



CSS – OD / 197 kWh Grid Tied Commercial Energy Storage Solution


Model CSS-OU-197 / PCS050


Quick Installation Guide


Version 1.4

For Europe


Legend


 **WARNING!** This symbol denotes a hazard. It calls attention to a procedure that if not correctly performed or adhered to could result in injury or loss of life. Do not proceed beyond a warning note until the indicated conditions are fully understood and met.

 **CAUTION!** Denotes a hazard. It calls attention to a procedure that, if not correctly performed or adhered to, could result in damage or destruction of the product. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.


 This symbol indicates that this is the Protective Earth (PE) terminal that must be firmly grounded to ensure the safety of operators.

Safety Instructions


 **WARNING: RISK OF ELECTRIC SHOCK**
DO NOT touch the wires, contacts, terminals, or any conductors connected to the grid circuit inside the equipment.
Failure to follow safety instructions could result in severe injury or death from electric shock.


 **WARNING: LETHAL HIGH VOLTAGES exist inside the product.**


- Note and abide by all warning signs on the product.
- Observe the safety precautions listed in this manual and other related documents.

 **WARNING: Damaged Equipment Hazards**

- Damaged equipment or system failure may cause electric shock or fire!
- Perform an initial visual inspection of the equipment for damage or other hazards before operation.
- Check whether other external devices or circuit connections are secure.
- Confirm that this equipment is in a safe state before operating it.


 **WARNING:** This equipment must be installed by **licensed electrician** and qualified personnel only. The installation and wiring of this equipment must comply with all applicable national, state/provincial, and local electrical codes and standards. Attempting installation by unqualified individuals could result in unsafe operation, code violations, personal injury/loss of life, or damage to the equipment.

 **WARNING: Battery Protection**
DC HIGH VOLTAGE! ELECTRIC SHOCK HAZARD!
The battery in the system generates a high voltage when connected. Accidental contact can result in electric shock or life-threatening injuries.


 **WARNING: Ground Fault Safety Warning**
If a ground fault occurs in the Battery Inverter, high voltage may appear on components that are normally not energized. **Accidental contact with these components can cause serious injury or death.**
Before Operating the system

- Check for ground faults: Ensure the system is free of any ground faults.
- Apply protective measures: Implement all required safety precautions before starting operation.


A ground fault can make normally safe parts dangerously live. Always verify system integrity and follow safety protocols to protect yourself and others.


 **WARNING: Live Line Measurement**

- There are high voltages in the equipment in the integrated Battery Inverter, and accidental touch may cause fatal electric shock hazards.
- During live measurement, take appropriate protection, such as wearing insulating gloves.
- There must be an accompanying person to ensure personal safety.

 **WARNING: Improper parameter settings**

- Improper parameter settings may affect the normal function realization of internal devices.
- Only authorized professionals can set the parameters.

 **WARNING: Regulatory Compliance**
The installation and various operations of the integrated PCS must comply with the relevant standards and regulations of the country/region where the project is located.

 **WARNING:** The inverter should not be directly connected to life support equipment or medical equipment.

Personal Protective Equipment



Safety Rubber Shoes



Helmet



Rubber Gloves




Safety Clothing



Goggles

Required tools for Battery Cabinet 197 kWh & Battery Inverter

 **WARNING!** Use only insulated tools



Torque wrench with 7mm, 10mm, 14mm, 17mm, 18mm, 19mm sockets



Wire Cutter



Crimping tool



Phillips screwdriver $\varnothing 6$ mm, L= 230 mm



Heat gun



Multimeter (≥ 1000 V_{DC})



Cable Stripper



Wire Stripper



Drill ($\varnothing 10$ mm drill)



Box Cutter



Pipe Cutter



Ladder



Rubber Hammer



Slotted Screwdriver (10 mm slot)



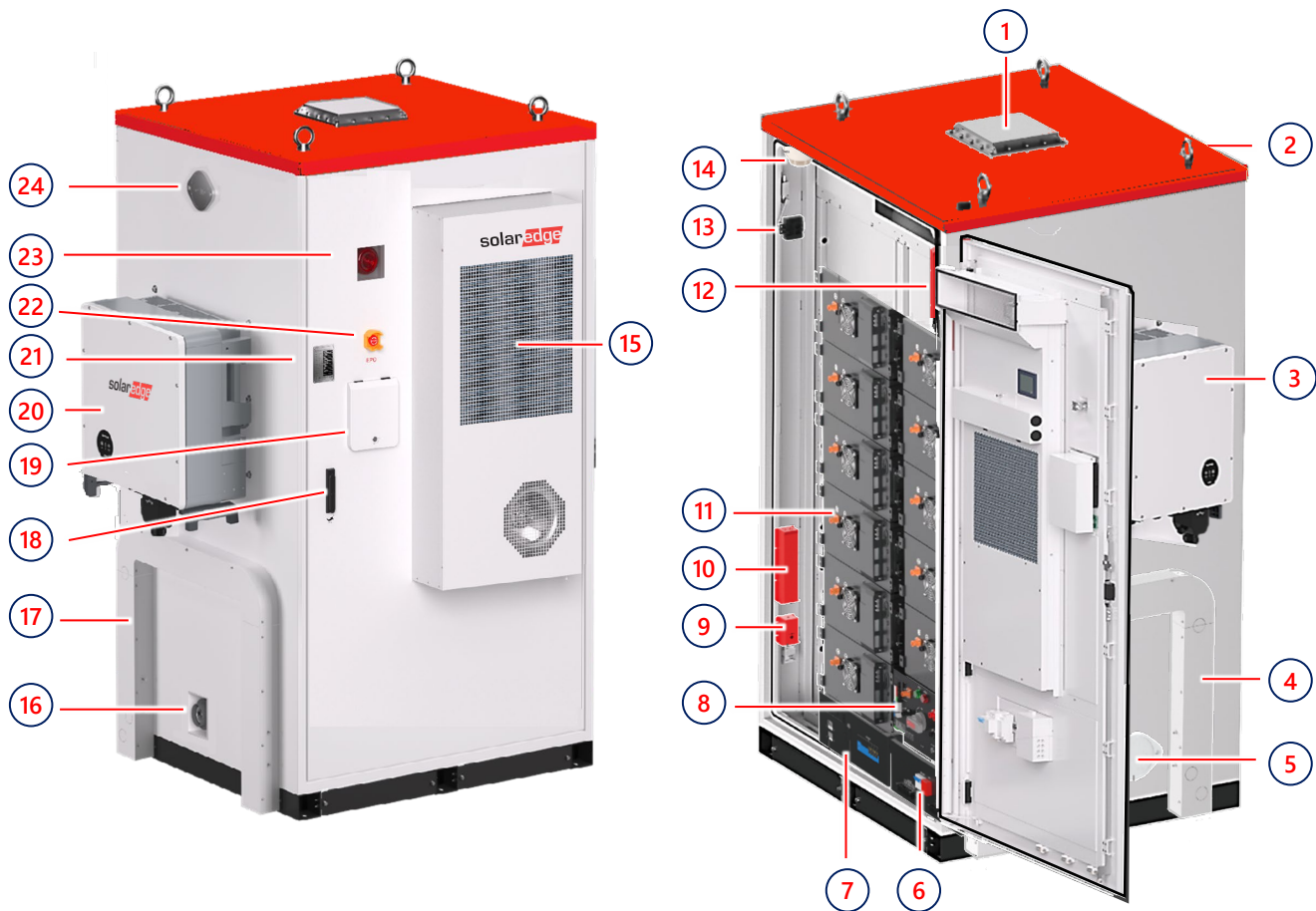
Slotted Screwdriver for Terminal Block Screws (2 mm slot)



Adjustable Wrench



Open-end torque wrench



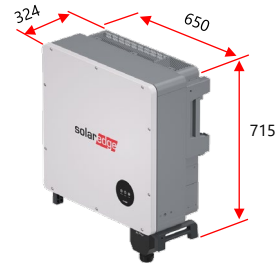
1. Explosion Relief Panel
2. Four Eye Bolts
3. Battery Inverter 1
4. Wiring Duct
5. Intake Valve
6. AC Interface Box
7. MBMU/Exchanger
8. Energy Modules Management Unit
9. Fire suppression control box
10. Aerosol Fire Extinguisher 2
11. Energy Module (x11)
12. Aerosol Fire Extinguisher 1
13. CO Detector
14. Smoke Detector
15. Battery Cabinet AC (HVAC)
16. Fire Fighting Valve
17. Wiring Duct
18. Door Lock
19. CSS Local Interface Display (EMS)
20. Battery Inverter 2
21. Nameplate
22. Emergency Power Off (EPO) switch
23. Acoustic-Visual Alarm
24. Exhaust Valve

Battery Cabinet 197 kWh



2360 KG

Battery Inverter 50 kW



68 KG

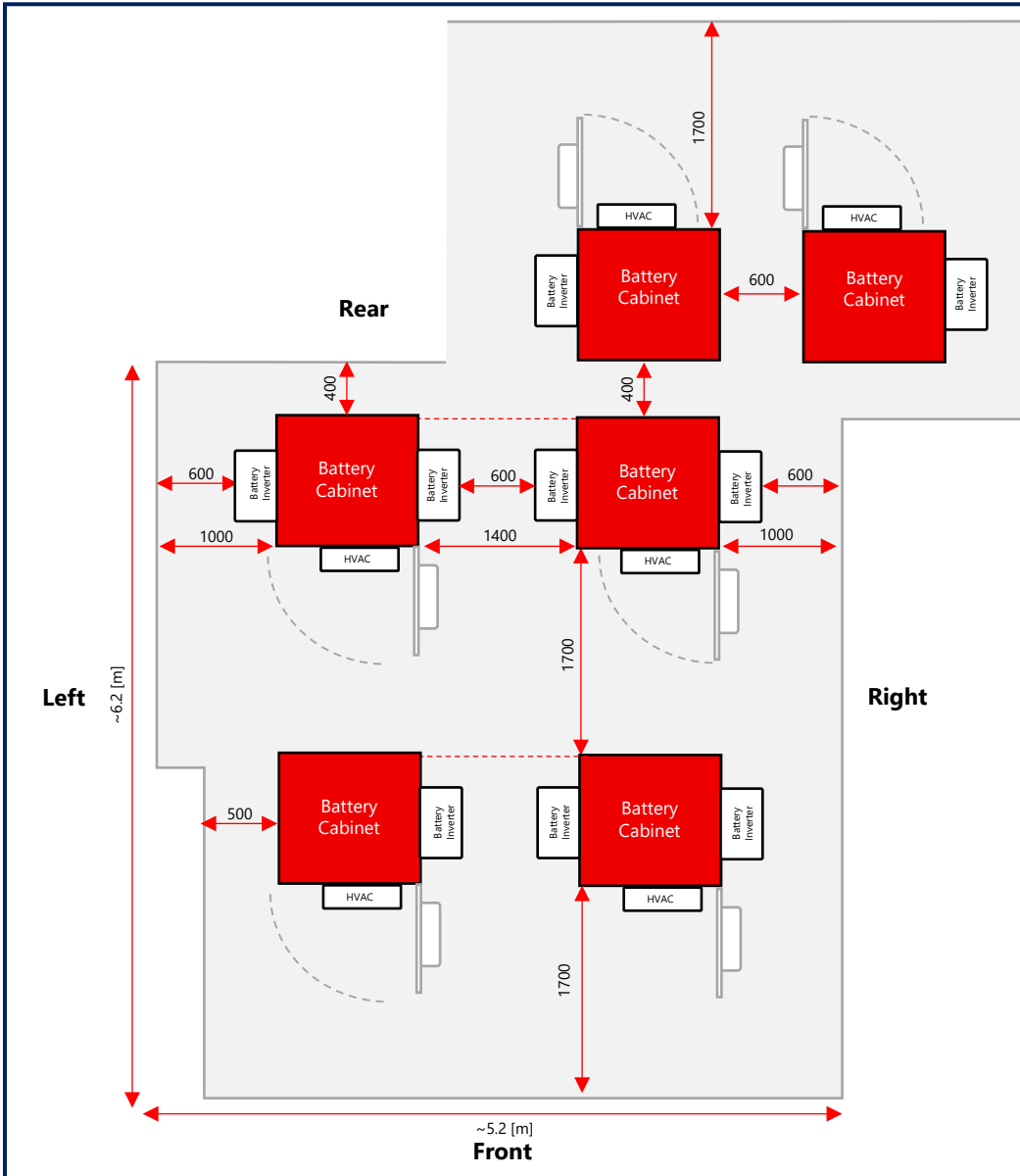
Battery Inverter 100 kW Battery Cabinet 197 kWh

*Assembled Dimensions



2496 KG

All dimensions are in [mm]



Default Layout & Clearance Distances (Top & front view)

All dimensions w/o units are in [mm]

Battery Cabinet + Battery Inverter	
Direction	Distance [mm]
Front	1700
Rear	400
Right	1000
Left	1000 (600 without Battery Inverter)

⚠ WARNING! To avoid flood damage and safety hazards, the cabinet must be installed on a concrete platform with a minimum height of 300 mm.

Above ground: Minimum 300

Below ground: Minimum 400



- NOTES!**
- Local codes and regulations could extend the required clearances beyond what is specified in this manual
 - Before proceeding with installation, consult with relevant authorities to ensure compliance with local regulations concerning clearance distances.

CAUTIONS and Requirements of Installation Environment

1. The installation, use, and operation of outdoor equipment and cables, including but not limited to the movement of equipment, operation of devices and cables, connection or disconnection of signal interfaces exposed to outdoor conditions, work at heights, and outdoor installations, are strictly prohibited during severe weather conditions such as lightning, rain, snow, or winds.
2. Avoid installing the equipment near underground facilities like underwater pipes and air outlets or in places prone to condensation. Additionally, steer clear of areas susceptible to water leakage, such as around air-conditioning outlets, vents, and outlet windows in the machine room. This will help prevent liquids from entering the equipment and causing malfunctions or short circuits.
3. Avoid installing the equipment in areas with poor geological conditions, such as rubbery or weak soil, waterlogged ground, or regions susceptible to land subsidence.
4. Do not place the equipment or operate it in a flammable environment or an environment that contains explosive gas or smoke. Ensure that any operations are performed in such a safe environment.
5. Avoid installing the battery cabinet in sandy environments. When installing in a sandy environment, increase the frequency of routine maintenance for the battery vent and HVAC systems: perform a weekly visual inspection and clean as needed based on observed conditions
6. Avoid installing the battery cabinet on unstable or vibrating foundations.
7. Do not install the battery cabinet in a working environment with metal conductive dust.
8. When the equipment is running, do not cover the vents or heat dissipation system to prevent fire due to high temperature.

CAUTION! For indoor installations ventilated room is required.



CAUTION! CSS – OD solution must be installed: >2km from the sea, when installed in an outdoor location, or >1km when installed in indoor locations.



NOTE Battery Cabinet & Battery Inverter max noise is <65 dBA @ 1 meter distance.

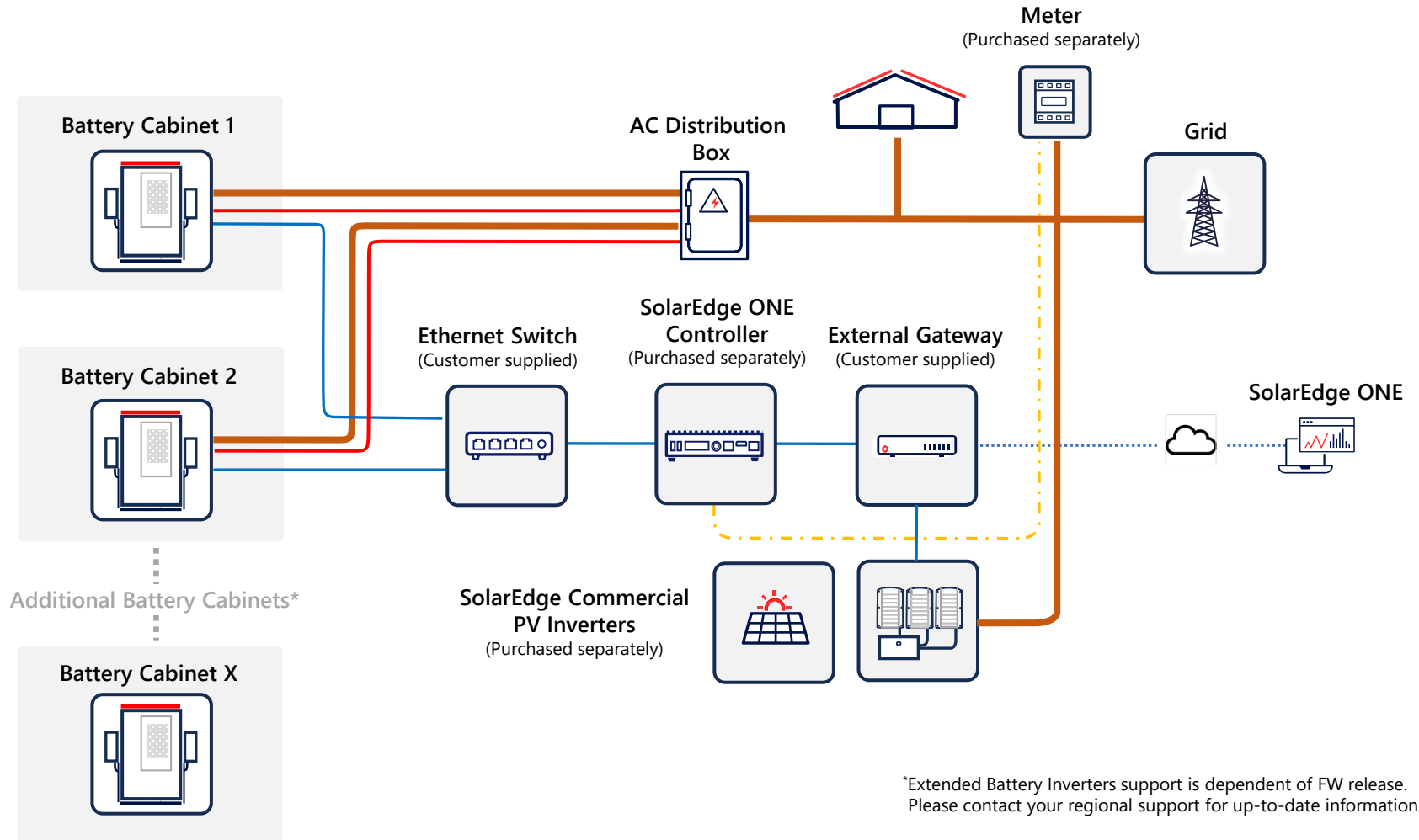


CAUTION! When Installed in indoor locations consider heat dissipation values of all installed devices when choosing appropriate room / space for their installation.

Battery Cabinet	
Max Power	Heat Dissipation
50 kW	0.87 kWh 2970 BTU
Battery Inverter	
Max Power	Heat Dissipation
50 kW	1.5 kWh 5118 BTU

- IMPORTANT NOTE!**
1. Communication cables and power wires **must** be laid separately (DC and AC loops).
 2. The distance between control/communication and power cables must be greater than 300mm.
 3. In cases when control cables cross power cables, validate that the angle between the two cables is kept at 90°.
 4. The recommended minimum distance between parallel shielded data cables and power cables is shown below:

Parallel length (m)	Min space distance (m)
200	0.3
300	0.5
500	1.2




*Extended Battery Inverters support is dependent of FW release. Please contact your regional support for up-to-date information support.

— Three Phase AC Cable, multi stranded class 5 or 6, 25-35 mm², 50 kW
— Single Phase Auxiliary AC Cable (not provided)

— Modbus TCP Communication Cable (LAN)
- - - RS485 Comm. Cable (not provided)

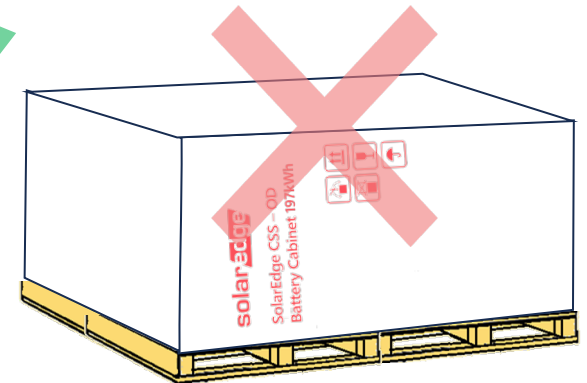
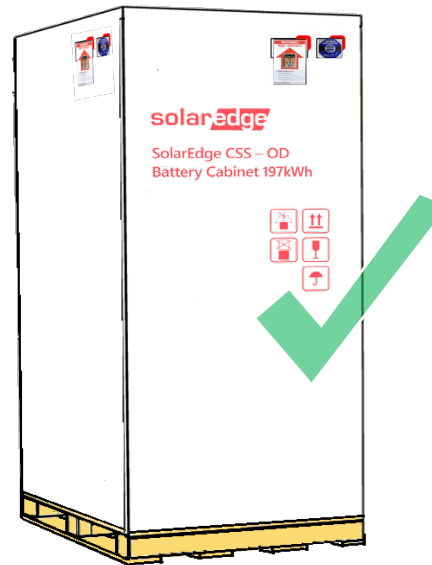
NOTES:

- Keep in upright position 
- Before opening, validate package integrity



IMPORTANT: Do not open damaged packages & contact SolarEdge to review the case.

NOTE: For SolarEdge commercial Battery storage and transportation guidelines refer to:
<https://knowledge-center.solaredge.com/sites/kc/files/se-commercial-battery-storage-transportation-and-storage-guideline-eng.pdf>

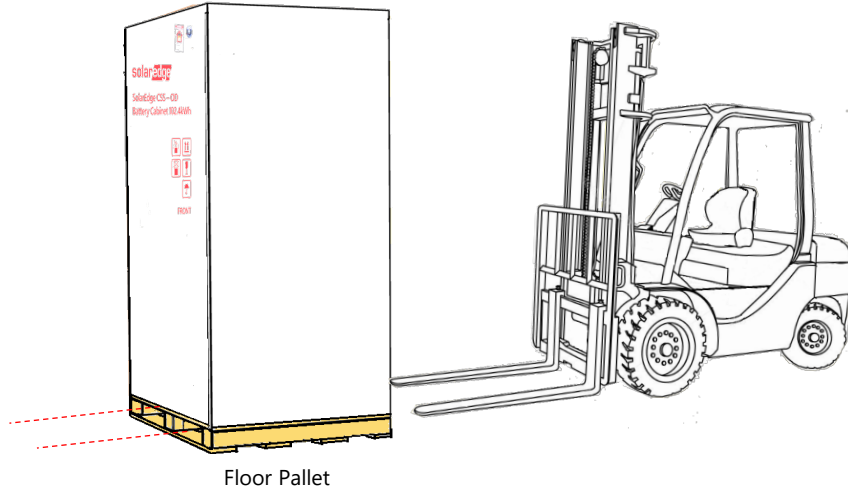


NOTES: For Battery Cabinet Package

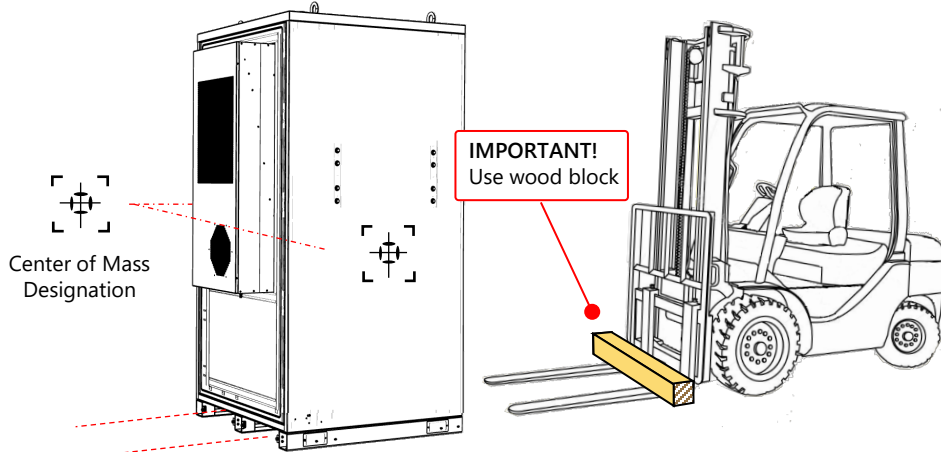
- Verify that the shock and tilt label sensors, on the front and right sides of the package, show green indication.
- When opening package, check the integrity of the fire safety solution. If aerosol gas was ejected due to any fault occurred during transportation the battery cabinet shall be replaced.
- If one of the sensors is red, please contact SolarEdge and do not open the package.



Transporting Battery Cabinet with the Wooden Box

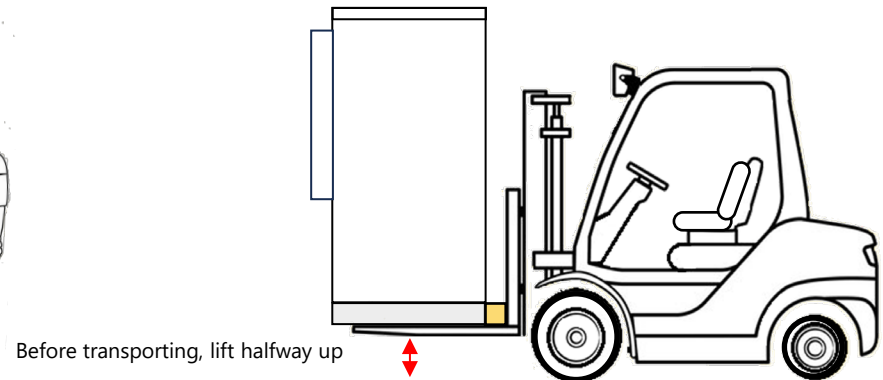
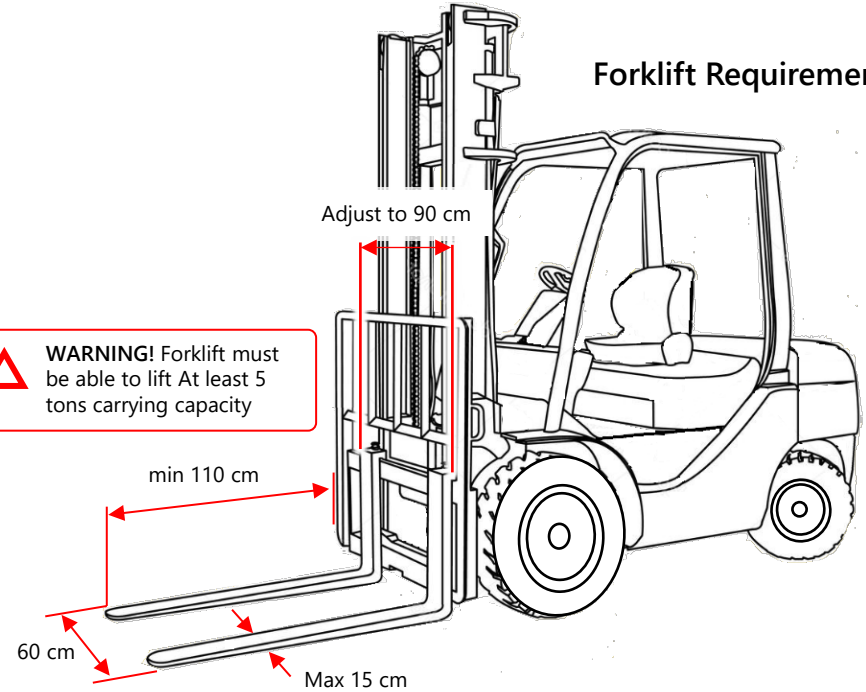


Transporting Battery Cabinet Standalone



Forklift Requirements

WARNING! Forklift must be able to lift At least 5 tons carrying capacity



HOISTING REQUIREMENTS

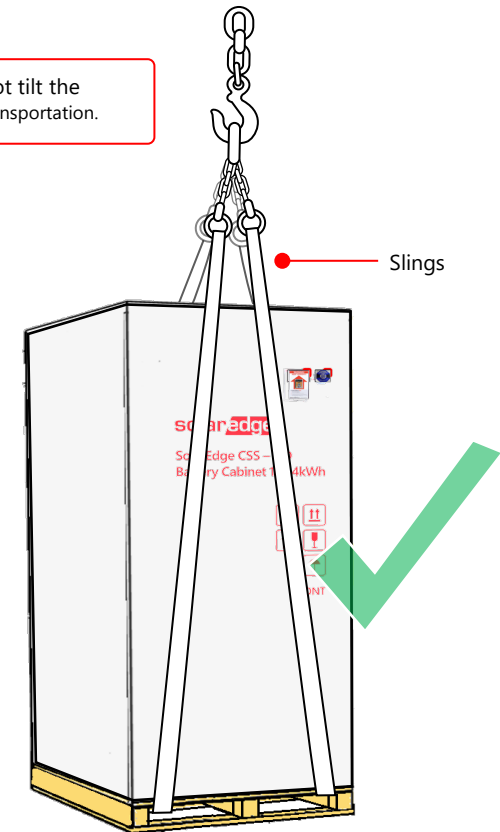
WARNING!

1. A trained and qualified lifting personnel is required.
2. Do not operate a hoist if severe weather or wind is apparent when conducting hoisting outdoors.
3. Keep unauthorized people from entering the area and standing under crane boom.
4. Ensure that the crane and slings meet the load-bearing requirements.
5. To prevent the cabinet from scratching, do not drag it when installing and removing hoisting equipment.
6. Check to ensure that the hoisting tools are in good condition.
7. Ensure that all the doors of the equipment are closed and locked during transportation.

Standalone Battery Cabinet Crane Transportation



Packaged Battery Cabinet Crane Transportation



WARNING! Do not tilt the cabinets during transportation.



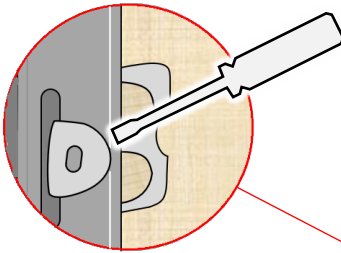
NOTE: Disassembly of wooden box must start from the top side

1 Top

5 Rear

3 Left

NOTE: Use flat head screwdriver to unfold the connecting buckles



NOTE: Leave protective nylon covering in this area

Right

4

2 Front

solar_{edge}
SolarEdge CSS - OD
Battery Cabinet 197.12 kWh

6

8

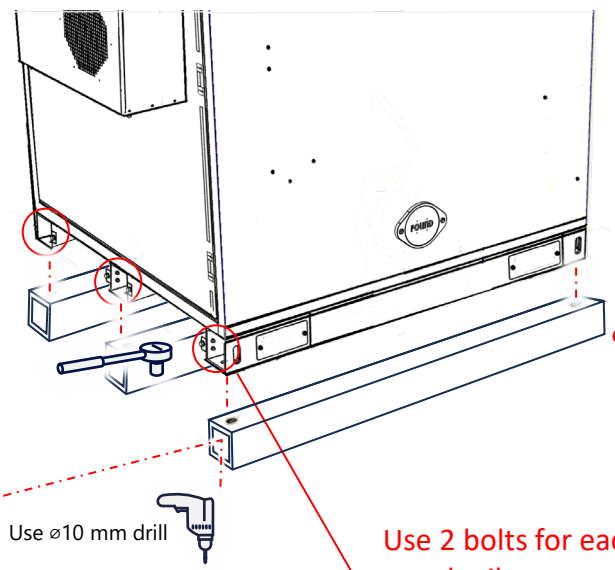
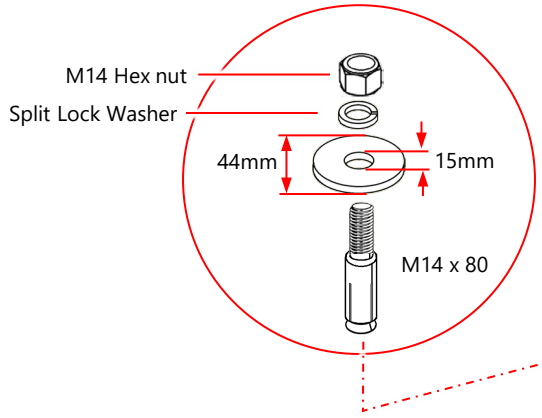
NOTE: Remove the screws and nuts securing the cabinet to the pallet using 19 mm socket (x6)

Mounting Battery Cabinet on Mounting Stand

1

NOTE: These expansion bolts & washers are **not supplied**. Torque is dependent on mounting surface. For concrete: 60Nm

Use 2 studs for each stand rail



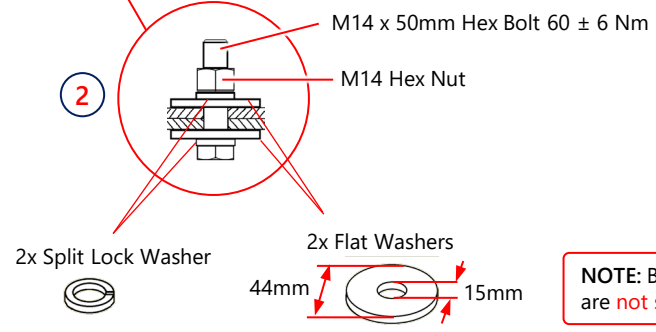
NOTE: For Mounting Stand production guidelines, see Appendix D.

IMPORTANT NOTE!

1. Open Mounting Stand provided by the customer.
2. General dimensions & requirements of the Mounting Stand are provided in Appendix D.
3. The customer's civil engineer shall review and approve the structure provided by the customer (open Mounting Stand).

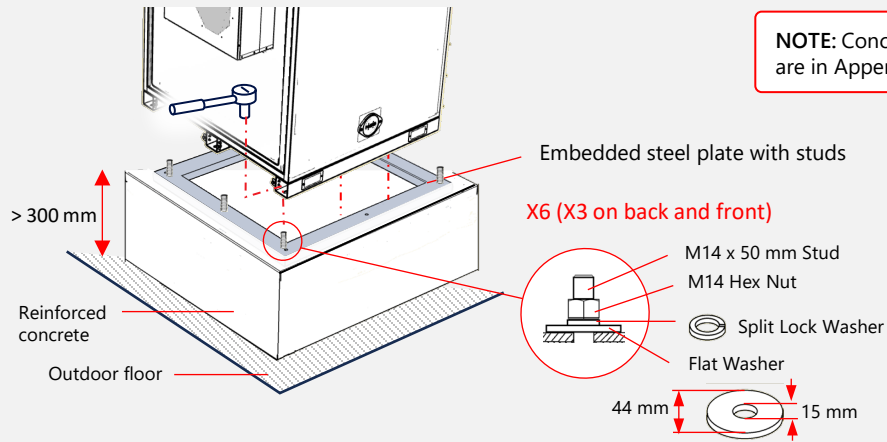
2

Use 2 bolts for each stand rail



NOTE: Bolts and washers are **not supplied**

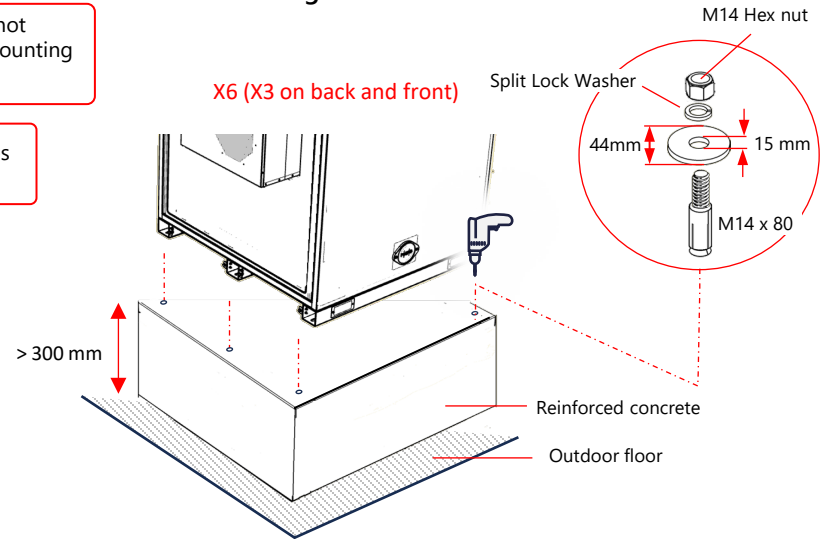
Option 1: Unified Concrete Platform Base with Embedded Steel Plate with Studs



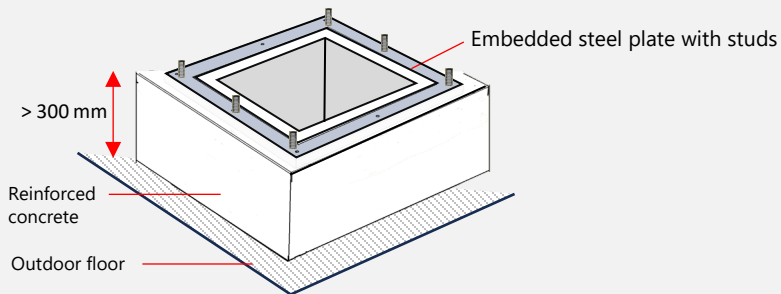
NOTE: Bolts, nuts, and washers are not supplied. Torque depends on the mounting pad. For concrete pads use 60 Nm.

NOTE: Concrete pad guidelines are in Appendix D

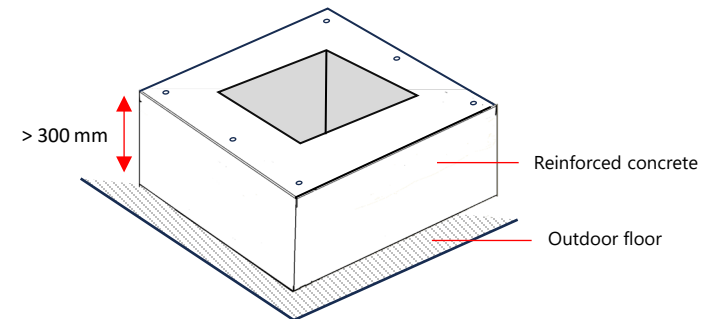
Option 3: Unified Concrete Platform Base with Drilling Occurs on Site



Option 2: Hollow Concrete Platform Base with Embedded Steel Plate with Studs

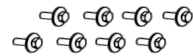


Option 4: Hollow Concrete Platform Base with Drilling Occurs on Site



Battery Cabinet Package Contents (Inside Accessories Box)

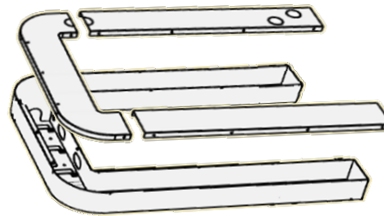
Slot Cover Plate Screws (W)



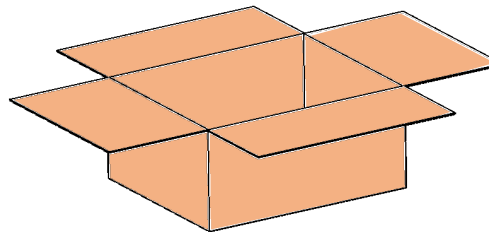
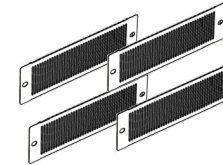
PE cable (0.7m) (E)



Battery Cabinet
Wiring Duct (B)

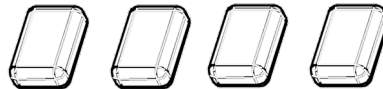


Forklift Slots Covers (x4) (Y)
(Outside Accessories Box)



Battery Cabinet Package Contents (Inside Battery Cabinet)

Sealant (x3) (H)



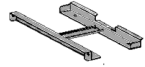
5m Corrugated Plastic
Conduit \varnothing 34.5 mm (I)



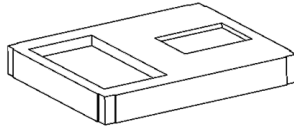
10m Corrugated Plastic
Conduit \varnothing 21 mm (J)



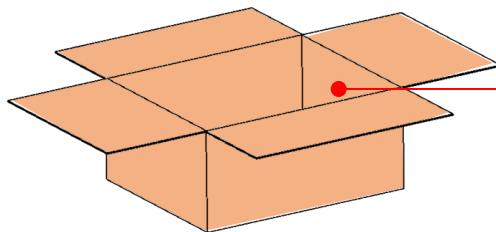
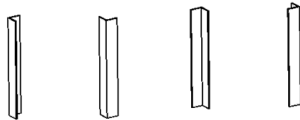
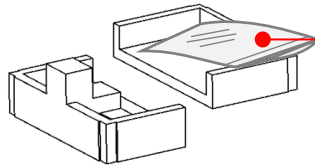
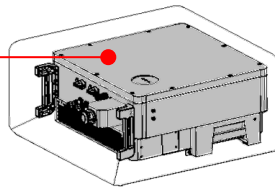
Battery Inverter Package Contents



Battery Inverter Mounting Bracket (K)

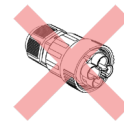


Battery Inverter

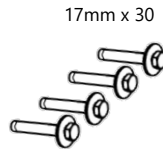


NOTE: THIS PROVIDED CABLE SHOULD NOT BE USED

DC-Bus Connector (N)

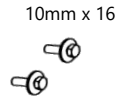


Bracket Mounting Screws (x4) (Q)



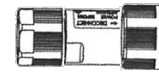
17mm x 30

Bracket Lock Screws (x2) (R)



10mm x 16

PARA Cable Connector (O)



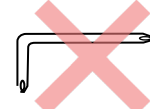
M6 Lugs (x5) (S)



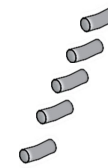
NOTE: These lugs are compatible with class 2 wires. Please ensure you provide your own lugs if class 5 or 6 wires are used on site.

NOTE: THIS PROVIDED TOOL SHOULD NOT BE USED

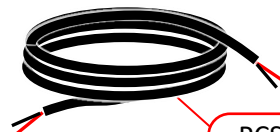
Right-angled Torx key (P)



Cables Shrinks (x5) (T)



Battery Cabinet to Battery Inverter PARA cables (3.5m) (D)



PCS-PARA

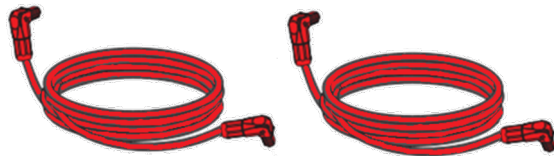
PARA Cable



NOTE: THIS PROVIDED CABLE SHOULD NOT BE USED

Cabling Kit Package Contents

DC+ Paralleling
Cables (x2) (5m) (U)

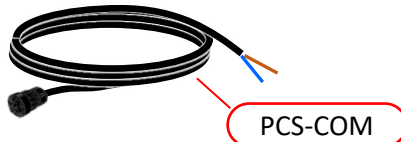


DC- Paralleling
Cables (x2) (5m) (V)



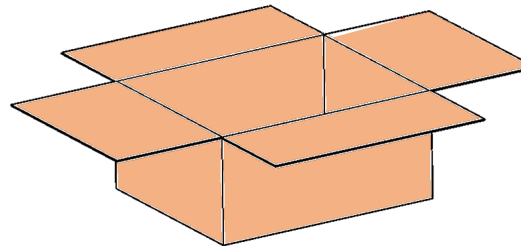
PAY ATTENTION!
All Cables are marked
with a designation label

Battery Cabinet to
Battery Inverter
CAN cables (3.5m) (C)

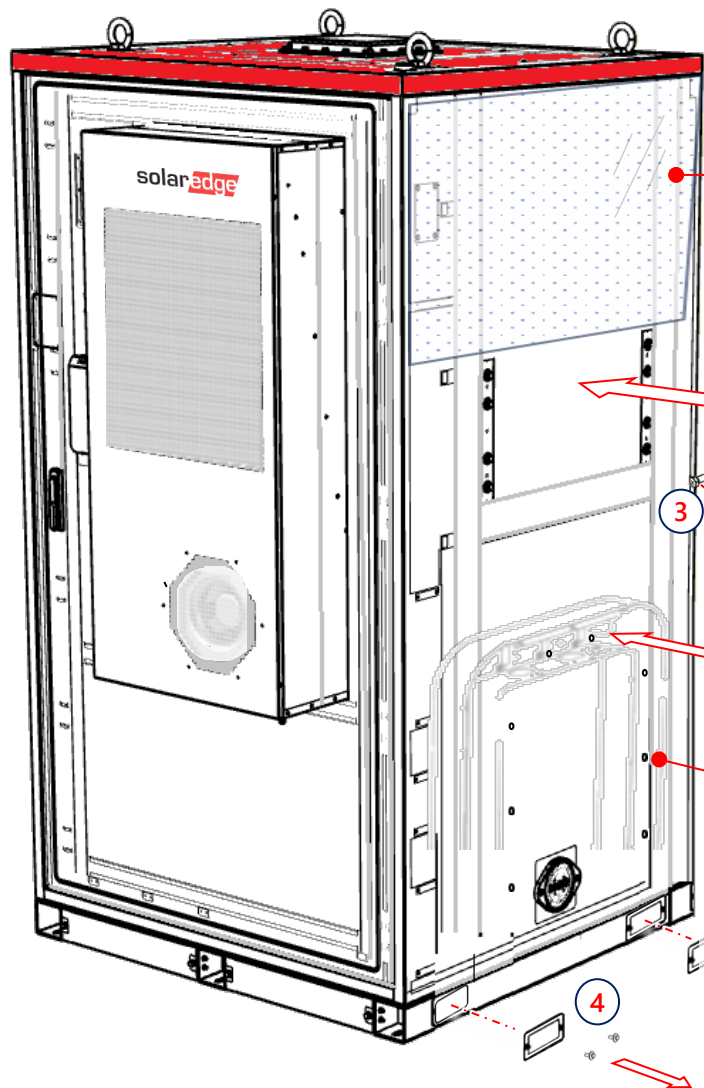


**NOTE: THIS PROVIDED CABLE
SHOULD NOT BE USED**

PARA Cable



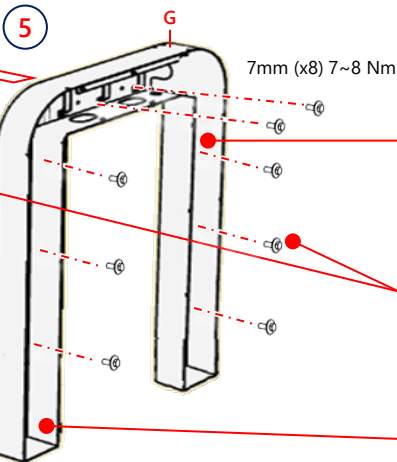
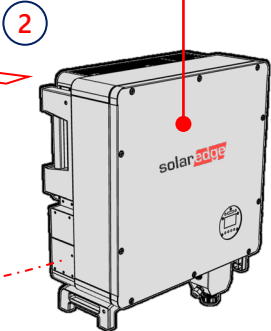
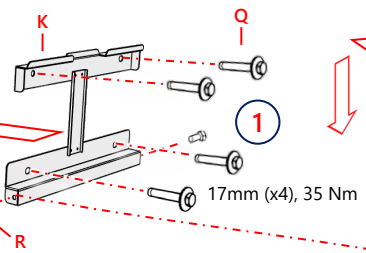
Mounting Battery Inverter onto the Battery Cabinet



Get parts from:
Battery Inverter Package.
K, Q, R, P

NOTE: Validate nylon sheet is protecting this area during Battery Inverter mounting operation

68 KG



Get parts from:
Battery Cabinet Package. G

NOTE: Use the screws on the battery cabinet wall to install the duct.

NOTE: In this stage, do not install the cover of the Battery Cabinet Wiring Duct



WARNING! HAZARD OF ELECTRIC SHOCK.
DISCONNECT POWER BEFORE INSTALLATION
OR SERVICE – TURN SWITCHES TO OFF

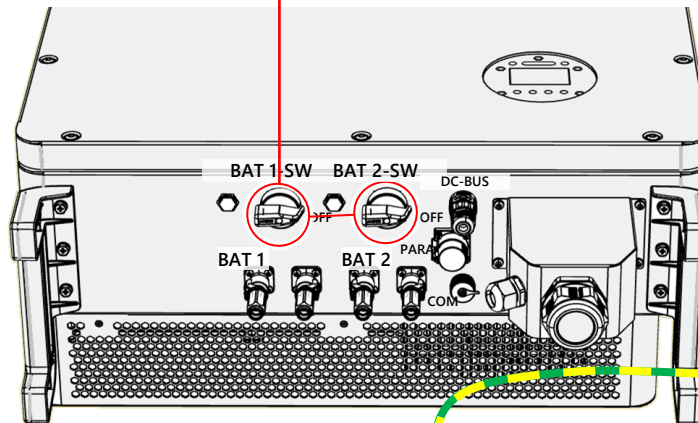


OFF

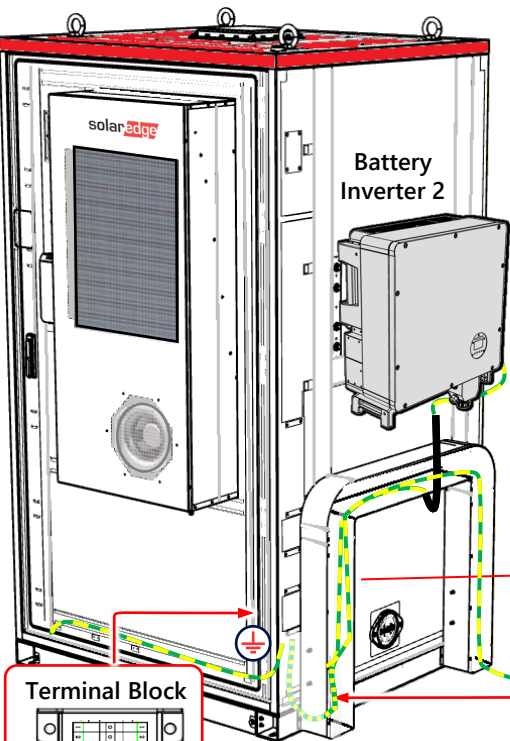


Get parts from:
Battery Cabinet Package
E, J

Battery Inverter



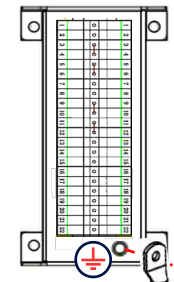
NOTE: Cut the corrugated tubes to the required length.



5 Route using tie-wraps

To Site Ground

Terminal Block



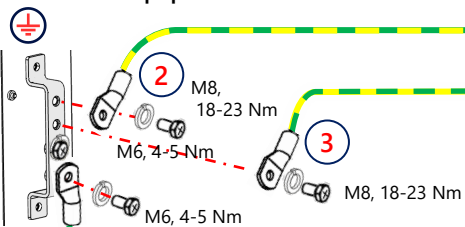
2 m wire from Equipotential Busbar of Battery inverter 1 side

M6, 4-5 Nm

E

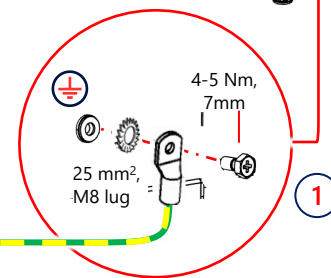
0.7 m wire

Equipotential Busbar

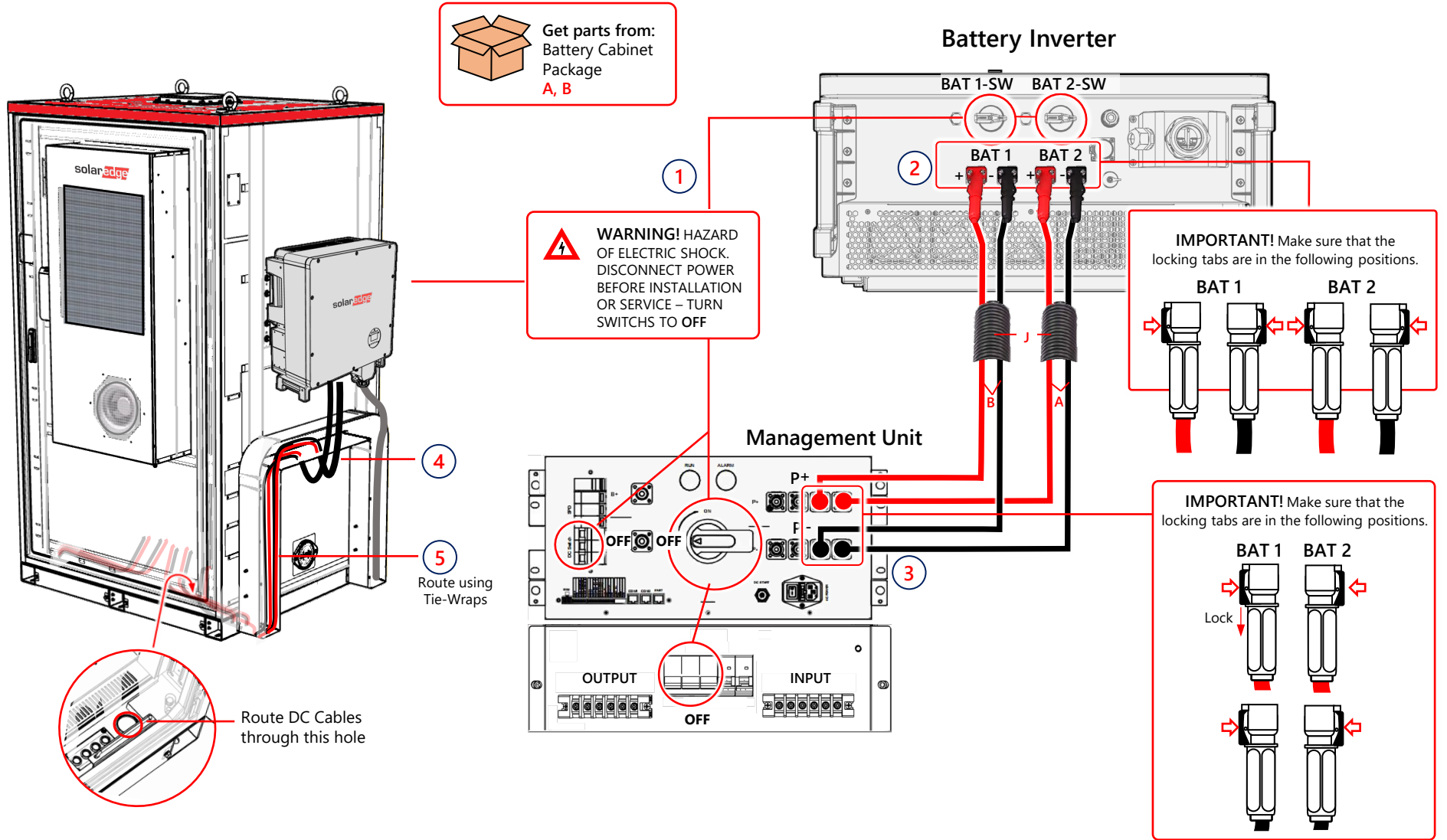


25 mm², M8 lug
(Not supplied)

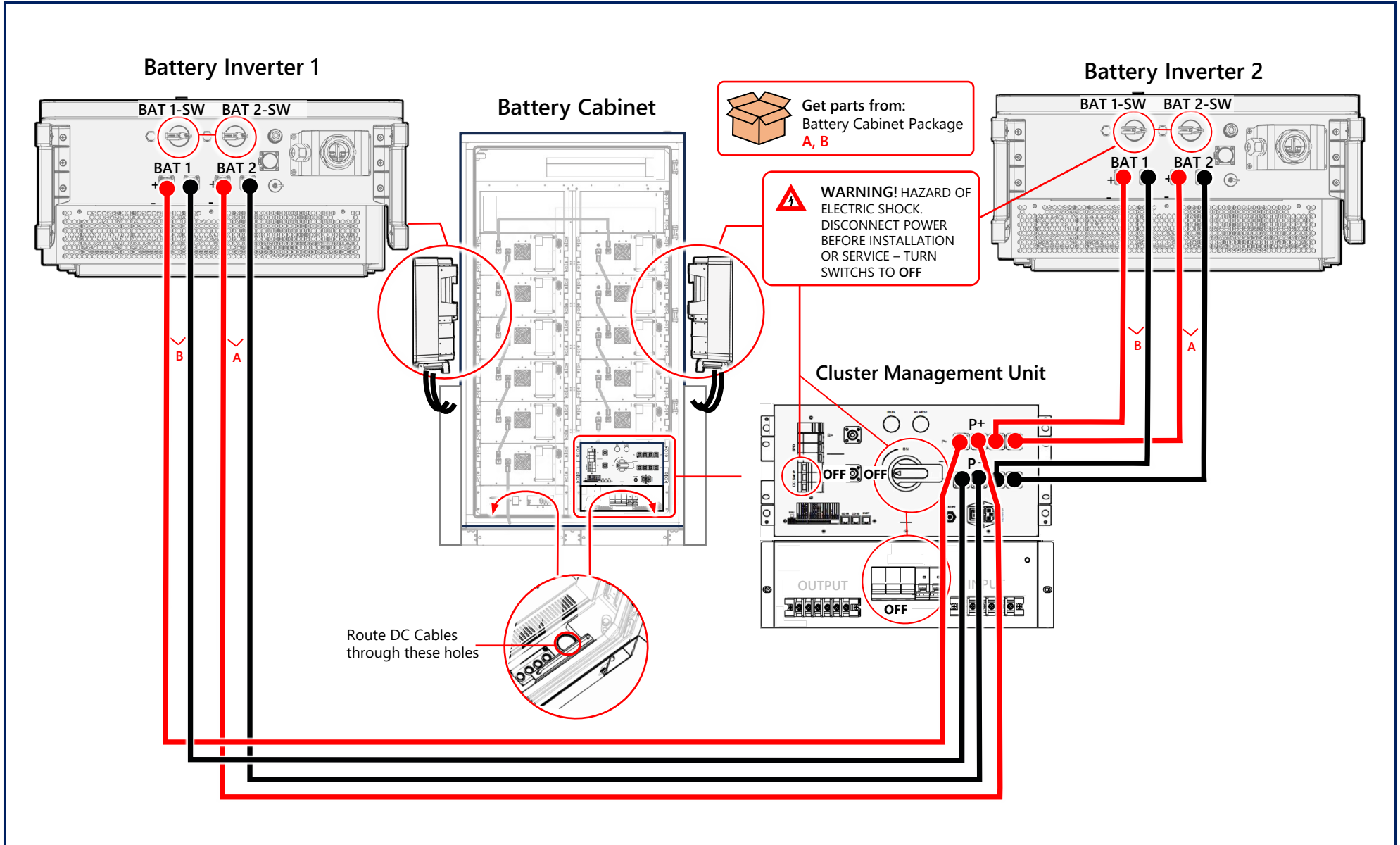
Site Ground



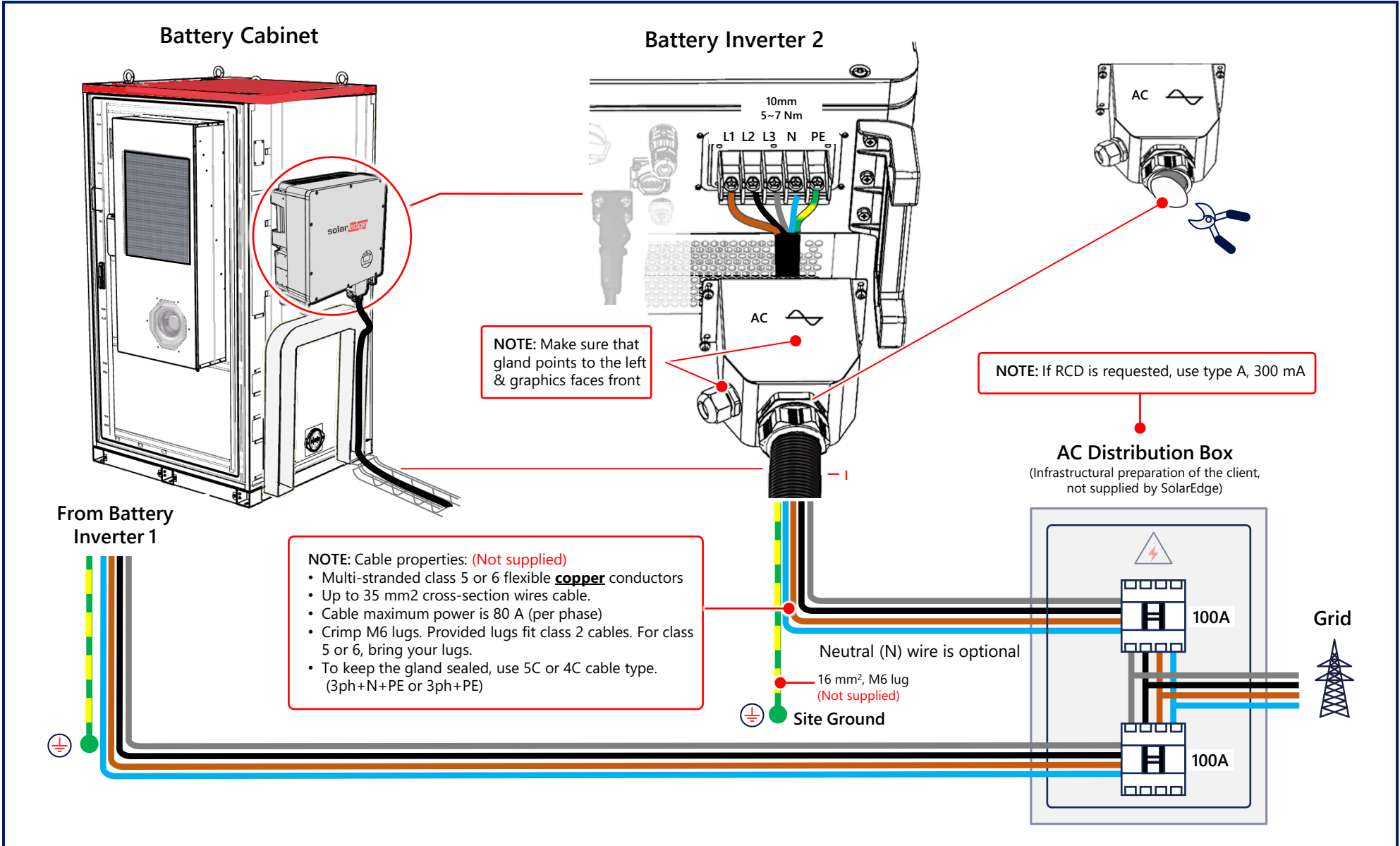
Wiring Battery Inverter to Battery Cabinet



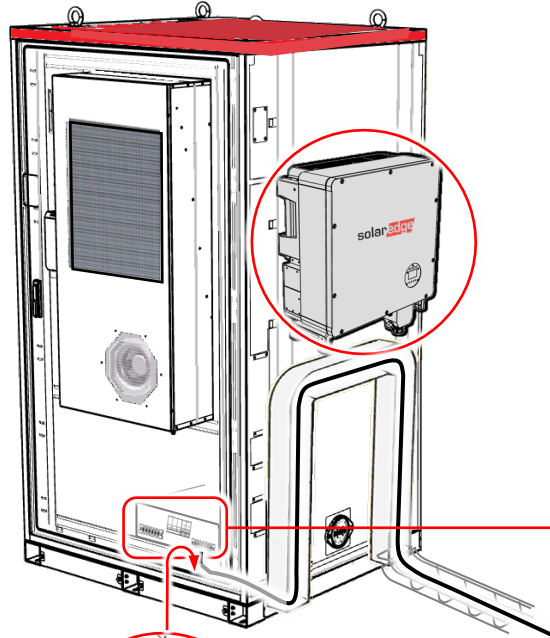
Wiring two Battery Inverters to Battery Cabinet



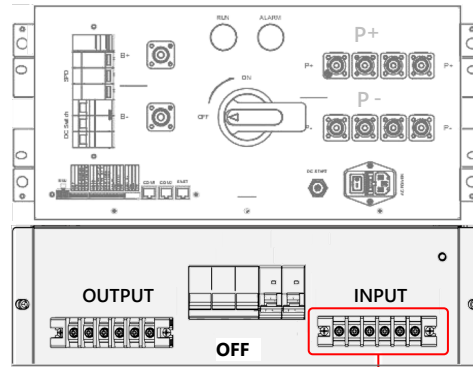
Wiring Battery Inverter(s) to Grid



Battery Cabinet



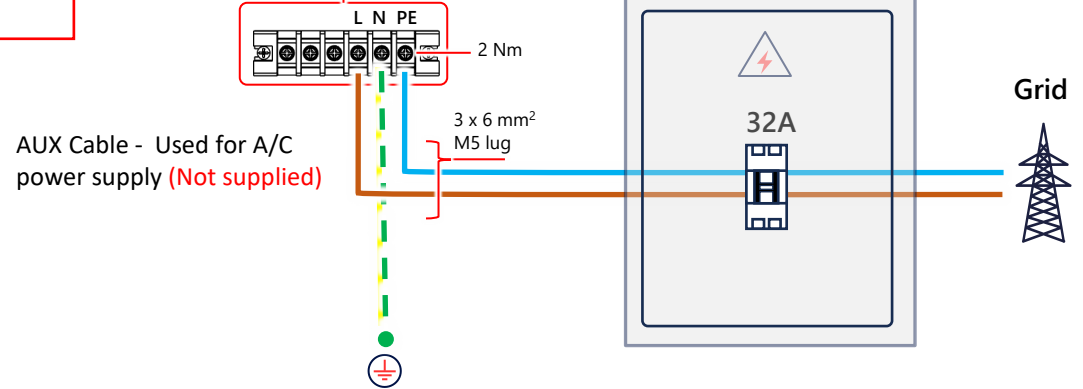
AC Auxiliary Cable exit



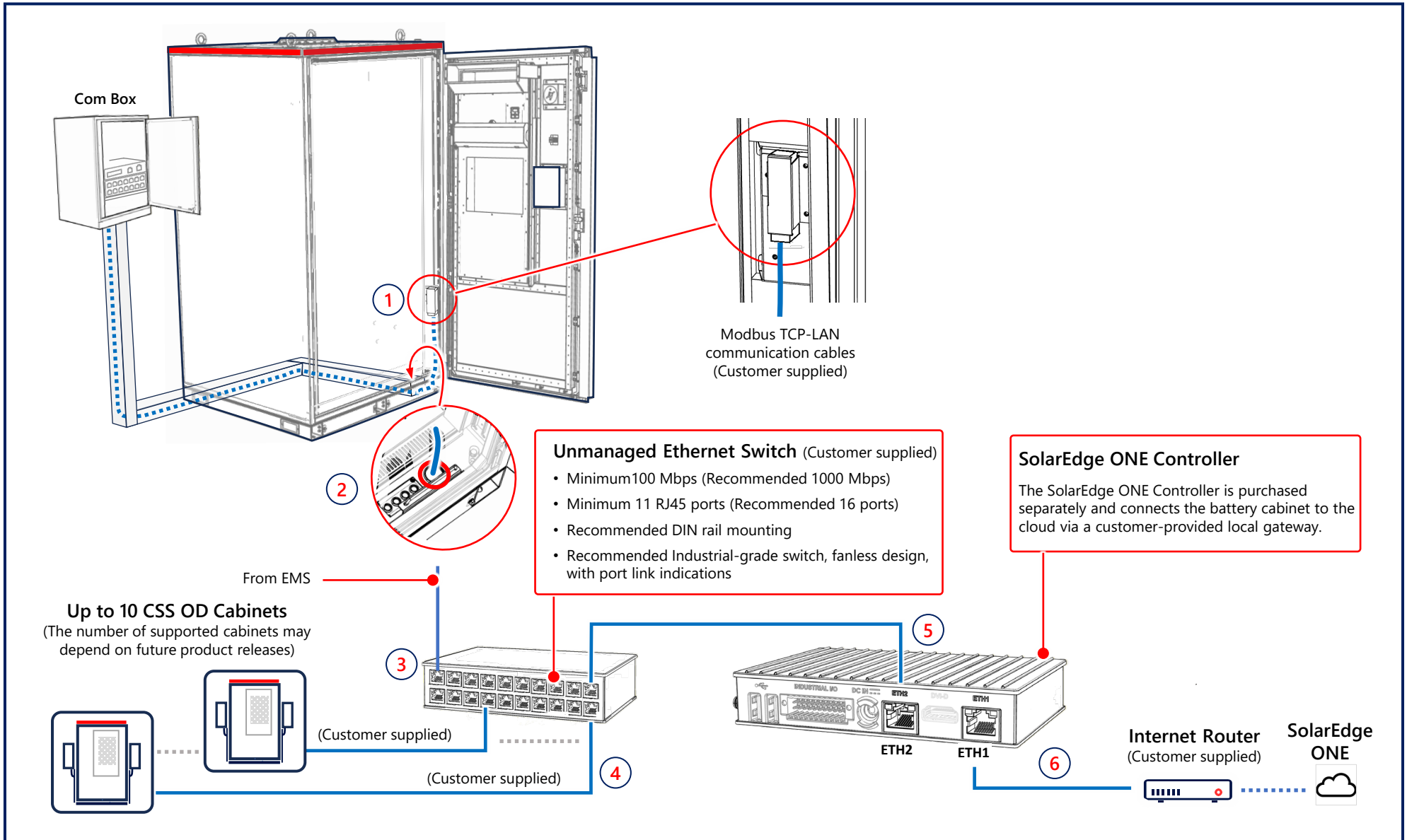
NOTE: If RCD is requested, use type A, 30 mA

AC Distribution Box

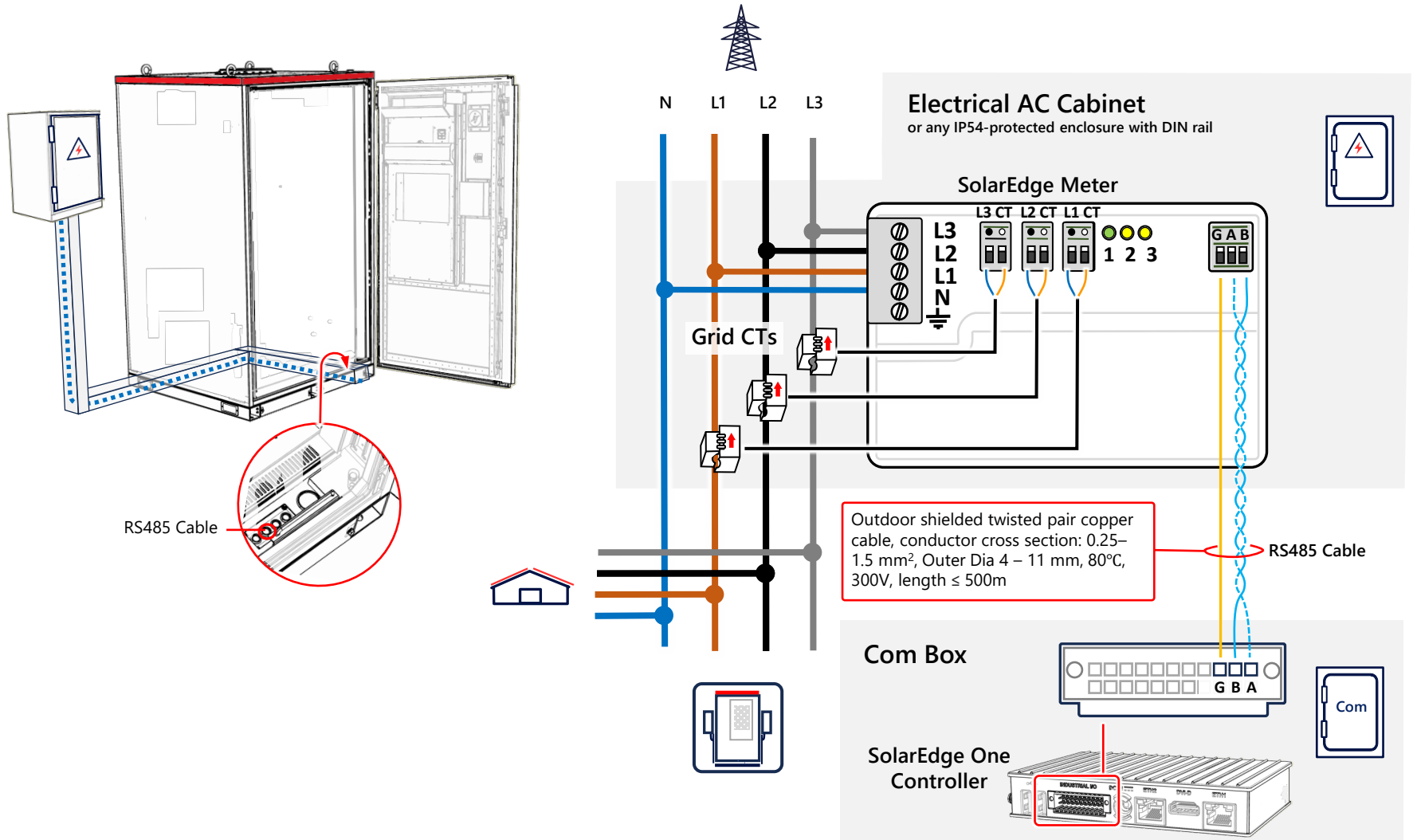
(Infrastructural preparation of the client, not supplied by SolarEdge)

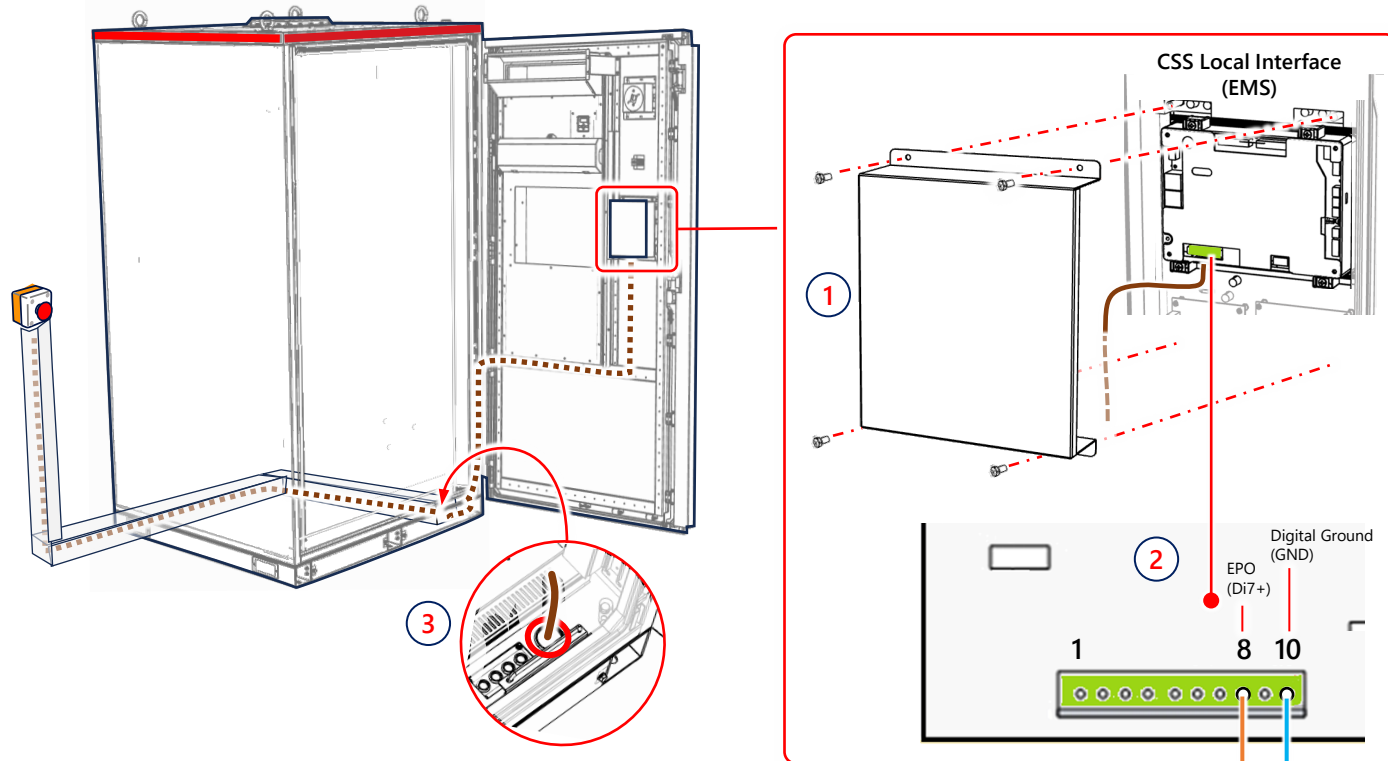


Connecting Multiple Battery Inverters to SolarEdge ONE Controller



Connecting External Meter





Follow Wiring Procedure

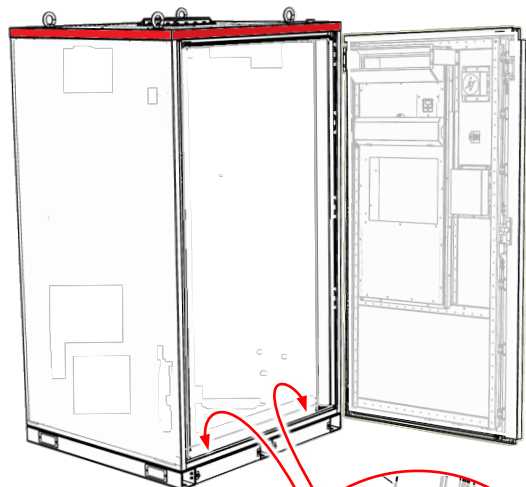
- Connect Remote EPO to the Battery Cabinet Leader using the digital I/O provided in the CSS Local Interface: pin 8 and 10
- Wire all battery cabinet leaders on site with the same method.
- Do not add any additional wiring to 'Follower' batteries.

Remote EPO Requirements

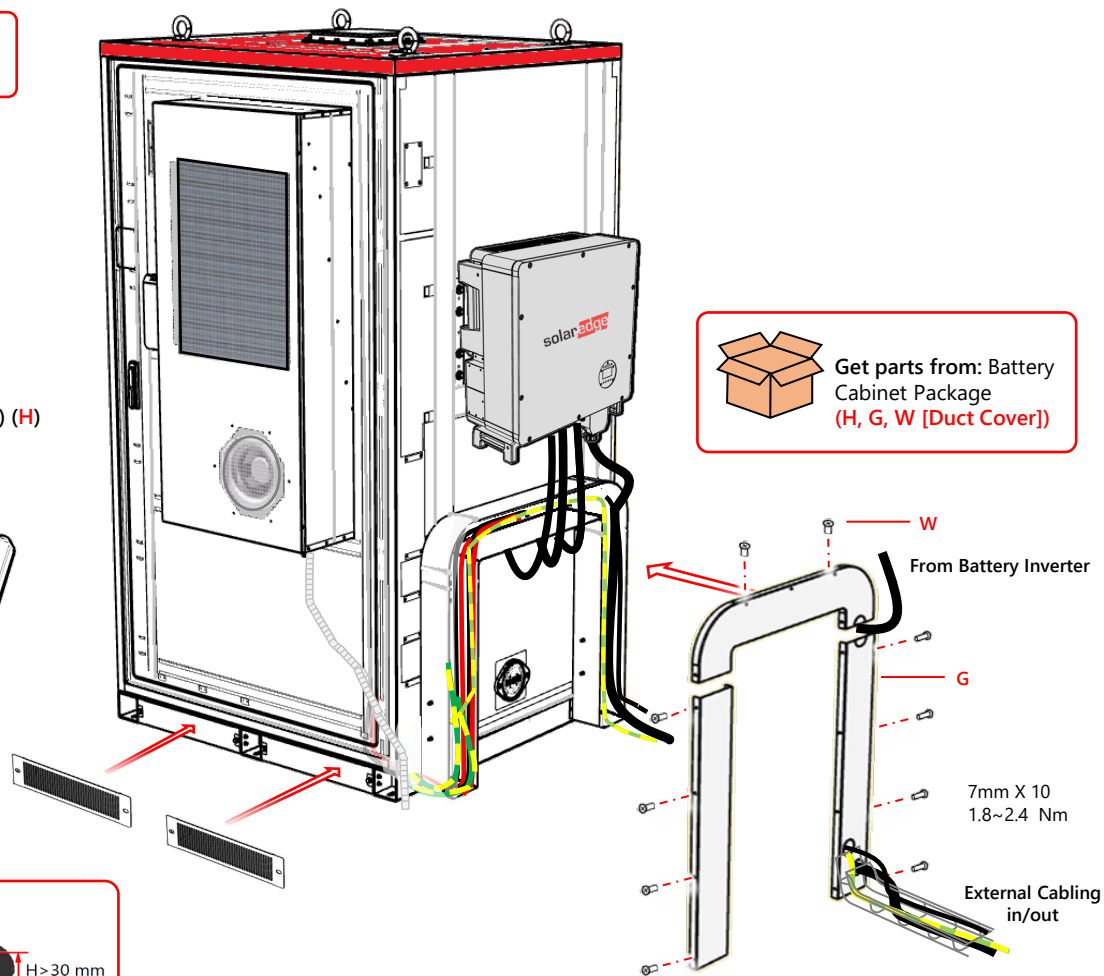
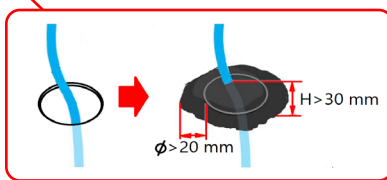
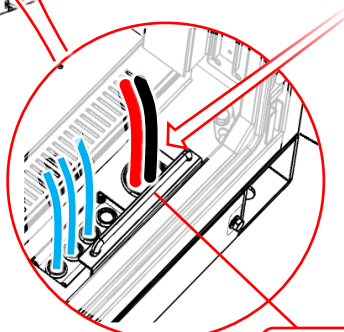
- Use only passive Normally Open (N.O), EPO push-button
- The EPO push-button of the Leader Inverter trips all Follower Battery Cabinet(s).
- Recovery duration is 1 second

Sealing and Closing Wiring Duct Lid and Panels

IMPORTANT! Use fire clay sealant to block the cable exit gaps and seal unused wiring holes.



Fire Clay Sealant (x4) (H)



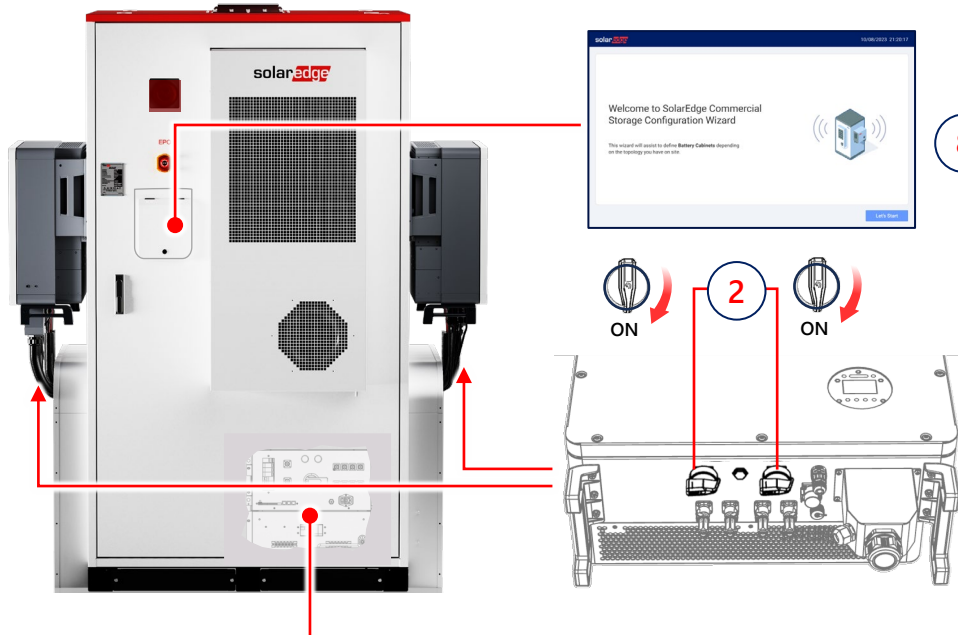
Get parts from: Battery Cabinet Package (H, G, W [Duct Cover])



Appendix A

Powering the CSS-OD

Follow the numbered steps to power on the system

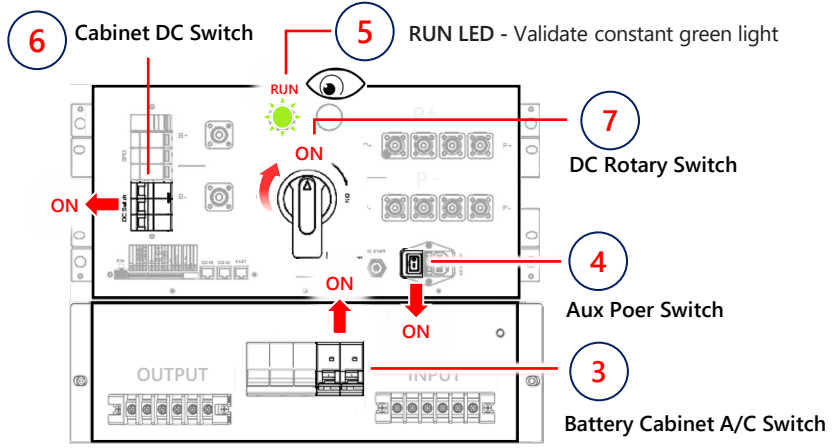
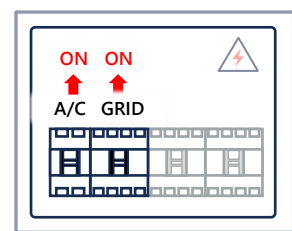


8 Validate EMS display is on

CAUTION! Before powering up the Battery Inverter, it is necessary to verify the connection of all cables and make sure they are correct and tight.

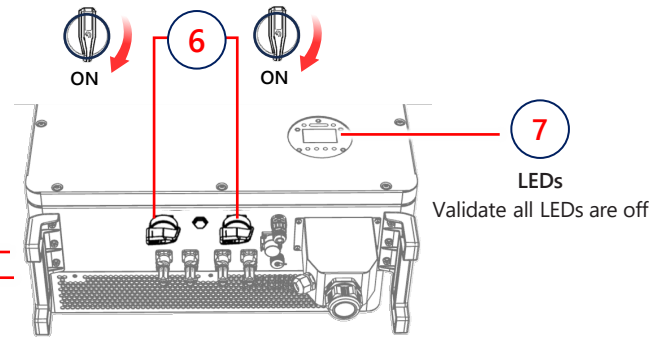
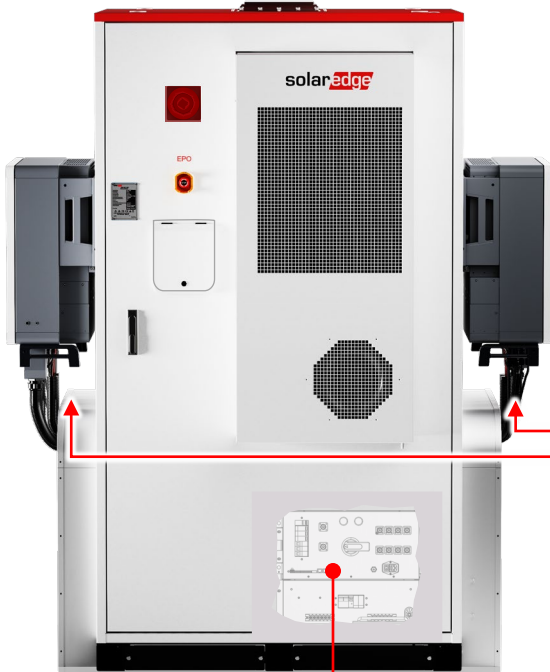
1

AC Distribution Box

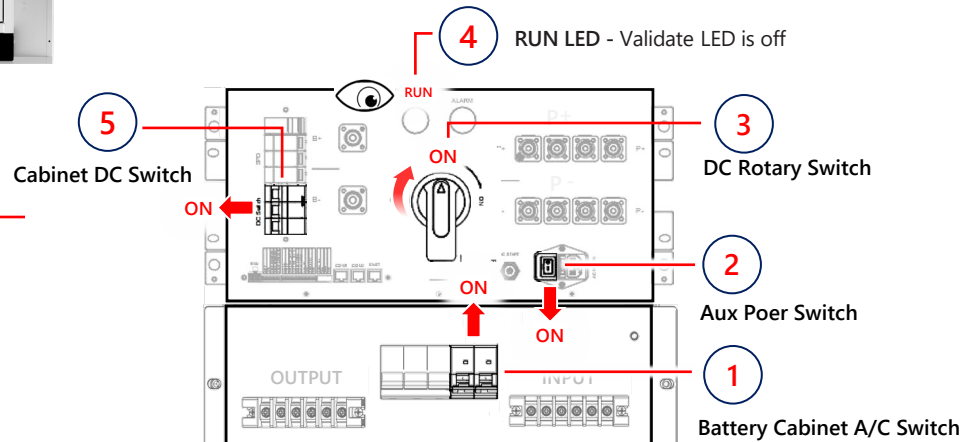


Power Off Sequence

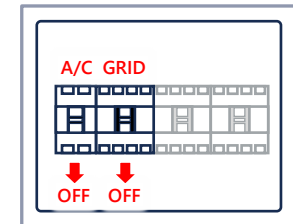
Follow the numbered steps to power off the system



CAUTION! Before powering up the Battery Inverter, it is necessary to verify the connection of all cables and make sure they are correct and tight.



8 AC Distribution Box

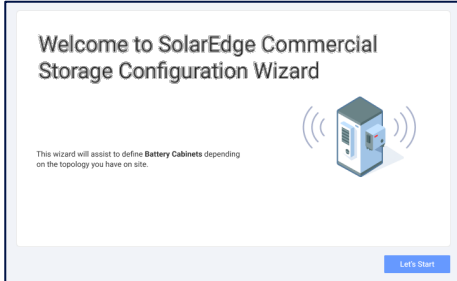




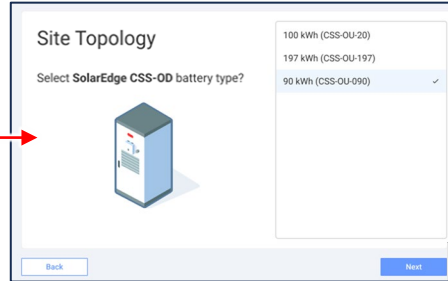
Appendix B

Commissioning

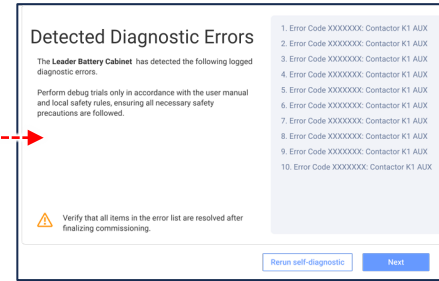
1 When the cabinet boots, it displays a Welcome screen - Tap 'Let's Start'.



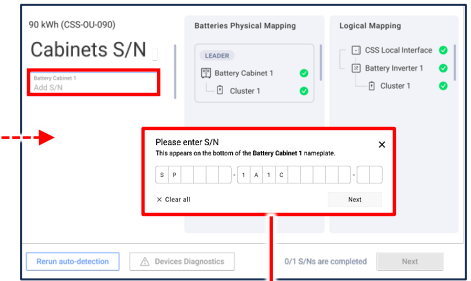
2 Select 197 kWh (CSS-OU-197) and tap Next



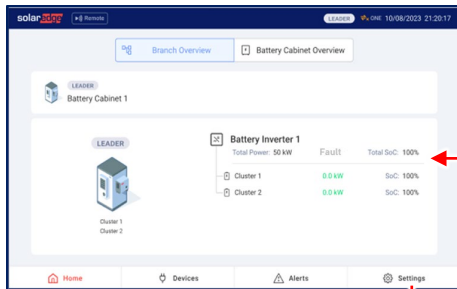
3 View detected Errors and resolve issues after commissioning. Tap Next



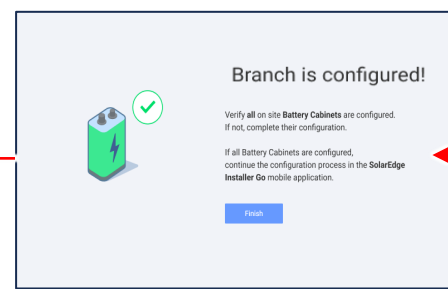
4 Detect or enter all Battery Cabinet S/N and tap Next



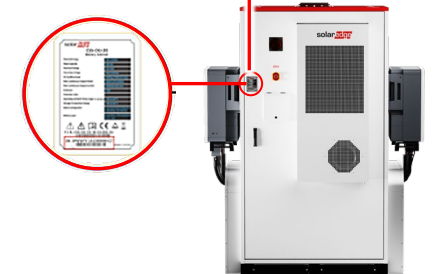
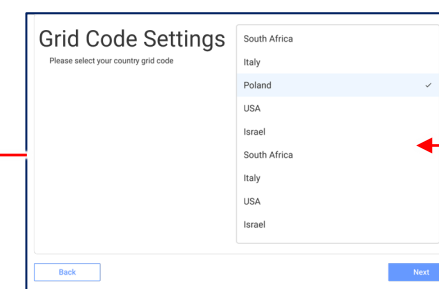
7 Tap Settings on the Home Screen



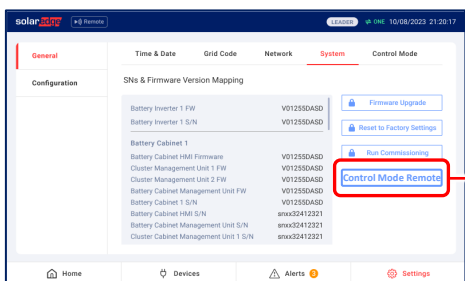
6 Tap Next to display the Home screen



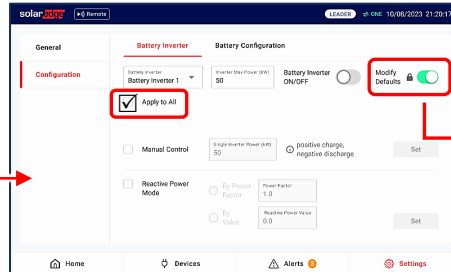
5 Select your country and tap Next



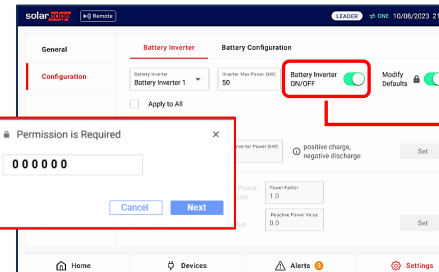
8 Tap: Settings > System > Control Mode Remote



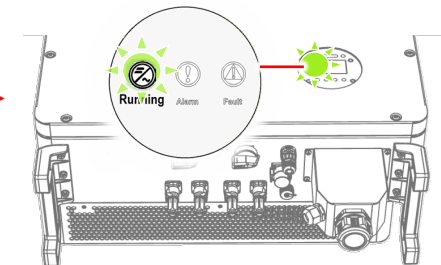
9 Tap: Settings > Battery Inverter > Modify Defaults



10 Tap: Settings > Configuration > Battery Inverter ON/OFF

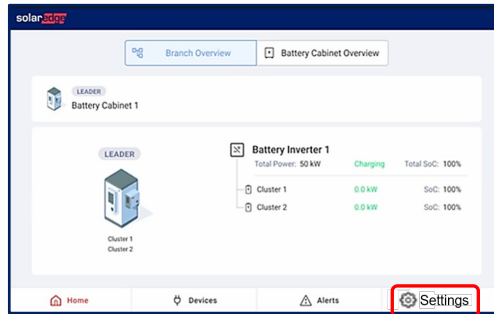


11 Validate that the Running LED shows a constant green light

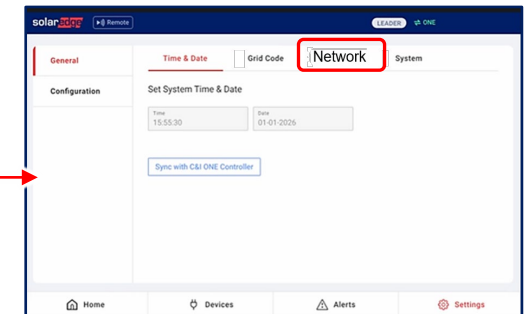


Setting Communication

1 Tap Settings on the Home Screen



2 Tap General > Network



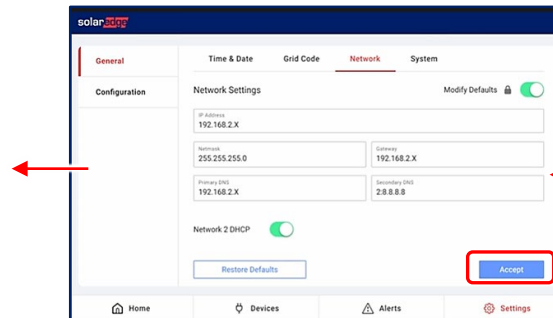
5 Install SolarEdge Go for SolarEdge ONE Controller for C&I Configuration



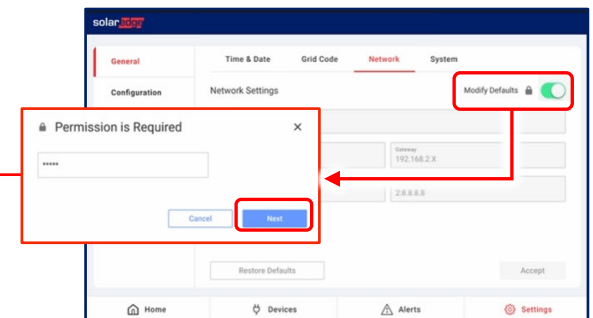
<https://youtu.be/KVCRGSEq8VU>



4 Tap Accept



3 Tap Modify Defaults and enter the password > Next





Appendix C

Troubleshooting and Maintenance

Troubleshooting

Fault Description	Possible Cause	Corrective Action
Grid Overvoltage	Grid voltage above permissible limit	<ul style="list-style-type: none"> • Check Grid Code settings • Check grid voltage with a multimeter. • Contact utility provider if voltage remains high.
Grid Undervoltage	Grid voltage below permissible limit	<ul style="list-style-type: none"> • Verify connection at AC terminals. • Check for utility fluctuations or loose wiring.
Grid Frequency Error	Frequency outside 50/60 Hz ± 0.5 Hz	<ul style="list-style-type: none"> • Confirm local grid frequency stability. • Wait for automatic reconnection once frequency normalizes.
Insulation Resistance Fault	Low insulation resistance detected on DC side	<ul style="list-style-type: none"> • Check for good earth resistance of BT+ and BT- battery terminals is greater than 2 MΩ. • Replace defective module or cable.
Ground Fault	Leakage current detected	<ul style="list-style-type: none"> • Inspect for damaged cables or moisture ingress. • Dry the system and re-test insulation.
Temperature Overheat	Inverter temperature exceeds safe limit	<ul style="list-style-type: none"> • Ensure ambient temperature is within range. • Clean heat sink and check for blocked airflow. • Verify fan operation (if equipped).
Communication Failure	Lost connection with SolarEdge ONE system	<ul style="list-style-type: none"> • Check communication wiring and connectors. • Verify that SolarEdge ONE Controller is powered. • Verify that your site router is powered and connected to the internet.

Maintenance

NOTE: For CSS-OD routine maintenance guide, refer to: https://knowledge-center.solaredge.com/sites/kc/files/se-css-od_197kwh-routine-maintenance-guide.pdf

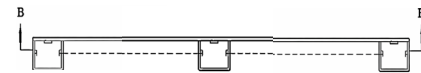
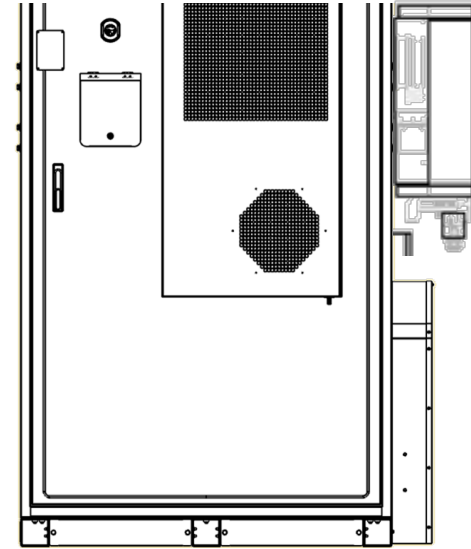
Battery Inverter LED Indications

LED Indication(s)		Description
All LEDs are Off	 Running Alarm Fault	The battery inverter is powered off
Steady Green	 Running Alarm Fault	Standard operation
Flashing Yellow and steady Red	 Running Alarm Fault	Self-test
Steady Yellow and steady Red	 Running Alarm Fault	Standby mode
Steady	 Running Alarm Fault	Faulty Inverter (Contact support)
Flashing Red	 Running Alarm Fault	Severity level: Inverter fault (Contact support)
Steady Green and flashing Yellow	 Running Alarm Fault	Normal operation; state of charge approaching 100% or 0%

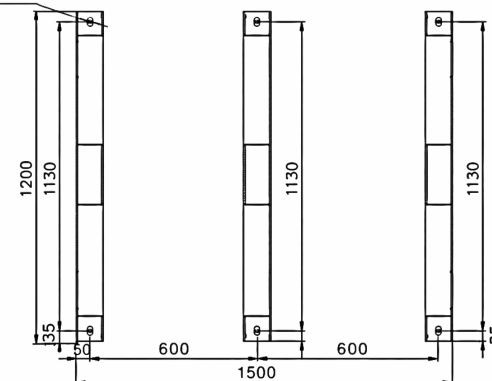


Appendix D

Construction Details



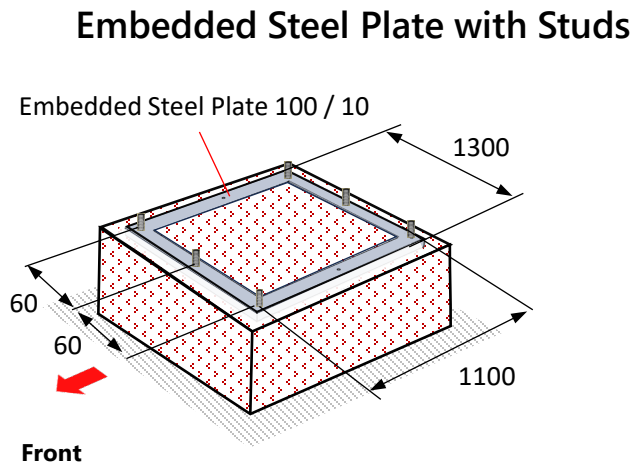
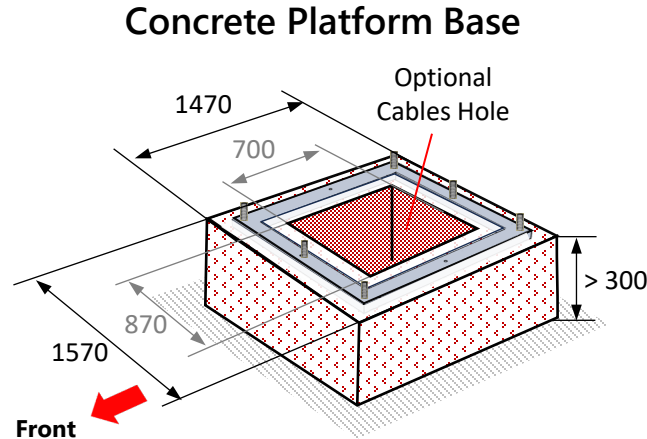
6-OB18*35

**Technical Requirements:**

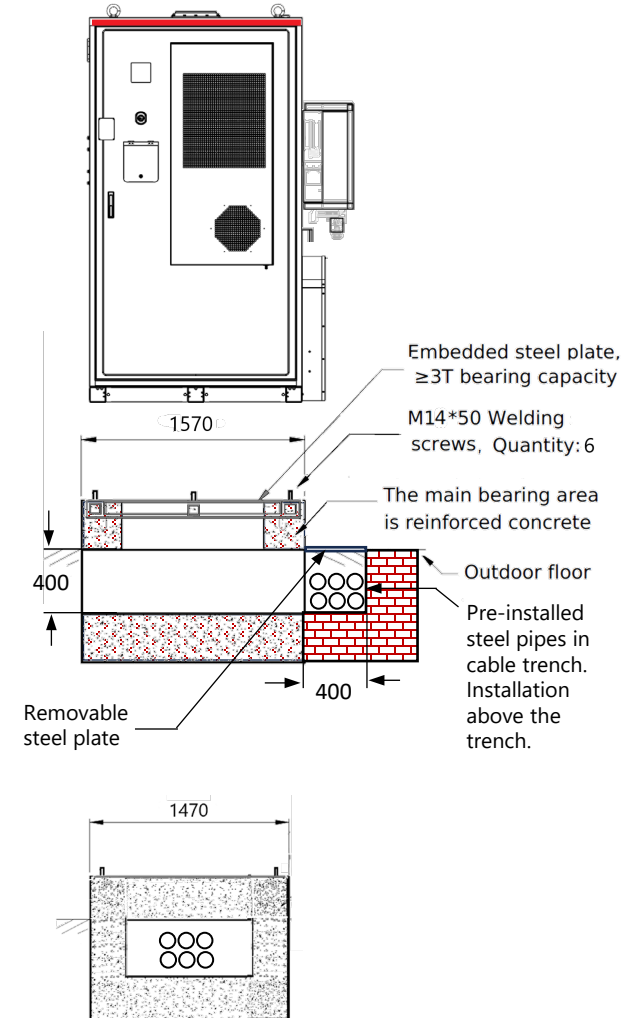
1. Solid welding, no virtual welding.
2. After welding, except for welding slag, the outer surface of the parts is polished and smooth.
3. Spray protection according to the requirements of the drawing; all stud end faces and threads need spray protection.
4. No dimensioned tolerance according to GB/T 1804-M processing.
5. The unmarked position tolerance shall be executed in GB/T 1184-K class.
6. With* number is an important size, need to focus on inspection.
7. For other dimensions not specified, refer to the 2D/3D drawing.

IMPORTANT NOTES!

1. Battery Cabinet must be installed on a reinforced concrete platform base.
2. Dig a trench or reserve a cable entry hole by considering the electrical wiring of the equipment before construction of the foundation.
3. The foundation must be made of non-combustible materials.
4. The bearing capacity of the foundation shall be > 3 tons.
5. When designing and manufacturing the embedded steel plates for the battery cabinet, it is necessary to consider that there must be a reliable connection (reinforcement hook) between the embedded steel plate and the concrete base.
6. When molding the concrete pad, it shall protrude below the ground as minimum of 400 mm.
7. To avoid flood damage and safety hazards, the cabinet must be installed on a concrete platform with a minimum height of 300 mm. Concrete base surface smoothness shall be $\leq 3\text{mm}$.
8. The upper surface tolerance of the foundation shall be $\pm 5\text{mm}$.
9. The concrete pad shall prevent rainwater accumulation on top of it. The foundation construction should meet the drainage requirements for maximum volume of rainfall in the locality, and the discharged water needs to be treated in accordance with local laws and regulations.
10. The foundation drawing is only for reference and cannot be regarded as the final construction drawing. Operators shall recheck the basic parameters according to the environment, geological conditions, seismic requirements, etc. of the installation site.



All dimensions are in mm





Support Contact Information

If you have technical problems concerning SolarEdge products, please contact us:

<https://www.solaredge.com/service/support>

Subject to change without notice.

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