CSS – OD / 90 kWh
Grid-tied Commercial Energy Storage Solution
Model CSS-OU-090 / PCS050B

Quick Installation Guide

Version 1.0

Preliminary

Draft 19-11-2025

Legend and Safety Instructions

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, 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.

Tools & Equipment Requirement

Personal Protective Equipment


Safety Rubber Shoes


Helmet


Rubber Gloves


Safety Clothing


Goggles

Required tools for Battery Cabinet 90 kWh & Battery Inverter

WARNING! Use only insulated tools


Torque wrench with 7mm, 10mm, 16mm, 17mm, 18mm, 19mm sockets


Wire Cutter


Crimping tool


Phillips screwdriver M4, M6, M10 L= 230 mm


Heat gun

Multimeter (≥ 1000 V_{DC})


Cable Stripper


Wire Stripper


Drill (⌀10 mm drill)


Box Cutter


Pipe Cutter


Ladder

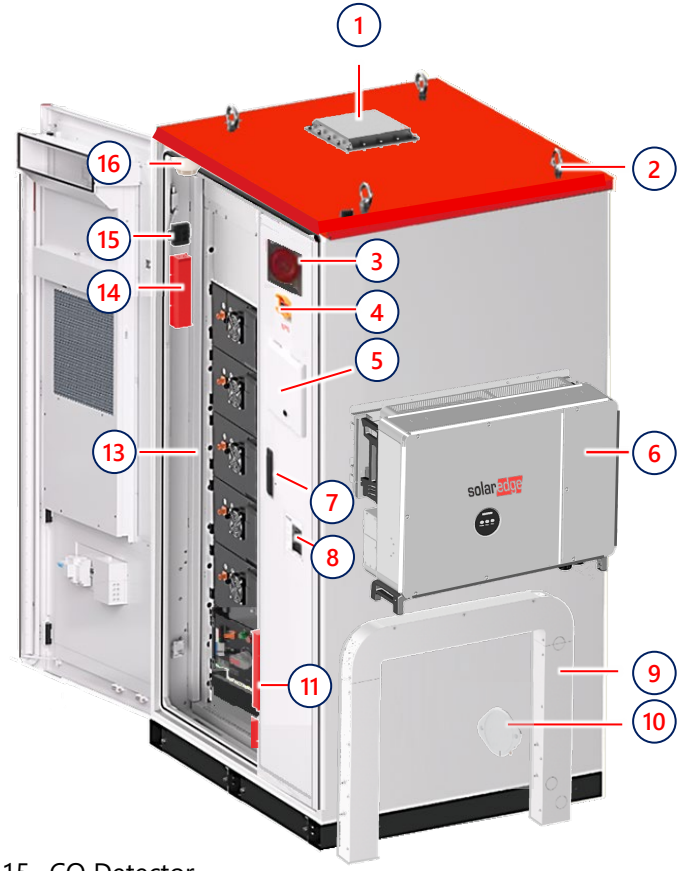

Rubber Hammer


Slotted Screwdriver (10 mm slot)


Slotted Screwdriver for Terminal Block Screws (2 mm slot)


Adjustable Wrench


Open-end torque wrench



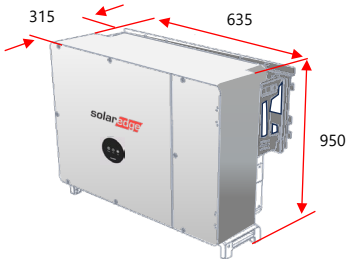
1. Explosion Relief Panel
2. Four Eye Bolts
3. Acoustic-Visual Alarm
4. Emergency Power Off (EPO) switch
5. CSS Local Interface Display (EMS)
6. Battery Inverter 1
7. Door Lock
8. Nameplate
9. Wiring Duct
10. Intake Valve (on back side of cabinet)
11. Aerosol Fire Extinguisher 1
12. Energy Modules Management Unit
13. Energy Module (x5)
14. Aerosol Fire Extinguisher 2
15. CO Detector
16. Smoke Detector
17. Fire Fighting Valve
18. Wiring Duct (optional)
19. Battery Inverter 2 (optional)
20. Exhaust Valve

Dimensions and Weights

Battery Cabinet 90 kWh

1233 KG

Battery Inverter 50 kW



80 KG

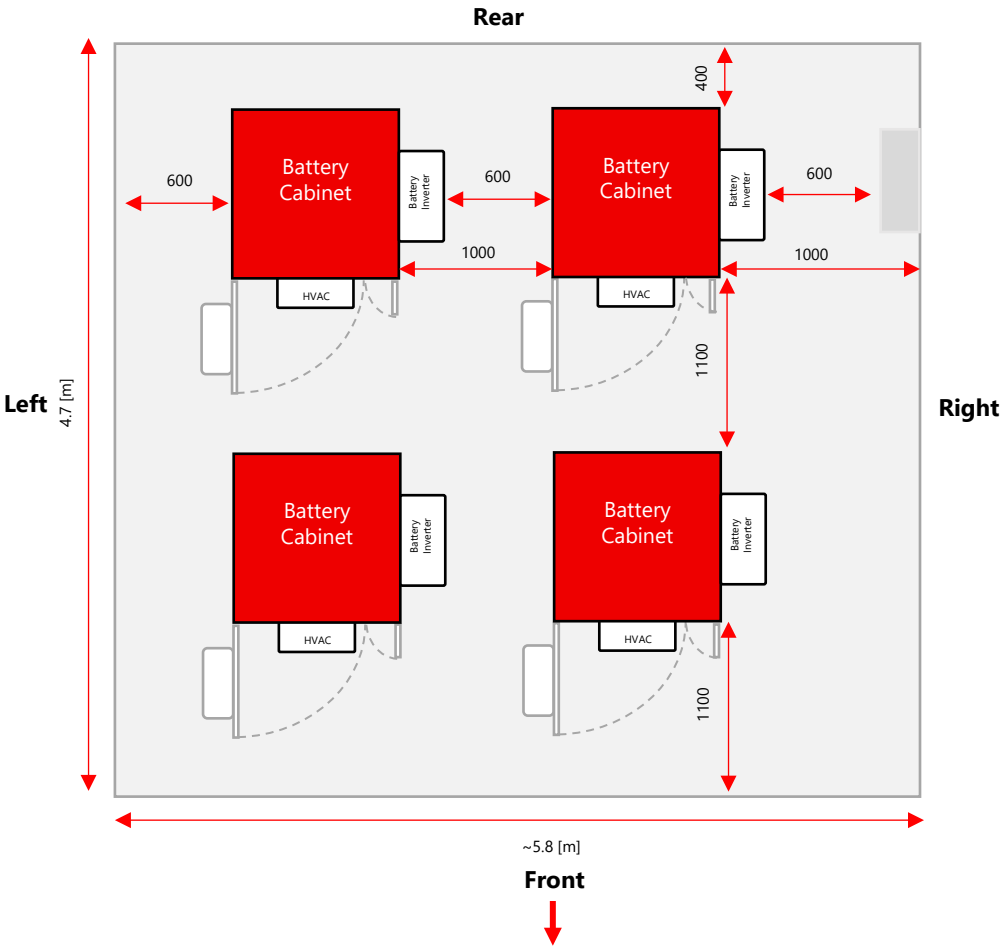
Battery Inverter 50 kW
Battery Cabinet 90 kWh

*Assembled Dimensions

1313 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	1200
Rear	400
Right	1400
Left	1000 (600 from 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.

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.

Environmental Conditions & Requirements

CAUTION

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, and work at heights. Outdoor installations are strictly prohibited during severe weather conditions such as lightning, rain, snow, or high 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. When installing in a sandy environment, increase the frequency of routine maintenance for the battery vent and HVAC systems: perform a visual inspection weekly and clean as needed based on observed conditions.
4. Do not place the equipment or operate it in a flammable environment or an environment that contains explosive gas or smoke.
5. Avoid installing the battery cabinet in sandy environments.
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.

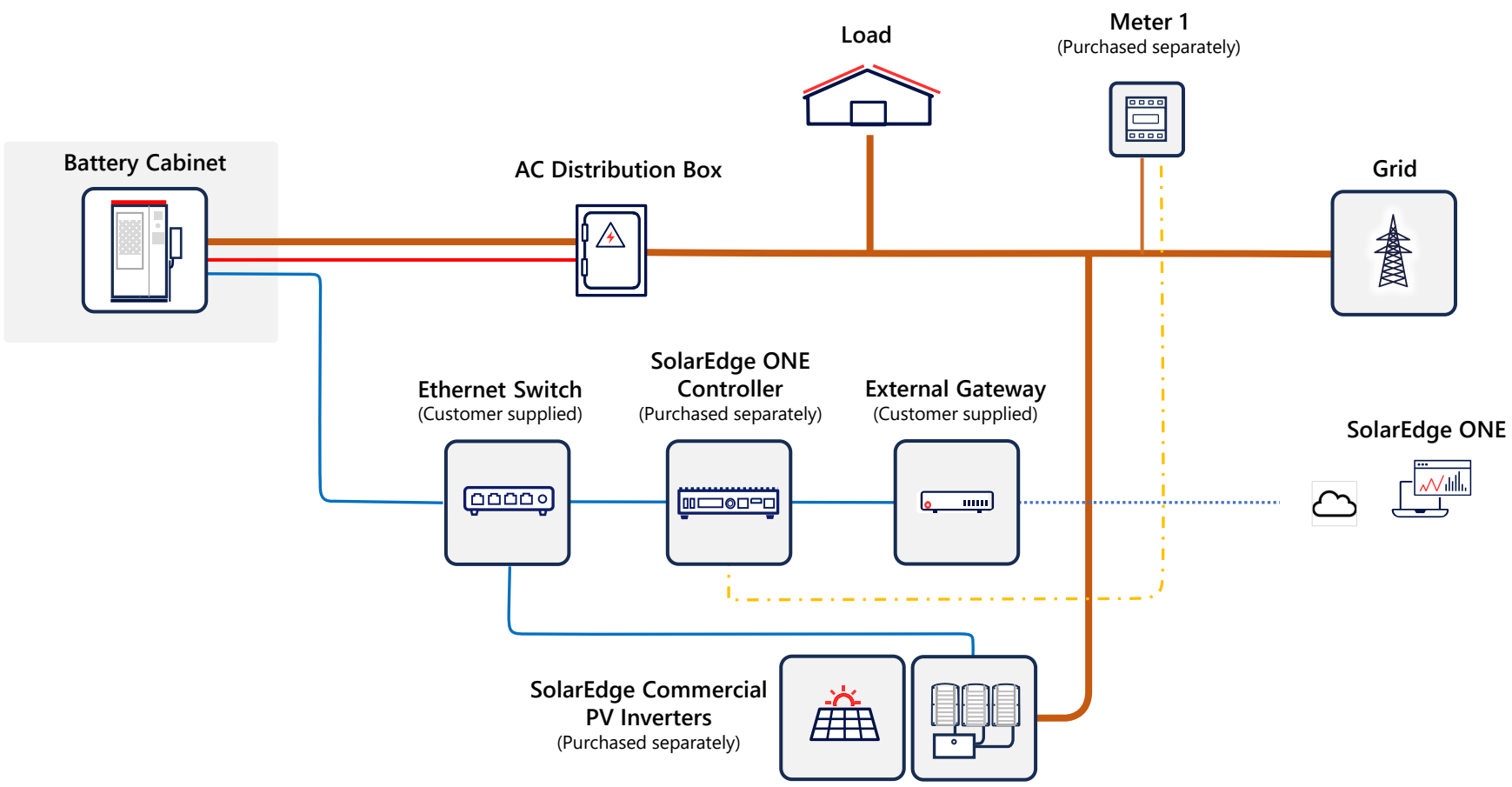
Battery Cabinet	
Max Power	**Heat Dissipation**
50 kW	0.87 kWh 2970 BTU
Battery Inverter	
Max Power	**Heat Dissipation**
50 kW	1.5 kWh 5118 BTU

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

Site Power & Communication Layout



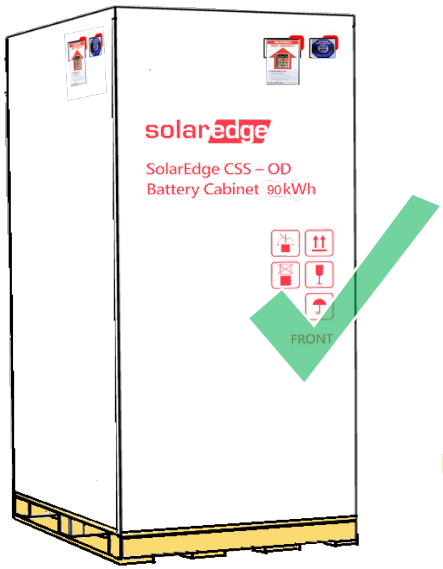
Handling and Inspecting Before Unpacking

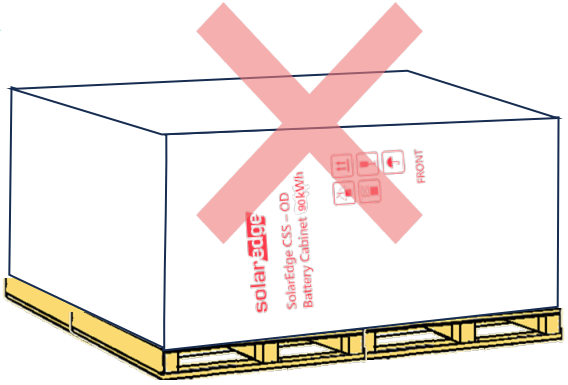
NOTES:

- 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-90kwh-eng.pdf



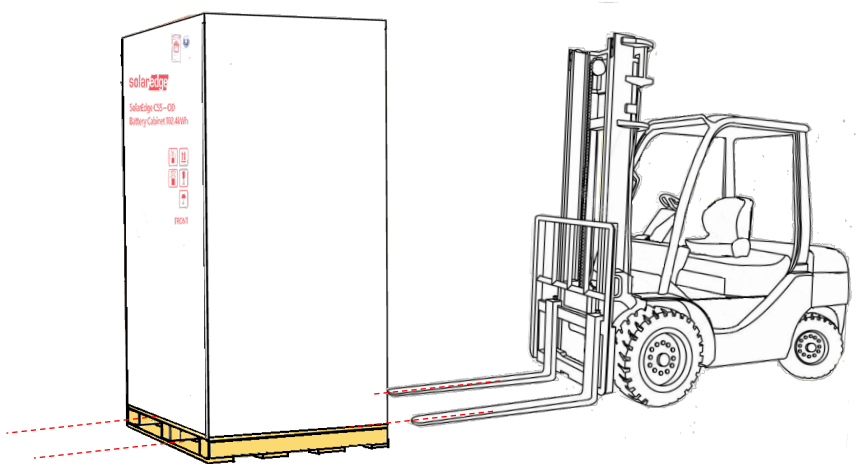


NOTES: For Battery Cabinet Package

- 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.

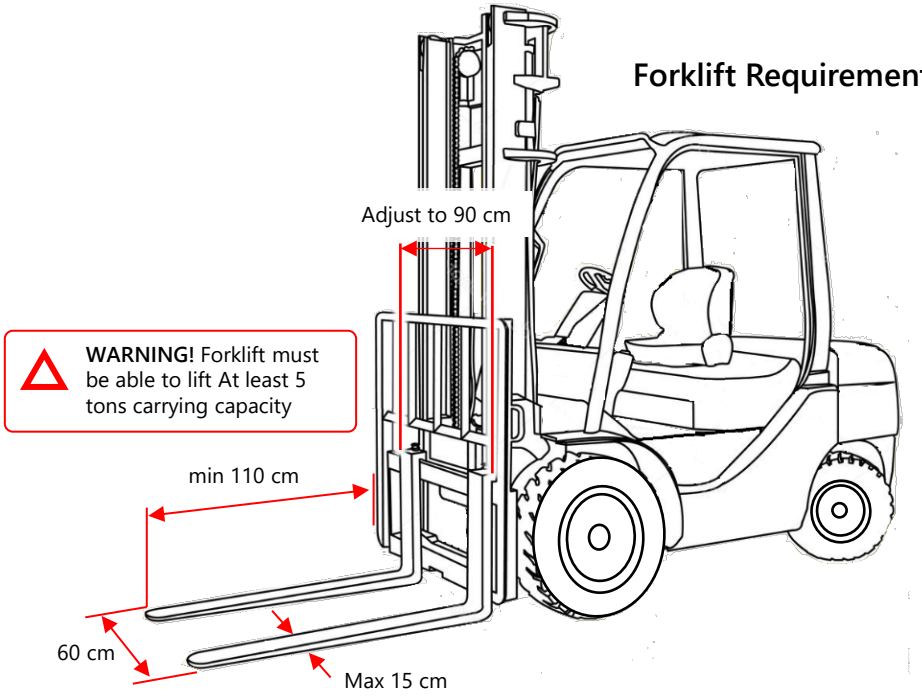
Battery Cabinet Transportation – Forklift Guidelines

Transporting Battery Cabinet with the Wooden Box

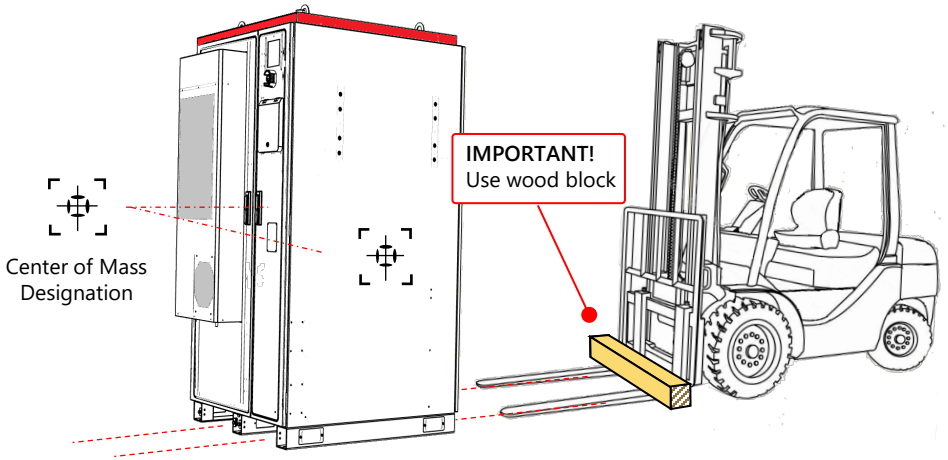


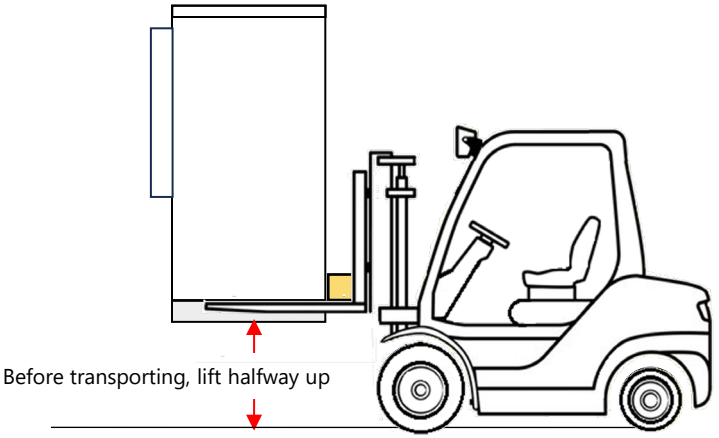
Floor Pallet

Forklift Requirements



Transporting Battery Cabinet Standalone





Battery Cabinet Transportation – Crane Lifting Guidelines

HOISTING REQUIRMENTS

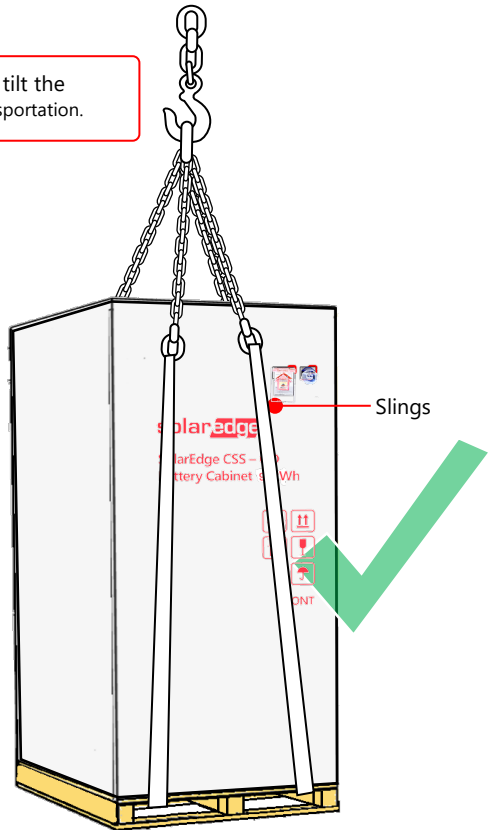
WARNING!

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.

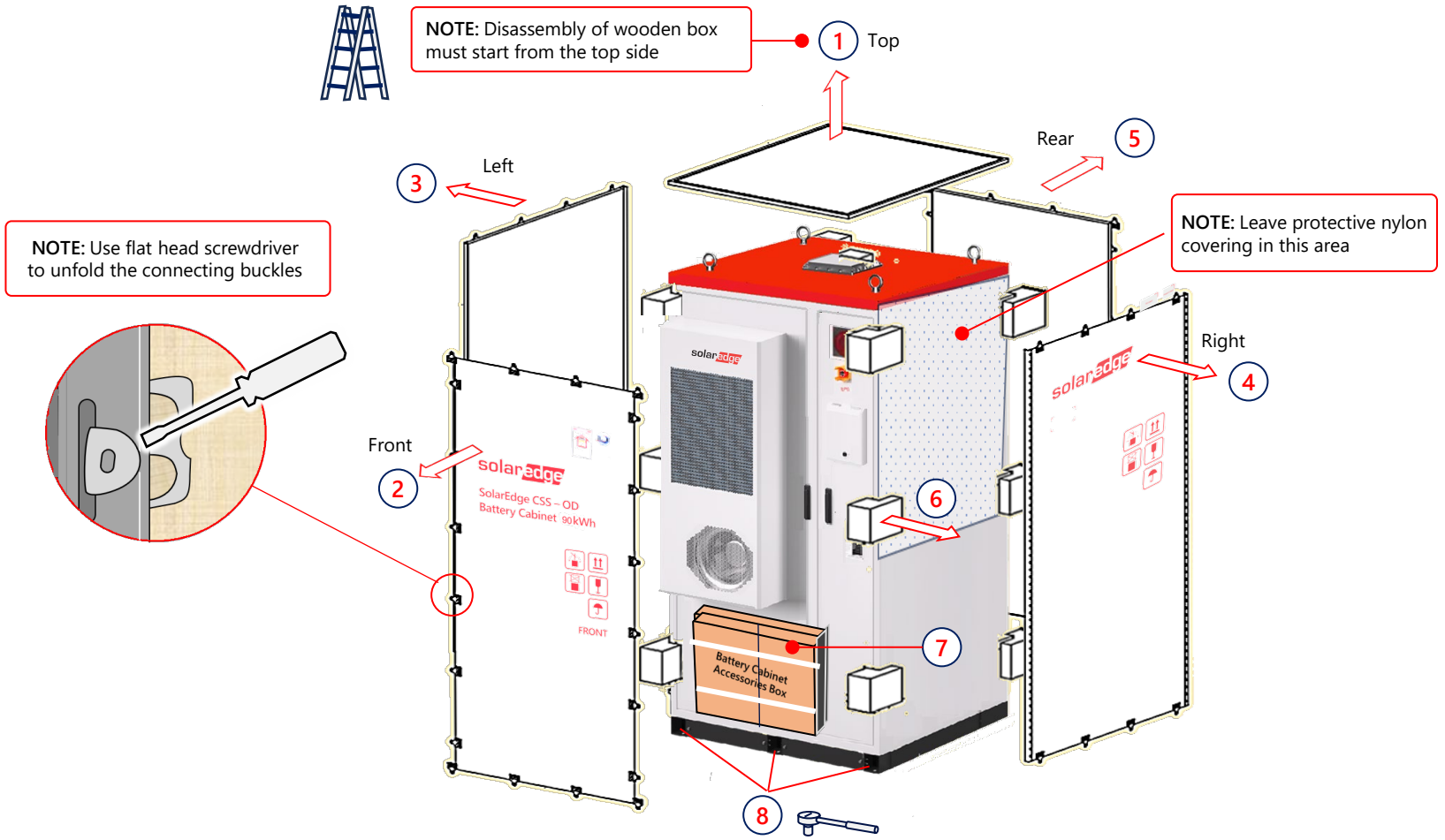
Standalone Battery Cabinet Crane Transportation

WARNING! Do not tilt the cabinets during transportation.

Packaged Battery Cabinet Crane Transportation



Unpacking Battery Cabinet

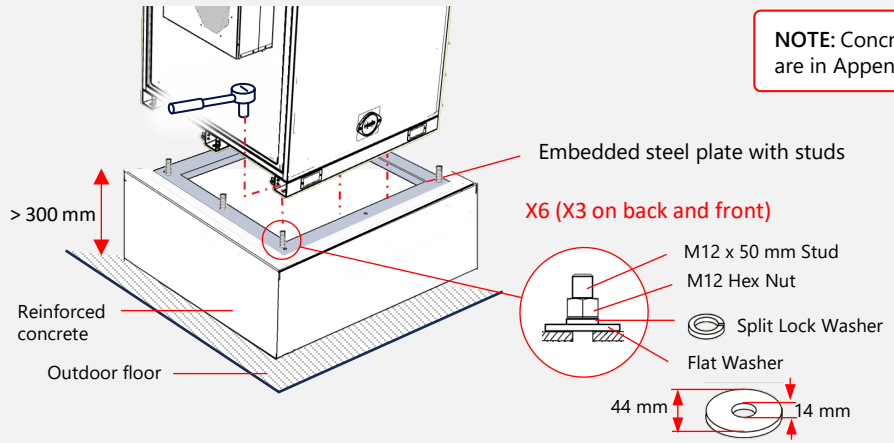


Mounting Battery Cabinet on Concrete Base Platform

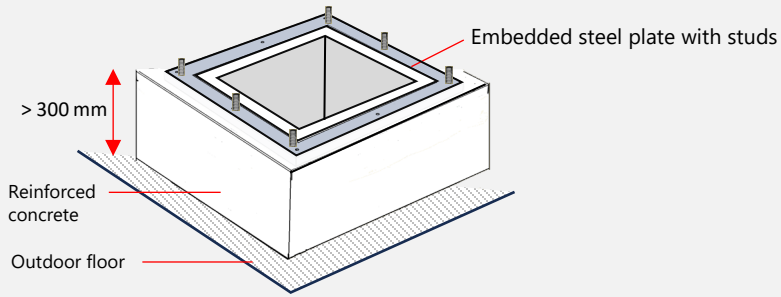
Option 1: Unified Concrete Platform Base with Embedded Steel Plate with Studs

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

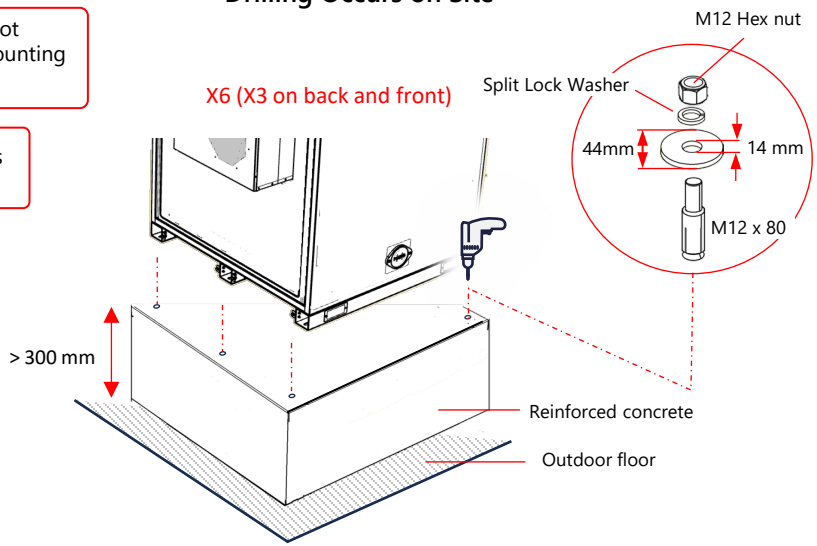
NOTE: Concrete pad guidelines are in Appendix B



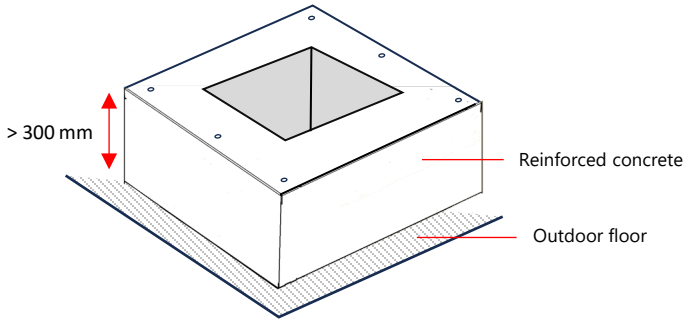
Option 2: Hollow Concrete Platform Base with Embedded Steel Plate with Studs



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



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

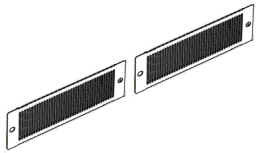


Battery Cabinet Package Contents (Inside Accessories Box)

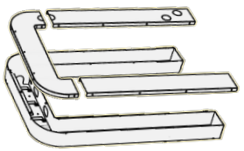
PAY ATTENTION!
All Cables are marked with a designation label

Battery Cabinet Accessories Box

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



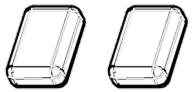
Battery Cabinet Wiring Duct (G)



PE cable (0.7m) (E)

Battery Cabinet Package Contents (Inside Battery Cabinet)

Sealant (x2) (H)



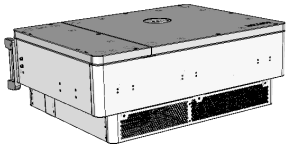
Corrugated Plastic Conduit ⌀34.5 mm (I)

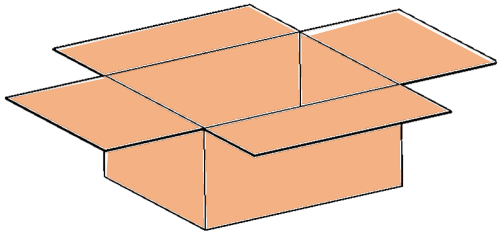
Corrugated Plastic Conduit ⌀21 mm (J)

Battery Inverter Package Contents

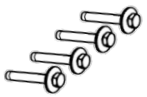
Battery Inverter Mounting Bracket kit (K)

Battery Inverter



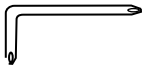


Bracket M10 Mounting Bolts (x12) (Q)



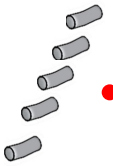
Bracket Lock M6 Bolts (x2)(R)

Right-angled Torx Star Allen key (P)



M6 Lugs (x15) (S)

Cables Shrinks (x15) (T)



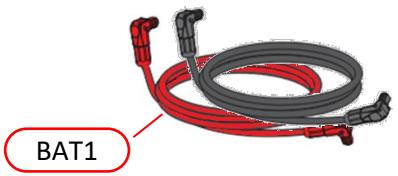
NOTE: These lugs are compatible with class 2 wires. Please ensure you provide your own lugs if class 5 or 6 wires are used on site.

Cabling Package Contents

PAY ATTENTION!
All Cables are marked with a designation label

Battery Cabinet to Battery Inverter DC Cables (3.5m) (B)

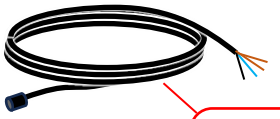
Battery Cabinet to Battery Inverter DC Cables (3m) (A)

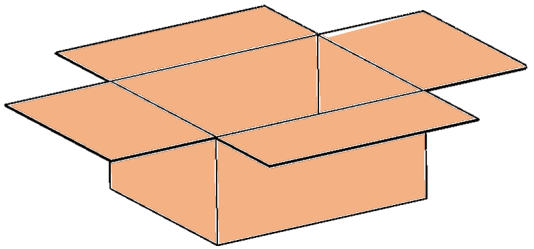


AC Auxiliary Cable (x1) (5m) (W)

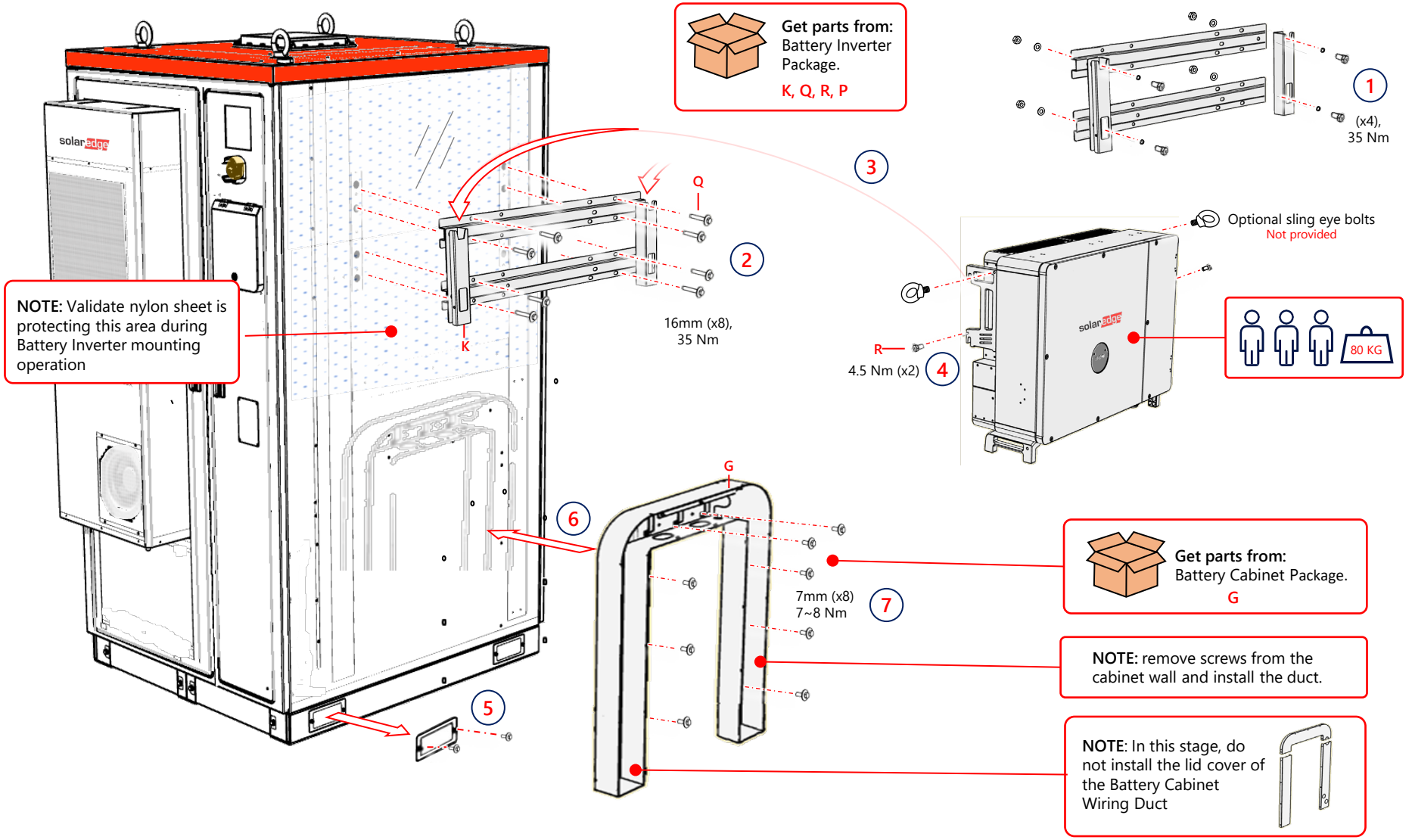
Modbus TCP Cable (Ethernet) (x1) (5m) (X)

Battery Cabinet to Battery Inverter COM cable (3.5m) (C)

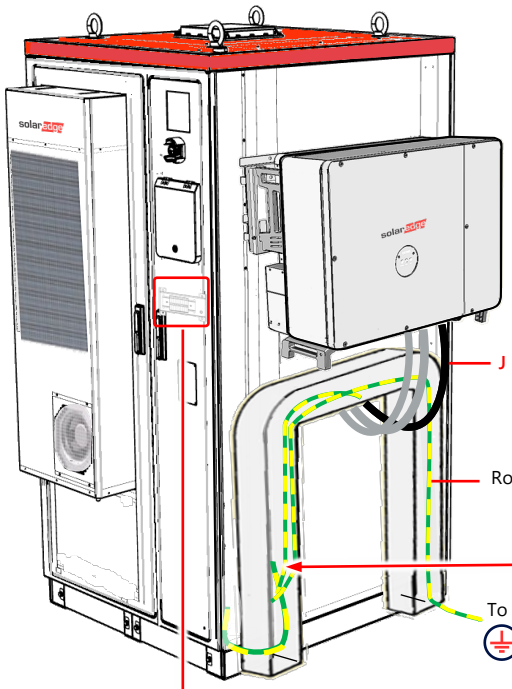




Mounting Battery Inverter onto the Battery Cabinet

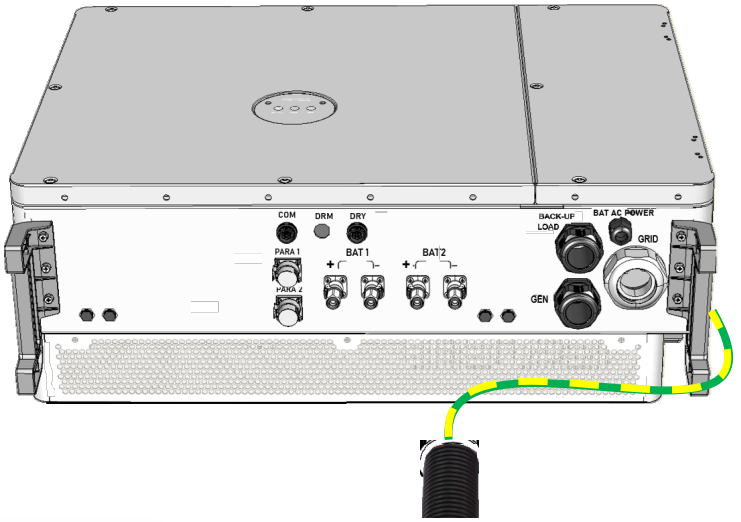


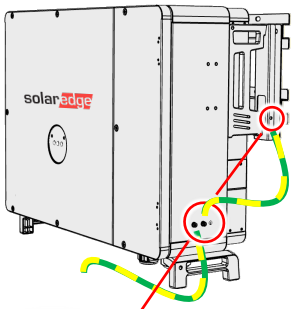
Battery Cabinet & Battery Inverter PE Wiring



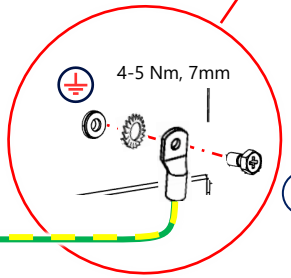
NOTE: Cut the corrugated tubes to the required length.

Battery Inverter

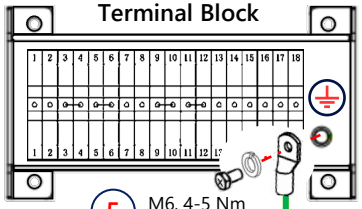




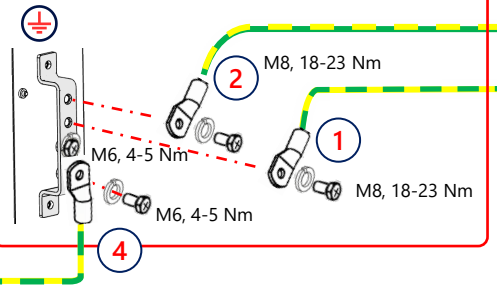
Get parts from: Battery Cabinet Package A, B, E, J



Terminal Block



Equipotential Busbar

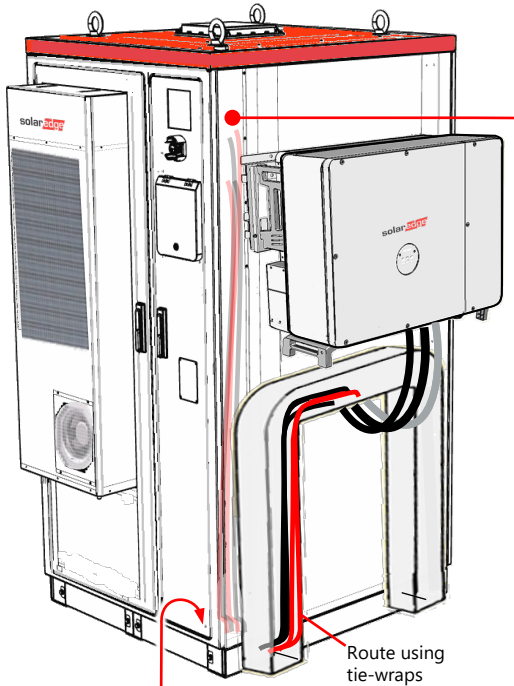


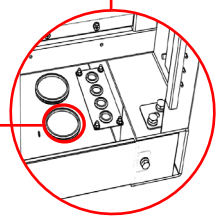
25 mm², M8 lug (Not supplied)

E

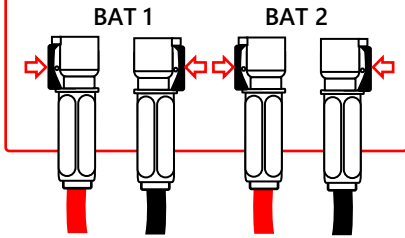
Site Ground

Battery Inverter to Battery Cabinet DC Wiring



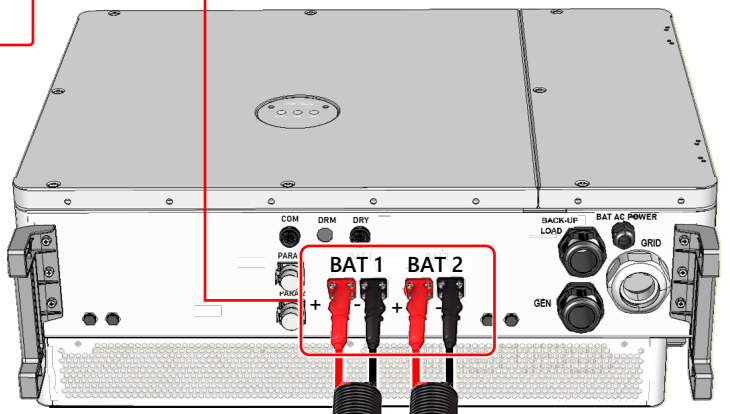


IMPORTANT! Make sure that the locking tabs are in the following positions.



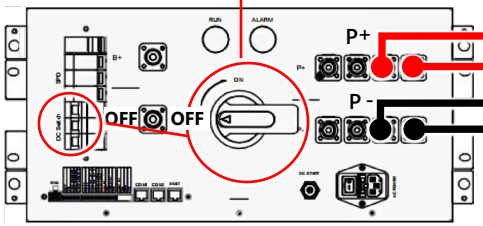
Get parts from:
Battery Cabinet Package
A, B, I

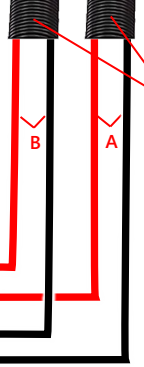
Battery Inverter



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

Cluster Management Unit

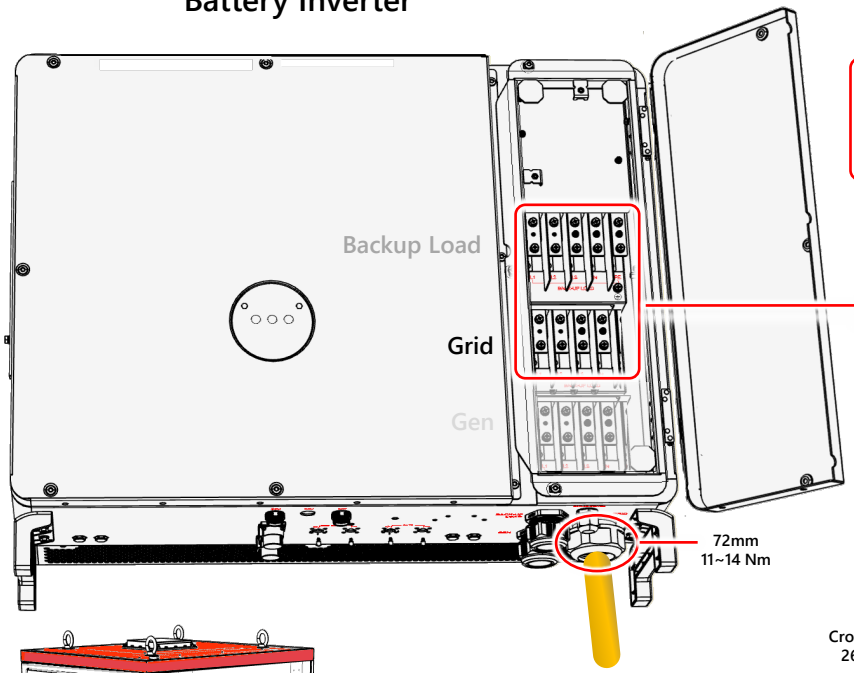


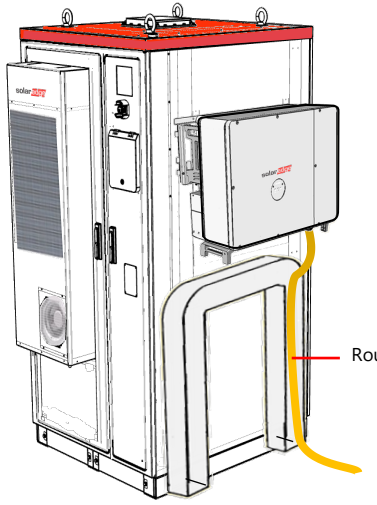


NOTE: Cut the corrugated tubes to the required length.

AC Wiring of Battery Inverter to Grid

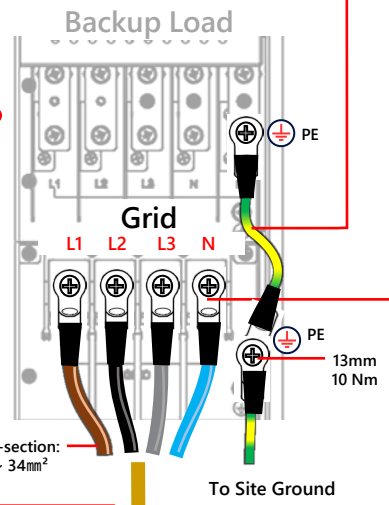
Battery Inverter





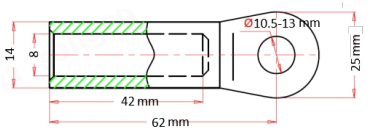
NOTE: Strip ≤240mm of the cable jacket

WARNING! To ensure proper and safe grounding, a Ground wire must be connected between the Backup Load and Grid PE terminals.



NOTE: Cable properties: (Not supplied)

- Multi-stranded class 5 or 6 flexible **copper** conductors
- 35mm² cross-section wires cable.
- Grid Cable maximum current is 160 A (per phase)
- Crimp M6 lugs provided. Lugs fit class 2 cables. For class 5 or 6, bring your lugs.
- To keep the gland sealed, use 5C or 4C cable type. (3ph+N+PE or 3ph+PE)



Neutral (N) wire is optional, 16 mm2, M6 lug (Not supplied)

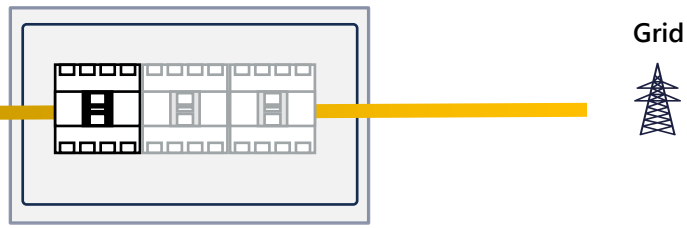
WARNING! Connect the ground wires in accordance with local regulations.

NOTES:

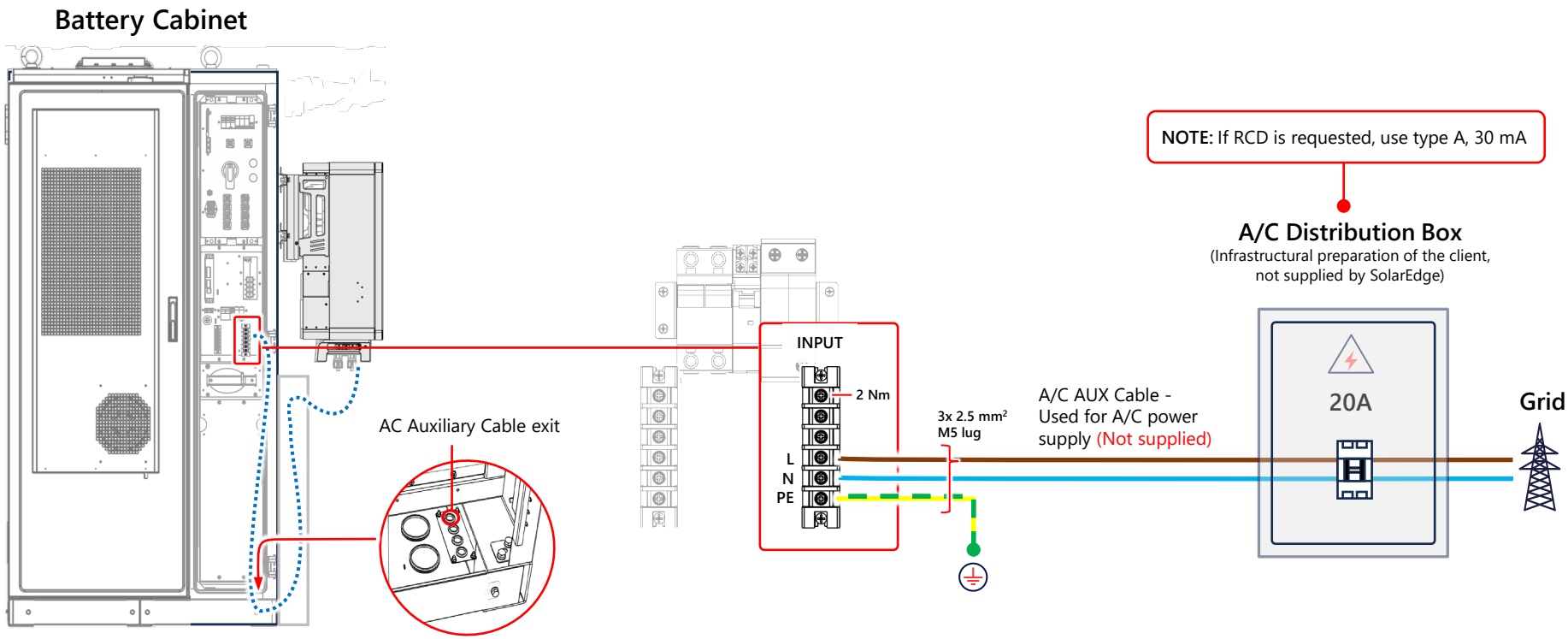
1. Recommended Grid circuit breaker parameters: 4P 200A/690VAC. If RCD is requested, use type A, 300 mA
2. Recommended Backup Load and Generator circuit breaker parameters: ≥ 125A/≥ 400Vac

AC Distribution Box

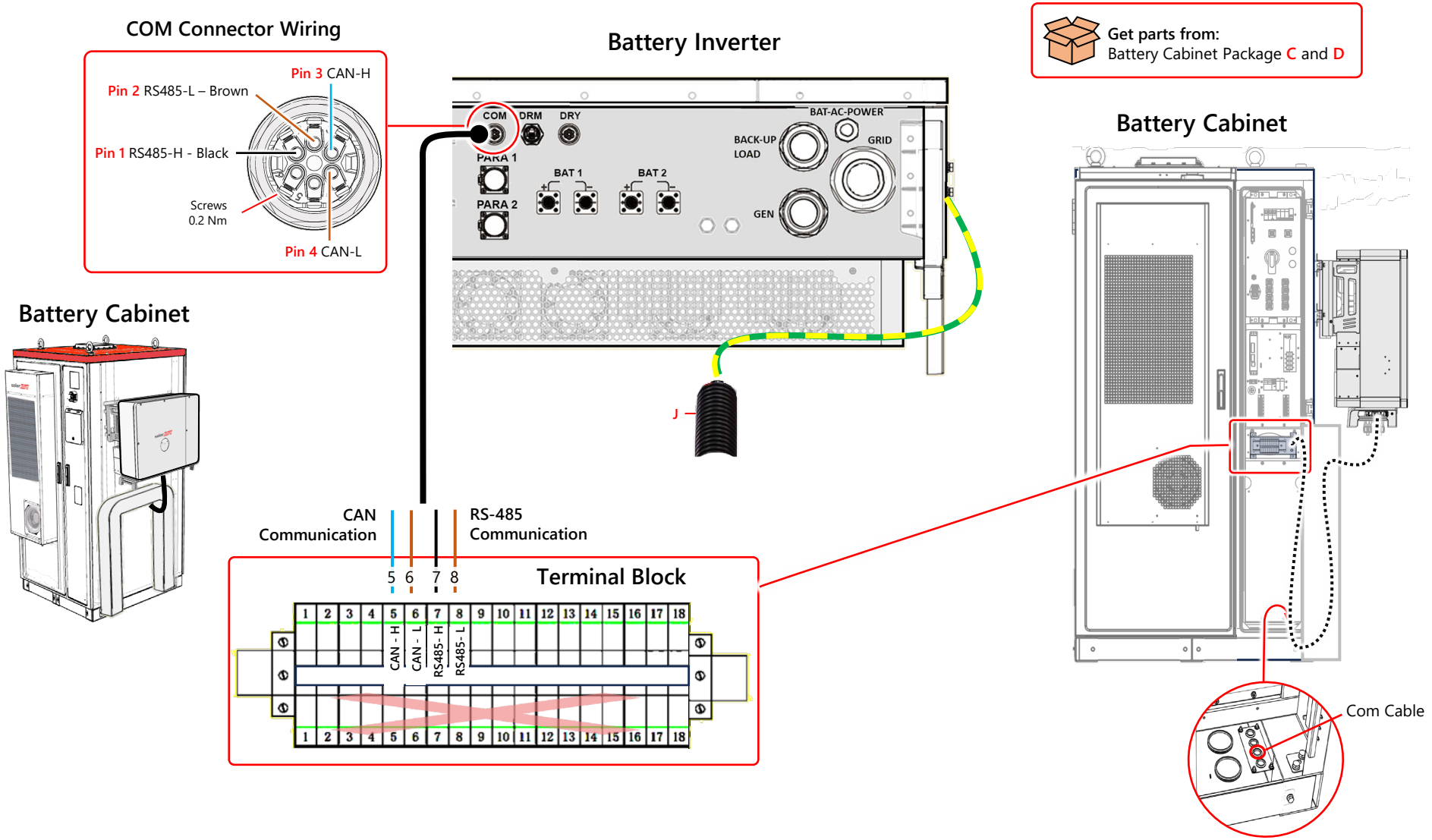
(Infrastructural preparation of the client, not supplied by SolarEdge)



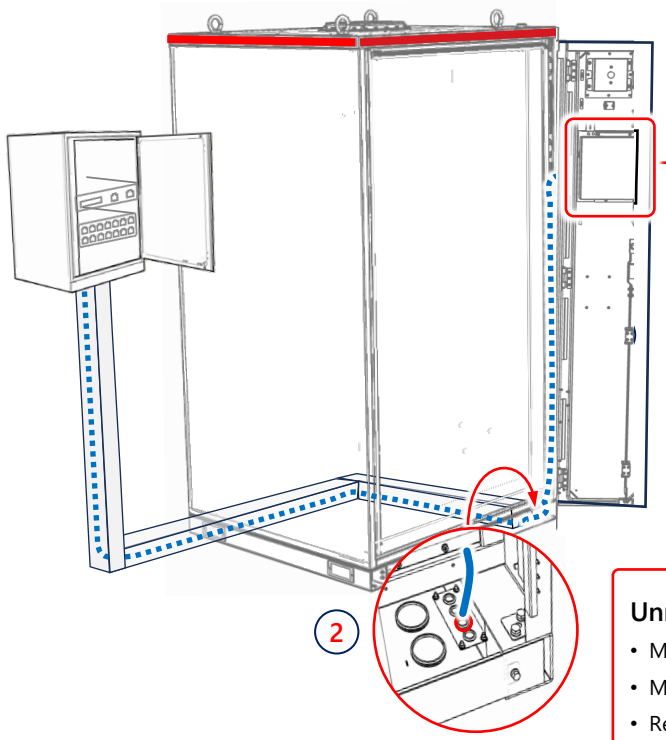
Wiring Air Conditioner to Battery Cabinet

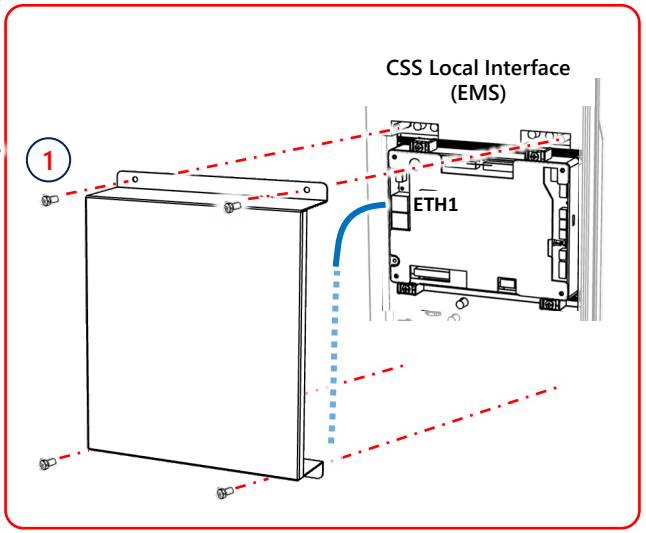


Wiring Communication between Battery Cabinet & Battery Inverter



Wiring Communication Between Battery Inverter(s) & SolarEdge ONE for C&I





Modbus TCP-LAN
communication cables
(Customer supplied)

Unmanaged Ethernet Switch (Customer supplied)

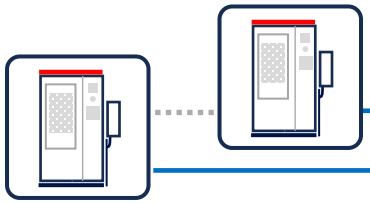
- Minimum100 Mbps (Recommended 1000 Mbps)
- Minimum 11 RJ45 ports (Recommended 16 ports)
- Recommended DIN rail mounting
- Recommended Industrial-grade switch, fanless design, with port link indications

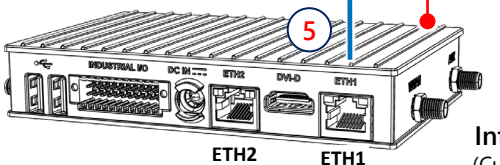
SolarEdge ONE Controller

The SolarEdge ONE Controller is purchased separately and connects the battery cabinet to the cloud via a customer-provided local gateway.

From EMS

Up to 10 CSS OD Cabinets
(The number of supported cabinets may depend on future product releases)



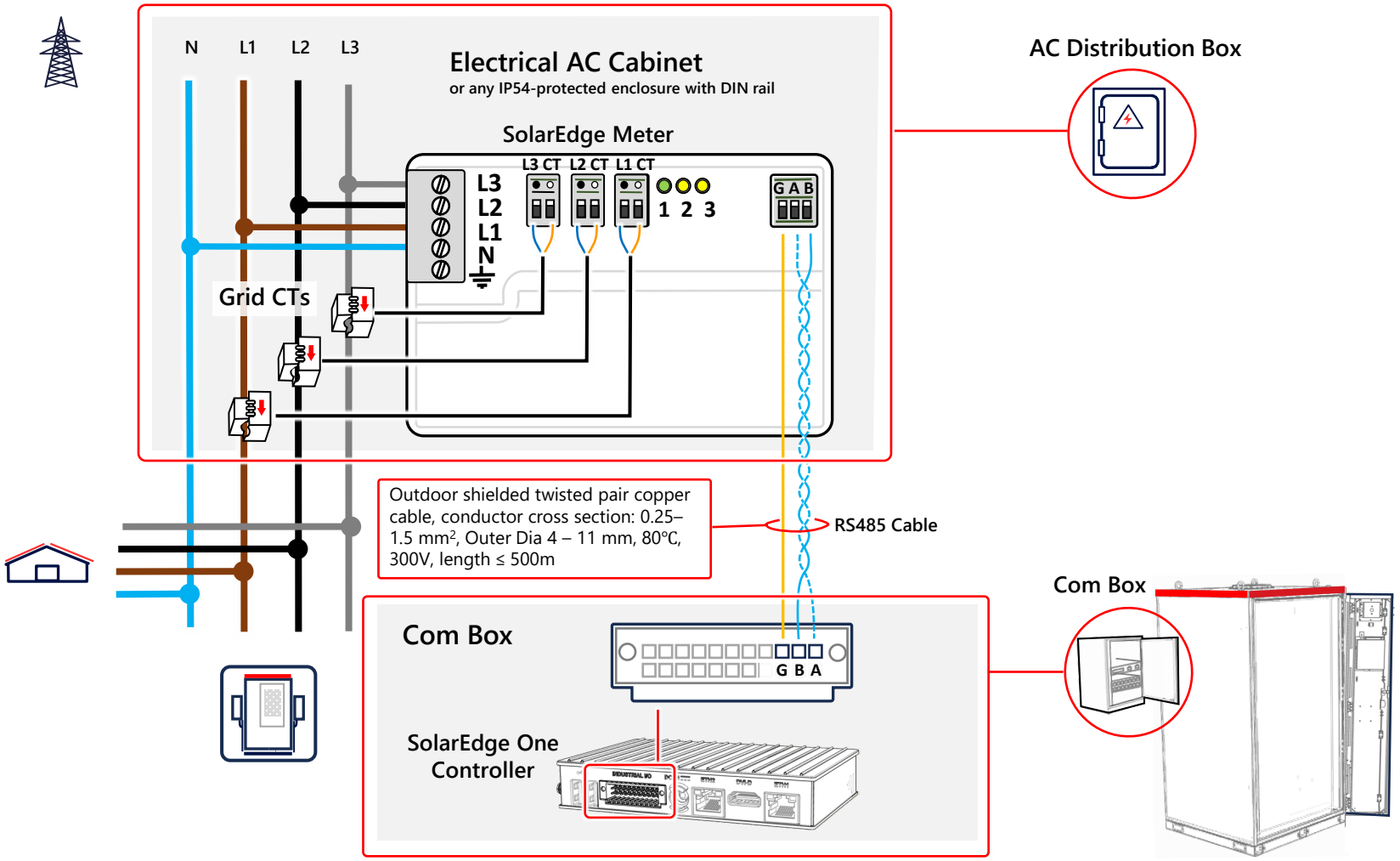


6
Internet Router
(Customer supplied)

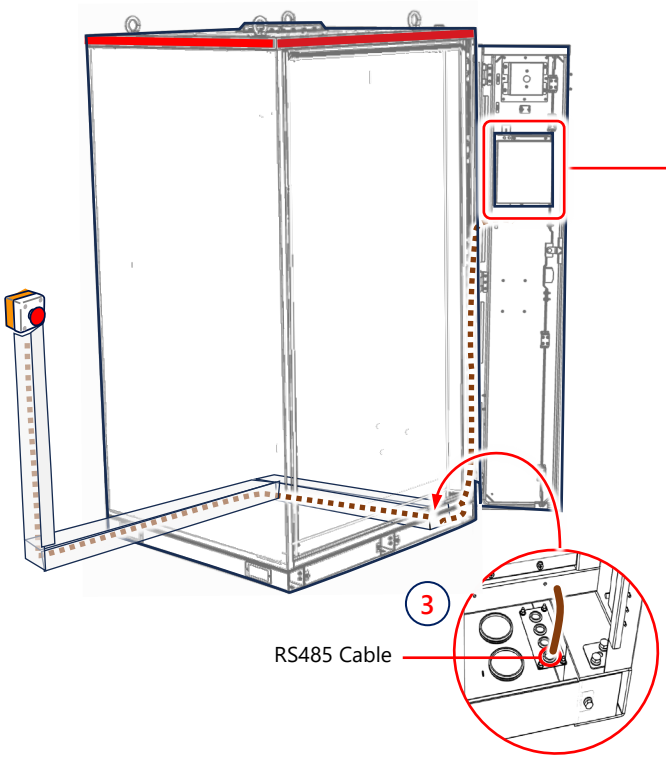
SolarEdge ONE for C&I

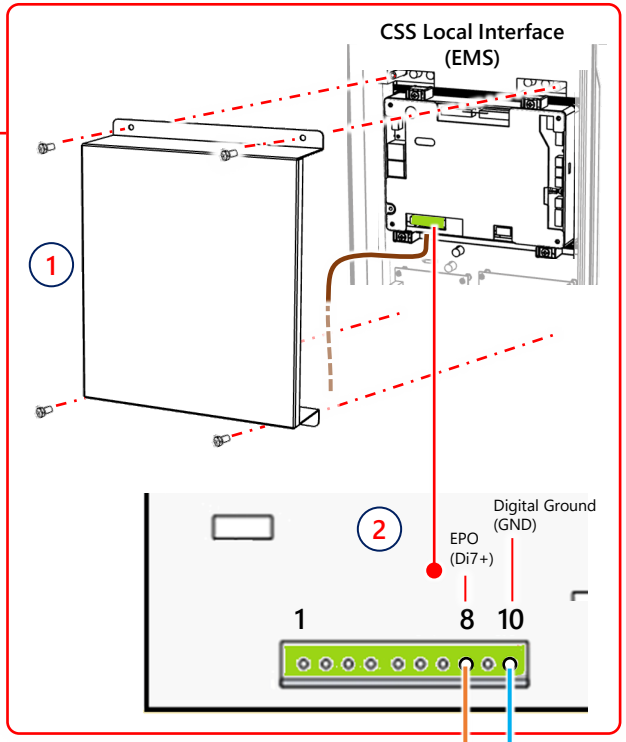
Logon to SolarEdge ONE for C&I portal and refer to User Guide to set, manage and monitor your site.

Connecting External Meter



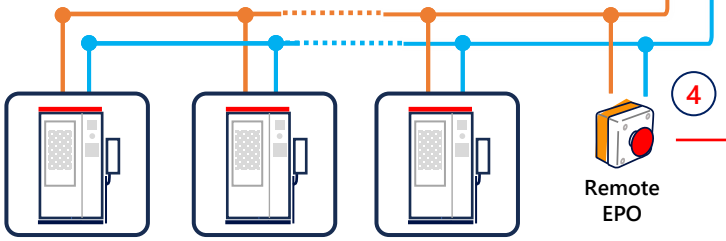
Wiring Remote EPO Push-button to Battery Cabinets & Battery Inverters (Optional)





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.

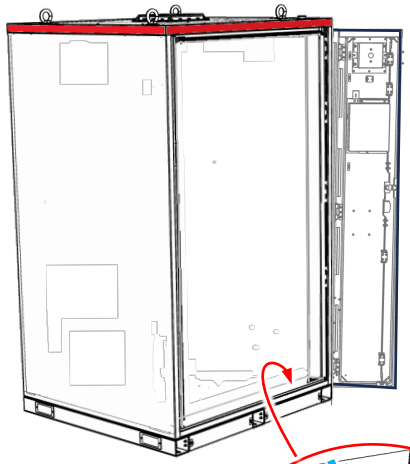


Remote EPO Requirements

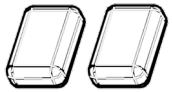
- Use only passive Normally Open (N.O), EPO push-button
- The EPO push-button of the Leader Inverter trips all Follower Battery Cabinet(s).
- Recovery duration is 1 second

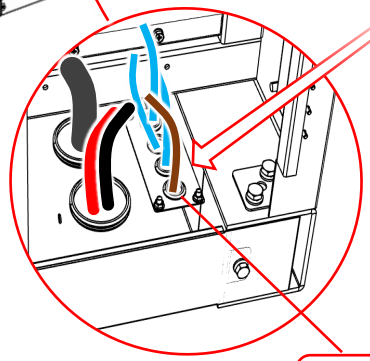
Sealing and Closing Wiring Duct Lid and Panels

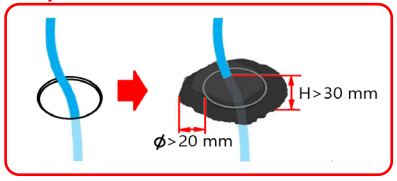
IMPORTANT! Use fire clay sealant to block the cable exit gaps and seal unused wiring holes.

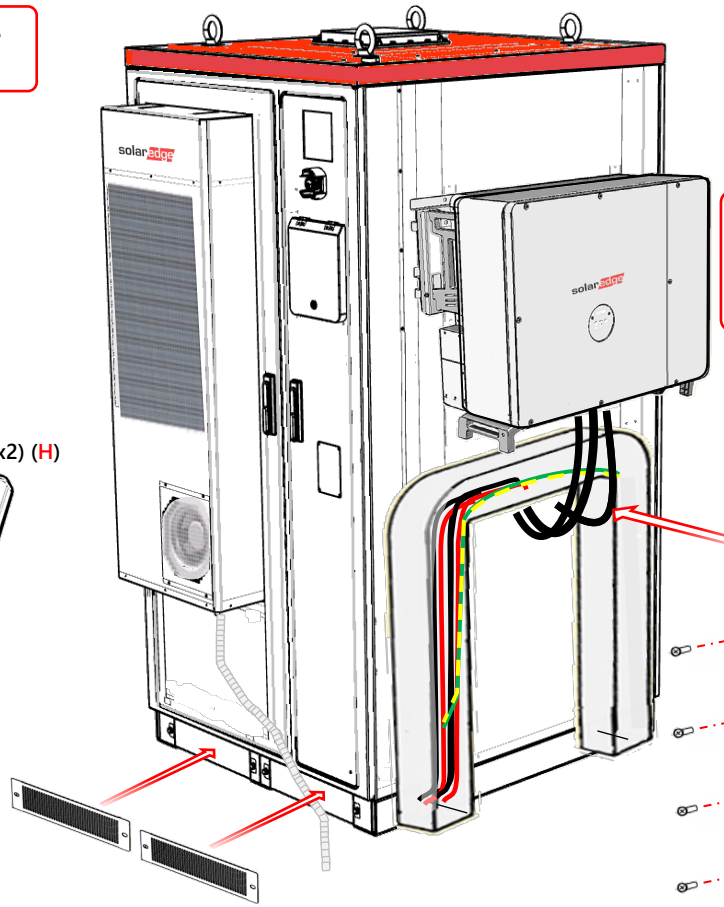


Fire Clay Sealant (x2) (H)

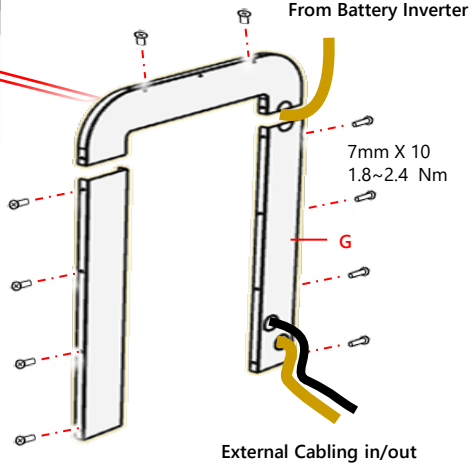








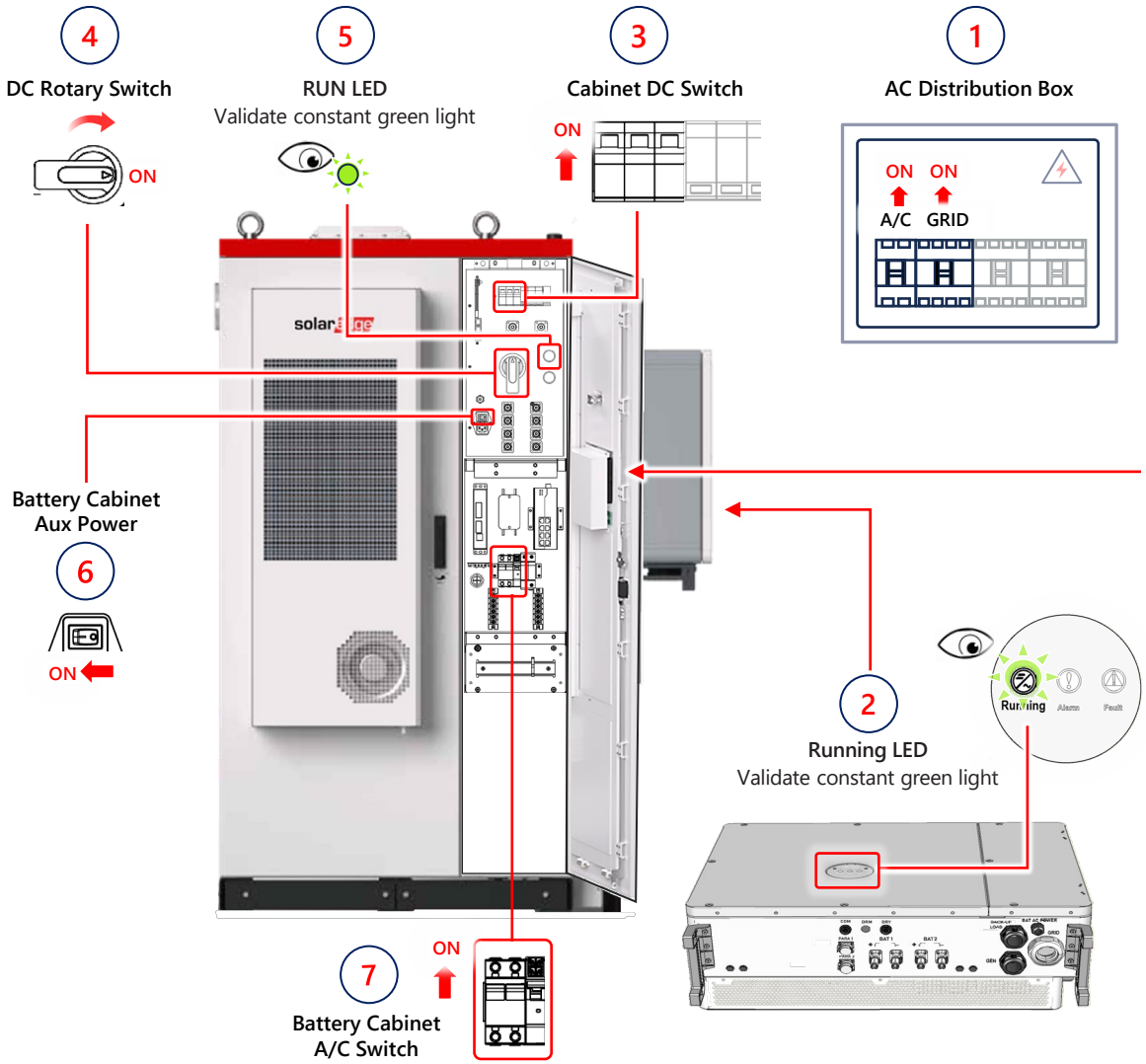
Get parts from: Battery Cabinet Package (H, G [Duct Cover])



Appendix A
Powering the CSS-OD

Power On Sequence

Follow the numbered steps to power-on the system

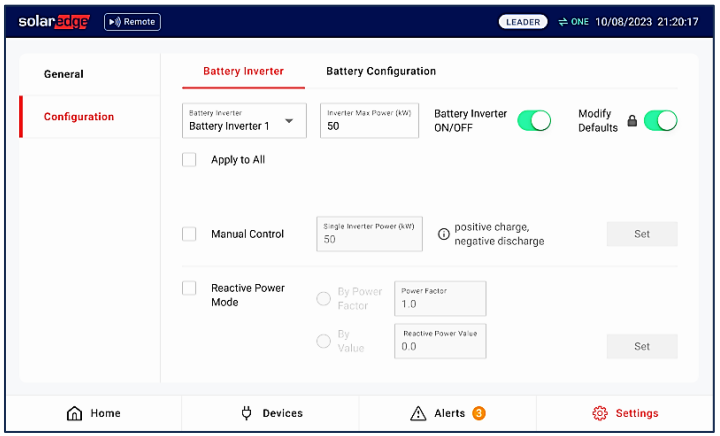


CAUTION! Before powering up the Battery Inverter, it is necessary to verify the connection of all cables and make sure they are correct and tight.

8

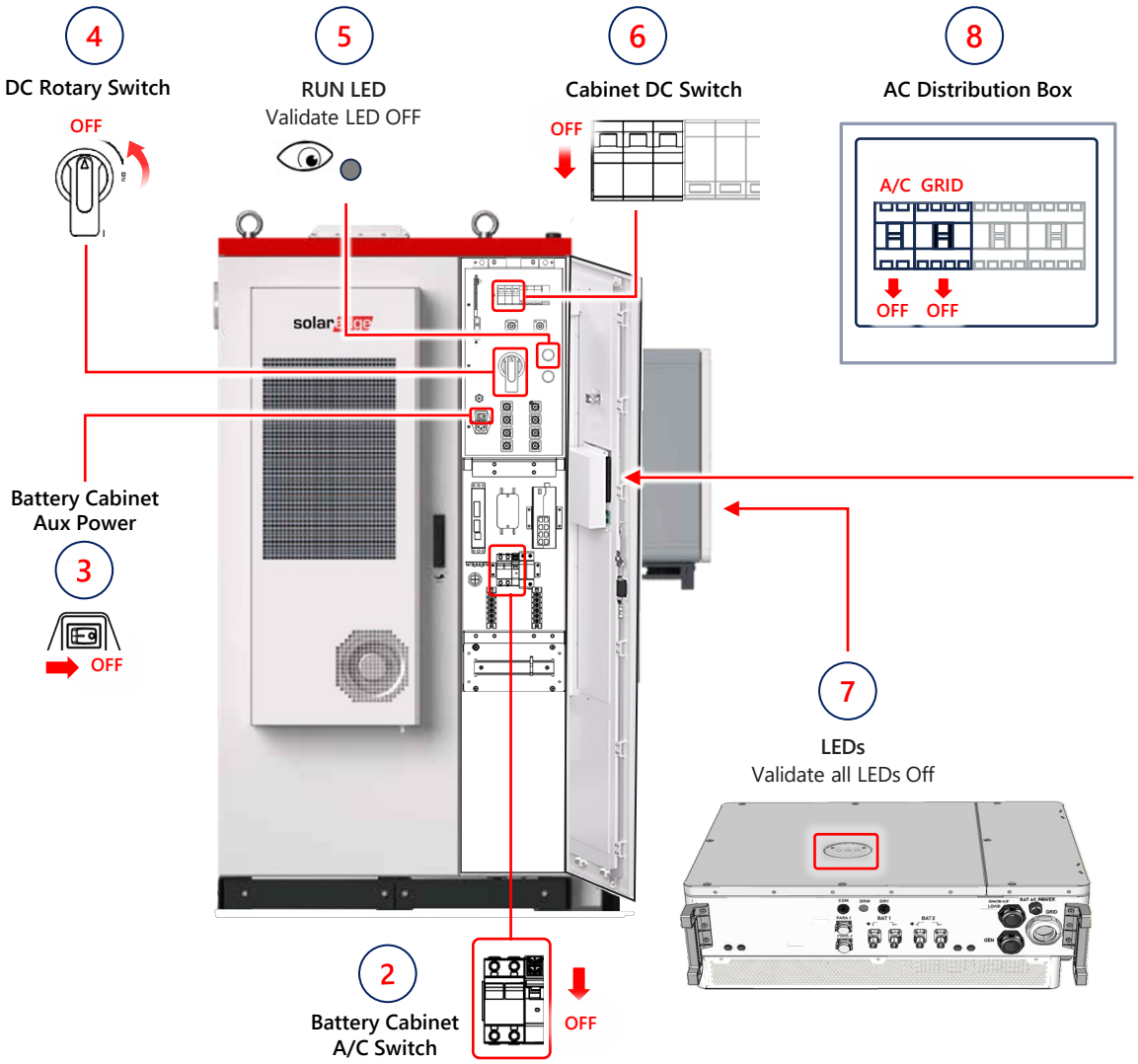
EMS Screen

1. Click : **Settings** → **Battery Inverter** → **Battery Inverter ON/OFF** → **ON**.
2. Enter password: 000000, issue Inverter power on command. The → **Battery Inverter ON/OFF** button changes from green to gray, and the Running LED light changes from steady red to green.
3. Click **Home** to check device status, active power, and DC voltage to confirm successful operation.
4. Click the **Device** tab to check the operating status and voltage of Inverter and battery cabinet to confirm successful operation.



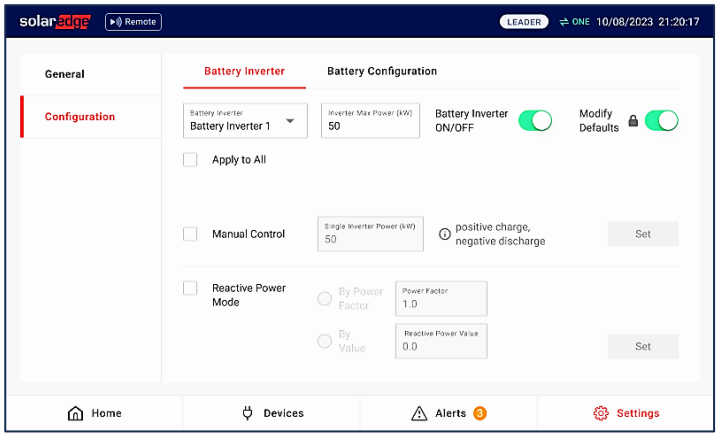
Power Off Sequence

Follow the numbered steps to power-off the system



1 EMS Display

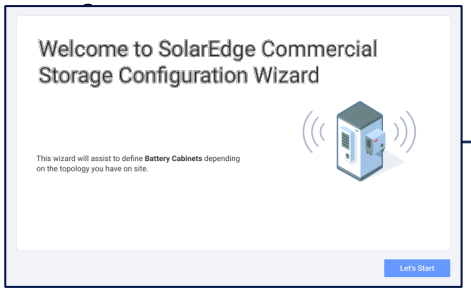
1. Click: **Settings → Battery Inverter → Battery Inverter ON/OFF → OFF**.
2. Enter password: 000000, issue Inverter shutdown command. The shutdown button changes from green to gray, and the Running LED changes from steady green to flashing red.



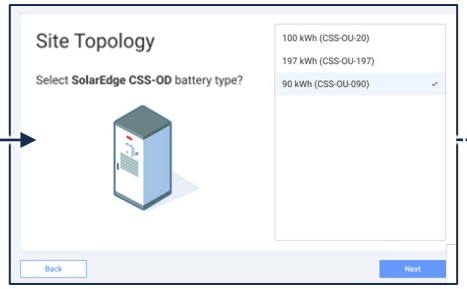
Appendix B
Commissioning

Commissioning

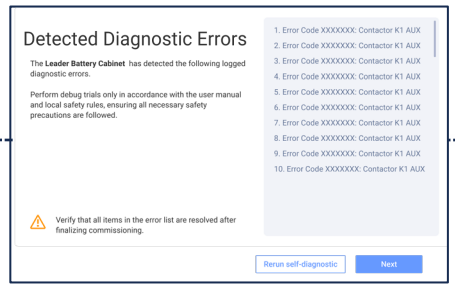
1. When the cabinet boots, it shows a Welcome screen - Tap **Let's**



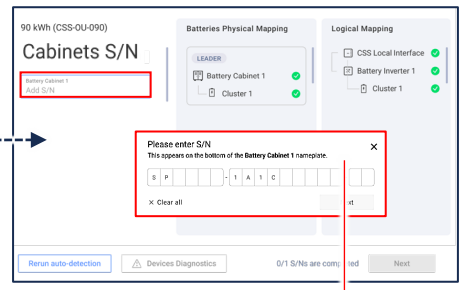
2. Select **90 kWh (CSS-OU-090)** and tap **Next**



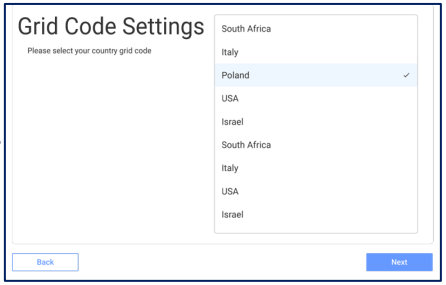
3. View detected Errors and resolve issues after commissioning. Tap **Next**



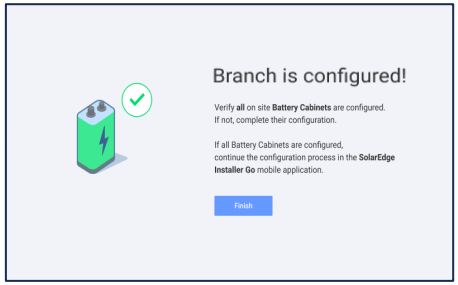
4. Detect or enter all **Battery Cabinet S/N** and tap **Next**



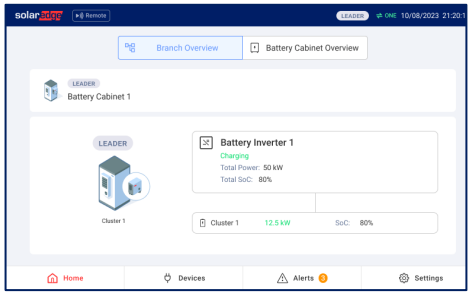
5. Select your country and tap **Next**



6. Tap **Next** to display the Home screen



7. Home Screen



1. Tap **Settings** for:
   - Turning the inverter power ON/OFF
   - Setting max power generation limit
   - Changing Grid code
   - Network Settings
   - Firmware version, update and reset
2. Tap **Alerts** for Error and fault messages
3. Tap **Devices** to view cabinet temperature

Appendix C
Troubleshooting and Maintenance

NOTE: For CSS-OD routine maintenance guide, refer to: https://knowledge-center.solaredge.com/sites/kc/files/se-css-od-90-routine-maintenance-guide.pdf

Fault Description	Possible Cause	Corrective Action
Grid Overvoltage	Grid voltage above permissible limit	• Check Grid Code settings • Check grid voltage with a multimeter. • Contact utility provider if voltage remains high.
Grid Undervoltage	Grid voltage below permissible limit	• Verify connection at AC terminals. • Check for utility fluctuations or loose wiring.
Grid Frequency Error	Frequency outside 50/60 Hz ±0.5 Hz	• Confirm local grid frequency stability. • Wait for automatic reconnection once frequency normalizes.
Insulation Resistance Fault	Low insulation resistance detected on DC side	• 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	• Inspect for damaged cables or moisture ingress. • Dry the system and re-test insulation.
Temperature Overheat	Inverter temperature exceeds safe limit	• 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	• Check communication wiring and connectors. • Verify that SolarEdge ONE Controller is powered. • Verify that your site router is powered and connected to the internet.

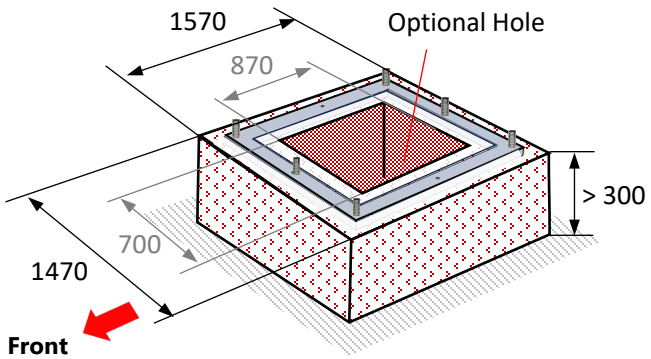
Appendix D
Construction Details

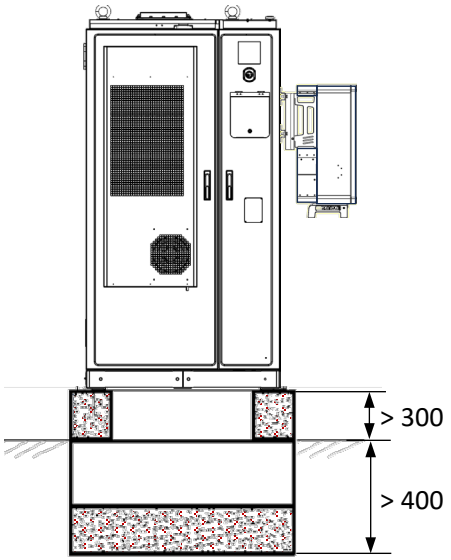
Battery Cabinet Concrete Platform Base Guidelines

IMPORTANT NOTES!

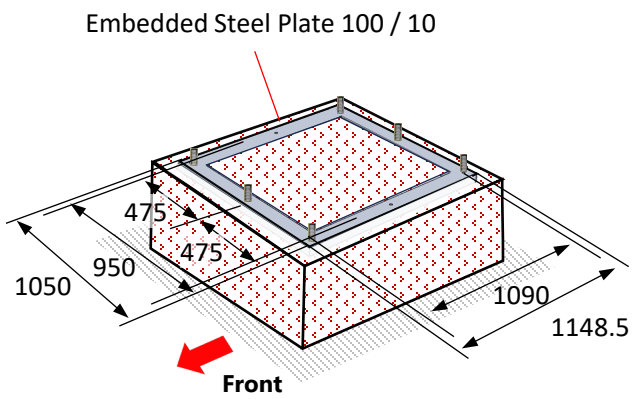
1. Battery Cabinet must be installed on a reinforced concrete platform base.
2. Dig a trench or reserve a cable entry hole by considering the electrical wiring of the equipment before construction of the foundation.
3. The foundation must be made of non-combustible materials.
4. The bearing capacity of the foundation shall be > 3 t.
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 a 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. The Concrete base surface smoothness shall be ≤ 3mm.
8. The upper surface tolerance of the foundation shall be ±5mm.
9. The concrete pad shall prevent rainwater accumulation on top of it. The foundation construction should meet the drainage requirements for the 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.

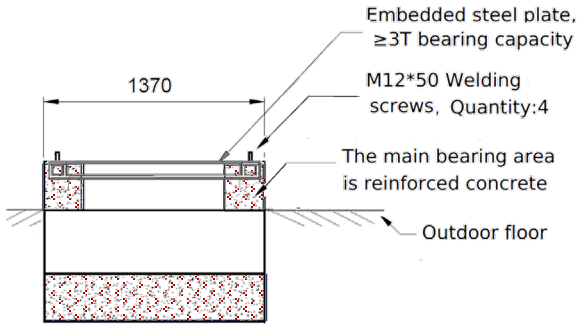
Concrete Platform Base





Embedded Steel Plate with Studs





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