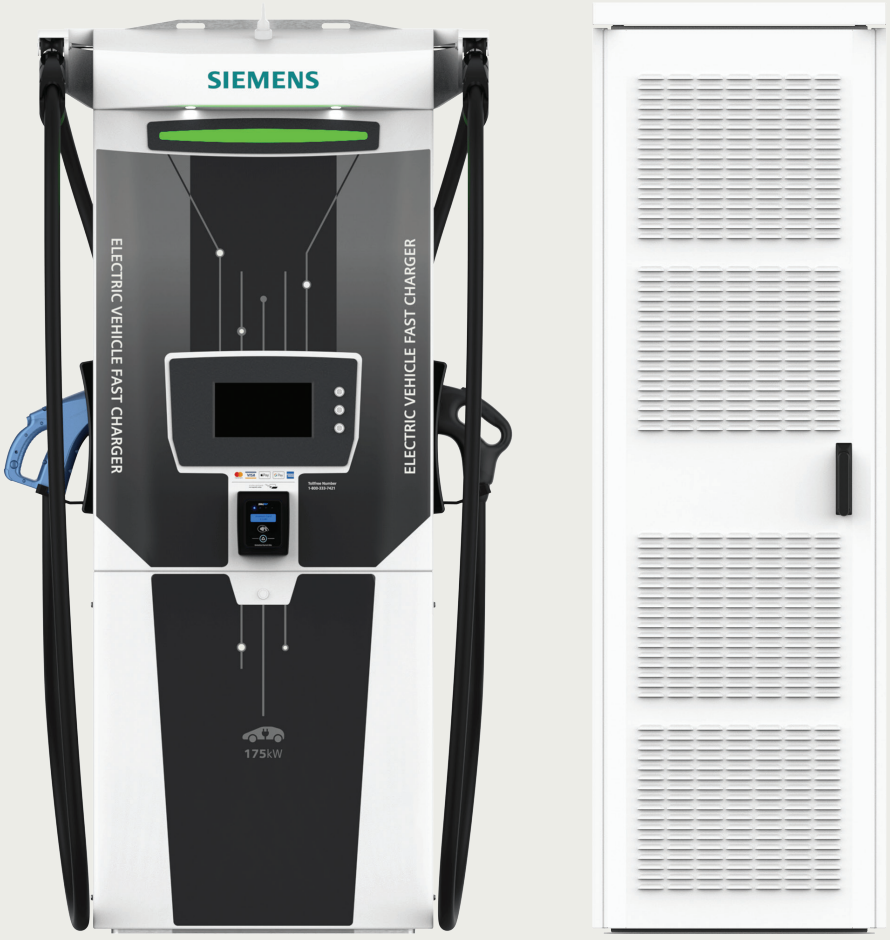
SIEMENS

INSTALLATION MANUAL

VersiCharge Ultra 175™

175 kW DC fast charger

usa.siemens.com/versicharge



Index

Important safety instructions. Save these instructions.

This manual contains important instructions for the VersiCharge Ultra 175 kWDC charger.

Read the installation and operating instructions before installing and commissioning the equipment.

These instructions must be followed during installation, operation, and maintenance of the unit.

CAUTION

The VersiCharge Ultra 175 kW DC charger unit must be installed and serviced only by qualified electrical personnel. To achieve EMC compliance, the chassis of the VersiCharge Ultra 175 fast charger unit must be bonded to Earth locally at the charger.

Grounding instructions

This unit must be connected to a grounded, metal, permanent wiring system. An equipment-grounding conductor must be run with circuit conductors and connected to equipment-grounding terminal or lead on the electric vehicle charger.

Connections to the battery charger shall comply with all local codes and ordinances.

Observe all pertinent national, regional, and local safety laws and regulations when installing and commissioning the VersiCharge Ultra 175 fast charger.

Identifying symbols


CRITICAL


CAUTION


RISK OF ELECTRIC SHOCK


Equipment Grounding Conductor Symbol


Phase Symbol


Alternating Current Supply Symbol

Wiring

Power and Protective Earth (PE) Conductor ratings: DC Copper 95mm2 (cross section), V90 class, rated to operate at 90°C.

Siemens recommends the use of copper cables. Refer to the Veefil-RT 175-S Piping and Cabling document (document TRI125.INS.016) for reference specifications.

Observe local regulations regarding wiring different circuits in the same conduit, including the Ethernet link, if used. In general, all conductors occupying the same conduit shall have an insulation rating equal to at least the maximum circuit voltage applied to any conductor within the conduit.

CRITICAL

Installation shall not be done in a: (i) commercial garage (repair facility) or (ii) within 20 feet (6096 mm) of any dispensing device or storage container for motor fuel or any other potentially flammable substance.

Important safety instructions. Save these instructions.

Input:
950Vdc
190A

1ø, 240 Vac
50/60 Hz ∿
3A

The VersiCharge Ultra 175 unit must be connected to a circuit provided with appropriate over-current protection in accordance with the National Electrical Code, ANSI/NFPA 70.

Tightening torque:
Wiring terminals:
30 Nm / 22 lb-ft

Service hatch:
2 Nm / 17.7 lb-in

Weather rating:
IP65 Electronics Enclosure
NEMA Type 3R

Usage limitations
No cable extensions of any kind shall be used to extend the VersiCharge Ultra 175 cable to connect to a vehicle.

Adaptors shall not be used to connect a vehicle connector to a vehicle inlet.

FCC Notice

Information to the user
(FCC Part 15.105)
Class A product:

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 which the user will be required to correct at his own expense.

Modification warning
(FCC Part 15.21)
Warning: Any changes or modifications not expressively approved by (Siemens) could void the user's authority to operate this equipment.

Packaging, handling and receipt

Prior to unpacking and installation read these instructions carefully to become familiar with the VersiCharge Ultra 175 unit packaging and handling procedures.

In all cases, the VersiCharge Ultra 175 unit must be transported to the installation site in its original packaging, and only unpacked at the installation site.

Installation, commissioning, and servicing of the VersiCharge Ultra 175 unit should only be carried out by qualified personnel.

Materials:
The VersiCharge Ultra 175 unit is transported in a reinforced cardboard crate.

Please respect the environment and recycle/reuse the materials.

Storage:
Store in the original packaging in a horizontal position.

Store in a dry location, protected from the weather (warehouse conditions).

Storage temperature:
-20 to 45°C / -4 to 113°F

Handling:
Only lift the VersiCharge Ultra 175 unit packaging in its horizontal orientation using a forklift, pallet jack or with lifting straps and engine hoist, forklift or crane. Check the weight on the delivery documents and ensure the lifting apparatus used is compatible.

Receipt:
Check that the crate packaging is in good condition and that the VersiCharge Ultra 175 unit is not damaged.

If there are any problems noted, make a formal complaint to the carrier and notify your supplier.

Packed crate weight:
300kg / 660lbs (approx)

Crate size:
1150 (W) x 2150 (L) x 850 (H) mm
45.3 (W) x 84.6 (L) x 33.5 (H) inches

Site configuration

Site survey:
A qualified engineer must survey the installation site to determine the correct ground preparation for the size and weight of the VersiCharge Ultra 175 unit, in accordance with local regulations.

The VersiCharge Ultra 175 unit is best installed following the recommended site configuration requirements.

Ground fixing:
The VersiCharge Ultra 175 unit is fixed to the ground through the baseplate fixing holes with 4 x M16 fasteners or 5/8 inch fasteners.

Fasteners are not supplied, as the type required depends on the foundation used, and must be chosen by the installer accordingly.

The fasteners should fix the VersiCharge Ultra 175 unit securely to the foundation through the base-plate, in accordance with the dimensions and fixing points shown in Figure 3: Base plate dimensions.

Note: Keep the plastic inserts from the bolts for use in the baseplate holes.

Conduit requirement:
Ø 110mm OD conduit.

When preparing the foundation, ensure that conduit and wiring terminates above ground according to the document VersiCharge Ultra 175 Piping and Cabling.

Foundation requirements
The foundation must be flat, even, and have the appropriate density for the weight of the VersiCharge Ultra 175 unit.

Check the flatness and level of the foundation and level of the VersiCharge Ultra 175 unit baseplate prior to fixing.

Communications:
A site can utilize Ethernet or optical fiber between the IPU and UU. If the UU and IPU are configured for use of optical fiber, then use optical fiber. If not, use Ethernet (default).

4G network capability.

Cat 6a STP Ethernet cable required with a minimum length from the foundation surface.

Fiber Optic Cable: OM3 Multi Mode 2 Core

For detailed wiring instructions, see reference.

Site configuration

Servicing distance

An additional space of 700mm from the center front and rear of the VerisCharge Ultra 175 unit is required to open the front panel for servicing, as shown in Figure 1.

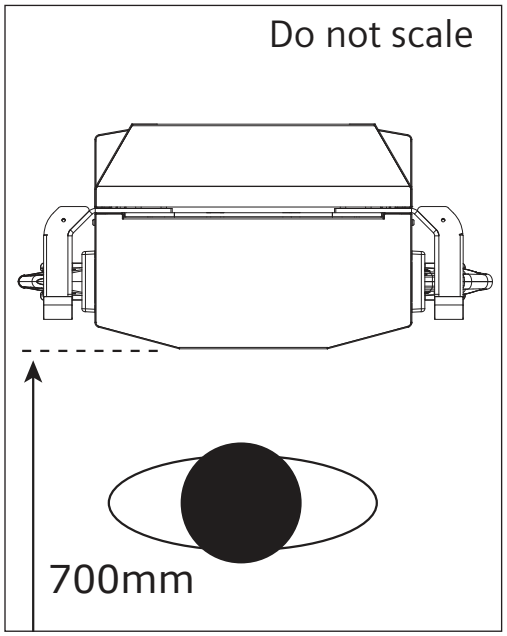


Figure 1: Servicing distance

Cable range

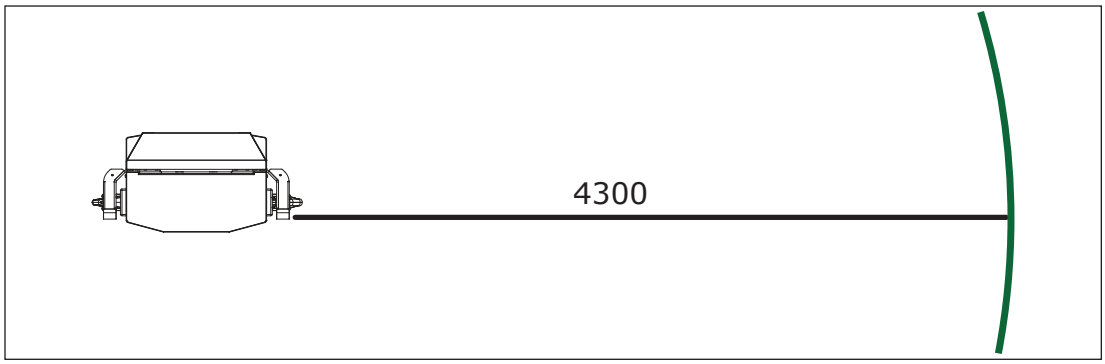
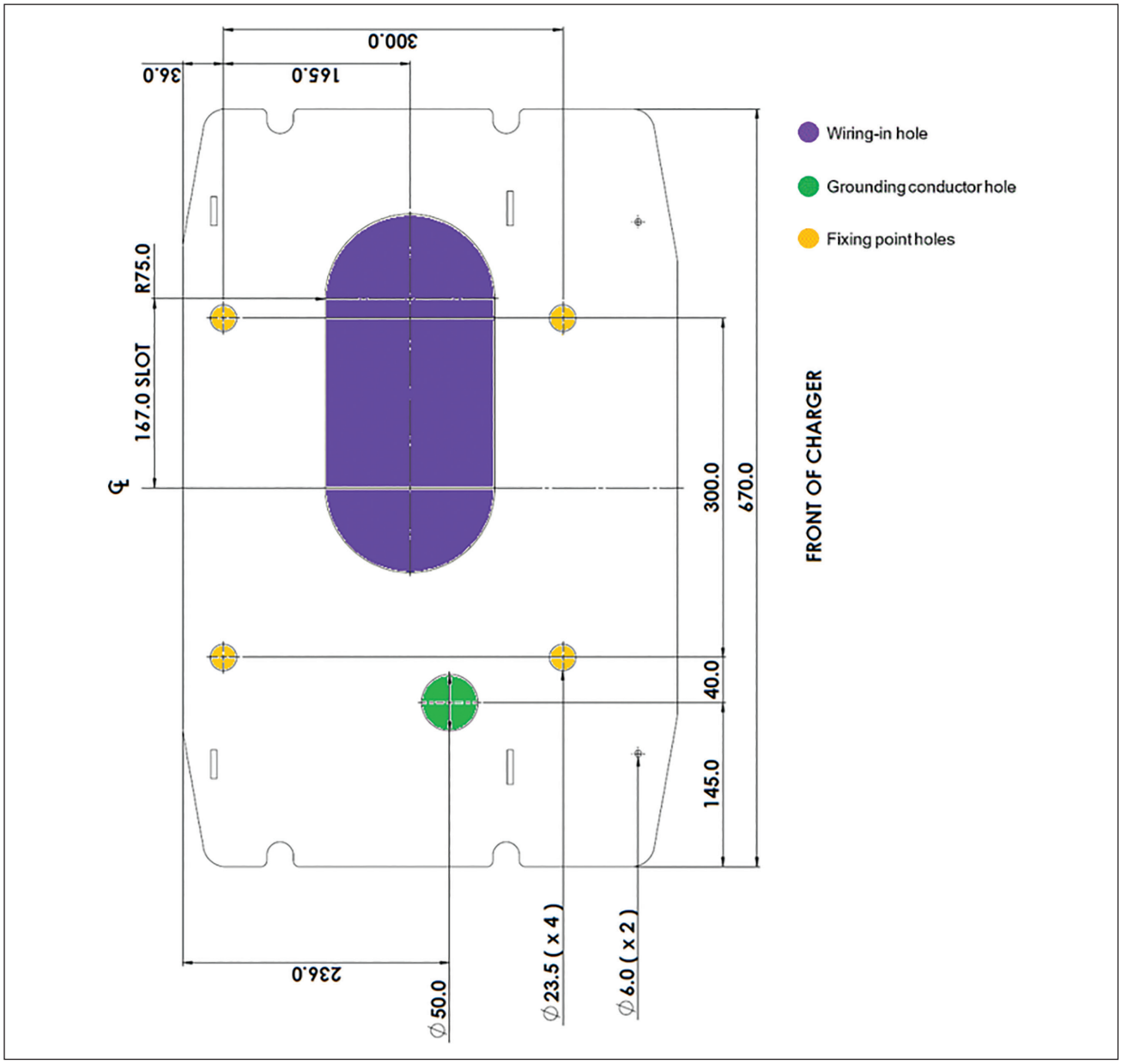


Figure 2: Cable range

Baseplate dimensions



Note: Do not scale. All dimensions shown in mm. A mounting stencil may be supplied by Siemens at the customer's request.

Installation requirements and equipment

These instructions provide a systematic guide for installing and commissioning the VersiCharge Ultra 175 unit.

The VersiCharge Ultra 175 unit must be installed and serviced by qualified electrical personnel.

Observe all pertinent national, regional, and local safety regulations when you install and commission the VersiCharge Ultra 175 unit.

The VersiCharge Ultra 175 unit has an IP65 electronics enclosure rating, however, as it must be opened for installation, this is best done in dry weather, or under cover, to avoid moisture or debris ingress.

The VersiCharge Ultra 175 unit must be properly installed, assembled, and commissioned according to these instructions before it is used.

In-box equipment:

- 5mm pin hex tool to remove the M8 security screws fixing the plastic panels.
- 4mm Allen wrench to remove fasteners on the enclosure access cover.
- 4x M32 cable glands.
- 1x M25 cable gland.
- M10 fasteners for wiring.
- External Ethernet connector.

Required equipment (not supplied):

- Lifting apparatus. See page 3 for weights. Ensure lifting apparatus is sufficiently rated.
- 110mm OD Conduit
- 4x M10 lugs and crimping equipment for wiring installation.
- 4x site specific fasteners
- Fasteners are not supplied, as the type required depends on the foundation used and must be chosen by the installer accordingly.
- Socket set and ratchet
- Torque wrench with 30Nm setting
- Torque wrench with 2Nm setting
- 1 x M8 lug for ground wire

Document Key:

Items shown in blue are parts that require action for that step.

Unpacking

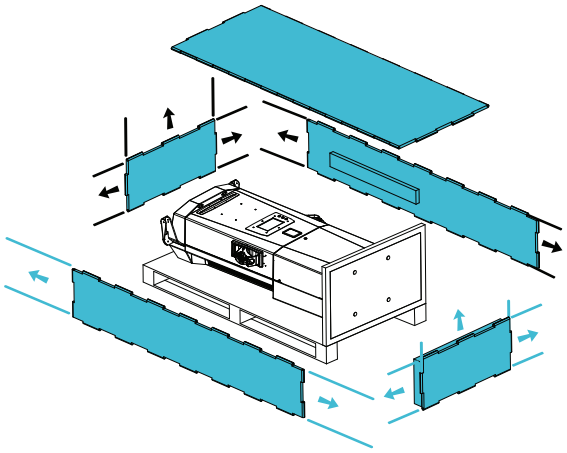
CAUTION

Do not work under suspended loads. Two people may be required as the unit may swing.

1. Open crate

Move the crate as close to the prepared installation site as possible. Ensure there is enough room to maneuver the lifting apparatus.

Remove/slide out all crate tubes to disassemble the cardboard crate.

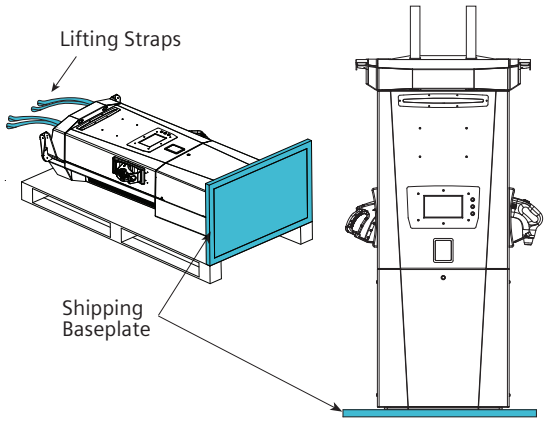


2. Lift VersiCharge Ultra 175 unit to upright

Securely attach the lifting straps at the top of the VersiCharge Ultra 175 to the lifting apparatus, and gently raise to a upright position on the shipping baseplate.

NOTE: The VersiCharge Ultra 175 unit is 2060mm tall on the shipping baseplate.

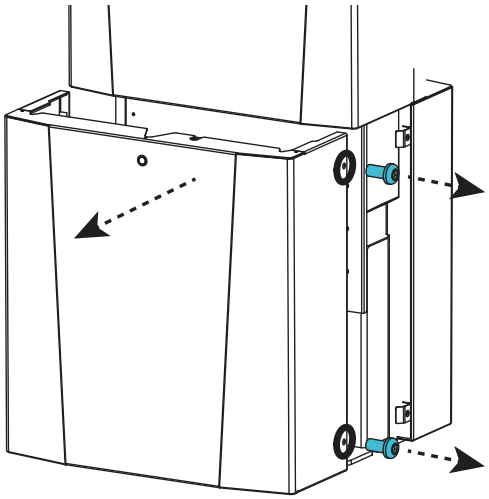
Once upright, remove all wrapping. Ensure the connection to the lifting apparatus is secure at all times.



Installation

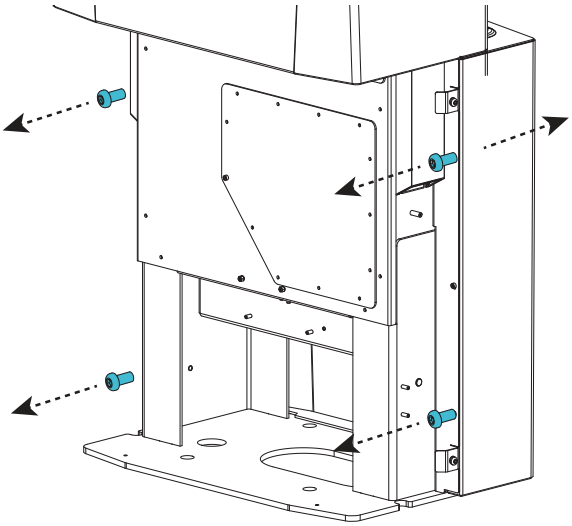
1. Remove lower front panel

Use the 5mm pin hex tool to unscrew the 4 security screws (2 per side) from the front panel, then remove them. Pull the front panel forward to remove and safely store all parts.



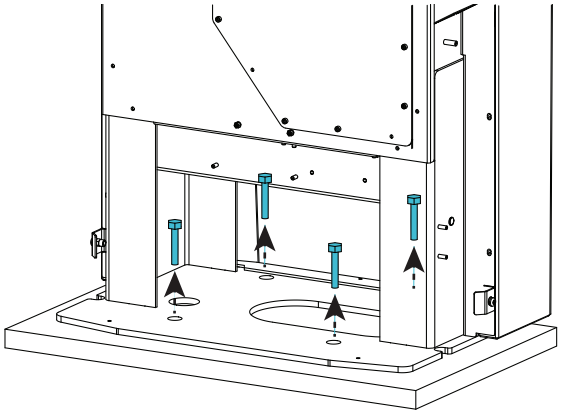
2. Remove rear-lower panel

Follow this step to increase visibility and access to the mounting holes. If visibility and access is sufficient, go to step 3. Use the 4mm Allen wrench to unscrew the 4 screws that attach the rear panel to the enclosure and slide out to remove.



3. Remove shipping bolts

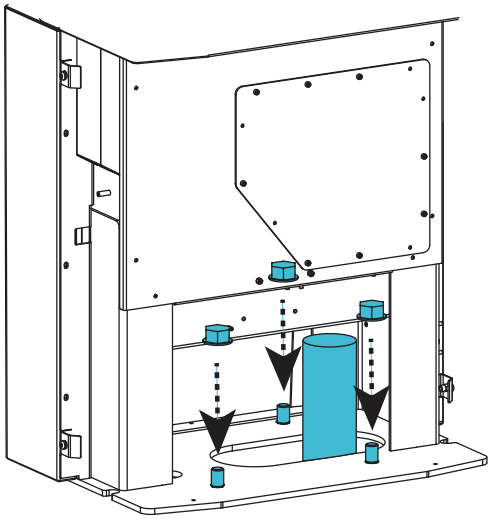
Unscrew the 4 bolts from the shipping base (optional fiber optic interface module not shown).



4. Secure to foundation

Lift the VersiCharge Ultra 175 unit and place over the prepared foundation. Feed the conduit and wiring through the power in-hole, and secure to the foundation fixing points. (Fasteners not supplied)

Note: Use the plastic inserts in the holes of the baseplate.

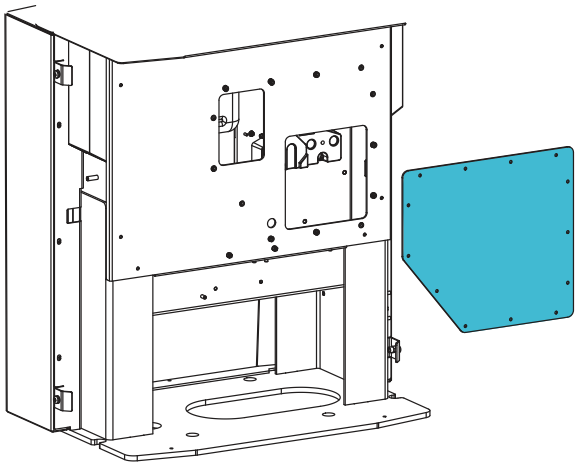


Installation

5. Remove enclosure access cover

Remove the enclosure access cover screws with the 4mm Allen wrench to prepare the VersiCharge Ultra 175 for wiring installation.

The enclosure access cover has an attached gasket. Ensure this is carefully stored to avoid damage or accumulation of debris.



6. Remove tape and attach cable glands

Remove the tape from the field wiring input holes, and fit the supplied 4x M32 cable glands and 1x M25 cable gland.

7. Prepare wiring

Fit the individual power cabling into each M32 cable gland, ensuring there is enough length to add the M10 lugs (not supplied) and attach to the busbars. Fit each wire with an M10 lug.

8. Remove M10 fasteners

Each installation busbar is fitted with M10 fasteners. Remove these ready for wiring.

CAUTION

To continue to achieve the NEMA 3R rating the power cabling must be fitted correctly into the cable gland.

Ensure the cable is sitting correctly in the gland and tighten to ensure no water or debris can enter. If in doubt, use an appropriate outdoor rated sealant.

When the cable gland has been tightened, pull on the cable to ensure it doesn't slip.

Wire and commissioning

CAUTION

Wiring and commissioning of the charger is to be done by qualified electrical personnel only.

The wiring diagram is also available on the inside of the Service Hatch.

1. DC conductors

Attach the M10 lugs onto the negative and positive busbar positions, as shown.

Ensure that the lugs and connection points are clean and free of dirt before you make the connections.

CRITICAL

Clean the surface area of the mating surfaces with an abrasive pad, and use joint compound between the mating surfaces.

You must use a torque wrench to tighten to the specified tightening torque, and you must apply a torque mark to the stud and nut.

CRITICAL

Tightening Torque:
30 Nm / 22 lb-ft

Note: Refer to Siemens VersiCharge Ultra 175 Site Installation Manual for a table of all torques used during installation.

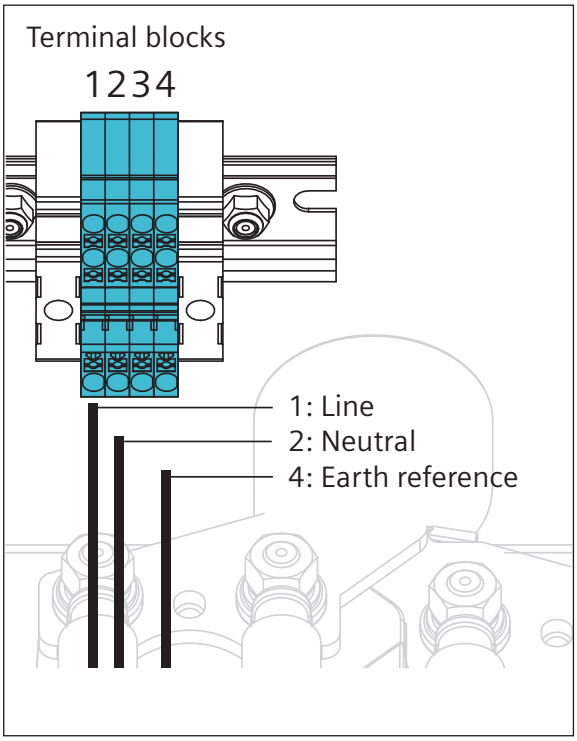
Fix grounding yellow/green wire to the M8 grounding stud (M8 lug not supplied) on the inside channel.

Wire and commissioning

Note: For all field wiring terminal connections, refer to the wiring diagram sticker on the reverse of the access hatch cover.

2. Single-phase power

The single-phase, power field wiring terminals are located on the underside of the top-left section of the wiring access hatch. Refer to the wiring diagram on the back of the access hatch cover, or wire into the terminal blocks as follows:



Strip and crimp the single-phase wires before connecting to the appropriate terminals. Once installed, perform a pull-test to ensure that the terminations are secure.

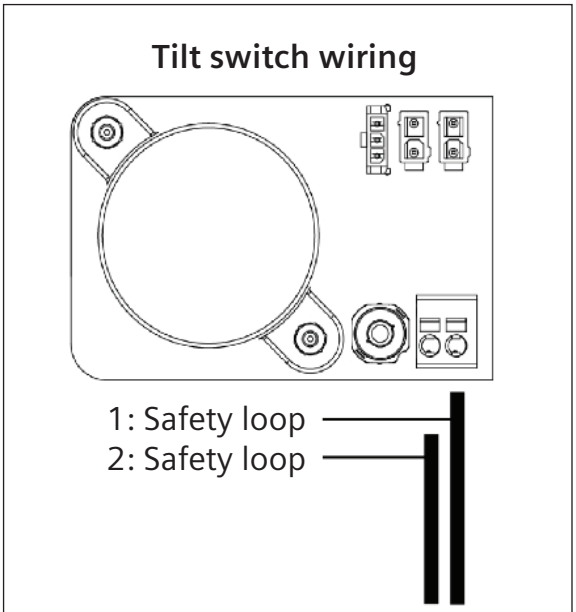
CRITICAL

If the single-phase wiring is run in a three-core cable (2C+E), do not terminate the third core (earth) to the common grounding terminal (green and yellow). This wire must be terminated to terminal block 4.

If not installed correctly, it will prevent the IMI from adequately monitoring the site earth.

3. Safety loop

The two safety loop terminals are located on the tilt-switch PCB, located on the bottom-right section of the wiring access hatch (push to fit). Polarity is not critical for these wires.

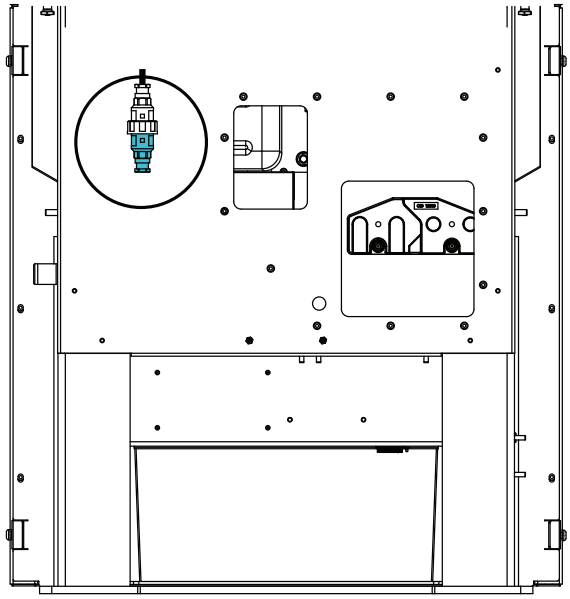


Ethernet port access

The Ethernet port is situated on the front of the enclosure box.

Twist to disengage the base cap and wire in the Cat 6a STP Ethernet cable.

Ensure the base cap is securely fitted back into the holder for IP65 protection.



CAUTION

To ensure the stability of communication to the unit, it is important that when terminating the network cable, the shield is Earthed appropriately to the terminal.

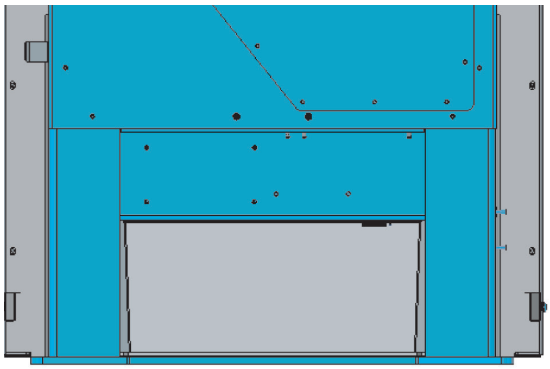
Fiber optic access

If fiber is to be utilized, then a fiber optic interface module is required.

If this is the case, the fiber optic module shall be mounted at the bottom of the unit.

The fiber optic interface module plugs into the Ethernet port of the unit.

Ensure that the coupling ring is tight, so that when the fiber optic cable is connected, the connection is tight.



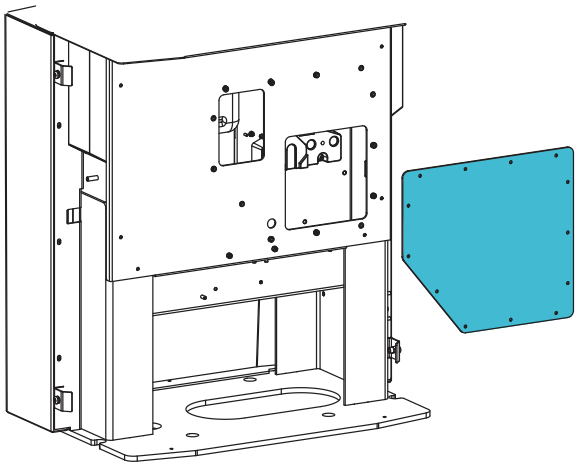
For detailed wiring instructions, see reference.

Closing checklist

Follow these steps in order to ready the unit for commissioning:

1. Remove lifting straps
Carefully remove the lifting straps from the top slots in the plastic.

2. Attach enclosure access cover
Check that the gasket has not been damaged or soiled. Use the 4mm Allen wrench to attach the enclosure access cover screws.

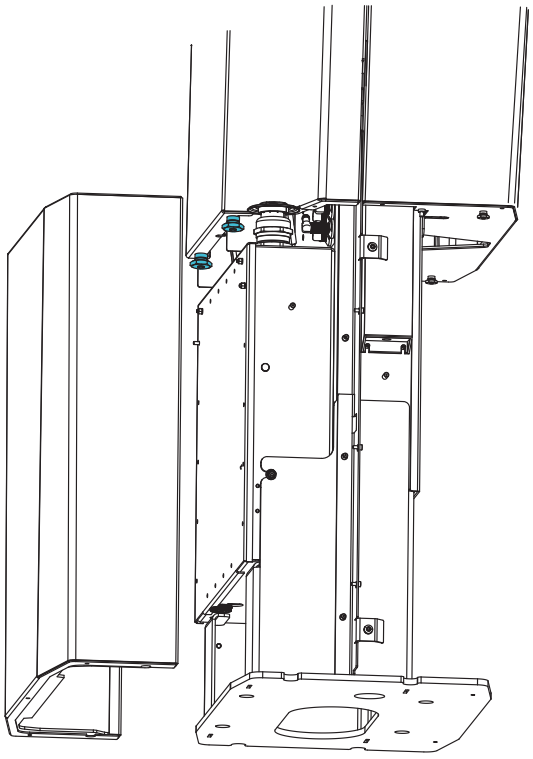


CAUTION

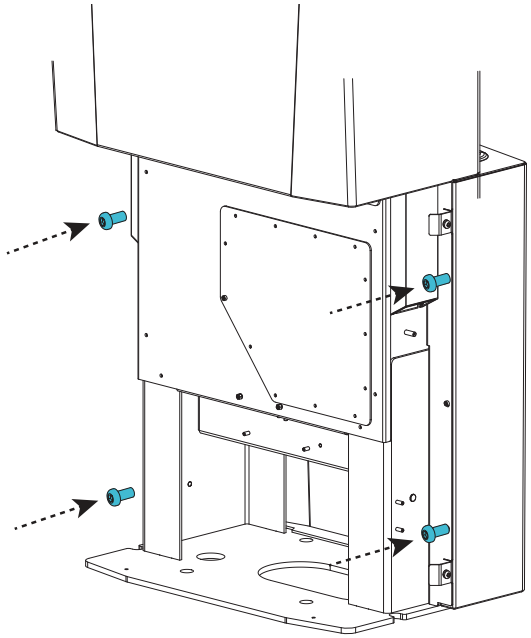
If using a power drill to fasten the nuts, ensure the correct torque setting of not greater than 2.0 Nm / 17.7 lb-inch. If using a hand tool, fasten until resistance felt. Do not over tighten.

Over tightening may result in damage to the screws and/or gasket, reducing the effectiveness of the seal. This can compromise the interior protection rating of the enclosure.

3. Attach the rear lower panel
Lift the panel, slide it over the fixing points and rubber cable flanges on both sides until it is secure under the top panel, and flush against the enclosure.



Use the 5mm Pin Hex tool to fasten the screws on both sides.Do not over tighten.



Closing checklist

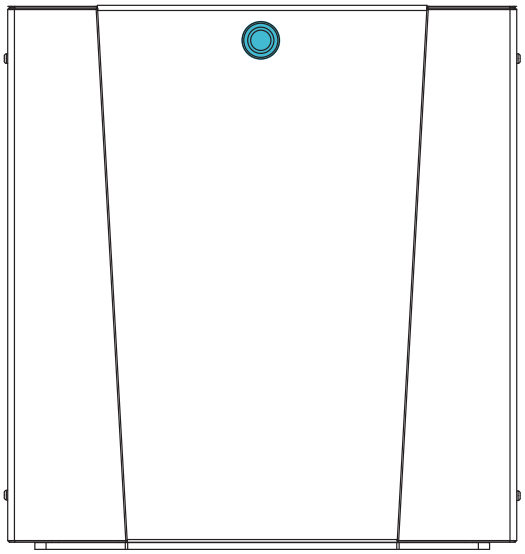
4. Plug in the parking sensor

The VersiCharge Ultra 175 unit has a parking sensor available for use on the front, lower panel.

Unclip the parking sensor plug from the front, metal panel and plug into the parking sensor.

Note that the plug for the parking sensor is located inside and under the central edge of the front panel.

Screw the plugs together to ensure the IP65 seal.

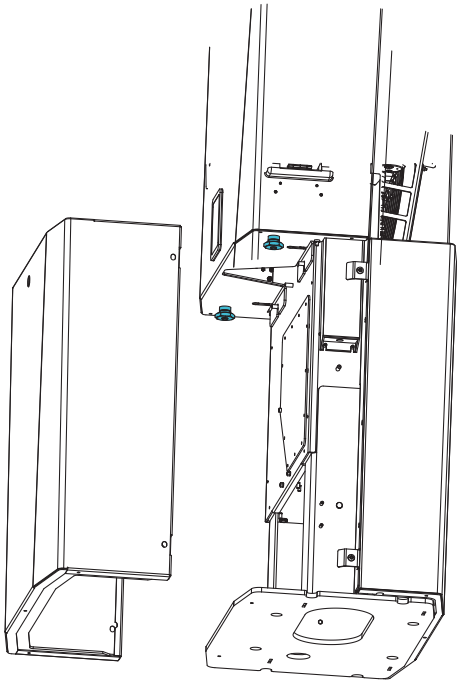


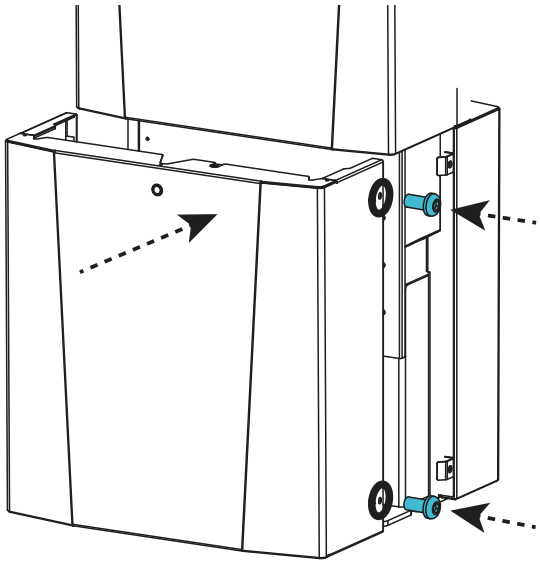
5. Attach the front-lower panel

Raise and slide the front-lower panel into the fixing points located under the front panel.

Fasten with nylon washers and security screws both sides, using the 5mm Pin Hex tool.

Do not over tighten.





The VersiCharge Ultra 175 unit is now ready for commissioning.

VersiCharge Ultra 175 System Installation Checklist

Inspection

Site name:			
Inspected by:		Date:	

Instructions

This document refers to the **VersiCharge Ultra 175 Site Installation Manual** where the requirements are detailed.
Check all fields 'YES' or 'NO.'
If 'NO', provide details in the comments section at the end of this form.

Checklist

TOPIC		RESULT		
1. Site pre-acceptance - complete for installation to start?		YES	NO	Comments
IPU foundation correct (orientation, altitude, conduit ends)	IPU			
UU foundations correct (orientation, altitude, conduit ends)	UU			
Site surface correct (paving, markings, etc.)				
Cables installed, labelled, have sufficient length, correct type (refer to VersiCharge Ultra 175 Piping and Cabling)	High Power AC Cables			
	High Power DC Cables			
	Protective Earth (AC, DC)			
	Data Cables			
	Single Phase Cable			
	Safety Loop			
	IMI Earth Reference Wire			
Earthing Electrode Installed for EMC compliance				
2. Cable preparation		YES	NO	Comments
IPU power cables cut and terminated				
UU power cables cut and terminated				
3. Crane/lifting and securing		YES	NO	Comments
IPU cabinet installed (Orientation, sealed, bolted down, lifting equipment removed)	IPU			
UU installed (orientation, bolted down, straps removed)	UU			
4. High power wiring connections		YES	NO	Comments
IPU AC power cables connected (contact grease, labels, heatshrink, correct crimp die, torque marks)	IPU			
IPU DC power cables connected (contact grease, labels, heatshrink, correct crimp die, torque marks)	IPU			
UU DC power cables connected (contact grease, labels, heatshrink, correct crimp die, torque marks)	UU			

VersiCharge Ultra 175 System Installation Checklist

TOPIC		RESULT		
4. High power wiring connections cont'd		**YES**	**NO**	**Comments**
UU to IPU DC continuity test (repeat for each user unit):	DC+ to DC+ has continuity			
	DC+ to DC- open circuit			
	DC+ to GND open circuit			
	DC- to DC- has continuity			
	DC- to GND open circuit			
	GND to GND has continuity			
Supply point to IPU AC continuity test	L1 to L1 has continuity			
	L1 to L2 open circuit			
	L1 to L3 open circuit			
	L1 to GND open circuit			
	L2 to L2 has continuity			
	L2 to L3 open circuit			
	L2 to GND open circuit			
	L3 to L3 has continuity			
	L3 to GND open circuit			
	GND to GND has continuity			
5. Single phase wiring connections		YES	NO	Comments
Single phase supply L, N connected to correct UU terminals				
6. Data wiring connections		YES	NO	Comments
UU data connector at UU crimped and inserted (including shield). Use tester to confirm correct termination.	UU			
UU data connector at IPU crimped and inserted (including shield). Use tester to confirm correct termination.	IPU			
7. Safety wiring connections		YES	NO	Comments
24V DC safety wire connected from IPU terminals to UU terminals.	IPU			
8. Final items		YES	NO	Comments
IPU cabinet closes correctly (4 latches per door), keys secure	IPU			
UU metal hatch closed and torqued, aluminium front panels installed	UU			
Waste management, tidy up of the site				
Photos of site (attach photos with this checklist)				

VersiCharge Ultra 175 System Installation Checklist

Comments	Action Taken

Notes:

Legal Manufacturer

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United States of America

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