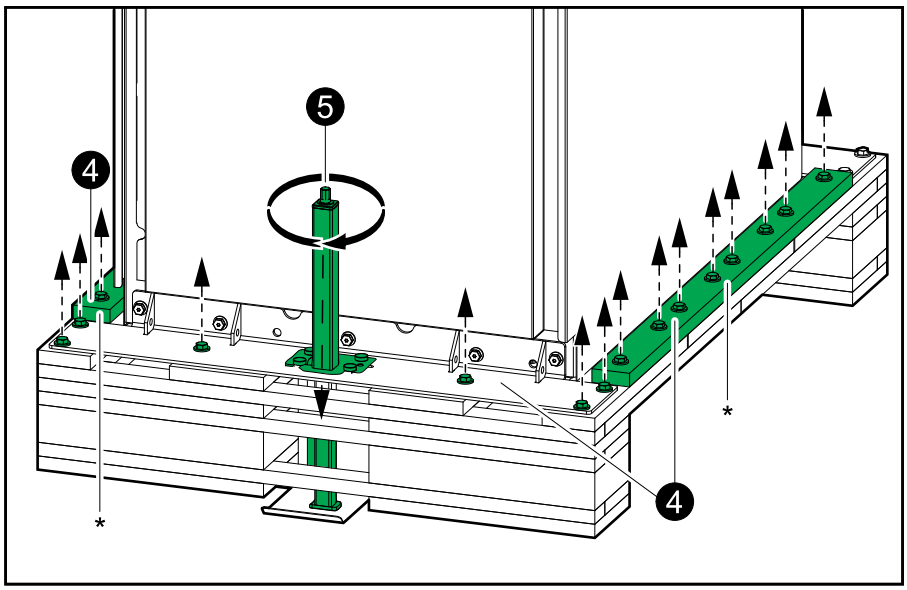
HAZARD OF TILTING

Do not use a jack in the front and rear transport bracket at the same time.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

4. Loosen and remove the bolts from the rear transport bracket and from the middle pallet part. Remove the pallet parts marked with * and save for step 8 for the I/O cabinet and the maintenance bypass cabinet.

Rear View of the Power Cabinet



5. Use a drilling machine with the provided hexagonal socket to activate the jack, slide it into position in the bracket, and to make contact with the floor protection plate.

   NOTE: Reduce the drill torque to minimum to prevent kickback.

6. Use the jack to lift the pallet to the top position.

7. Remove the rear and middle pallet parts.

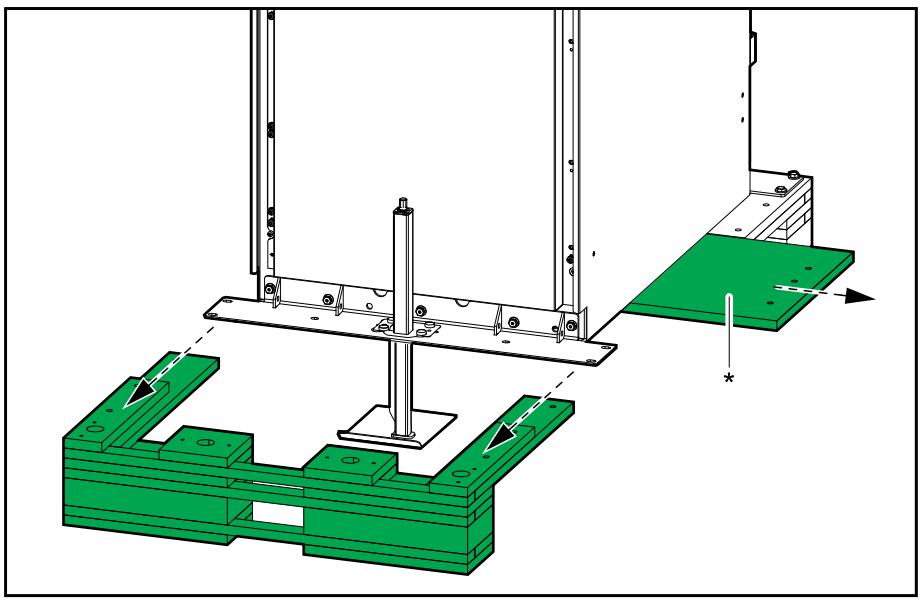
⚠WARNING

HAZARD OF SERIOUS INJURY

Do not put your hands or feet under the cabinet while removing the pallet parts.

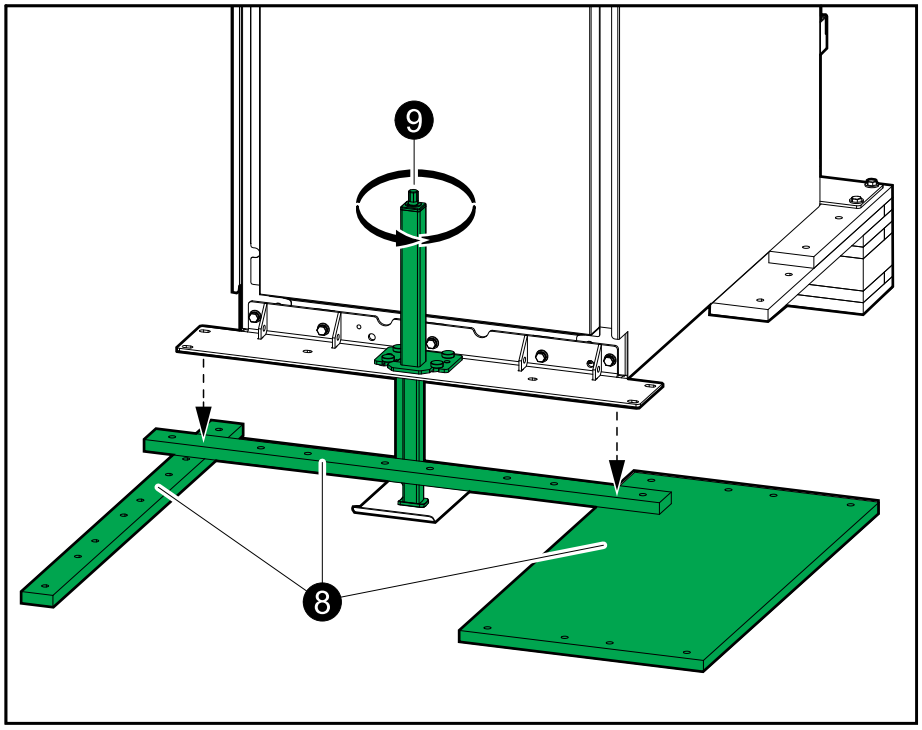
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Rear View of the Power Cabinet



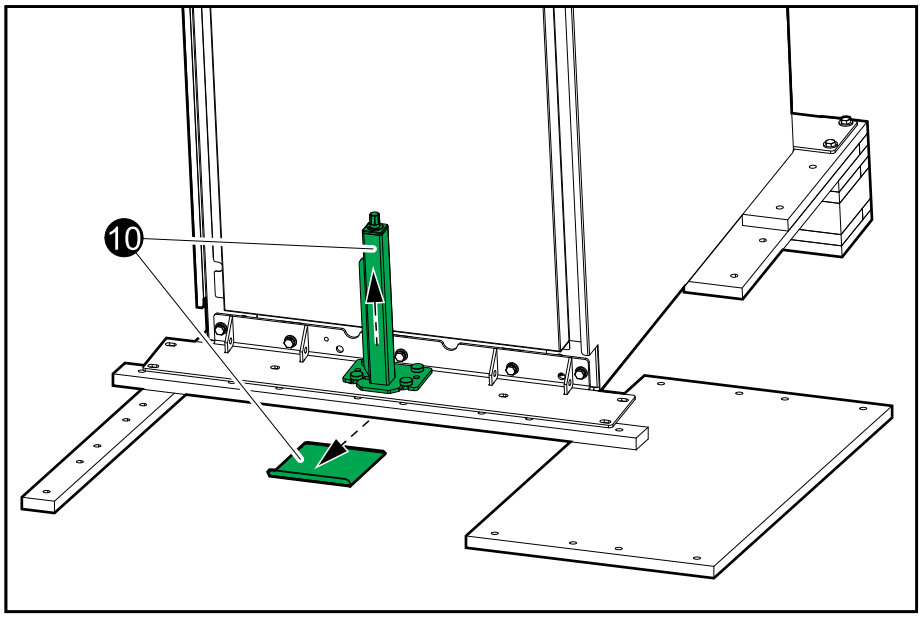
8. Place support under the metal bracket:
   - For the power cabinets, flip over the wooden part and place it under the transportation bracket as a support.
   - For the remaining cabinets, place the pallet parts from step 4 as a support.
9. Use a drilling machine to lower the cabinet down onto the support.

Rear View of the Power Cabinet



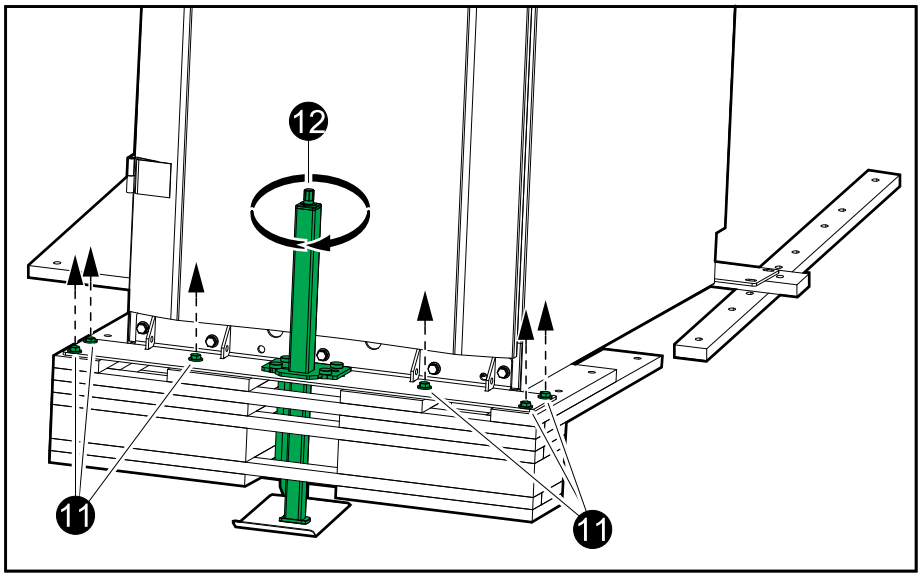
10. Move the floor protection plate and the jack from the rear to the front side.

Rear View of the Power Cabinet



11. Loosen and remove the bolts from the front transport bracket.

Front View of the Power Cabinet



12. Use a drilling machine with the provided hexagonal socket to activate the jack, slide it into position in the bracket, and to lift the pallet to the top position.
13. Remove the front pallet parts.

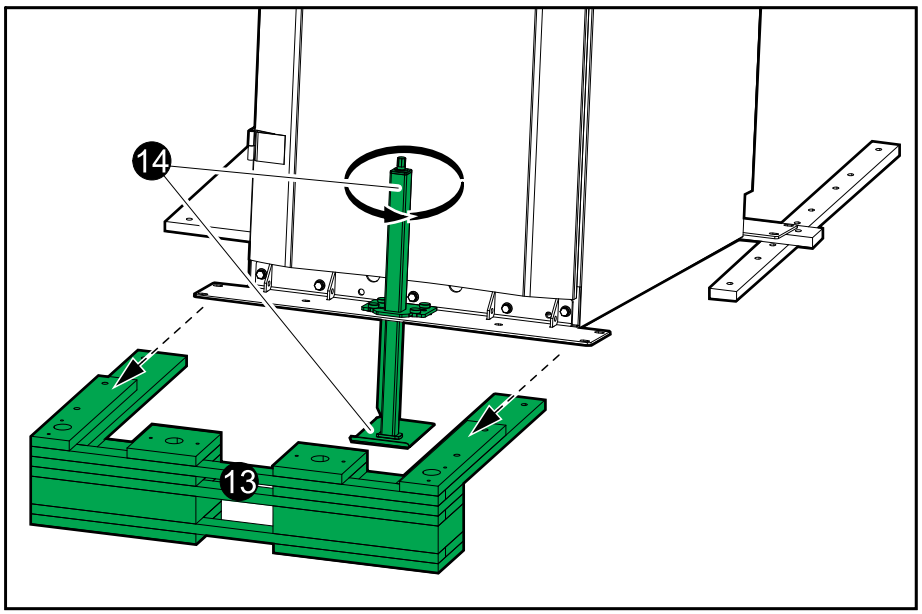
⚠WARNING

HAZARD OF SERIOUS INJURY

Do not put your hands or feet under the cabinet while removing the wooden plate.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Front View of the Power Cabinet



14. Use the jack to lower the cabinet onto the floor until the wheels connect with the floor. Remove the jack and the floor protection plate.

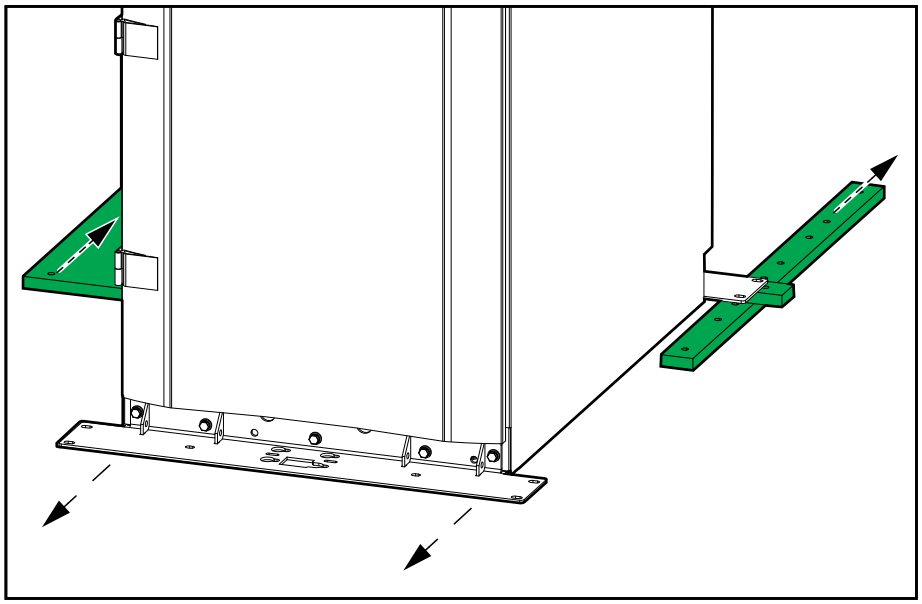
15. Wheel the cabinet away and remove the remaining pallet parts.

⚠WARNING

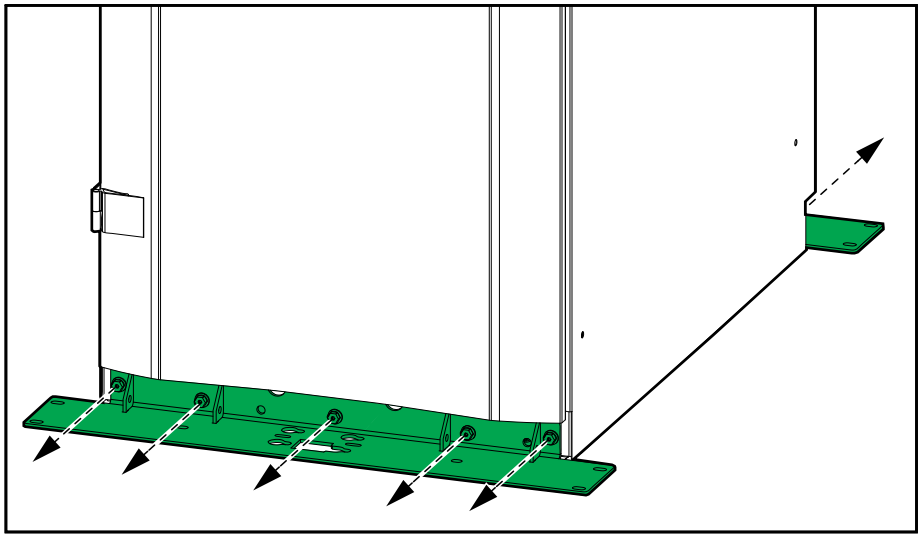
HAZARD OF TILTING

Be alert to uneven floors and doorsteps when moving the cabinet on its wheels to avoid overbalancing and tipping the cabinet.

Front View of the Power Cabinet



16. Remove the front and rear transportation brackets.



The cabinet can now be moved on the built-in wheels to the installation area.

Mount the Rear Anchoring Brackets

⚠DANGER

HAZARD OF TILTING

All rear and front anchoring brackets must be installed.

Failure to follow these instructions will result in death or serious injury.

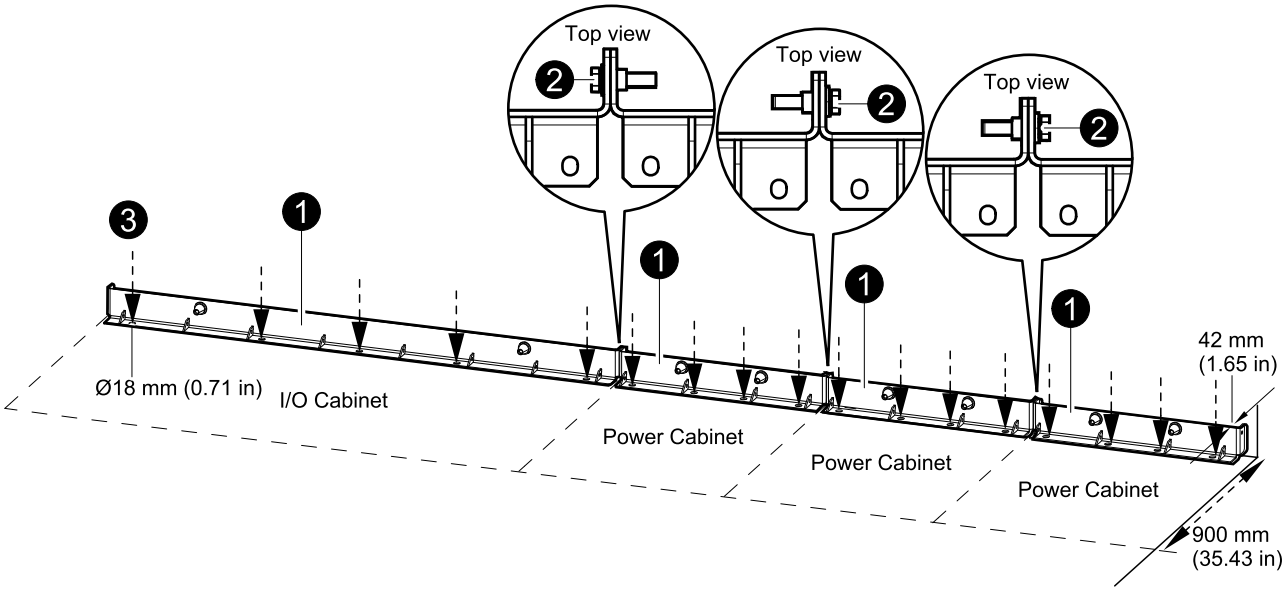
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Leave the UPS system covered while making anchoring holes to prevent dust or other conductive particles from entering the system.

Failure to follow these instructions will result in death or serious injury.

1. Place the rear anchoring brackets of the I/O cabinet and the power cabinets in the final installation area.



2. Interconnect the rear anchoring brackets using the provided screws and bolts.
3. Mark the hole locations.
4. Drill anchoring holes according to national and local requirements.
5. Mount the rear anchoring brackets to the floor. Bolts are not supplied.
6. Use a bubble-leveler to ensure that the brackets are level. Use the provided leveling shims if necessary.

Position the Cabinets

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not step/walk on top of the cabinets.

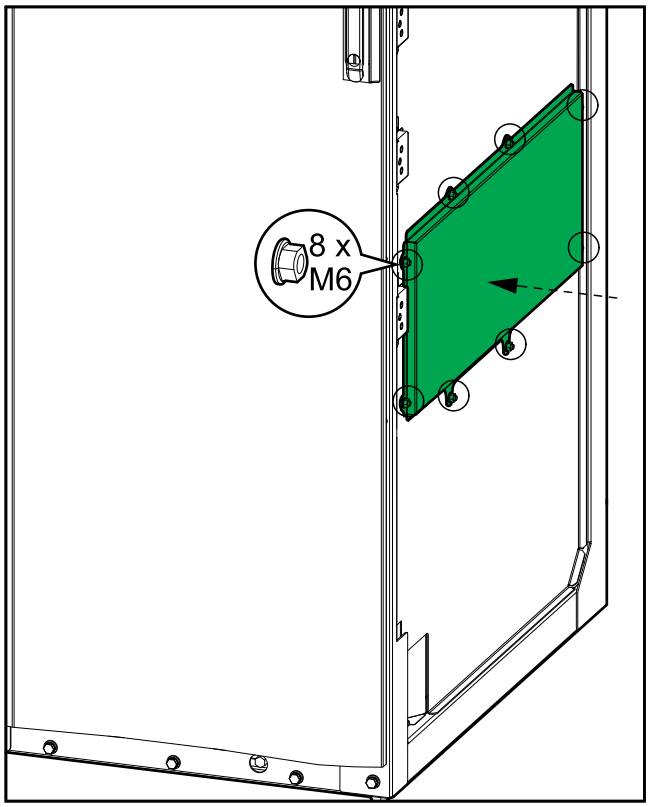
Failure to follow these instructions will result in death or serious injury.

NOTE: For some of the steps below, only the power cabinet is shown. The procedure is the same for all cabinets.

NOTE: The cabinets must be moved to the final installation area individually and cannot be moved after they have been interconnected.

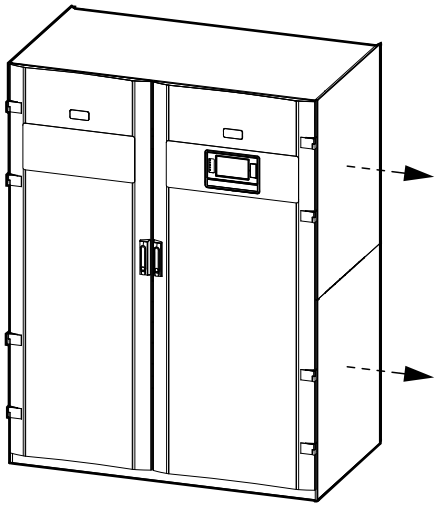
1. Install the interconnection cover from the installation kit 0M-92448 on the right side (front view) of the right-most power cabinet and fasten with the M6 nuts.

Front View of the Power Cabinet

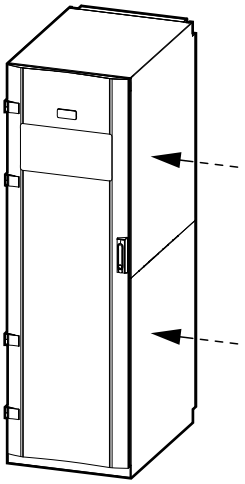


2. Move the side panel from the right side (front view) of the I/O cabinet and install it on the right side of the right-most power cabinet.

Front View of the I/O Cabinet

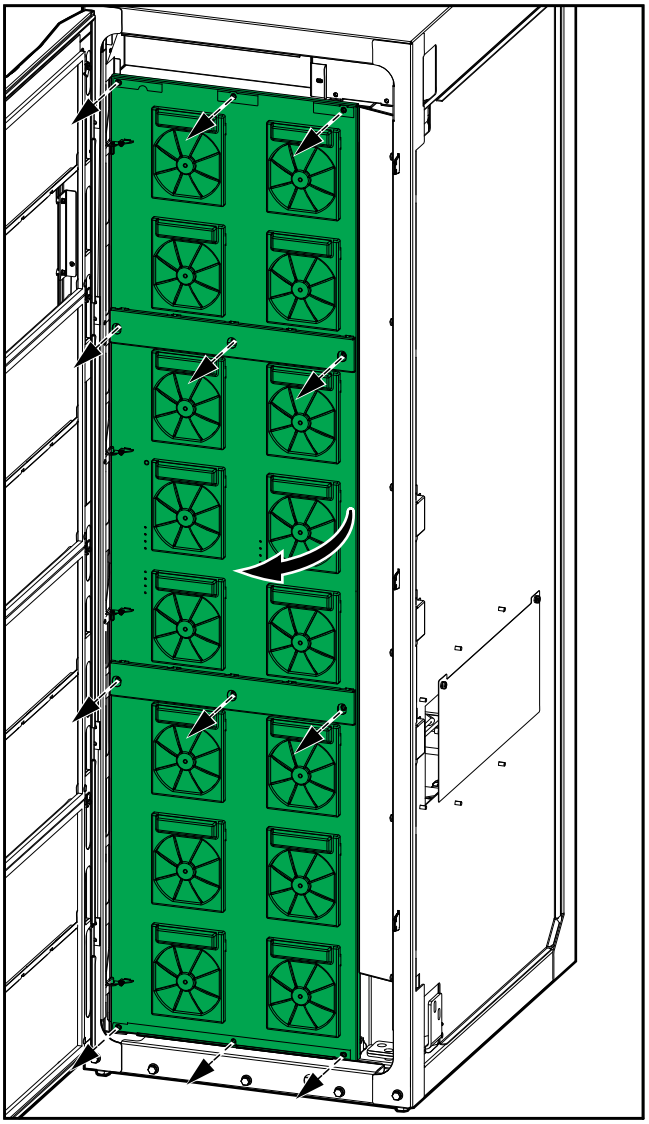


Front View of the Power Cabinet



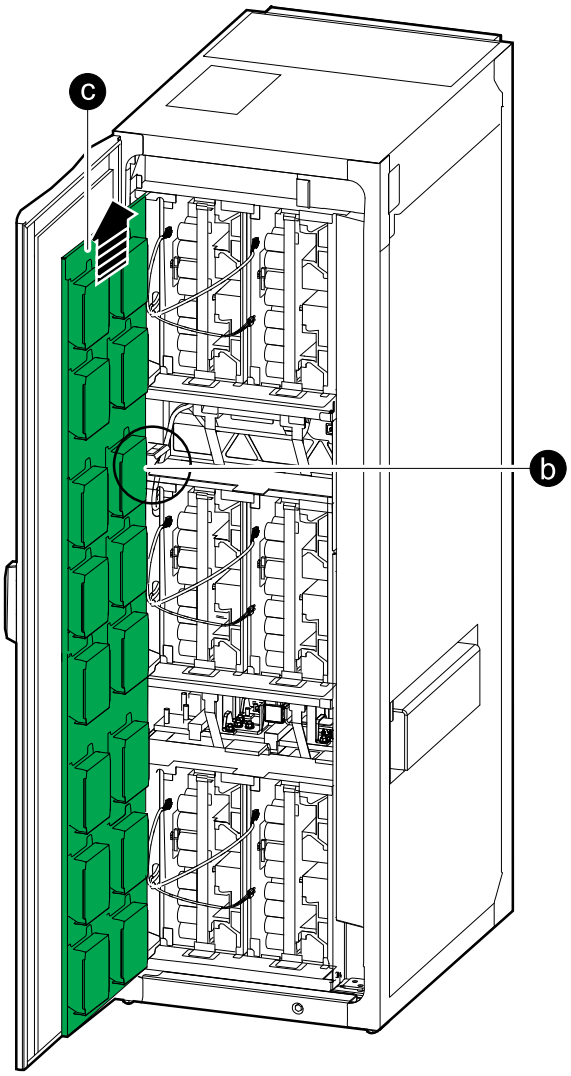
3. Perform the following steps on all power cabinets:
   a. Remove the 12 screws and open the fan doors of the power cabinets.

Front View of the Power Cabinet



b. Disconnect the cable between the fan doors and the power cabinets.

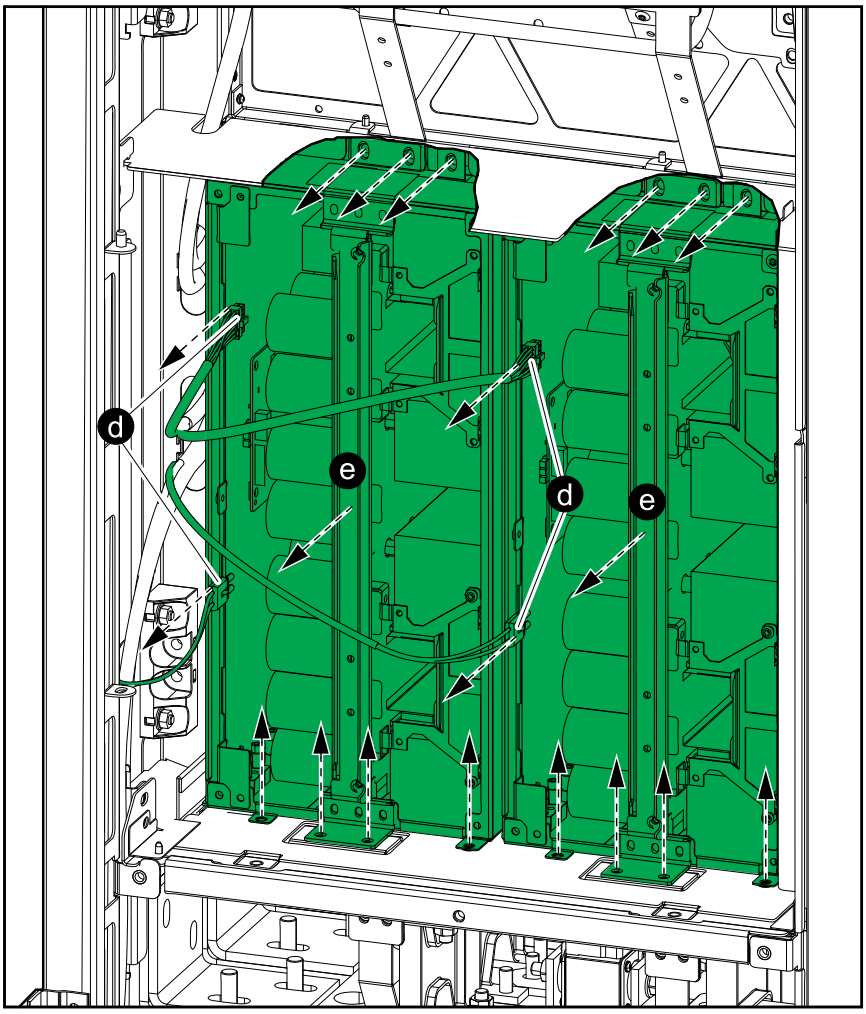
Front View of the Power Cabinet



c. Lift the fan door up and remove it.

d. Disconnect the two cables from each of the two middle power blocks.

Front View of the Power Cabinet

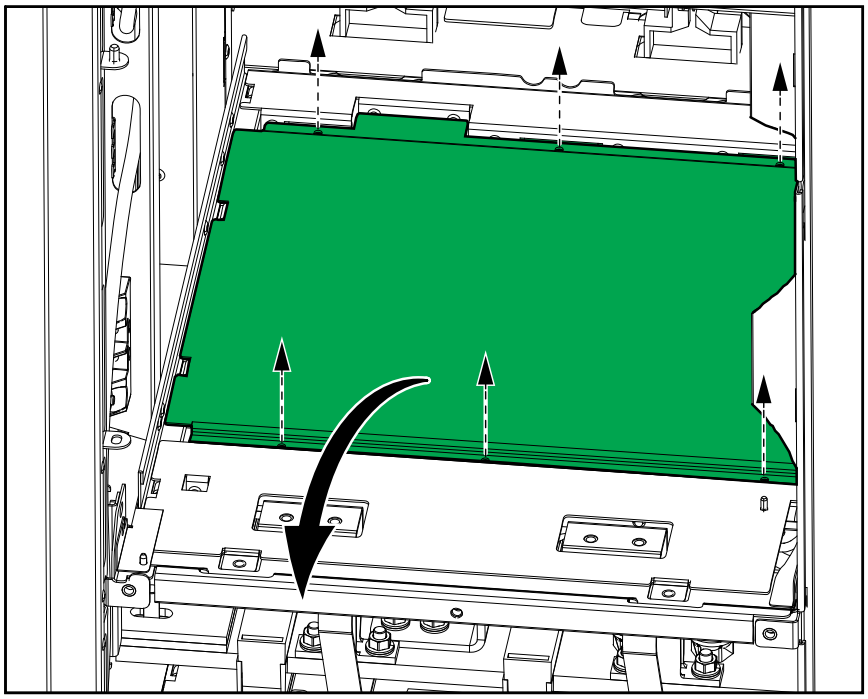


e. Loosen the screws and pull out the middle power blocks. Be careful not to damage the cables.

NOTICE
RISK OF EQUIPMENT DAMAGE Cover the power blocks when removed from the power cabinet to avoid dust in the power blocks. **Failure to follow these instructions can result in equipment damage.**

f. Loosen the screws and remove the plate below the power blocks.

Front View of the Power Cabinet



4. Perform the following steps (a to c) on all power cabinets **except the power cabinet that will be installed at the end of the row**.

⚠ DANGER

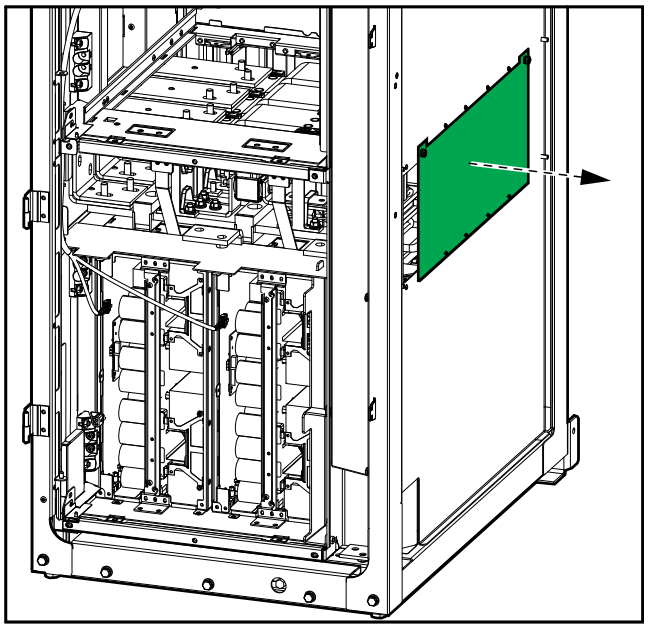
HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

Do not perform the steps a to c on the power cabinet that will be installed at the end of the row.

Failure to follow these instructions will result in death or serious injury.

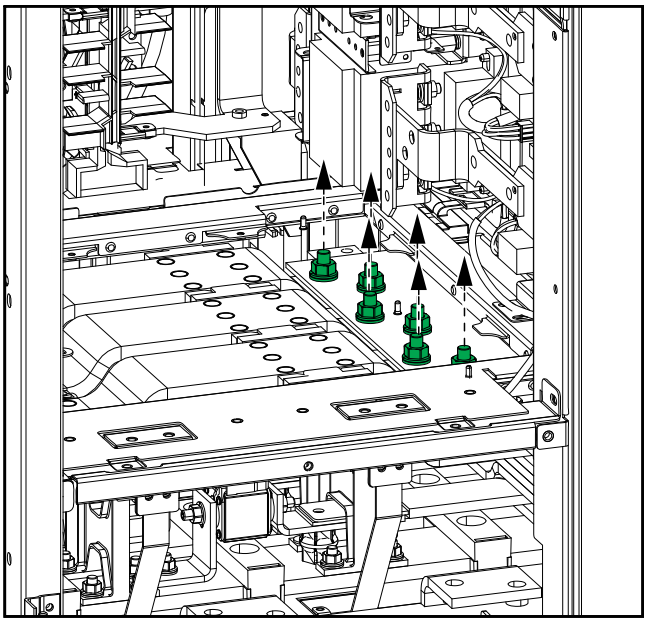
a. Remove the indicated cover from the right side and dispose of the cover.

Front View of the Power Cabinet



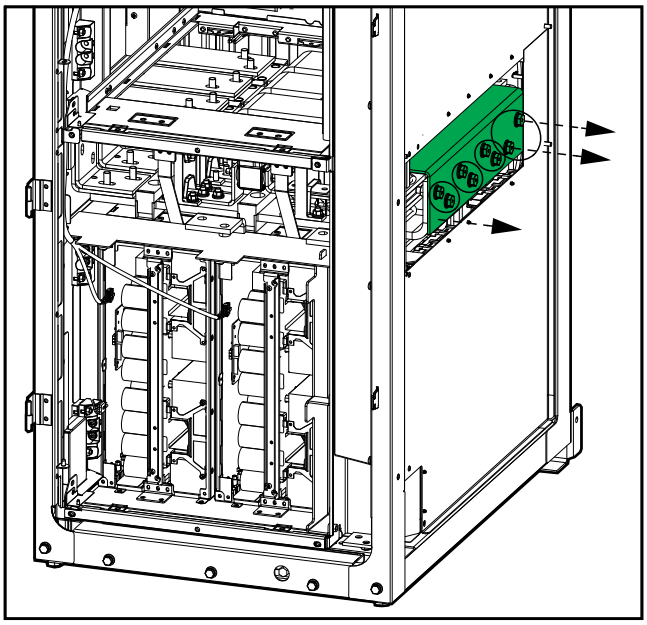
b. Loosen and remove the eight bolts from the inside of the power cabinet.

Front View of the Power Cabinet



c. Loosen the eight bolts and remove and dispose of the indicated plate.

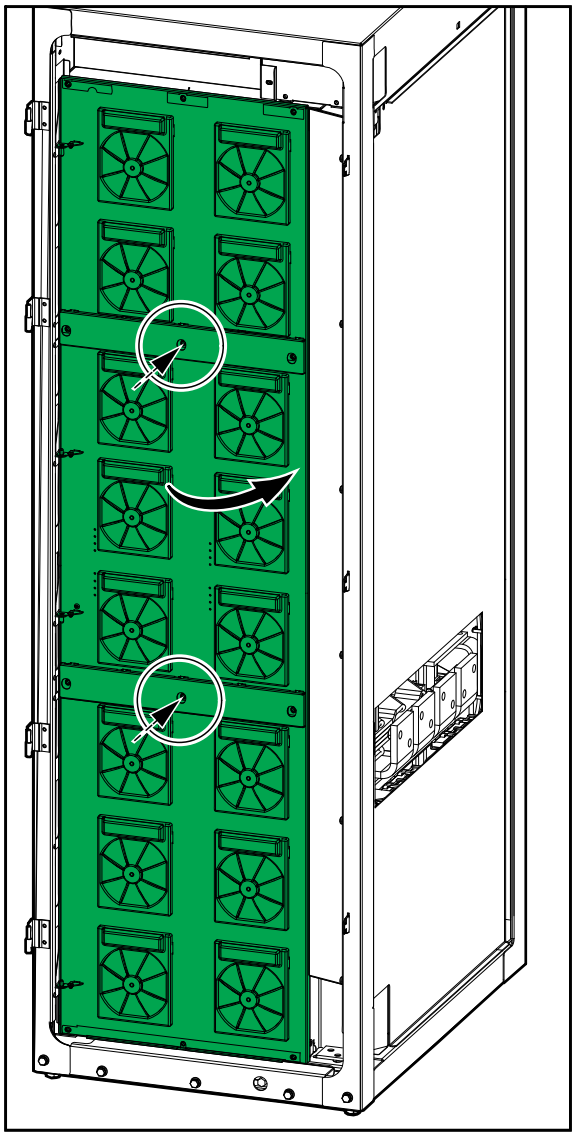
Front View of the Power Cabinet



5. Install the fan doors temporarily on all power cabinets and fasten with two screws.

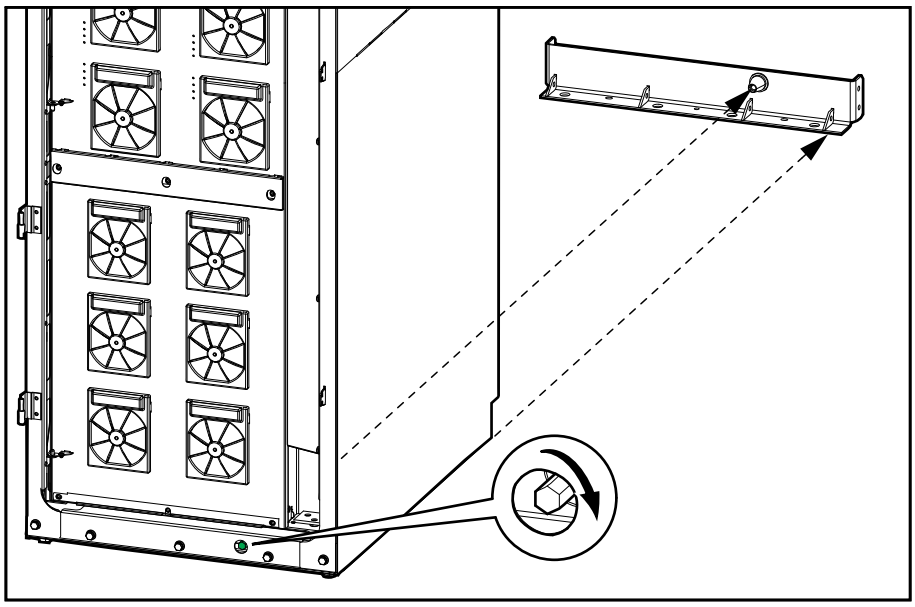
NOTICE
RISK OF EQUIPMENT DAMAGE The fan doors must be installed to avoid damaging the signal cables when pushing the power cabinets into position. **Failure to follow these instructions can result in equipment damage.**

Front View of the Power Cabinet

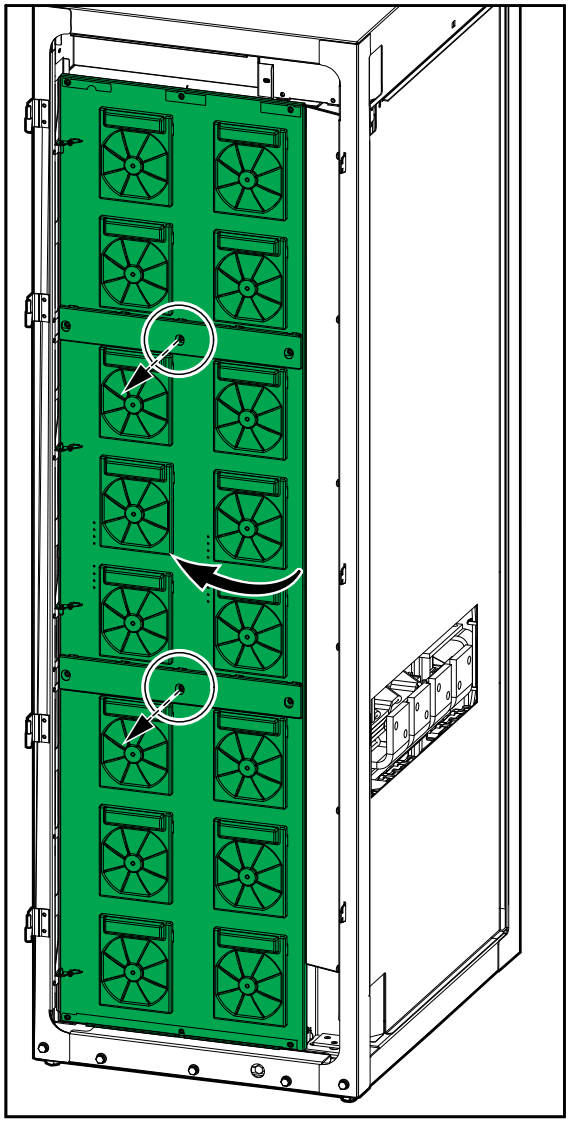


6. Push the I/O cabinet and the power cabinets into position against the rear anchoring brackets – the cabinets will connect to the conic outcroppings on the brackets.

Front View of the Power Cabinet

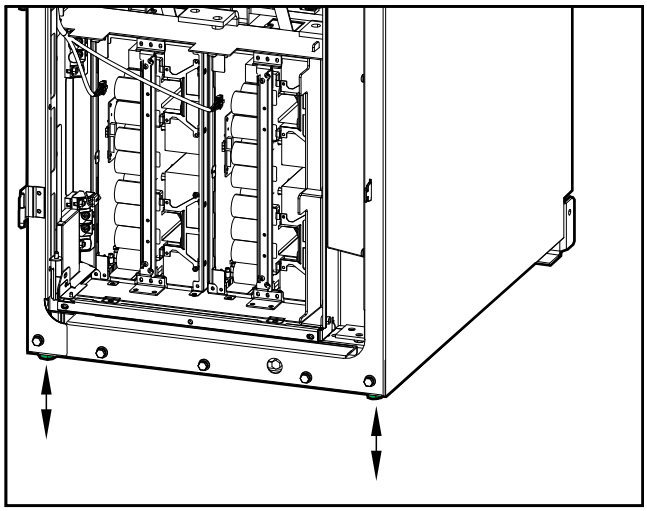


7. Remove the fan doors of the power cabinets.



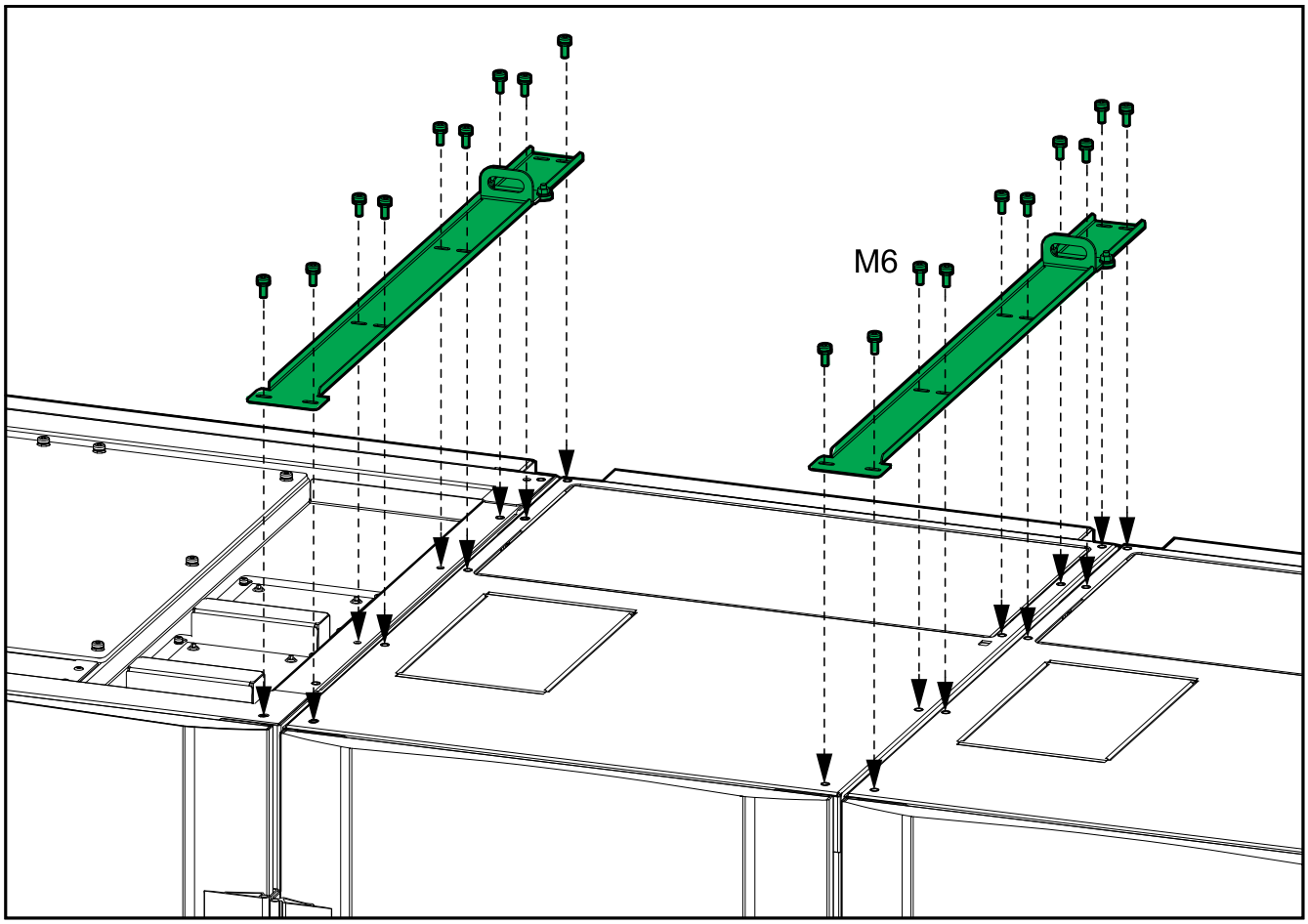
8. Fasten the cabinets to the rear anchoring brackets by tightening the bolts on the front of the cabinet. Torque to 50 Nm (36.87 lb-ft).
9. Lower the two front feet on all cabinets until they connect with the floor – use a bubble-leveler to ensure that the cabinets are level. Use the provided levelling shims if necessary.

Front View of the Power Cabinet



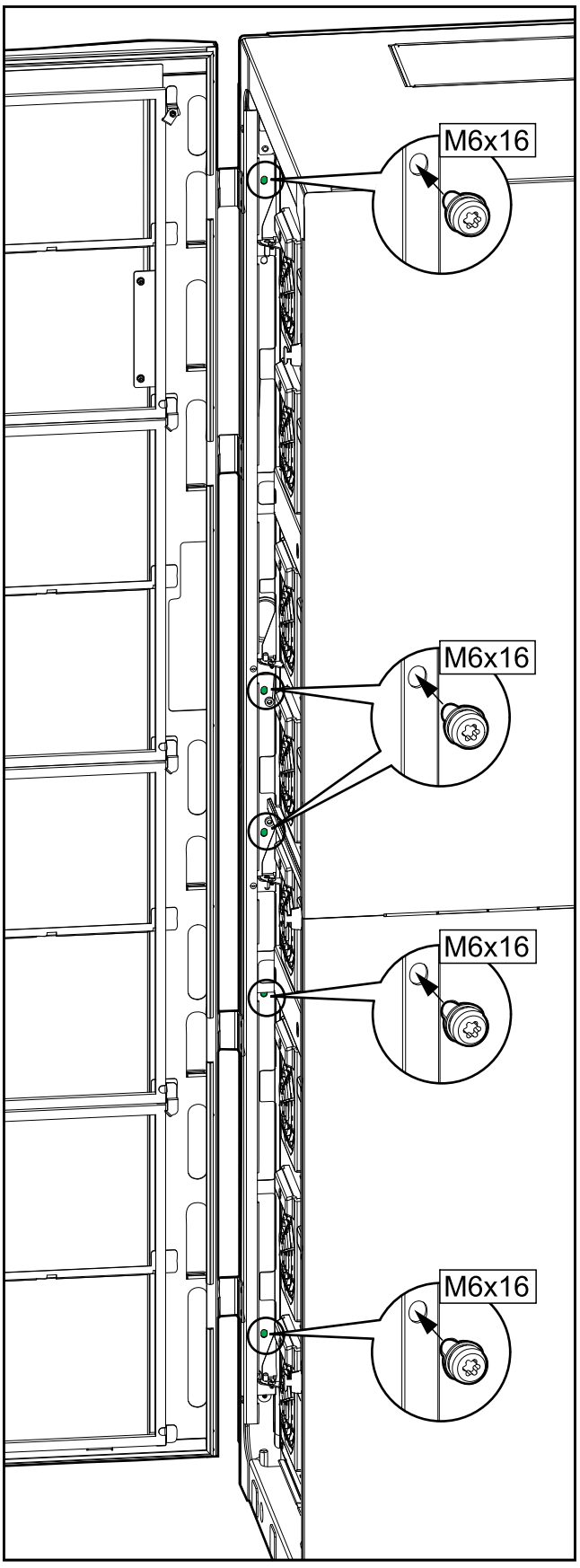
10. Install the top baying bracket on the top of the cabinets and fasten with the provided screws.

Front View of the I/O Cabinet and Two Power Cabinets

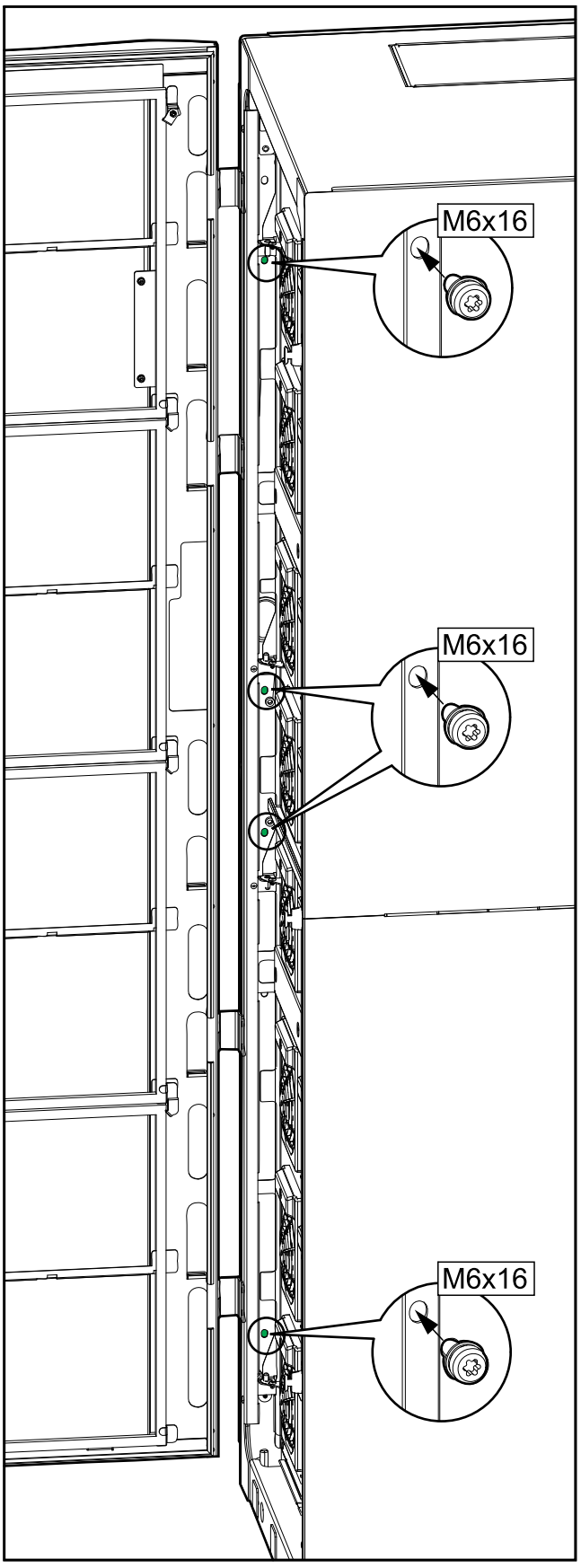


11. Mount the M6 screws from the installation kit from right to left in the five marked positions between the power cabinets and in the four marked positions between the power cabinet and the I/O cabinet to tighten the cabinets together.

From Power to Power Cabinet



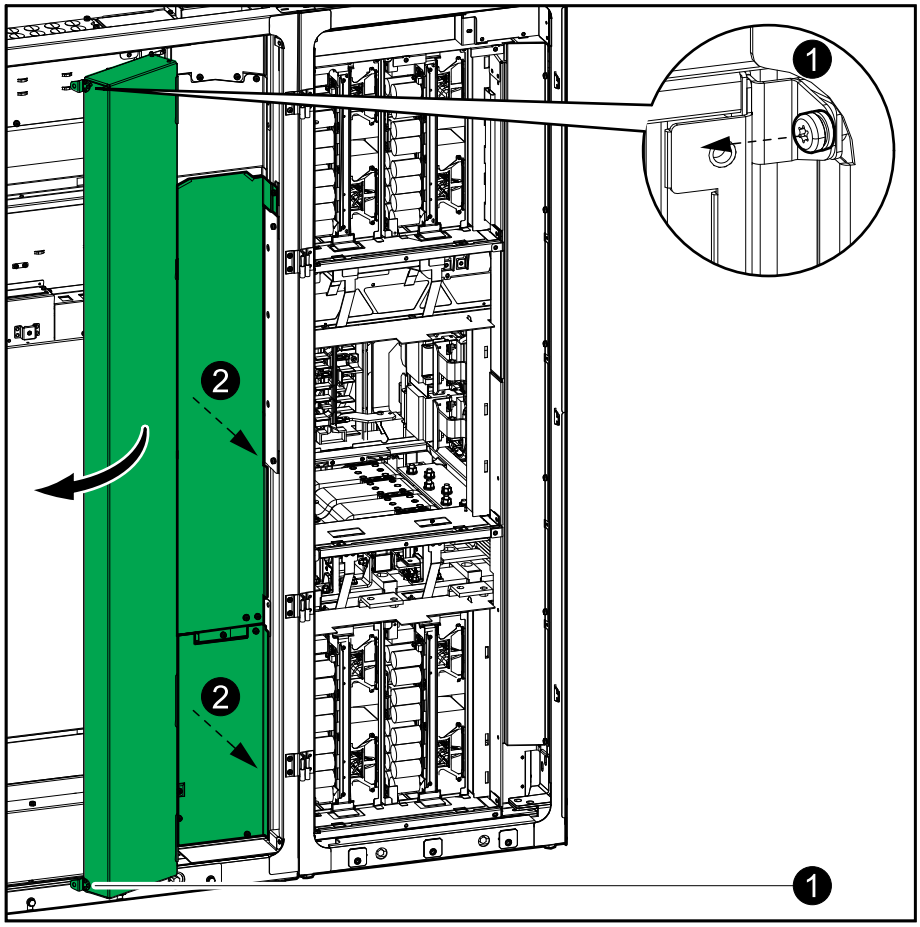
From Power to I/O Cabinet



Install Busbars between the I/O Cabinet and the Power Cabinet

1. Loosen the two screws and open the door with the interface boards.

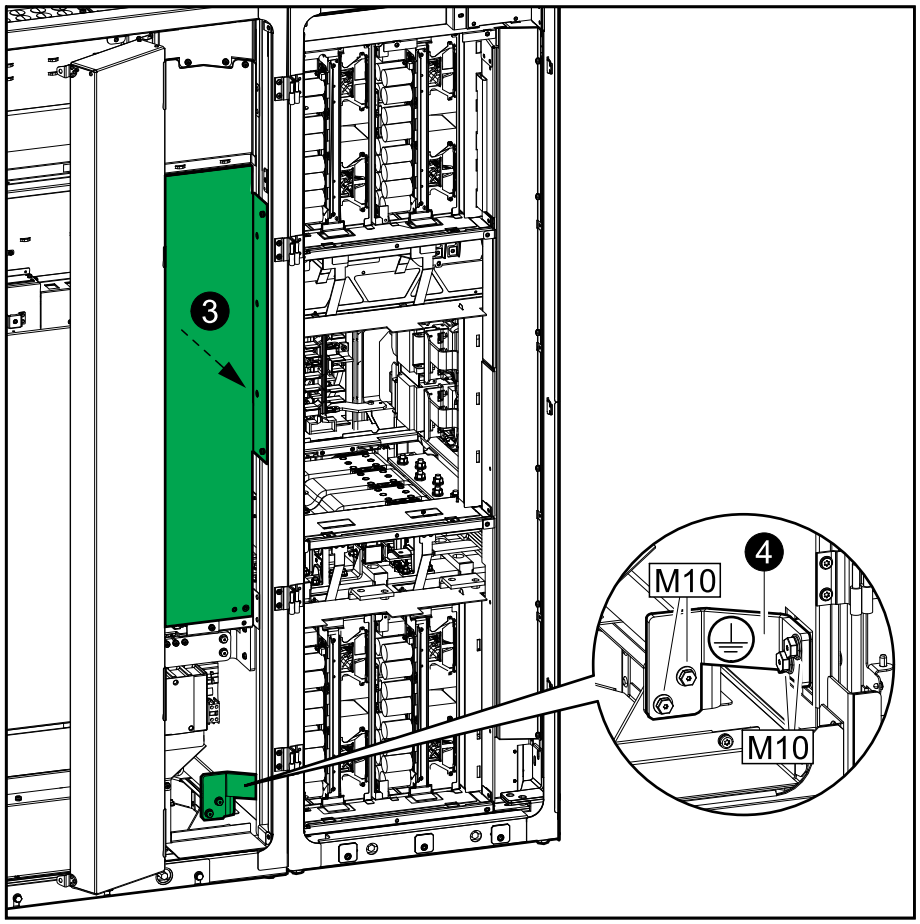
Front View of the I/O Cabinet and the Power Cabinet



2. Remove the two plates.

3. Remove the plastic cover.

Front View of the I/O Cabinet and the Power Cabinet

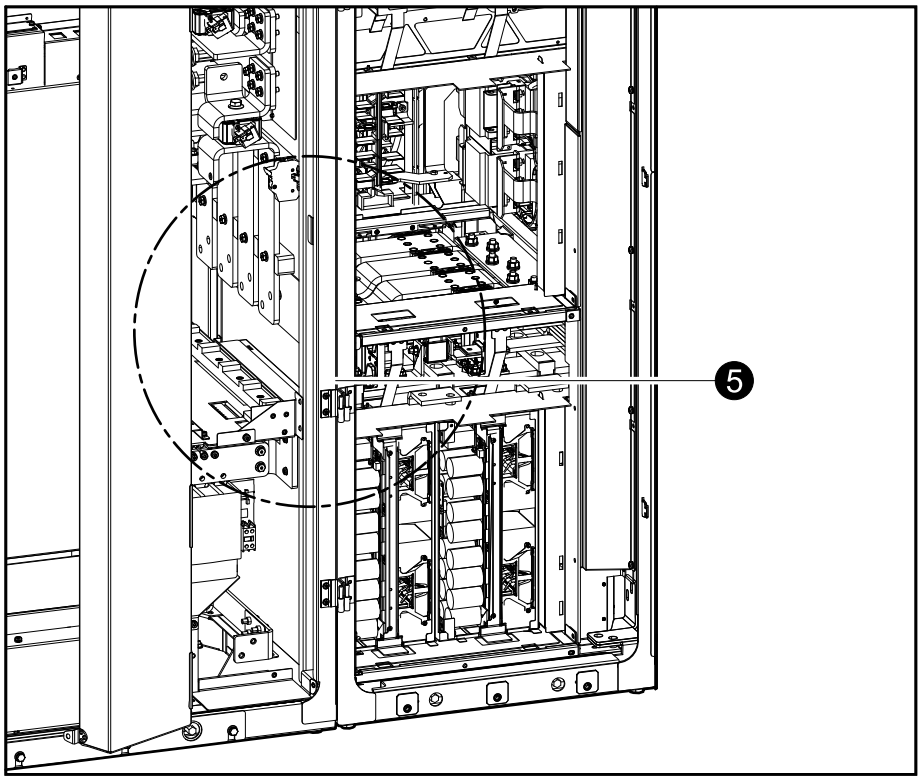


4. Install the grounding busbar 880-9978 from the installation kit 0M-92445 between the I/O cabinet and the power cabinet.

   NOTE: If the grounding busbar 880-9978 is not compatible with the power cabinet placed to the right of the I/O cabinet, the busbar kit 0J-0446 with flexible busbars must be used for the grounding connection instead of the grounding busbar. Contact Schneider Electric.

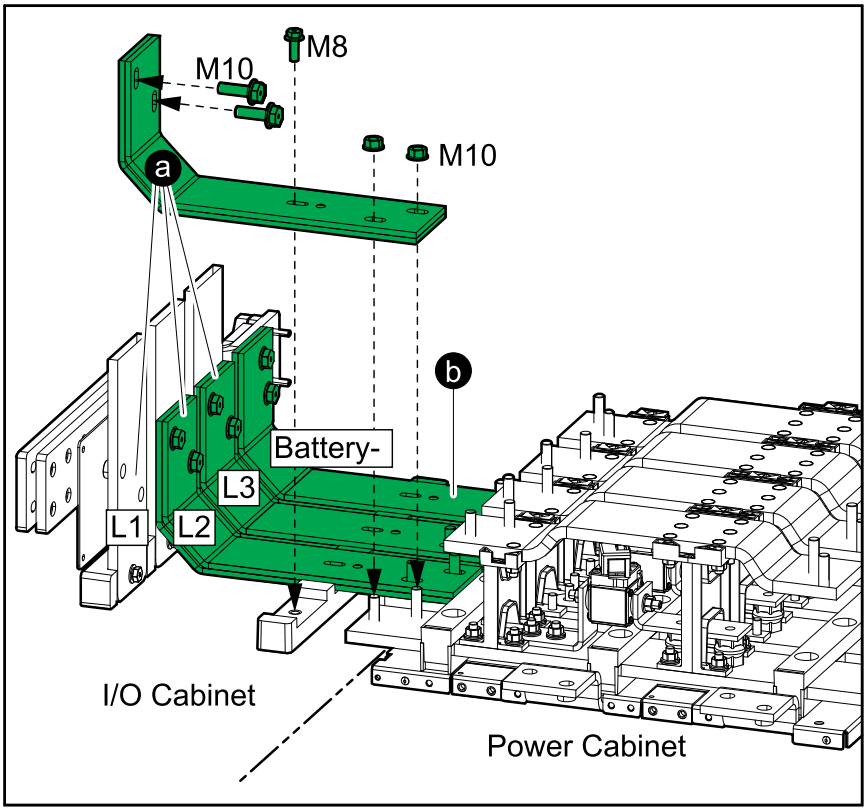
5. Install the interconnection busbars from the kit 0M-92446 between the I/O cabinet and the power cabinet.

Front View of the I/O Cabinet and the Power Cabinet



a. Install the three input interconnection busbars 0M–97884.

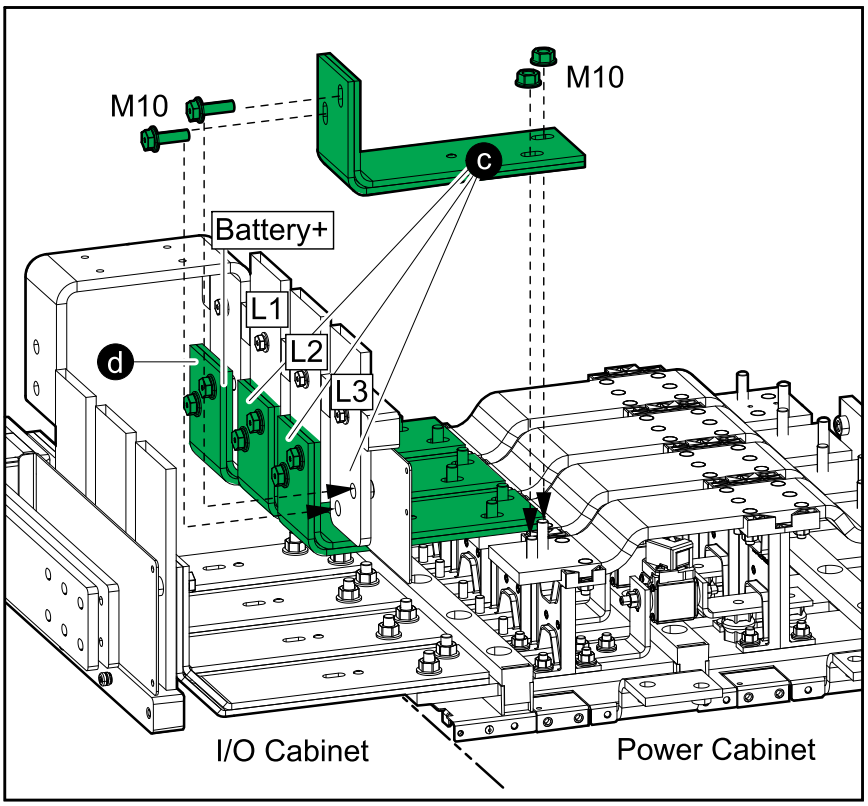
Front View of the Busbar Connections



b. Install the battery- interconnection busbar 0M–96982.

c. Install the three output interconnection busbars 0M–97888.

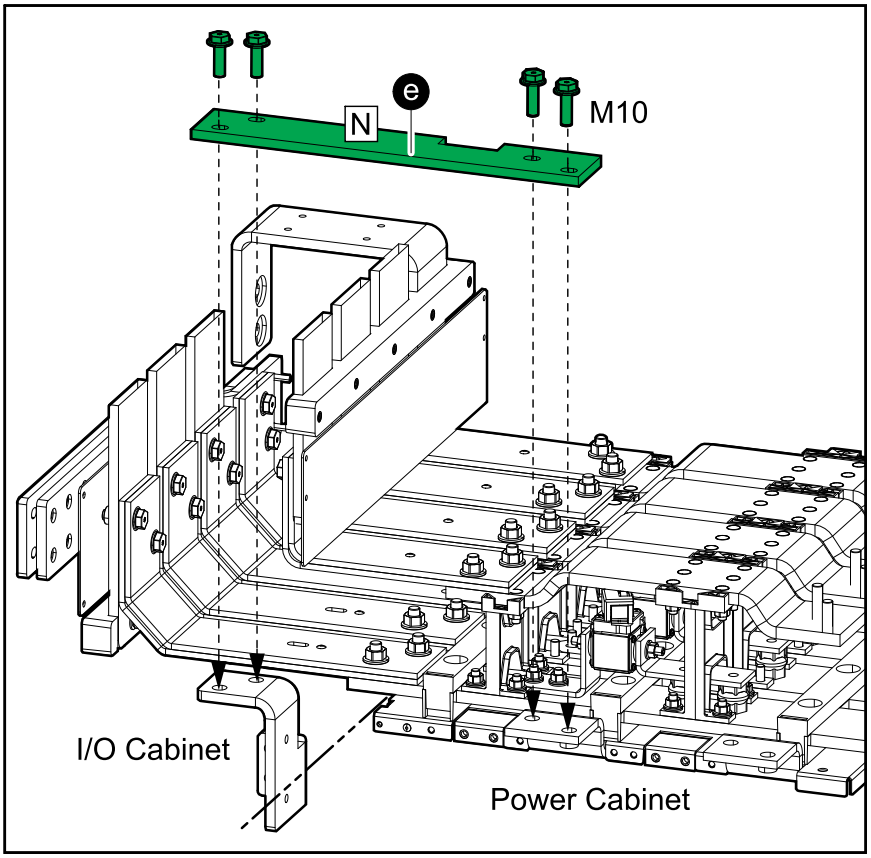
Front View of the Busbar Connections



d. Install the battery+ interconnection busbar 0M–97887.

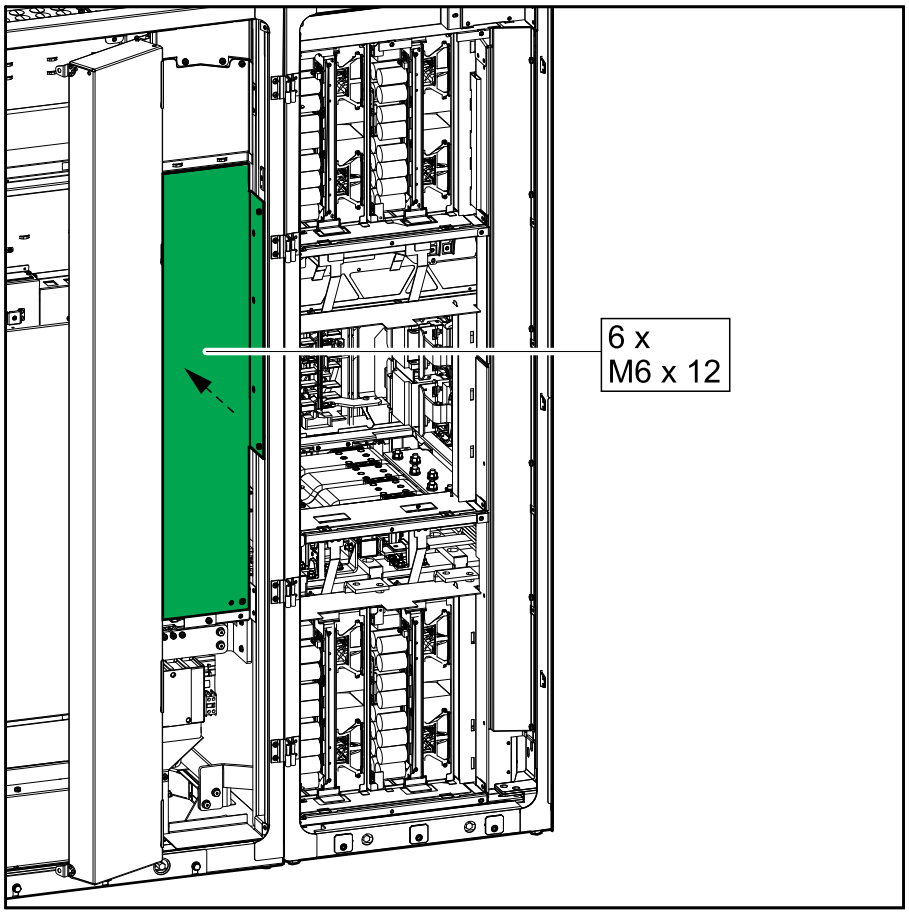
e. Install the neutral interconnection busbar 880–90461 **or** 880–9719.

Front View of the Busbar Connections



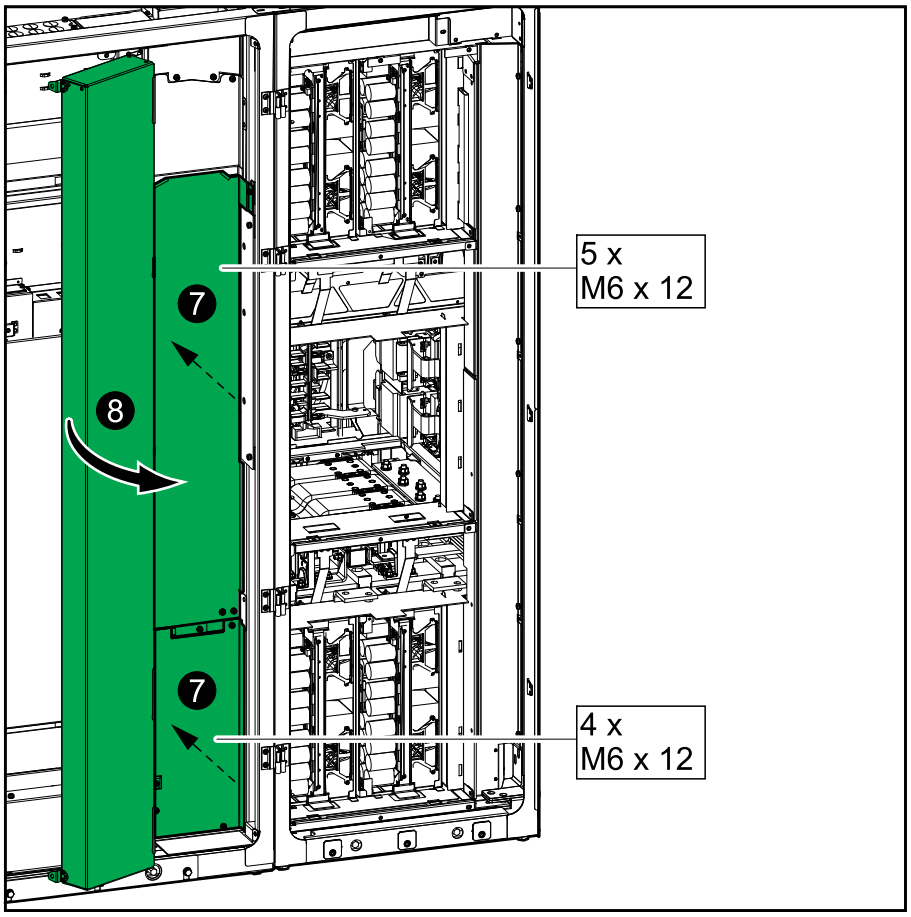
6. Reinstall the plastic cover.

Front View of the I/O Cabinet



7. Reinstall the two plates.

Front View of the I/O Cabinet



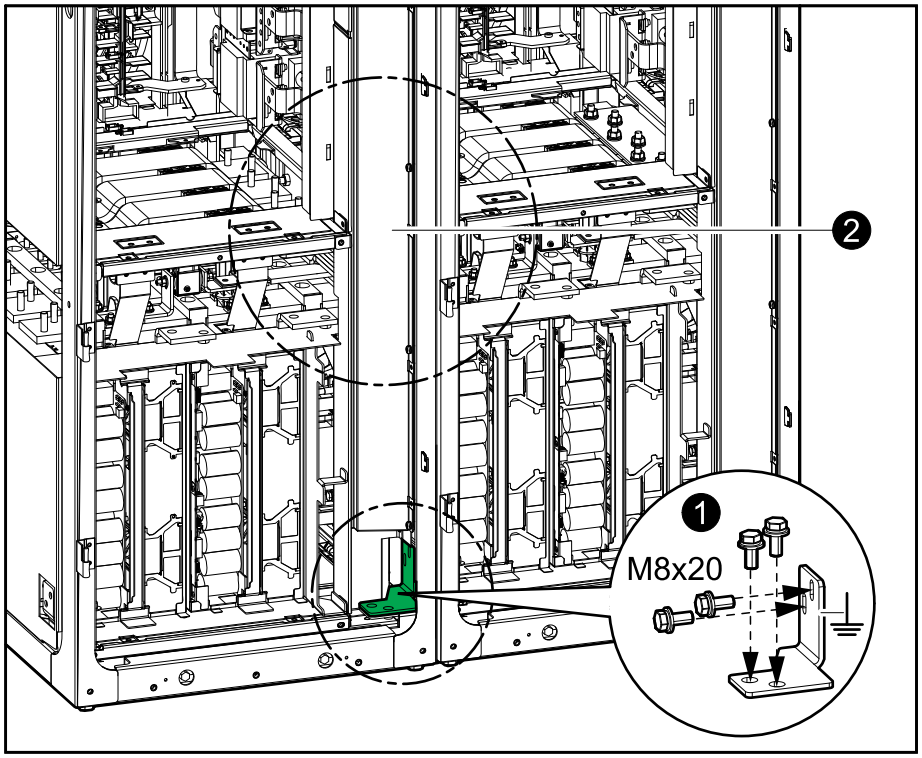
8. Close the door with the interface boards and fasten with the two screws.

Install the Busbars between the Power Cabinets

1. Install the grounding busbars 880-5259 or 880-99027[9] from the installation kit 0H-0440, 0H-9162, or 0H-9102[9] between all power cabinets.

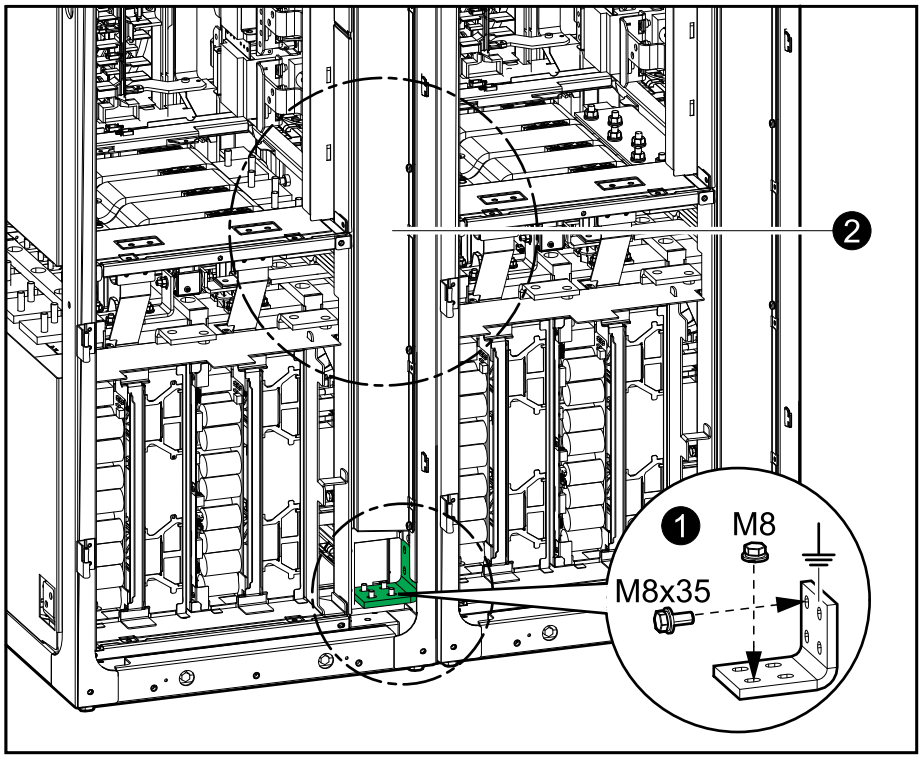
   NOTE: If your system contains different power cabinet versions, the busbar kit 0J-0446 with flexible busbars must be used for the grounding connection between the power cabinets instead of the grounding busbar. Contact Schneider Electric.

Front View of Two Power Cabinets with grounding Busbar 880–5259



9. The part number is dependent on the power cabinet version.

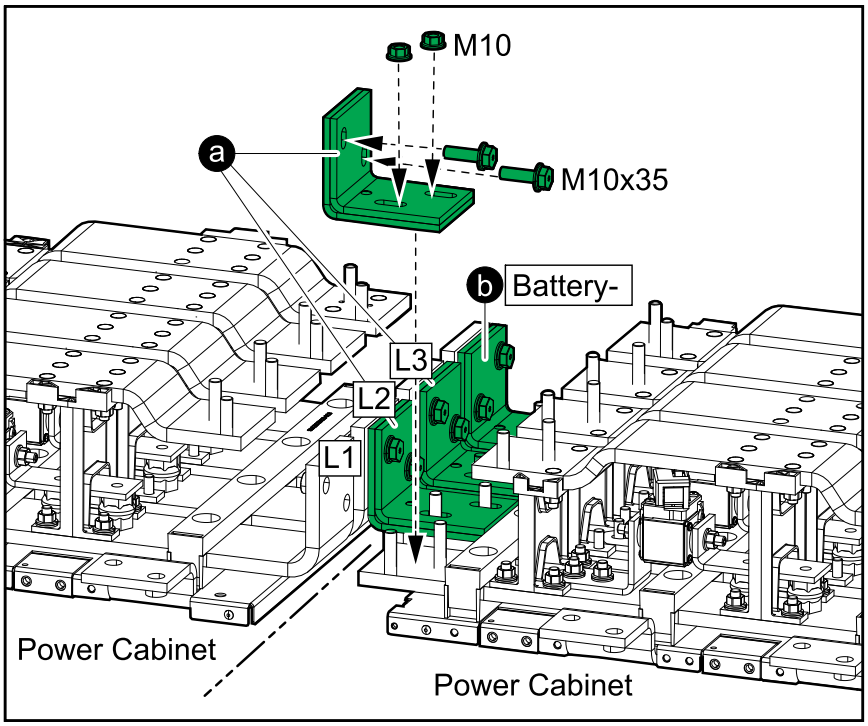
Front View of Two Power Cabinets with grounding Busbar 880-99027



2. Install the interconnection busbars from the installation kit 0H-0440, 0H-9162, or 0H-9102[10] between all power cabinets.

   a. Install the three input interconnection busbars 0M-97885.

Front View of the Busbar Connections

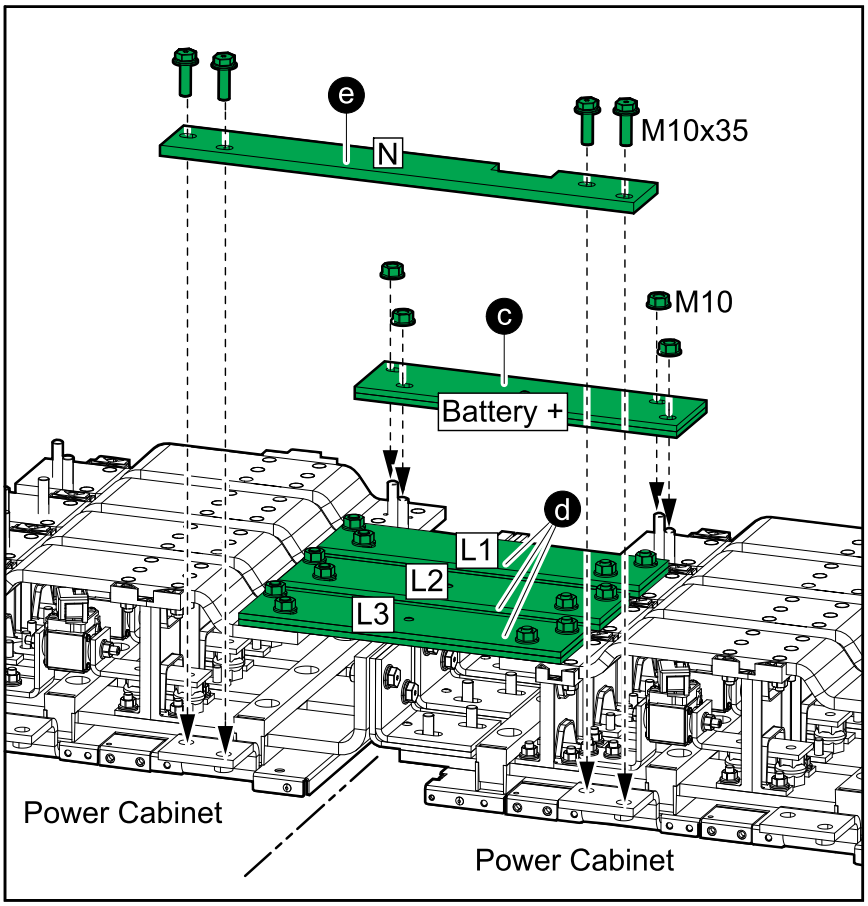


   b. Install the battery – interconnection busbar 0M-819336.

10. The part number is dependent on the power cabinet version.

c. Install the battery + interconnection busbar 0M-140035.

Front View of Busbar Connections



d. Install the output interconnection busbars 0M-97886.

e. Install the neutral interconnection busbar 880-10146 or 880-9720[11].

11. The part number is dependent on the power cabinet version.

Connect the Power Cables

Prepare the I/O Cabinet for Power Cables in Top Cable Entry Systems

⚠DANGER

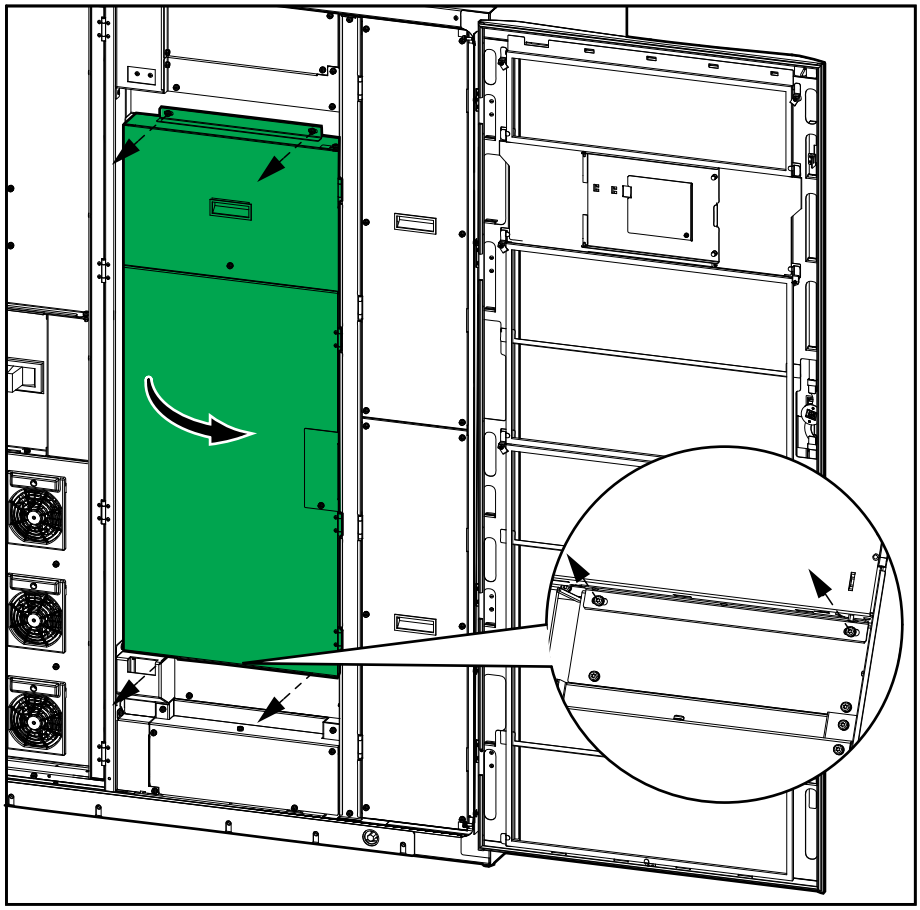
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS.

Failure to follow these instructions will result in death or serious injury.

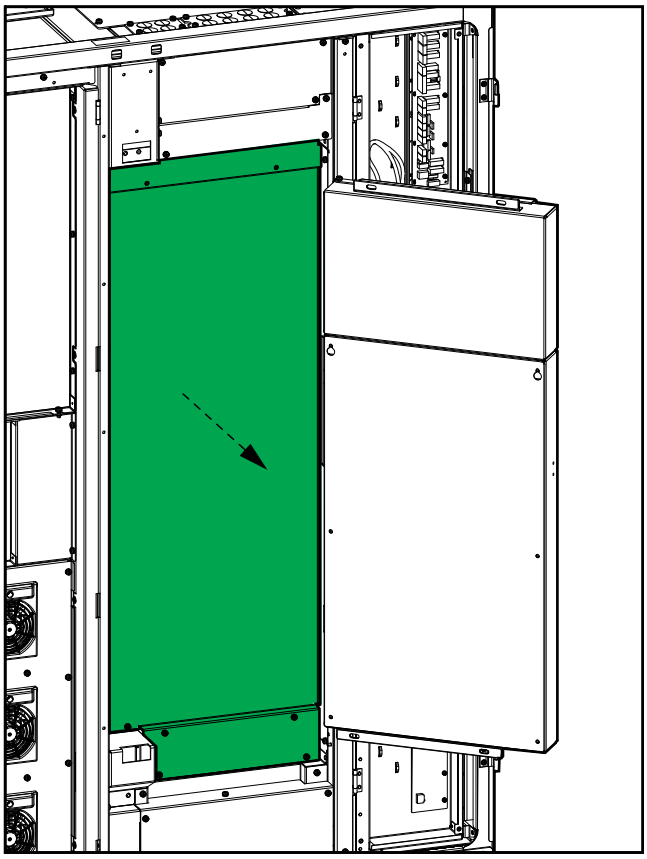
1. Open the front doors of the I/O cabinet.
2. Loosen the four screws and open the inner door.

Front View of the I/O Cabinet



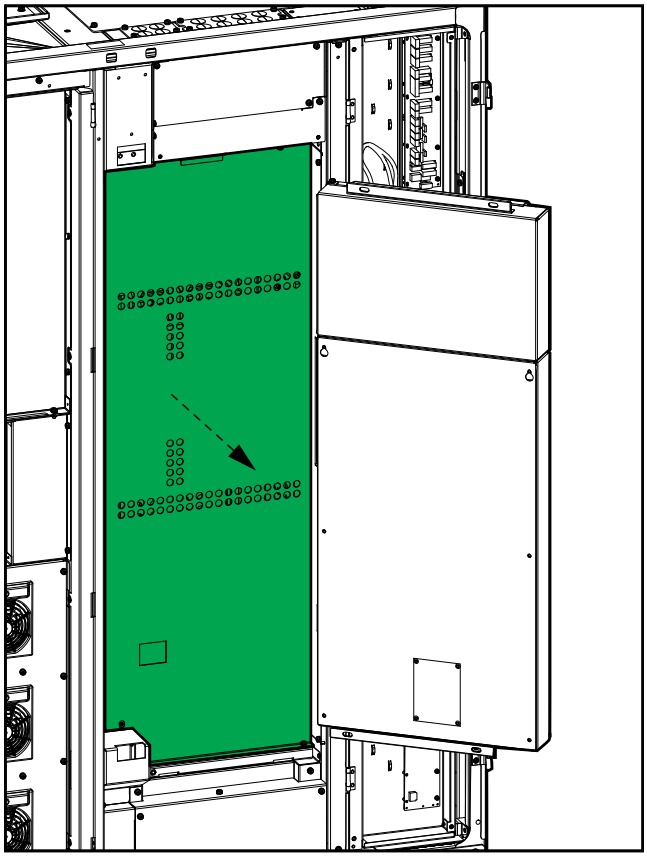
3. Remove the metal plate.

Front View of the I/O Cabinet



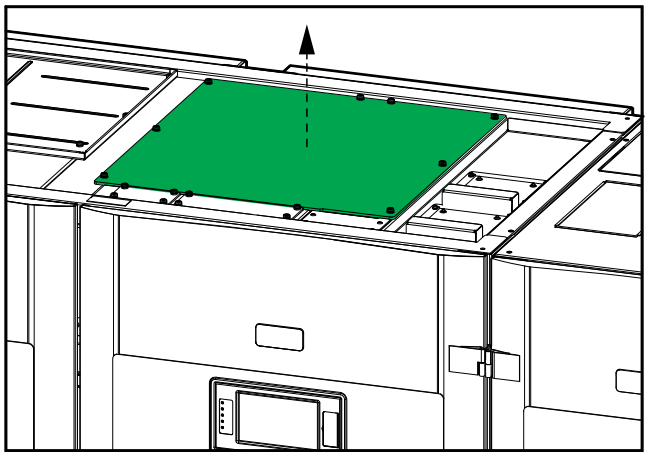
4. Remove the plastic plate.

Front View of the I/O Cabinet

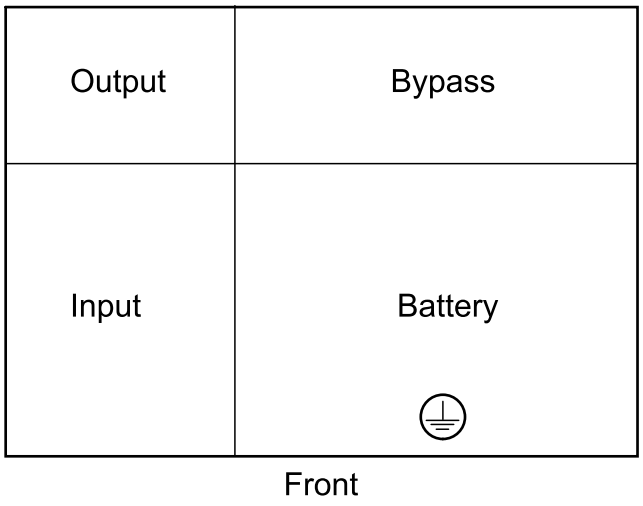


5. Loosen the bolts and remove the gland plate from the top of the I/O cabinet

Front View of the I/O Cabinet



6. Drill or cut holes for cables/conduits in the top gland plate according to the guidelines.



7. Install conduits and reinstall the top gland plate.

⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

Failure to follow these instructions will result in death or serious injury.

Prepare the I/O Cabinet for Power Cables in Bottom Cable Entry Systems

⚠DANGER

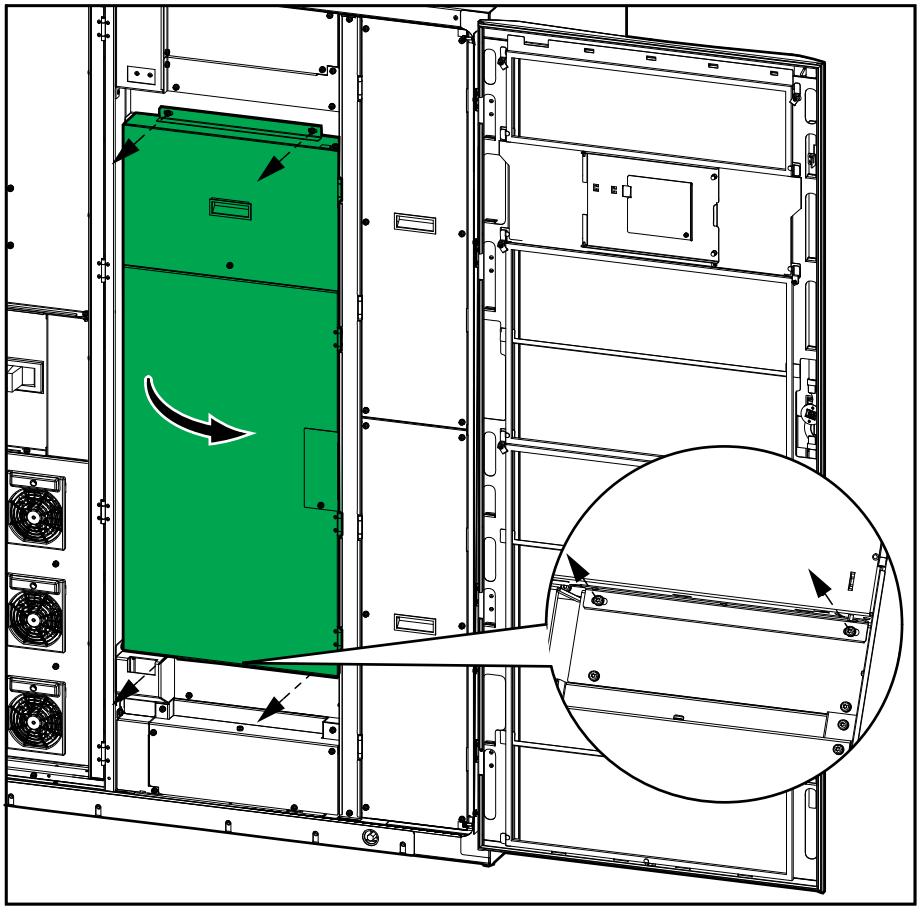
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Do not drill/punch holes for cables or conduits with the gland plates installed and do not drill/punch holes in close proximity to the UPS.

Failure to follow these instructions will result in death or serious injury.

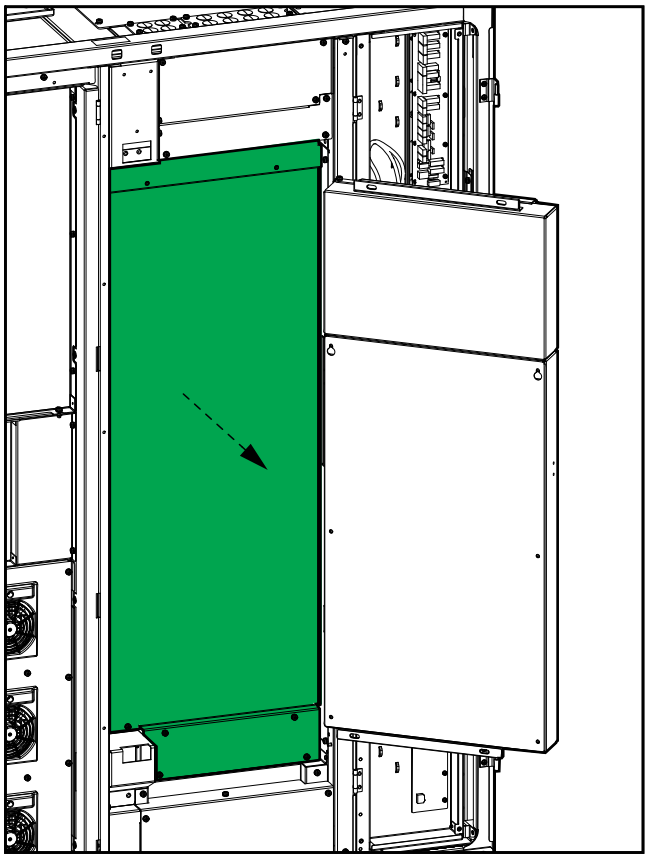
1. Open the front doors of the I/O cabinet.
2. Loosen the four screws and open the inner door.

Front View of the I/O Cabinet



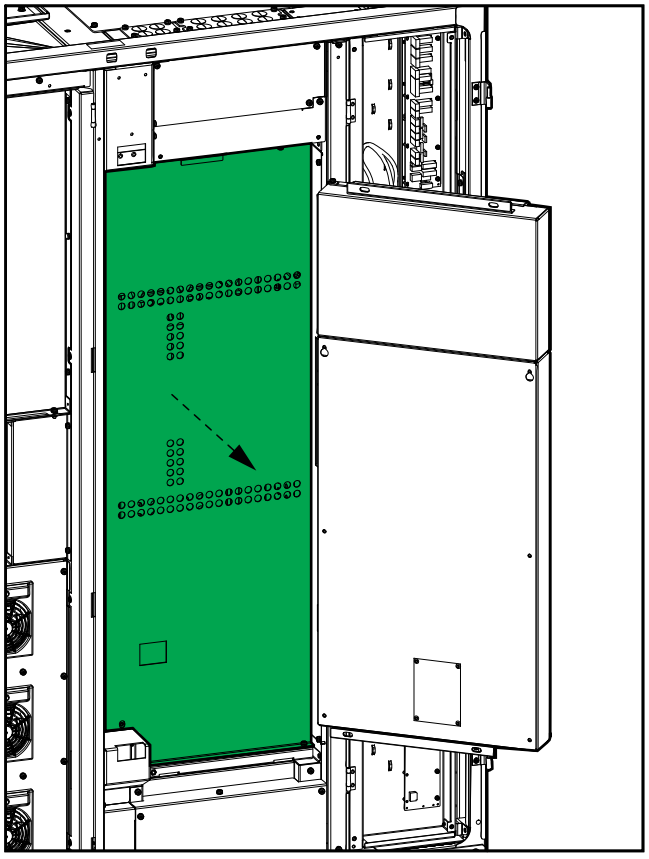
3. Remove the metal plate.

Front View of the I/O Cabinet



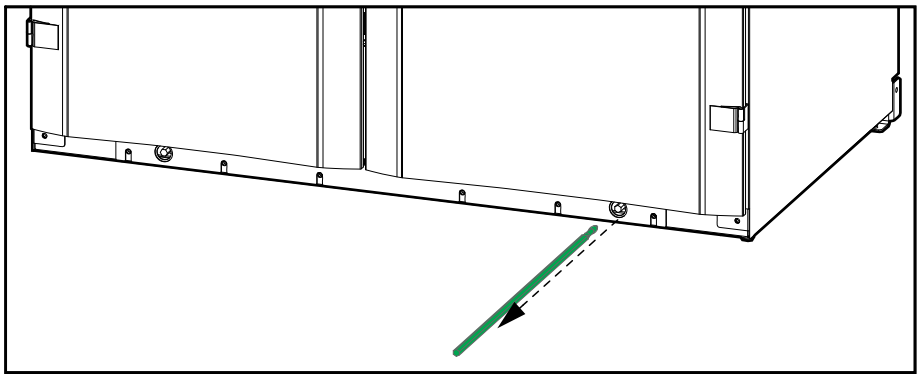
4. Remove the plastic plate.

Front View of the I/O Cabinet



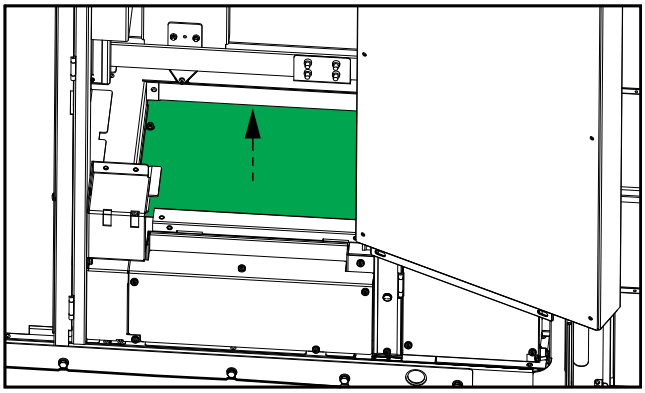
5. Remove the right rod of the I/O cabinet.

Front View of the I/O Cabinet

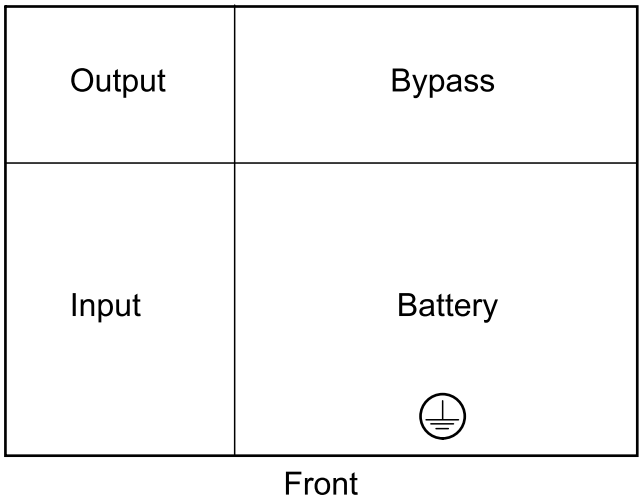


6. Loosen the bolts and remove the gland plate in the bottom of the I/O cabinet.

Front View of the I/O Cabinet



7. Drill or cut holes for cables/conduits in the bottom gland plate according to the guidelines.



8. Install conduits and reinstall the bottom gland plate.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

Ensure that there are no sharp edges that can damage the cables.

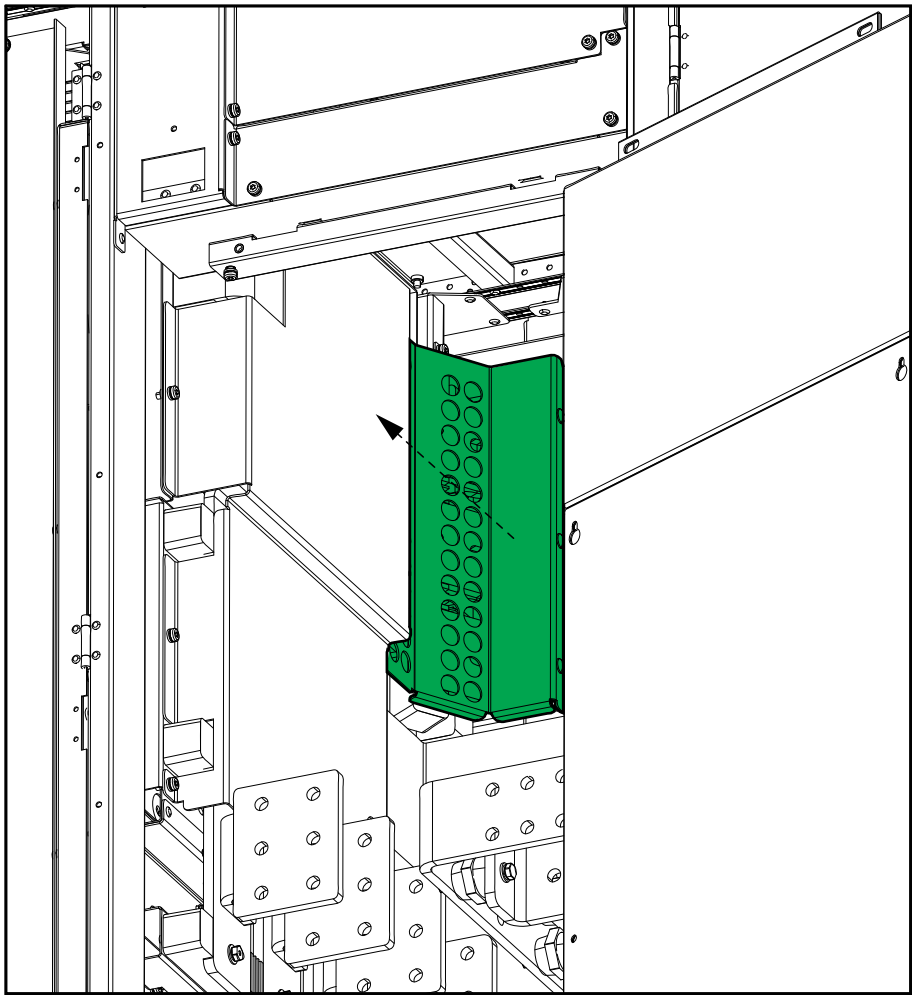
Failure to follow these instructions will result in death or serious injury.

Install the Single Utilty/Mains Kit GVXSFOPT1

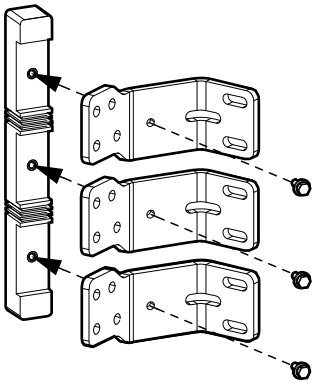
NOTE: This procedure is only applicable to single utility/mains systems.

1. Remove the indicated cover from the I/O cabinet.

Front View of the I/O Cabinet

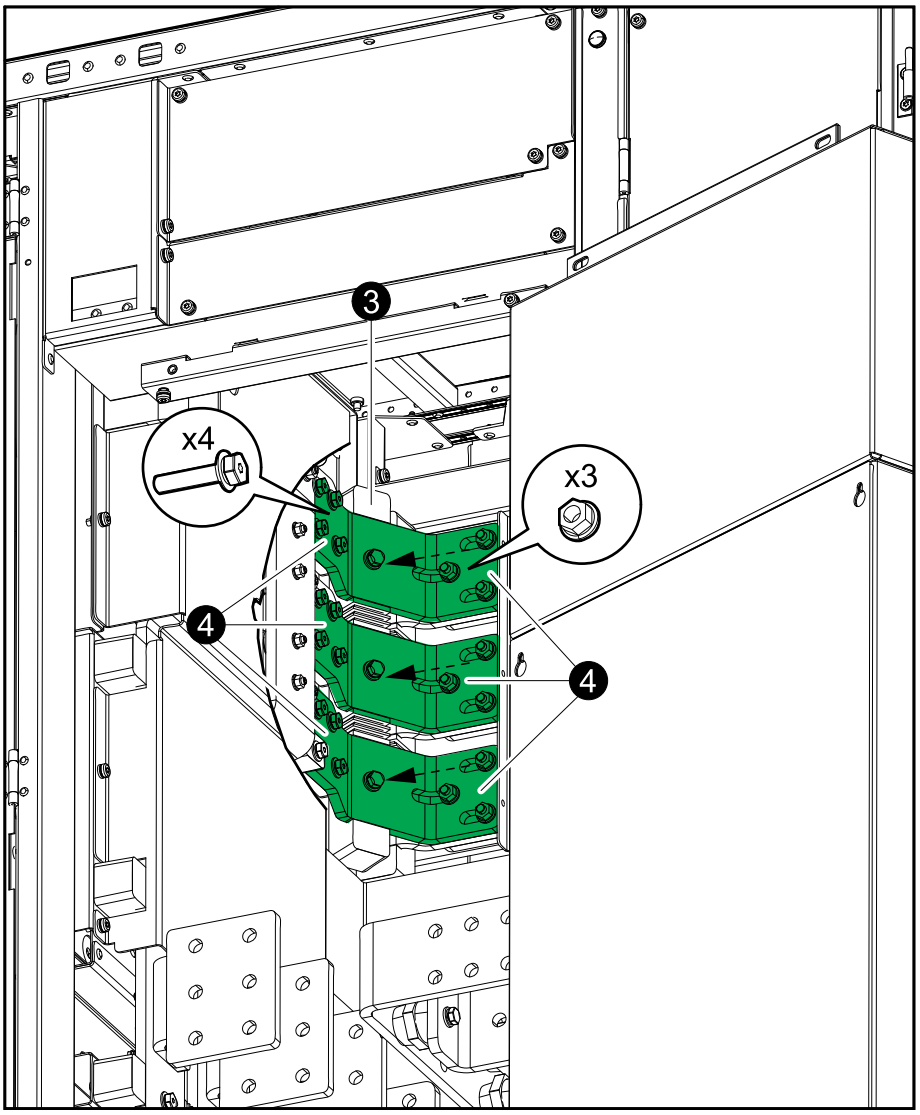


2. Assemble the single utility/mains kit and fasten with M8 bolts.



3. Install the single utility/mains assembly between the input and bypass busbars in the top of the I/O cabinet.

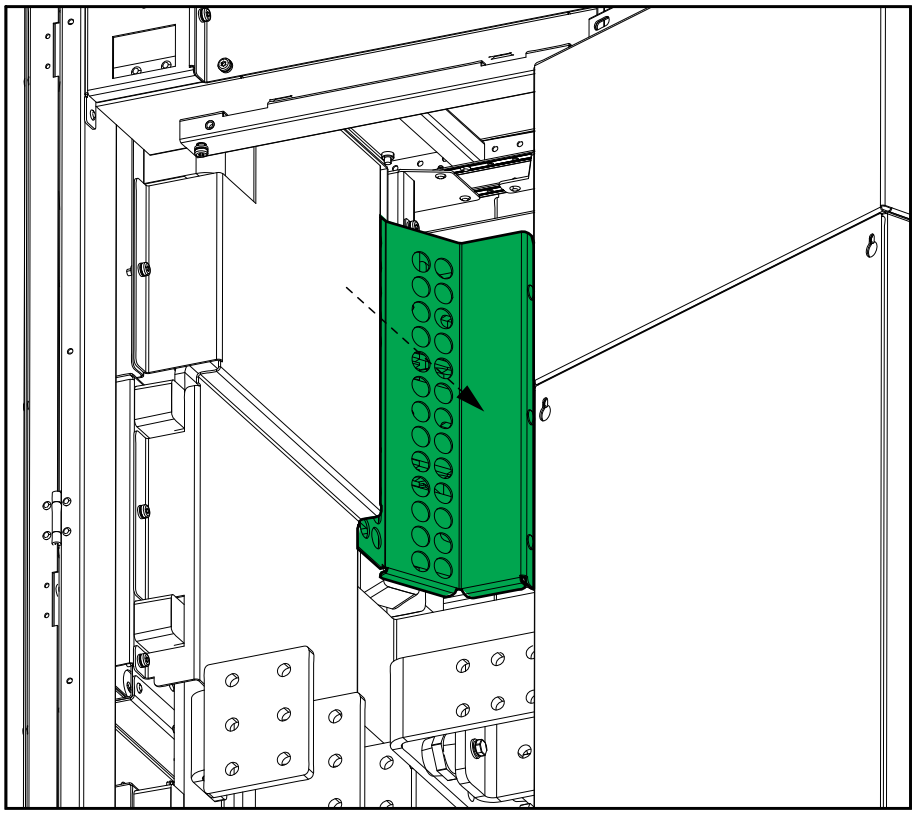
Front View of the I/O Cabinet



4. Fasten the assembly with four M10 bolts in the left side and three M8 nuts in the right side for each busbar.

5. Install the covers over the busbars.

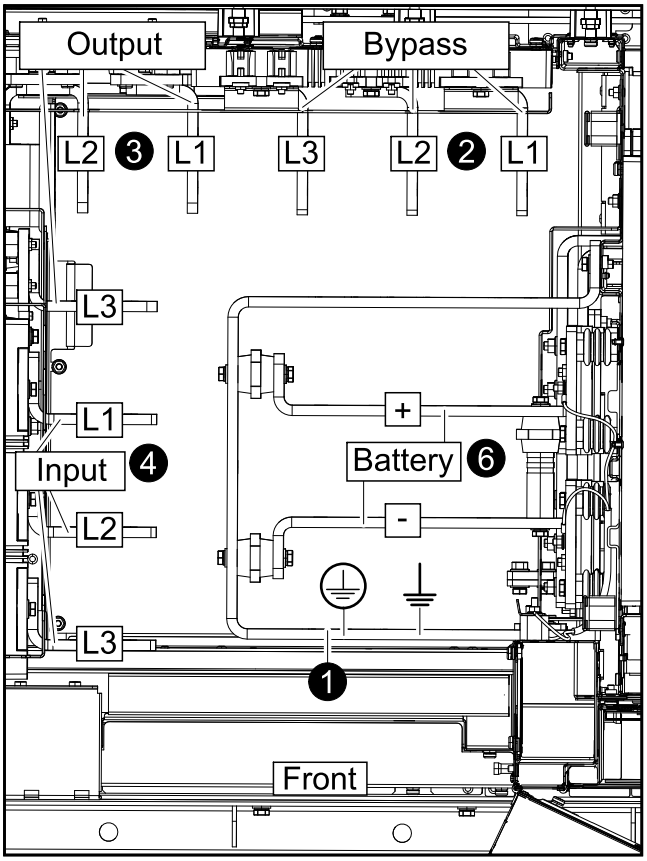
Front View of the I/O Cabinet



Connect the Power Cables

NOTE: For systems with maintenance bypass cabinet, refer to the maintenance bypass cabinet installation manual for information on how to connect the power cables.

Top View of the Power Connection Area in the I/O Cabinet



1. Connect the equipment ground conductor to the grounding busbar.
2. Only applicable to dual utility/mains systems: Connect the bypass cables (L1, L2, L3, G).
3. Connect the output cables (L1, L2, L3, G).
4. Connect the input cables (L1, L2, L3, G).

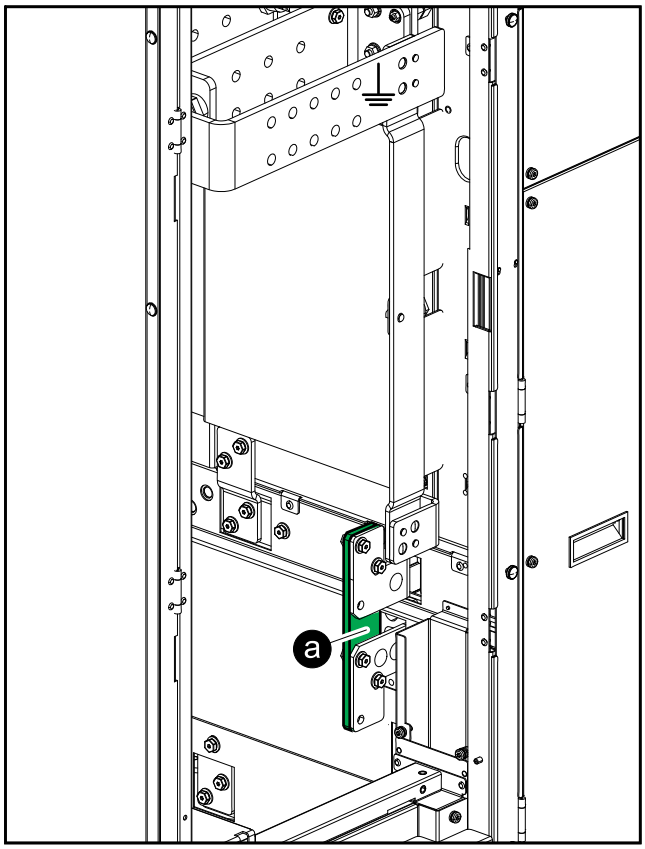
5. In high impedance grounding systems only:

   NOTE: For high impedance grounding systems, the installation must include a ground-fault detection circuitry.

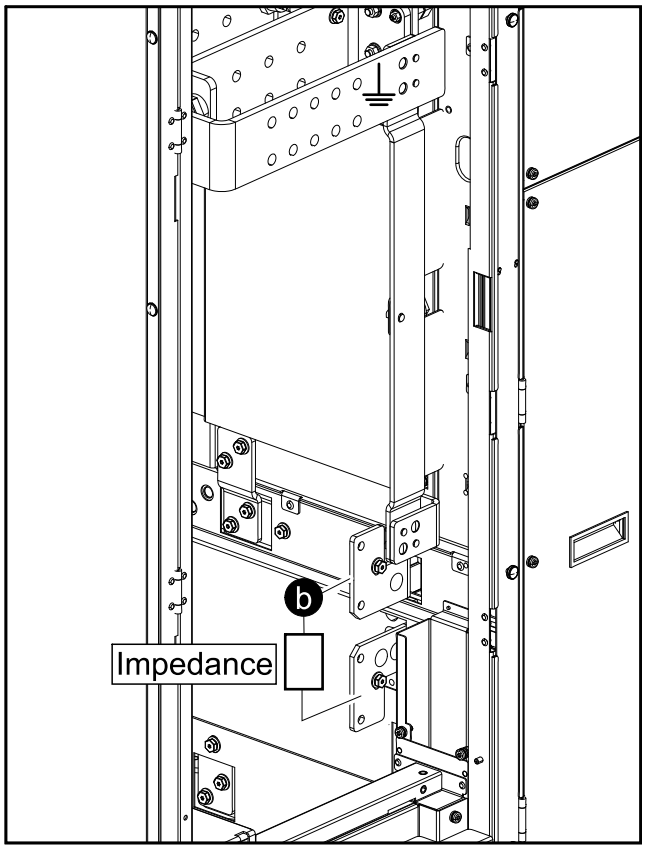
   a. Remove the jumper busbar.

   b. Connect an external impedance between the “E” terminal and the equipment grounding terminal according to NEC 2014 article 250.36.

Front View of the I/O Cabinet



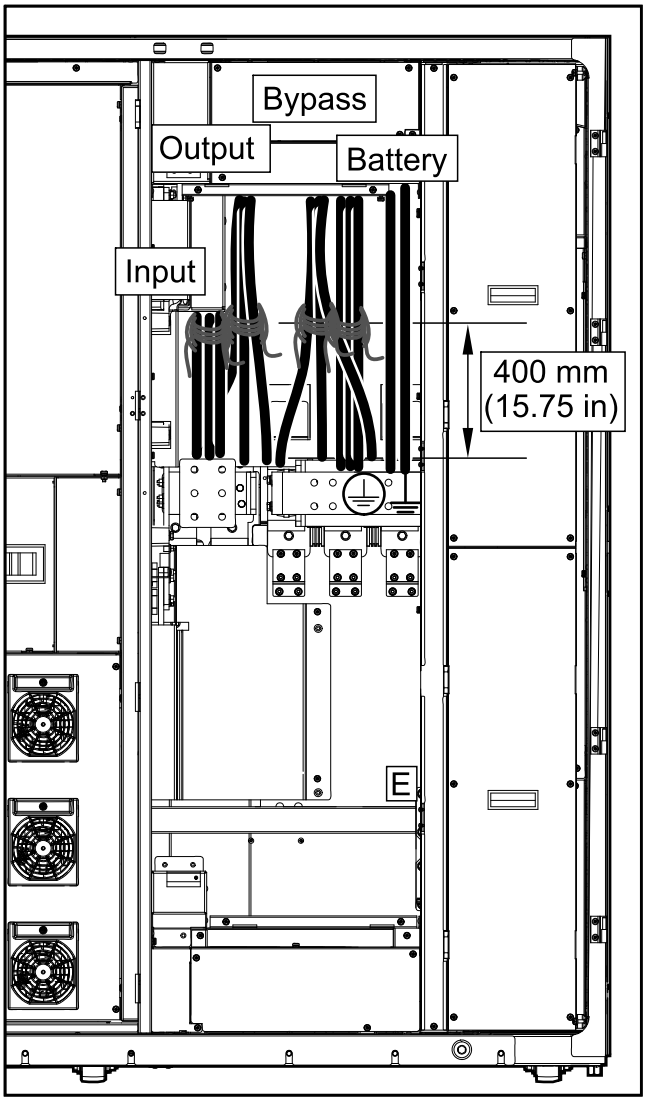
Front View of the I/O Cabinet



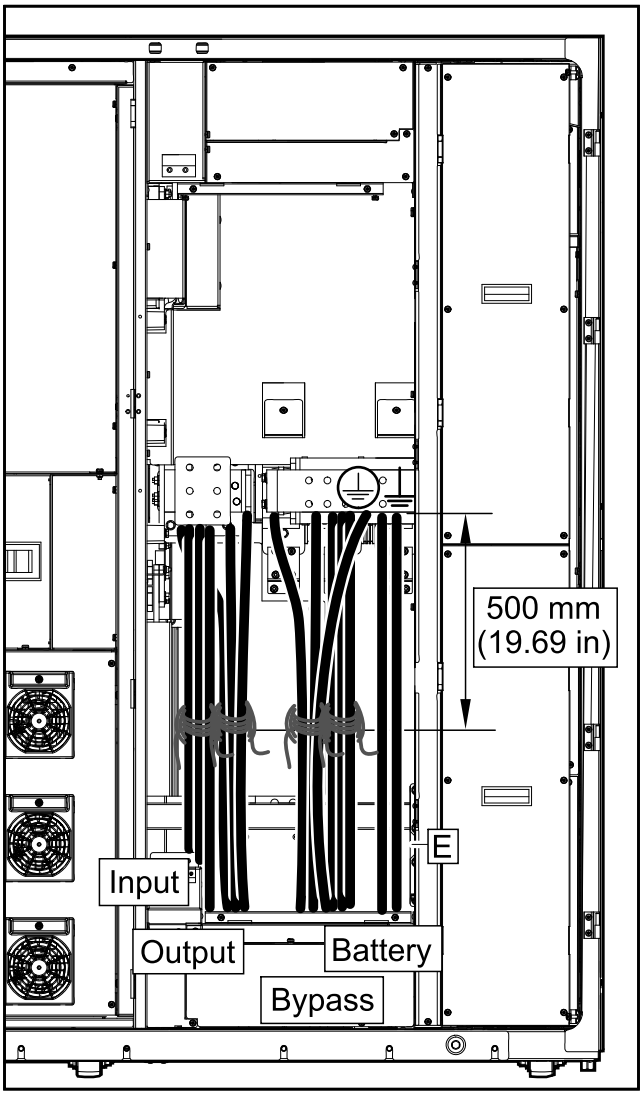
6. Connect the battery cables to the battery + and battery – terminals.

7. Restrain the cables as described in *Restrain the Cables, page 67*.

Front View of the I/O Cabinet in a Top Cable Entry System



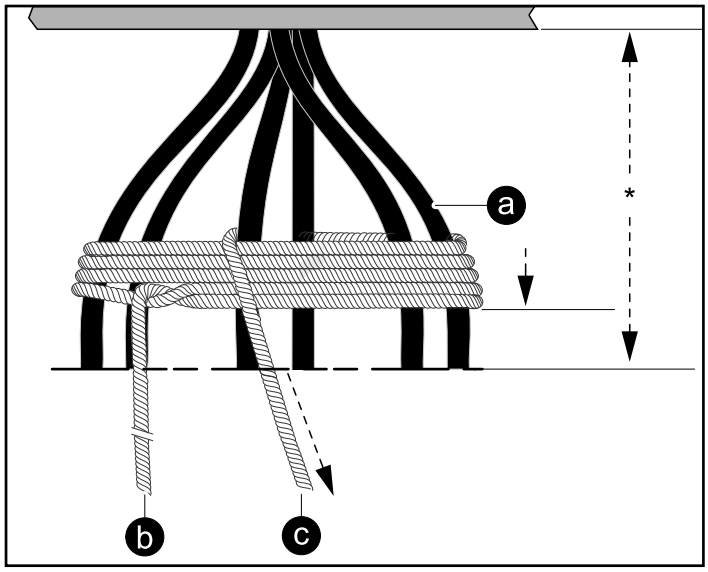
Front View of the I/O Cabinet in a Bottom Cable Entry System



Restrain the Cables

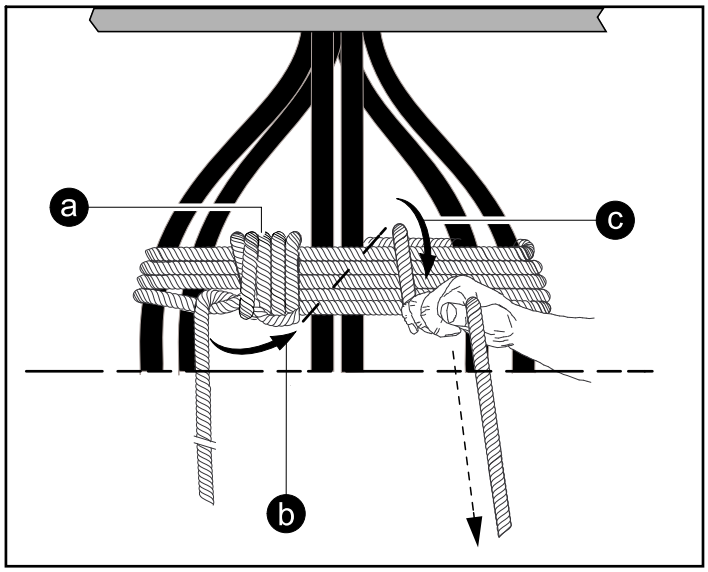
Use 3/8 in nylon rope to restrain the cables.

1. Wrap the rope around the cables (a). Wrap the cables four times leaving 1 m (3 ft) of excess rope at the first end (b). Pull rope (c) taut.

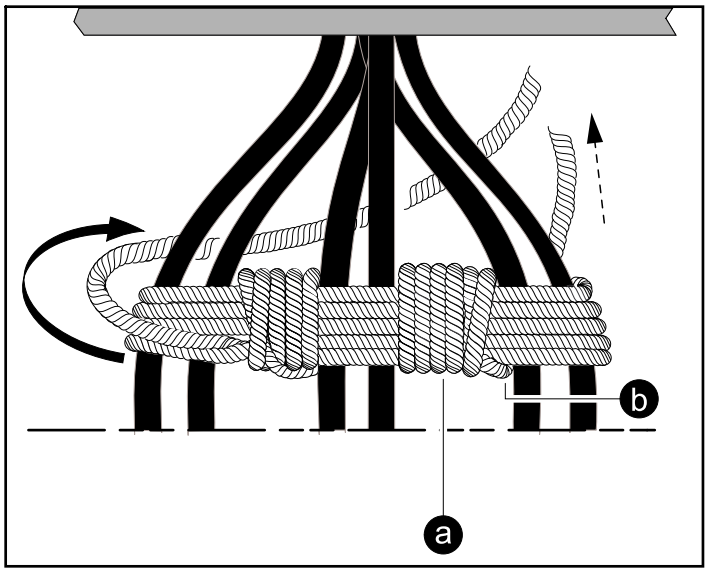


* Unsupported cable length.

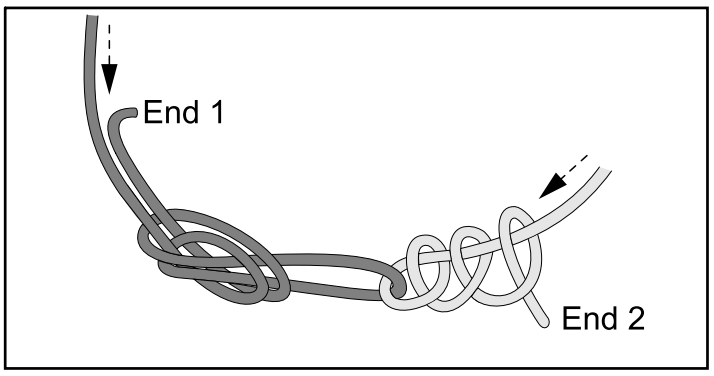
2. Wrap rope (a) several times until the space between the first two sets of cables is completely filled. Weave final rope loop underneath the previous loop (b). Bring rope (c) through the other open area and pull the rope taut.



3. Wrap rope (a) several times until the space between the second and the third set of cables is completely filled. Wave the final rope loop (b) underneath the previous loop as shown. Pull the rope taut.



4. Tie rope End 1 and End 2 together as shown. The rope must be taut. Cut off excess rope and tape ends to prevent fraying.

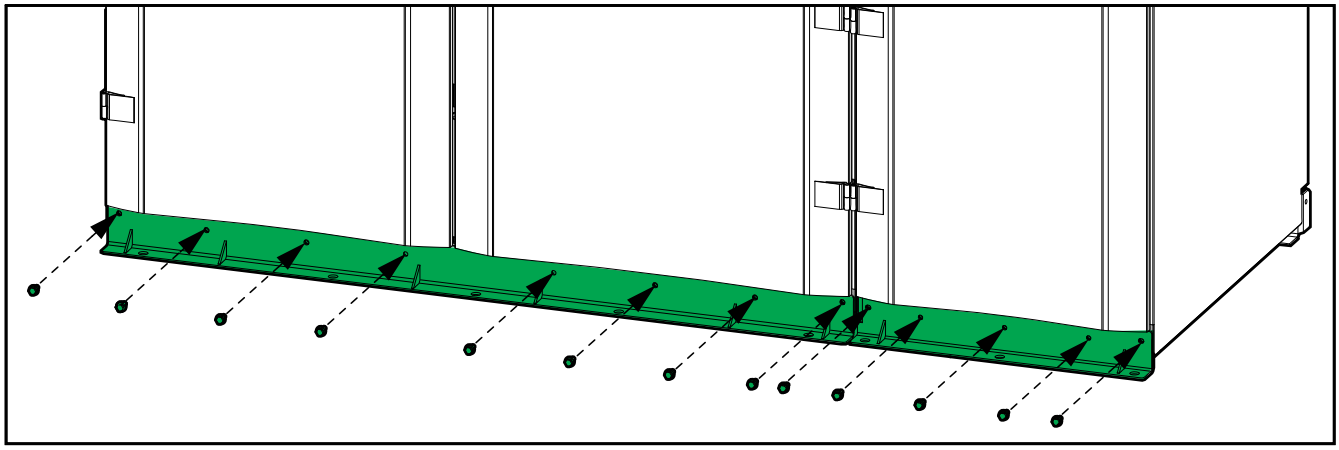


5. Repeat the procedure where needed.

Mount the Front Anchoring Brackets

1. Fasten the front anchoring brackets to the front of the cabinets using the provided bolts.

Front View of the I/O Cabinet and the Power Cabinet



2. Anchor the front anchoring brackets to the floor.

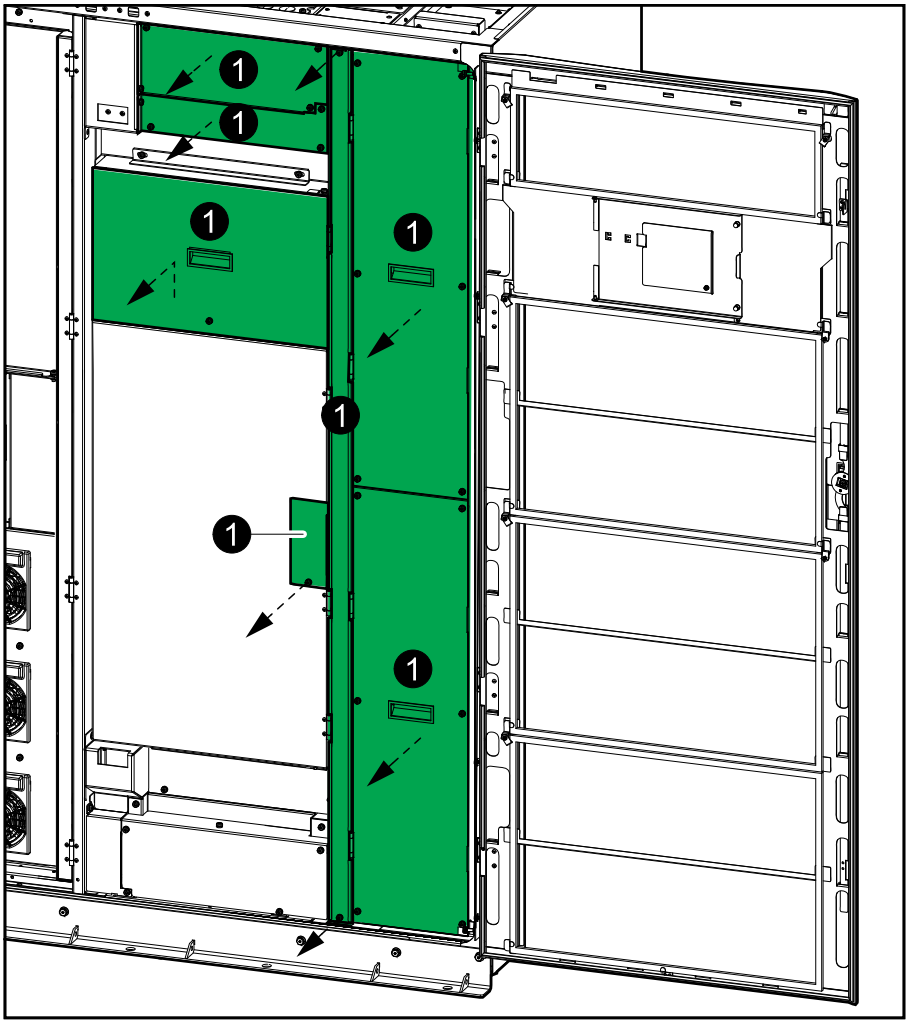
   NOTE: Floor anchoring bolts are not supplied.

Connect the Signal Cables

Prepare the I/O Cabinet for Signal Cables in Top Cable Entry Systems

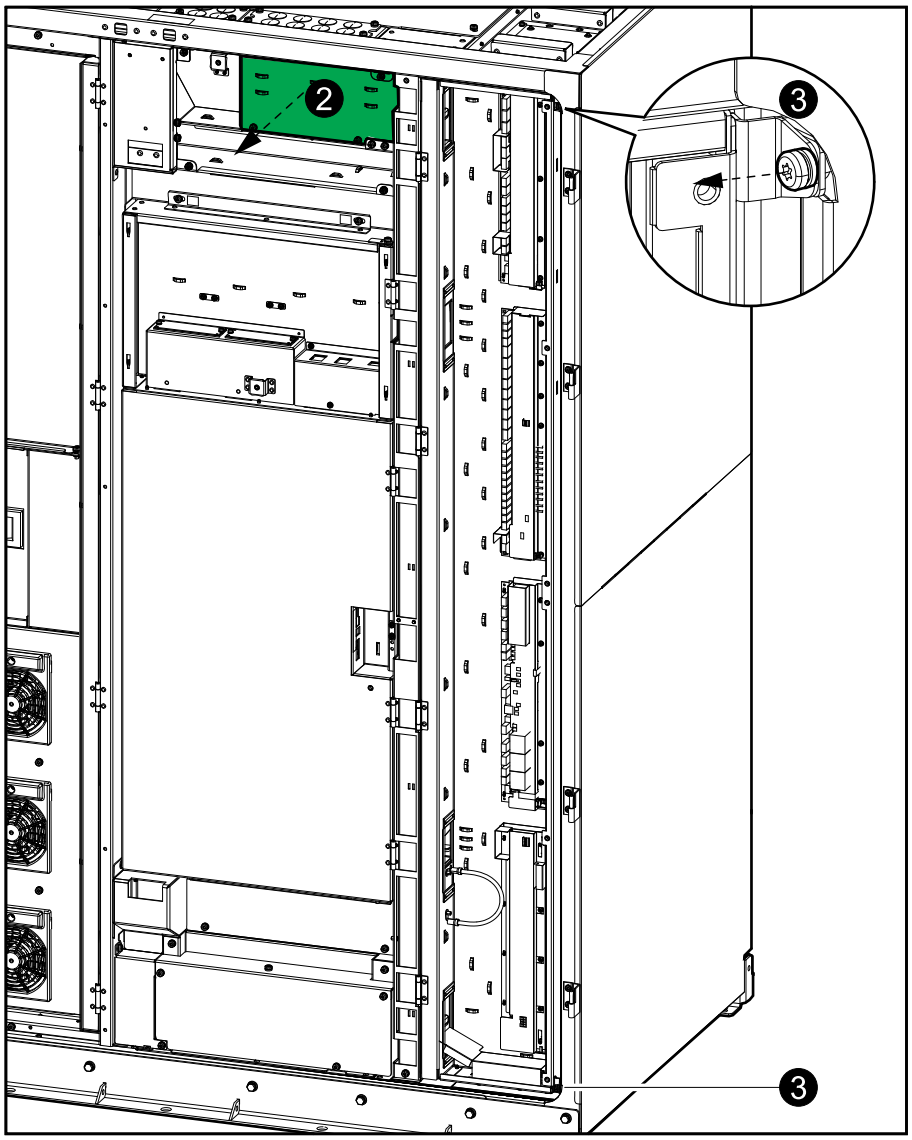
1. Remove the seven indicated plates.

Front View of the I/O Cabinet



2. Remove the indicated plate.

Front View of the I/O Cabinet

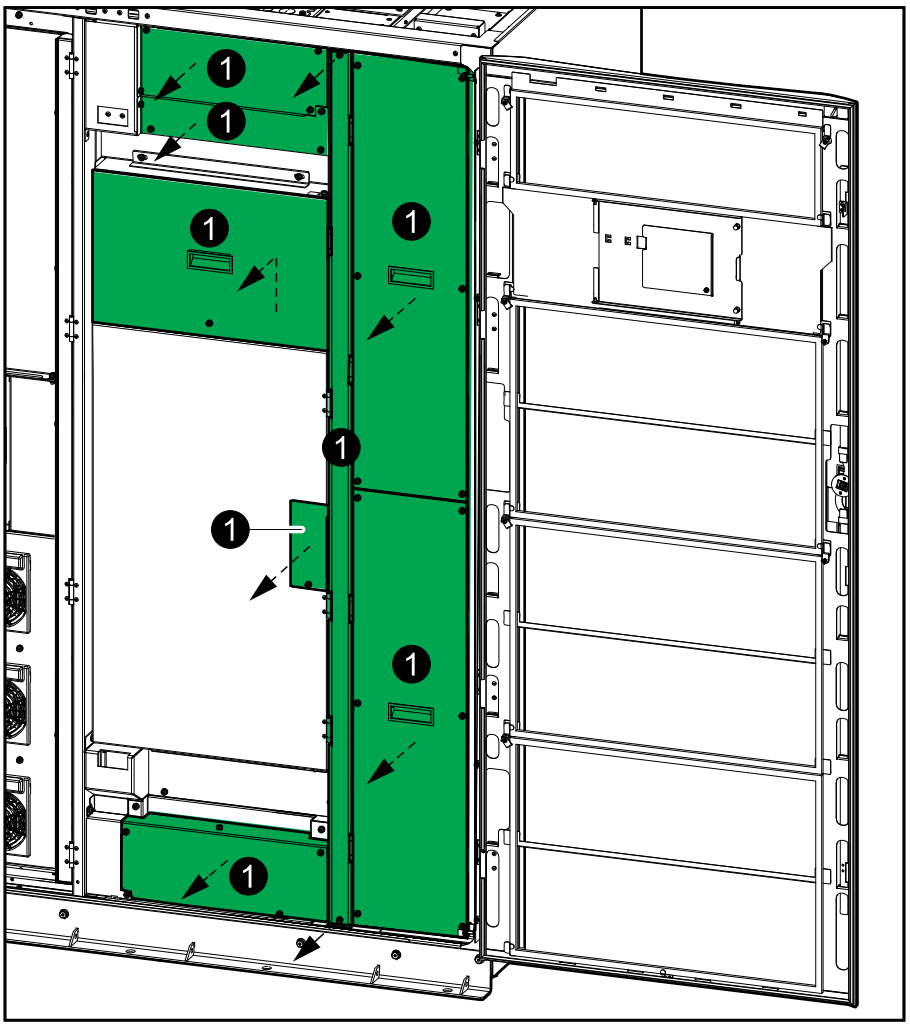


3. Loosen and remove the two screws and open the door.

Prepare the I/O Cabinet for Signal Cables in Bottom Cable Entry Systems

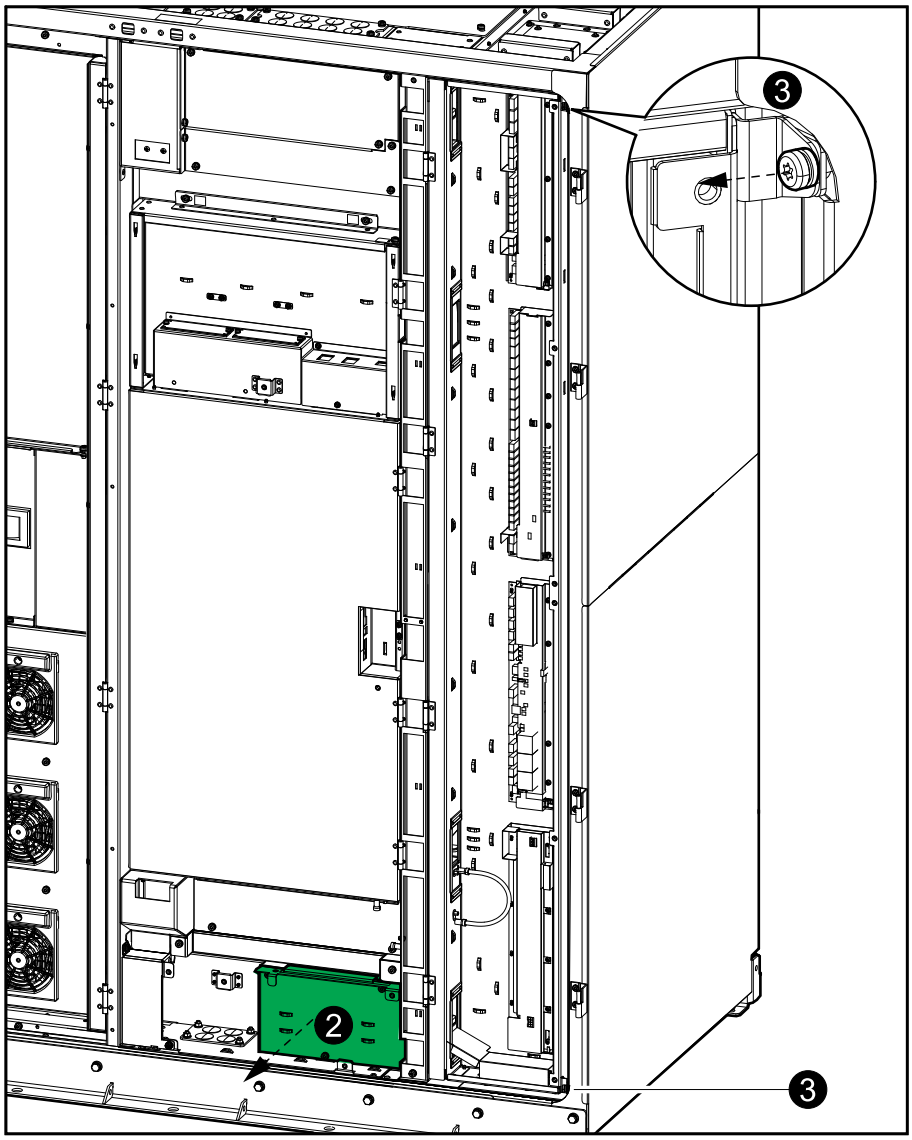
1. Remove the eight indicated plates.

Front View of the I/O Cabinet



2. Remove the indicated plate.

Front View of the I/O Cabinet

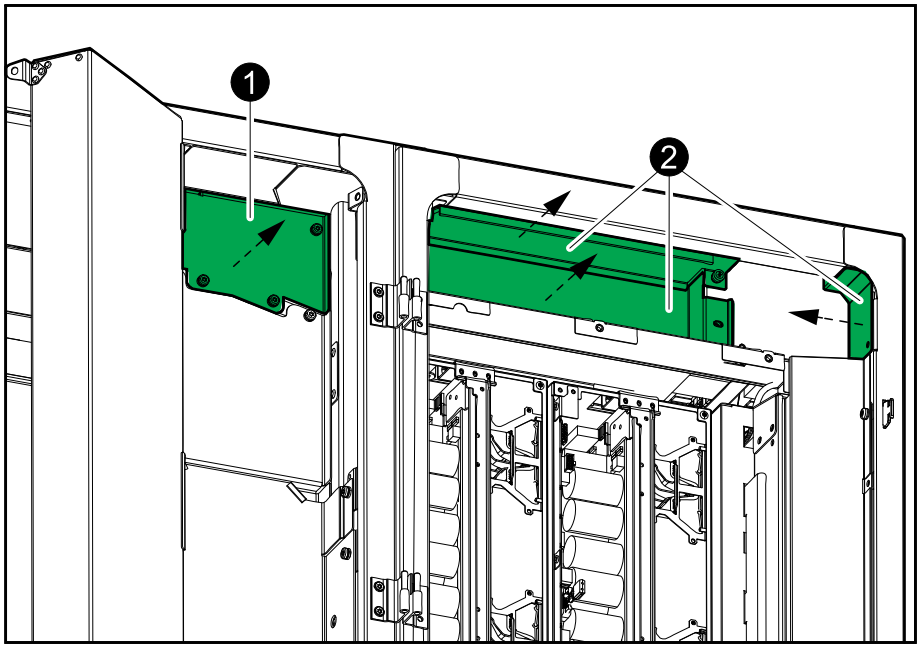


3. Loosen and remove the two screws and open the door.

Connect Signal Cables between the I/O Cabinet and the Power Cabinets

1. Remove the indicated plate from the I/O cabinet.

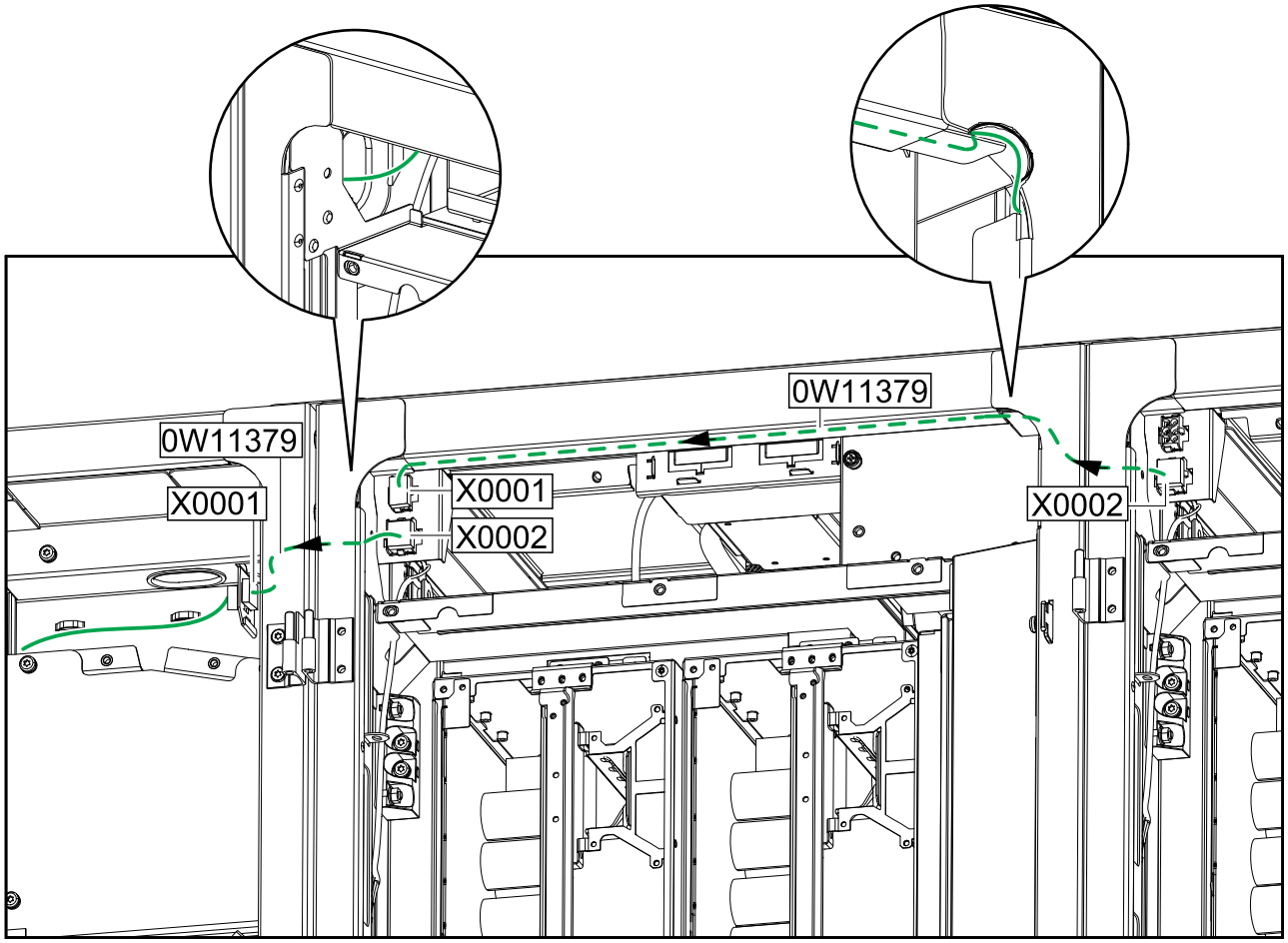
Front View of the I/O Cabinet and the Left–Most Power Cabinet



2. Remove the three indicated plates from the power cabinets.

3. Route and connect the two system power cables 0W11379 that are shipped in the power cabinets:
   a. Connect the first 0W11379 signal cable from X0002 in the left-most power cabinet to X0001 in the I/O cabinet.
   b. Connect the second 0W11379 signal cable from X0002 in the next power cabinet to X0001 in the left-most power cabinet.

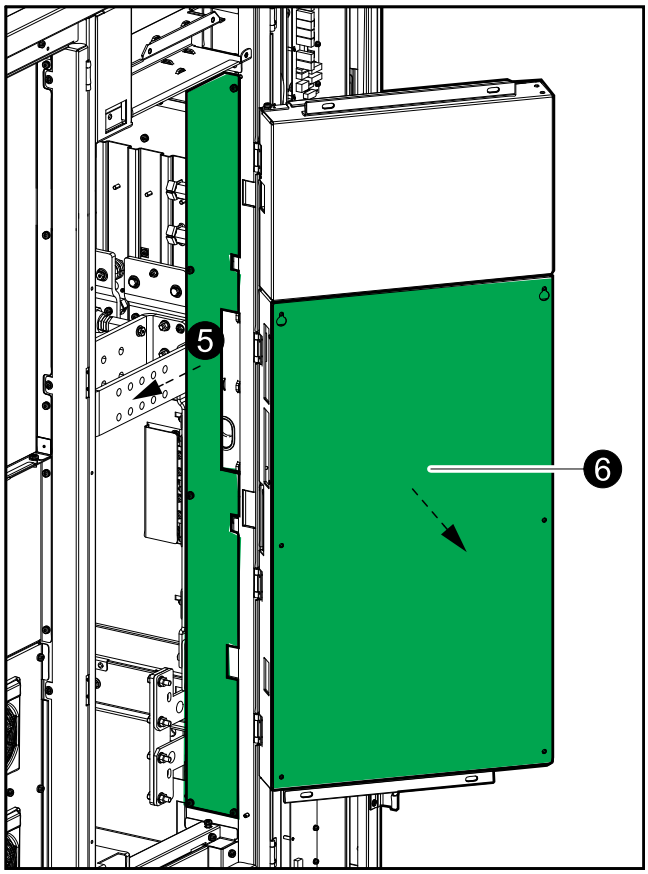
Front View of the I/O Cabinet, Power Cabinet 1, and Power Cabinet 2



4. Open the wide door in the I/O cabinet.

5. Remove the plate in front of the cable channel.

Front View of the I/O Cabinet



6. Remove the plate in front of the communication board.

7. Connect the signal cables in the power cabinets:

   NOTE: Maximum bending radius: 50 mm.

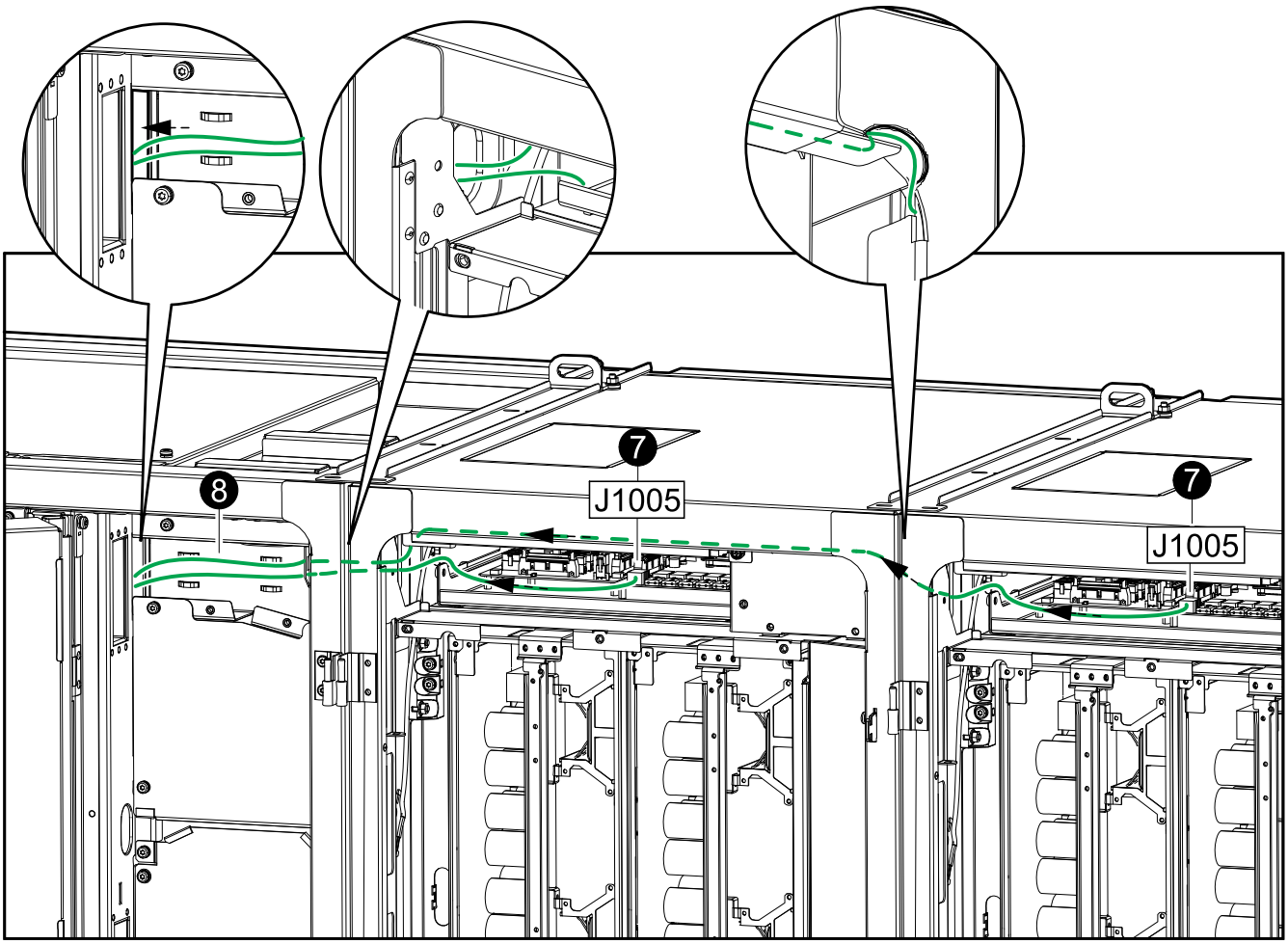
   a. Connect 0W11378 to 640–6515 J1005 in power cabinet 1.

   b. Connect 0W11384 to 640–6515 J1005 in power cabinet 2.

   c. Connect 0W11385 to 640–6515 J1005 in power cabinet 3.

   d. Connect 0W12213 to 640–6515 J1005 in power cabinet 4.

Front View of the I/O Cabinet, Power Cabinet 1, and Power Cabinet 2

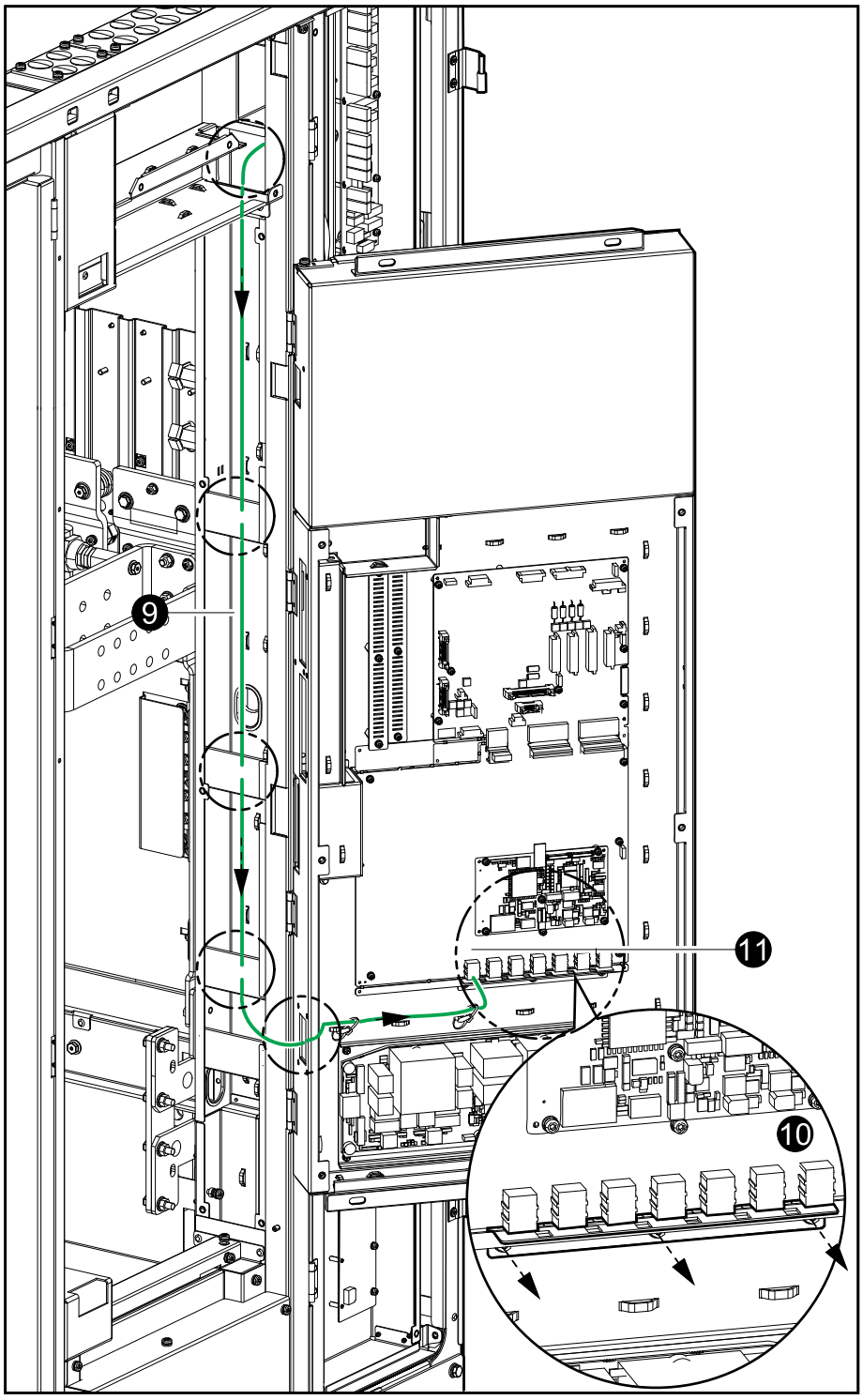


8. Open the narrow door and route the signal cables into the I/O cabinet as shown on the illustration and fasten with the provided cable ties.

9. Route the signal cables to the connection plane in the door.

10. Remove and dispose of the plastic plate below the terminals.

Front View of the I/O Cabinet



11. Open the door to ensure that the cables will not be too tight and connect the four signal cables in the I/O cabinet and fasten with cable ties:

NOTE: Maximum bending radius: 50 mm.

a. Connect 0W11378 to 640–6502 J1100.

b. Connect 0W11384 to 640–6502 J1101.

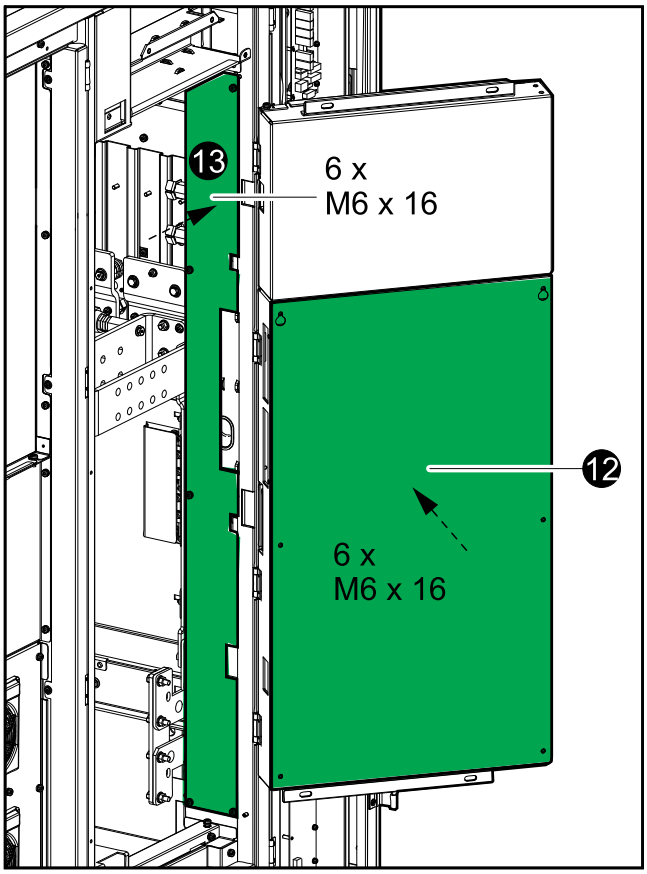
c. Connect 0W11385 to 640–6502 J1102.[12]

d. Connect 0W12213 to 640–6502 J1103 (only used in redundant systems).

12. Save this cable if your system is an expandable system.

12. Reinstall the plate in front of the communication board.

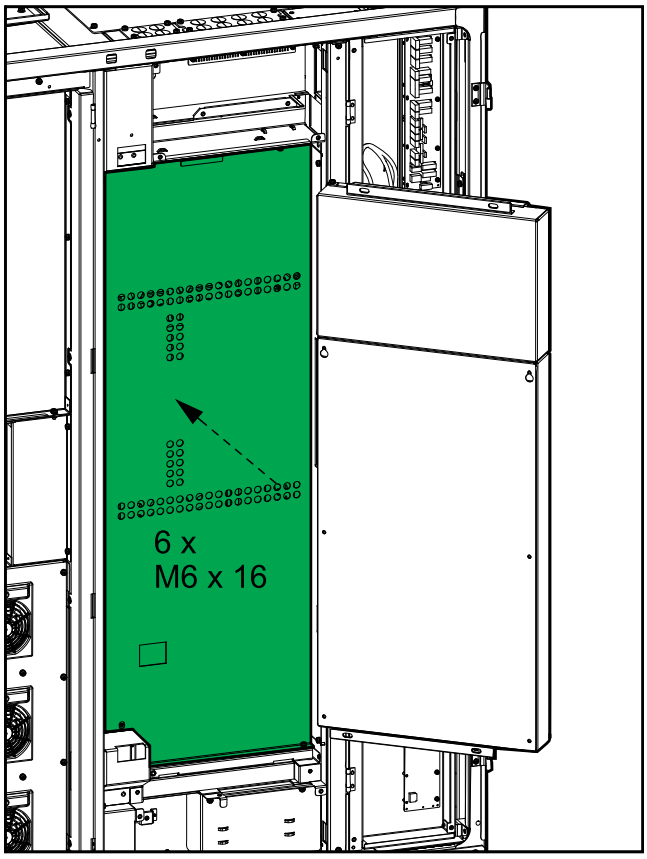
Front View of the I/O Cabinet



13. Reinstall the plate in front of the cable channel.

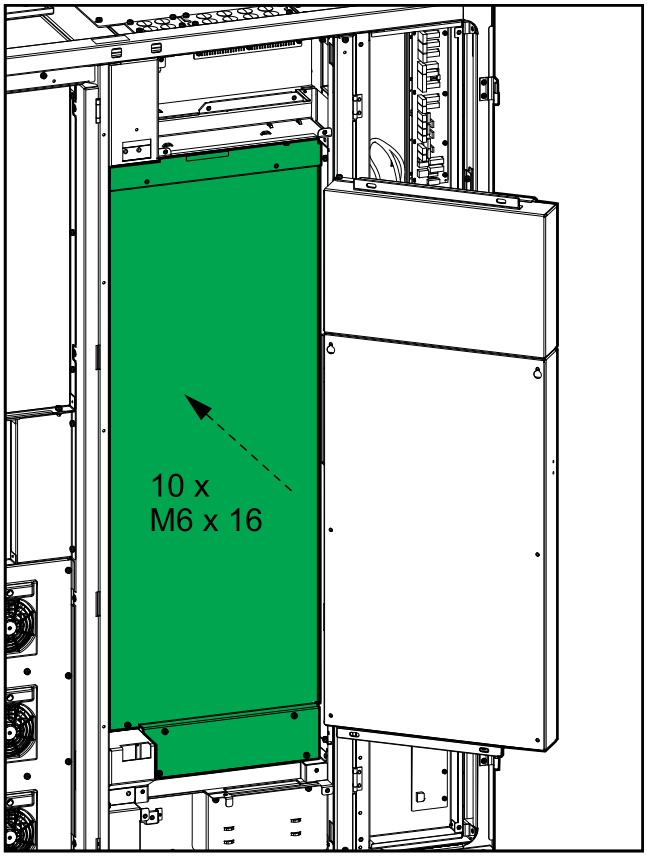
14. Install the plastic plate.

Front View of the I/O Cabinet



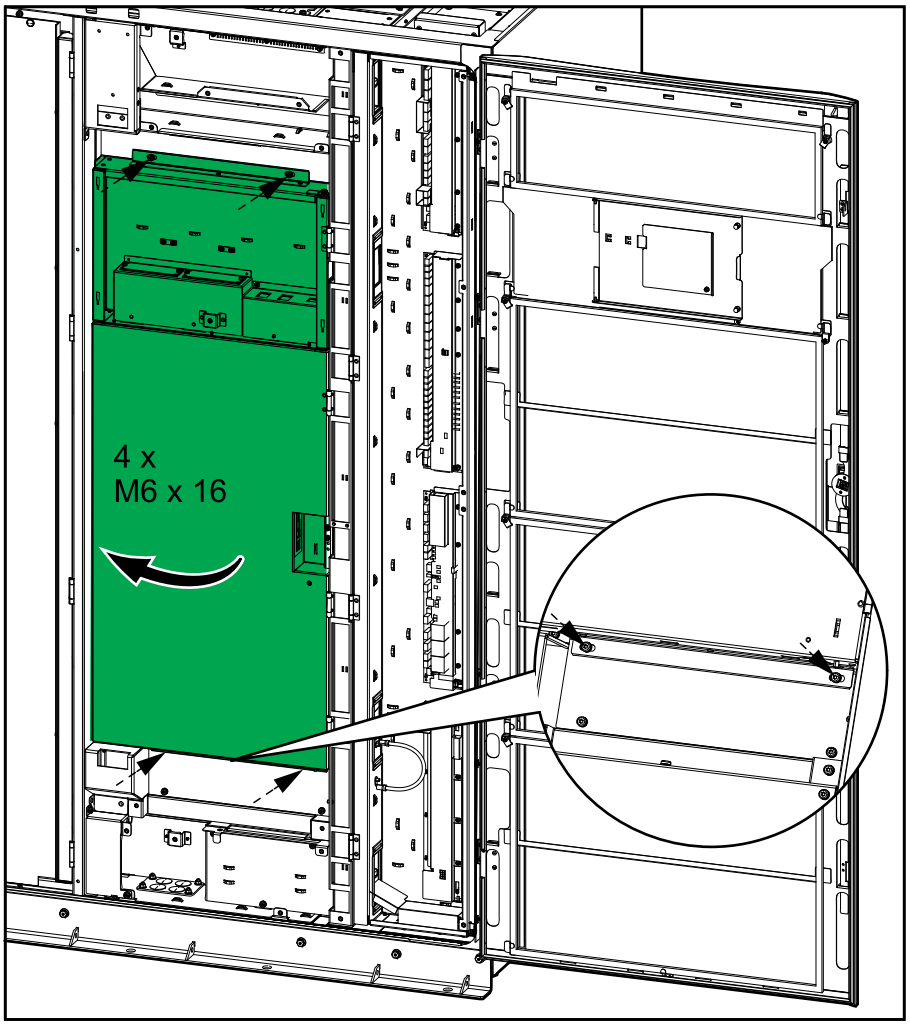
15. Install the metal plate.

Front View of the I/O Cabinet



16. Close the inner door and fasten with screws.

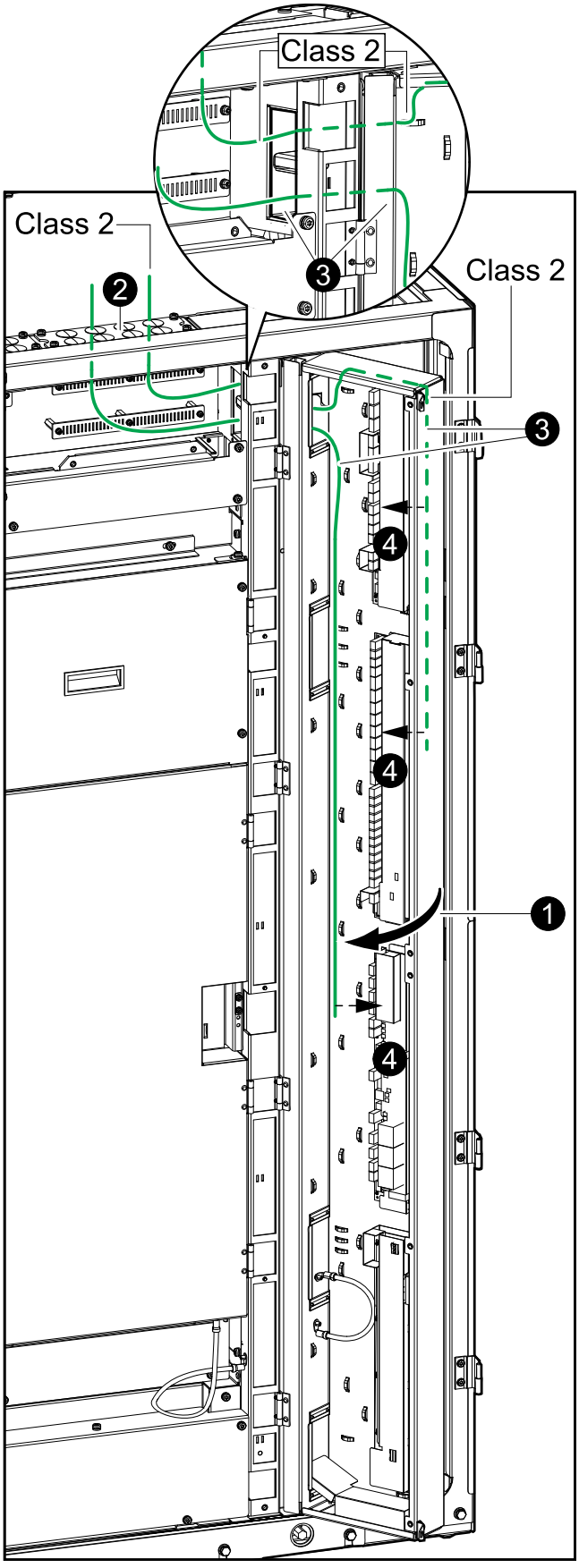
Front View of the I/O Cabinet



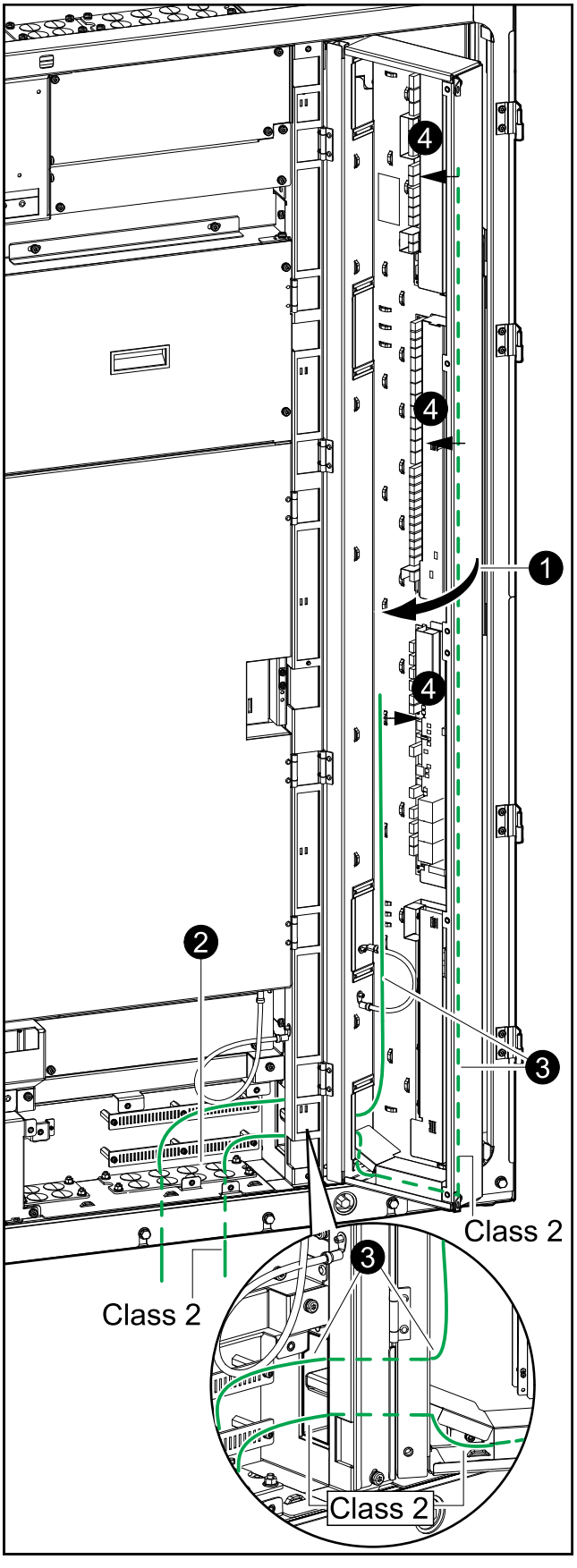
Connect Signal Cables between the I/O Cabinet and the Switchgear

NOTE: This procedure is only for systems that do not have the Schneider Electric maintenance bypass cabinet. For systems with maintenance bypass cabinet, follow the procedure in the Maintenance Bypass Cabinet Installation Manual.

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems

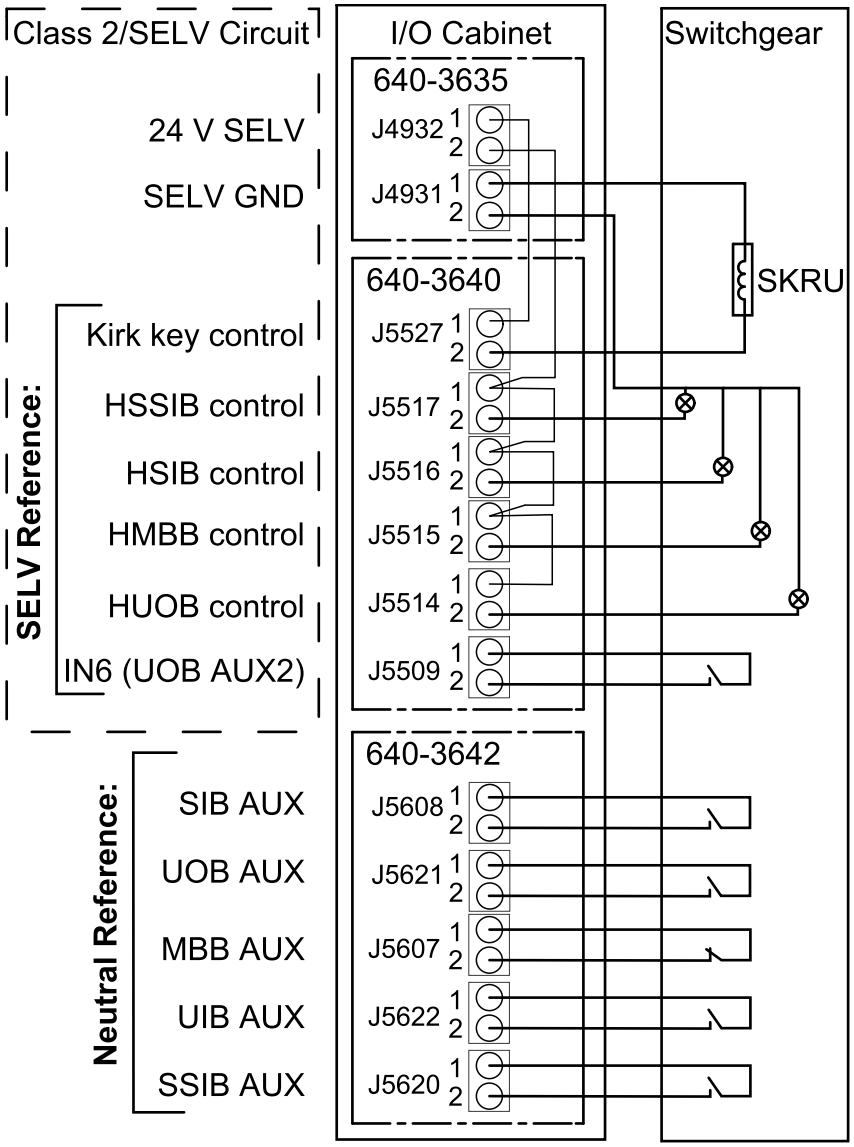


1. Open the door to ensure that the cables will not be too tight.

2. Remove the plugs from either the top or bottom of the I/O cabinet and install conduits.
3. Route the cables from the switchgear through the top or bottom of the I/O cabinet and to boards 1, 2, and 3 from the top. Class 2 circuit must be separated from other cables.
4. Connect the below signal cables between the I/O cabinet and the switchgear.

   NOTE: The UOB must include two separated auxiliary switches.

   All circuits connected must have the same 0 V reference.



Connect the Signal Cables for Battery Solutions

Connect the Signal Cables between the I/O Cabinet and the Classic Battery Cabinets

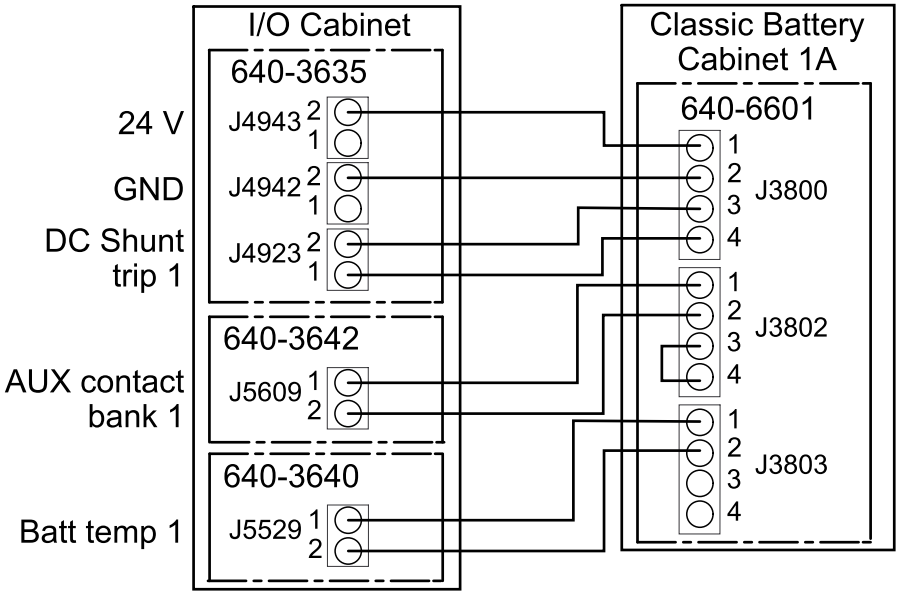
NOTE: The procedure below shows a system with four battery banks each consisting of one classic battery cabinet. Connect signal cables according to the number of classic battery cabinets in your installation.

NOTE: In the example below the two provided temperature sensors are installed in classic battery cabinet 1 and classic battery cabinet 3. The temperature sensors can be installed in any of the classic battery cabinets.

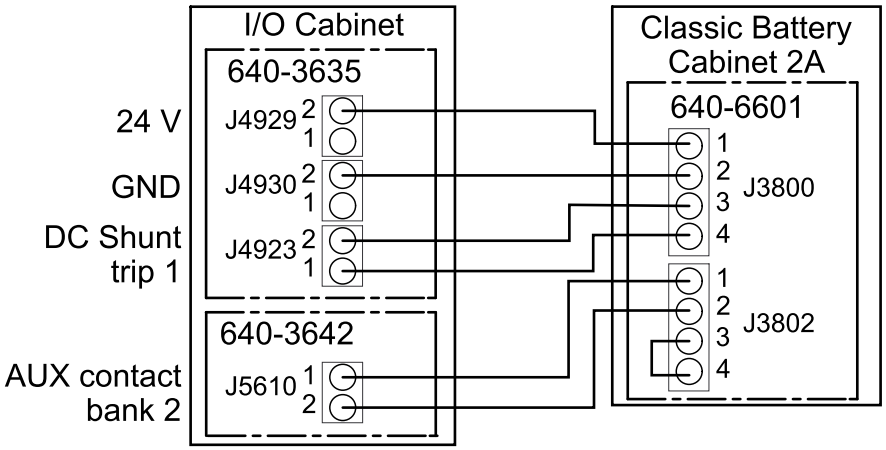
NOTE: If you have two classic battery cabinets in your battery bank, see *Connect the Signal Cables between Two Classic Battery Cabinets in One Battery Bank,*

page 85 for information on how to connect signal cables between two classic battery cabinets in one battery bank.

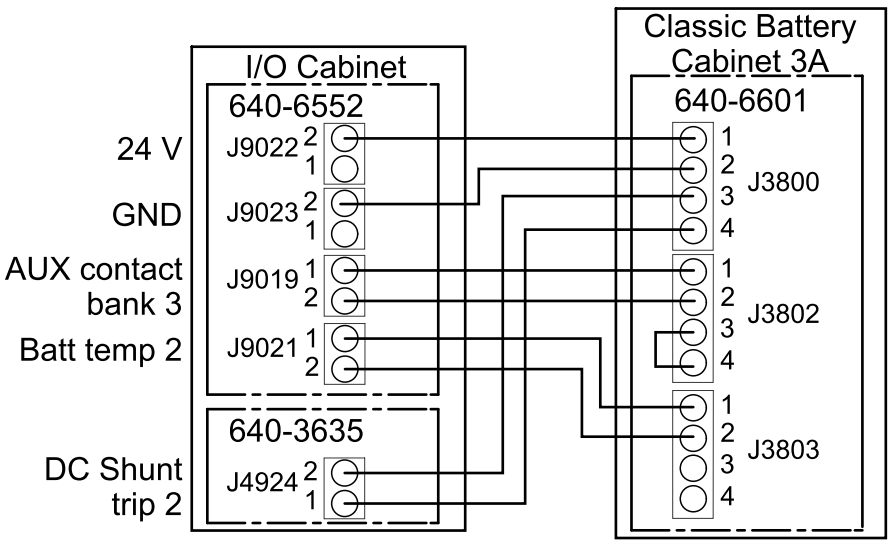
1. Connect the signal cables between the I/O cabinet and the classic battery cabinet in battery bank 1.



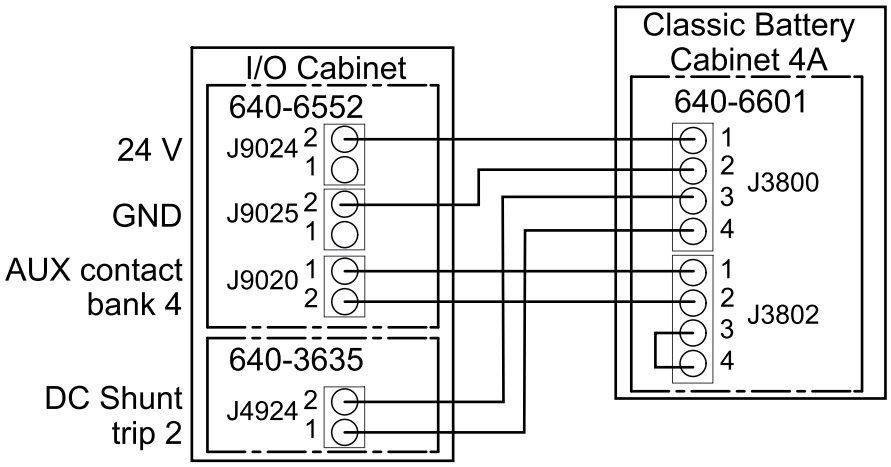
2. Connect the signal cables between the I/O cabinet and the classic battery cabinet in battery bank 2.



3. Connect the signal cables between the I/O cabinet and the classic battery cabinet in battery bank 3.



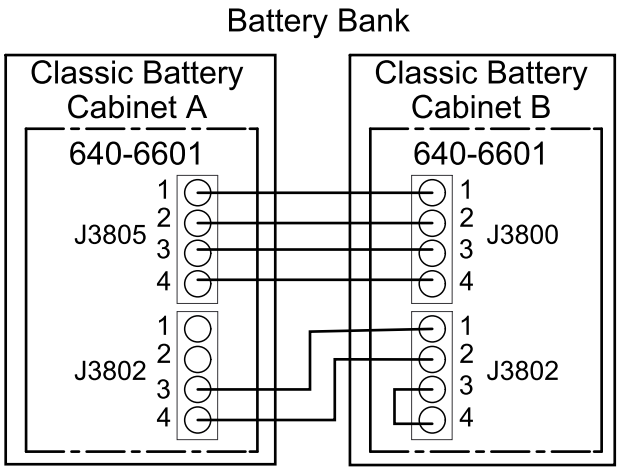
4. Connect the signal cables between the I/O cabinet and the classic battery cabinet in battery bank 4.



Connect the Signal Cables between Two Classic Battery Cabinets in One Battery Bank

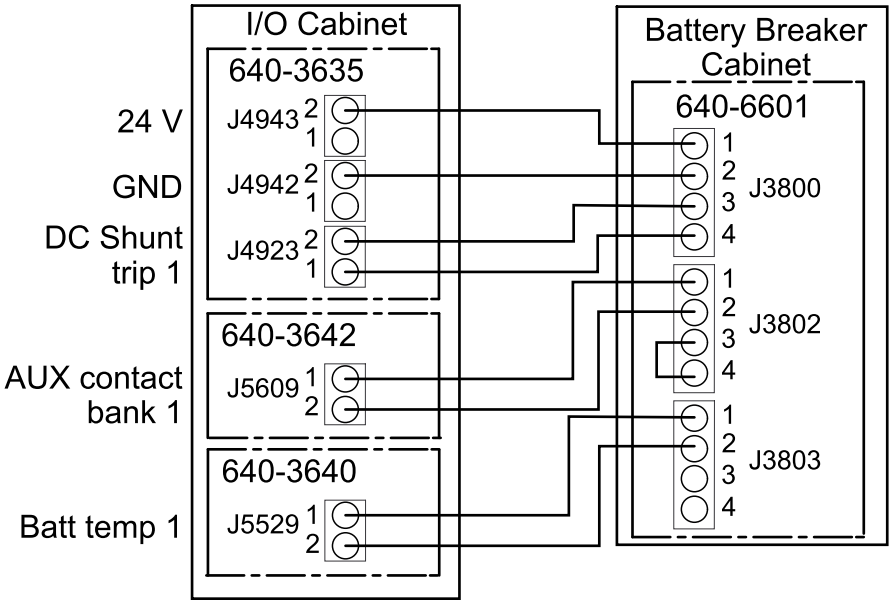
NOTE: The procedure is identical for all battery banks with two classic battery cabinets.

1. Remove the jumper between J3802 pin 3 and 4 in classic battery cabinet A.
2. Connect the signal cables between classic battery cabinet A and classic battery cabinet B.



Connect Signal Cables between the I/O Cabinet and the Battery Breaker Cabinet

1. Connect the below signal cables between the I/O cabinet and the battery breaker cabinet.



Connect the Emergency Power Off (EPO)

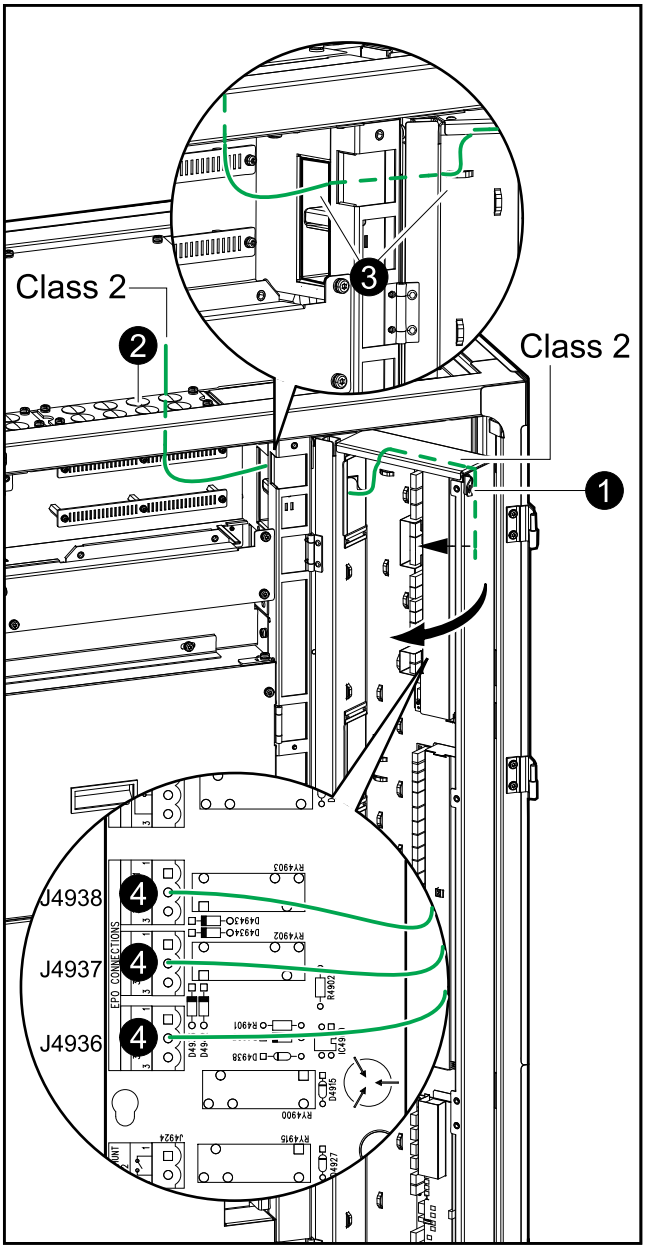
Do not connect any circuit to the EPO terminal block unless it can be confirmed that the circuit is Class 2.

All circuits connected must have the same 0 V reference.

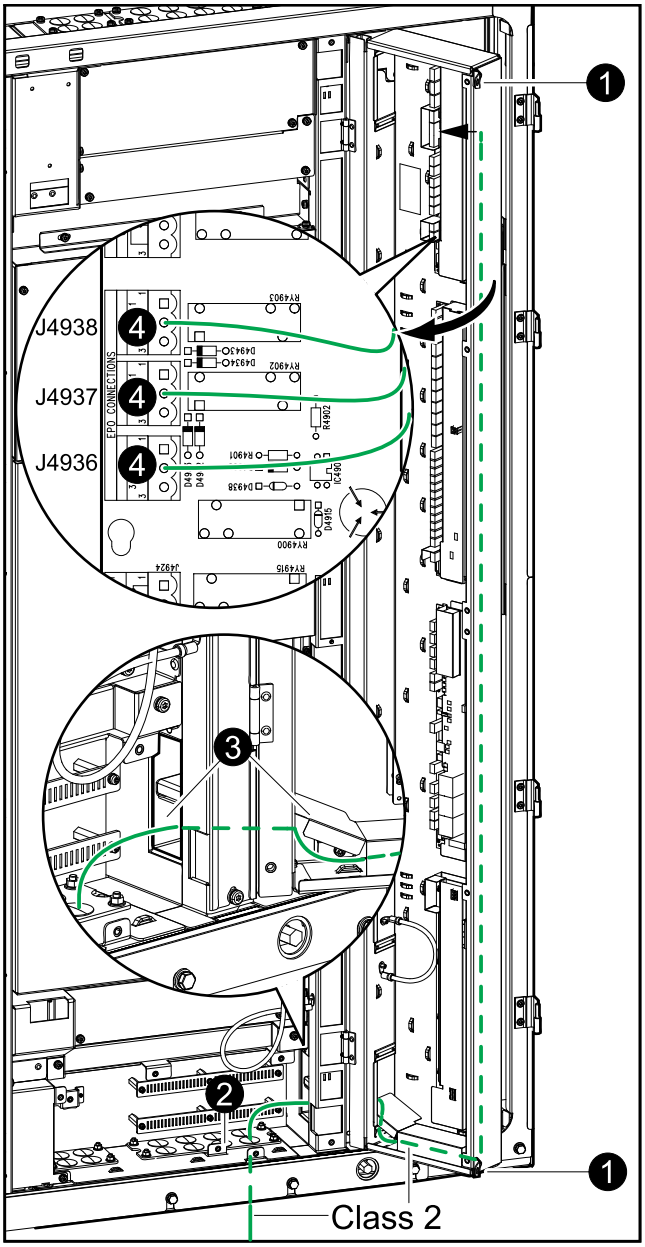
1. Open the door to ensure that the cables will not be too tight.
2. Remove the plugs from either the top or bottom of the I/O cabinet and install conduits.

3. Route the cables from your EPO through the top or bottom of the I/O cabinet and to the EPO terminals.

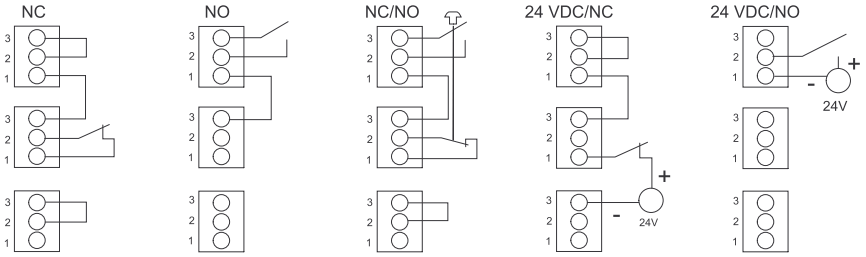
Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems



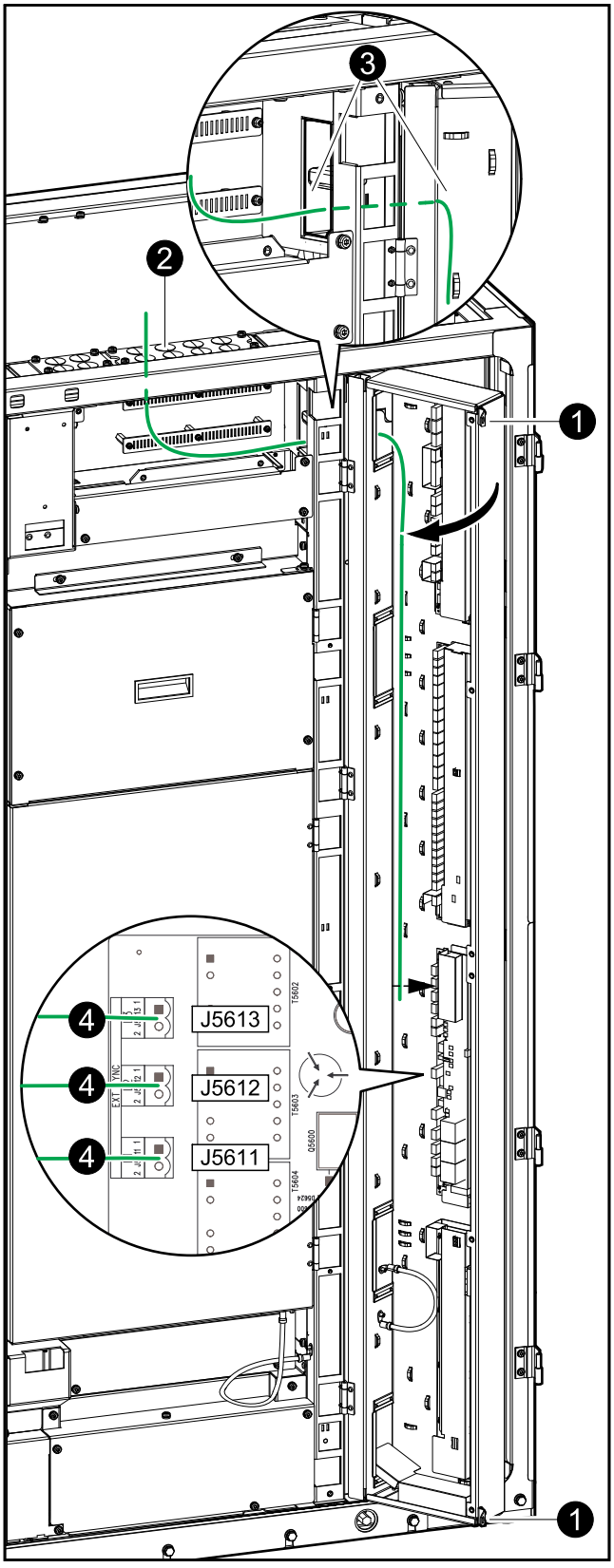
4. Connect the building EPO according to one of the options below.



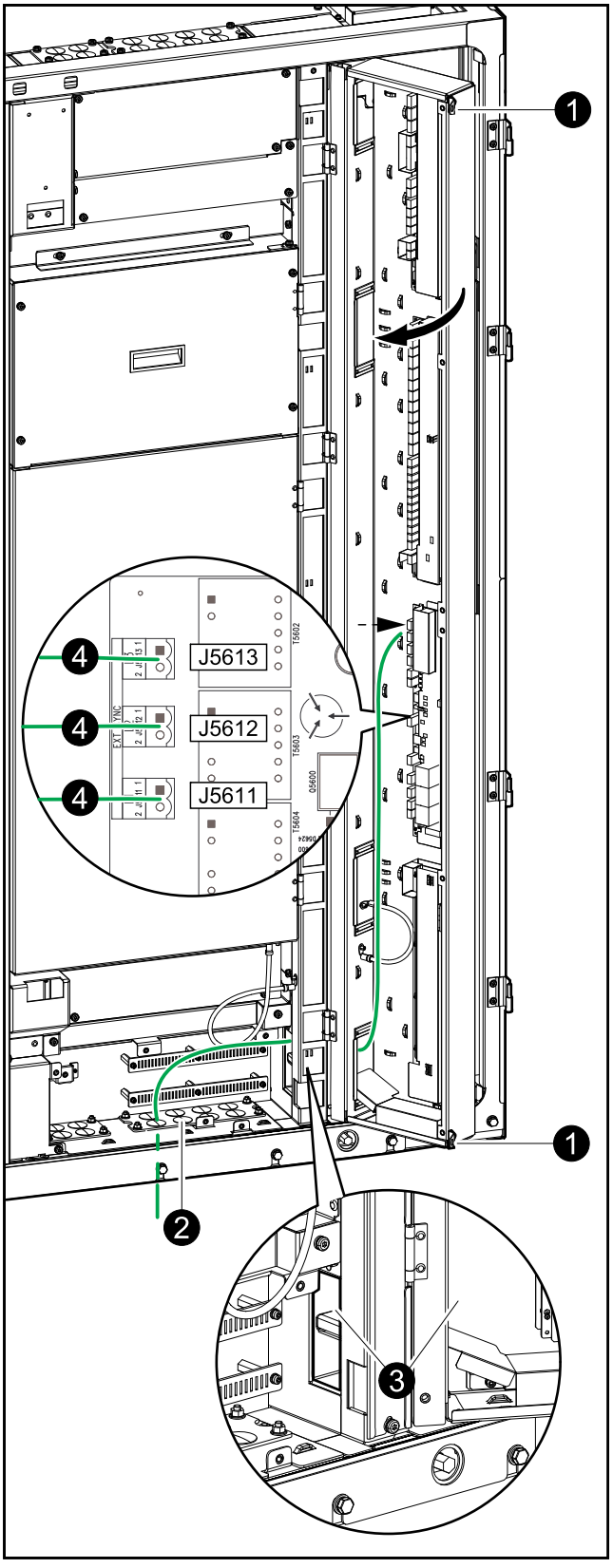
Connect External Synchronization

The signal cables must have a minimum rating of 600 V.

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems



1. Open the door to ensure that the cables will not be too tight.

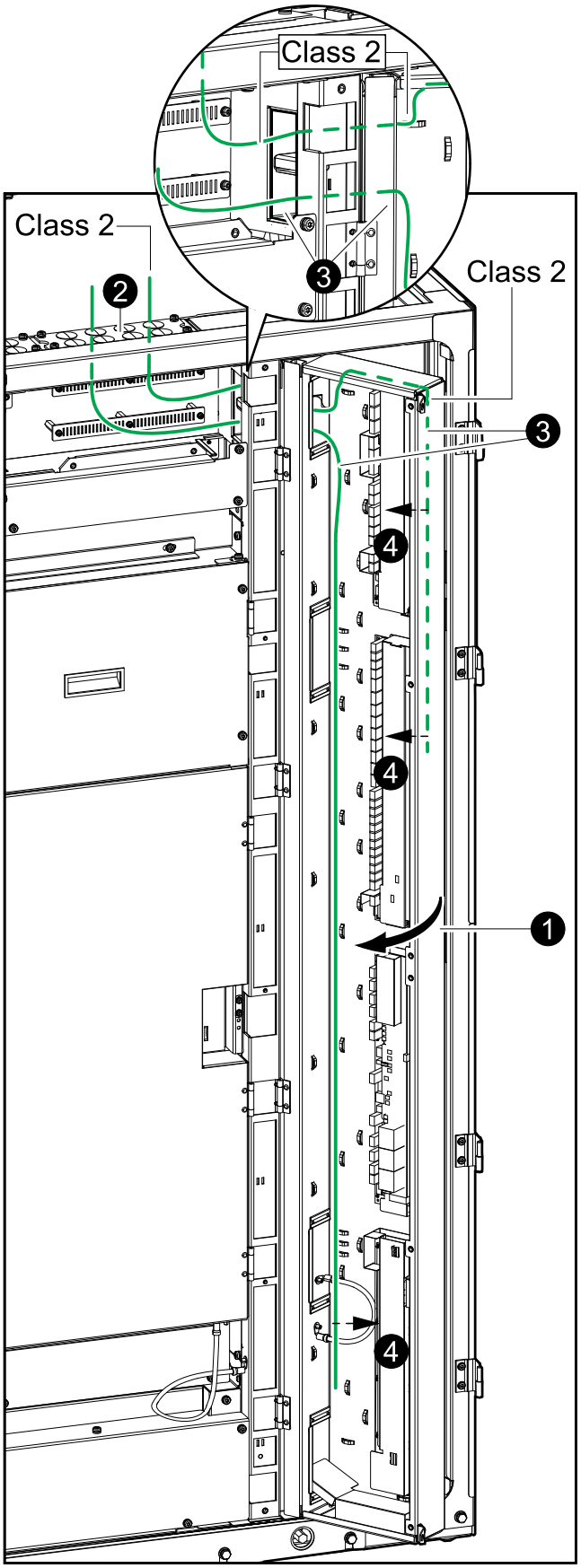
2. Remove the plugs from either the top or bottom of the I/O cabinet and install conduits.
3. Route the external synchronization cables through the top or bottom of the I/O cabinet to the third interface board from the top.
4. Connect the three phases:

   NOTE: The phases from the synchronization source must be protected by a fuse of maximum 0.5 A.

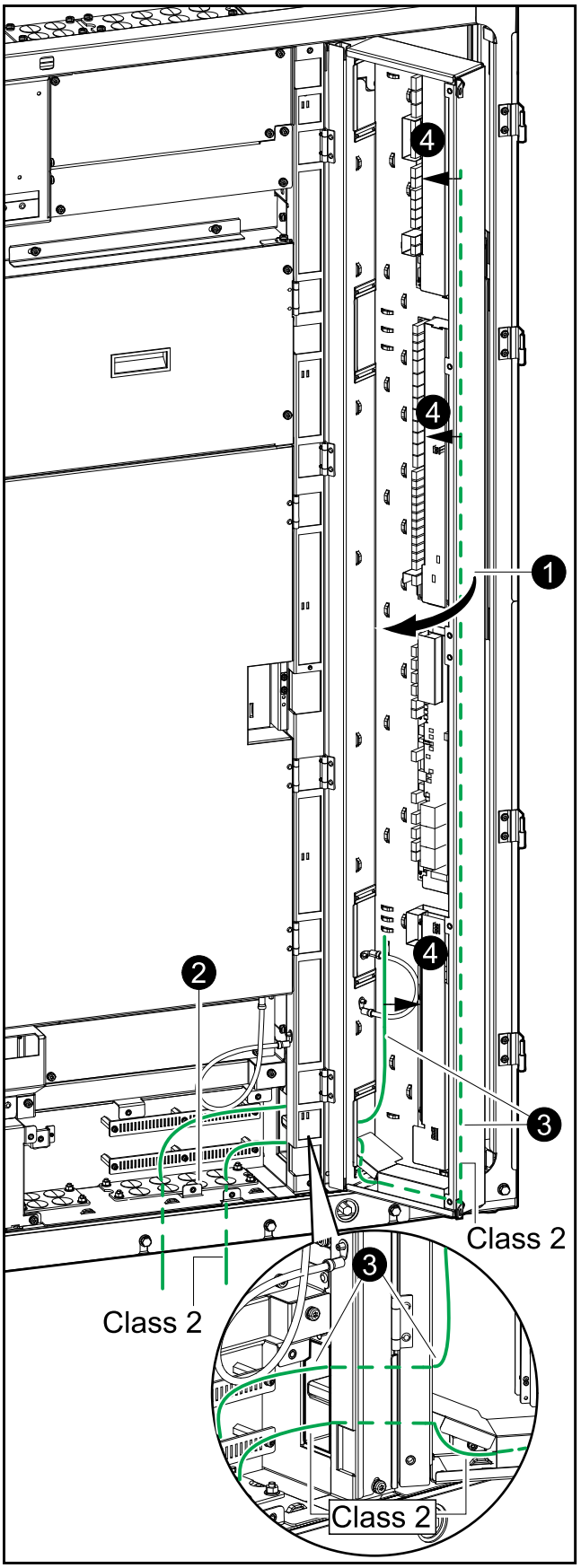
   a. Connect L1 to J5611 on 640–3642.
   b. Connect L2 to J5612 on 640–3642.
   c. Connect L3 to J5613 on 640–3642.

Connect Equipment to Input Contacts and Output Relays

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems



1. Open the door to ensure that the cables will not be too tight.
2. Remove the plugs from either the top or bottom of the I/O cabinet and install conduits.
3. Route the cables from your relays through the top or bottom of the I/O cabinet and to boards 1, 2, and 4 from the top.
4. Connect your equipment to the configurable input contacts or configurable output relays.

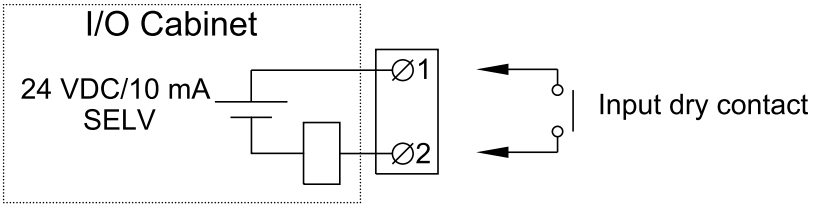
Overview of Input Contacts and Output Relays

Input Contacts

Do not connect any circuit to the input contacts unless it can be confirmed that the circuit is Class 2/SELV.

All circuits connected must have the same 0 V reference.

Common signalling to the input contacts must be galvanically isolated to avoid cross currents between parallel UPSs. An external supply must be connected to 640–3640 terminal J5530 and the switch SW5500 must be in closed position (**PWR IN 24V DC SELV**).

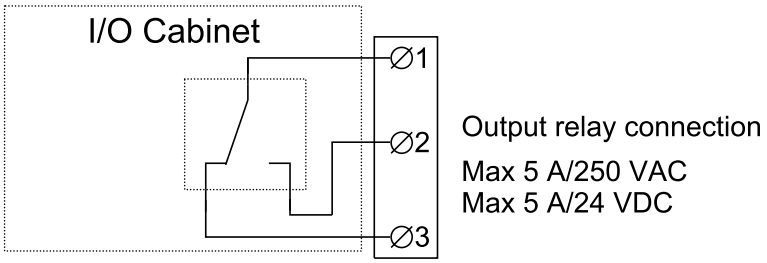


Name	Description	Location
IN 1 (Contact 1)	Configurable input contact	640–3640 terminal J5502
IN 2 (Contact 2)	Configurable input contact	640–3640 terminal J5503
IN 3 (Contact 3)	Configurable input contact	640–3640 terminal J5504
IN 4 (Contact 4)	Configurable input contact	640–3640 terminal J5505
IN 5 (Contact 5)	Configurable input contact	640–3640 terminal J5510
IN 7	Transformer temperature switch	640–3640 terminal J5508
IN 9	Forced external synchronization input	640–3640 terminal J5506
IN 10	External synchronization requested	640–3640 terminal J5511
IN 11	Use static bypass standby	640–3640 terminal J5512
IN 12	24 VDC SELV monitoring	NA

Output Relays

NOTE: Maximum 250 VAC 5 A must be connected to the output relays.

All external circuitry must be fused with maximum 5 A fast acting fuses.



Name	Description	Location
OUT 1 (Relay 1)	Configurable output relay	640–3635 terminal J4939
OUT 2 (Relay 2)	Configurable output relay	640–3635 terminal J4940
OUT 3 (Relay 3)	Configurable output relay	640–3635 terminal J4941
OUT 4	Forced external synchronization output	640–3640 terminal J5520[13]
OUT 5	Reserved for future use	640–3640 terminal J5521[13]
OUT 6	External synchronization requested output	640–3640 terminal J5522[13]
OUT 7	UPS in inverter ON	640–3640 terminal J5523[13]
OUT 8 (Relay 4)	Configurable output relay	640–3640 terminal J5524[13]
OUT 9 (Relay 5)	Configurable output relay	640–3640 terminal J5525[13]
OUT 10 (Relay 6)	Configurable output relay	640–3640 terminal J5528[13]

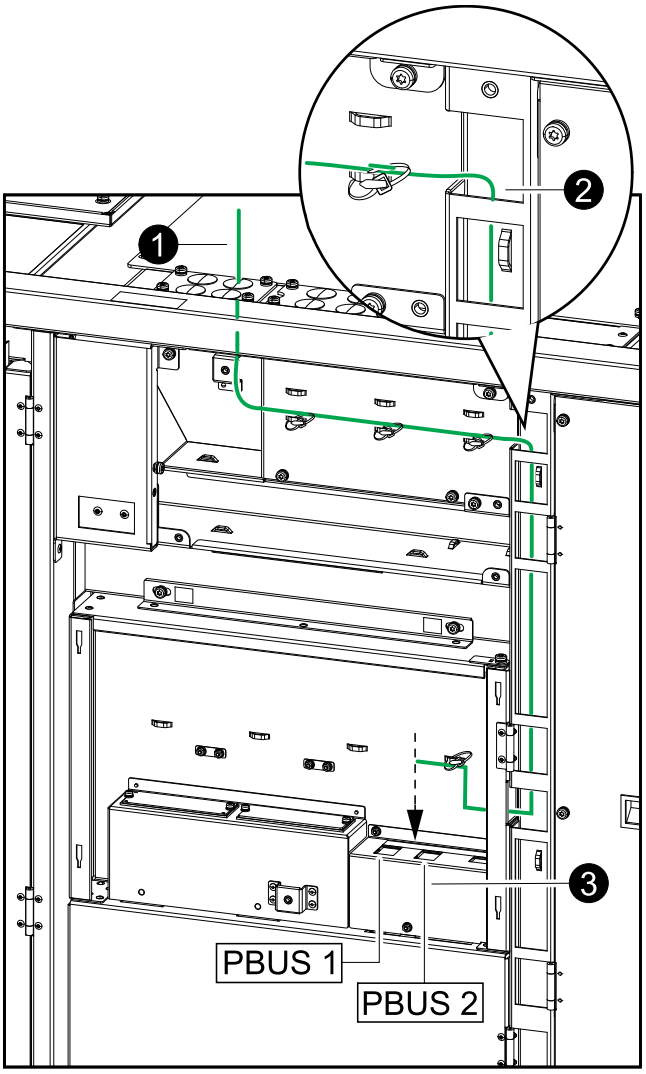
NOTE: Refer to the operation manual for configuration options.

13. Class 2/SELV wiring

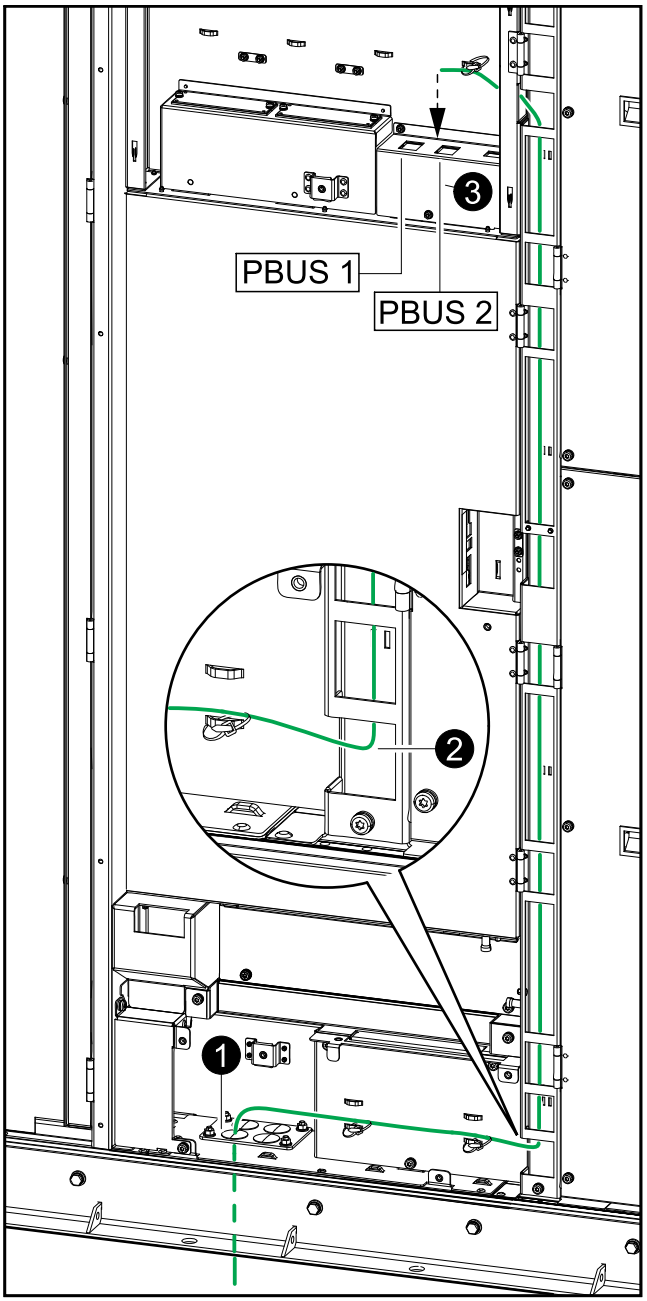
Connect the PBUS Cables between Parallel UPS Units

1. Remove two plugs from either the top or bottom of the cabinet and install conduits.

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems



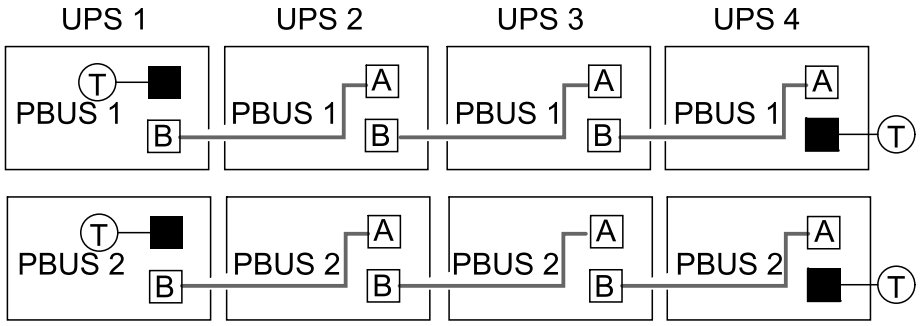
2. Route the PBUS cables from 0H0889 through either the top or the bottom of the I/O cabinet.

3. Connect the PBUS cables between the I/O cabinets of the parallel system according to the diagram below.

   NOTE: The PBUS 1 cables are white and the PBUS 2 cables are red.

   NOTE: The total length of PBUS cables must not exceed 60 m (197 ft).

   Example of System with Four UPSs in Parallel



External Communication

The following interfaces are supported:

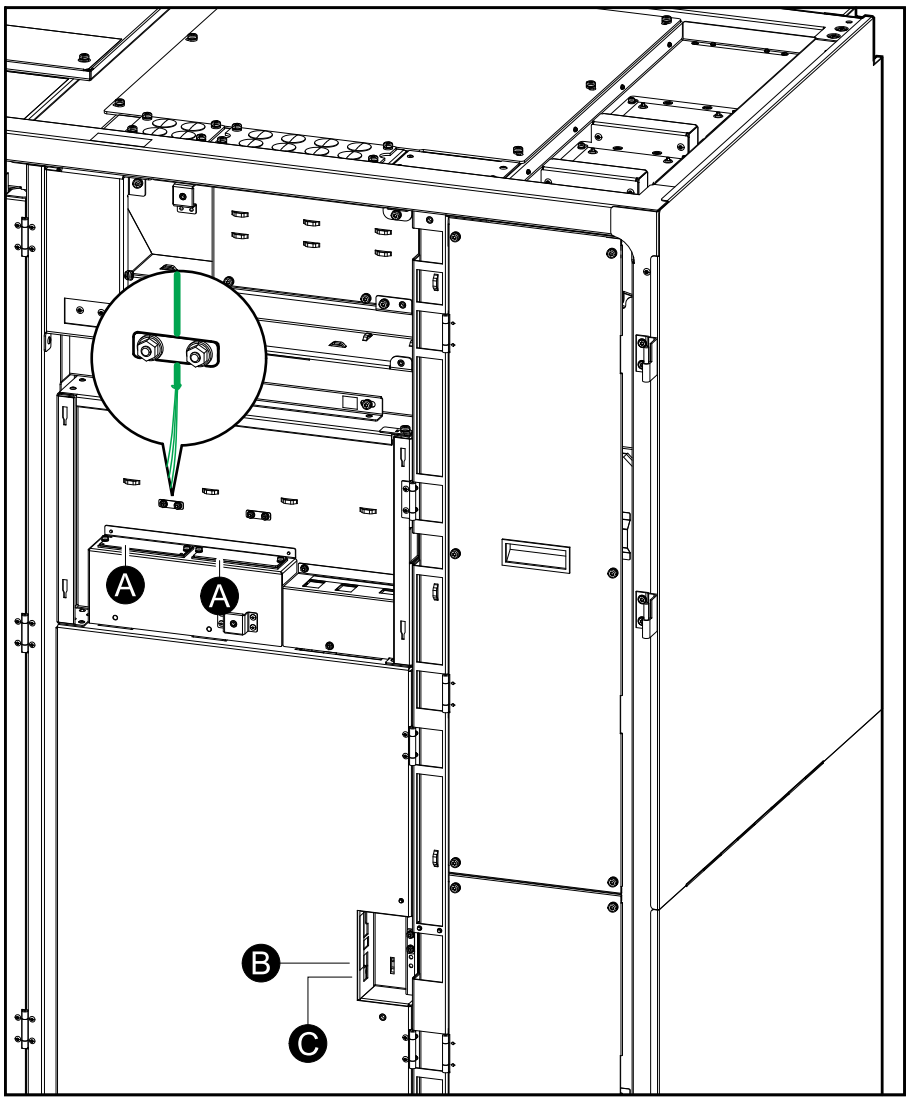
A. Two smart slots for optional network management cards (AP9630, AP9631, AP9635CH).

   NOTE: If the dry contact I/O AP9810 is connected to AP9631 or AP9635CH, the total length of cables for connected equipment must not exceed 30 m (98 ft). Use the plate for shielding.

B. Modbus and modbus dip switch settings.

C. Network/ethernet.

Front View of the I/O Cabinet

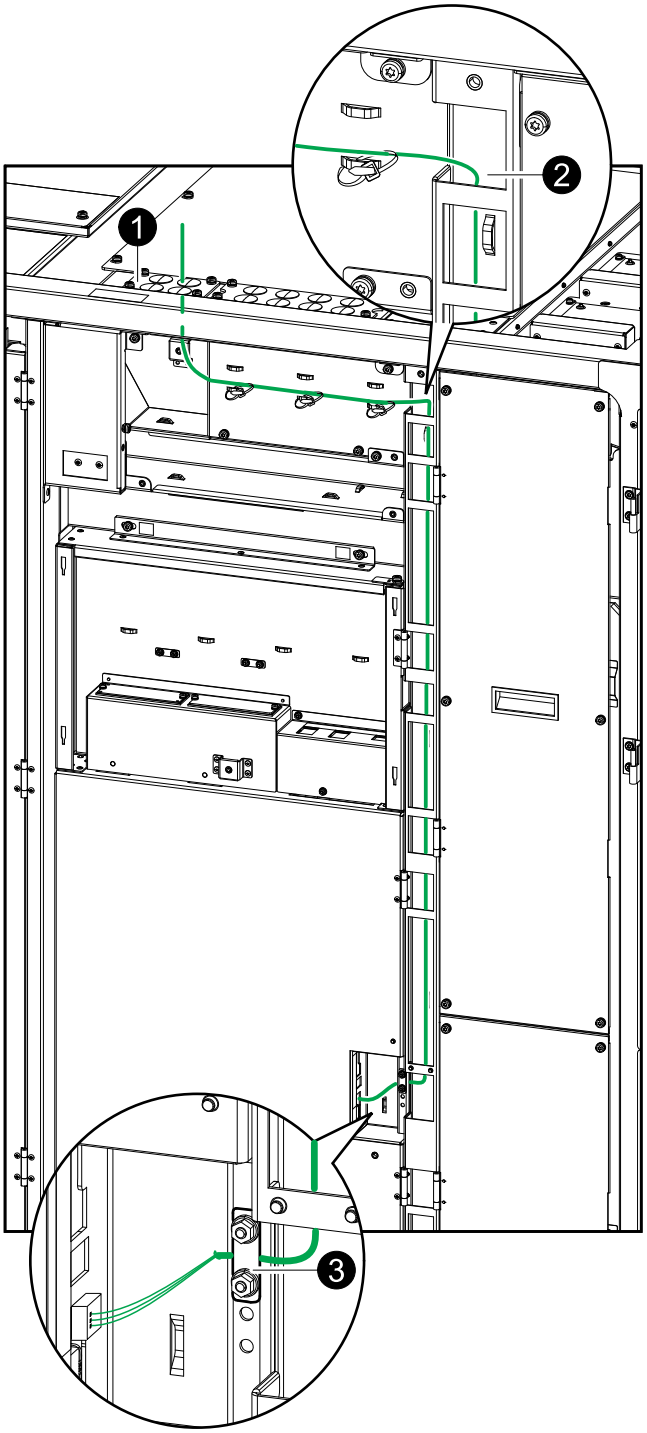


Connect the Modbus Cables

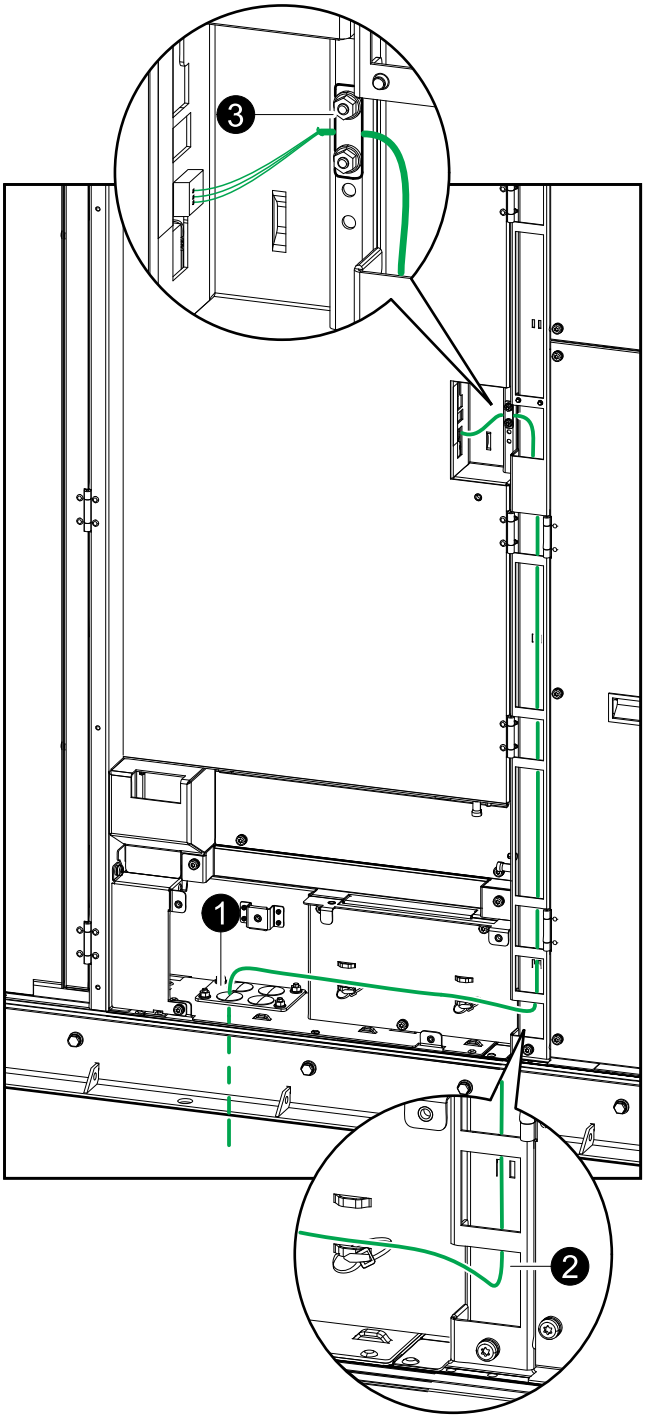
NOTE: A terminator for modbus connection is provided in the installation kit 0M-92445.

1. Remove the plugs from either the top or the bottom of the I/O cabinet and install conduits.

Front View of the I/O Cabinet in Top Cable Entry Systems



Front View of the I/O Cabinet in Bottom Cable Entry Systems

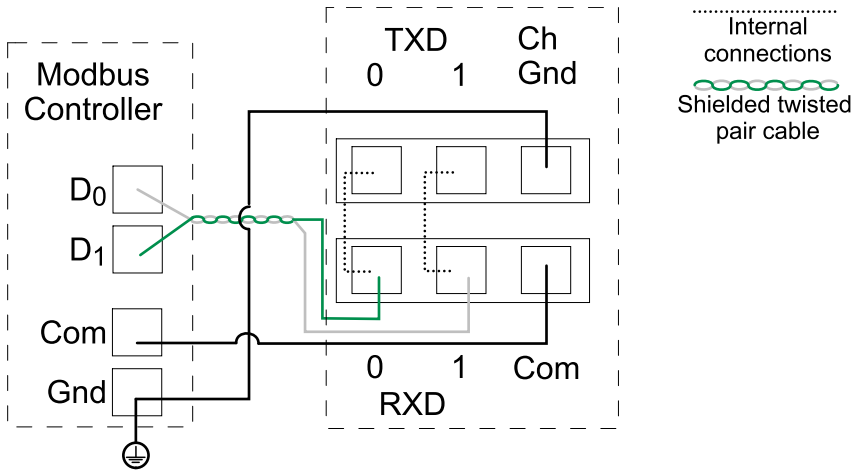


2. Route the cables as shown on the drawing.

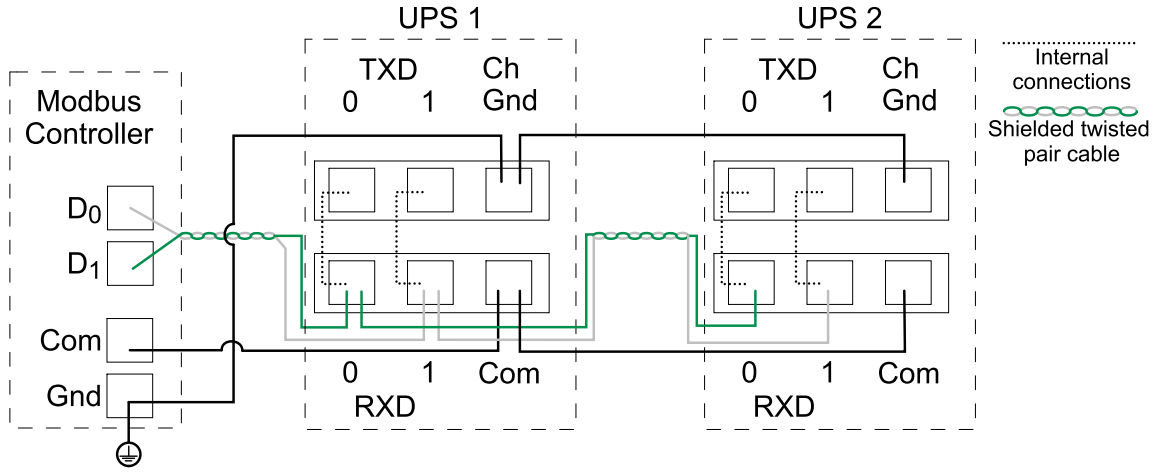
3. Connect the modbus cables. Use either 2–wire or 4–wire connection.

NOTE: Shielded cables must be used for modbus connections.

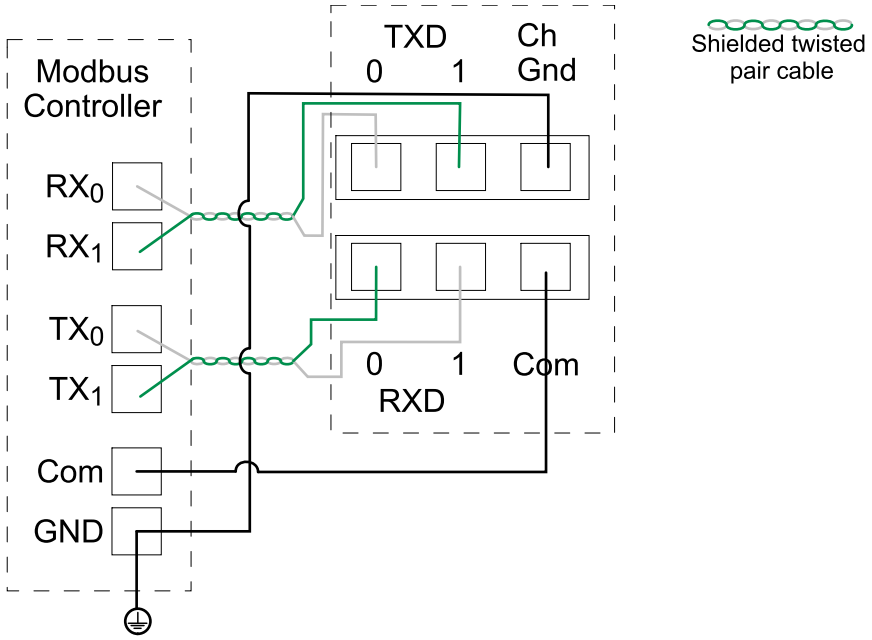
2–Wire Connection with One UPS



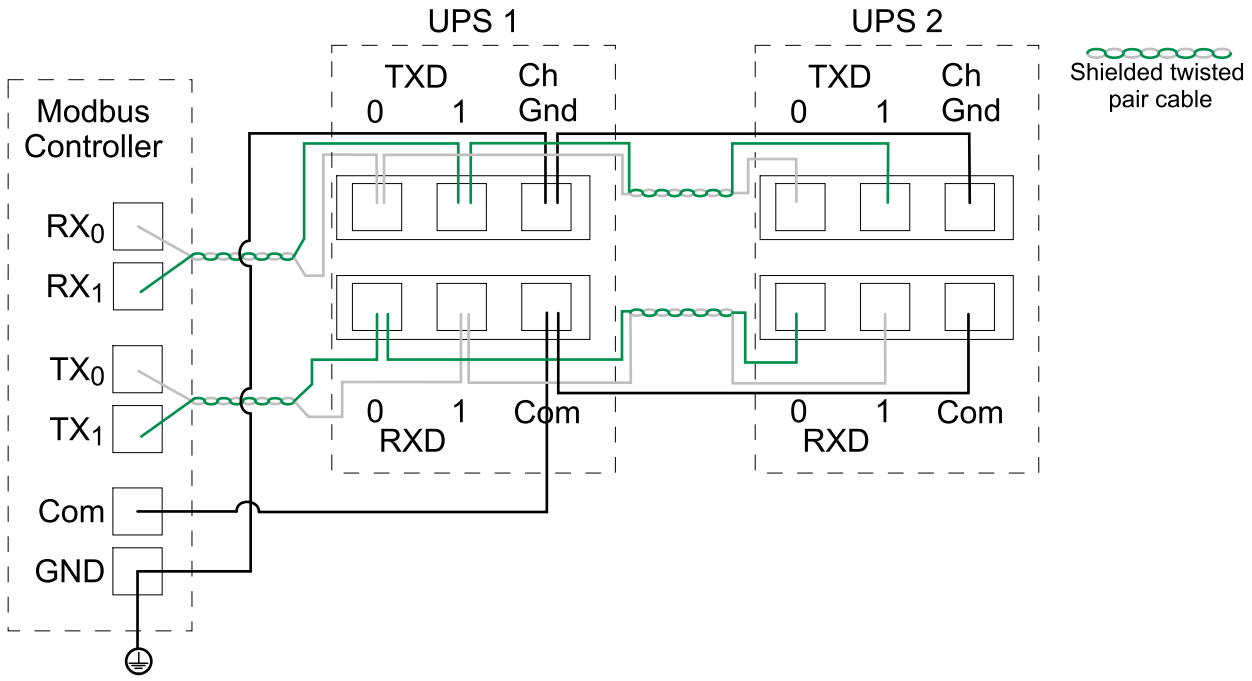
Example: 2–Wire Connection with Two UPSs



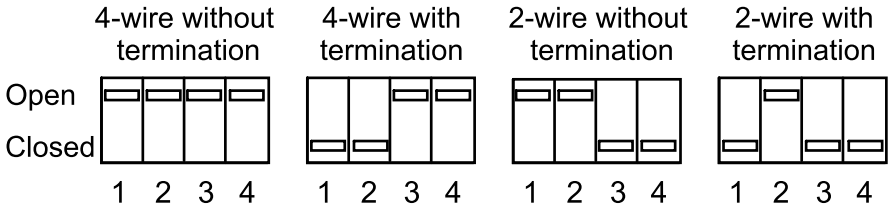
Example: 4–Wire Connection with One UPS



Example: 4–Wire Connection with Two UPSs



4. Set the modbus dip switches to match your installation.

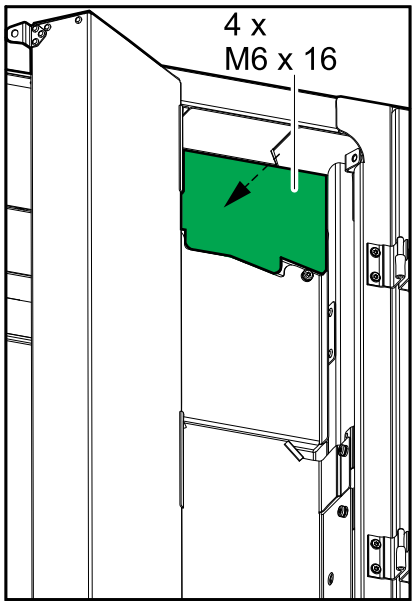


Final Mechanical Assembly

Final Mechanical Assembly of the I/O Cabinet

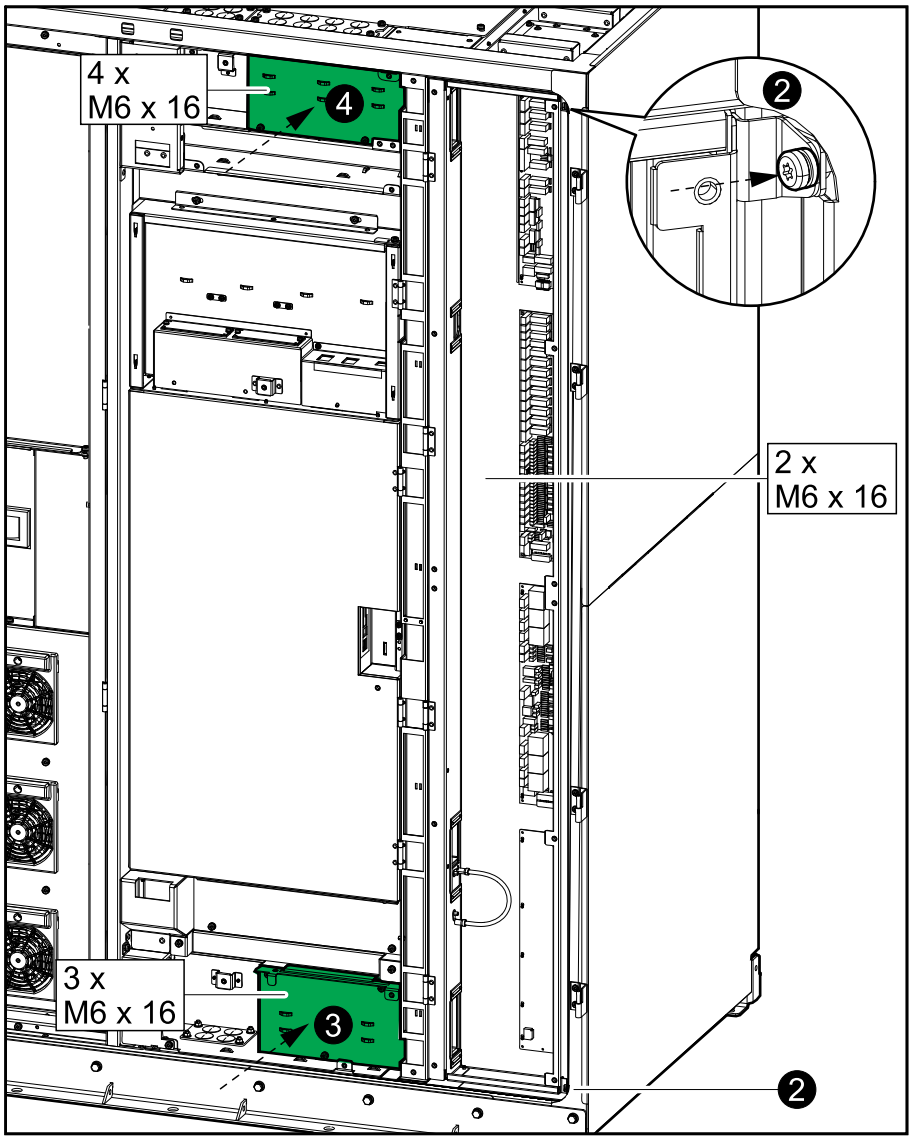
1. Install the plate in the top right corner of the I/O cabinet.

Front View of the I/O Cabinet



2. Close the door with the printed circuit boards and fasten with two screws.

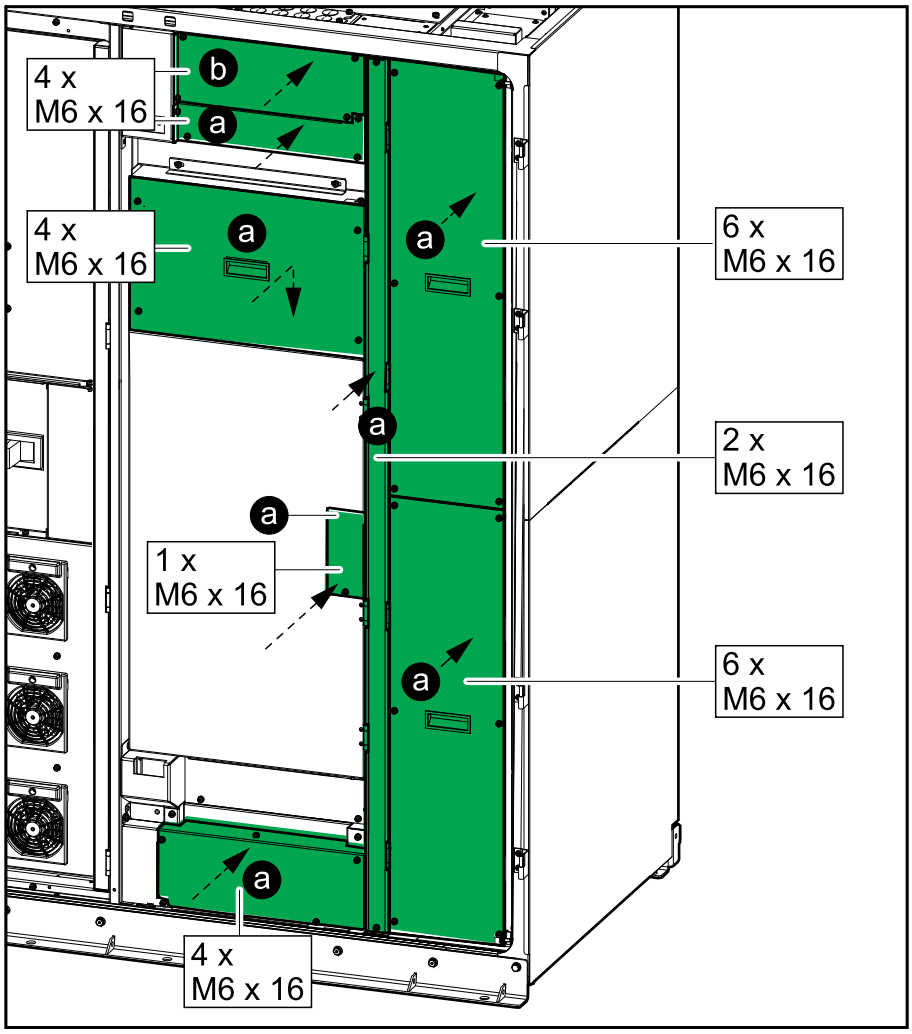
Front View of the I/O Cabinet



3. Install the plate at the bottom of the I/O cabinet.
4. Install the plate at the top of the I/O cabinet.

5. Install the eight indicated plates in chronological order.

Front View of the I/O Cabinet

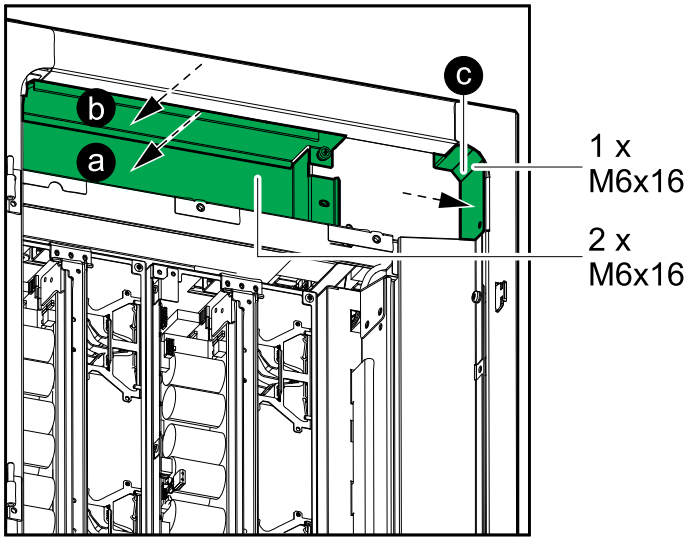


6. Close the front door.

Final Mechanical Assembly of the Power Cabinets

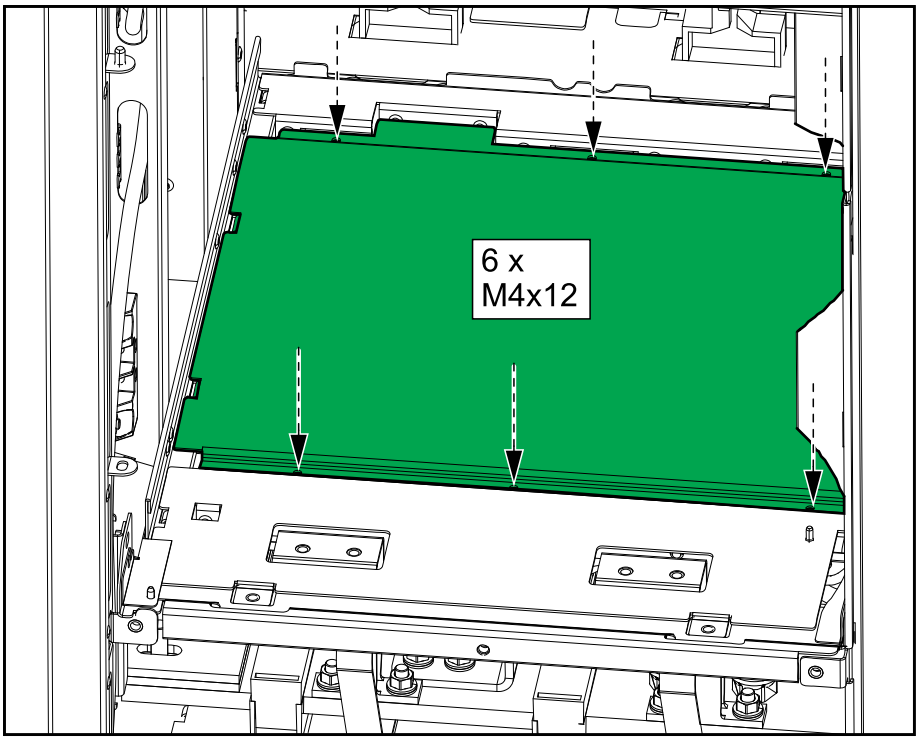
1. Reinstall the three plates in the top of each of the power cabinets in chronological order (a-c).

Front View of the Power Cabinet



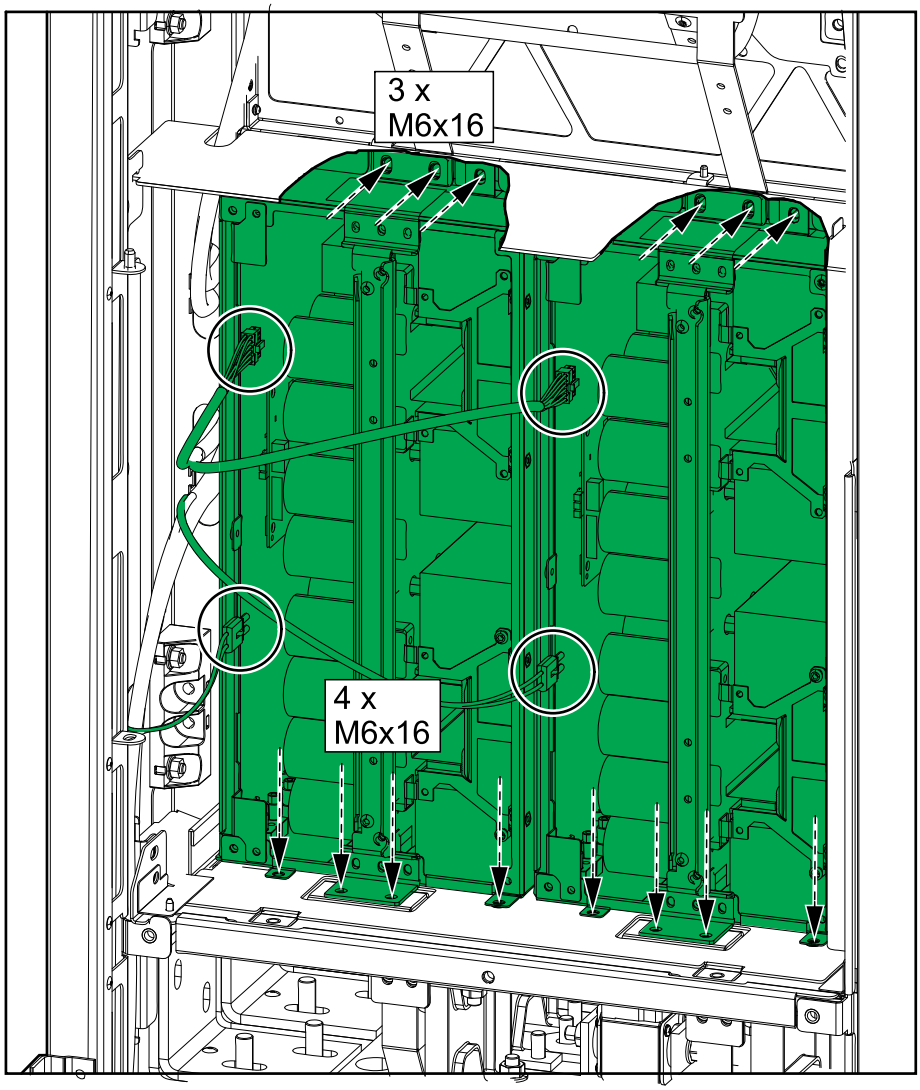
2. Reinstall the plate in each of the power cabinets.

Front View of the Power Cabinet



3. Push the two power blocks into each of the power cabinets and fasten with the screws.

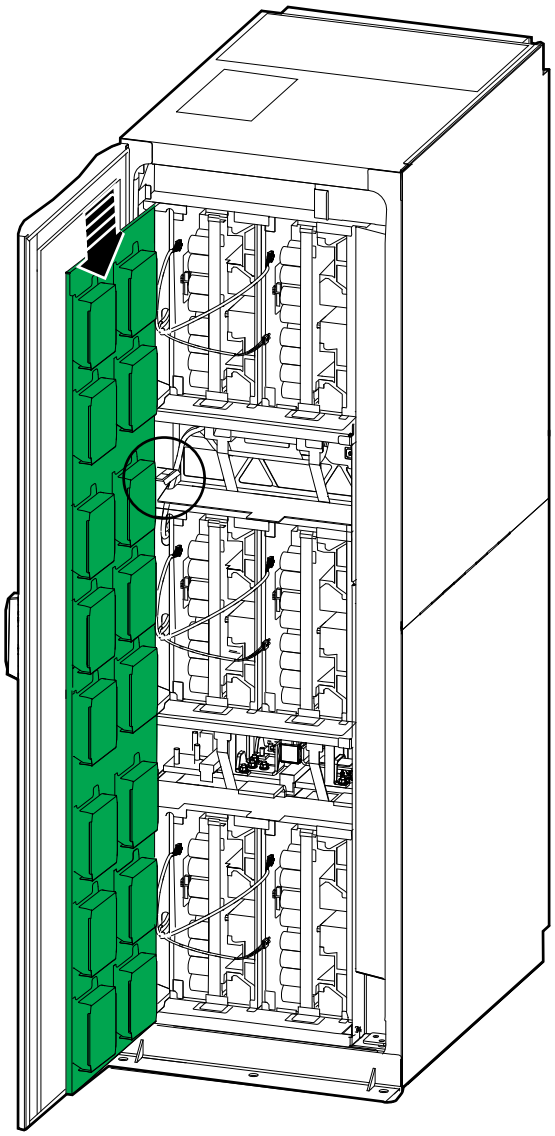
Front View of the Power Cabinet



4. Reconnect the two cables to each of the two middle power blocks.

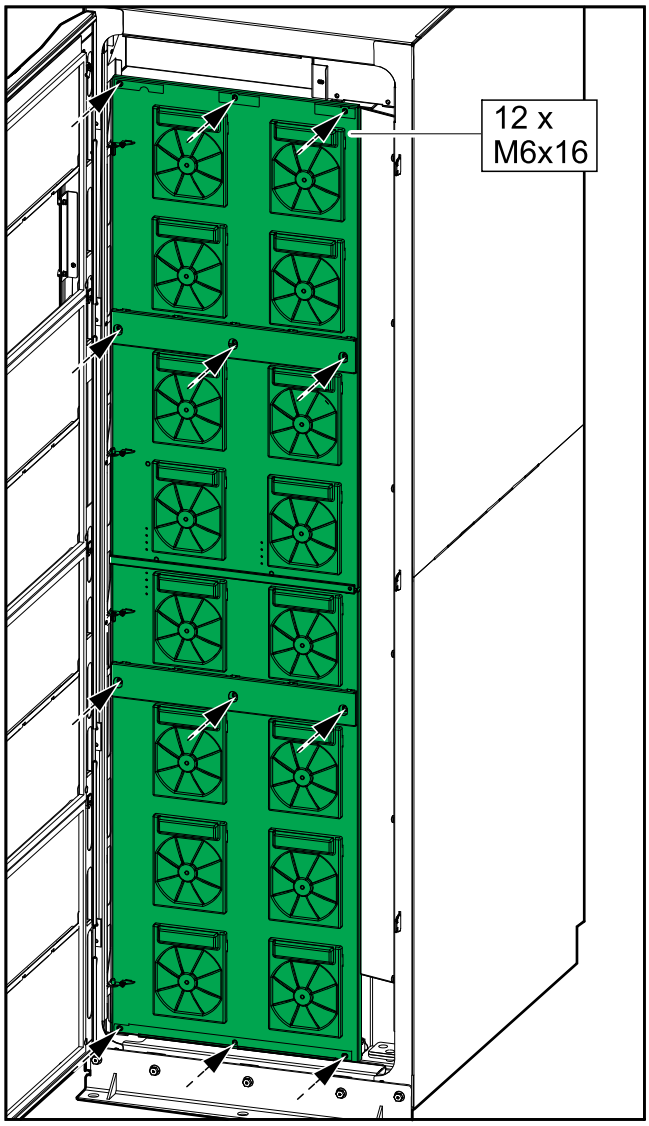
5. Reinstall the fan doors and reconnect the cable between the fan doors and each of the power cabinets.

Front View of the Power Cabinet



6. Close the fan doors and fasten them to each of the power cabinets with the 12 screws.

Front View of the Power Cabinet



7. Close the front door.

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As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

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