Galaxy VX

UPS with 1500 kW I/O Cabinet

Installation

380 V, 400 V, 415 V, 440 V, and 480 V

1100 kW/kVA and 1100 kW/kVA N+1
500 kW/kVA, 750 kW/kVA, and 1000 kW/kVA Expandable to 1250 kW/kVA, 1250 kW/kVA, 1250 kW/kVA, 1250 kW/kVA N+1
500 kW/kVA, 750 kW/kVA, 1000 kW/kVA, and 1250 kW/kVA Expandable to 1500 kW/kVA, 1500 kW/kVA, 1500 kW/kVA N+1

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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.

Electromagnetic Compatibility

NOTICE

RISK OF ELECTROMAGNETIC DISTURBANCE

This is a product Category C3 according to IEC 62040-2. This is a product for commercial and industrial applications in the second environment - installation restrictions or additional measures may be needed to prevent disturbances. The second environment includes all commercial, light industry, and industrial locations other than residential, commercial, and light industrial premises directly connected without intermediate transformer to a public low-voltage mains supply. The installation and cabling must follow the electromagnetic compatibility rules, e.g.:

- the segregation of cables,
- the use of shielded or special cables when relevant,
- the use of grounded metallic cable tray and supports.

Failure to follow these instructions can result in equipment damage.

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 for 380, 400, 415, and 440 V Systems

Specifications for 500 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Connections	3–wire (L1, L2, L3, PE)[1]				
Input voltage range (V)[2]	340-456	340-480	353-498	374-528	408-576
Frequency (Hz)	40 – 70				
Nominal input current (A)	800	760	731	685	633
Maximum input current (A)[3]	886	851	819	767	725
Input current limitation (A)	890			832	760
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				
Protection	Contactors				
Ramp-in	Adaptive 1 – 40 secs				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[1]				
Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
Frequency (Hz)	50 or 60				
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.				
Nominal bypass current (A)	767	729	703	663	606
Maximum short circuit rating	100 kA RMS[4]				
Thyristor I^2t (kA^*s^2)	7220[5] for systems with 1000 kW I/O cabinet 16245[5] for systems with 1500 kW I/O cabinet				
BF2 magnetic trip	39 kA				
Protection	Molded switch with trip for backfeed protection				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)				
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	760	722	696	656	601
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load				
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				

1. TN, TT, and IT power distribution systems are supported. Corner (line) grounding is not supported.
2. The system can operate at 600 V for 1 minute.
3. At nominal input voltage and full charge.
4. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
5. If this value is exceeded, the thyristors can short.

Voltage (V)	380	400	415	440	480
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				
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load				
Maximum charging power (kW)	60 at 100% load 175 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)	1090	1090	1090	1090	1090
Battery current at full load and minimum battery voltage (A)	1362	1362	1362	1362	1362
Maximum battery backup time	Unlimited				
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)				
Deep discharge protection	Yes				
Recharge according to battery temperature	Yes				

Heat Dissipation (BTU/hr) for 500 kW UPS

	Normal Operation				ECO Mode			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	17309	16387	16387	16387	5618	5618	5618	6056
50%	32774	30938	30938	31396	7747	7747	7747	7747
75%	53313	50542	50542	50542	11620	11620	11620	10969
100%	86017	82260	82260	75723	13758	13758	13758	13758

	ECOnversion				Battery Operation			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	6495	6495	6495	7155	18234	18234	18234	18234
50%	7747	7747	7747	7747	31855	31855	31855	31855
75%	11620	11620	11620	10969	53313	53313	53313	53313
100%	15493	13758	13758	13758	78519	78519	78519	78519

Specifications for 750 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Connections	3–wire (L1, L2, L3, PE)[6]				
Input voltage range (V)[7]	340-456	340-480	353-498	374-528	408-576
Frequency (Hz)	40 – 70				
Nominal input current (A)	1201	1139	1097	1029	950
Maximum input current (A)[8]	1328	1276	1229	1153	1092
Input current limitation (A)	1335			1248	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				
Protection	Contactors				
Ramp-in	Adaptive 1 – 40 secs				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[6]				
Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
Frequency (Hz)	50 or 60				
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.				
Nominal bypass current (A)	1151	1093	1054	994	909
Maximum short circuit rating	100 kA RMS[9]				
Thyristor I^2t (kA^*s^2)	7220[10] for systems with 1000 kW I/O cabinet 16245[10] for systems with 1500 kW I/O cabinet				
BF2 magnetic trip	39 kA				
Protection	Molded switch with trip for backfeed protection				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)				
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	1140	1083	1043	984	902
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load				
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%)				

6. TN, TT, and IT power distribution systems are supported. Corner (line) grounding is not supported.
7. The system can operate at 600 V for 1 minute.
8. At nominal input voltage and full charge.
9. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
10. If this value is exceeded, the thyristors can short.

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Load power factor	0.7 leading to 0.5 lagging without derating				
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load				
Maximum charging power (kW)	90 at 100% load 262 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)	1634	1634	1634	1634	1634
Battery current at full load and minimum battery voltage (A)	2043	2043	2043	2043	2043
Maximum battery backup time	Unlimited				
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)				
Deep discharge protection	Yes				
Recharge according to battery temperature	Yes				

Heat Dissipation (BTU/hr) for 750 kW UPS

	Normal Operation				**ECO Mode**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	26656	25271	25271	25271	9084	9084	9084	9413
50%	51926	49160	49160	47782	12924	12924	12924	12272
75%	86236	82053	82053	77888	17430	17430	17430	16453
100%	134684	129025	129025	117778	23240	23240	23240	21938

	ECOnversion				**Battery Operation**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	9742	9742	9742	10733	27351	27351	27351	27351
50%	12924	12924	12924	12924	47782	47782	47782	47782
75%	17430	17430	17430	16453	79969	79969	79969	79969
100%	23240	23240	23240	21938	117778	117778	117778	117778

Specifications for 1000 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Connections	3–wire (L1, L2, L3, PE)[11]				
Input voltage range (V)[12]	340-456	340-480	353-498	374-528	408-576
Frequency (Hz)	40 – 70				
Nominal input current (A)	1601	1519	1463	1370	1266
Maximum input current (A)[13]	1771	1702	1638	1534	1456
Input current limitation (A)	1780			1664	1520
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				
Protection	Contactors				
Ramp-in	Adaptive 1 – 40 secs				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[11]				
Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
Frequency (Hz)	50 or 60				
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.				
Nominal bypass current (A)	1535	1458	1405	1325	1211
Maximum short circuit rating	100 kA RMS[14]				
Thyristor I^2t (kA^*s^2)	7220[15] for systems with 1000 kW I/O cabinet 16245[15] for systems with 1500 kW I/O cabinet				
BF2 magnetic trip	39 kA				
Protection	Molded switch with trip for backfeed protection				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)				
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	1519	1443	1391	1312	1203
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load				
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%)				

11. TN, TT, and IT power distribution systems are supported. Corner (line) grounding is not supported.
12. The system can operate at 600 V for 1 minute.
13. At nominal input voltage and full charge.
14. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
15. If this value is exceeded, the thyristors can short.

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Load power factor	0.7 leading to 0.5 lagging without derating				
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load				
Maximum charging power (kW)	120 at 100% load 350 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)	2179	2179	2179	2179	2179
Battery current at full load and minimum battery voltage (A)	2724	2724	2724	2724	2724
Maximum battery backup time	Unlimited				
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)				
Deep discharge protection	Yes				
Recharge according to battery temperature	Yes				

Heat Dissipation (BTU/hr) for 1000 kW UPS

	Normal Operation				**ECO Mode**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	36468	34617	34617	33888	12112	12112	12112	12112
50%	71083	67389	67389	60137	17232	17232	17232	16362
75%	123390	117778	117778	98514	23240	23240	23240	21938
100%	187156	179579	179579	149141	30987	30987	30987	29251

	ECOnversion				**Battery Operation**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	13334	13334	13334	14313	36468	35819	36468	36468
50%	17254	17254	17254	16956	63710	62976	63710	63710
75%	24358	24358	24358	22496	106625	104128	106625	106625
100%	31342	31342	31342	29428	157038	156664	157038	157038

Specifications for 1100 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Connections	3–wire (L1, L2, L3, PE)[16]				
Input voltage range (V)[17]	340-456	340-480	353-498	374-528	408-576
Frequency (Hz)	40 – 70				
Nominal input current (A)	1761	1671	1609	1510	1393
Maximum input current (A)[18]	1948	1872	1802	1691	1602
Input current limitation (A)	1958			1830	1672
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				
Protection	Contactors				
Ramp-in	Adaptive 1 – 40 secs				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[16]				
Bypass voltage range (V)	342-418	360-440	374-457	396-484	432-528
Frequency (Hz)	50 or 60				
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.				
Nominal bypass current (A)	1688	1604	1546	1458	1332
Maximum short circuit rating	100 kA RMS[19]				
Thyristor I^2t (kA^*s^2)	7220[20] for systems with 1000 kW I/O cabinet 16245[20] for systems with 1500 kW I/O cabinet				
BF2 magnetic trip	39 kA				
Protection	Molded switch with trip for backfeed protection				
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)				
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	1671	1588	1530	1443	1323
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load				
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%)				

16. TN, TT, and IT power distribution systems are supported. Corner (line) grounding is not supported.
17. The system can operate at 600 V for 1 minute.
18. At nominal input voltage and full charge.
19. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
20. If this value is exceeded, the thyristors can short.

Voltage (V)	**380**	**400**	**415**	**440**	**480**
Load power factor	0.7 leading to 0.5 lagging without derating				
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load				
Maximum charging power (kW)	132 at 100% load 385 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)	2397				
Battery current at full load and minimum battery voltage (A)	2996				
Maximum battery backup time	Unlimited				
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)				
Deep discharge protection	Yes				
Recharge according to battery temperature	Yes				

Heat Dissipation (BTU/hr) for 1100 kW UPS

	Normal Operation				**ECO Mode**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	44213	42160	42160	42160	11396	11396	11396	11877
50%	78192	74128	74128	70080	17043	17043	17043	16088
75%	108153	102095	102095	100584	22701	22701	22701	21271
100%	152315	144204	144204	150284	26458	26458	26458	26458

	ECOnversion				**Battery Operation**			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	13701	13701	13701	15272	40115	40115	40115	40115
50%	17067	17067	17067	17683	70080	70080	70080	70080
75%	23928	23928	23928	22957	117288	117288	117288	117288
100%	30658	30658	30658	28556	172741	172741	172741	172741

Specifications for 1250 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**
Connections	3–wire (L1, L2, L3, PE)[21]			
Input voltage range (V)[22]	340-456	340-480	353-498	374-528
Frequency (Hz)	40 – 70			
Nominal input current (A)	2001	1899	1828	1716
Maximum input current (A)[23]	2214	2127	2048	1922
Input current limitation (A)	2225			2080
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			
Protection	Contactors			
Ramp-in	Adaptive 1 – 40 secs			
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[21]			
Bypass voltage range (V)	342-418	360-440	374-457	396-484
Frequency (Hz)	50 or 60			
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.			
Nominal bypass current (A)	1918	1822	1757	1657
Maximum short circuit rating	100 kA RMS[24]			
Thyristor I^2t (kA^*s^2)	16245[25]			
BF2 magnetic trip	39 kA			
Protection	Molded switch with trip for backfeed protection			
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)			
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	1899	1804	1739	1640
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load			
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			

21. TN, TT, and IT power distribution systems with no earthed line conductors are supported.
22. The system can operate at 600 V for 1 minute.
23. At nominal input voltage and full charge.
24. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
25. If this value is exceeded, the thyristors can short.

Voltage (V)	380	400	415	440
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load			
Maximum charging power (kW)	150 at 100% load 437 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)	2724	2724	2724	2724
Battery current at full load and minimum battery voltage (A)	3405	3405	3405	3405
Maximum battery backup time	1 hour			
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)			
Deep discharge protection	Yes			
Recharge according to battery temperature	Yes			

Heat Dissipation (BTU/hr) for 1250 kW UPS

	Normal Operation				ECO Mode			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	44427	42118	42118	42118	12950	12950	12950	13497
50%	86543	81934	81934	78490	19367	19367	19367	18282
75%	147223	140237	140237	129814	25796	25796	25796	24172
100%	224474	215042	215042	196297	30065	30065	30065	30065

	ECOnversion				Battery Operation			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	15569	15569	15569	17156	45585	45585	45585	45585
50%	19394	19394	19394	19721	79637	79637	79637	79637
75%	27191	27191	27191	25681	133281	133281	133281	133281
100%	34838	34838	34838	32451	196297	196297	196297	196297

Specifications for 1500 kW UPS

Voltage (V)	**380**	**400**	**415**	**440**
Connections	3–wire (L1, L2, L3, PE)[26]			
Input voltage range (V)[27]	340-456	340-480	353-498	374-528
Frequency (Hz)	40 – 70			
Nominal input current (A)	2401	2279	2194	2059
Maximum input current (A)[28]	2657	2552	2457	2306
Input current limitation (A)	2670			2496
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			
Protection	Contactors			
Ramp-in	Adaptive 1 – 40 secs			
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)[26]			
Bypass voltage range (V)	342-418	360-440	374-457	396-484
Frequency (Hz)	50 or 60			
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.			
Nominal bypass current (A)	2302	2187	2108	1988
Maximum short circuit rating	100 kA RMS[29]			
Thyristor I^2t (kA^*s^2)	16245[30]			
BF2 magnetic trip	39 kA			
Protection	Molded switch with trip for backfeed protection			
Connections	4–wire (L1, L2, L3, N, PE) or 3–wire (L1, L2, L3, PE)			
Overload capacity	150% for 1 minute (normal operation) 125% for 10 minutes (normal operation) 115% for 1 minute (battery operation) 110% 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)	2279	2165	2087	1968
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load			
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			

26. TN, TT, and IT power distribution systems with no earthed line conductors are supported.
27. The system can operate at 600 V for 1 minute.
28. At nominal input voltage and full charge.
29. Conditioned by the internal molded switch with a 90 kA peak magnetic trip
30. If this value is exceeded, the thyristors can short.

Voltage (V)	380	400	415	440
Charging power in % of output power	35% at ≤ 80% load 12% at 100% load			
Maximum charging power (kW)	180 at 100% load 525 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)	3269	3269	3269	3269
Battery current at full load and minimum battery voltage (A)	4086	4086	4086	4086
Maximum battery backup time	1 hour			
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)			
Deep discharge protection	Yes			
Recharge according to battery temperature	Yes			

Heat Dissipation (BTU/hr) for 1500 kW UPS

	Normal Operation				ECO Mode			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	53313	50542	50542	50680	15540	15540	15540	16131
50%	103851	98321	98321	91275	23240	23240	23240	21626
75%	176667	168285	168285	151832	30956	30956	30956	28889
100%	269368	258050	258050	234549	36079	36079	36079	37428

	ECOnversion				Battery Operation			
Load	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
25%	18683	18683	18683	17234	54702	51372	54702	54702
50%	23273	23273	23273	20325	95564	95014	95564	95564
75%	32629	32629	32629	26436	159938	159521	159938	159938
100%	41806	41806	41806	35819	235556	236677	235556	235556

Recommended Upstream Protection and Cable Sizes

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

A readily accessible breaker is required for upstream protection. Maximum fault current disconnection time: 46 seconds at 200% input.

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

NOTE: Overcurrent protection is to be provided by others.

Cable sizes in this manual are based on table B.52.12 and B.52.13 of IEC 60364–5–52 with the following assertions:

- 90 °C conductors
- An ambient temperature of 30 °C
- Use of copper or aluminium conductors
- Installation method F4 for DC cables and installation method F5 for AC cables, corrected for single layer in perforated cable tray.

PE cables are sized in accordance with IEC 60364-5-54 table 54.2 Minimum cross-sectional area of protective conductors.

NOTE: Alwasy consider the PE size according to the complete electrical installation.

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

Recommended Upstream Protection and Cable Sizes for 1100 kW UPS

	Maximum OCPD (A)				Conductors per Phase Copper/ Aluminium (mm²)				PE Conductor (mm²)			
	380 V	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
Input	2000[31]	2000[31]	2000[31]	2000[32]	5x240/ 6x240	5x240/ 6x240	5x240/ 6x240	5x185/ 6x240	3x240/ 3x240	3x240/ 3x240	3x240/ 3x240	3x185/ 3x240
Bypass	2000[33]	2000[33]	1600[31]	1600[32]	4x240/ 6x240	4x240/ 6x240	4x185/ 5x240	4x185/ 5x240	2x240/ 3x240	2x240/ 3x240	2x185 3x240	2x185/ 3x240
Output	2000[33]	2000[33]	1600[31]	1600[32]	4x240/ 6x240	4x240/ 6x240	4x185/ 5x240	4x185/ 5x240	2x240/ 3x240	2x240/ 3x240	2x185 3x240	2x185/ 3x240
Battery	4000	4000	4000	4000	6x240/ 8x240	6x240/ 8x240	6x240/ 8x240	6x240/ 8x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240

Recommended Upstream Protection and Cable Sizes for 1250 kW UPS

	Maximum OCPD (A)				Conductors per Phase Copper/ Aluminium (mm²)				PE Conductor (mm²)			
	380 V	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
Input	2500[33]	2500[33]	2500[33]	2500[33]	5x240/ 7x240	5x240/ 7x240	5x240/ 7x240	5x240/ 7x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240
Bypass	2000[31]	2000[32]	2000[33]	2000[33]	5x240/ 6x240	5x185/ 6x240	4x240/ 6x240	4x240/ 6x240	3x240/ 3x240	3x185/ 3x240	2x240/ 3x240	2x240/ 3x240
Output	2000[31]	2000[32]	2000[33]	2000[33]	5x240/ 6x240	5x185/ 6x240	4x240/ 6x240	4x240/ 6x240	3x240/ 3x240	3x185/ 3x240	2x240/ 3x240	2x240/ 3x240
Battery	4000	4000	4000	4000	7x240/ 9x240	7x240/ 9x240	7x240/ 9x240	7x240/ 9x240	4x240/ 5x240	4x240/ 5x240	4x240/ 5x240	4x240/ 5x240

31. Long-time setting (I_r) = 0.98.
32. Long-time setting (I_r) = 0.95.
33. Long-time setting (I_r) = 0.9.

Recommended Upstream Protection and Cable Sizes for 1500 kW UPS

	Maximum OCPD (A)				Conductors per Phase Copper/ Aluminium (mm²)				PE Conductor (mm²)			
	380 V	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**	**380 V**	**400 V**	**415 V**	**440 V**
Input	3200[34]	3200[34]	3200[34]	2500[35]	7x240/ 9x240	7x240/ 9x240	7x240/ 9x240	6x240/ 8x240	4x240/ 5x240	4x240/ 5x240	4x240/ 5x240	3x240/ 4x240
Bypass	2500[36]	2500[34]	2500[34]	2000[35]	6x240/ 7x240	5x240/ 7x240	5x240/ 7x240	5x240/ 6x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240	3x240/ 3x240
Output	2500[36]	2500[34]	2500[34]	2000[35]	6x240/ 7x240	5x240/ 7x240	5x240/ 7x240	5x240/ 6x240	3x240/ 4x240	3x240/ 4x240	3x240/ 4x240	3x240/ 3x240
Battery	4000	4000	4000	4000	8x240/ 10x240	8x240/ 10x240	8x240/ 10x240	8x240/ 10x240	4x240/ 5x240	4x240/ 5x240	4x240/ 5x240	4x240/ 5x240

34. Long-time setting (I_r) = 0.9.
35. Long-time setting (I_r) = 1.0.
36. Long-time setting (I_r) = 0.95.

Specifications for 480 V Systems

Input Specifications

	500 kW	750 kW	1000 kW	1100 kW	1250 kW	1500 kW
Connections	L1, L2, L3 + G[37]					
Nominal input voltage (V)	480					
Input voltage range (V)[38]	408-576					
Frequency range (Hz)	40 – 70					
Nominal input current (A)	633	950	1266	1393	1583	1899
Maximum input current (A)[39]	728	1092	1456	1602	1820	2184
Input current limitation (A)	760	1140	1520	1672	1900	2280
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 short circuit rating	100 kA RMS					
Protection	Contactors					
Ramp-in	Adaptive 1 – 40 secs					

Bypass Specifications

	500 kW	750 kW	1000 kW	1100 kW	1250 kW	1500 kW
Connections	L1, L2, L3 + G					
Nominal bypass voltage (V)	480					
Bypass voltage range (V)	432-528					
Frequency (Hz)	50 or 60					
Frequency range (Hz)	Programmable: +/-0.1, +/-3, +/-10. Default is +/-3.					
Nominal bypass current (A)	606	909	1211	1332	1514	1817
Maximum short circuit rating	100 kA RMS[40]					
Thyristor I^2t	16245					
BF2 magnetic trip	39 kA					
Protection	Molded switch for backfeed protection					

37. TN, TT, and IT power distribution systems are supported. Corner (line) grounding is not supported.
38. The system can operate at 600 V for 1 minute.
39. At nominal input voltage and full charge.
40. Conditioned by the internal molded switch with a 90 kA peak magnetic trip

Output Specifications

	500 kW	750 kW	1000 kW	1100 kW	1250 kW	1500 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 regulation	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	902	1203	1323	1504	1804
Total harmonic distortion (THDU)	<2% at 100% linear load <3% at 100% non–linear load					
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	750 kW	1000 kW	1100 kW	1250 kW	1500 kW
Charging power in % of output power	40% at ≤ 80% load 15% at 100% load					
Maximum charging power (kW)	75 at 100% load 200 at 80% load	112.5 at 100% load 300 at 80% load	150 at 100% load 400 at <80% load	165 at 100% load 440 at <80% load	187.5 at 100% load 500 at <80% load	225 at 100% load 600 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 (full load) (VDC)	420					
Battery current at full load and nominal battery voltage (A)	1090	1634	2179	2397	2724	3269
Battery current at full load and minimum battery voltage (A)	1362	2043	2724	2996	3405	4086
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)					

	500 kW	750 kW	1000 kW	1100 kW	1250 kW	1500 kW
Battery test	Manual/automatic (selectable)					
Deep discharge protection	Yes					
Recharge according to battery temperature	Yes					

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 2500 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 is to be provided by others and marked with its function.

NOTE: All wiring must comply with all applicable national and/or electrical codes (National Electrical Code, ANSI/NFPA 70).

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 or aluminium conductors
- 100% rated breakers
- Nominal operating conditions

If the ambient room temperature is greater than 30 °C, use larger or additional parallel conductors in accordance with the correction factors of the NEC. The maximum allowable conductor size is 600 kcmil.

Equipment Grounding Conductors (EGC) are sized in accordance with NEC Article 250.122 and Table 250.122 “Minimum size equipment conductor for grounding equipment.

NOTE: Always consider the EGC size according to the complete electrical installation.

	1100 kW		
	Maximum OCPD (A)	**Conductors per Phase Copper/ Aluminium (kcmil)**	**Equipment Grounding Conductor Copper/Aluminium[41]**
Input	2000[42]	5x500 / 6x500	250 kcmil/ 400 kcmil
Bypass	1600[42]	4x500 / 5x500	4/0 AWG / 350 kcmil
Output	1600[42]	4x500 / 5x500	4/0 AWG / 350 kcmil
Battery	3000[43]	8x500 / 9x600	400 kcmil / 600 kcmil

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

	1250 kW			1500 kW		
	Maximum OCPD (A)	**Conductors per Phase Copper/ Aluminium (kcmil)**	**Equipment Grounding Conductor Copper/ Aluminium[44]**	**Maximum OCPD (A)**	**Conductors per Phase Copper/ Aluminium (kcmil)**	**Equipment Grounding Conductor Copper/ Aluminium[44]**
Input	2000[45]	5x600/ 6x600	250 kcmil/ 400 kcmil	2500[45]	6x600/ 8x600	350 kcmil/ 400 kcmil
Bypass	1600[45]	4x600/ 5x600	4/0 AWG/ 350 kcmil	2000[45]	5x600/ 6x600	250 kcmil/ 350 kcmil
Output	1600[45]	4x600/ 5x600	4/0 AWG/ 350 kcmil	2000[45]	5x600/ 6x600	250 kcmil/ 350
Battery	4000[46]	9x600/ 11x600	500 kcmil/ 750 kcmil	5000[46]	11x600/ 14x600	700 kcmil/ –

Recommended Bolt and Lug Sizes for Copper Cables

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

Recommended Bolt and Lug Sizes for Aluminium Cables

Cable Size	Terminal Bolt Diameter	Cable Lug Type	Crimping Tool	Die
2/0 AWG	M12 x 40 mm	LAB2/0-12-5	CT930	Olive P54
3/0 AWG	M12 x 40 mm	LAB3/0-12-5	CT930	Ruby P60
250 kcmil	M12 x 40 mm	LAB250-12-5	CT930	Red P71
300 kcmil	M12 x 40 mm	LAB300-12-2	CT930	Blue P76
400 kcmil	M12 x 40 mm	LAB400-12-2	CT930	Green P94
500 kcmil	M12 x 40 mm	LAB500-12-2	CT930	Pink P99
600 kcmil	M12 x 40 mm	LAB600-12-2	CT930	Black P106

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

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

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
75%	50542	10319	10319	53313
100%	69234	13758	13758	78519

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

Heat Dissipation (BTU/hr) for a 1000 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25%	36468	12112	15294	36468
50%	61876	15493	16657	63710
75%	95564	20637	20637	106625
100%	145873	27516	27516	157038

Heat Dissipation (BTU/hr) for a 1100 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25%	35040	12359	16849	40115
50%	66050	15134	18298	70080
75%	99075	19843	21986	117288
100%	156383	26458	26458	172741

Heat Dissipation (BTU/hr) for a 1250 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25%	44427	14044	18748	45585
50%	75057	17198	20047	79637
75%	119455	22549	24172	133281
100%	177708	30065	30065	196297

Heat Dissipation (BTU/hr) for a 1500 kW UPS

Load	Normal Operation	ECO Mode	ECOnversion	Battery Operation
25%	53313	16853	22054	54285
50%	92813	23240	23129	96666
75%	147481	27059	27059	154530
100%	213250	36079	36079	229962

Specifications

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)

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[47]	-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[48]	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 69.5 dB at 100% load for 400 V systems 68 dB at 100% load for 480 V systems	
Protection class	IP20	
Color	RAL 9003 white	

47. For temperatures between 40 °C and 50 °C, the load power rating must be derated with 2.5% per °C of rated output power. Above 40 °C the minimum input voltage is 340 V, and from 380 V to 340 V, the charge power must be linearly derated from 12% to 1%.
48. Maximum operation altitude is 3000 m (10000 ft).

Weights and Dimensions for UPSs with 1500 kW I/O Cabinet

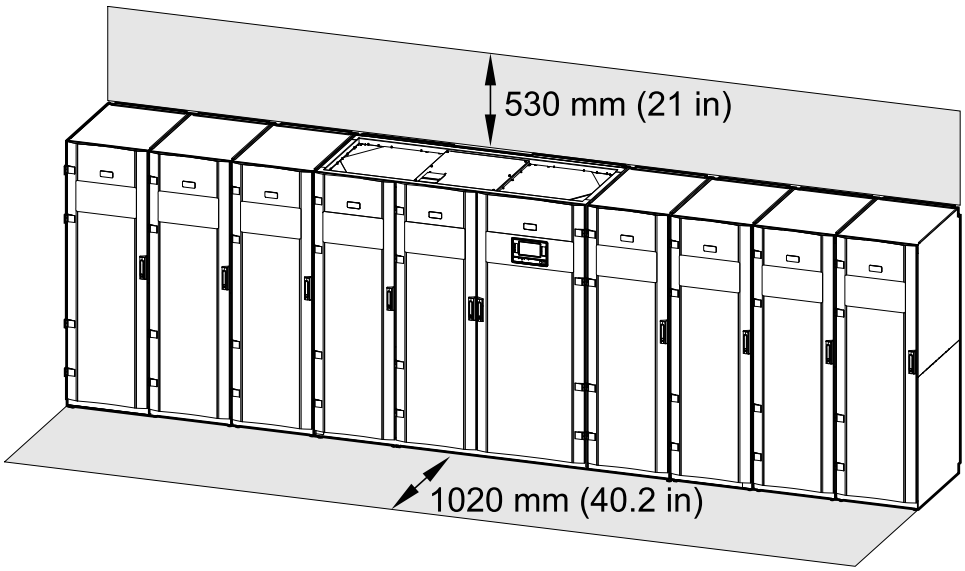
Part Number	Parts	Weight kg (lbs)	Height mm (in)	Width mm (in)	Depth mm (in)
GVX500K1250HS GVX500K1500HS	In total – Power cabinets – I/O cabinet	1956 (4312) 2x540 (2x1190) 876 (1931)	1970 (77.6)	3200 (126.0) 2x600 (2x23.6) 2000 (78.7)	900 (35.4)
GVX750K1250HS GVX750K1500HS	In total – Power cabinets – I/O cabinet	2496 (5503) 3x540 (3x1190) 876 (1931)	1970 (77.6)	3800 (149.6) 3x600 (3x23.6) 2000 (78.7)	900 (35.4)
GVX1000K1250HS GVX1000K1500HS	In total – Power cabinets – I/O cabinet	3036 (6693) 4x540 (4x1190) 876 (1931)	1970 (77.6)	4400 (173.2) 4x600 (4x23.6) 2000 (78.7)	900 (35.4)
GVX1250K1250HS GVX1250K1500HS	In total – Power cabinets – I/O cabinet	3576 (7884) 5x540 (5x1190) 876 (1931)	1970 (77.6)	5000 (196.9) 5x600 (5x23.6) 2000 (78.7)	900 (35.4)
GVX1500K1250HS GVX1500K1500HS	In total – Power cabinets – I/O cabinet	4116 (9074) 6x540 (6x1190) 876 (1931)	1970 (77.6)	5600 (220.5) 6x600 (6x23.6) 2000 (78.7)	900 (35.4)
GVX1750K1500HS	In total – Power cabinets – I/O cabinet	4656 (10265) 7x540 (7x1190) 876 (1931)	1970 (77.6)	6200 (244.1) 7x600 (7x23.6) 2000 (78.7)	900 (35.4)

Clearance for UPSs with 1500 kW I/O Cabinet

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 with no requirement for rear or side access.

Front View

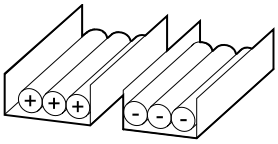
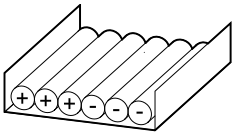
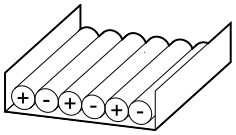
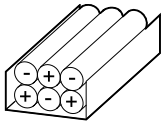


Guidance for Organizing Battery Cables

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

Overview of Configurations

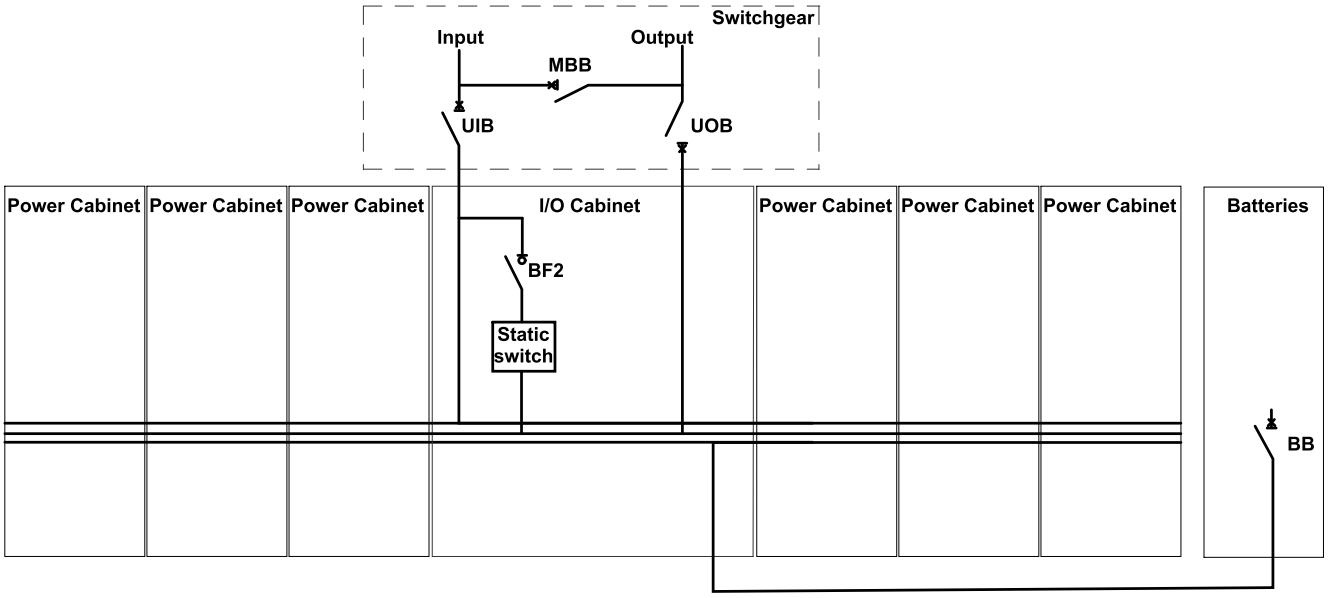
Breakers in the System

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 1500 kW I/O Cabinet – Single Utility/Mains

The illustration shows a 1500 kW UPS. The principle is the same for the other UPSs with the 1500 kW I/O cabinet.

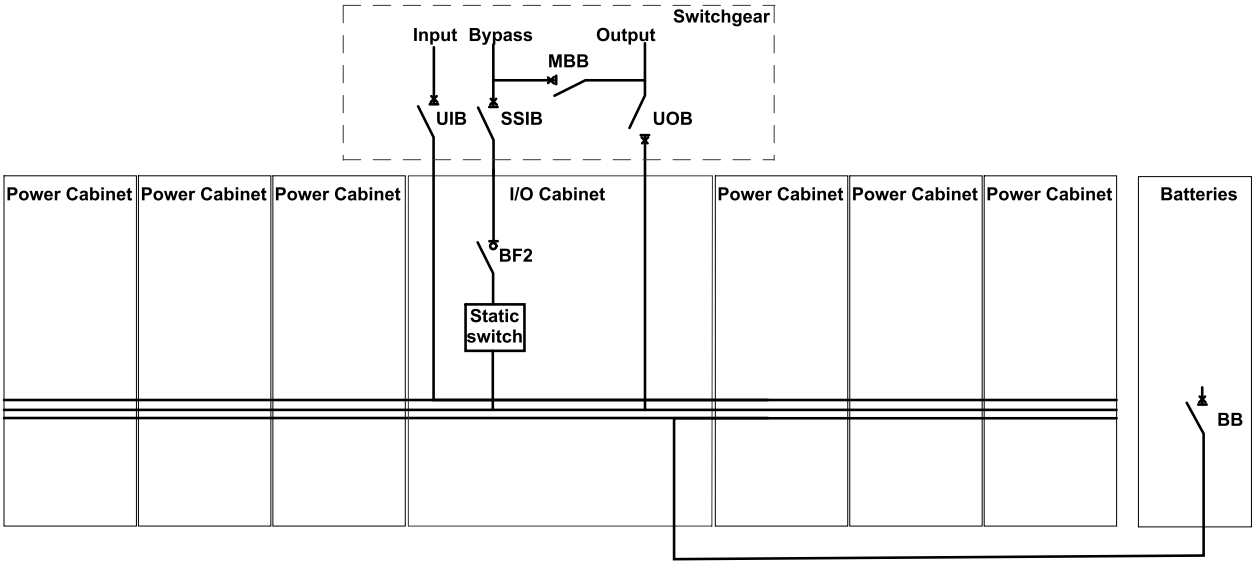
Galaxy VX 1500 kW UPS



Overview of UPSs with 1500 kW I/O Cabinet – Dual Utility/Mains

The illustration shows a 1500 kW UPS. The principle is the same for the other UPSs with the 1500 kW I/O cabinet.

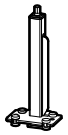
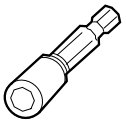
Galaxy VX 1500 kW UPS



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 44*	1 
Floor protection plate		1 
Hexagonal socket for drilling machine		1 

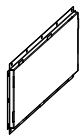
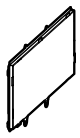
Installation Kit 0M-821667

NOTE: The rear anchoring bracket is shipped on the pallet.

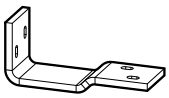
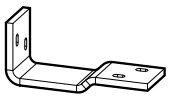
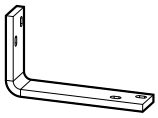
Part	Used in	Number of units
Rear anchoring bracket	*Mount the Rear Anchoring Brackets, page 51*	1 

Installation Kit 0H-9101

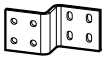
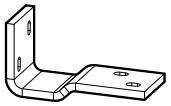
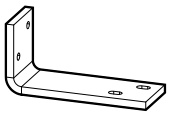
Part	Used in	Number of Units
Angle for left side of the rear anchoring bracket 870–30411	*Mount the Rear Anchoring Brackets, page 51*	1 
Angle for right side of the rear anchoring bracket 870–30412		1 
M8 x 20 hexagonal torx with washer		8 
1 mm leveling shims		30 
Temperature sensor 0M-1160	*Connect the Signal Cables between the I/O Cabinet and the Classic Battery Cabinets, page 98*	2

Part	Used in	Number of Units
Terminator for modbus	*Connect the Modbus Cables, page 107*	2 
Cable ties for signal cables	*Connect the Signal Cables, page 88*	50
EMC cover left 0M-82316	*Position the Cabinets, page 52*	1 
EMC cover right 0M-98993		1 
M6 nut with washer		22 

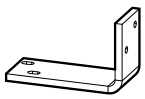
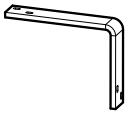
Installation Kit 0H-9097

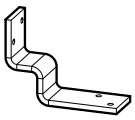
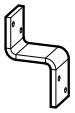
Part	Used in	Number of Units
Battery + interconnection busbar 880–90655 between I/O cabinet and power cabinet to the right	*Install the Busbars between the I/O Cabinet and the Power Cabinets, page 71*	1 
Output interconnection busbars 880–90654 between I/O cabinet and power cabinet to the right		3 
Neutral interconnection busbar 880–5538 between I/O cabinet and power cabinet to the right		1 
M10 nut with washer		8 
M10 x 40 hexagonal torx with washer		2 
M8 x 40 hexagonal torx with washer		10 

Installation Kit 0H-9128

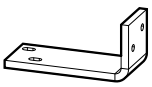
Part	Used in	Number of Units
Grounding interconnection busbar 880–99029 between I/O cabinet and power cabinet to the right	*Install the Busbars between the I/O Cabinet and the Power Cabinets, page 71*	1 
Battery - interconnection busbar 880–90658 between I/O cabinet and power cabinet to the right		1 
Input interconnection busbars 880–90657 between I/O cabinet and power cabinet to the right		3 
Neutral interconnection busbar 880–9614 between I/O cabinet and power cabinet to the right		1 
M10 nut with washer		8 
M10 x 40 hexagonal torx with washer		2 
M8 x 40 hexagonal torx with washer		18 
M6 nuts with washer		3 

Installation Kit 0H-9096

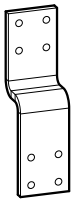
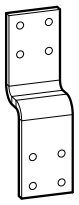
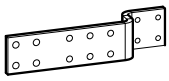
Part	Used in	Number of Units
Grounding interconnection busbar 880–5662 between I/O cabinet and power cabinet to the left	*Install the Busbars between the I/O Cabinet and the Power Cabinets, page 71*	1 
Battery + interconnection busbar 880–5503 between I/O cabinet and power cabinet to the left		1 
Neutral interconnection busbar 880–5507 between I/O cabinet and power cabinet to the left		1 

Part	Used in	Number of Units
First battery - interconnection busbar 880–5496 between I/O cabinet and power cabinet to the left		1 
First layer input interconnection busbars 880–5502 between I/O cabinet and power cabinet to the left		3 
Second battery - interconnection busbar 880–5495 between I/O cabinet and power cabinet to the left		1 
M10 nut with washer		2 
M10 x 40 hexagonal torx with washer		10 
M8 nut with washer		4 
M8 x 40 hexagonal torx with washer		18 

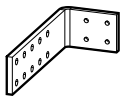
Installation Kit 0H-9129

Part	Used in	Number of Units
Output interconnection busbars 880–9569 between I/O cabinet and power cabinet to the left	*Install the Busbars between the I/O Cabinet and the Power Cabinets, page 71*	3 
Second layer input interconnection busbars 880–90650 between I/O cabinet and power cabinet to the left		3 
M10 nut with washer		6 
M8 x 40 hexagonal torx with washer		12 
M6 nuts with washer		3 

Installation Kit 0H-9161 for Single Mains

Part	Used in	Number of Units
Vertical single mains busbar 880–99058 for L1	*Install the Single Utility/Mains Installation Kit 0H-9161, page 82*	1 
Vertical single mains busbar 880–99059 for L2		1 
Vertical single mains busbar 880–99057 for L3		1 
Horizontal single mains busbars 880–99060		3 
M10 nut with washer		24 
M10 x 60 hexagonal torx with washer		36 

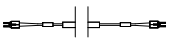
Installation Kit 0H-1102

Part	Used in	Number of units
Neutral busbar 880–5501	*Connect the Power Cables in a 380 V, 400 V, 415, and 440 V System, page 83*	1 
M8 x 35 hexagonal torx with washer		4 

Installation Kit 0M-99259

Part	Used in	Number of Units
Front anchoring bracket for I/O cabinet	*Mount the Front Anchoring Brackets, page 86*	1 

Installation Kit 0H-1074

Part	Used in	Number of Units
Optical fiber cable 0W7819	*Connect the Signal Cables between the I/O Cabinet and the Power Cabinets, page 92*	1 
Optical fiber cable 0W7822		1 
Optical fiber cable 0W7827		1 
Display cable 0W7853	Do not install. Installation must be performed by Schneider Electric.	1 
Display cable 0W7858		1 
Display cable 0W7859		1 

Installation Kit 0H-0889

Part	Used in	Number of Units
PBUS 1 cable 0W7995	*Connect the PBUS Cables between Parallel UPS Units, page 105*	1 
PBUS 2 cable 0W7996		1 

Installation Kit 0M-92449

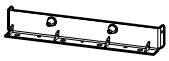
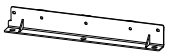
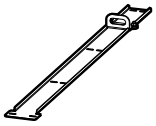
Part	Used in	Number of Units
Display	Do not install. Installation must be performed by Schneider Electric.	1 
M4x10 torx screw with washer		4 

Installation 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.

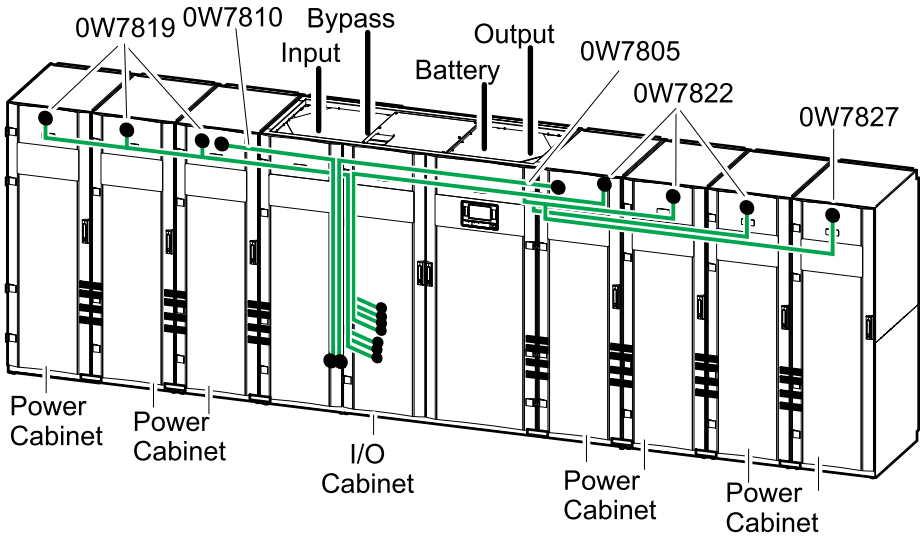
NOTE: These installation kit parts are shipped in the packaging of the power cabinet.

Part	Used in	Number of Units
Rear anchoring bracket for power cabinet 0M-818242	*Mount the Rear Anchoring Brackets, page 51*	1 
M8 x 20 hexagonal torx with washer		2 
Front anchoring bracket for power cabinet 0M-816684	*Mount the Front Anchoring Brackets, page 86*	1 
Long top baying bracket 0M-821220	*Position the Cabinets, page 52*	1 
M6 x 16 torx screw with washer		15 
M10 nut with washer		24 
M10 x 35 hexagonal torx with washer		12 
1 mm leveling shims		10 
Ground interconnection busbar 880–5259 **or** 880–99027[49] from power cabinet to power cabinet	*Install the Busbars between the Power Cabinets, page 77*	1 
M8 nut with washer		4 
M8 x 35 mm hexagonal torx with washer		4 
Interconnection busbar 880-10146 **or** 880–9720[49] from power cabinet to power cabinet (neutral)		1

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

Part	Used in	Number of Units
		
Interconnection busbar 0M-140035 power cabinet to power cabinet (battery +)		1 
Interconnection busbar 0M-97886 power cabinet to power cabinet (output)		3 
Interconnection busbar 0M-819336 power cabinet to power cabinet (battery -)		1 
Interconnection busbar 0M-97885 power cabinet to power cabinet (input)		3 

Installation Procedure



1. *Remove the Cabinets from the Pallet, page 44*.
2. *Mount the Rear Anchoring Brackets, page 51*.
3. *Position the Cabinets, page 52*.
4. *Install the Busbars between the I/O Cabinet and the Power Cabinets, page 71*.
5. *Install the Busbars between the Power Cabinets, page 77*.
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 80*.
   - *Prepare the I/O Cabinet for Power Cables in Bottom Cable Entry Systems, page 81*.
7. In single mains systems only: *Install the Single Utility/Mains Installation Kit 0H-9161, page 82*.
8. Connect the power cables. Follow one of the procedures:
   - *Connect the Power Cables in a 380 V, 400 V, 415, and 440 V System, page 83*.
   - *Connect the Power Cables in a 480 V System, page 85*.
9. *Mount the Front Anchoring Brackets, page 86*.
10. *Prepare for Signal Cables, page 88*.
11. *Connect the Signal Cables between the I/O Cabinet and the Power Cabinets, page 92*.
12. *Connect the Signal Cables between the I/O Cabinet and the Switchgear, page 98*.
13. *Connect the Signal Cables for Battery Solutions, page 98*.
14. *Connect the Emergency Power Off (EPO), page 100*.
15. Option: *Connect External Synchronization, page 100*.
16. Option: *Connect Equipment to Input Contacts and Output Relays, page 103*.
17. Option: *Connect the PBUS Cables between Parallel UPS Units, page 105*.
18. Option: *Connect the Modbus Cables, page 107*.
19. *Final Mechanical Assembly, page 110*.

Mechanical Installation

Remove the Cabinets from the Pallet

NOTICE

RISK OF EQUIPMENT DAMAGE

Ensure that you have sufficient free space around the cabinets for the removal of the middle pallet part. The 1500 kW I/O cabinet requires 1.5 m (59 in) free space on the right or left side of the cabinet.

Failure to follow these instructions can result in equipment damage.

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.

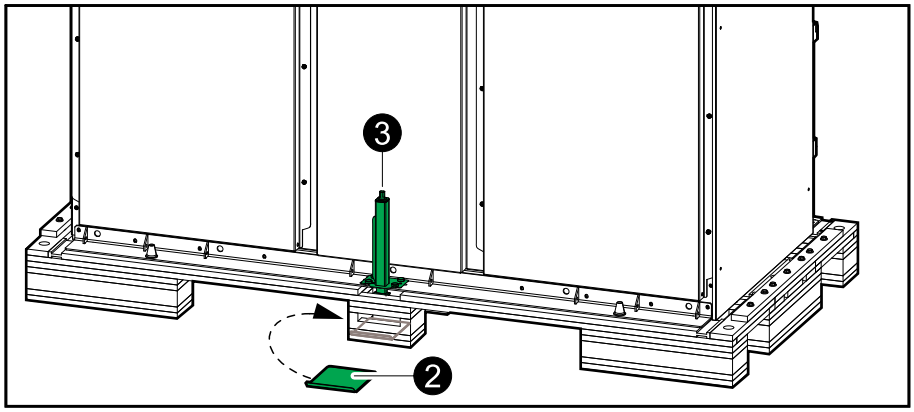
Failure to follow these instructions can result in equipment damage.

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

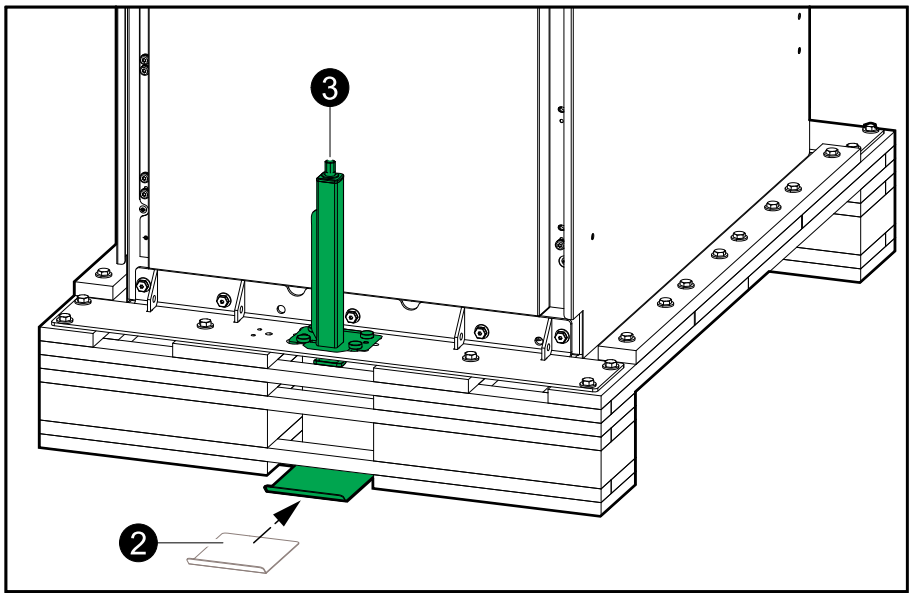
1. Take the installation kit 0M-816661 shipped with the I/O cabinet. Use the jack and the floor protection plate in the kit for all cabinets in this procedure.

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

Rear View of the 1500 kW 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

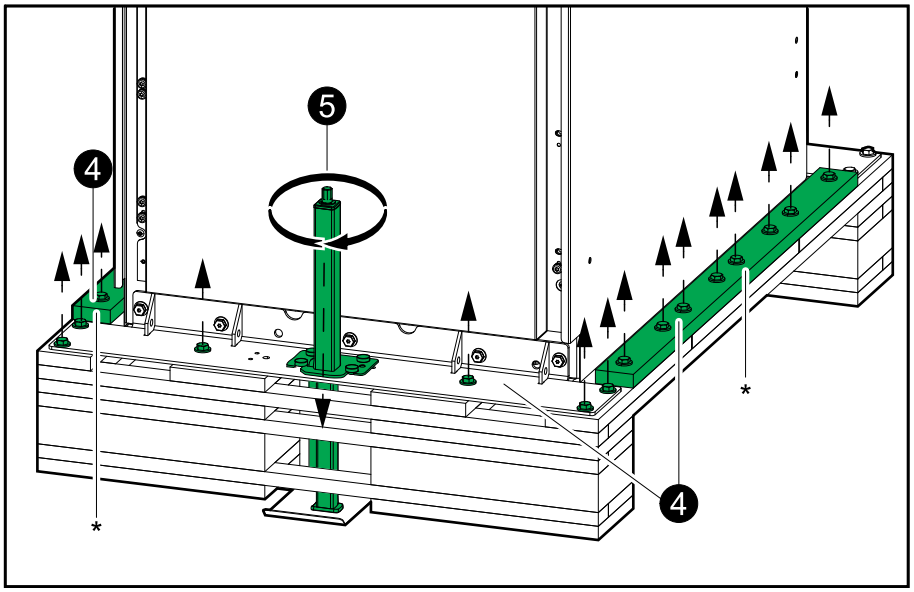
HAZARD OF TILTING

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.

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.

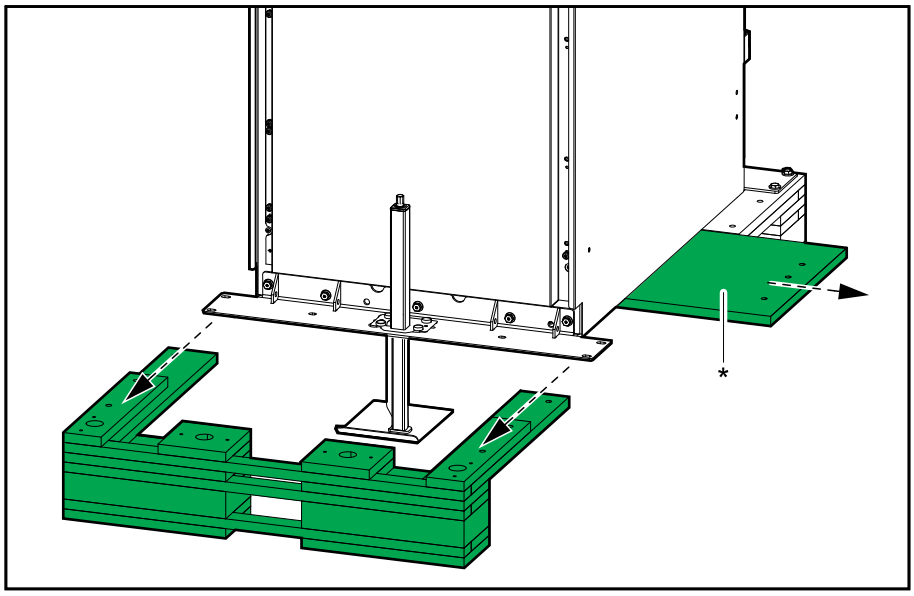
   NOTE: Reduce the drill torque to minimum to prevent kickback.

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.**

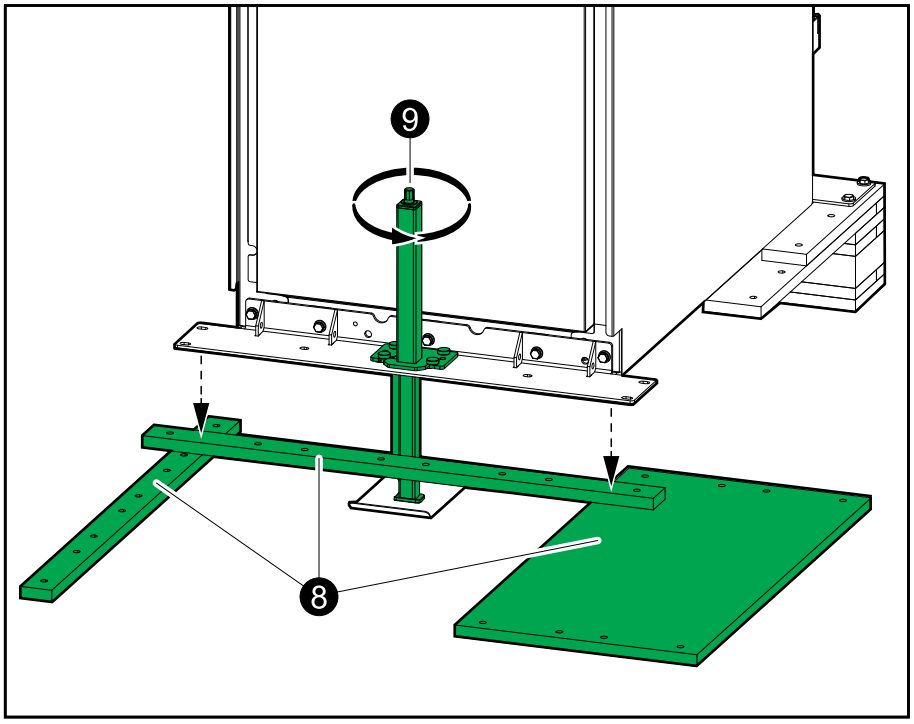
Rear View of the Power Cabinet



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 I/O cabinet, place the pallet parts from step 4 as a support.

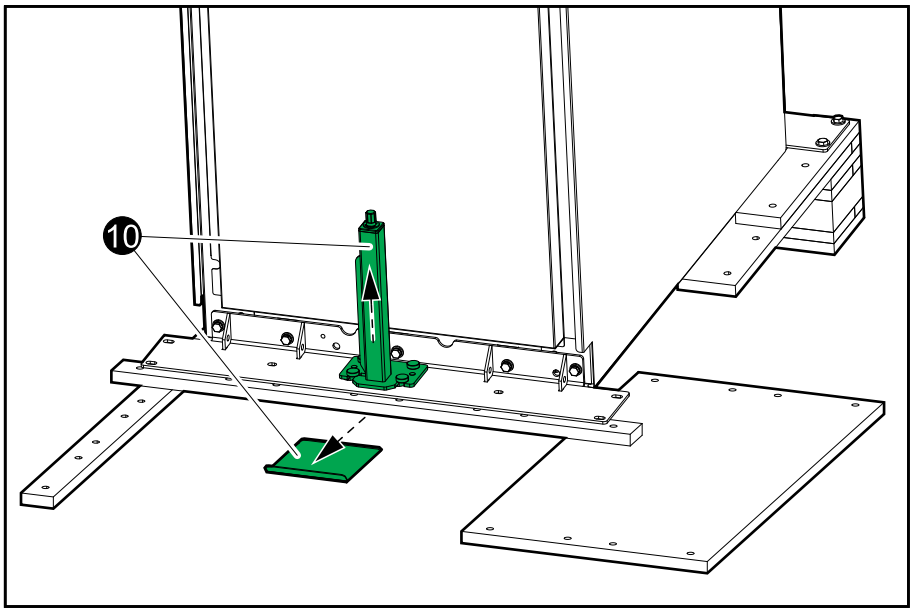
9. Use a drilling machine to lower the cabinet down onto the support.

Rear View of the Power Cabinet



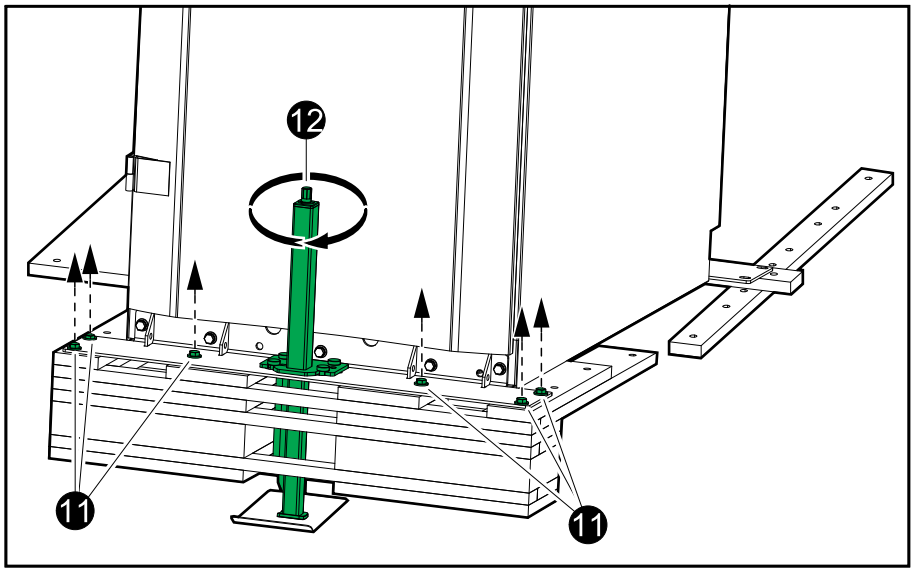
10. Move the floor protection plate and the jack from the rear to the front side.

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.

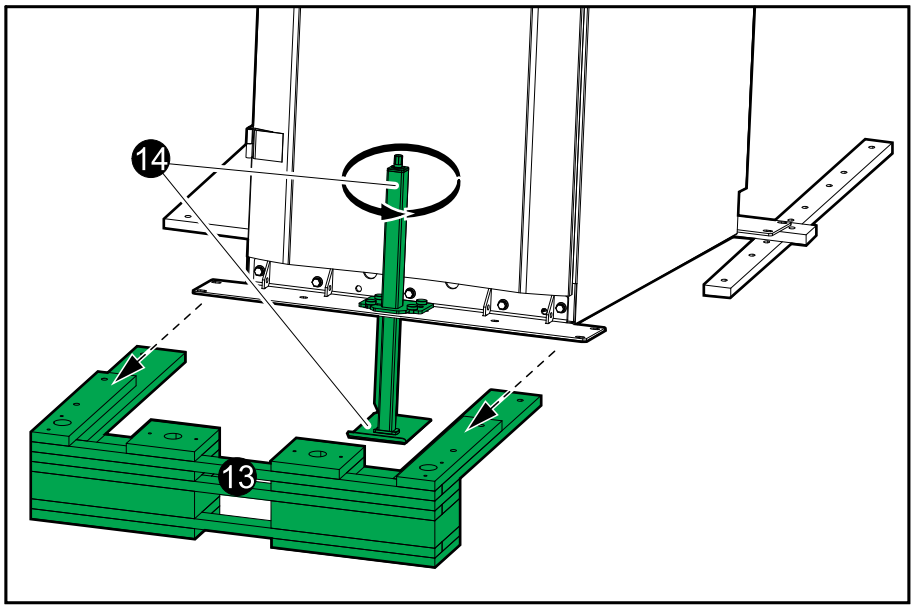
⚠WARNING

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.

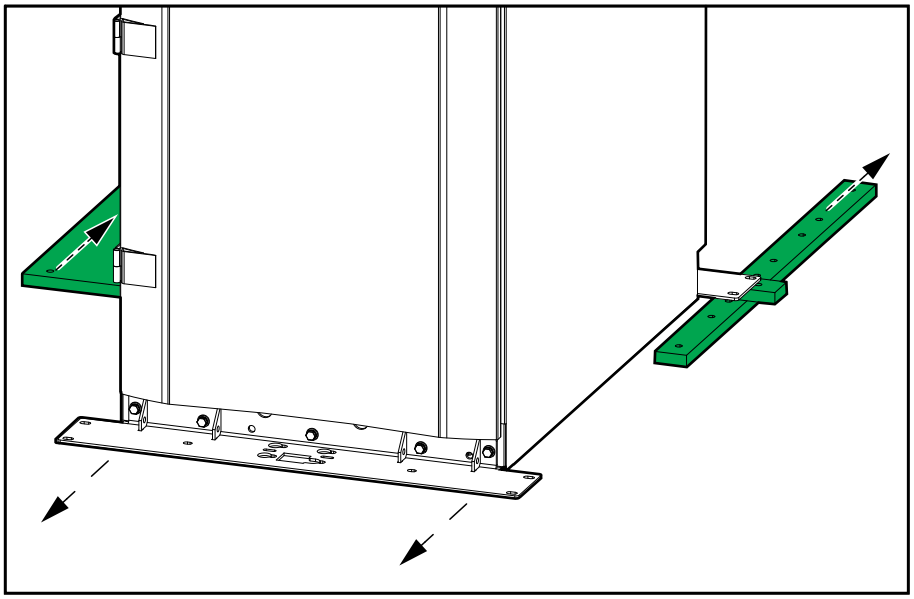
15. Wheel the cabinet away and remove the remaining pallet parts.

⚠WARNING

HAZARD OF TILTING

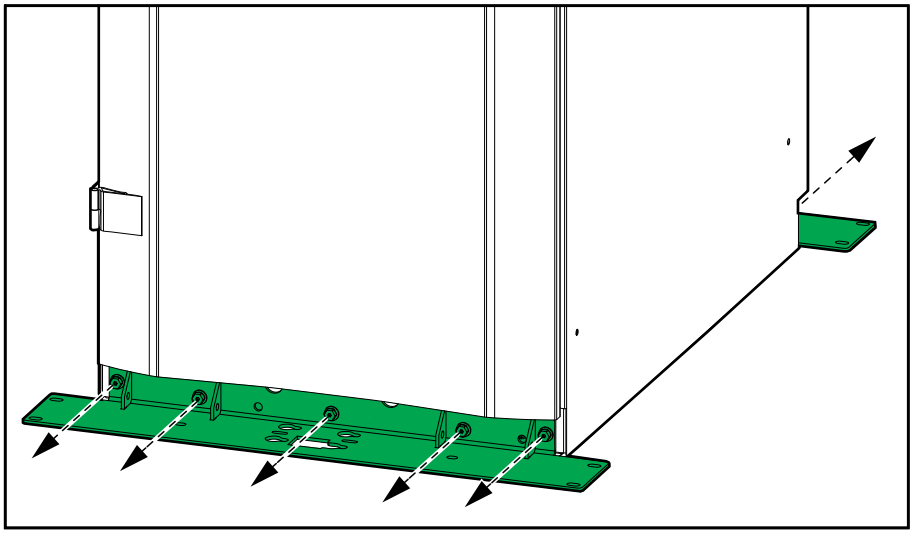
Be alert to uneven floors and doorsteps when moving the cabinet on its wheels to avoid overbalancing and tipping the cabinet.

Front View of the Power Cabinet



16. Remove the front and rear transportation brackets.

Front View of the Power Cabinet



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.

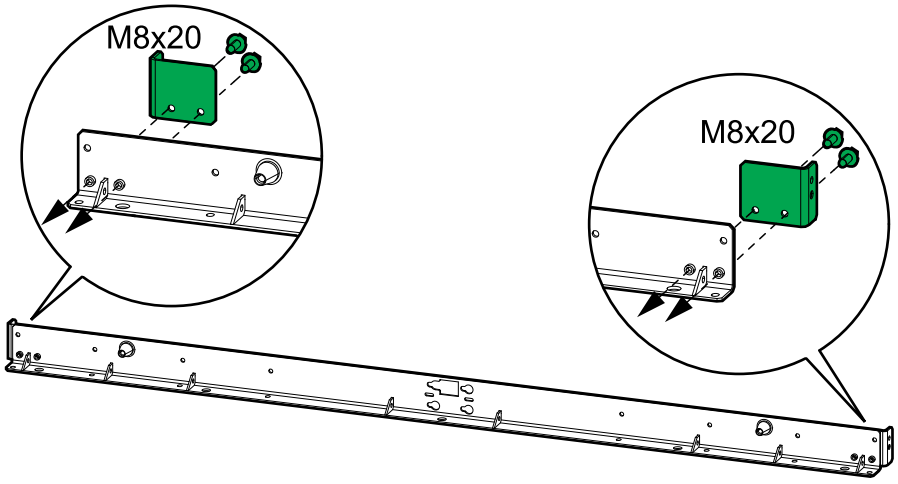
⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

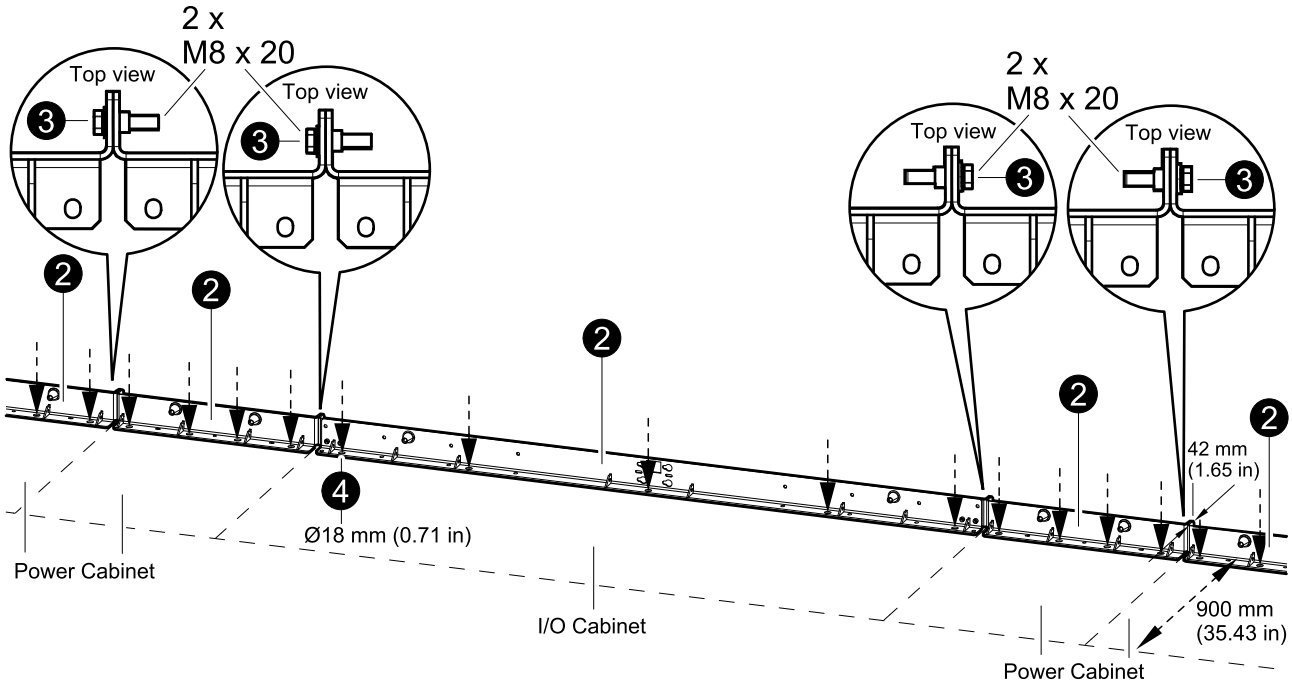
Leave the UPS system covered while making anchoring holes to prevent dust or other conductive particles from entering the system.

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

1. Use the rear anchoring bracket that was attached to the rear of the I/O cabinet pallet. Fasten the two plates from the installation kit 0H-9101 to the rear anchoring bracket of the I/O cabinet with M8 bolts. Note the direction of the plates.



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



3. Interconnect the rear anchoring brackets using the provided screws and bolts.
4. Mark the hole locations.
5. Drill anchoring holes according to the national and local requirements.
6. Mount the rear anchoring brackets to the floor. Bolts are not supplied.
7. Use a bubble-leveler to ensure that the rear anchoring 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: The cabinets must be moved to the final installation area individually and cannot be moved after they have been interconnected.

⚠DANGER

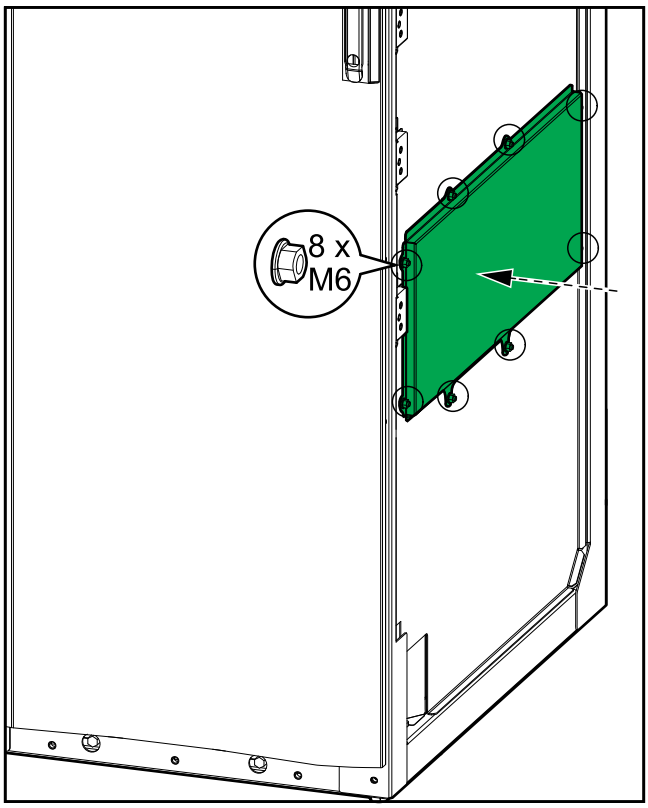
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

A minimum of one power cabinet and a maximum of four power cabinets must be placed on each side of the I/O cabinet.

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

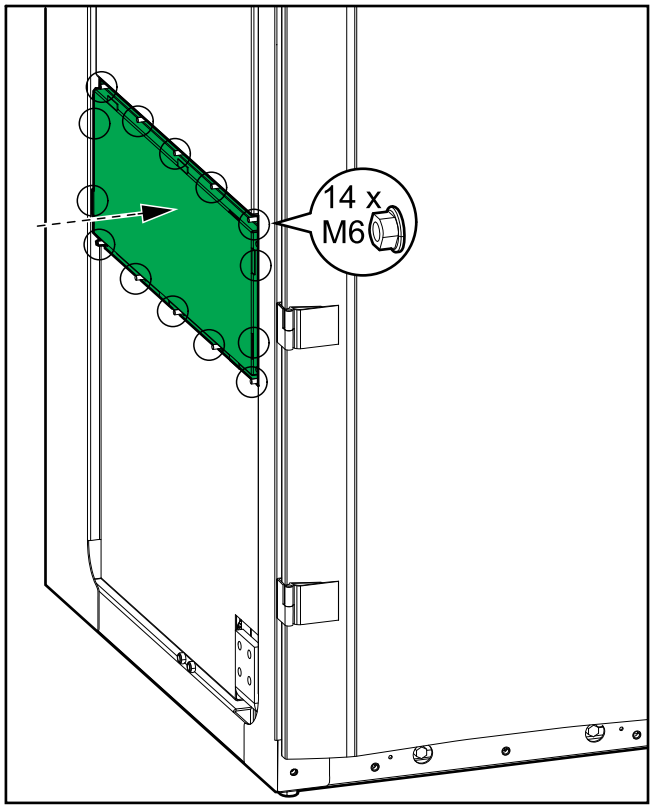
1. Install the interconnection cover 0M-98993 from the installation kit 0H-9101 on the right side (front view) of the right-most power cabinet and fasten with the M6 nuts.

Front View of the Power Cabinet



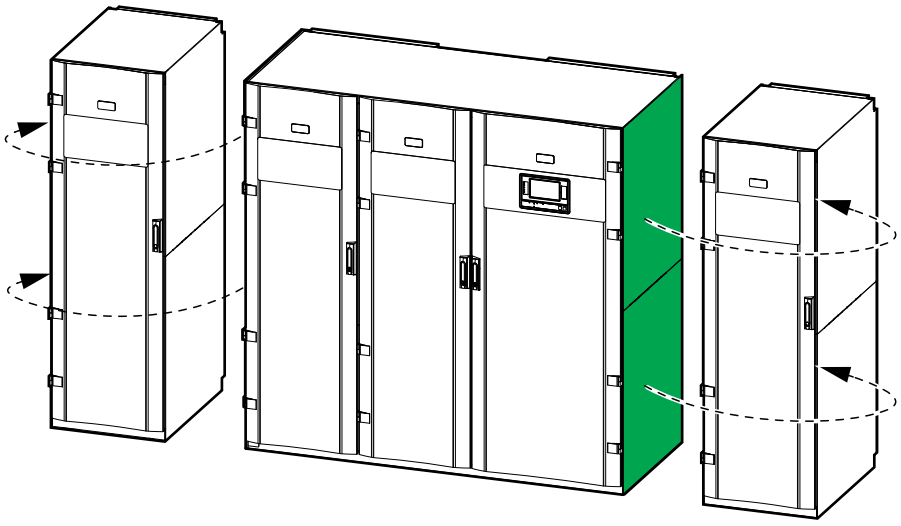
2. Install the interconnection cover 0M-82316 from the installation kit 0H-9101 on the left side (front view) of the left-most power cabinet and fasten with the M6 nuts.

Front View of the Power Cabinet



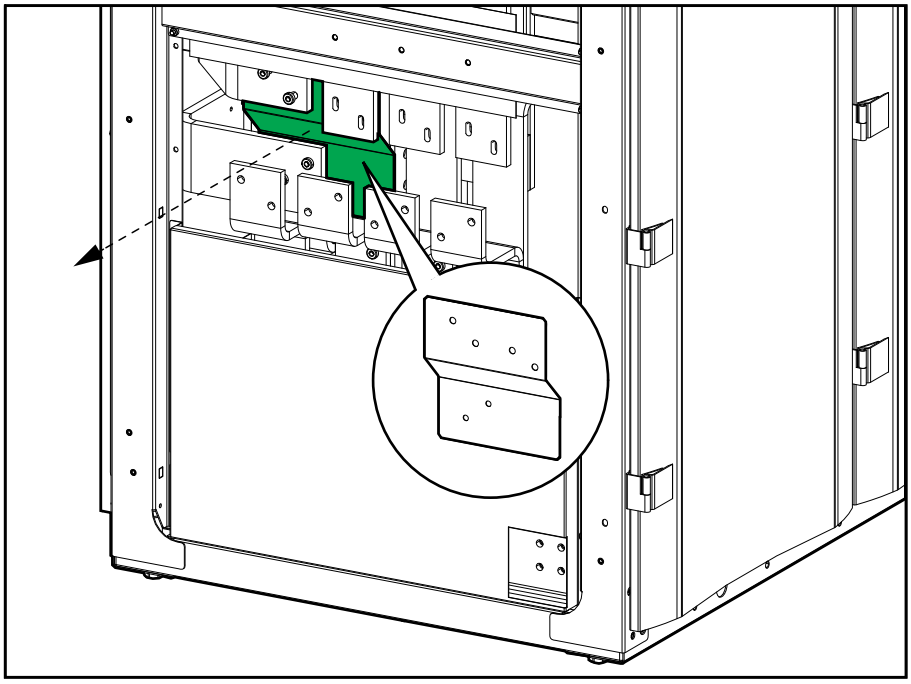
3. Remove the side panels from the I/O cabinet and install them on the left side of the left-most power cabinet and on the right side of the right-most power cabinet.

Front View of the UPS



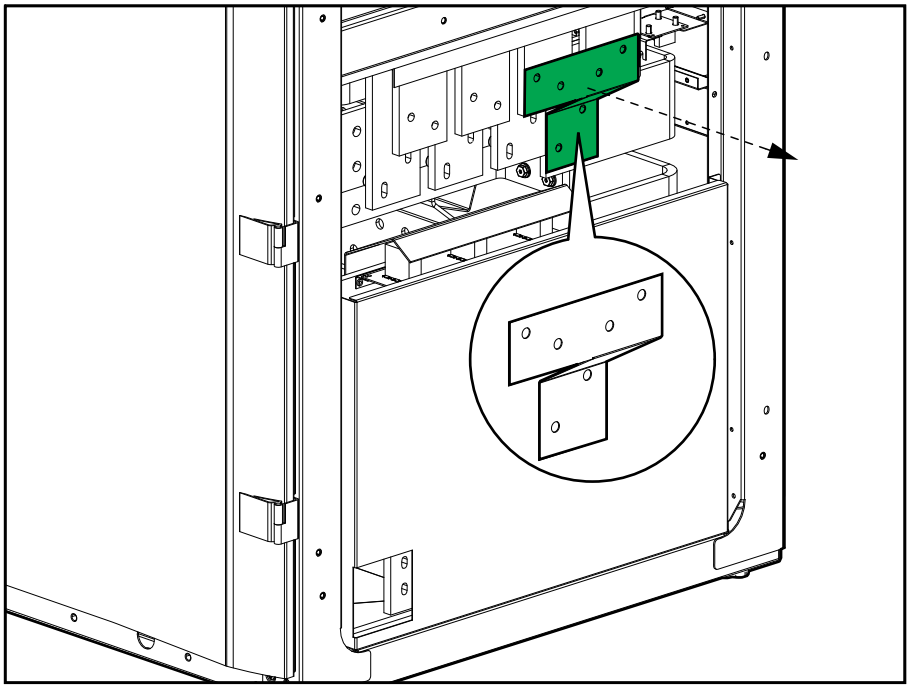
4. Remove and dispose of the indicated transport bracket from the left side of the I/O cabinet.

Front View of the I/O Cabinet



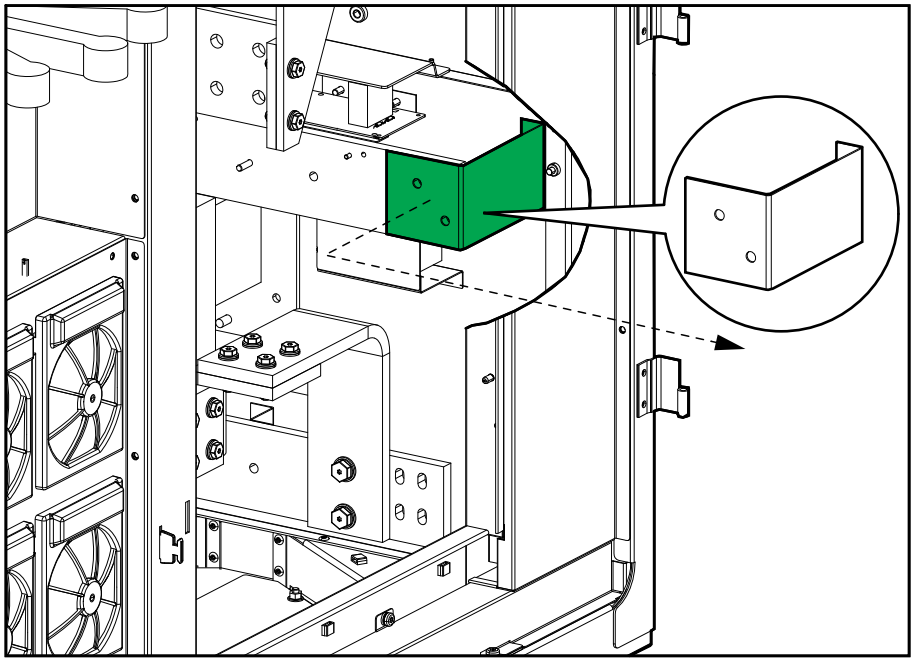
5. Remove and dispose of the indicated transport bracket from the right side of the I/O cabinet.

Front View of the I/O Cabinet



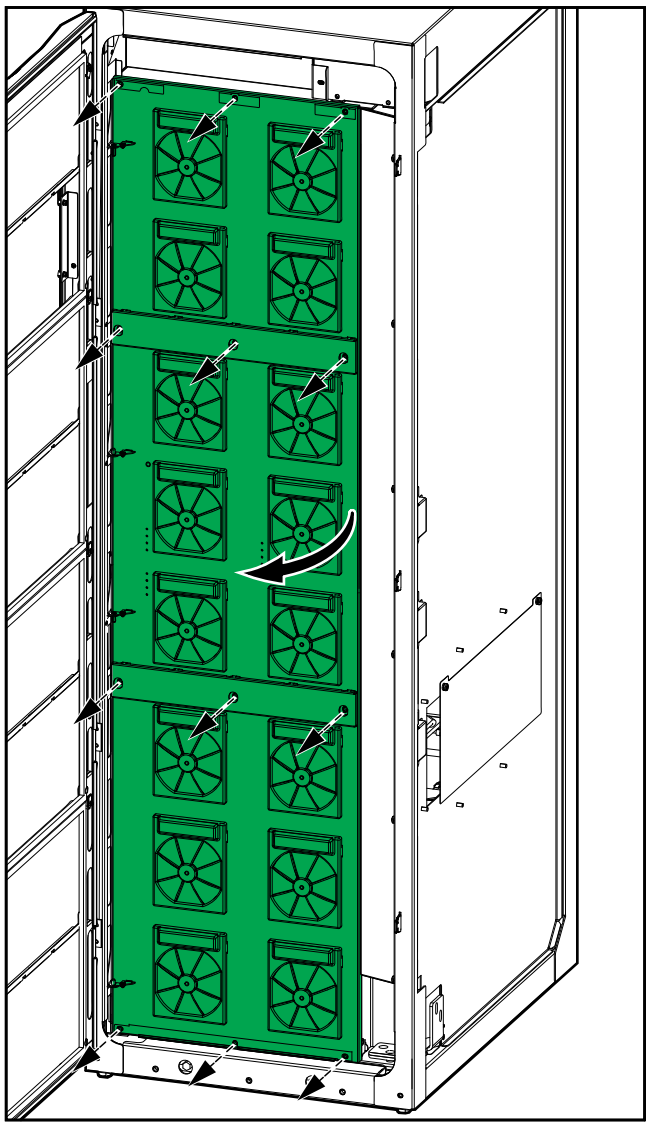
6. Remove and dispose of the indicated transport bracket from the right side of the I/O cabinet.

Front View of the I/O Cabinet



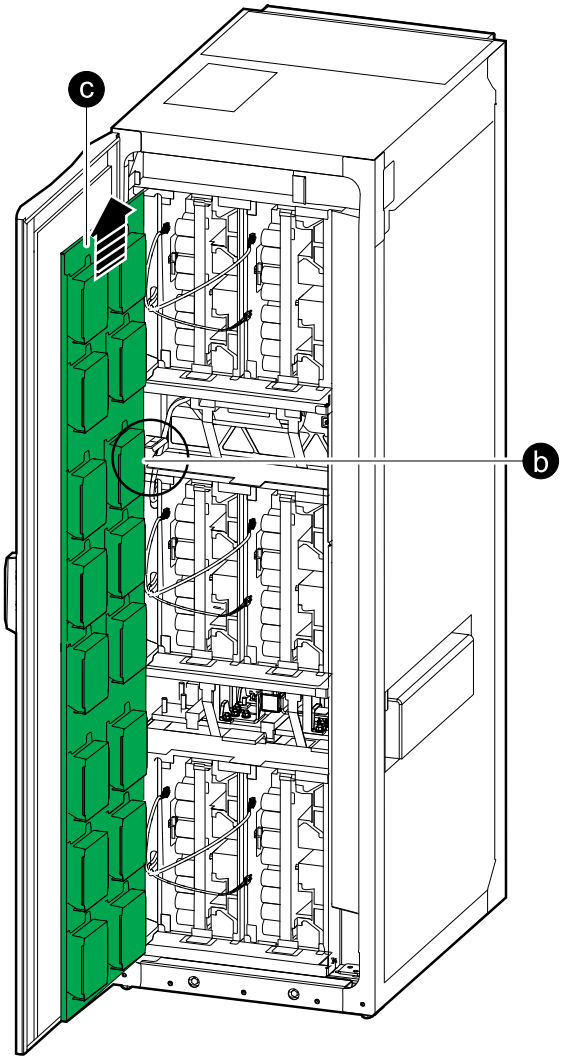
7. Perform the following steps on all power cabinets:
   a. Remove the 12 screws and open the fan doors of the power cabinets.

Front View of the Power Cabinet



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

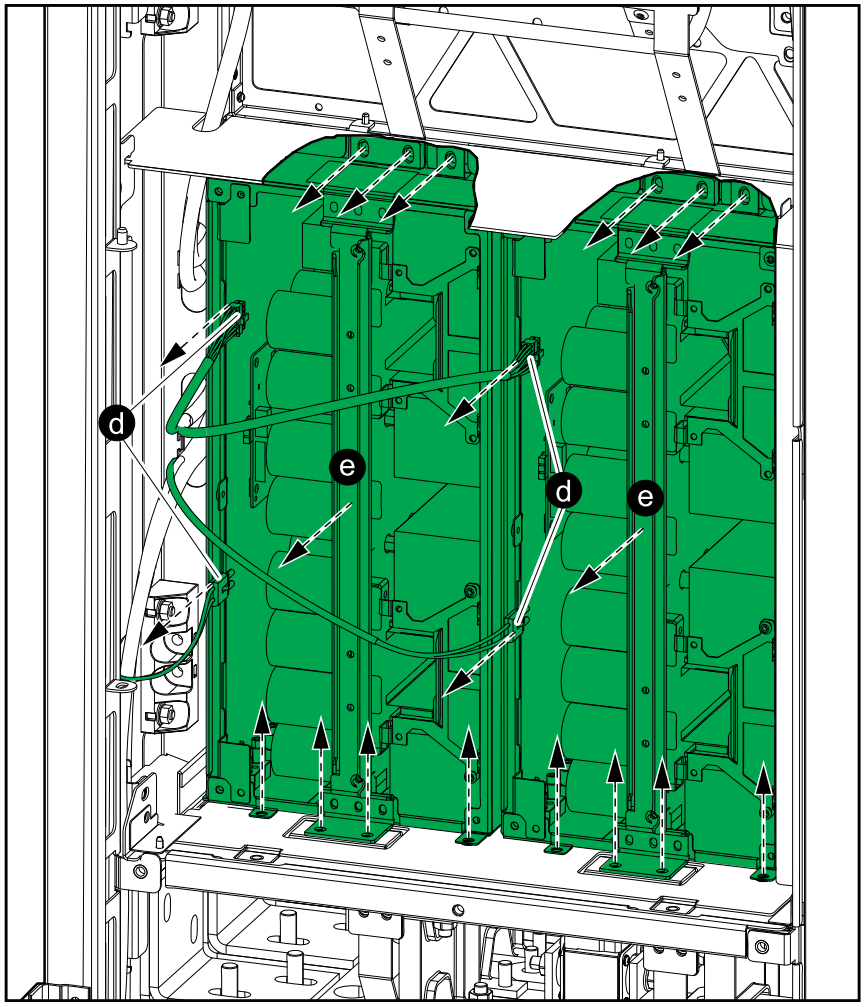
Front View of the Power Cabinet



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

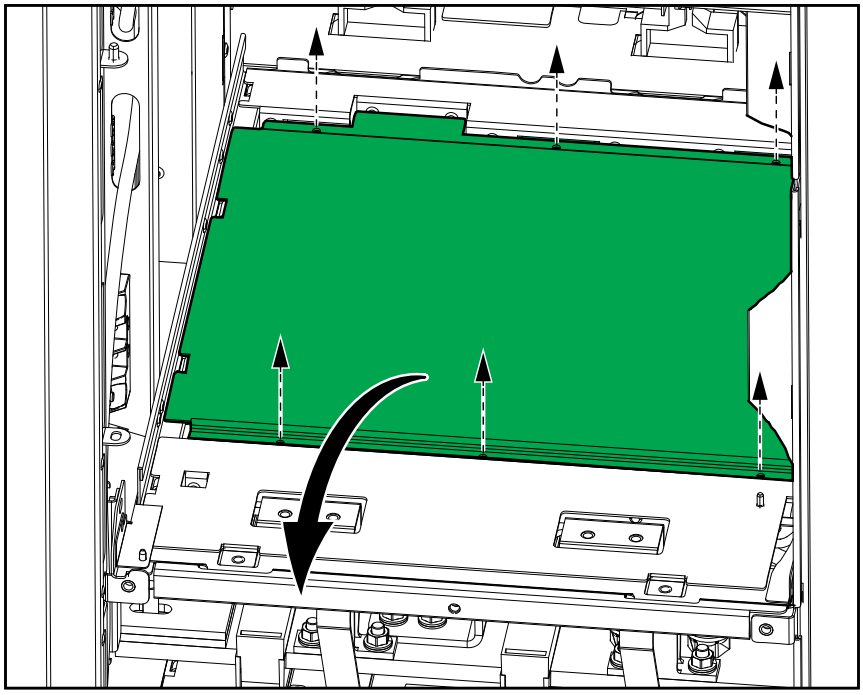


e. Loosen the screws and pull out the middle power blocks. Be careful not to damage the cables.

NOTICE
RISK OF EQUIPMENT DAMAGE Cover the power blocks while 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



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

⚠ DANGER

HAZARD OF ELECTRICAL SHOCK, EXPLOSION, OR ARC FLASH

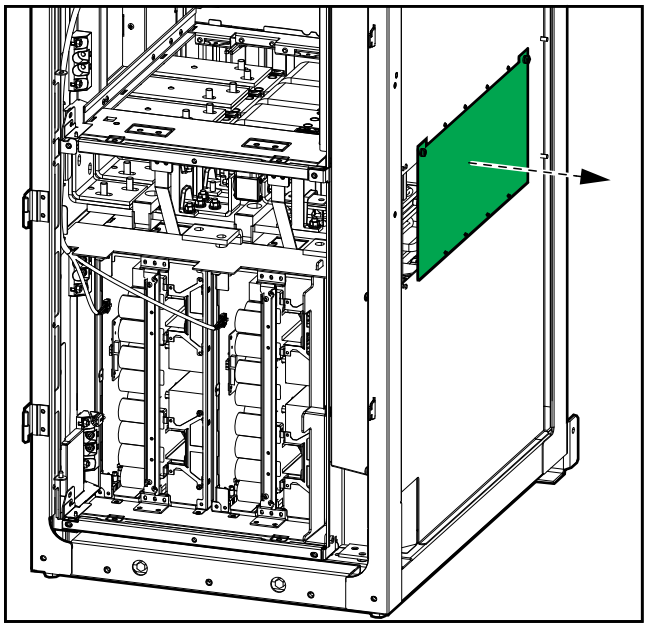
Do not perform the steps a to c on the power cabinets that will be installed at the end of the row.

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

NOTE: The EMC plate is not part of all power cabinet versions. Check your specific power cabinets.

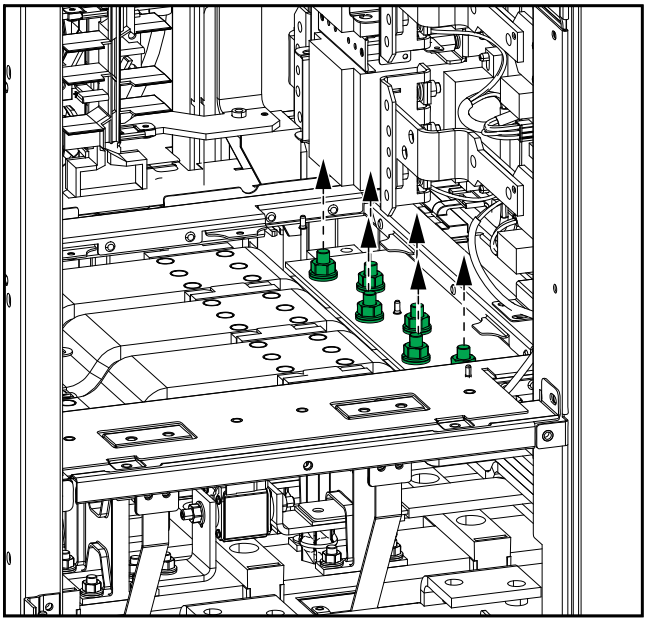
a. Remove the indicated cover from the right side and dispose of the cover.

Front View of the Power Cabinet



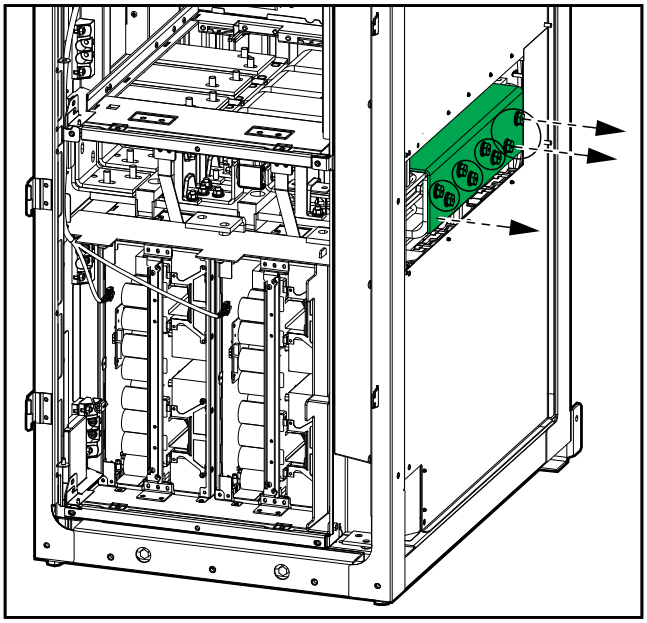
b. Loosen and remove the eight bolts from the inside of the power cabinet.

Front View of the Power Cabinet



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

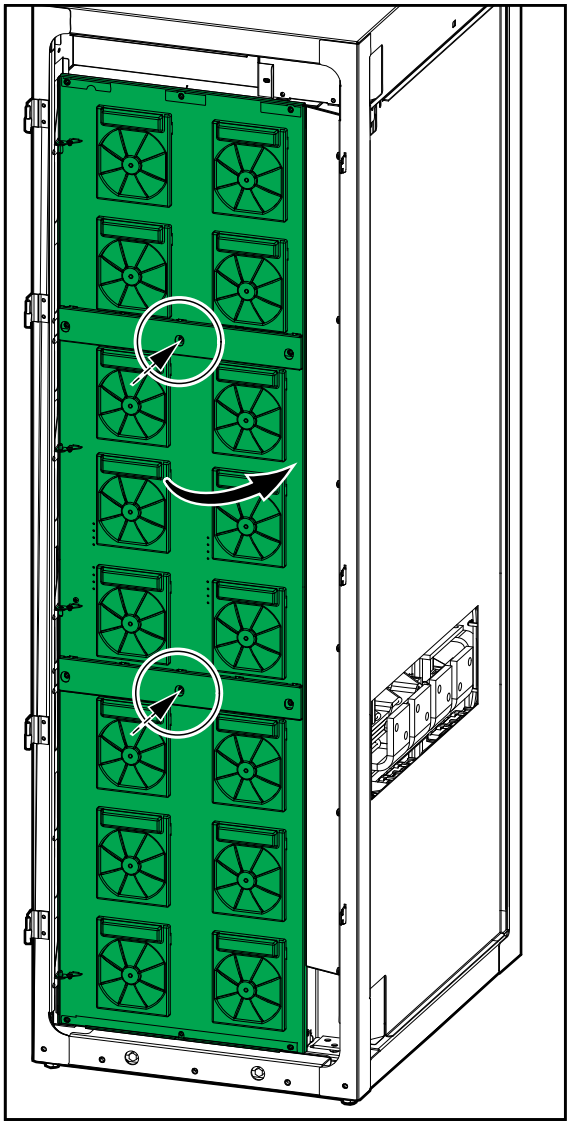
Front View of the Power Cabinet



9. Reinstall 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.**

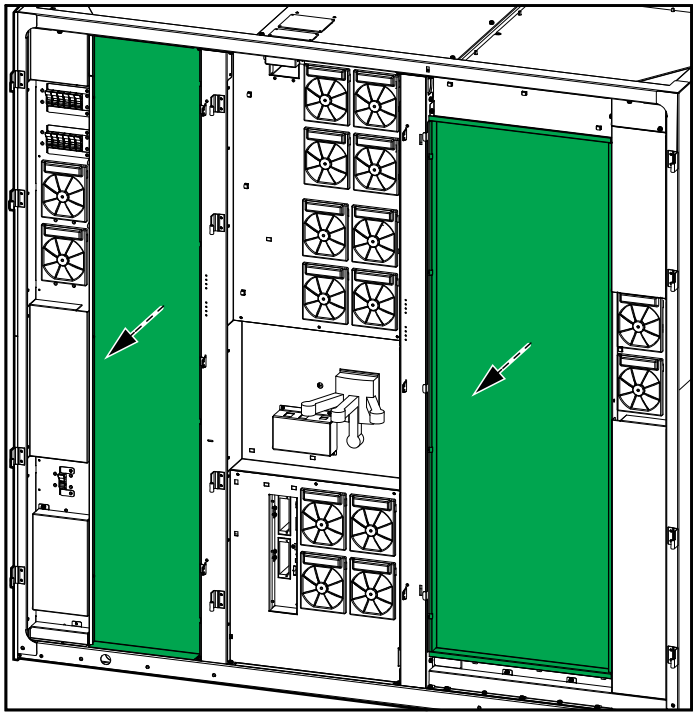
Front View of the Power Cabinet



10. Open the left and right front doors of the I/O cabinet.

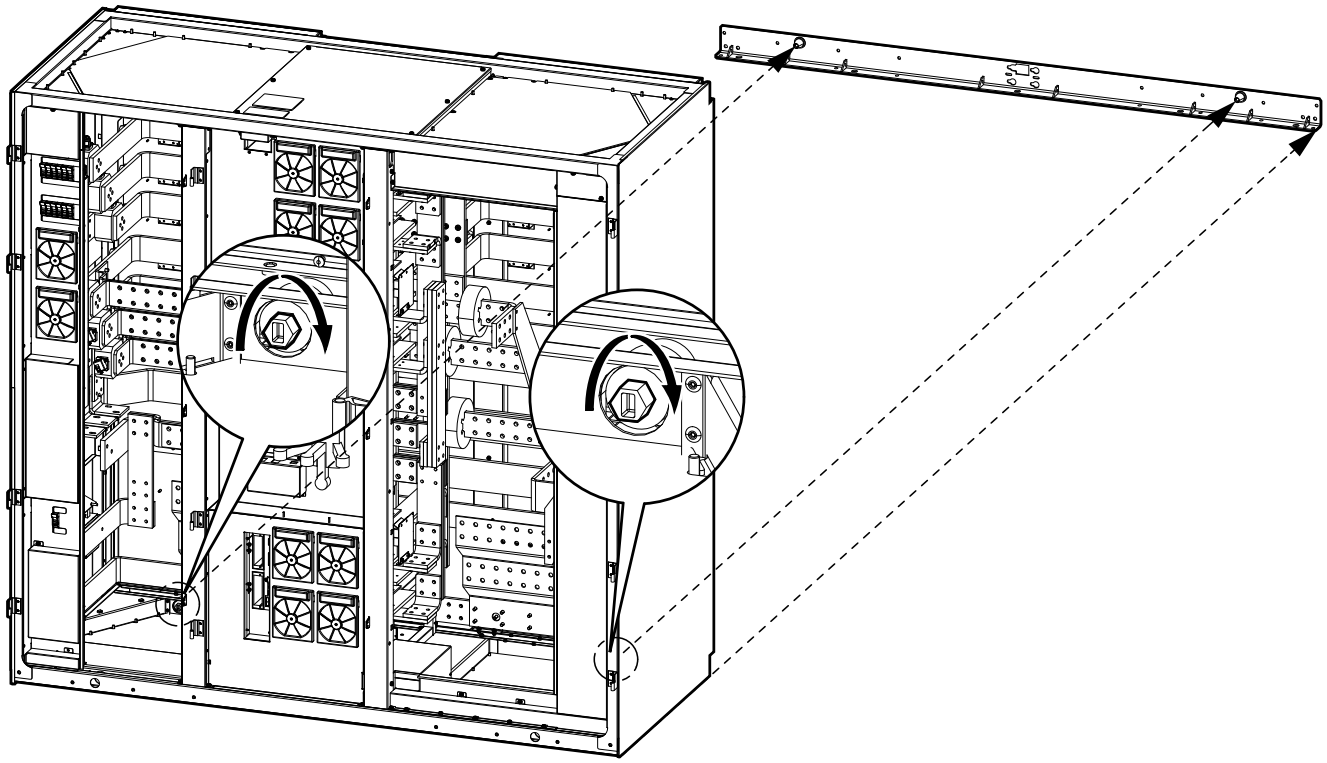
11. Remove the two metal plates from the I/O cabinet.

Front View of the I/O Cabinet



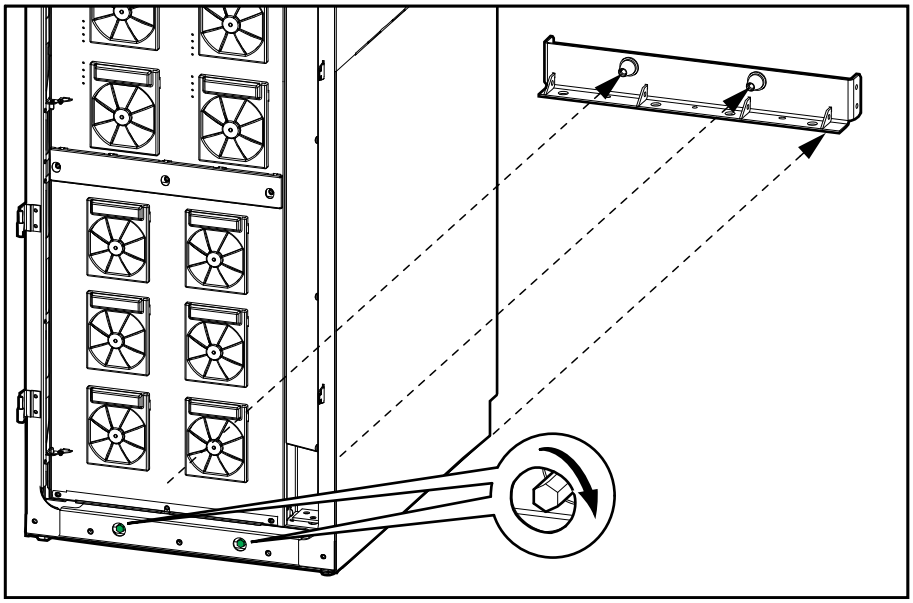
12. Push the I/O cabinet into position against the rear anchoring bracket – the I/O cabinet will connect to the conic outcroppings on the rear anchoring bracket.

Front View of the I/O Cabinet



13. Push the power cabinets into position against the rear anchoring brackets – the power cabinets will connect to the conic outcroppings on the rear anchoring brackets.

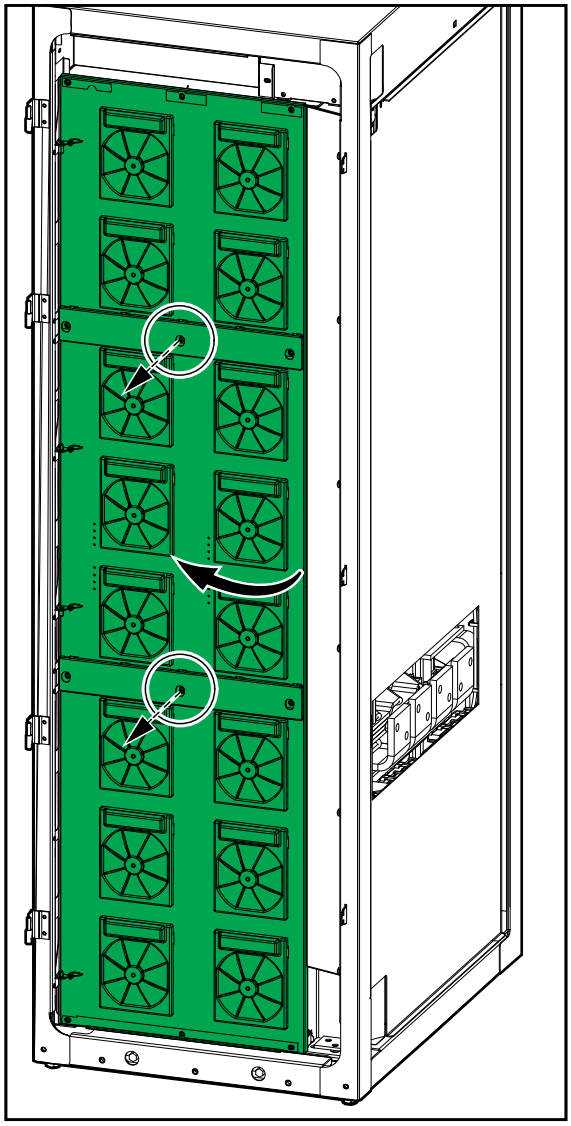
Front View of the Power Cabinet



14. Fasten the cabinets to the rear anchoring brackets by tightening the bolts on the front of the cabinets. Torque to 50 Nm (36.87 lb-ft).

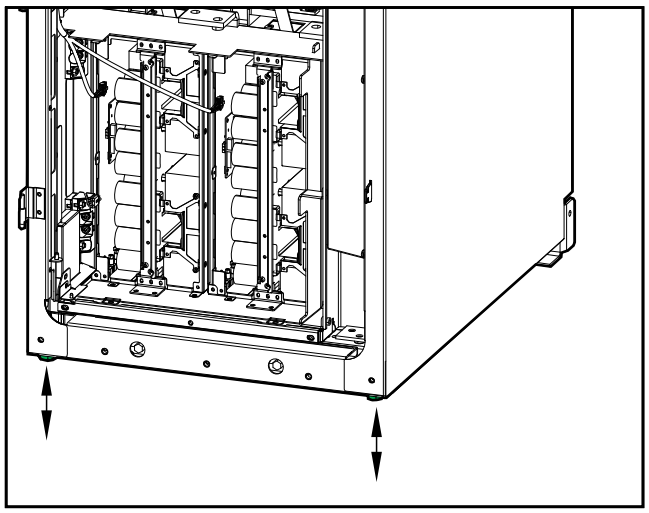
15. Remove the fan doors of the power cabinets.

Front View of the Power Cabinet



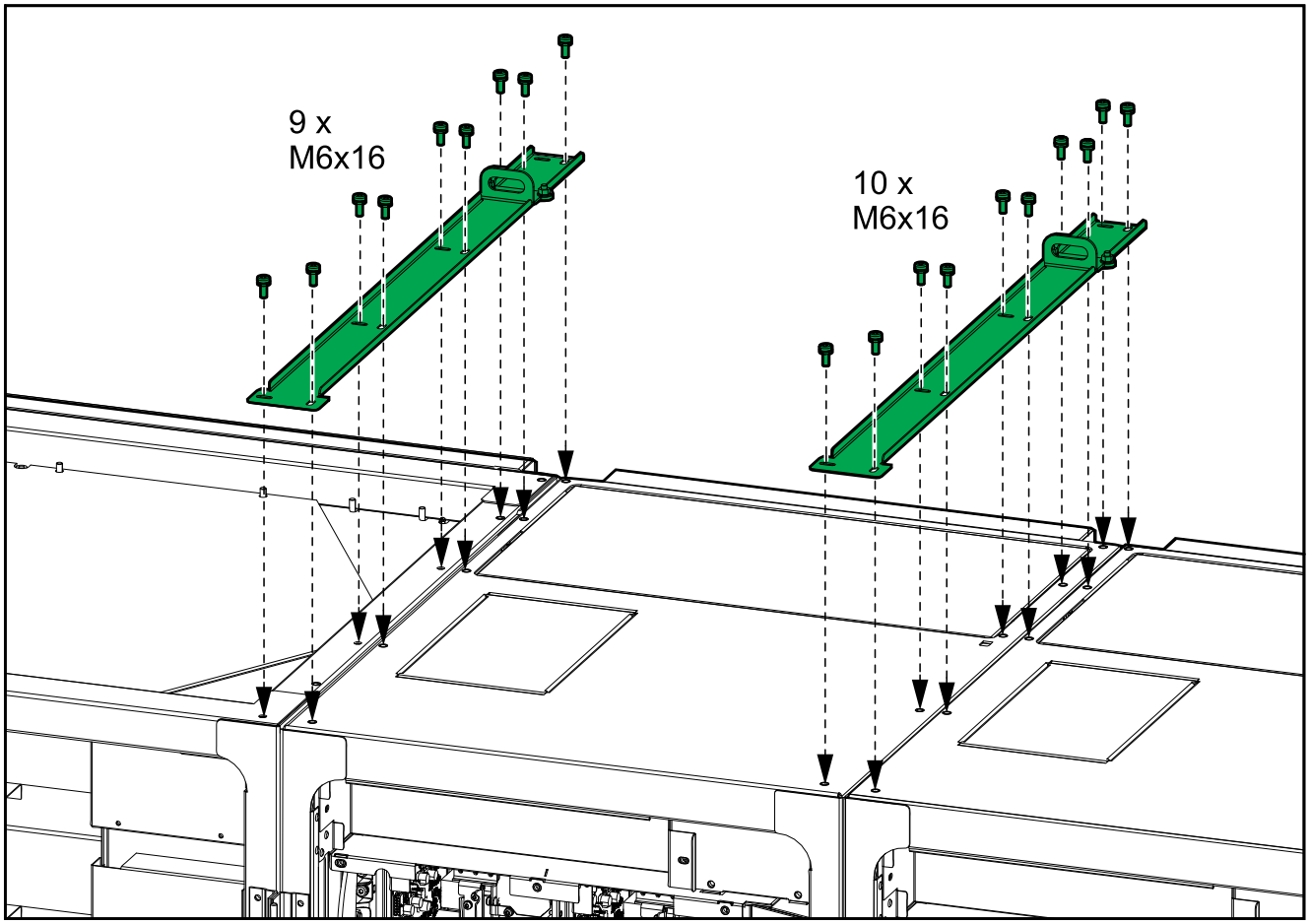
16. Lower the two front feet on all cabinets until they connect with the floor – use a bubble-leveler to ensure that the cabinets are level. Use the provided levelling shims if necessary.

Front View of the Power Cabinet



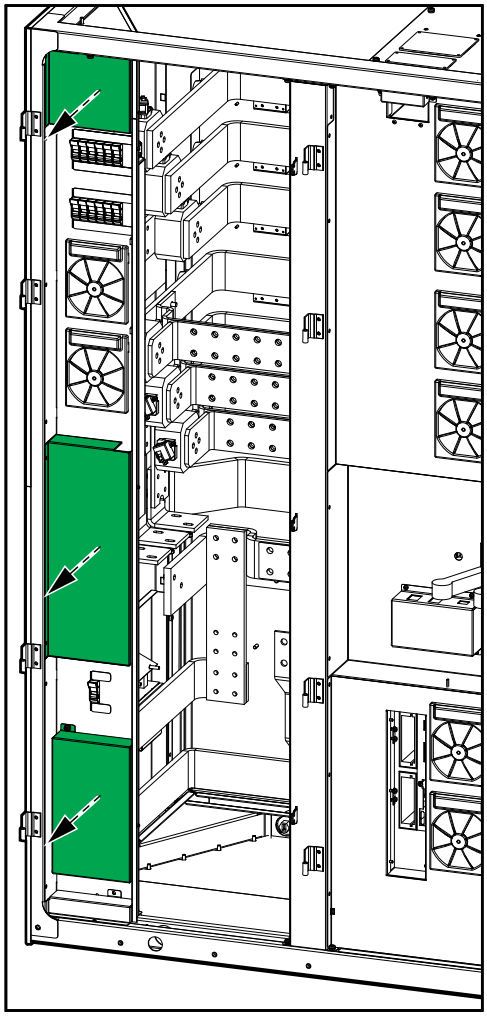
17. Install the top baying brackets on the top of the cabinets and fasten with the provided screws.

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



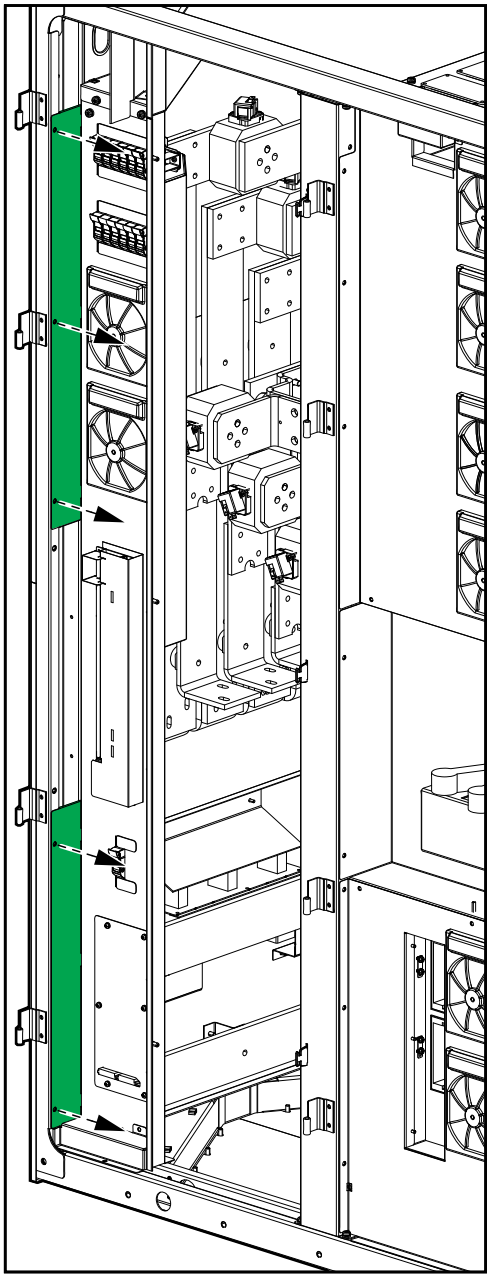
18. Remove the three indicated plates in the left side of the I/O cabinet.

Front View of the I/O Cabinet



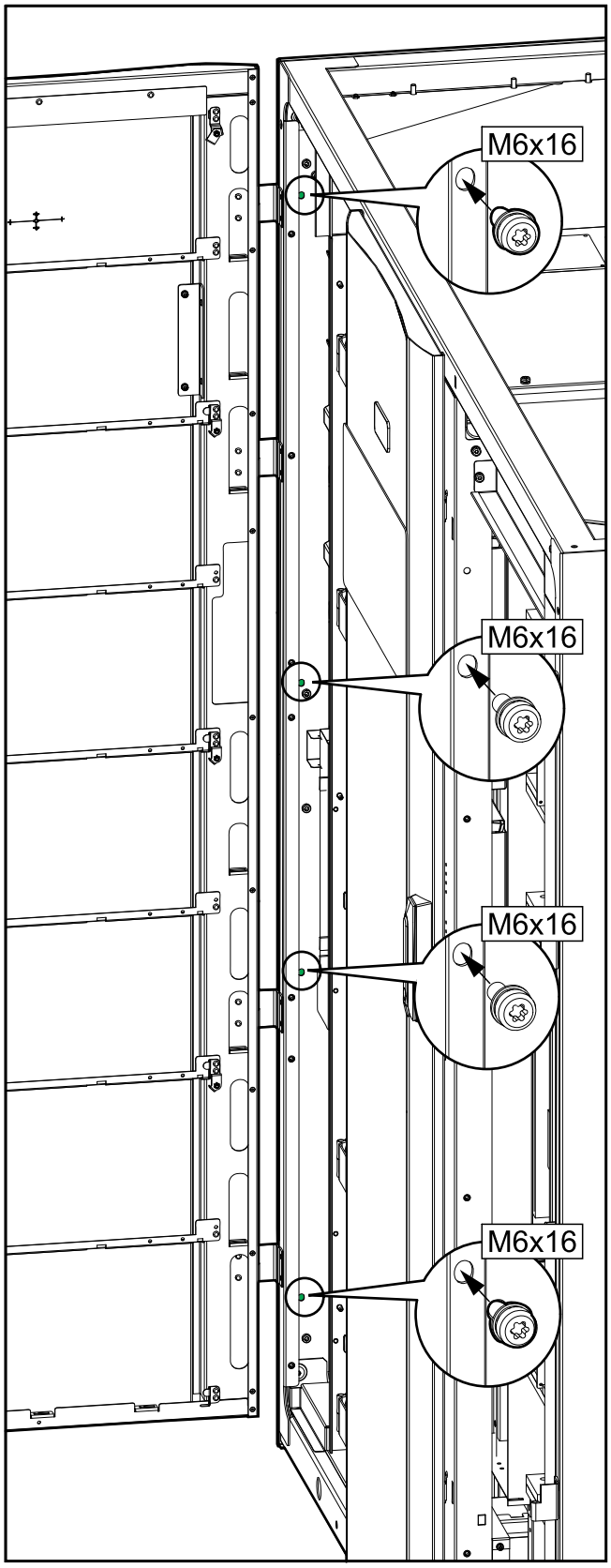
19. Remove the two indicated plates in the left side of the I/O cabinet.

Front View of the I/O Cabinet



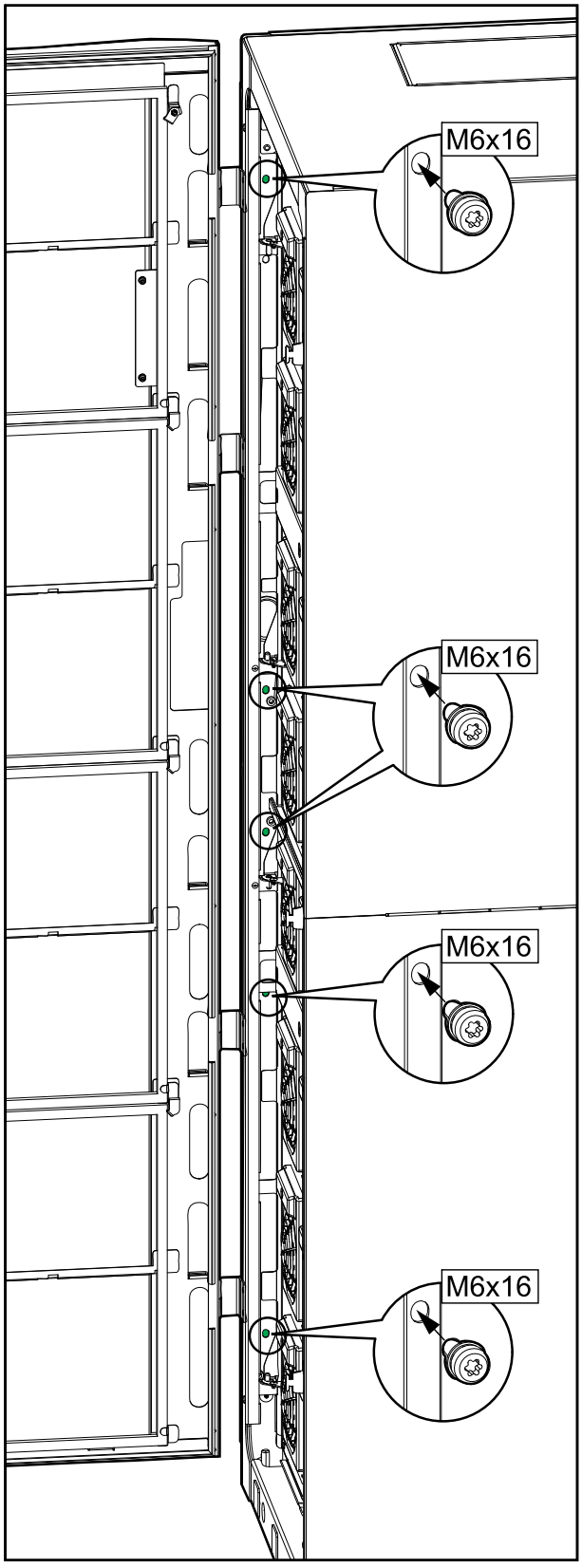
20. Mount the M6 screws from the installation kit from right to left in the four marked locations between the I/O cabinet and the power cabinet placed to the left of the I/O cabinet.

From the Power Cabinet on the Left Side of the I/O Cabinet to the I/O Cabinet

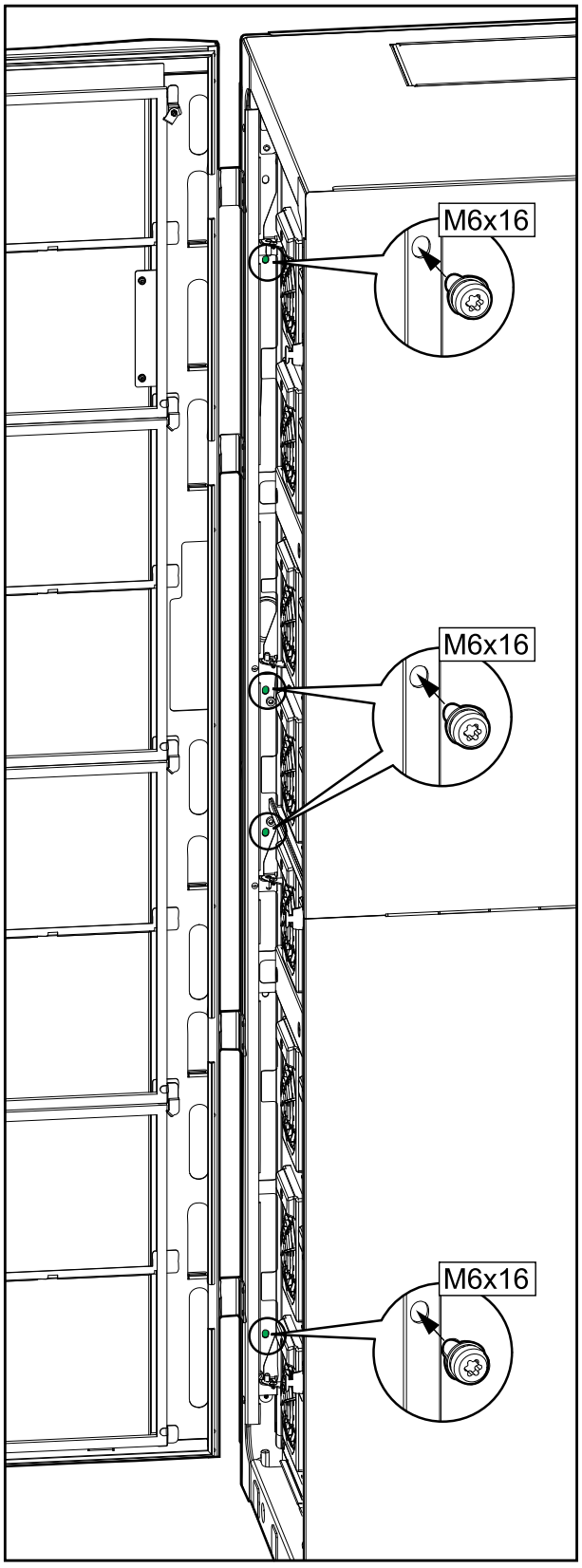


21. Mount the M6 screws from the installation kit from right to left to tighten the cabinets together:
    - in the five marked positions between the power cabinets.
    - in the four marked positions between the I/O cabinet and the power cabinet on the right side of the I/O cabinet.

From the Power Cabinet to the Power Cabinet



From the Power Cabinet on the Right Side of the I/O Cabinet to the I/O Cabinet

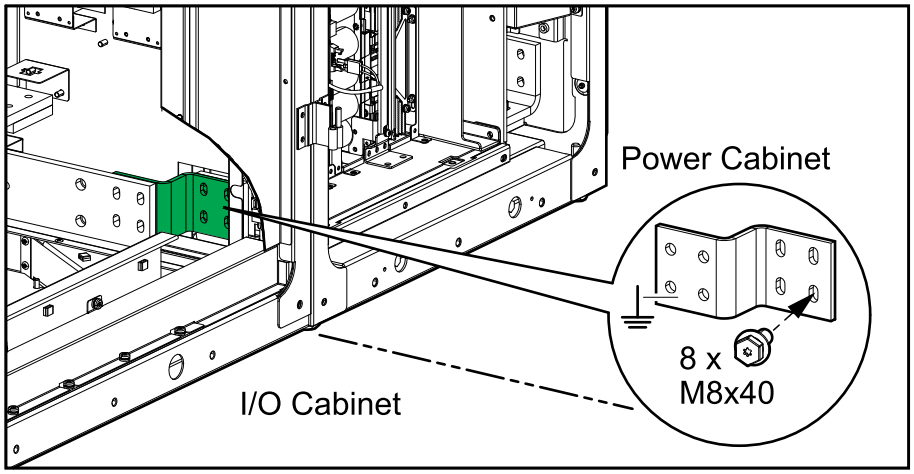


Install the Busbars between the I/O Cabinet and the Power Cabinets

1. Install the grounding busbar 880–99029 from the installation kit 0H–9128 between the I/O cabinet and the power cabinet placed to the right of the I/O cabinet.

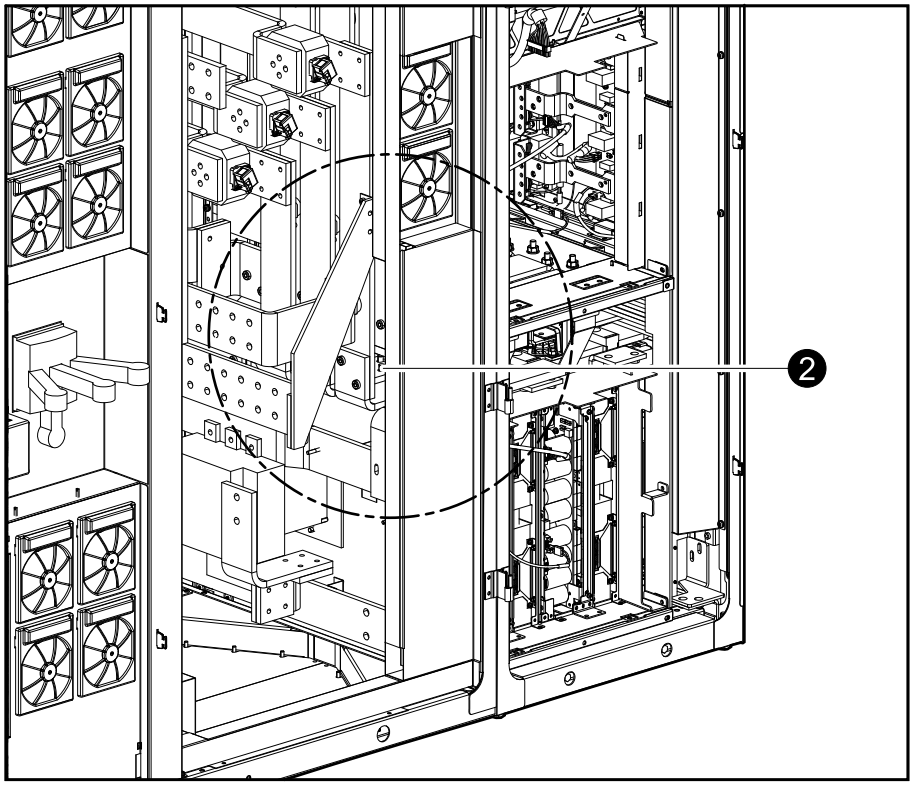
   NOTE: If the grounding busbar 880-99029 is not compatible with the power cabinet placed to the right of the I/O cabinet, the busbar kit 0J-0446 with flexible busbars must be used for the grounding connection instead of the grounding busbar. Contact Schneider Electric.

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



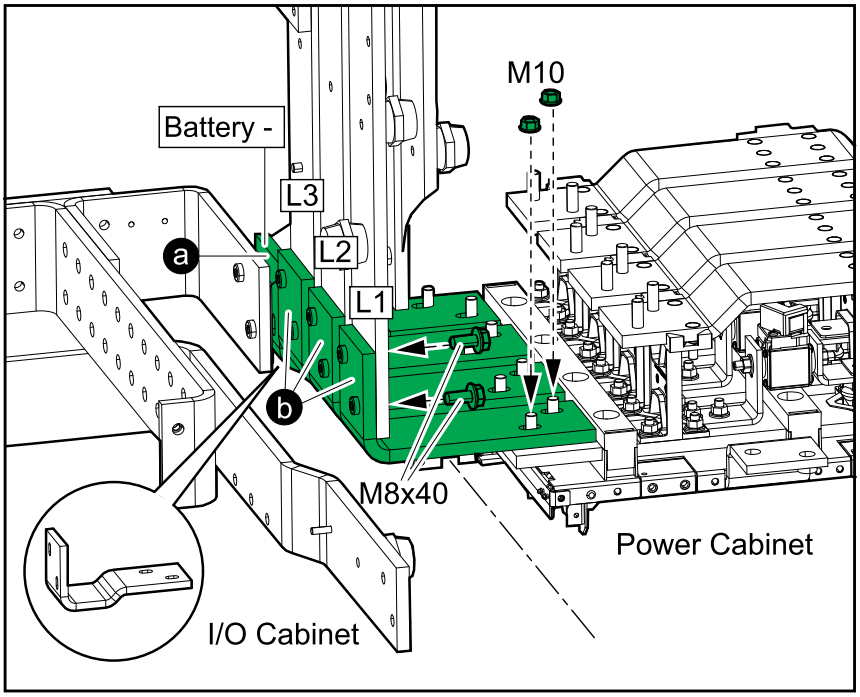
2. Install the interconnection busbars from the installation kit 0H–9128 and 0H–9097 between the I/O cabinet and the power cabinet placed to the right of the I/O cabinet.

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



a. Install the battery– interconnection busbar 880–90658.

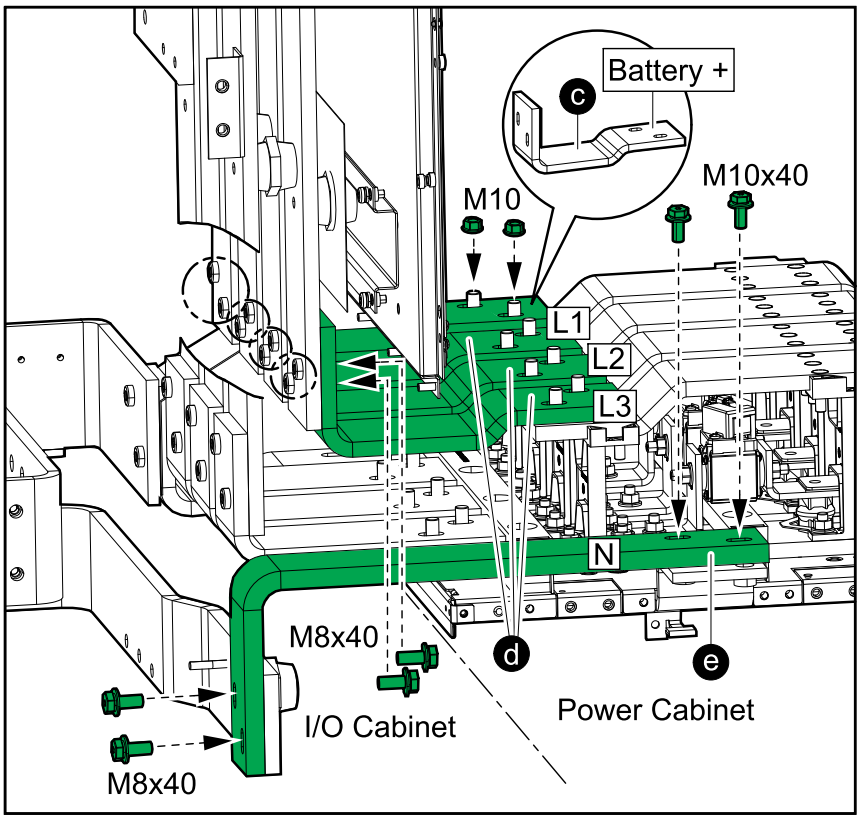
Front View of Busbar Connections



b. Install the three input interconnection busbars 880–90657.

c. Install the battery+ interconnection busbar 880–90655.

Front View of Busbar Connections



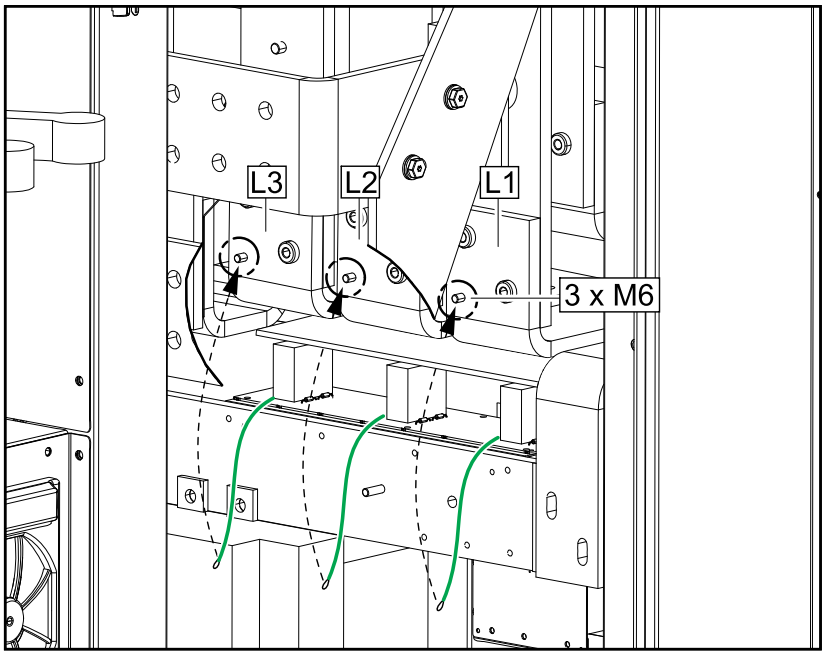
d. Install the three output interconnection busbars 880–90654.

e. Install the neutral interconnection busbar 880–9614 **or** 880–5538[50].

50. The part number to use is dependent on your power cabinet version.

f. Connect the signal cables connected to the boards to the three input interconnection busbars and fasten with the three M6 nuts from the installation kit 0H-9128.

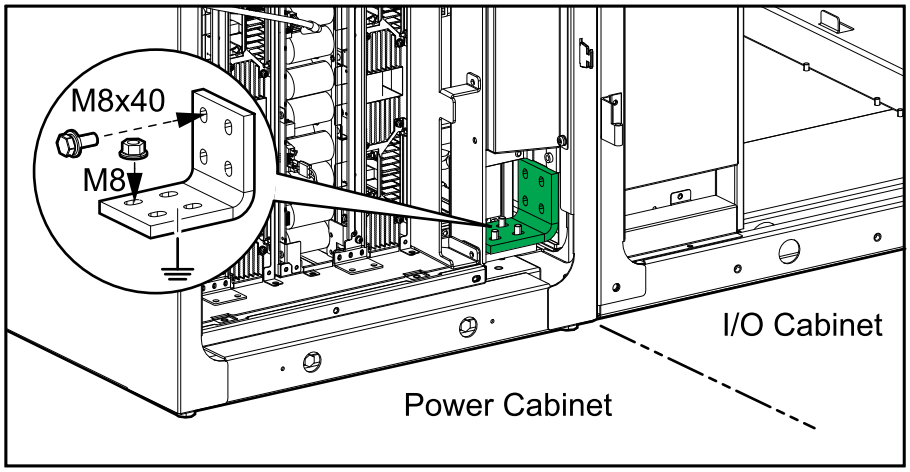
Front View of the Right Side of the I/O Cabinet



3. Install the grounding busbar 880-5662 from the installation kit 0H-9096 between the I/O cabinet and the power cabinet placed to the left of the I/O cabinet.

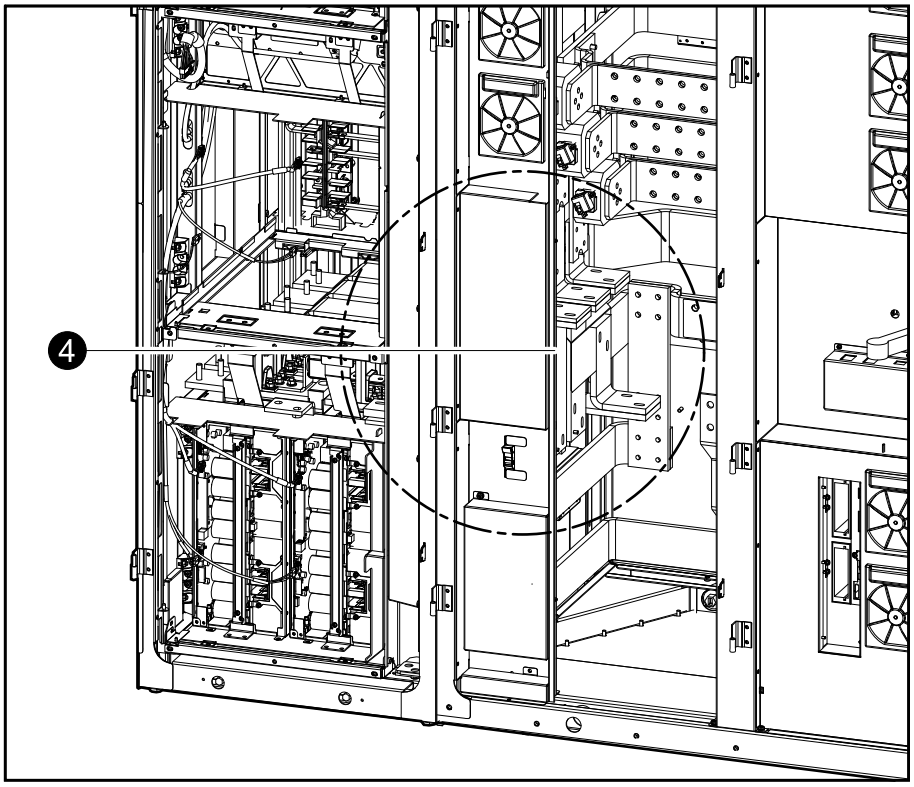
NOTE: If the grounding busbar 880-5662 is not compatible with the power cabinet placed to the left of the I/O cabinet, the busbar kit 0J-0446 with flexible busbars must be used for the grounding connection instead of the grounding busbar. Contact Schneider Electric.

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



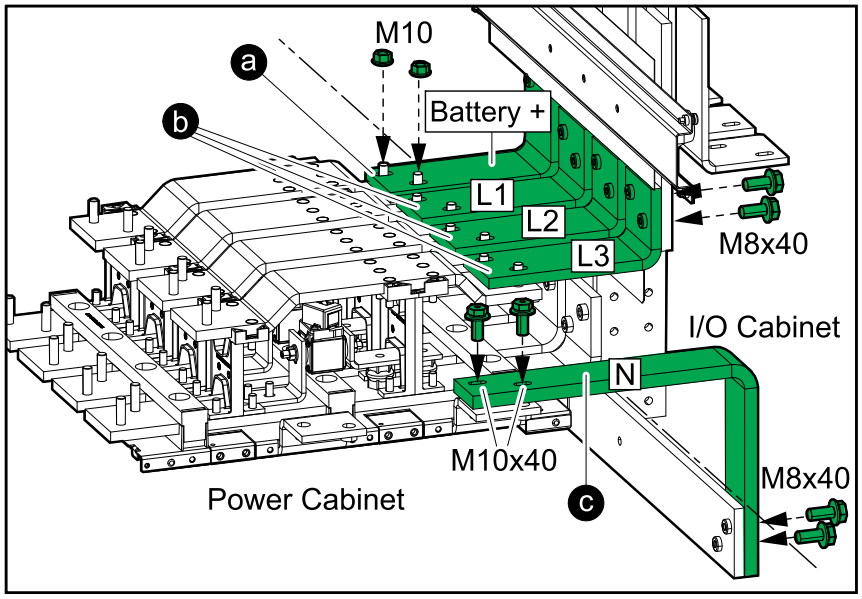
4. Install the interconnection busbars from the installation kit 0H-9096 and 0H-9129 between the I/O cabinet and the power cabinet placed to the left of the I/O cabinet.

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



a. Install the battery+ interconnection busbar 880–5503.

Front View of Busbar Connections

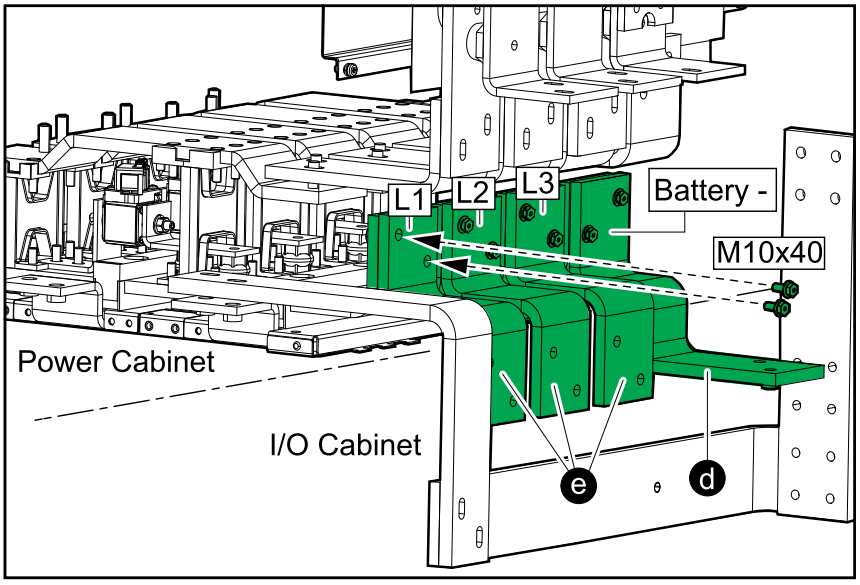


b. Install the three output interconnection busbars 880–9569.

c. Install the neutral interconnection busbar 880–5507.

d. Install the first battery– interconnection busbar 880–5496.

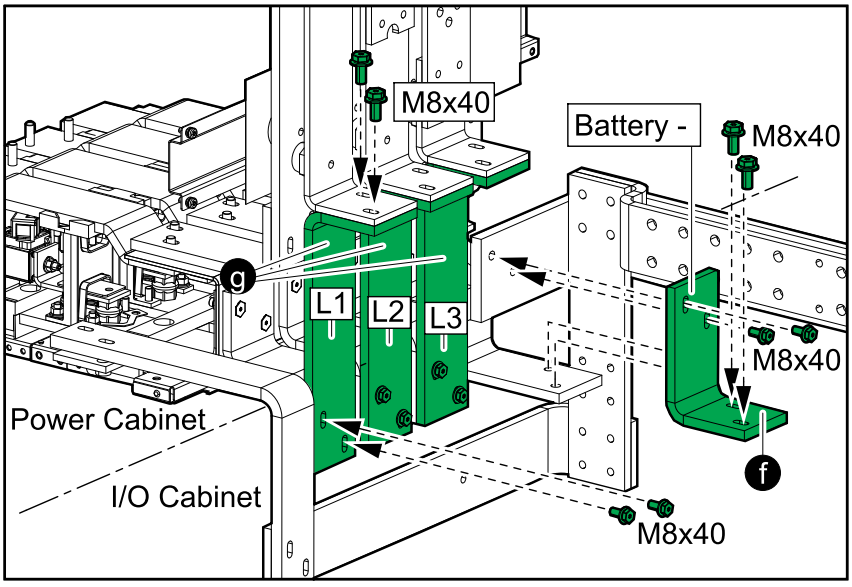
Front View of Busbar Connections



e. Install the first layer of three input interconnection busbars 880–5502.

f. Install the second battery– interconnection busbar 880–5495.

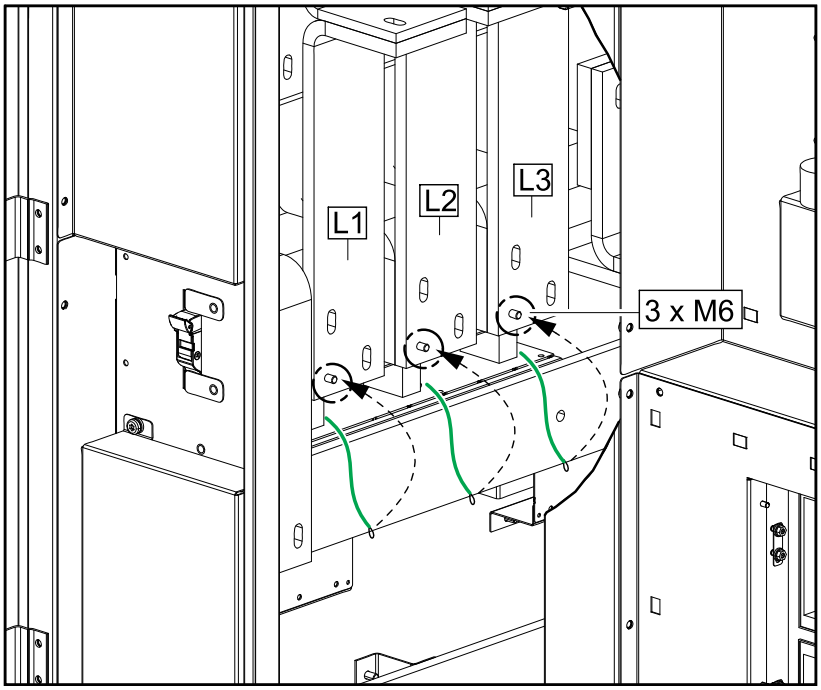
Front View of Busbar Connections



g. Install the second layer of three input interconnection busbars 880–90650.

h. Connect the signal cables connected to the boards to the three input interconnection busbars and fasten with the three M6 nuts from the installation kit 0H-9129.

Front View of the Left Side of the I/O Cabinet

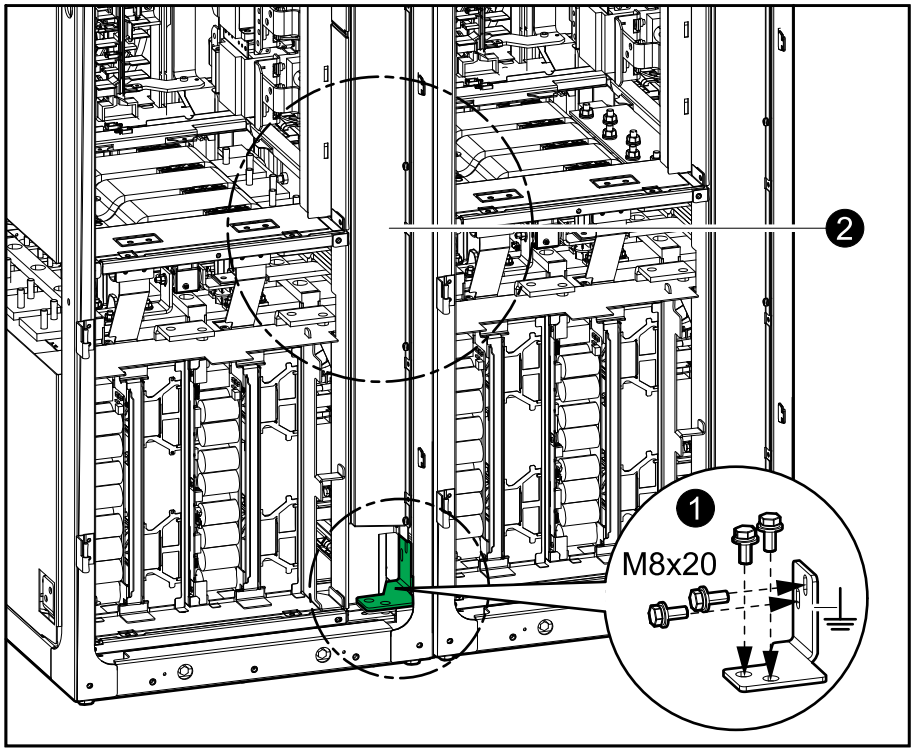


Install the Busbars between the Power Cabinets

1. Install the grounding busbars 880-5259 or 880-99027[51] from the installation kit 0H-0440, 0H-9162, or 0H-9102[51] between all power cabinets.

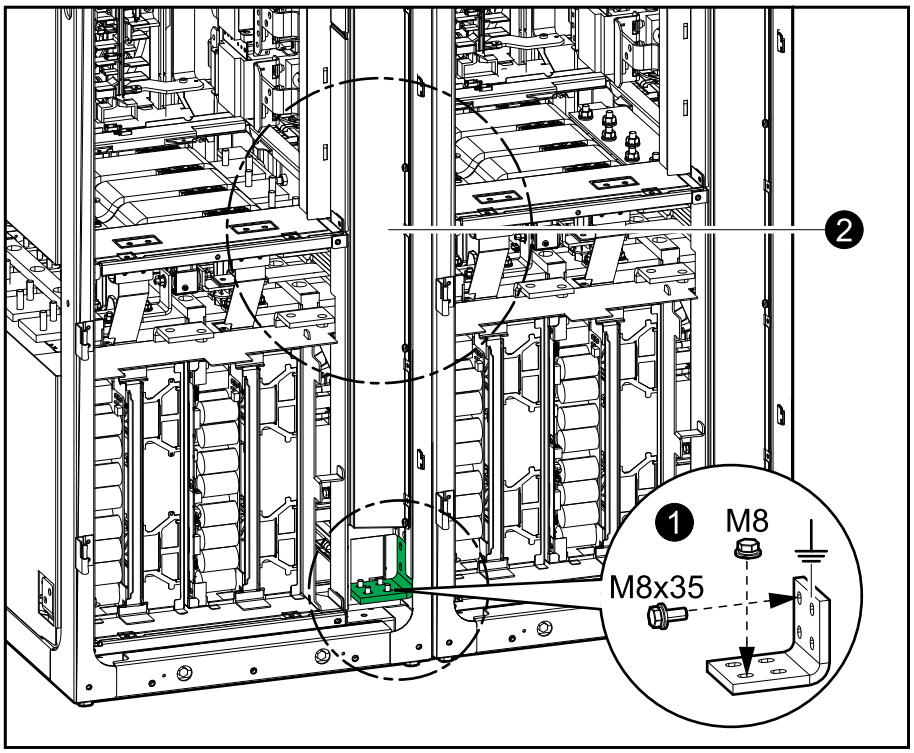
   NOTE: If your system contains different power cabinet versions, the busbar kit 0J-0446 with flexible busbars must be used for the grounding connection between the power cabinets instead of the grounding busbar. Contact Schneider Electric.

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



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

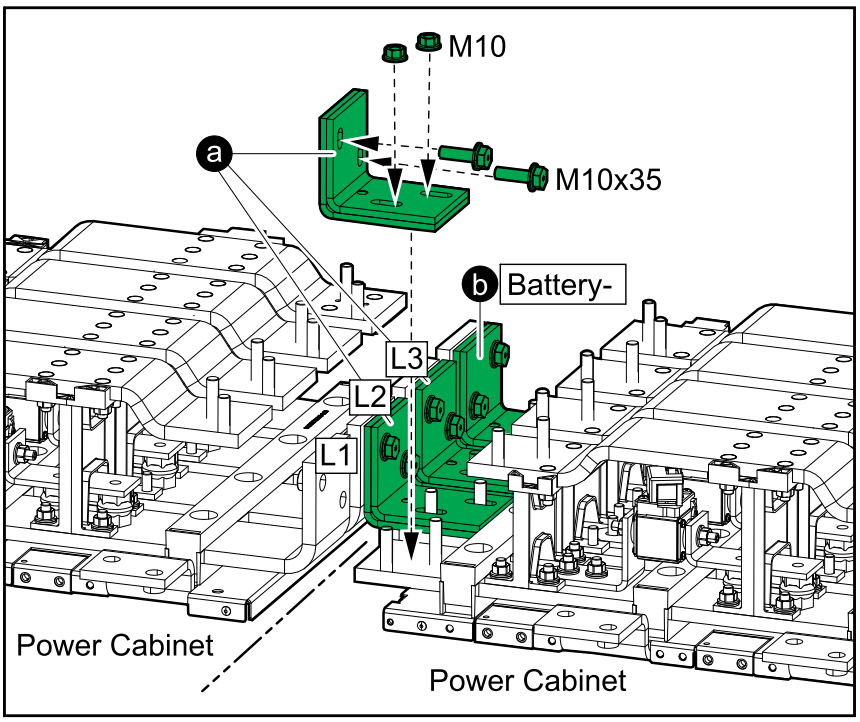
Front View of Two Power Cabinets with grounding Busbar 880-99027



2. Install the interconnection busbars from the installation kit 0H-0440, 0H-9162, or 0H-9102[52] between all power cabinets.

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

Front View of the Busbar Connections

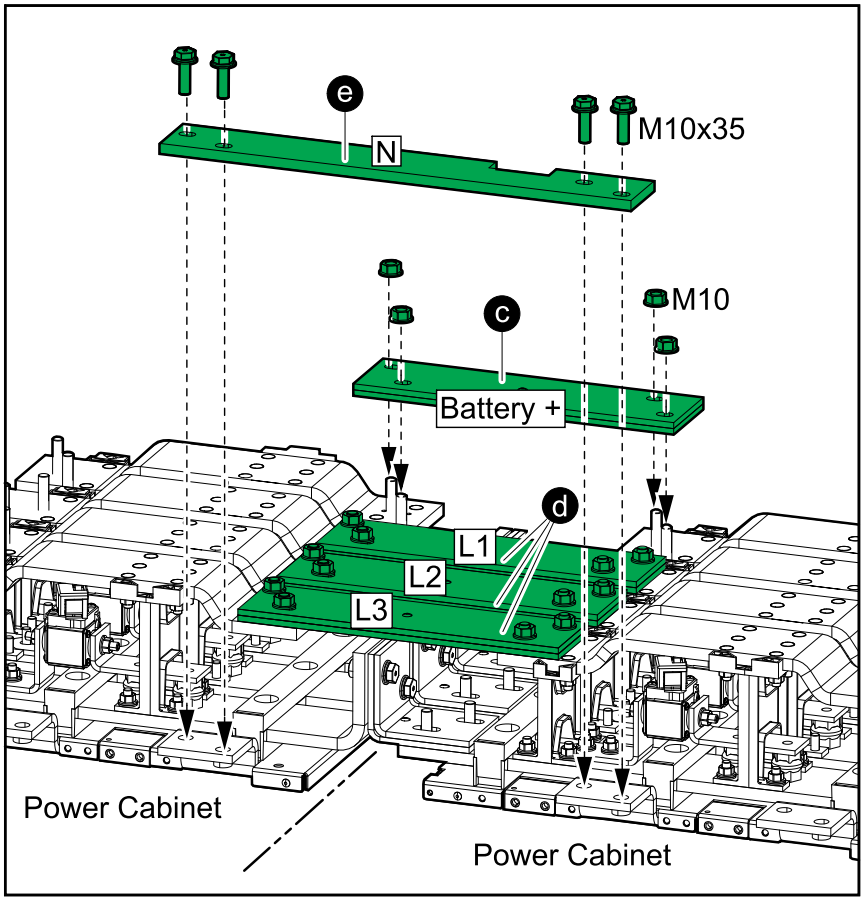


   b. Install the battery – interconnection busbar 0M-819336.

52. 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[53].

53. 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

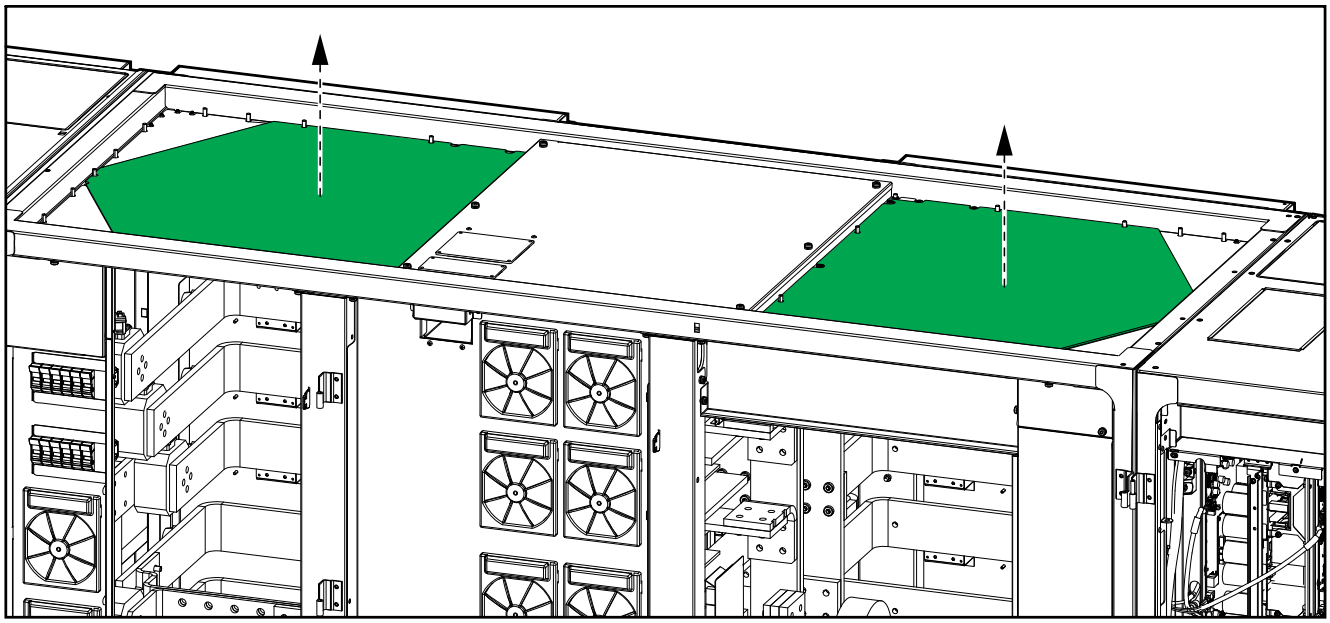
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

Front View of the I/O Cabinet



2. Drill or cut holes for cables/conduits in the top gland plate.
3. 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

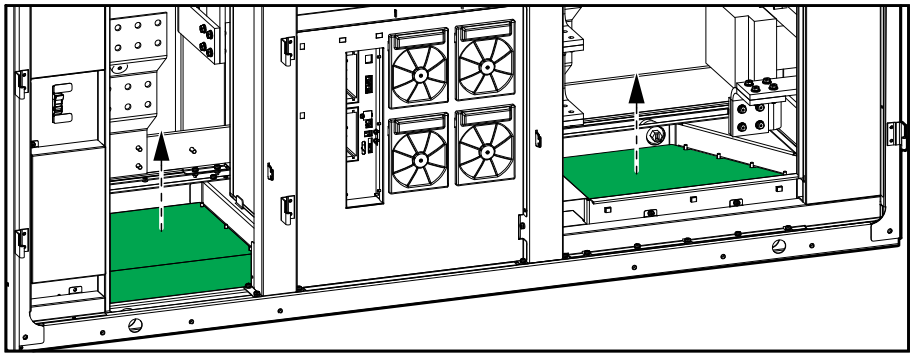
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

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

Front View of the I/O Cabinet



2. Drill or cut holes for cables/conduits in the bottom gland plate.
3. 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.

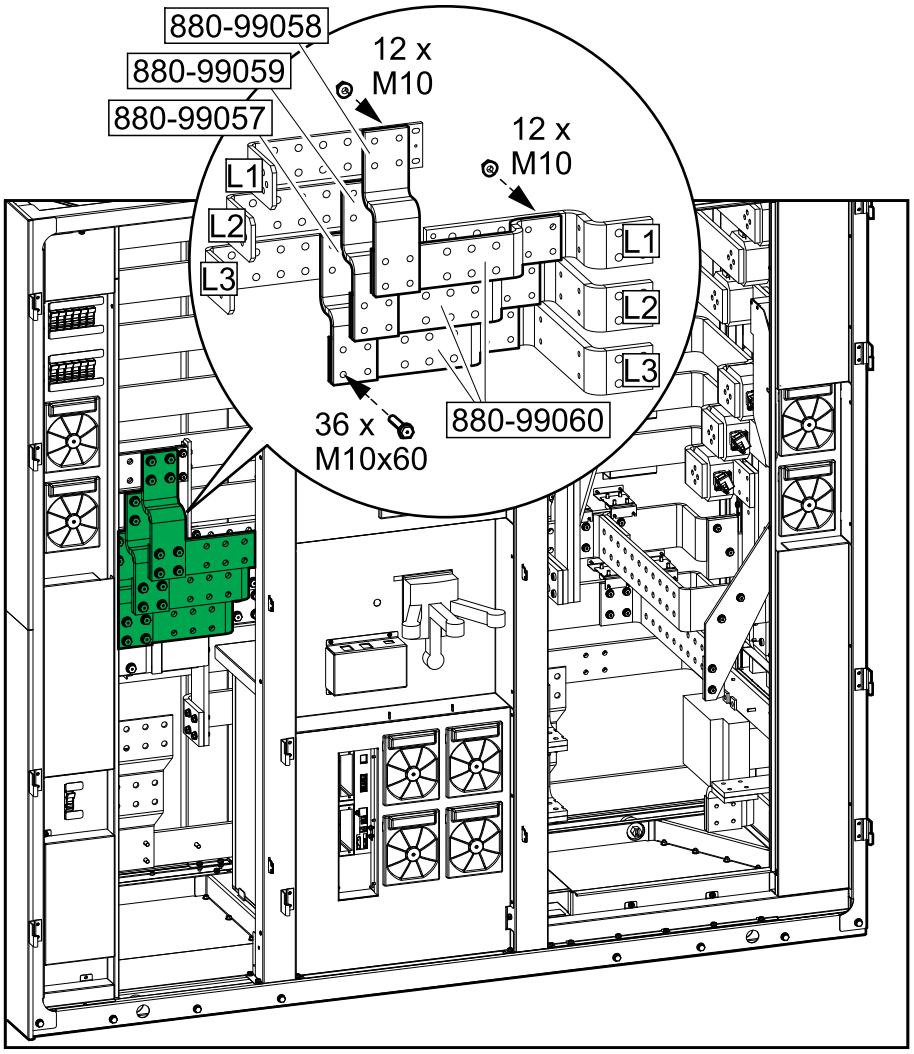
Install the Single Utility/Mains Installation Kit 0H-9161

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

1. Install the single utility/mains installation kit 0H-9161 between the input and bypass busbars. Connect L1 to L1, L2 to L2, and L3 to L3.

   NOTE: Two busbars are required for each connection.

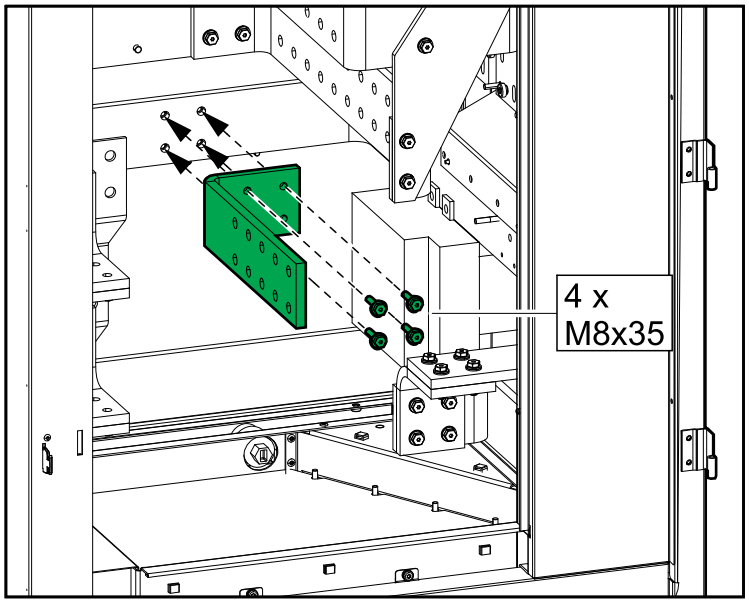
Front View of the I/O Cabinet



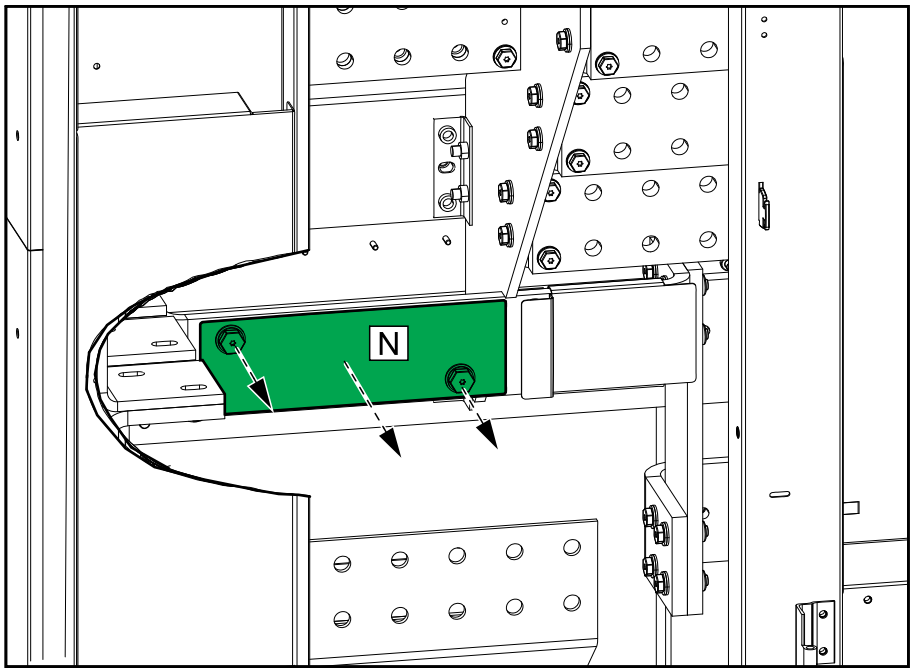
Connect the Power Cables in a 380 V, 400 V, 415, and 440 V System

1. Install the N busbar 880–5501 from the installation kit 0H-1102.

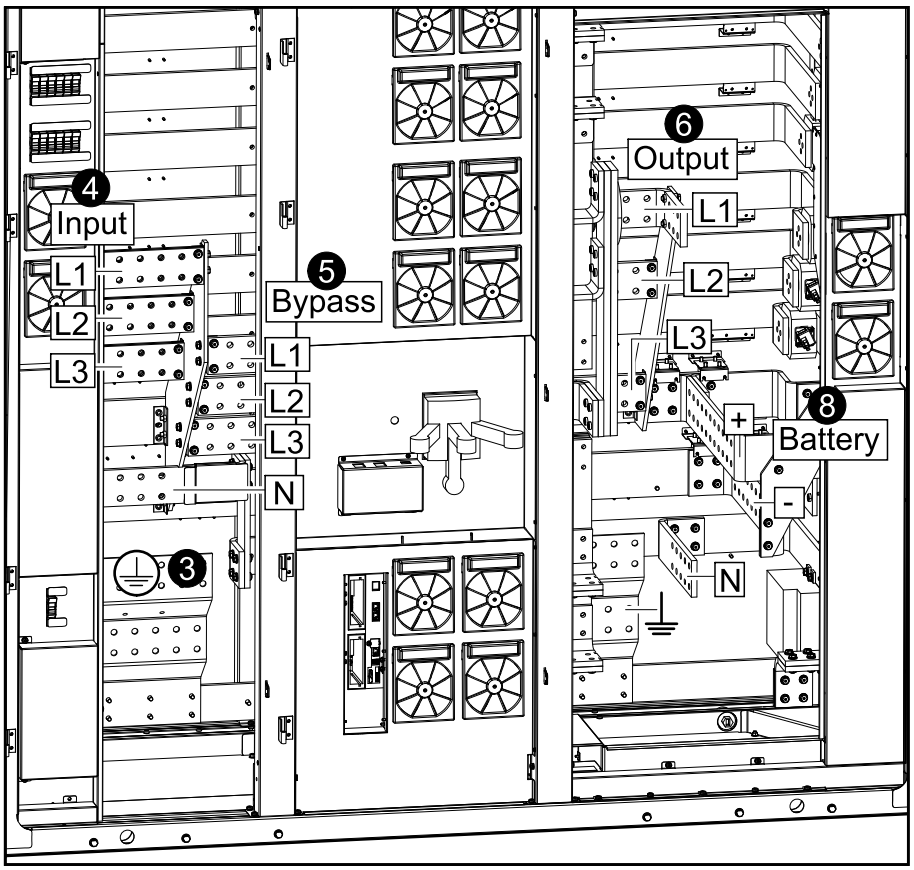
Front View of the I/O Cabinet



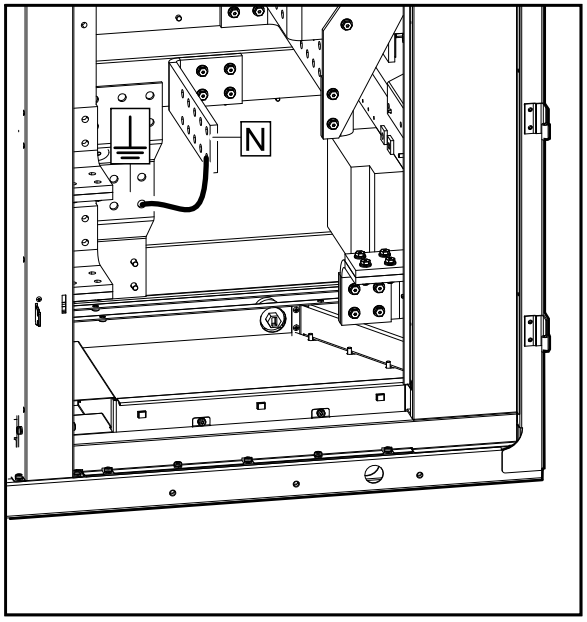
2. In installations with neutral connection only, remove the lexan plate from the N busbar.



3. Connect the equipment earthing conductor/PE to the PE busbar.

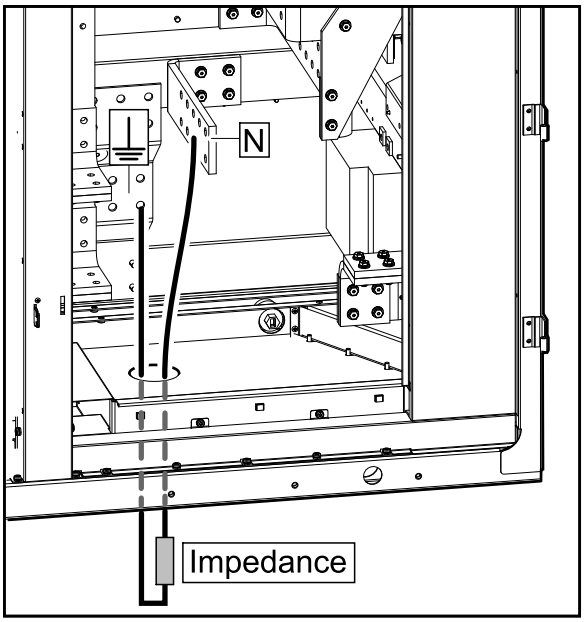


4. Connect the input cables.
5. Only applicable to dual mains systems: Connect the bypass cables.
6. Connect the output cables.
7. Only applicable to TNC systems: Install jumper cables (not provided) between the N busbar and the earthing terminal.



8. Only applicable to 4–wire systems: In an IT system, connect an external impedance between the N busbar and the earthing terminal.

   NOTE: For IT systems, the installation must include a earth-fault detection circuitry.

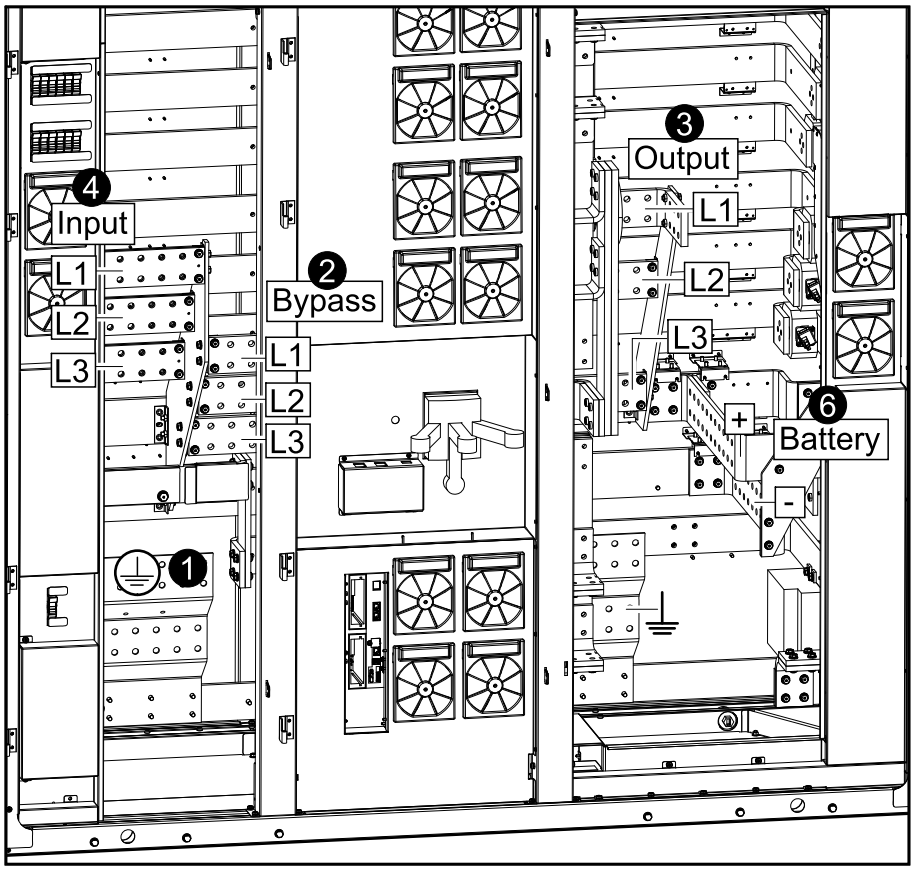


9. Connect the battery cables to the battery + and battery – terminals.

Connect the Power Cables in a 480 V System

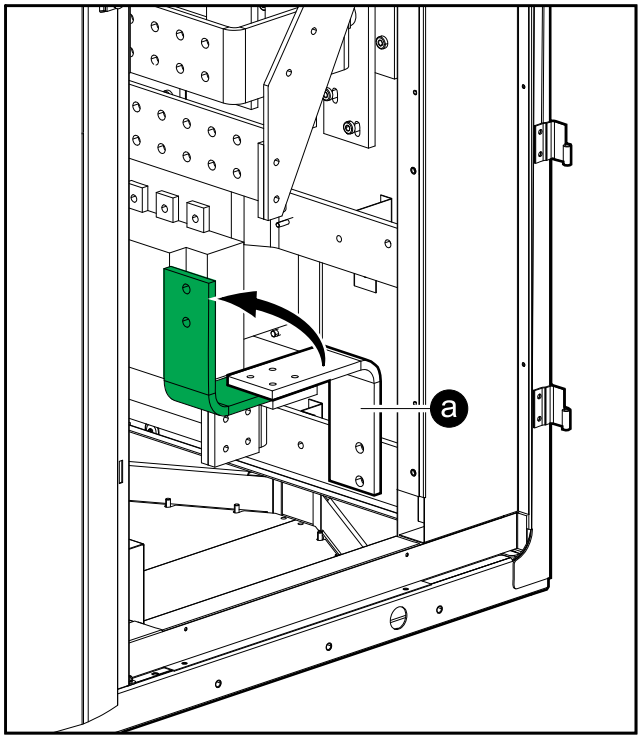
The grounding electrode conductor must be installed per NEC 250.30 and sized per NEC 250.66.

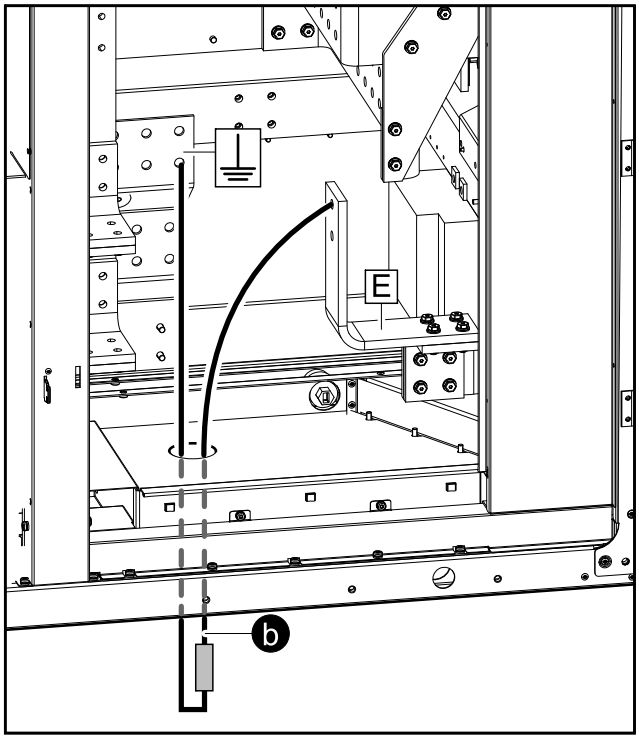
1. Connect the equipment grounding conductor/PE to the PE busbar.



2. Only applicable to dual mains systems: Connect the bypass cables.
3. Connect the output cables.
4. Connect the input cables.
5. For high impedance grounding systems only:

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





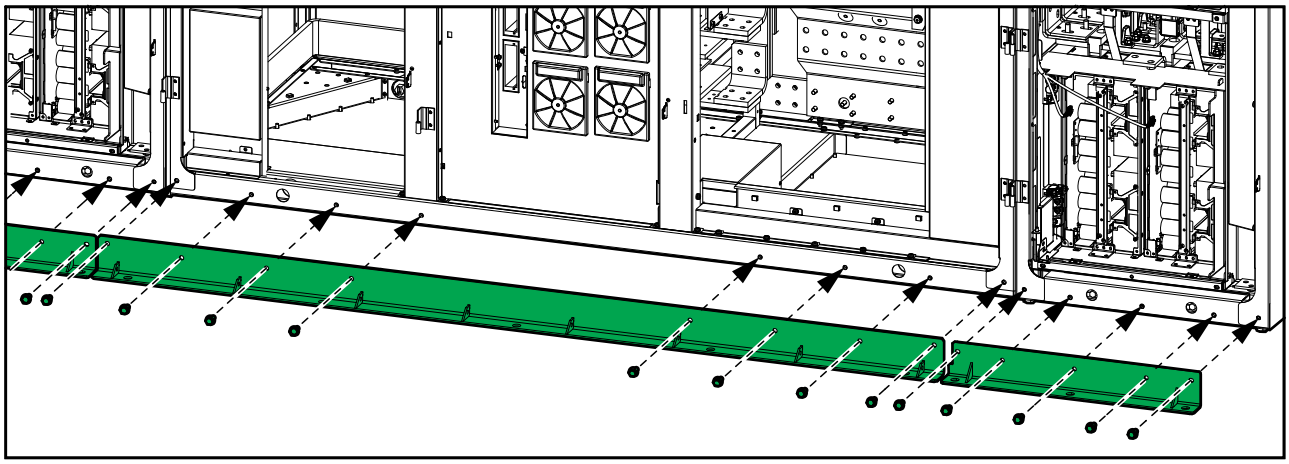
   a. Rotate the jumper busbar so it does not create a connection.

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

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

Mount the Front Anchoring Brackets

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



2. Anchor the front anchoring brackets to the floor.

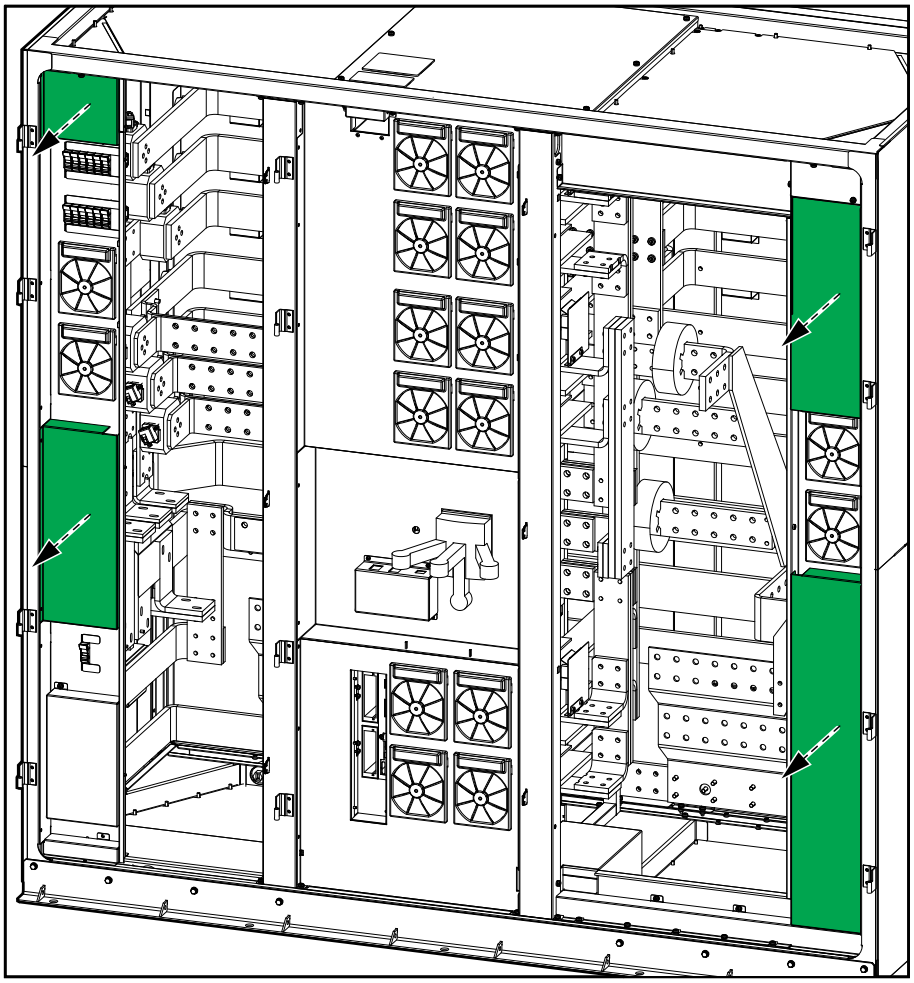
   NOTE: Floor anchoring bolts are not supplied.

Connect the Signal Cables

Prepare for Signal Cables

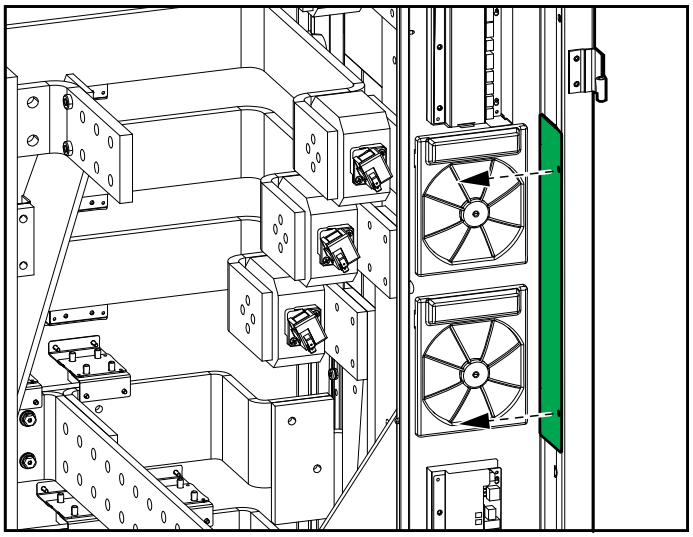
1. Remove the four indicated plates.

Front View of the I/O Cabinet



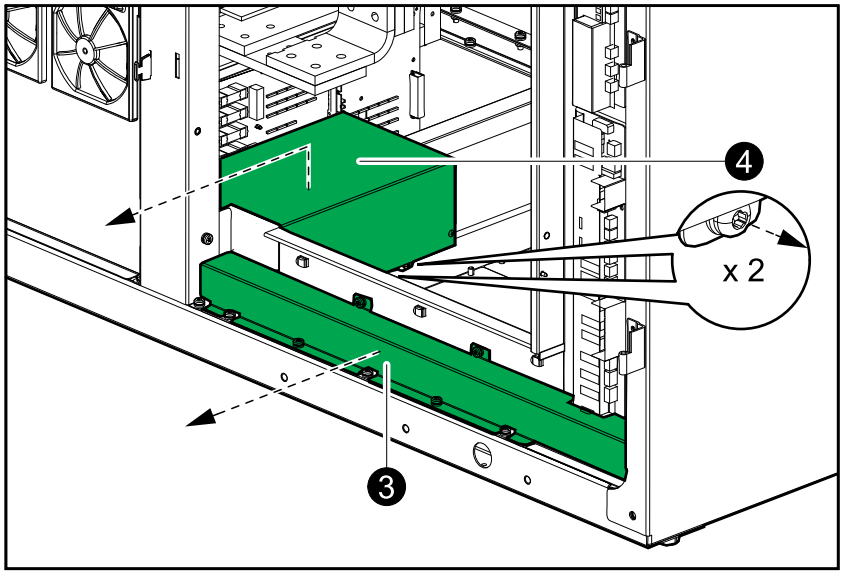
2. Remove the indicated plate to allow for routing of non-Class 2/non-SELV cables.

Front View of the I/O Cabinet



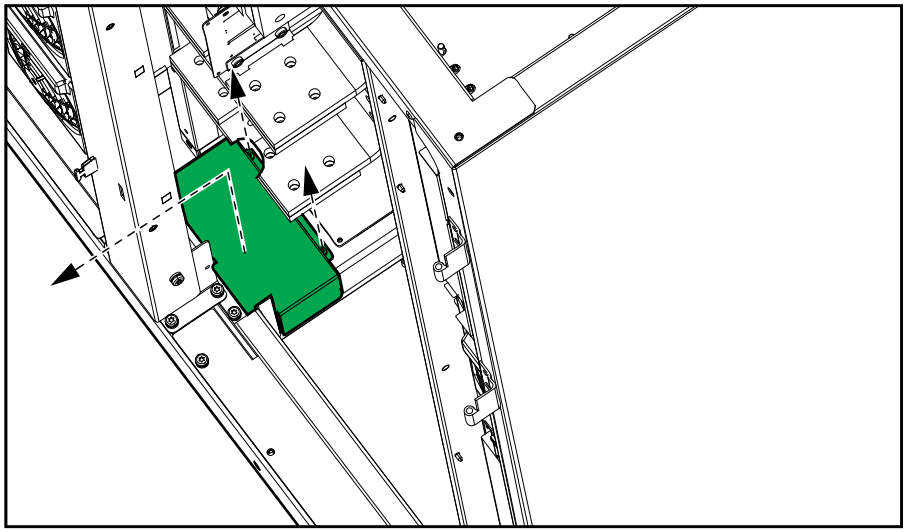
3. For bottom cable entry only: remove the plate in front of the cable channel for non-Class 2/non-SELV cables.

Front View of the I/O Cabinet

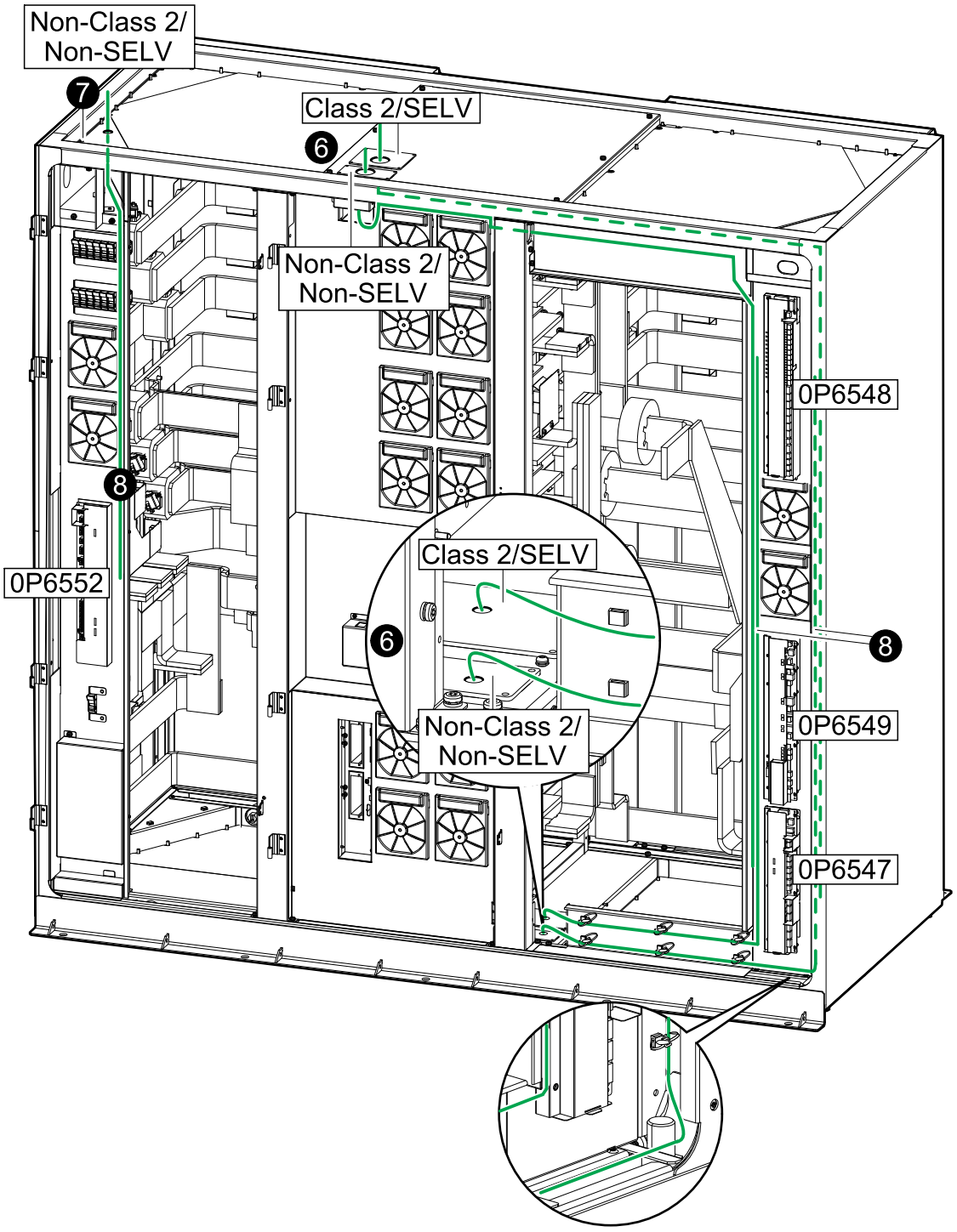


4. For bottom cable entry only: loosen the two screws on the right side of the box and remove the box.
5. For bottom cable entry only: loosen the two screws behind the box and lift out the box.

Front View of the I/O Cabinet



6. Remove the two gland plates from either the top or the bottom of the I/O cabinet and drill holes for the applicable Class 2/SELV and non-Class 2/non-SELV cables in the table below. Install conduits and reinstall the plates.



Class 2/SELV

Board	Terminal	Description	See
0P6548	J5502–J5506, J5508, J5510–J5512	Input contacts	*Connect Equipment to Input Contacts and Output Relays, page 103*
0P6548	J5520–J5525, J5528	Output relays	
0P6548	J5527	Kirk key control	*Connect the Signal Cables between the I/O Cabinet and the Switchgear, page 98*
0P6548	J5514	UOB lamp contol	
0P6548	J5515	MBB lamp control	
0P6548	J5516	SIB lamp control	

Class 2/SELV (Continued)

Board	Terminal	Description	See
0P6548	J5517	SSIB lamp control	
0P6548	J5509	UOB 2	
0P6547	J4931–J4932	24 V SELV supply	
0P6547	J4936–J4938	EPO	*Connect the Emergency Power Off (EPO), page 100*
0P3643	PBUS 1 and PBUS 2	PBUS	*Connect the PBUS Cables between Parallel UPS Units, page 105*
0P6502		Modbus	*Connect the Modbus Cables, page 107*

Non-Class 2/Non-SELV

Board	Terminal	Description	See
0P6548	J4939–J4941[54]	Output relays	*Connect Equipment to Input Contacts and Output Relays, page 103*
0P6549	J5607	MBB	*Connect the Signal Cables between the I/O Cabinet and the Switchgear, page 98*
0P6549	J5608	SIB	
0P6549	J5620	SSIB	
0P6549	J5621	UOB	
0P6549	J5622	UIB	
0P6549	J5611–J5613	External synchronization	*Connect External Synchronization, page 100*
0P6548	J5529	Battery temperature sensor 1	*Connect the Signal Cables for Battery Solutions, page 98*
0P6549	J5609	Battery breaker 1	
0P6549	J5610	Battery breaker 2	
0P6547	J4942–J4943	24 V supply 1	
0P6547	J4929–J4930	24 V supply 2	
0P6547	J4923	DC shunt trip 1	
0P6547	J4924	DC shunt trip 2	

7. In installations with three or four battery banks, remove the top gland plate in the left corner of the I/O cabinet and drill holes for the applicable non-Class 2/ non-SELV cables below. Install conduits and reinstall the plates.

Non-Class 2/Non-SELV

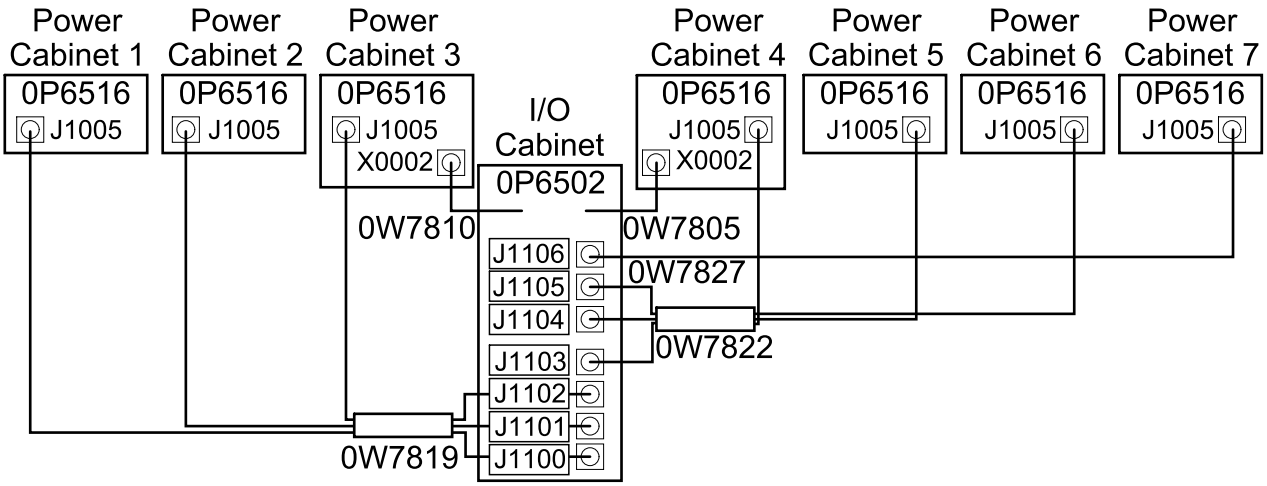
Board	Terminal	Description	See
0P6552	J9019	Battery breaker 3	*Connect the Signal Cables for Battery Solutions, page 98*
0P6552	J9020	Battery breaker 4	
0P6552	J9021	Battery temperature sensor 2	
0P6552	J9022–J9023	24 V supply 3	
0P6552	J9024–J9025	24 V supply 4	

8. Route the cables through the top or bottom and to the boards as shown on the illustration.

54. These output relays can also be Class 2/SELV but the three output relays must have identical reference.

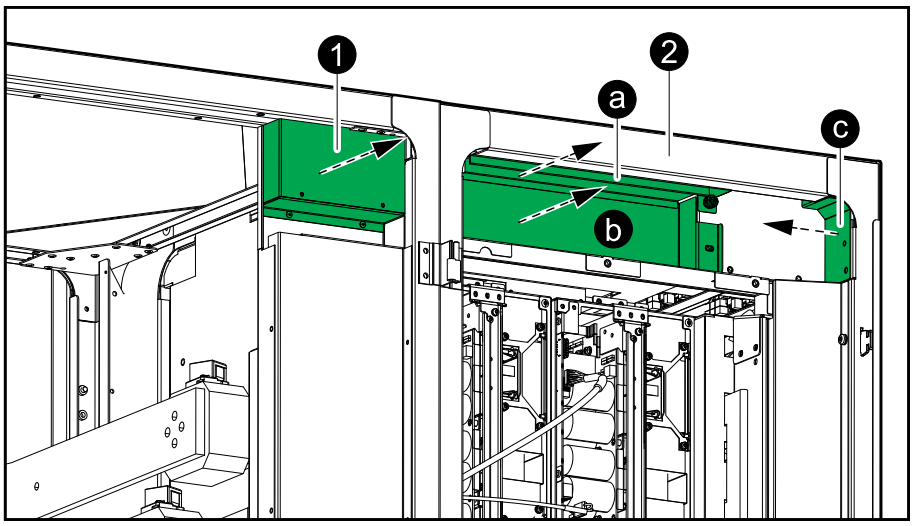
Connect the Signal Cables between the I/O Cabinet and the Power Cabinets

Overview of Signal Cables between the Power Cabinets and the I/O Cabinet



1. Remove the plate in the upper right corner of the I/O cabinet.

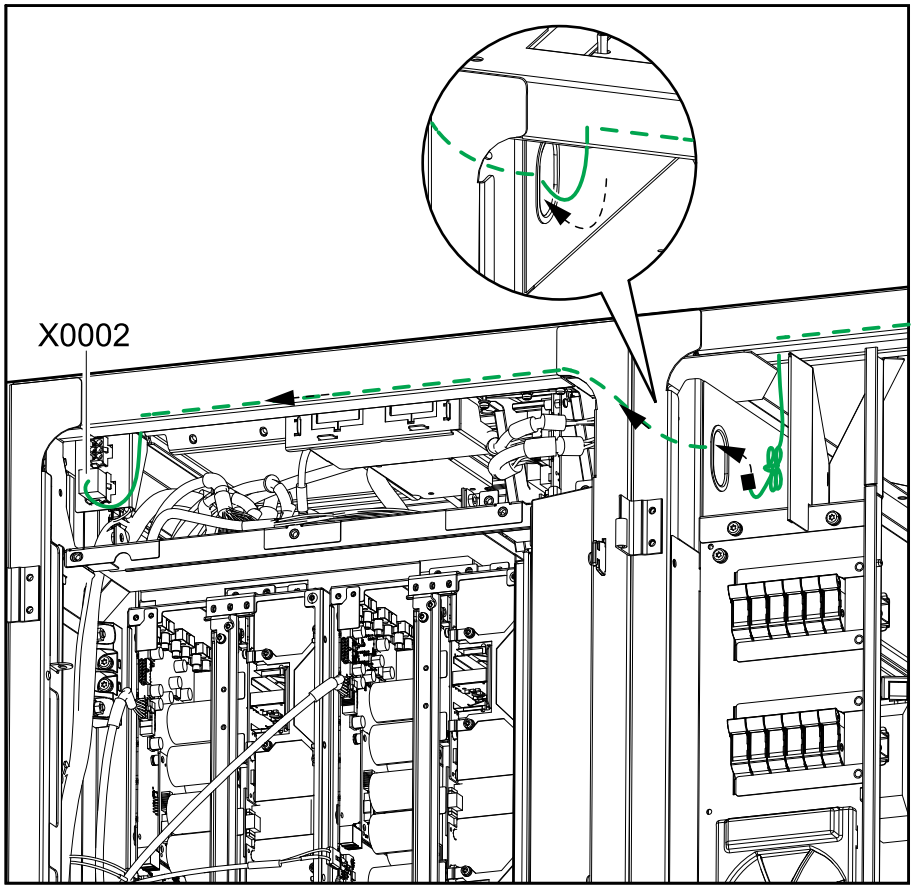
I/O Cabinet and One Power Cabinet



2. Remove the three plates (a-c) on all power cabinets.
3. Remove and dispose of all 0W11379 signal cables connected to the X0002 terminals of all power cabinets.

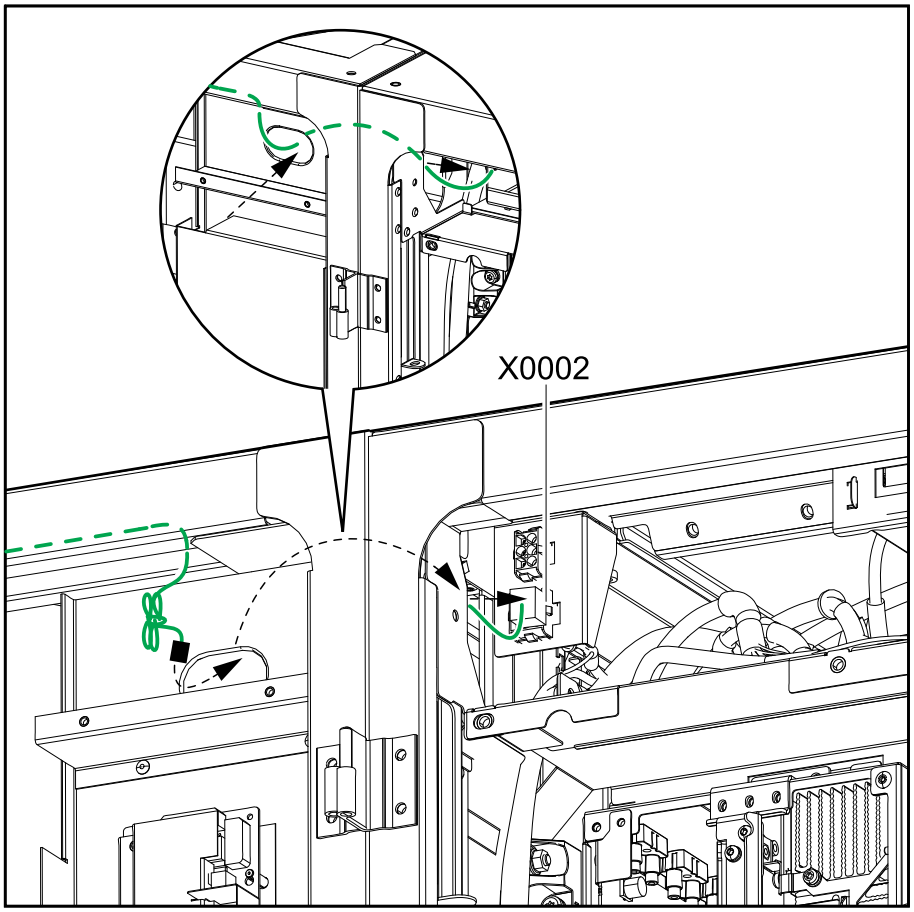
4. Connect the signal cable connected in the left side of the I/O cabinet to X0002 in the power cabinet to the left of the I/O cabinet.

Power Cabinet to the Left of the I/O Cabinet and the I/O Cabinet



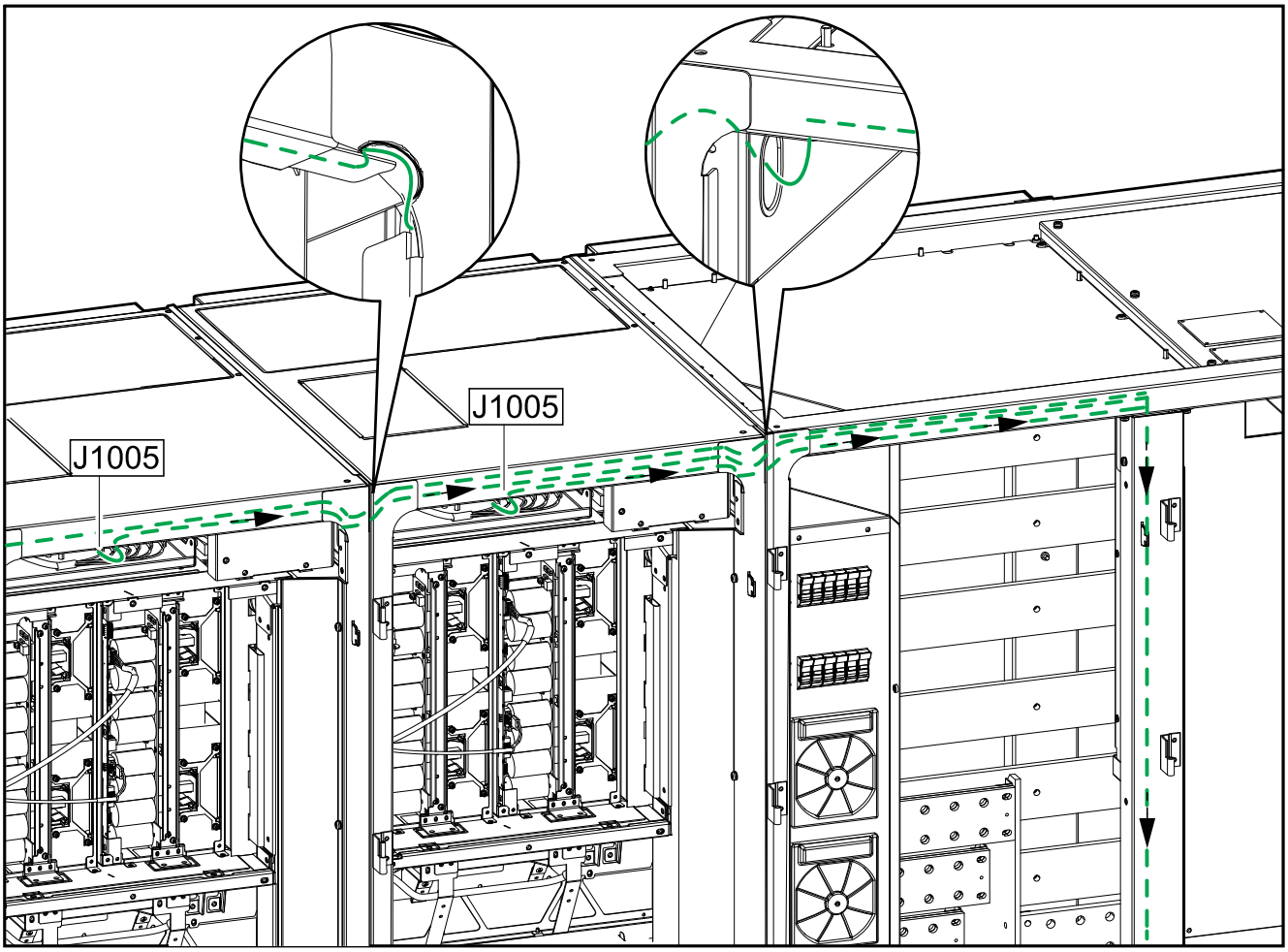
5. Connect the signal cable connected in the right side of the I/O cabinet to X0002 in the power cabinet to the right of the I/O cabinet.

I/O Cabinet and the Power Cabinet to the Right of the I/O Cabinet



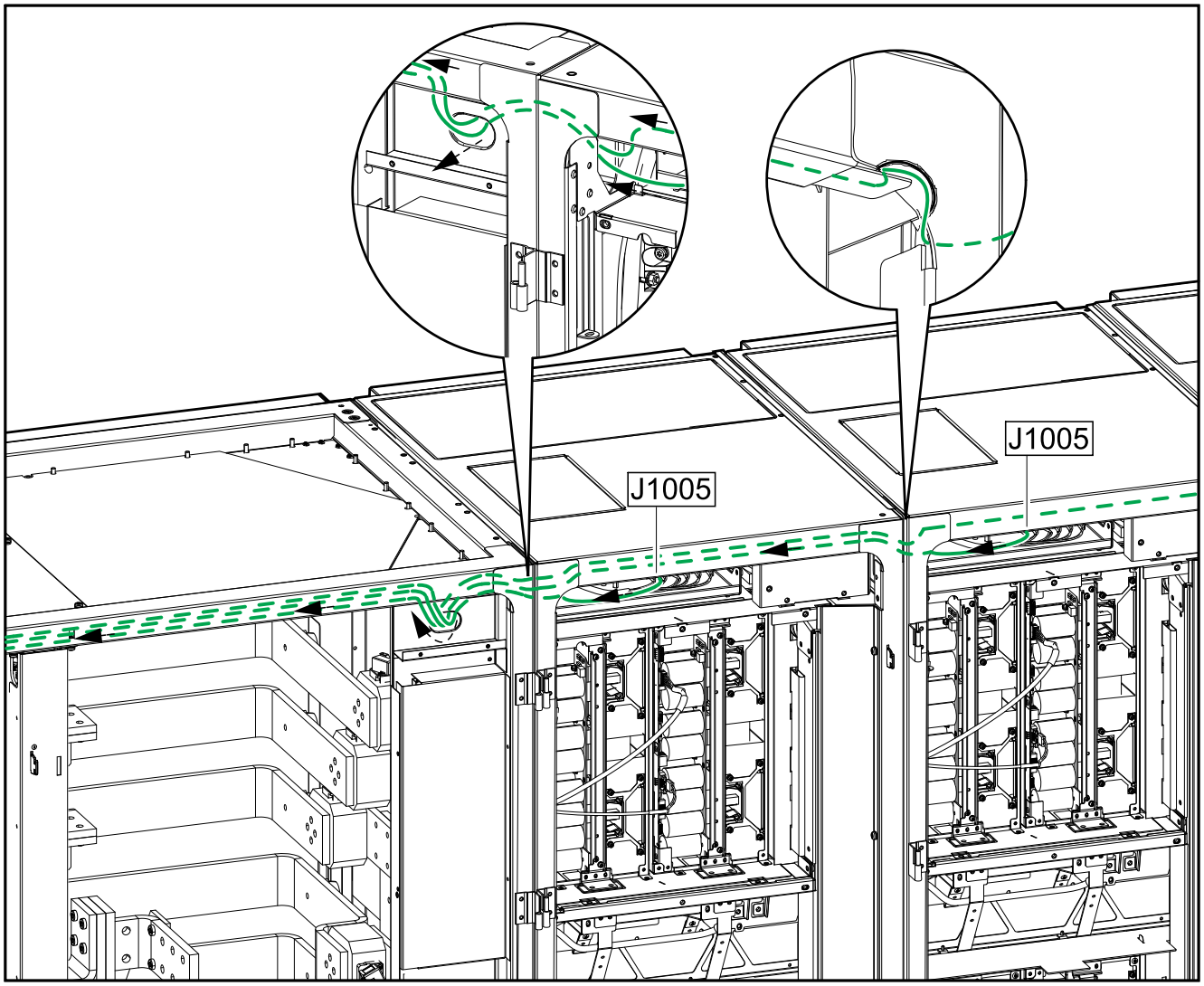
6. Connect the signal cable 0W7819 to 0P6516 terminal J1005 in power cabinets 1–3 (on the left side of the I/O cabinet). Route the cable into the I/O cabinet as shown on the illustration and fasten the cable.

Two Power Cabinets and the I/O Cabinet



7. Connect the signal cable 0W7822 to 0P6516 terminal J1005 in power cabinets 4–6[55] (on the right side of the I/O cabinet). Route the cable into the I/O cabinet as shown on the illustration and fasten the cable.

I/O Cabinet and Two Power Cabinets



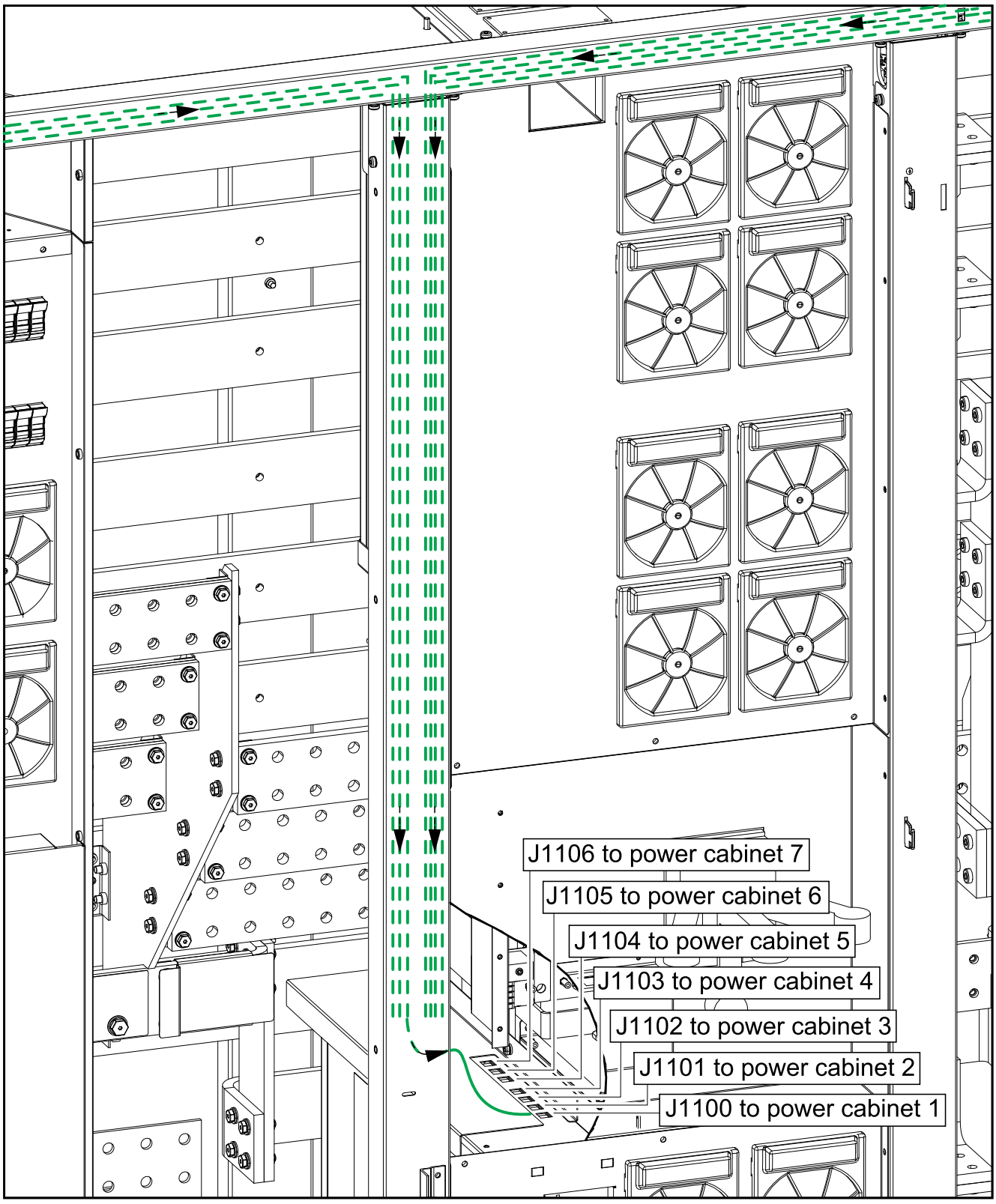
8. In redundant systems only, connect the signal cable 0W7827 to 0P6516 terminal J1005 in power cabinet 7. Route the cable as shown above and fasten the cable.

55. The cable must always be connected to power cabinet 4 (placed to the right of the I/O cabinet). Connect to power cabinet 5 and 6 if available.

9. Connect the signal cables 0W7819, 0W7822, and 0W7827 to 0P6502 terminals J1100 to J1106 in the I/O cabinet.

NOTE:

- J1104 only connected in systems with five or more power cabinets.
- J1105 only connected in systems with six or more power cabinets.
- J1106 only connected in systems with seven power cabinets.



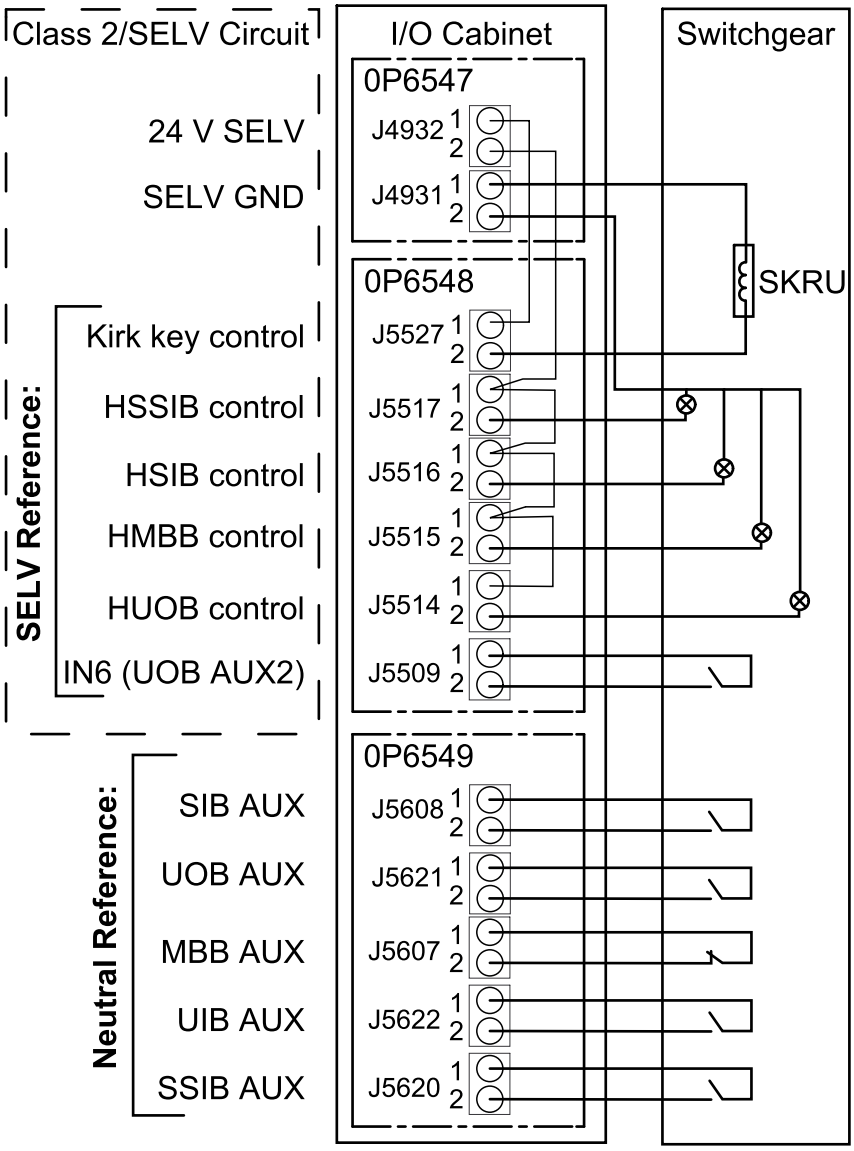
Connect the Signal Cables between the I/O Cabinet and the Switchgear

1. Route the cables from the switchgear through the top or bottom of the I/O cabinet and to the boards as shown in *Prepare for Signal Cables, page 88*. Class 2/SELV circuits must be separated from other cables as indicated on the illustrations.
2. Connect the below signal cables between the I/O cabinet and the switchgear.

   NOTE: The unit output breaker UOB must include two separated auxiliary switches.

   NOTE: The solenoid key release unit (SKRU) is only applicable to 480 V systems.

   All circuits connected must have the same 0 V reference.



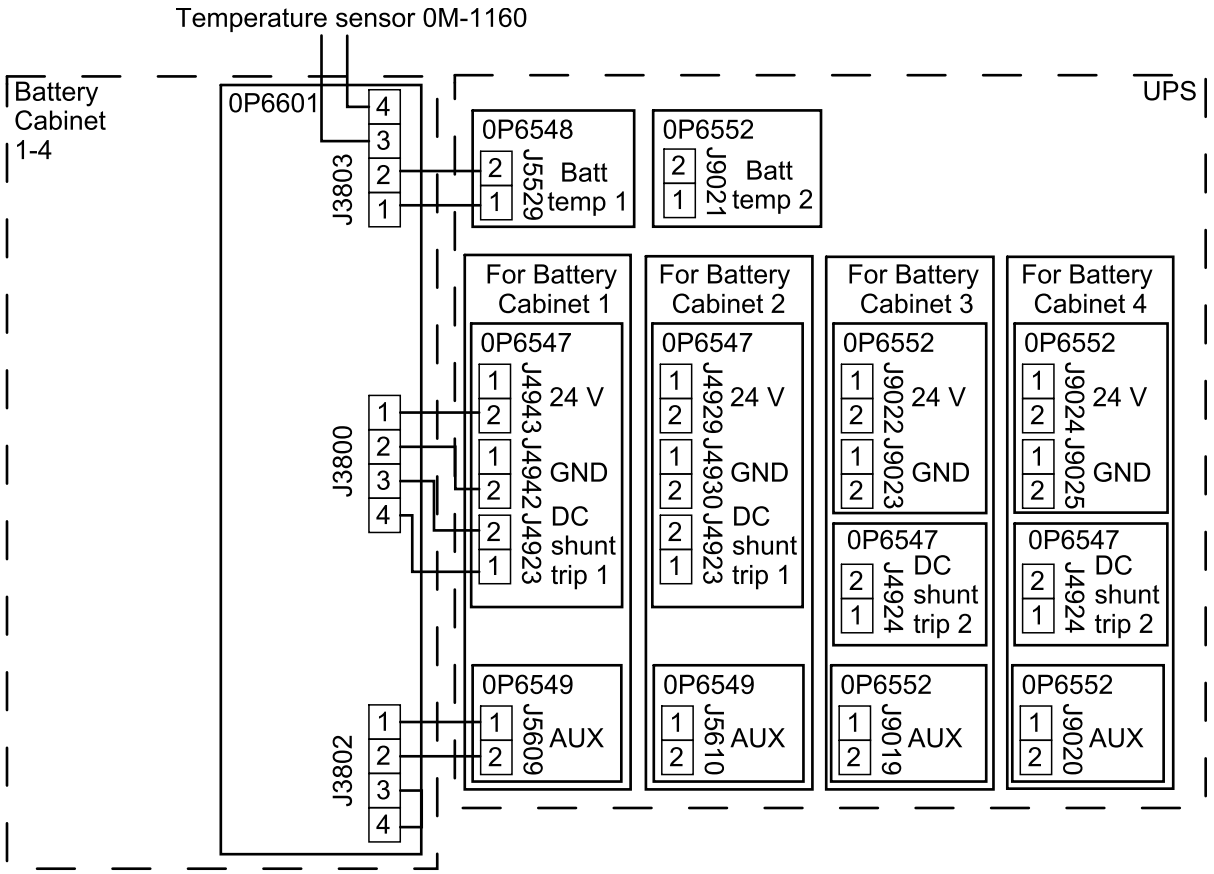
Connect the Signal Cables for Battery Solutions

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

NOTE: The illustration 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: 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 99* for information on how to connect signal cables between two classic battery cabinets in one battery bank.

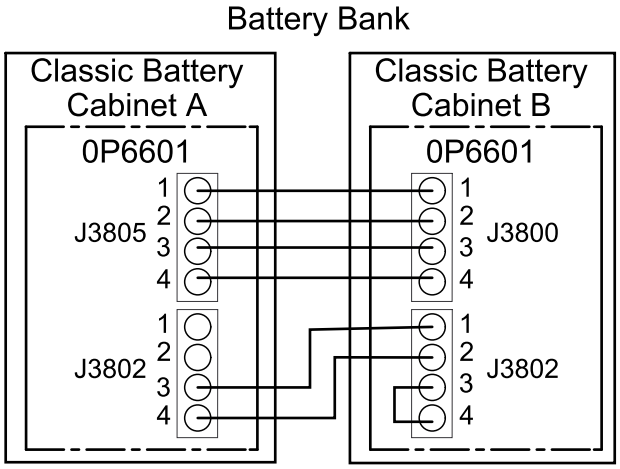
1. Route the signal cables from the battery banks through the top or bottom of the I/O cabinet to the boards.
2. Connect the signal cables between the I/O cabinet and the classic battery cabinets.



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

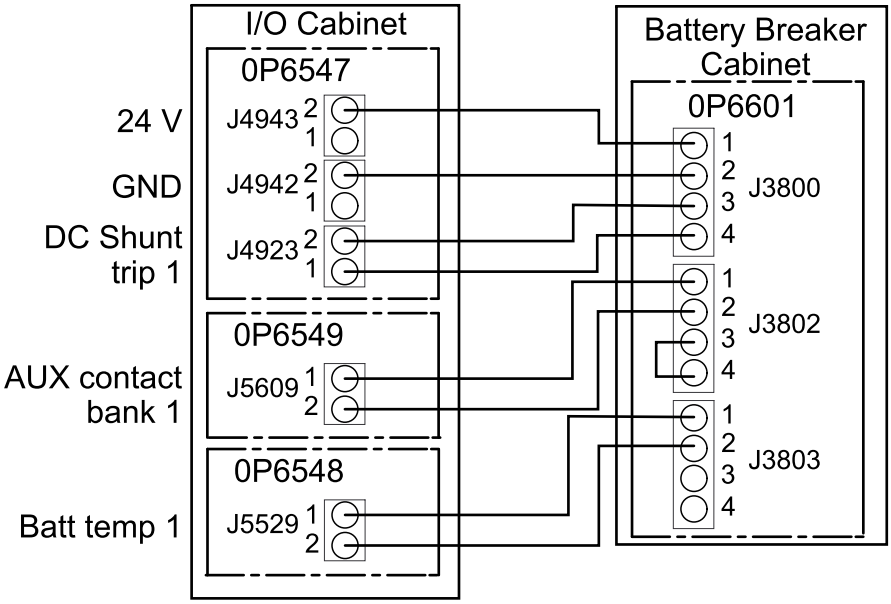
NOTE: The procedure is identical for all battery banks with two classic battery cabinets.

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.

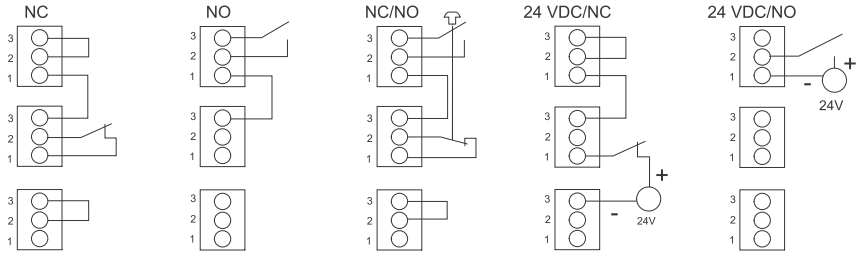


Connect the Emergency Power Off (EPO)

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

All circuits connected must have the same 0 V reference.

1. Route the cables from your EPO through the top or bottom of the I/O cabinet and to the EPO terminals J4936–J4938 on 0P6547 as shown in *Prepare for Signal Cables, page 88*.
2. 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.

1. Route the external synchronization cables through the top or bottom of the I/O cabinet to 0P6549 as shown in *Prepare for Signal Cables, page 88*.

2. Connect the three phases:

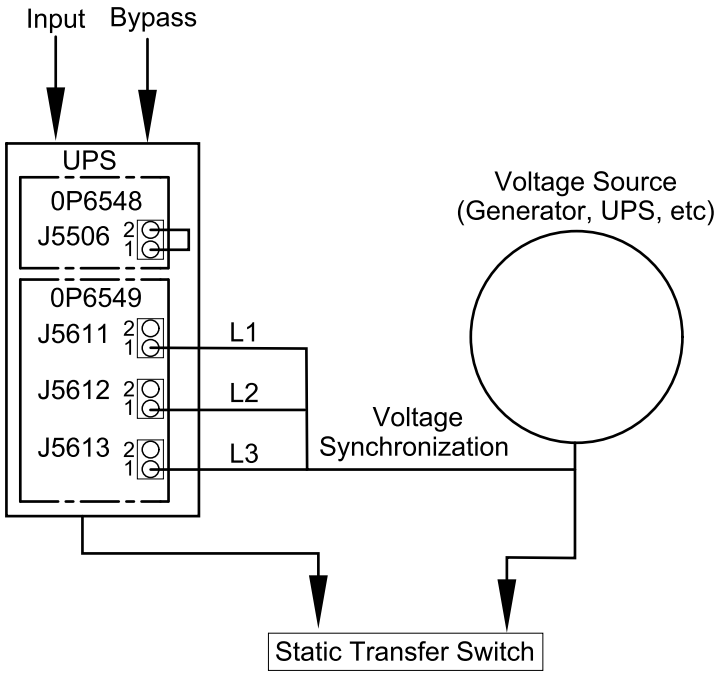
   NOTE: The phases from the synchronization source must be protected by a fuse of maximum 0.5 A.

   a. Connect L1 to J5611 on 0P6549.

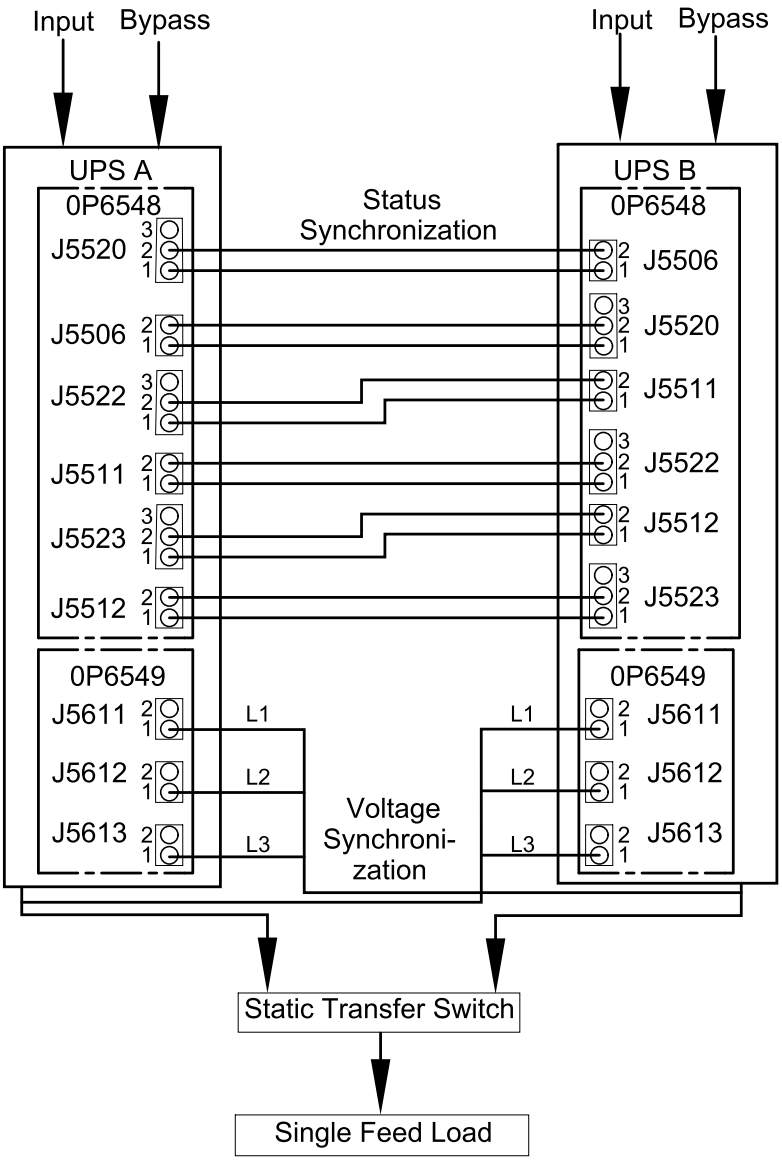
   b. Connect L2 to J5612 on 0P6549.

   c. Connect L3 to J5613 on 0P6549.

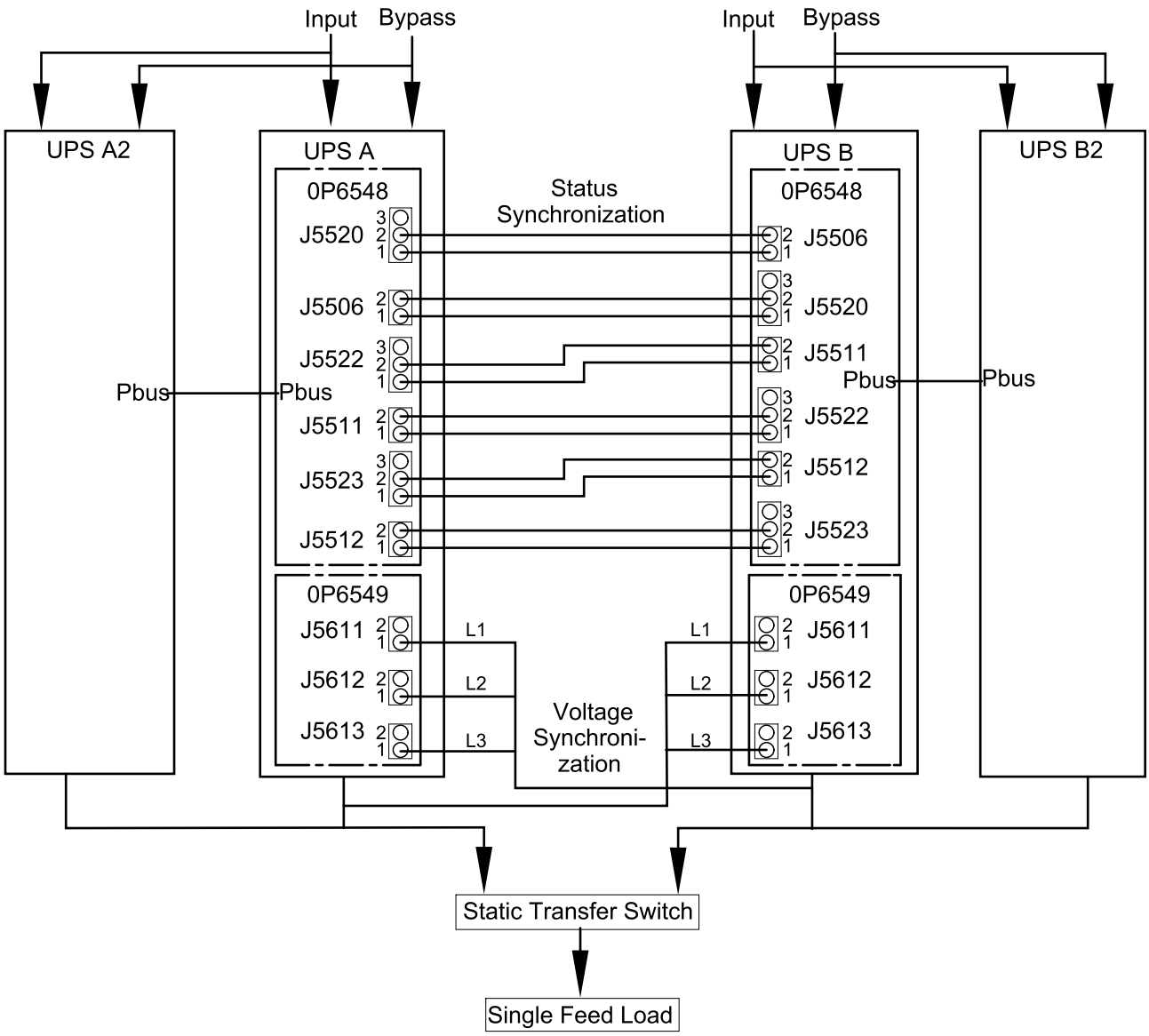
Basic UPS Synchronization to a Fixed Voltage Source



Dual UPS Synchronization with a Floating Synchronization Master



Fixed Parallel Synchronization Master



Connect Equipment to Input Contacts and Output Relays

1. Route the cables from your contacts/relays through the top or bottom of the I/O cabinet and to the boards in the right side of the I/O cabinet as shown in *Prepare for Signal Cables, page 88*.
2. Connect your equipment to the input contacts and/or output relays.

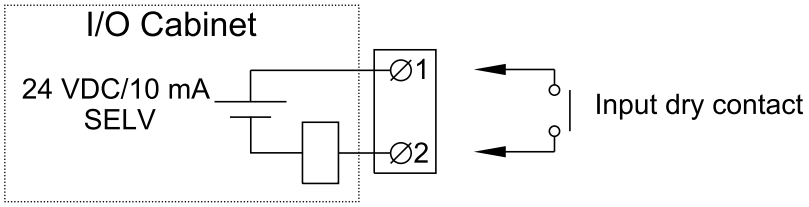
Overview of Input Contacts and Output Relays

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.

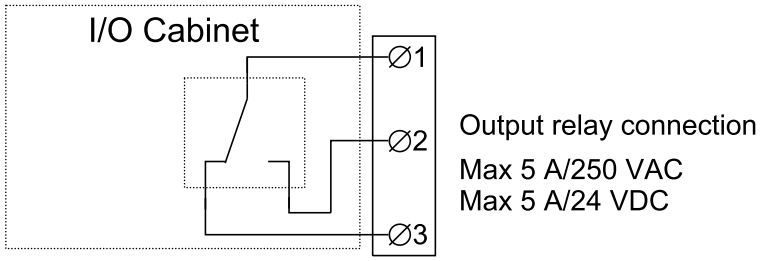
The switch SW5500 on 0P6548 is used to select between internal SELV supply for inputs (standard setting) and external supply[56]. If external supply is selected, the supply must be connected to J5530.



Name	Description	Location
IN 1 (Contact 1)	Configurable input contact	0P6548 terminal J5502[57]
IN 2 (Contact 2)	Configurable input contact	0P6548 terminal J5503[57]
IN 3 (Contact 3)	Configurable input contact	0P6548 terminal J5504[57]
IN 4 (Contact 4)	Configurable input contact	0P6548 terminal J5505[57]
IN 5 (Contact 5)	Configurable input contact	0P6548 terminal J5510[57]
IN 6	UOB redundant AUX contact	0P6548 terminal J5509[57]
IN 7	Transformer temperature switch	0P6548 terminal J5508[57]
IN 8	External bonding contact	0P6548 terminal J5507[57]
IN 9	Forced external synchronization input	0P6548 terminal J5506[57]
IN 10	External synchronization requested	0P6548 terminal J5511[57]
IN 11	Use static bypass standby	0P6548 terminal J5512[57]
IN 14	MegaTie	0P6552 terminal J9027[57]

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	0P6547 terminal J4939
OUT 2 (Relay 2)	Configurable output relay	0P6547 terminal J4940
OUT 3 (Relay 3)	Configurable output relay	0P6547 terminal J4941
OUT 4	Forced external synchronization output	0P6548 terminal J5520[57]
OUT 5	MegaTie	0P6548 terminal J5521[57]
OUT 6	External synchronization requested output	0P6548 terminal J5522[57]
OUT 7	UPS in inverter ON	0P6548 terminal J5523[57]
OUT 8 (Relay 4)	Configurable output relay	0P6548 terminal J5524[57]

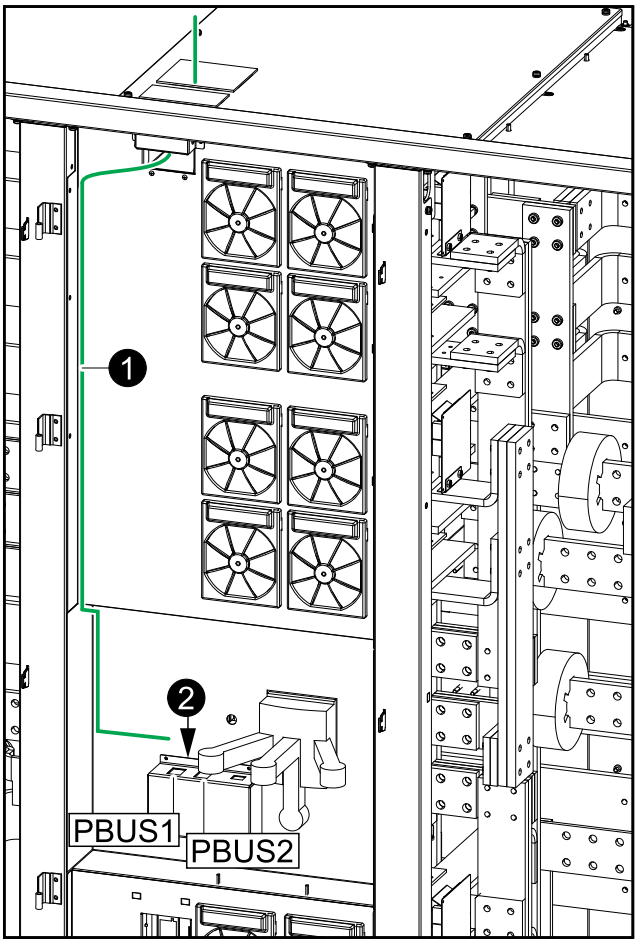
56. An external supply is useful in parallel systems where inputs are connected between different UPSs. This is to have a common reference and to avoid cross currents.
57. Class 2/SELV wiring

Name	Description	Location
OUT 9 (Relay 5)	Configurable output relay	0P6548 terminal J5525[58]
OUT 10 (Relay 6)	Configurable output relay	0P6548 terminal J5528[58]
OUT 14	Bonding contactor	0P6552 terminal J9029[58]

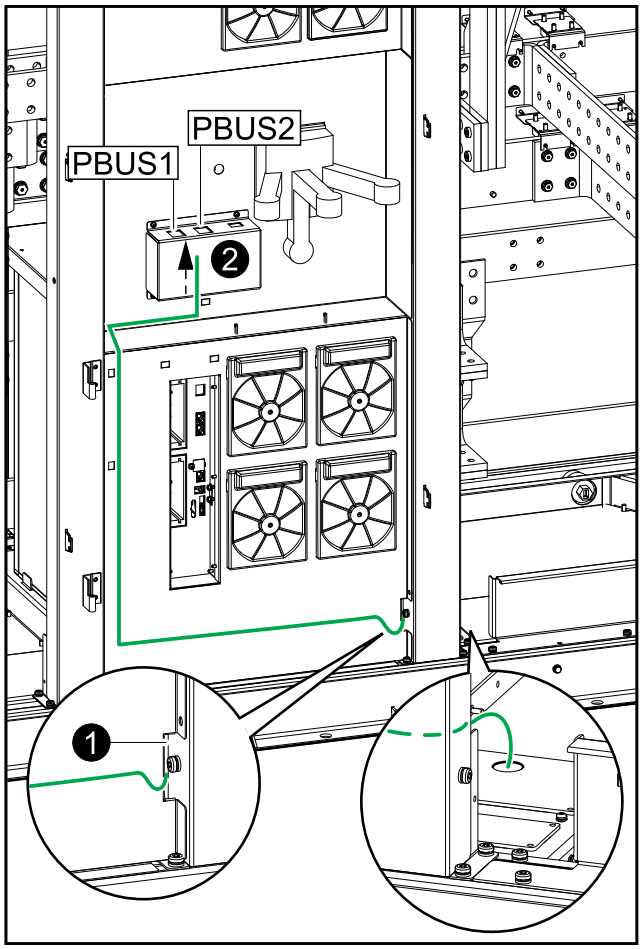
NOTE: Refer to the operation manual for configuration options.

Connect the PBUS Cables between Parallel UPS Units

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. Route the PBUS cables from the installation kit 0H–0889 through either the top or the bottom of the I/O cabinet.

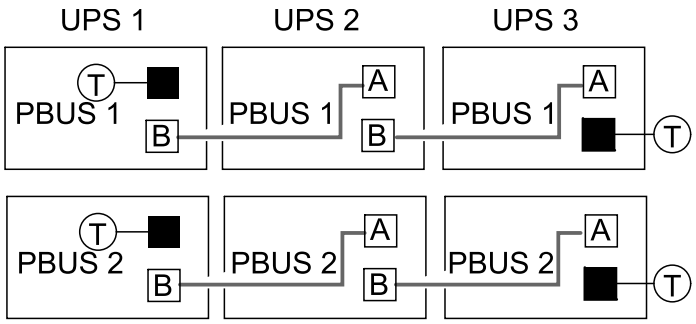
58. Class 2/SELV wiring

2. 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 the PBUS cables must not exceed 60 m (197 ft).

Example of System with Three UPSs in Parallel



External Communication

The following interfaces are supported:

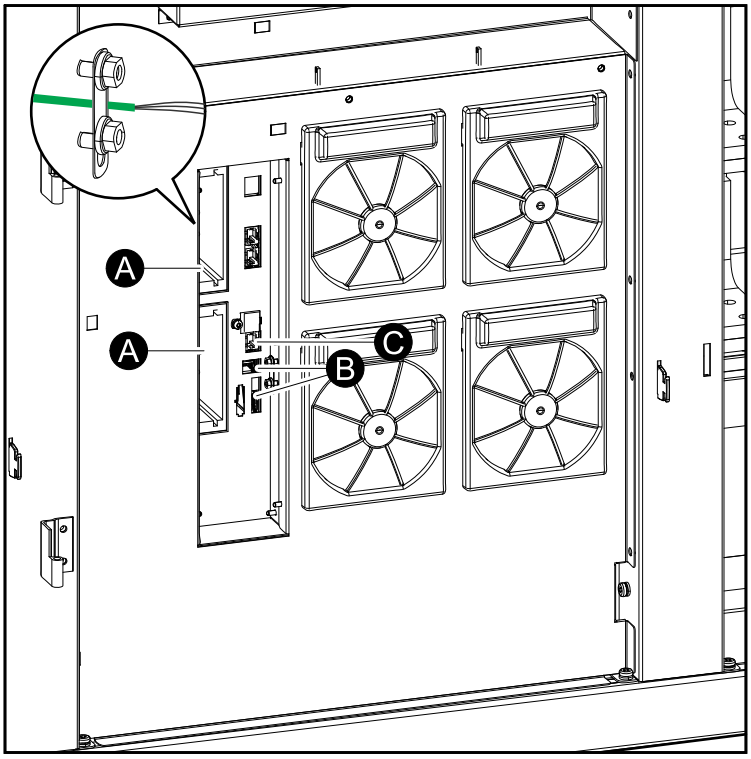
A. Two smart slots for optional network management cards (AP9630, AP9631, AP9635CH).

   NOTE: If the input dry contact 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.

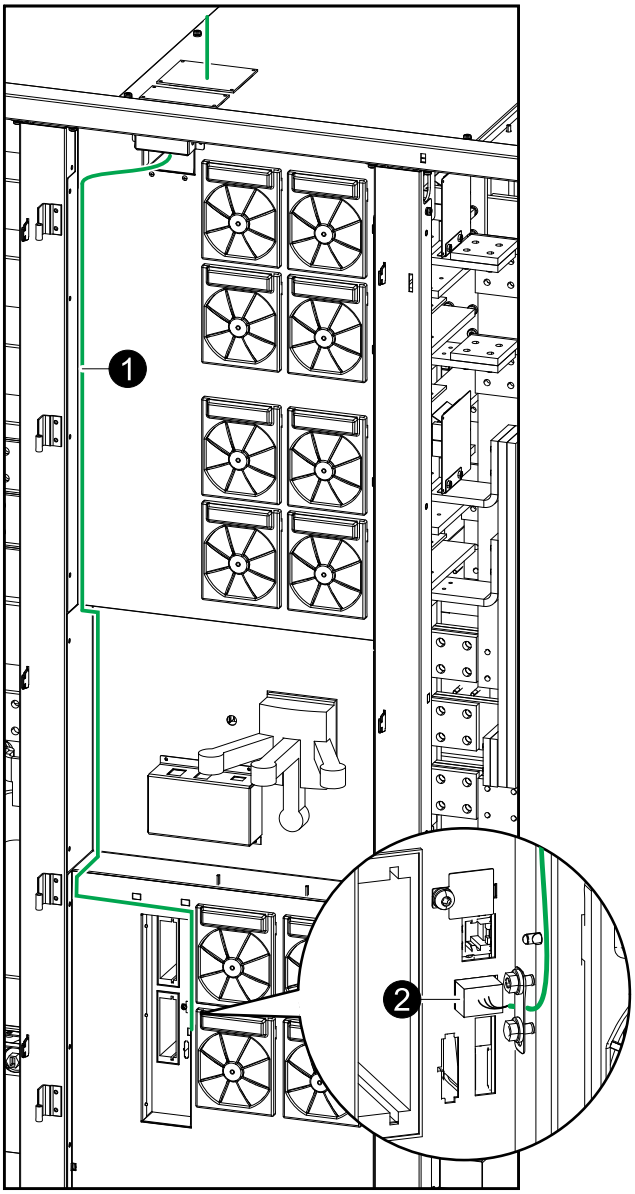
Front View of the I/O Cabinet



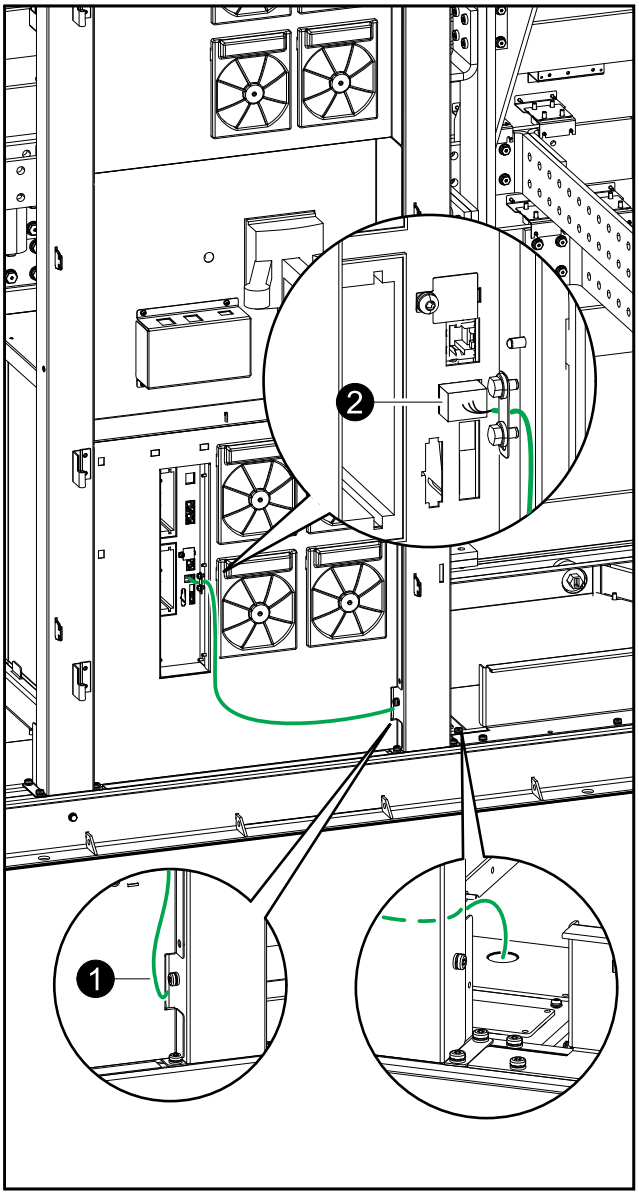
Connect the Modbus Cables

NOTE: Terminators for modbus connection is provided in the installation kit 0H-9101.

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



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

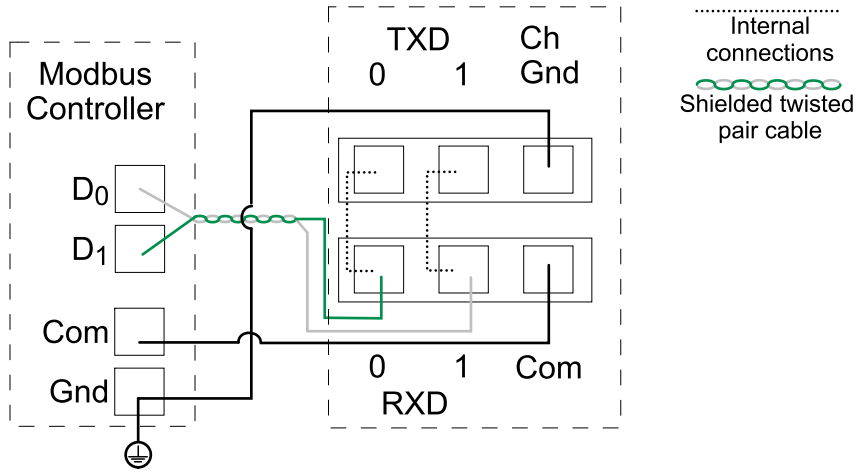


1. Route the cables as shown on the illustrations.

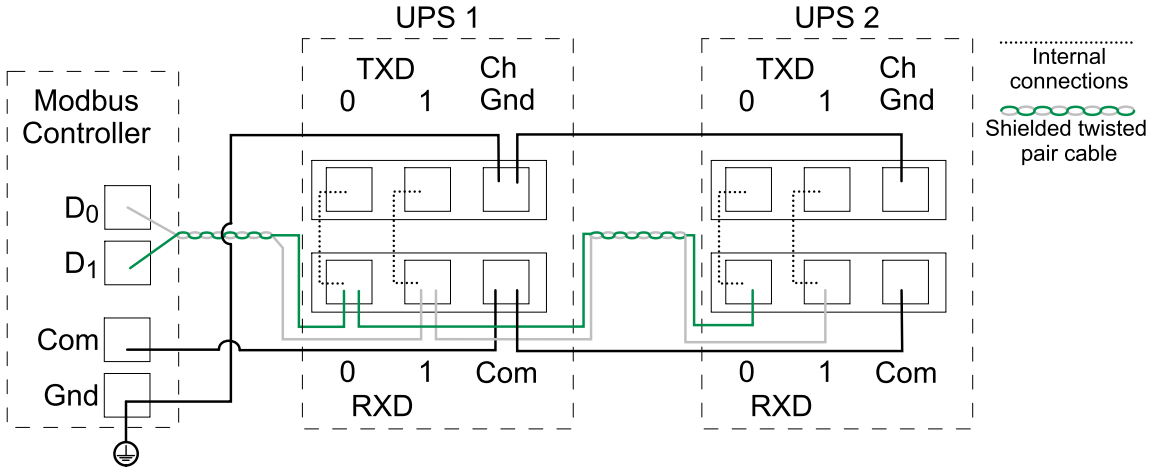
2. Connect the modbus cables. Use either 2–wire or 4–wire connection. Shield the cables as shown.

   NOTE: Shielded cables must be used for modbus connections. The shield connection to the ground must be as short as possible (ideally below 1 cm).

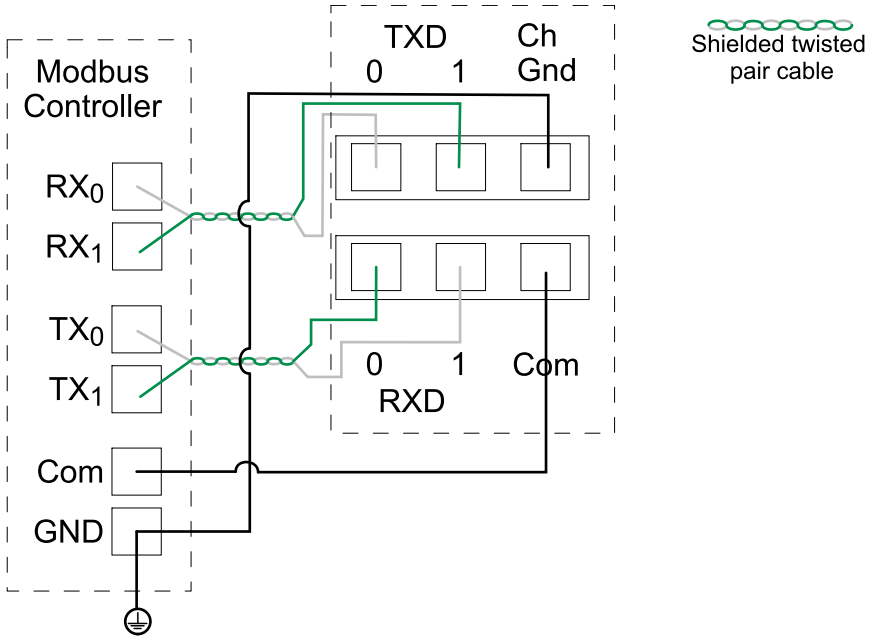
2–Wire Connection with One UPS



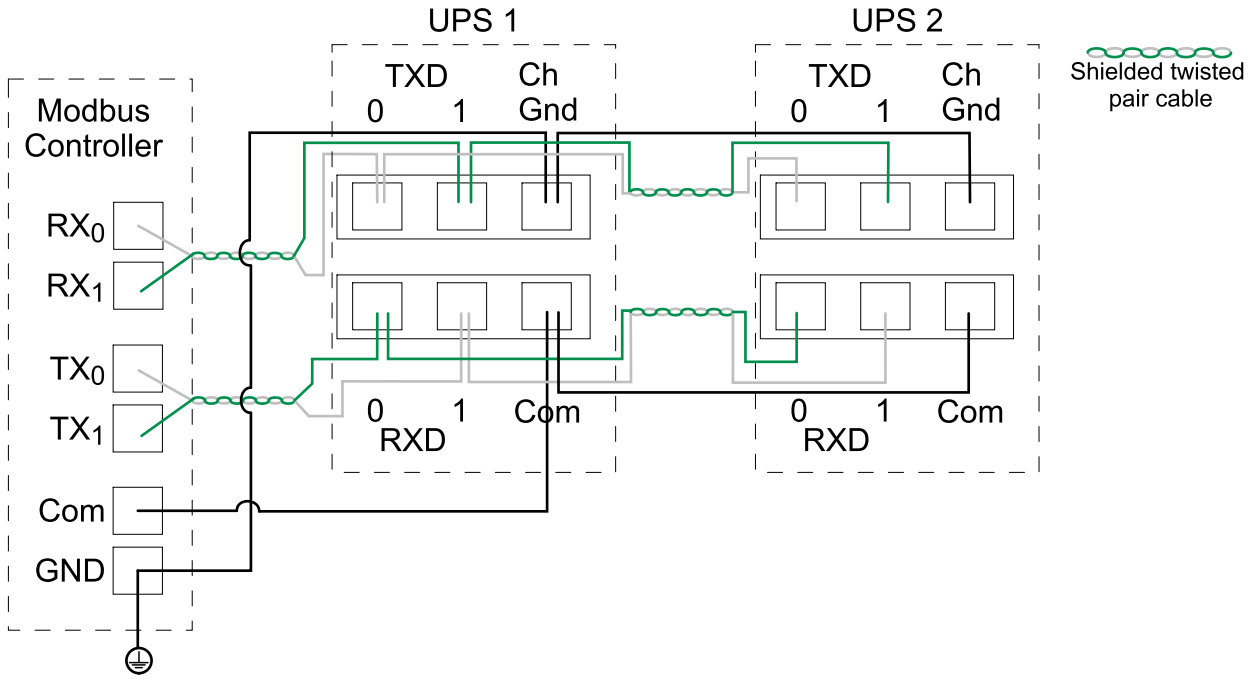
Example: 2–Wire Connection with Two UPSs



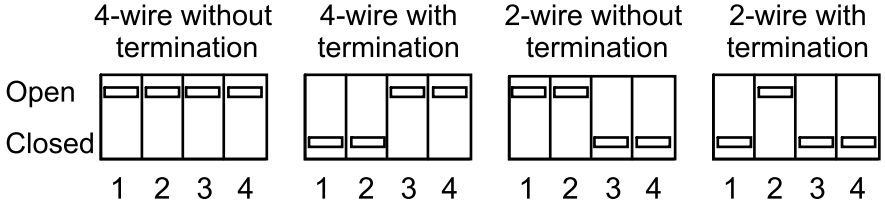
Example: 4–Wire Connection with One UPS



Example: 4–Wire Connection with Two UPSs



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

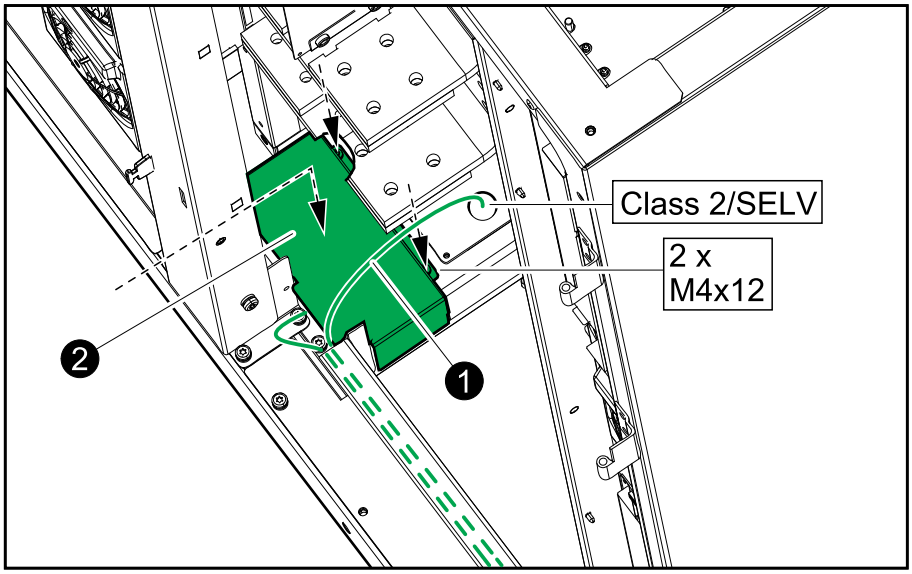


Final Mechanical Assembly

Final Mechanical Assembly of the I/O Cabinet

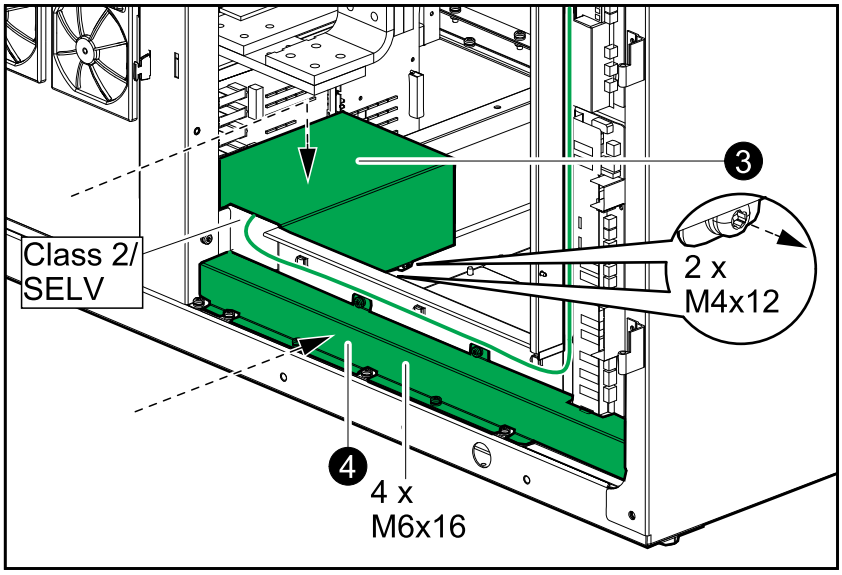
1. Lift up the Class 2/SELV cables.

Front View of the I/O Cabinet



2. Reinstall the indicated box over the non-Class 2/non-SELV cables.
3. Reinstall the indicated box over Class 2/SELV cables.

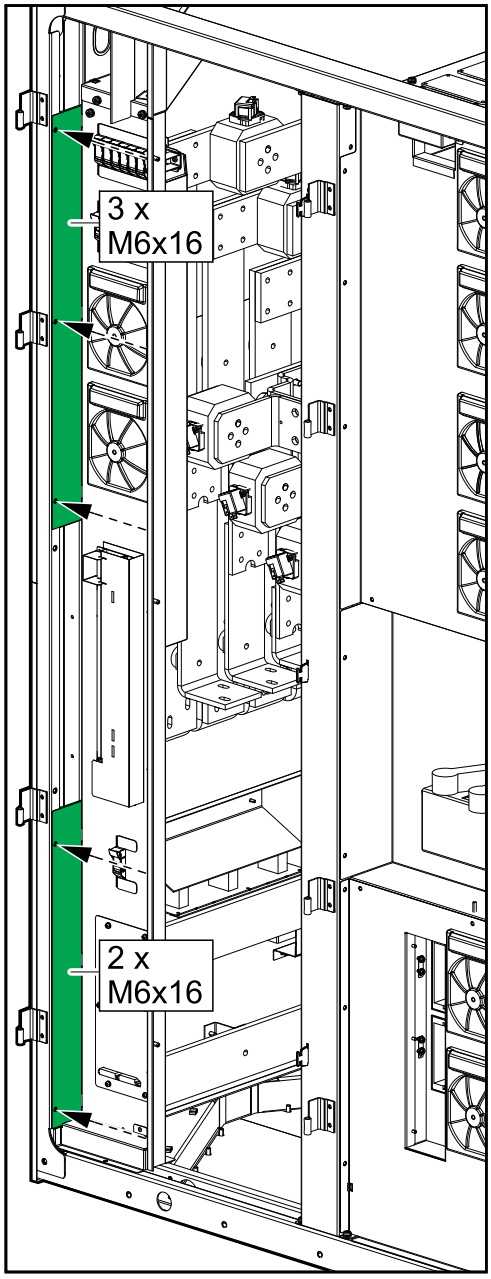
Front View of the I/O Cabinet



4. Reinstall the plate over the cable channel for non-Class 2/non-SELV cables.

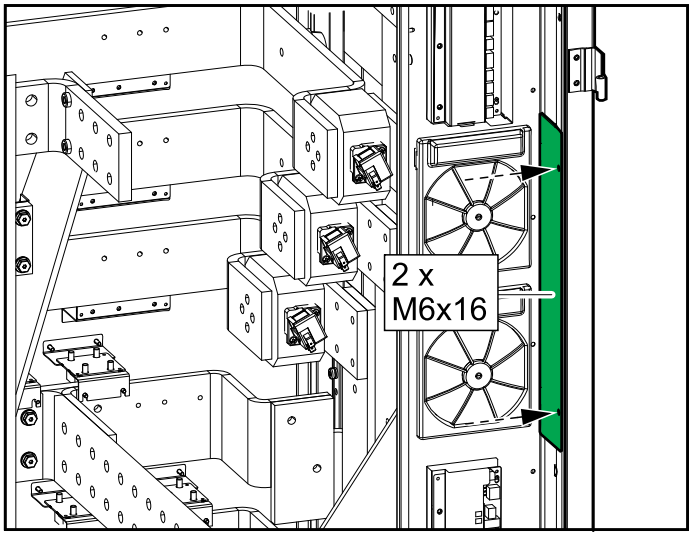
5. Reinstall the two plates in the left side.

Front View of the I/O Cabinet



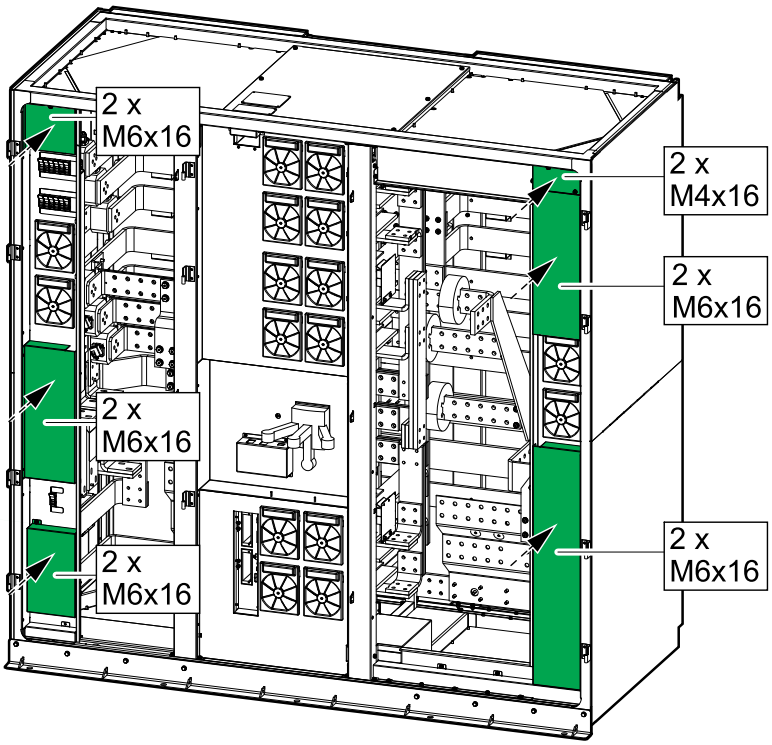
6. Reinstall the plate in the right side.

Front View of the I/O Cabinet



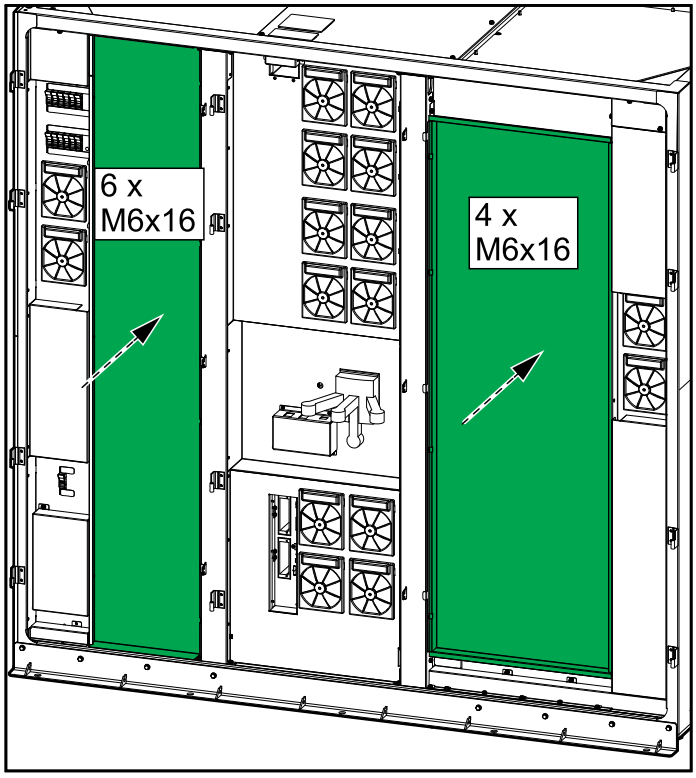
7. Reinstall the six plates in the left and right sides of the I/O cabinet.

Front View of the I/O Cabinet



8. Reinstall the two metal plates.

Front View of the I/O Cabinet

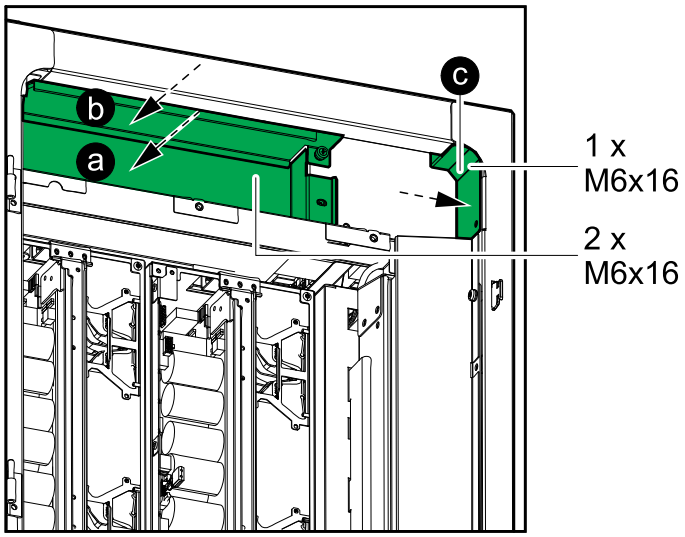


9. Close the front doors.

Final Mechanical Assembly of the Power Cabinets

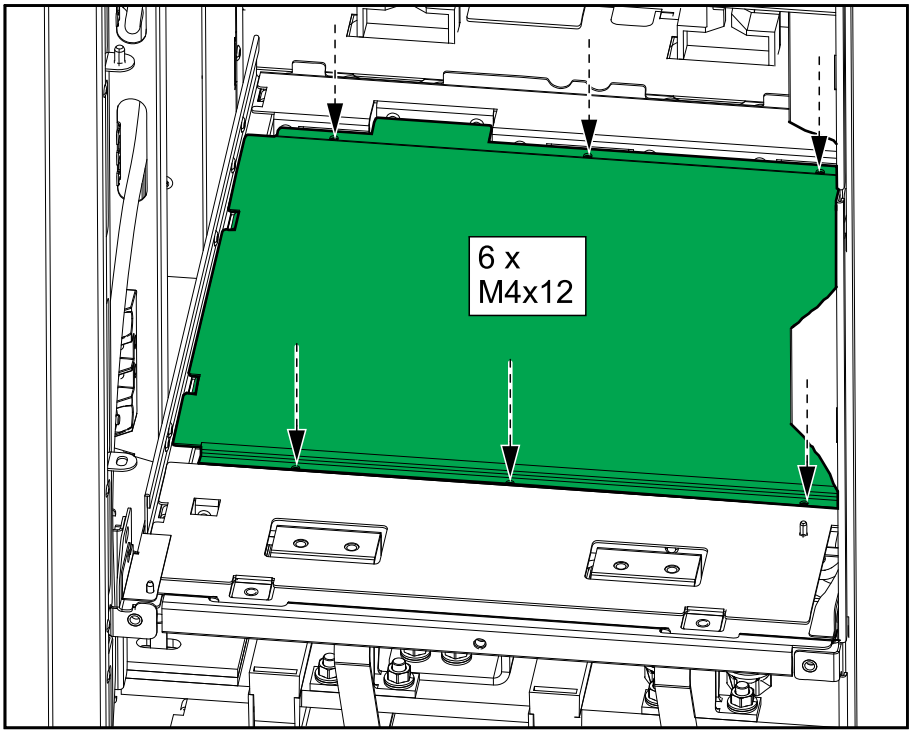
1. Reinstall the three plates in the top of each of the power cabinets in chronological order (a-c).

Front View of the Power Cabinet



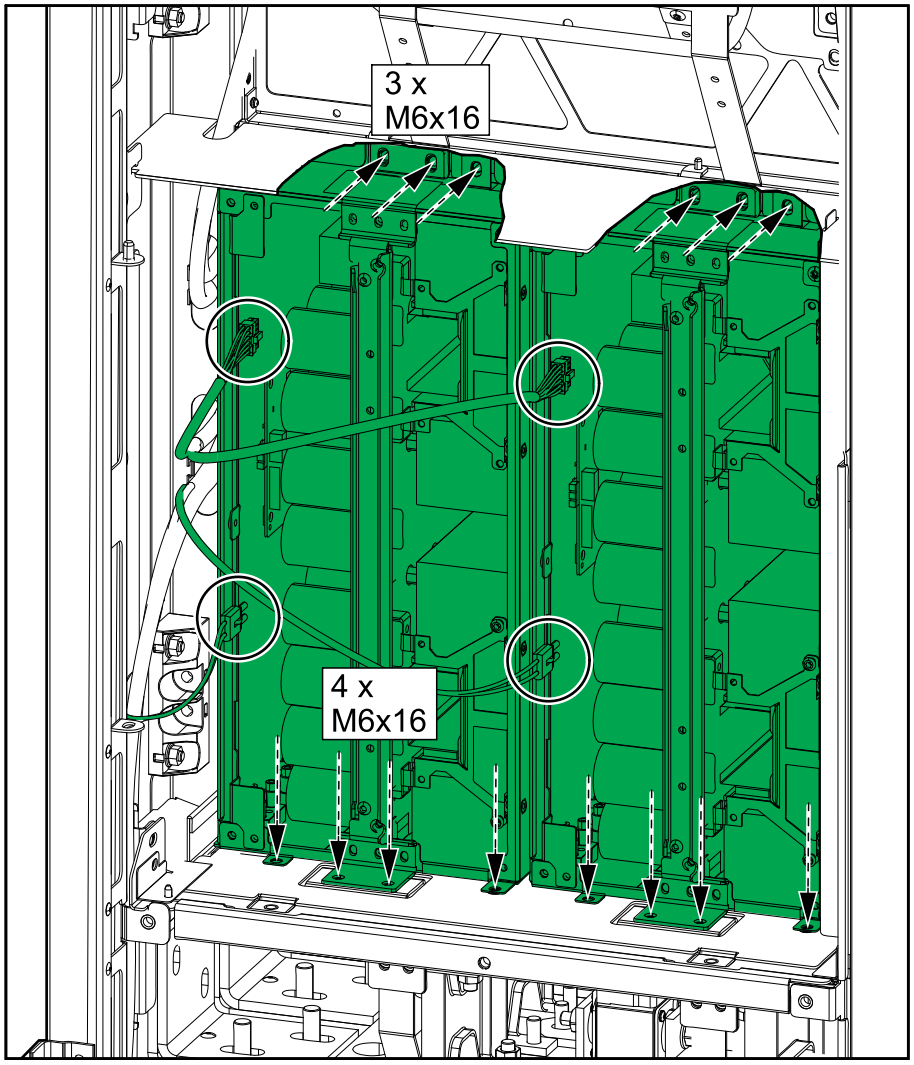
2. Reinstall the plate in each of the power cabinets.

Front View of the Power Cabinet



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

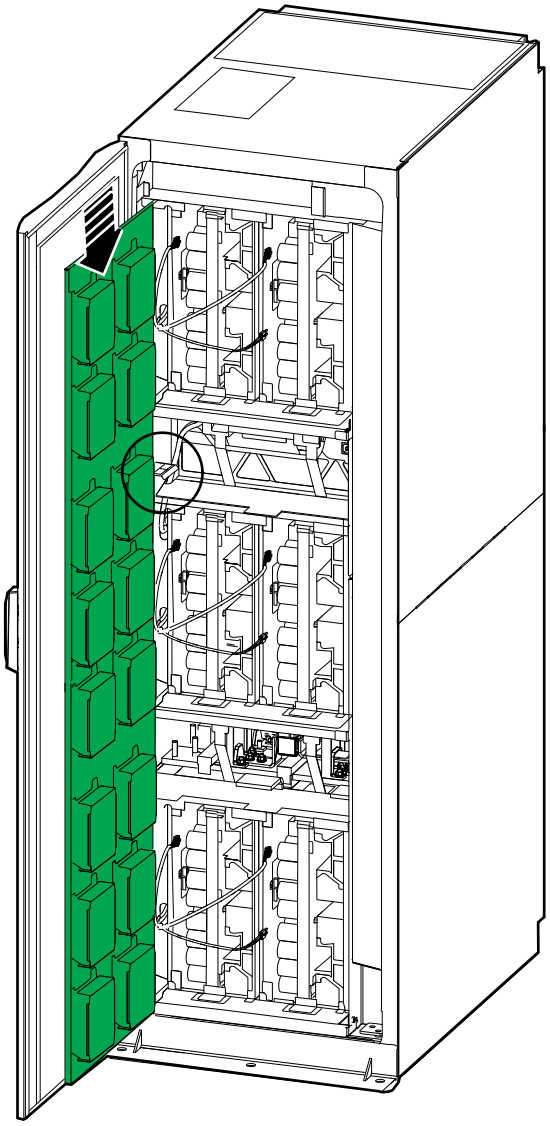
Front View of the Power Cabinet



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

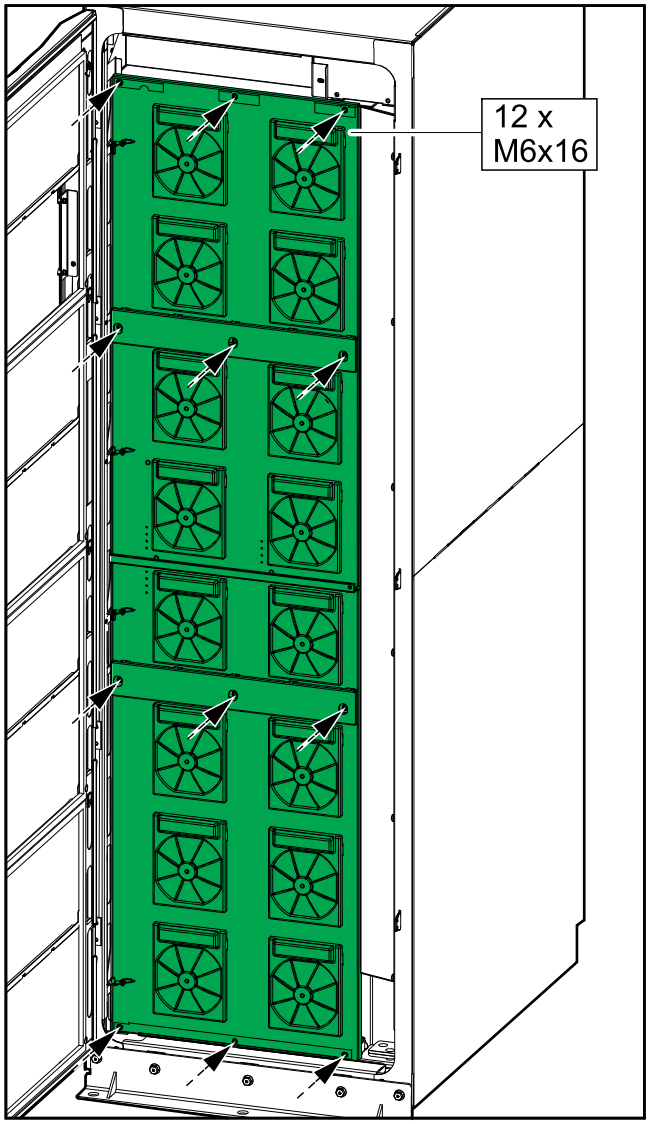
5. Reinstall the fan doors and reconnect the cable between the fan doors and each of the power cabinets.

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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