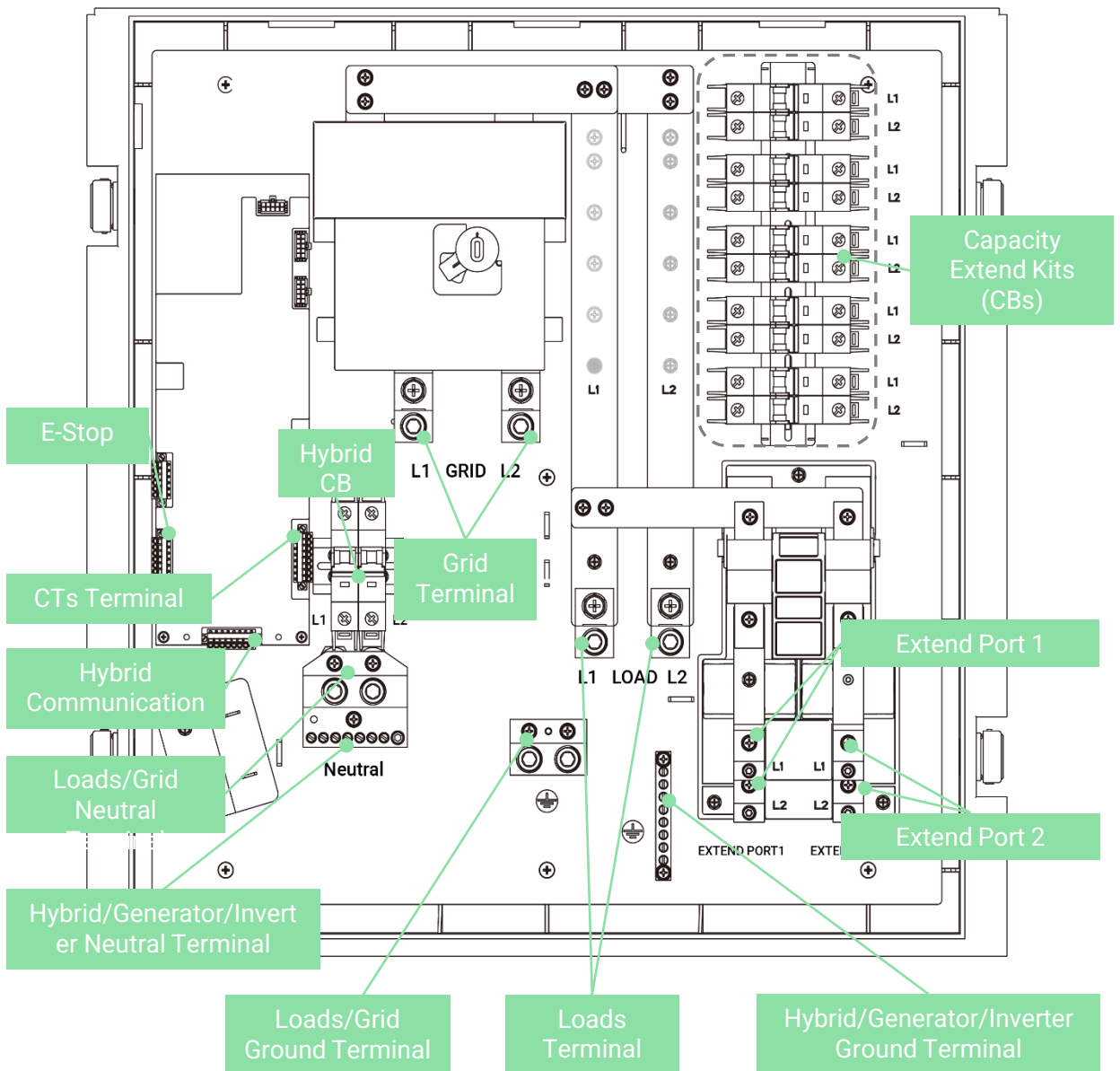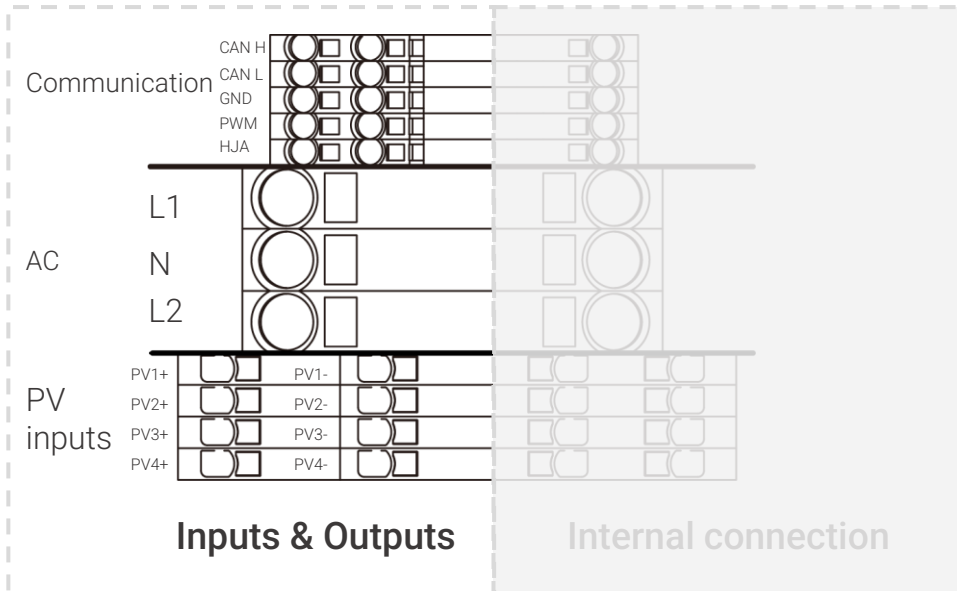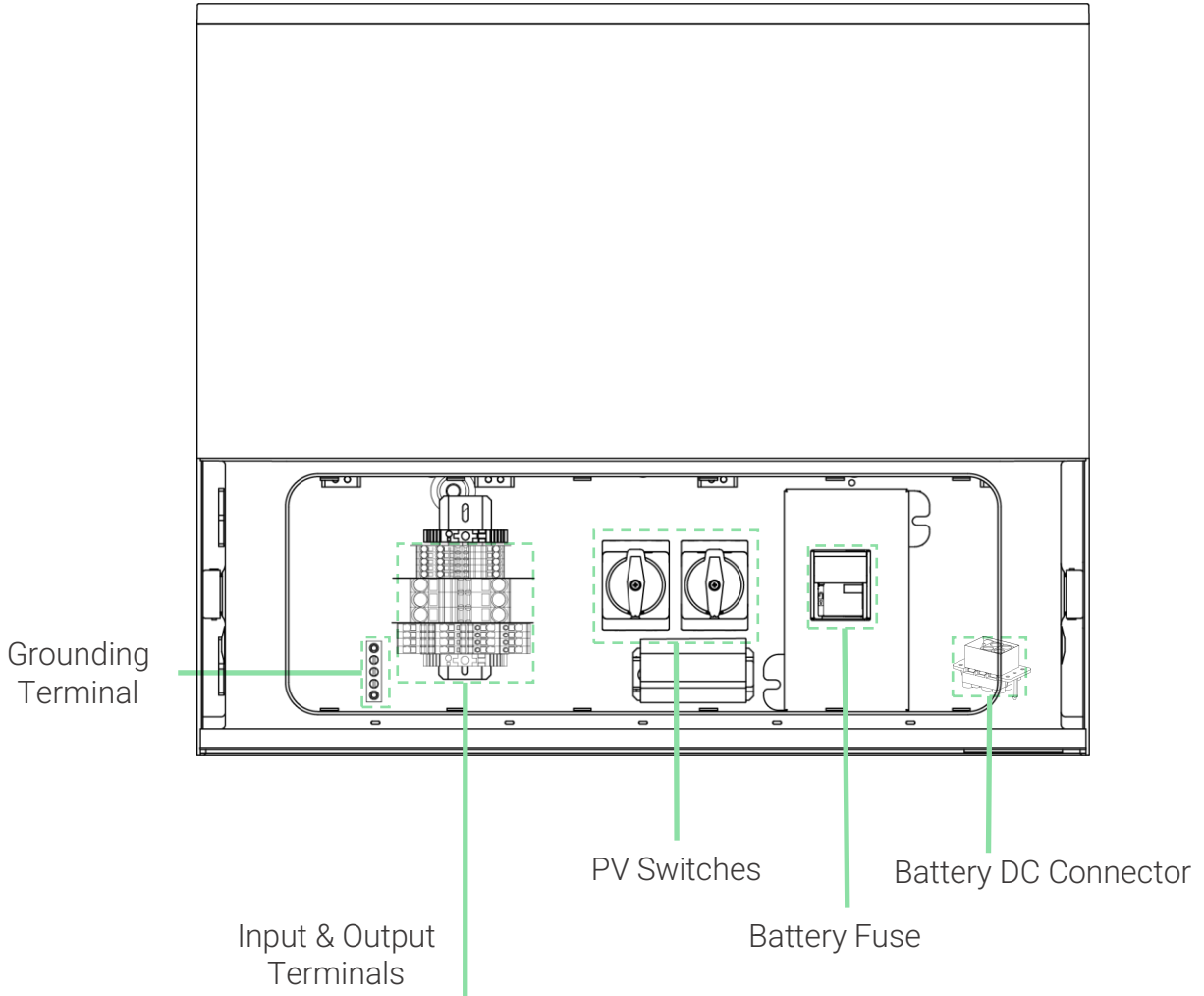# QUICK INSTALLATION GUIDE

This Quick Installation Guide provides a set of instructions on the standard product installation process. Please refer to the Installation Manual for more details or contact the EP service team in case you have any questions.
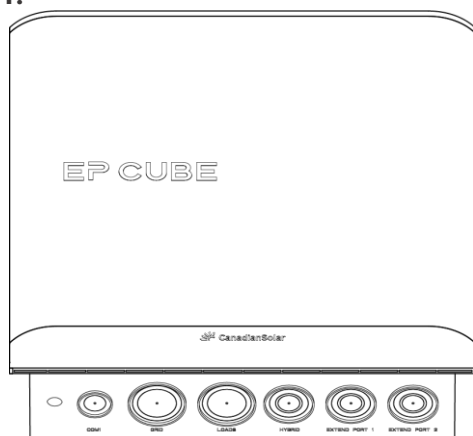
Smart Gateway Overview

Labels on diagram:
- Capacity Extend Kits (CBs)
- E-Stop
- Hybrid CB
- Grid Terminal
- CTs Terminal
- Hybrid Communication
- Loads/Grid Neutral
- Extend Port 1
- Extend Port 2
- Hybrid/Generator/Inverter Neutral Terminal
- Loads/Grid Ground Terminal
- Loads Terminal
- Hybrid/Generator/Inverter Ground Terminal
- L1 GRID L2
- L1 LOAD L2
- Neutral
- EXTEND PORT1

Hybrid Inverter Overview

Grounding Terminal

Input & Output Terminals

PV Switches

Battery Fuse

Battery DC Connector

Communication	CAN H		
	CAN L		
	GND		
	PWM		
	HJA		
AC	L1		
	N		
	L2		
PV inputs	PV1+	PV1-	
	PV2+	PV2-	
	PV3+	PV3-	
	PV4+	PV4-	

Inputs & Outputs   Internal connection

Unpacking

In the Smart Gateway Box

1.

2.

3.

4.

5.

6.

1. Smart Gateway

2. Smart Gateway Bracket A2_1pcs
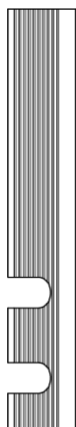
3. Smart Gateway Bracket A_M6_2pcs

4. CTs_2pcs

5. User Manual_1pcs

6. Warranty Letter_1pcs
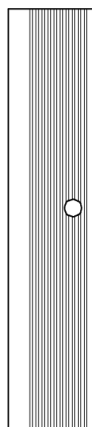
In the Hybrid Inverter Box

1.
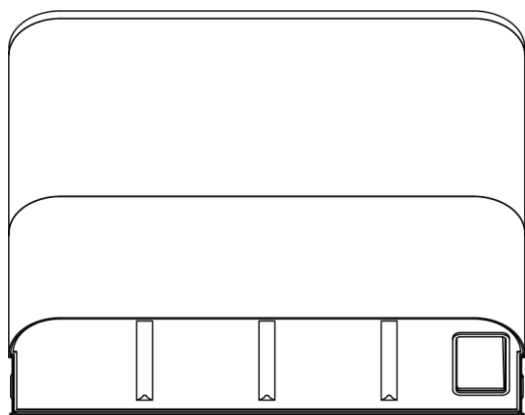
2.

3.

4.
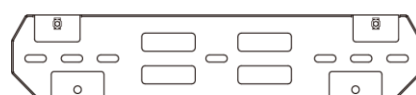
5.

6.

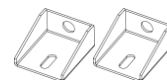**7.**

8.

9.

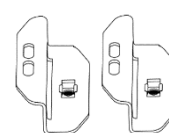**10.**

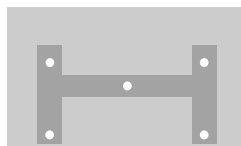**11.**

12.

1. Hybrid Inverter

2. Inverter Side Cover A_1pcs

3. Inverter Side Cover B_1pcs

4. Hybrid Bracket C_1pcs

5. Inverter Side Bracket D_2pcs

6. Inverter Bracket B1_2pcs

7. Inverter Bracket B2_2pcs
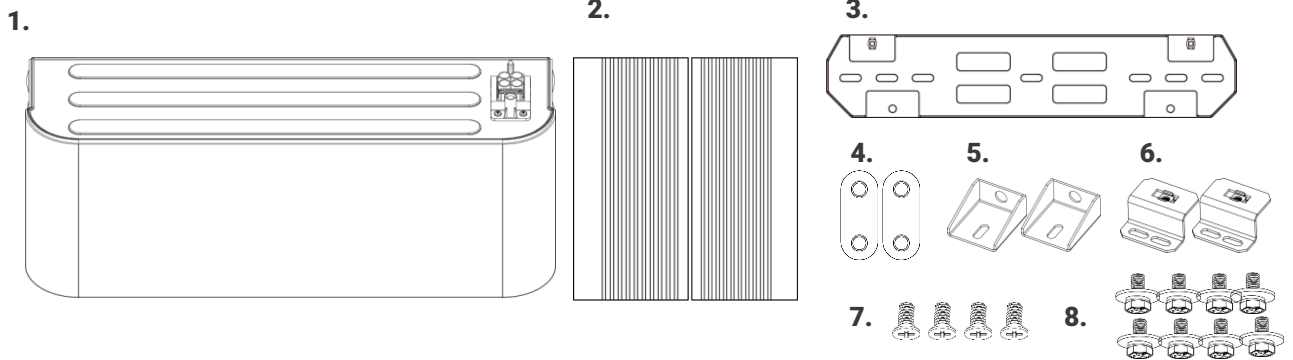
8. Communication Cable_1pcs

9. Resistor_1pcs

10. Hybrid Drill template_1pcs

11. Inverter Side Bracket D_M5_4pcs

12. Inverter Bracket B _M6_8pcs

In the Battery Modules Box

1.

2.

3.

4.

5.

6.

7.

8.

1. Battery module

4. Bracket Side Bracket F_2pcs

7. Battery Side Bracket F_M5_4pcs

2. Battery Side Cover B_2pcs

5. Battery Bracket B1_2pcs

8. Battery Bracket B_M6_8pcs

3. Hybrid Bracket C_1pcs

6. Battery Bracket B2_2pcs

In the Base Modules Box

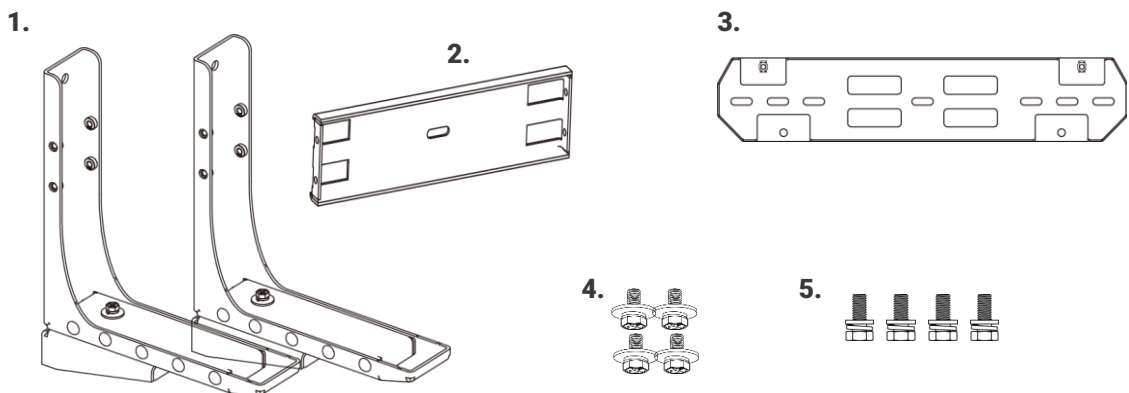**1.**

2.

3.

4.

1. Base

4. Hybrid Base Bracket G_ M6_4pcs
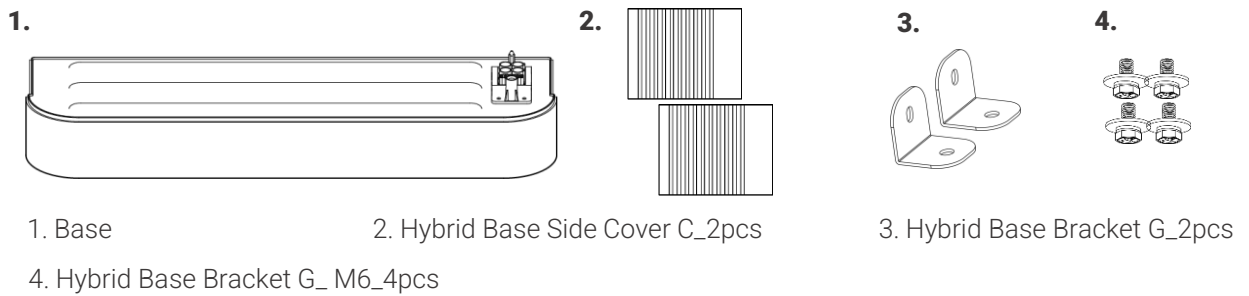
2. Hybrid Base Side Cover C_2pcs

3. Hybrid Base Bracket G_2pcs

In the Optional Brackets Box

1.

2.

3.

4.

5.

1. Wall Bracket E1_2pcs

4. Wall Bracket E_M6_4pcs

2. Wall Bracket E2_1pcs

5. Wall Bracket E_M8_4pcs

3. Hybrid Bracket C_1pcs

Tools

Required Tools

Electric Drill	25/64" 5/16"	1-1/8" to 2-1/4" Hole Saw Set	Hammer
Sscrewdriver Set	1/8" 5/32" 5/32" 5/16"	Marking Pen	Wire Stripper 26 AWG to 0 AWG
Level Tool	Tape Measure	Socket Set	Multi-meter

Install Smart Gateway

1 Choose an installation position for Smart Gateway and Install Bracket A2 on the wall. Place bracket on the wall to mark drill positions.
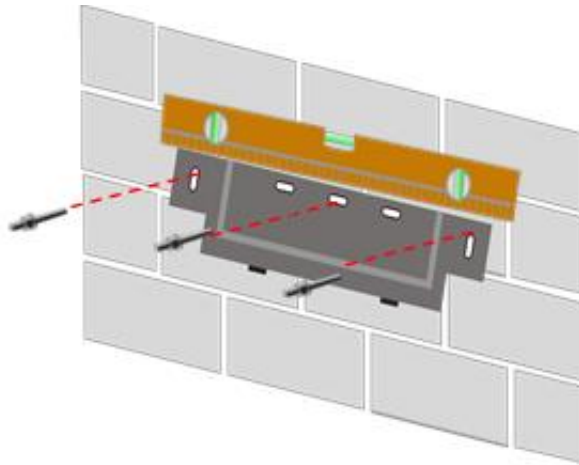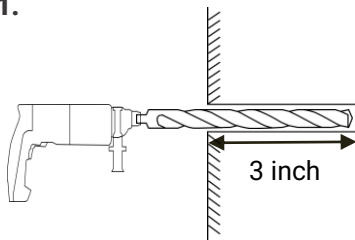
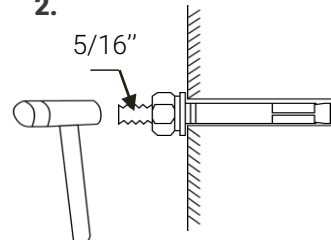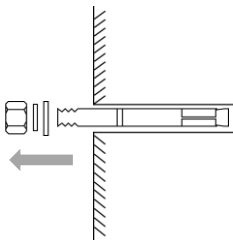**1.**

3 inch

Drilled into a Concrete/Masonry wall up to 3-4 inch.

2.

5/16"

Use 6pcs 5/16" expansion bolts to fix the bracket to the wall

3.

Wall Anchors/bolts/fastener are to be supplied by the installer, and observe the regional building code.

4.
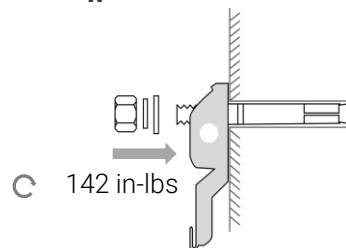
142 in-lbs

Tighten the screws to torque of 142in-lbs. See Mounting Details in the *Installation Manual* for additional details.

2   Hang SG Bracket A1 on the SG Bracket A2 on the wall

3   Check: if the brackets are properly installed?

Left view   Right view ✓

Left view   Right view ✗

Left view   Right view ✗

Left view   Right view ✗

Left view   Right view ✗

INSTALLATION

4 Fasten the brackets together on both sides with screws.

Left

Right

Top view

M6   142 in-lbs

Drill Template

Hybrid

20.00",508mm

16.00",406mm

12.00",305mm

Φ3/8", 10mm

6 Battery - Hybrid

73.85",1876mm

5 Battery - Hybrid

4 Battery - Hybrid

6 Battery

3 Battery - Hybrid

5 Battery

17.87",454mm

4 Battery

47.99",1219mm

3 Battery

8.46",215mm

2 Battery

8.46",215mm

1 Battery

10.24", 260mm

Ground reference line
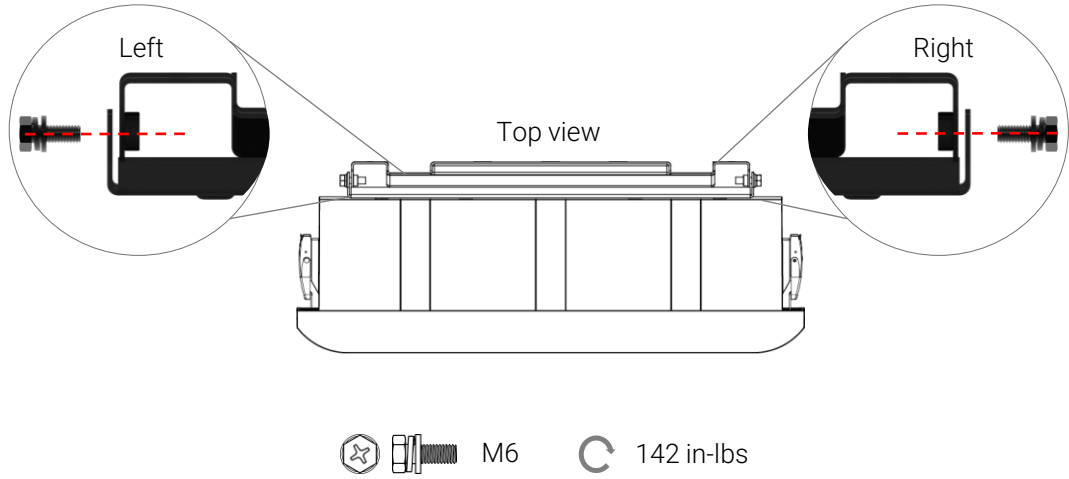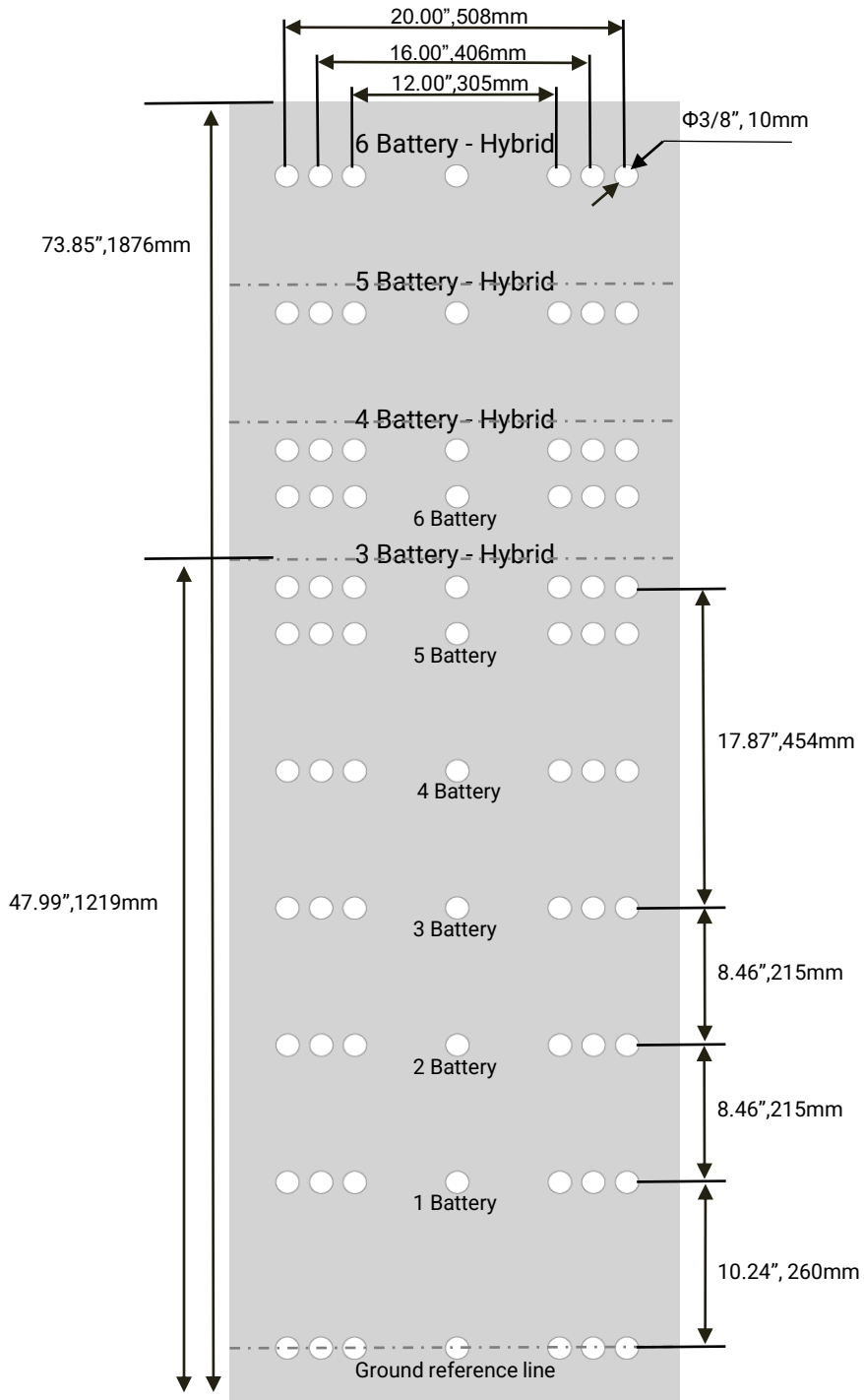
Install Hybrid

Wall Mounting (Extra Bracket C required (provided in the optional brackets box))

Tear down the spare piece of drill template
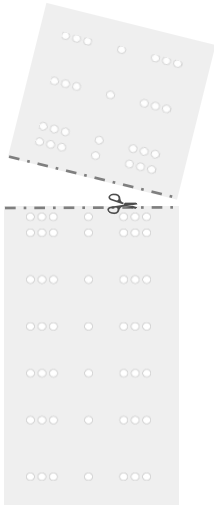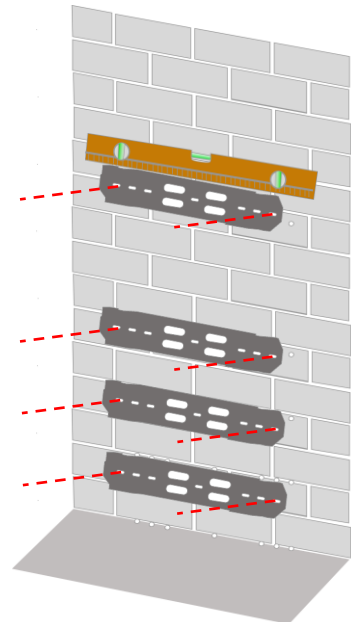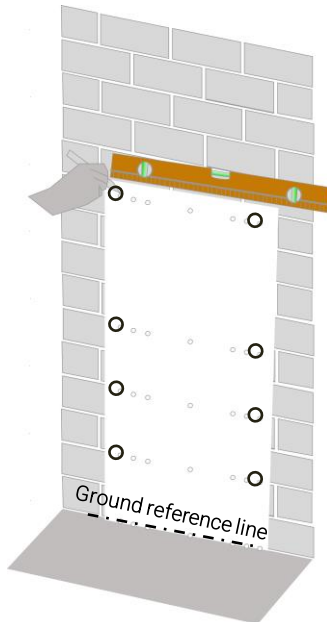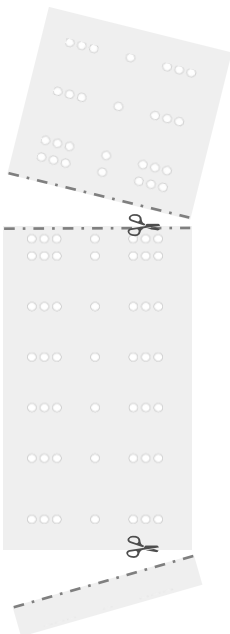
Floor Mounting

Ground reference line
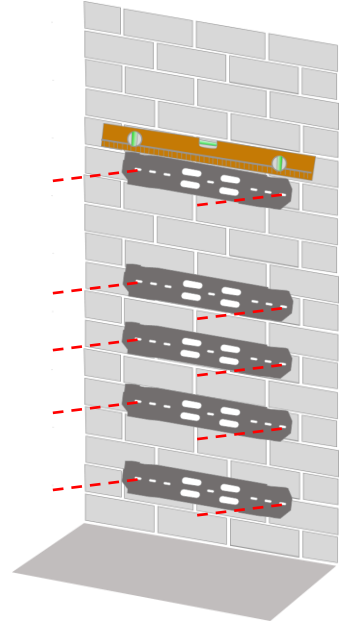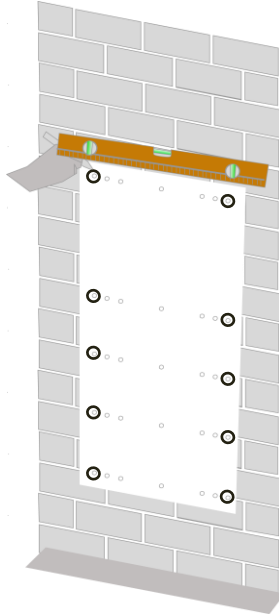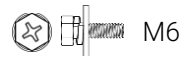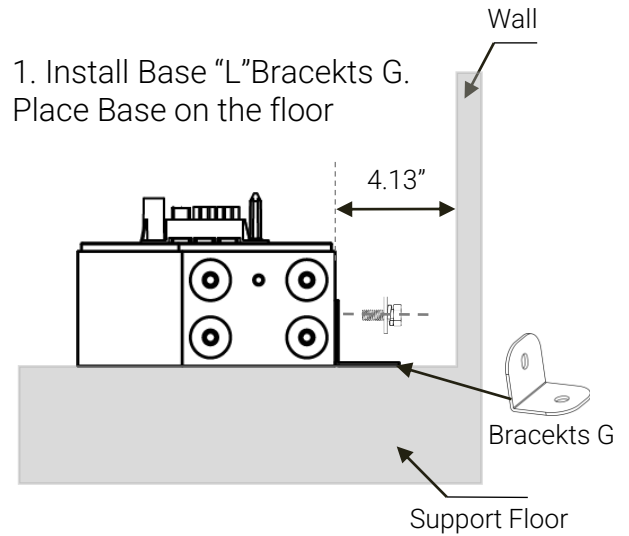
Install Base (for floor mounting)

Place the Base on a level flat concrete floor. Keep a minimum distance of 105mm between the Base and the adjacent wall.   **(Bolts not included in package)**

Wall

1. Install Base "L"Bracekts G.
Place Base on the floor

4.13"

Bracekts G
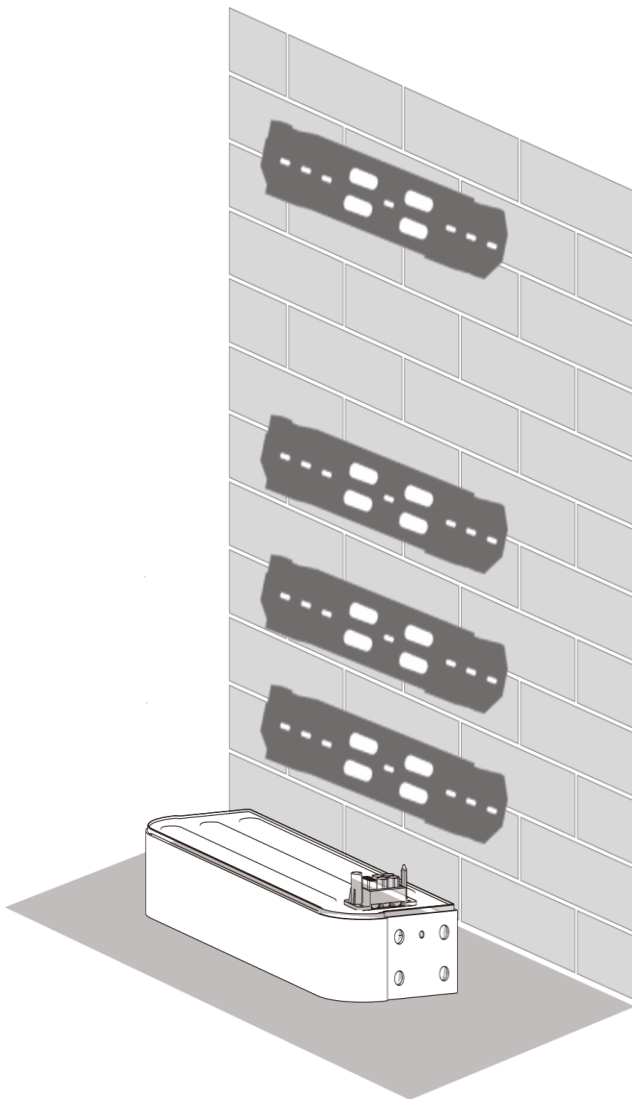
Support Floor

M6   62 in-lbs

2. Lock Base on the floor

5/16"

80mm
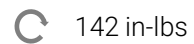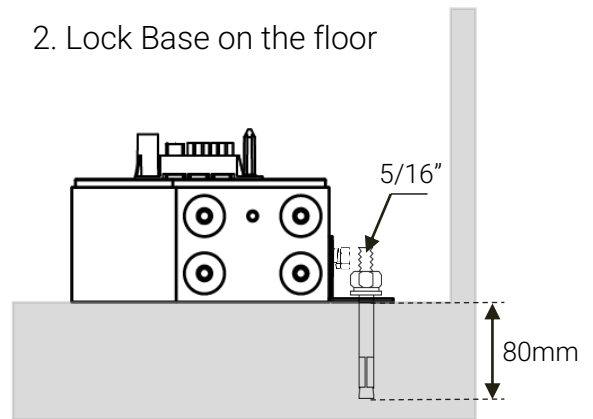
142 in-lbs

Install Base (for wall mounting)

2 Assemble support bracket E
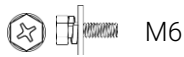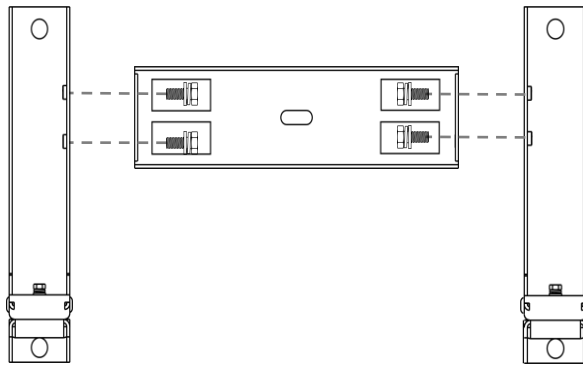
⊗ ▯▭ M6   ↻ 62 in-lbs

Attach Bracket E1 to Bracket E2 from the left and right sides with the bolts (M6* 0.63″).
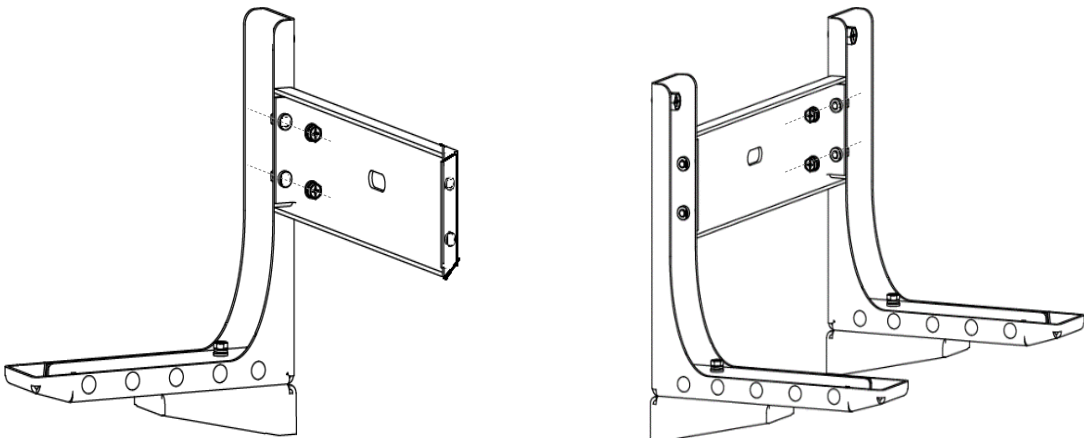
Install Base (for wall mounting)

3 Fasten both brackets together (support bracket E to mounting bracket C)

⊗ ⊞ ▭ M8   ↻ 142 in-lbs
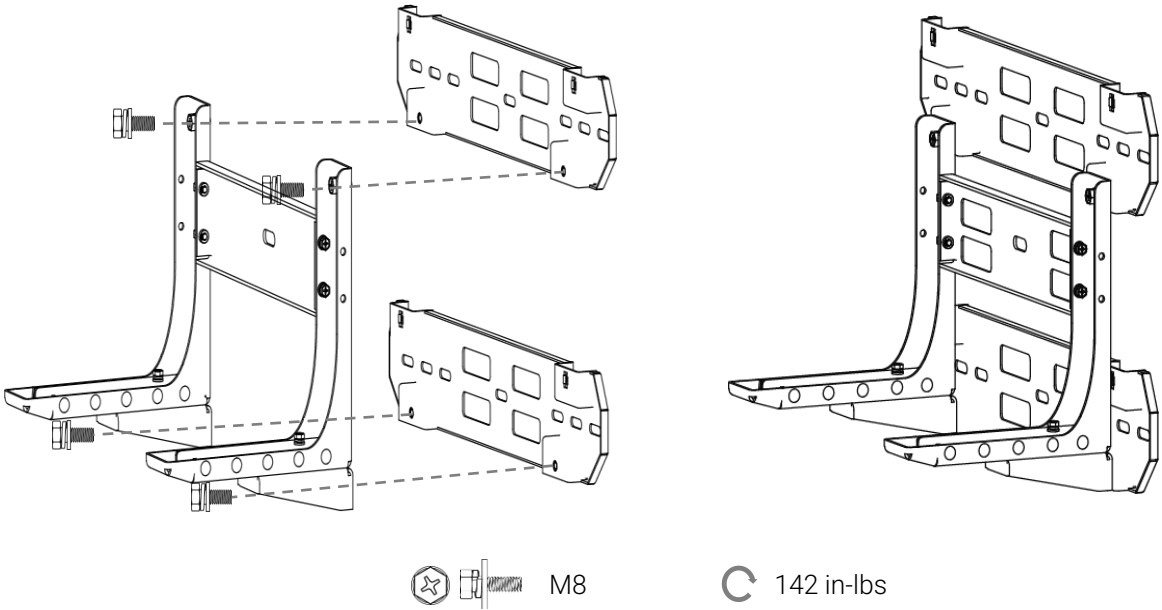
4 Align the front edge of Base with the edge of bracket E. Fasten Base on support bracket E through bracket G.

⊗ ⊞ ▭ M6   ↻ 62 in-lbs
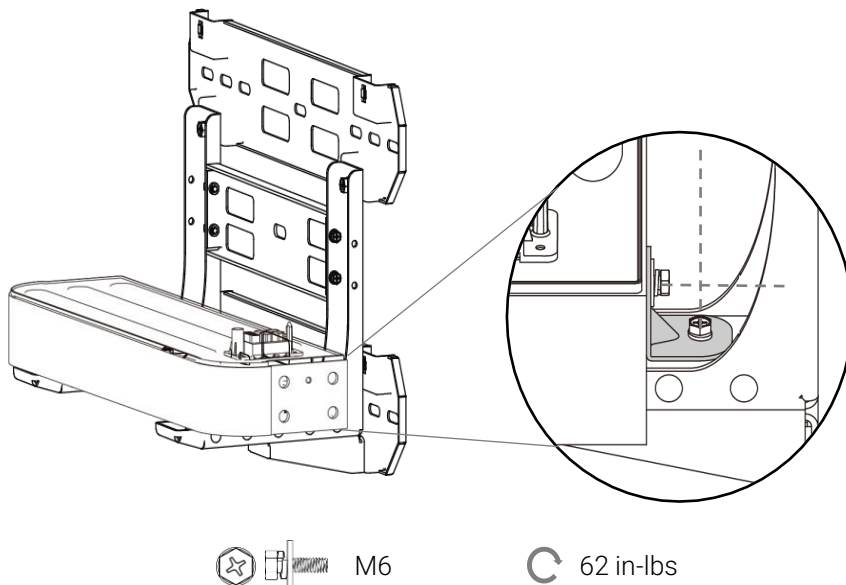
Install Battery Modules

1 Align Battery Module with Base.

Note: Ensure that the DC connectors are also aligned.
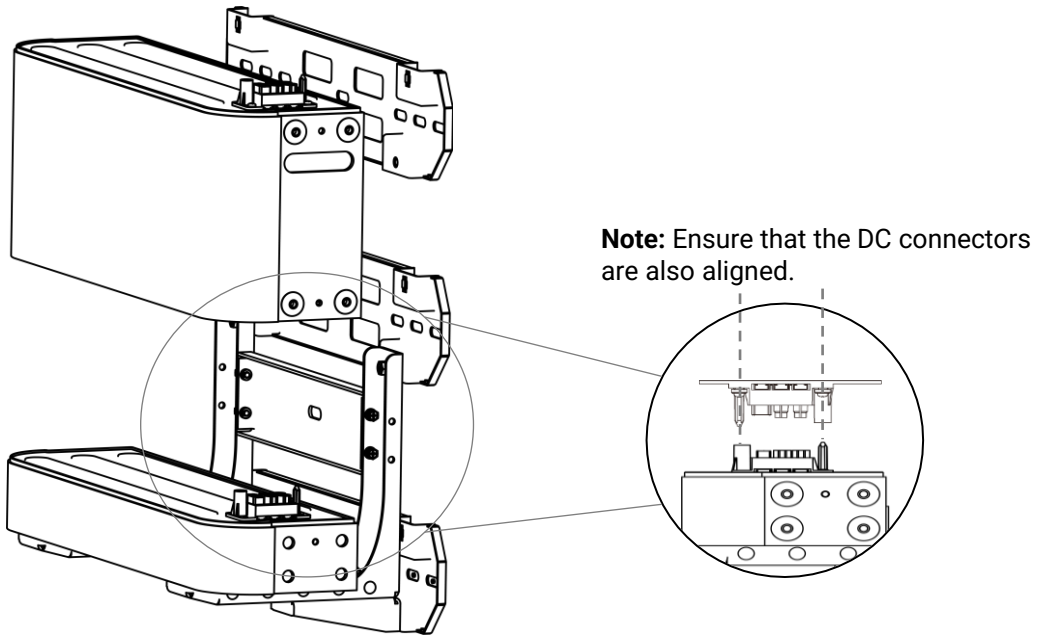
2 Place Battery Module on Base
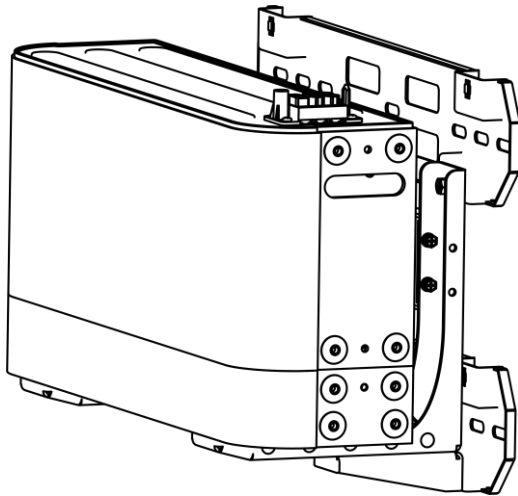
3 Install Bracket F on both sides to fasten Battery Module and Base.

⊗ 🔩 M5   ↻ 62 in-lbs
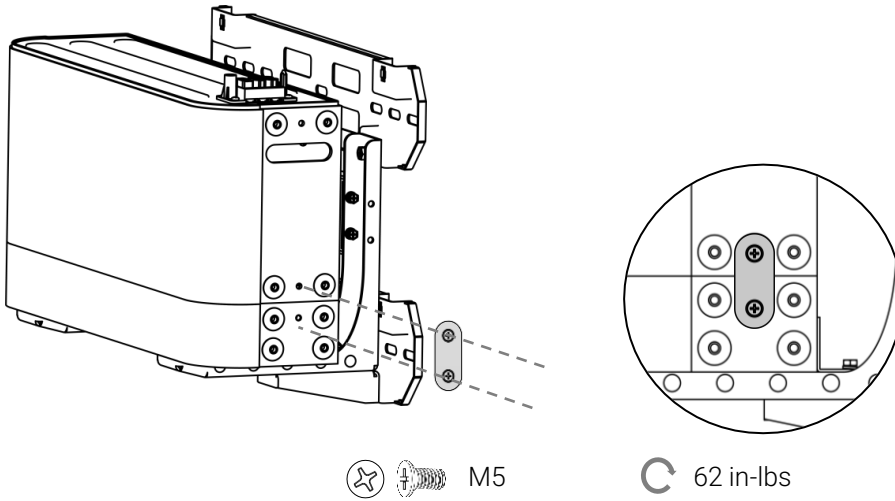
4 Use wall brackets B1 and B2 to fasten the battery module to wall bracket C.

Steps:

1.

2.

3.

⊗ 🔩 M6   ↻ 62 in-lbs
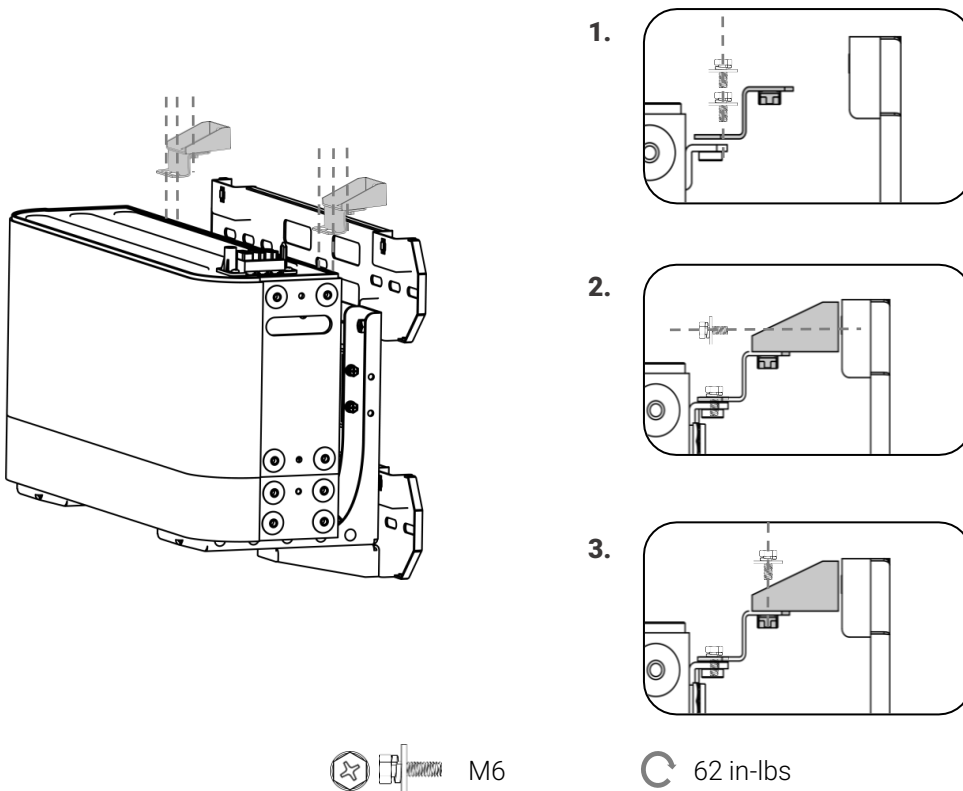
2nd Battery Module Installation
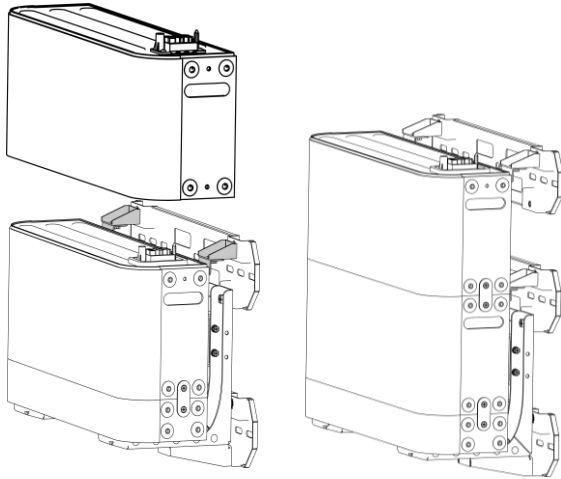
3rd Battery Module Installation
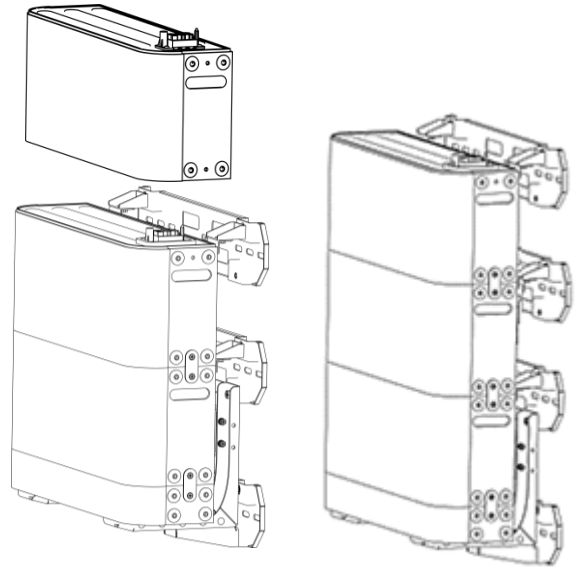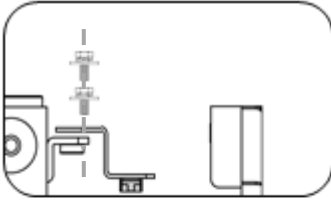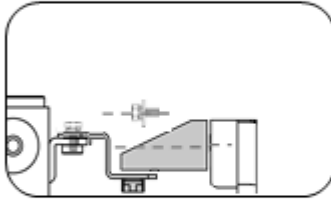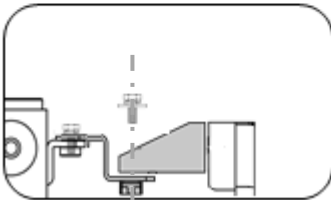
Hybrid Inverter Installation

Bracket D

Bracket F
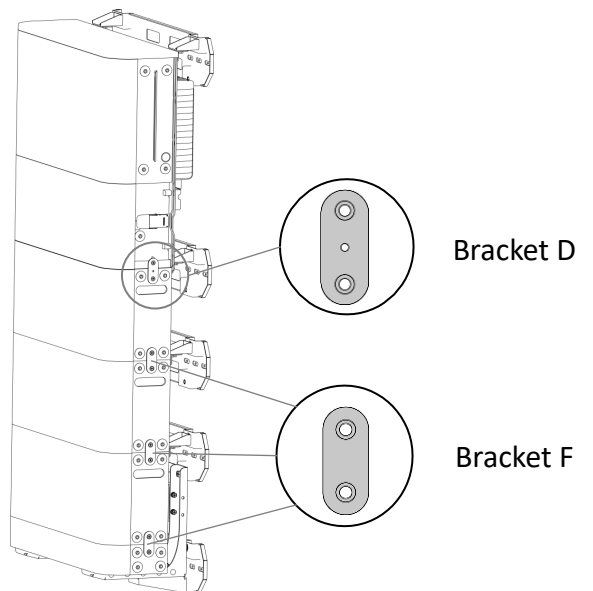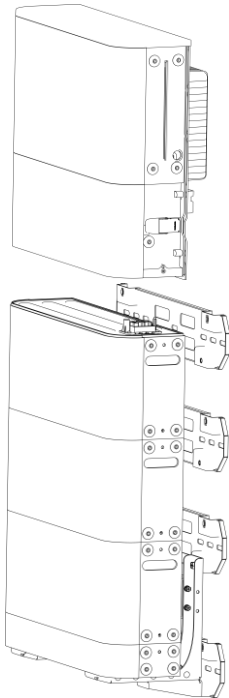
Hybrid Inverter Installation

Steps:

1.

2.

3.
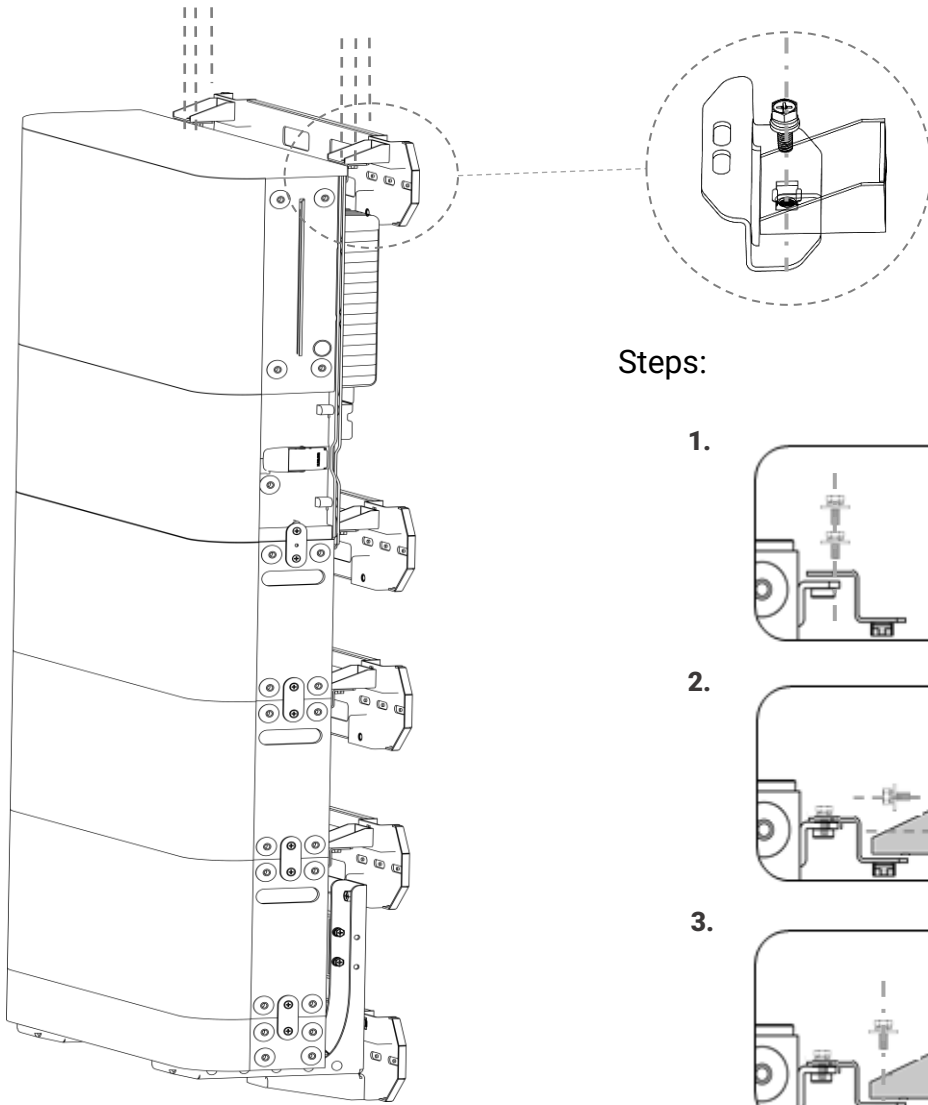
M6   62 in-lbs
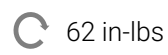
Open Smart Gateway
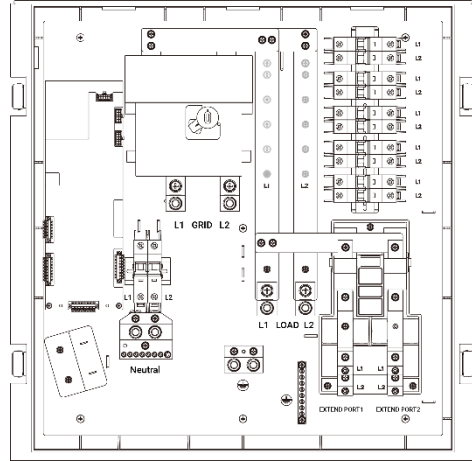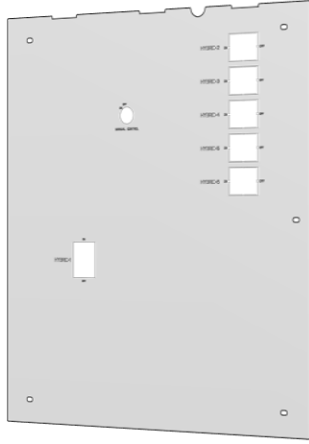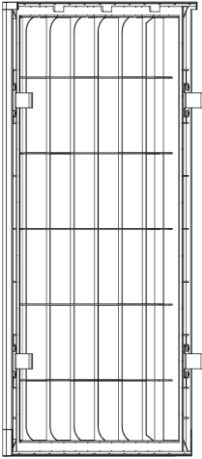
Steps to Open
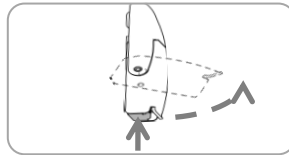
1. Unlock the Locks
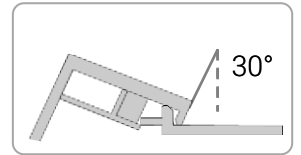
2. Flip the panel to 30°
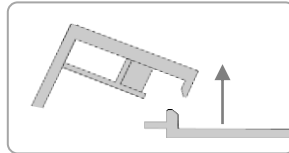
3. Move upward and remove the panel
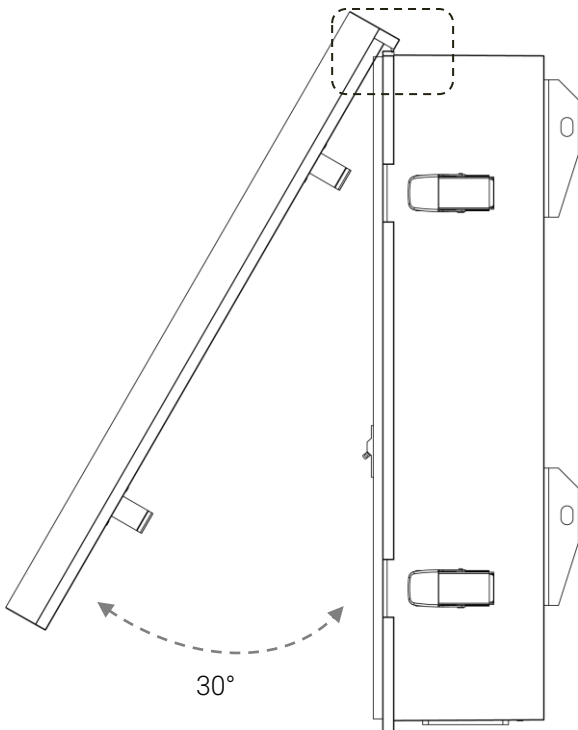
Steps to Close
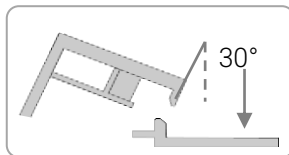
1. Align the panel at an angle, and place it on SG
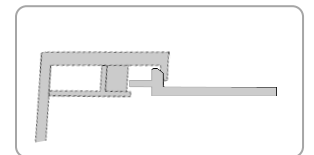
2. Release the panel, then align it with the SG borders

4. Lock the panel

30°
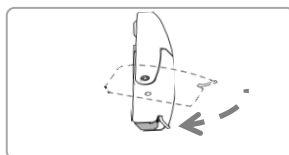
Connect the DC Connector

1 Unlock the latches, then remove the front panel and dead front cover of Hybrid.
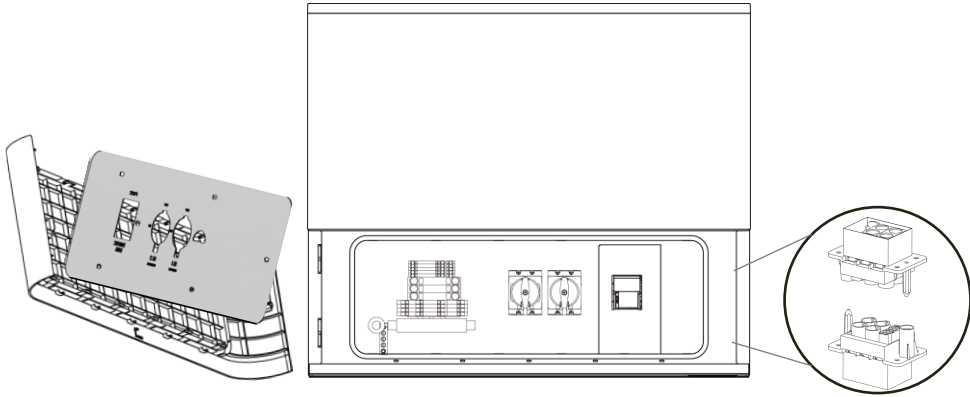
2 Disconnect Fuse.
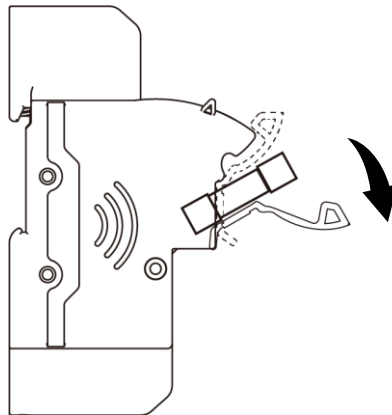
3 Ensure that fuse has been disconnected. Then plug in the DC connector of the Hybrid Inverter.
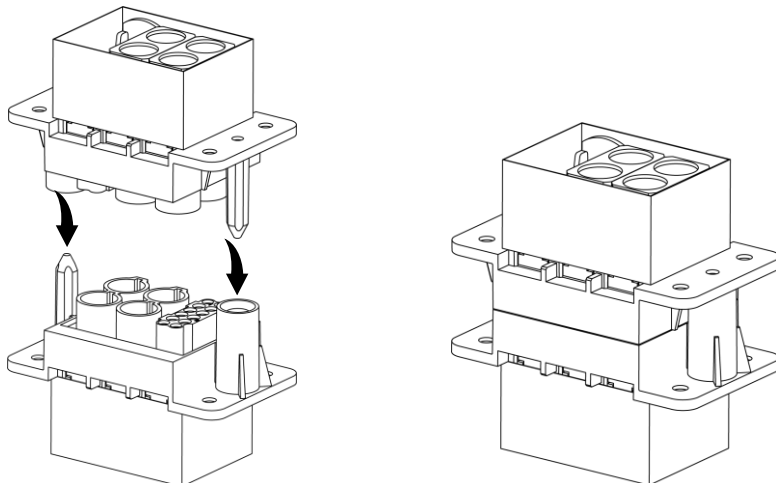
Smart Gateway Knockouts for Cables

Smart Gateway Knockouts Sizes

1-1/4"	2-3/4"		2-1/4"	
Com	Grid	Loads	Hybrid	Extend Port 1	Extend Port 2

System Diagram

Hybrid

EP CUBE

CanadianSolar

Pv system

Smart Gateway

Control Board

Communication Terminal

Dry

CTs

Grounding Bar

Neutral Bar

Hybrid Input Breakers

40A

Hybrid-1

Hybrid-2

Hybrid-3

Hybrid-4

Hybrid-5

Hybrid-6

L1

L2

Extend Port 1

L1

L2

VT

Extend Port 2

L1

L2

Loads Terminal

L1

L2

Neutral Terminal

N

G

Grounding Terminal

L1

L2

Relay

L1

L2

Back-up Loads Distribution Board

Main Electrical Distribution Board

From Grid

CT1

CT2

Hybrid and Smart Gateway Communication Connection

Com

Shielded twisted pair cable

CAN HYBRID

L1 H1 L2 H2 GND PWM HJA

CANH1
CANL1
PWM
HJA
GND

Pay attention to wire colors and labels

Cable Color	SG Terminals	Hybrid Terminal
Orange	L1	CANL1
Yellow	H1	CANH1
Black	GND	GND
Brown	PWM	PWM
Red	HJA	HJA

Terminal wiring steps
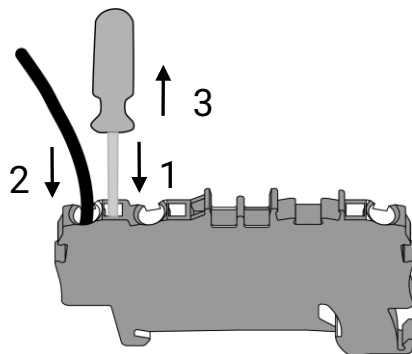
1. Press button 2. insert cable 3. release button

Hybrid and Smart Gateway Communication Connection

If communication resistor is not installed, install it between the CANH1 & CANL1 terminals.

Hybrid Comm. Wiring with Resistor
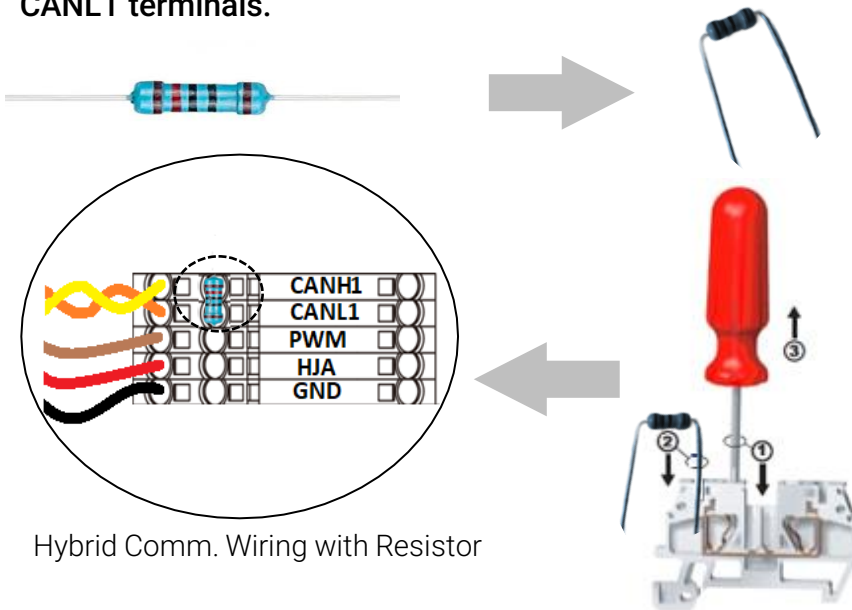
If communication resistor already pre-installed, then just complete the communication wiring process

Com

Shielded twisted pair cable
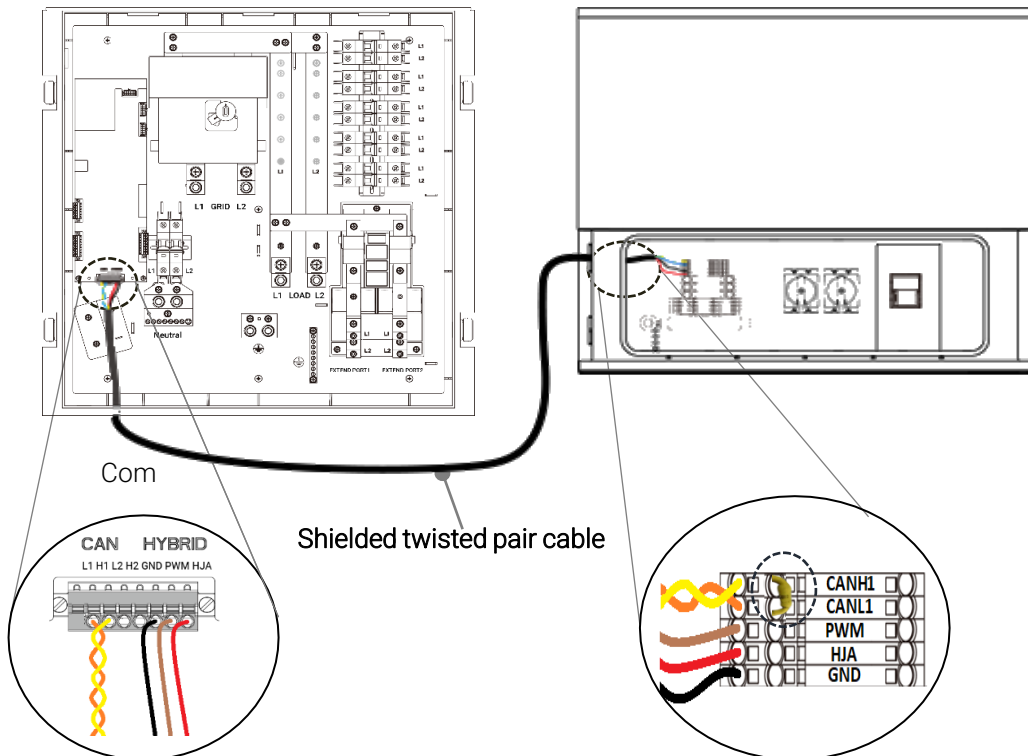
Hybrid and Smart Gateway Communication (Parallel Hybrid)

Smart Gateway

Hybrid 1

Hybrid 2

Shielded twisted pair cable required

CAN HYBRID
L1 H1 L2 H2 GND PWM HJA

Smart Gateway Comm. Wiring

CANH1
CANL1
PWM
HJA
GND

Hybrid 1 Comm. Wiring

CANH1
CANL1
PWM
HJA
GND
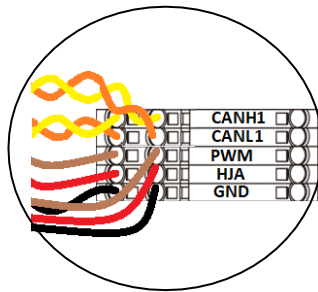
Hybrid 2 Comm. Wiring & installed Resistor

Standard cable length is 10m, cannot be extended.
Extension may cause communication failure.
Do not use any other cable to avoid any product malfunction.
If communication resistors are not pre-installed, then install the resistor on final hybrid.

Communication cable is included, pay attention to colors of the wires.

Wire Color	SG Terminal	Hybrid1 Terminal	Hybrid2 Terminal
Orange	L1	CANL1	CANL1
Yellow	H1	CANH1	CANH1
Black	GND	GND	GND
Brown	PWM	PWM	PWM
Red	HJA	HJA	HJA

Only install CAN termination resistor between CANH1 and CANL1 on the final hybrid.(farthest away from SG)

CANH1
CANL1
PWM
HJA
GND
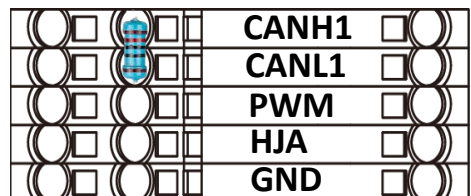
* Follow the previous steps to install the resistor on Hybrid Comm. Terminals.

Hybrid and Smart Gateway Communication (Parallel Hybrid)

If communication resistors are pre-installed, uninstall it from hybrid units connected between SG and final Hybrid .

Hybrid1 Comm. Wiring & Pre-installed Resistor

| CANH1 |
| CANL1 |
| PWM |
| HJA |
| GND |

Hybrid1 Comm. & Resistor Removed

| CANH1 |
| CANL1 |
| PWM |
| HJA |
| GND |
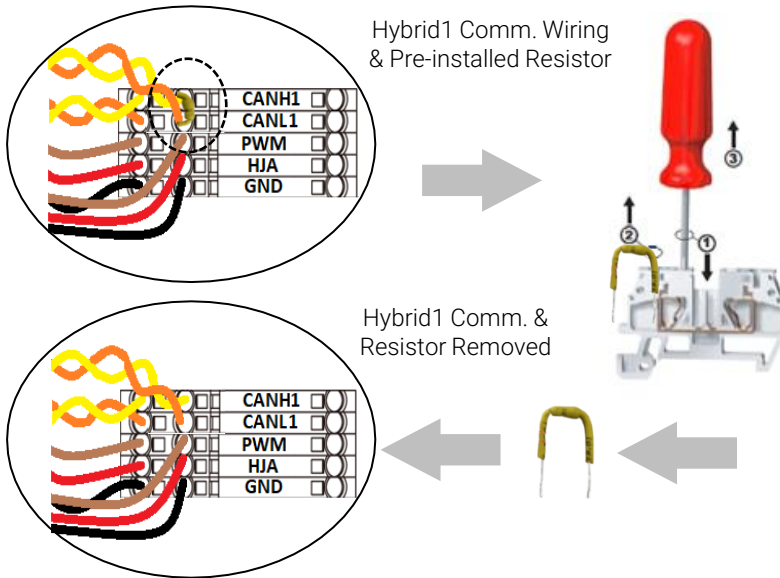
Keep the resistor in place on final hybrid.

Shielded twisted pair cable required

CAN   HYBRID

L1 H1 L2 H2 GND PWM HJA

| CANH1 |
| CANL1 |
| PWM |
| HJA |
| GND |

| CANH1 |
| CANL1 |
| PWM |
| HJA |
| GND |

Smart Gateway Comm. Wiring

Hybrid 1 Comm. Wiring & Pre-installed Resistor Removed

Hybrid 2 Comm. Wiring with Preinstalled Resistor
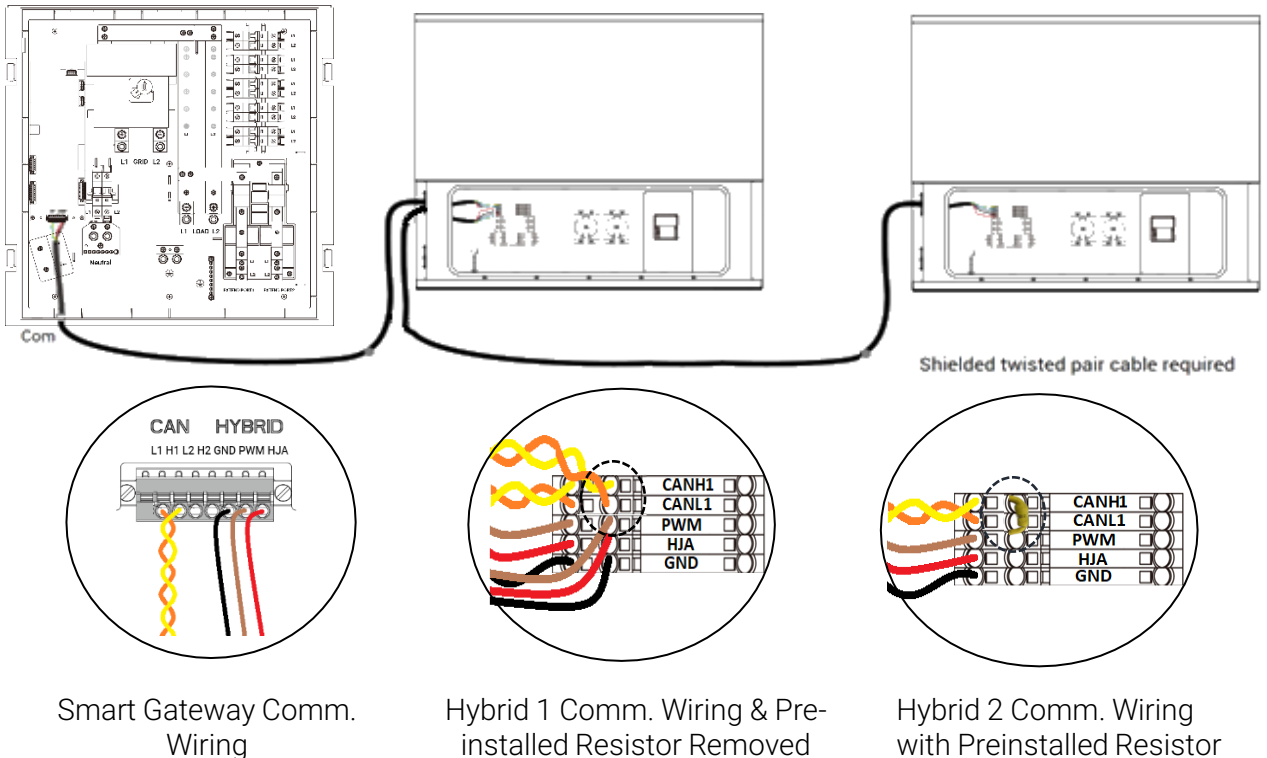
Hybrid to Smart Gateway AC Connection
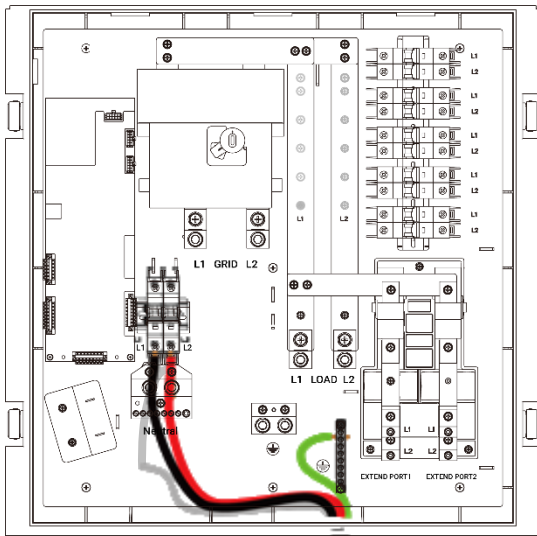
Hybrid
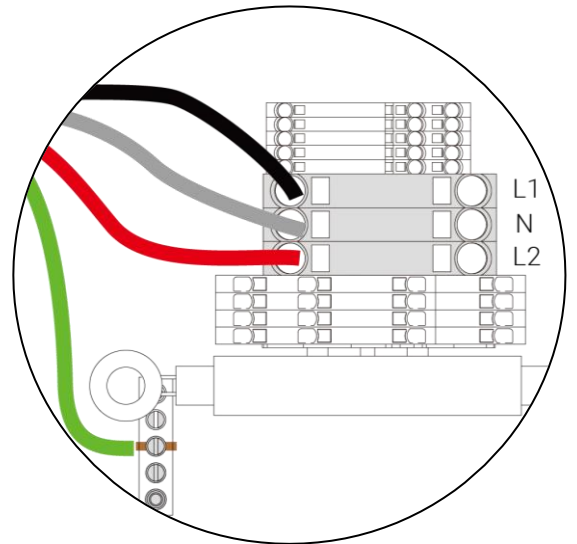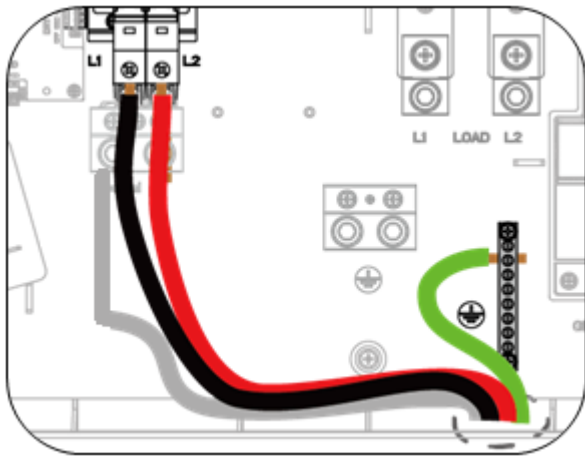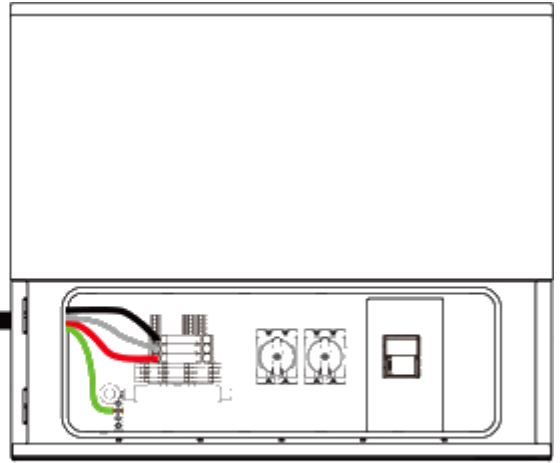
■ 6-8 AWG	
■ 6-8 AWG	
■ 6-8 AWG	
■ 9-4 AWG	

40 in-lbs

5/32"

⚠️ **Note:** While making connections on neutral terminal, ensure to terminate neutral cables on lower terminals first, and work your way from lower terminals to upper terminals. i.e. first connect neutral wires of Hybrids, Generator/PV inverter, and then connect neutral wires of Load and Grid.

Hybrid to Smart Gateway AC Connection (Hybrid2)
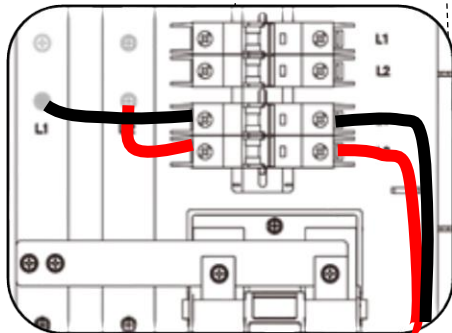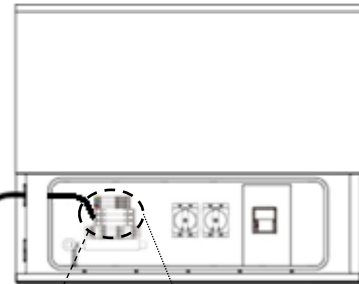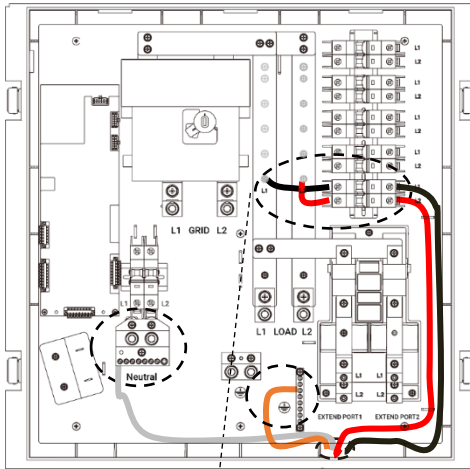
Hybrid 2 Circuit Breaker
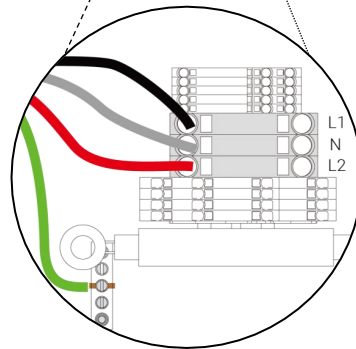
Hybrid 2 AC Output
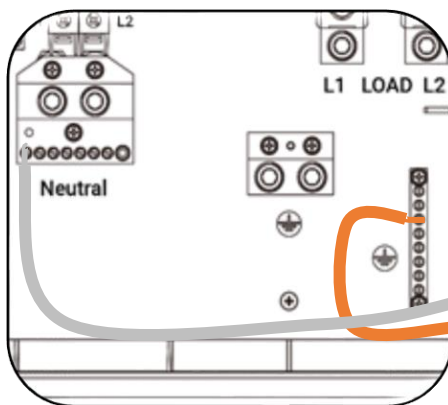
Neutral & Ground Cable

🔴	🟫	6-8 AWG
⬛	🟫	6-8 AWG
⬜	🟫	6-8 AWG
🟩	🟫	9-4 AWG

40 in-lbs

5/32"

PV Connection

Pv system

	10 AWG
	10 AWG

PV1 +
PV2 +
PV3 +
PV4 +

PV1 -
PV2 -
PV3 -
PV4 -
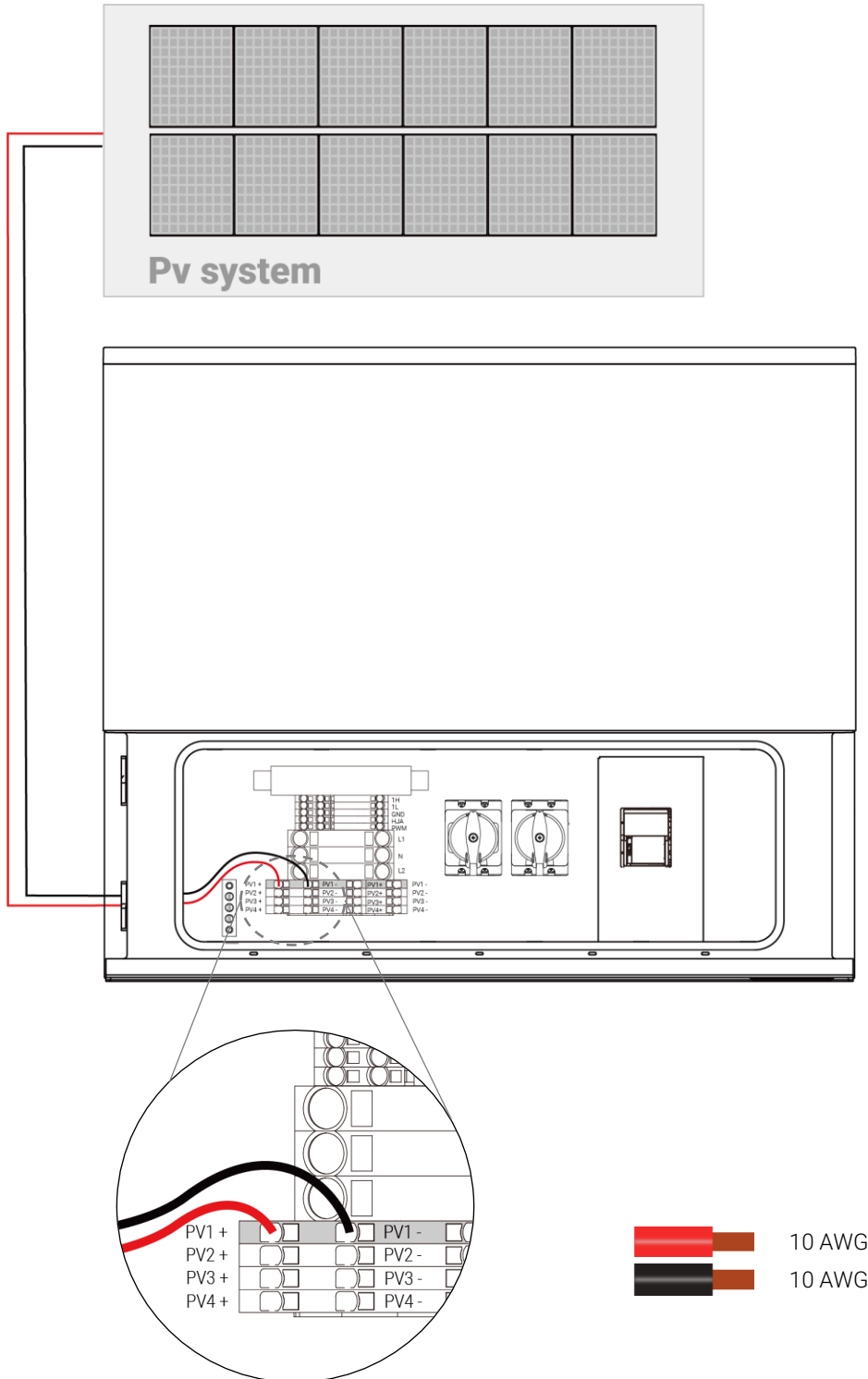
Grid Cables Connection
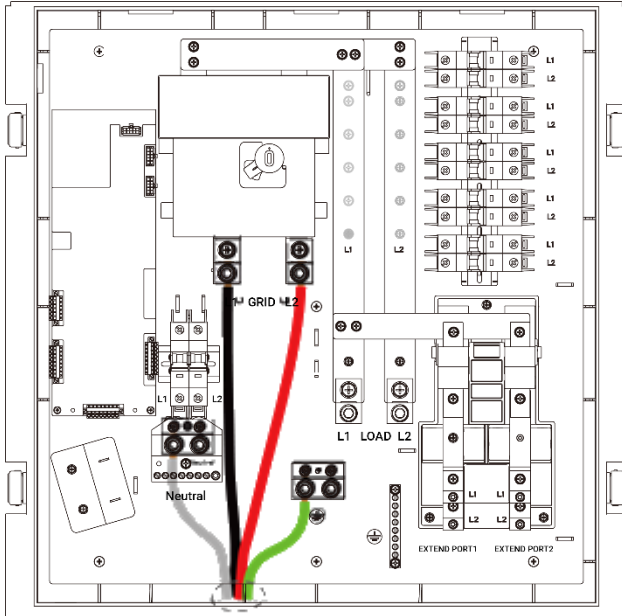
Grid

🔴	4 - 2/0 AWG
⚫	4 - 2/0 AWG
⚪	4 - 2/0 AWG
🟢	3/0 - 4/0 AWG
	110 in-lbs
	275 in-lbs
	5/16"

Loads Cables Connection

Loads
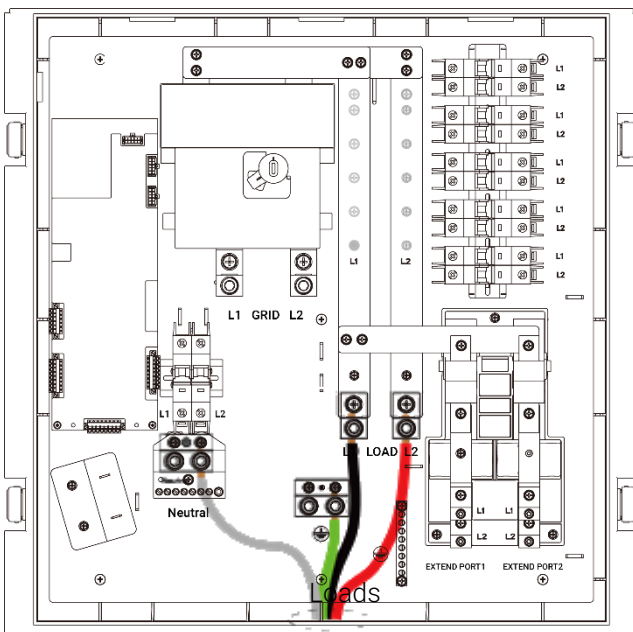
🔴	4 - 2/0 AWG
⚫	4 - 2/0 AWG
⚪	4 - 2/0 AWG
🟢	3/0 - 4/0 AWG
	110 in-lbs
	275 in-lbs
	5/16"

Install the CTs

Install CTs sensor on L1 and L2 between grid and MCB. Connect the CTs cables to SG CT terminal.

- Standard cable length of 10m (32.8 feet), can be extended up to 90m (295 feet).
- Recommended cable gauge & standard: 22AWG and UL1015.

From Grid

L1   L2

MCB

Electrical Panel

Non Backup Loads

L1

L2

CT1	5+
	5-
CT2	6+
	6-
Dry	ON
	COM
	OFF
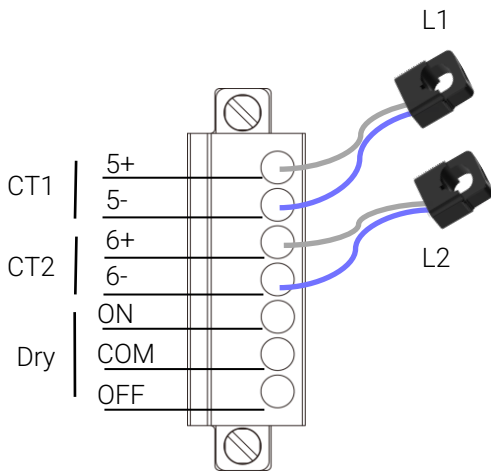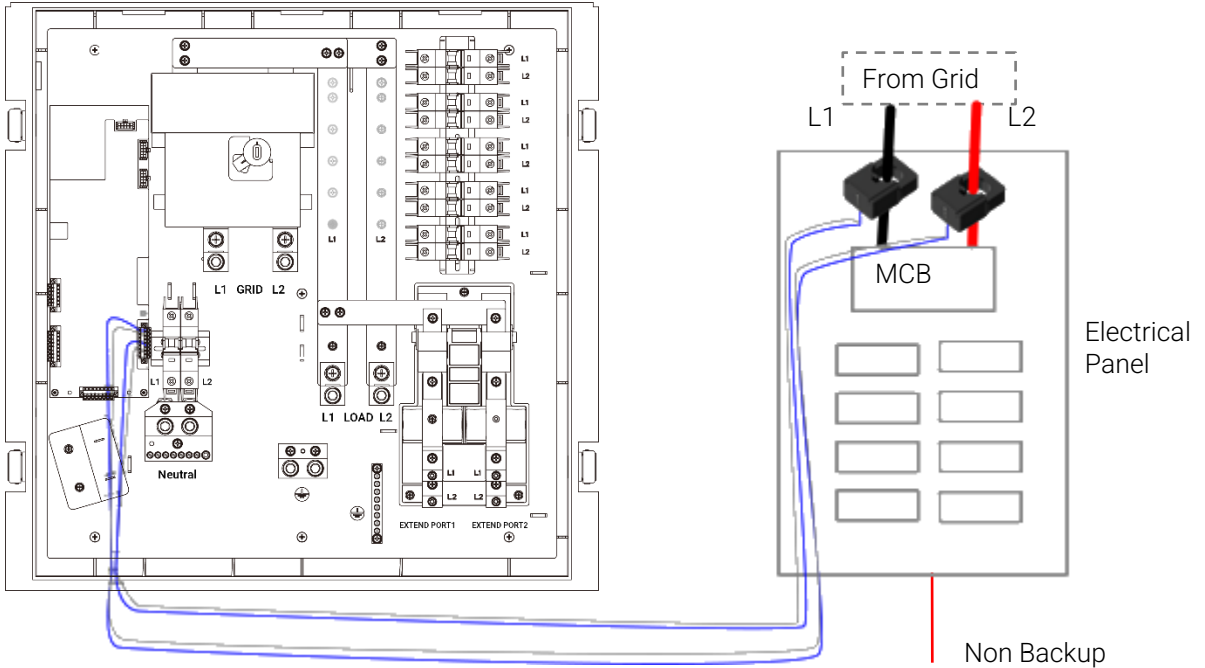
Terminal for CTs connection

K → L

Grid   MCB

L ← K

Grid   MCB
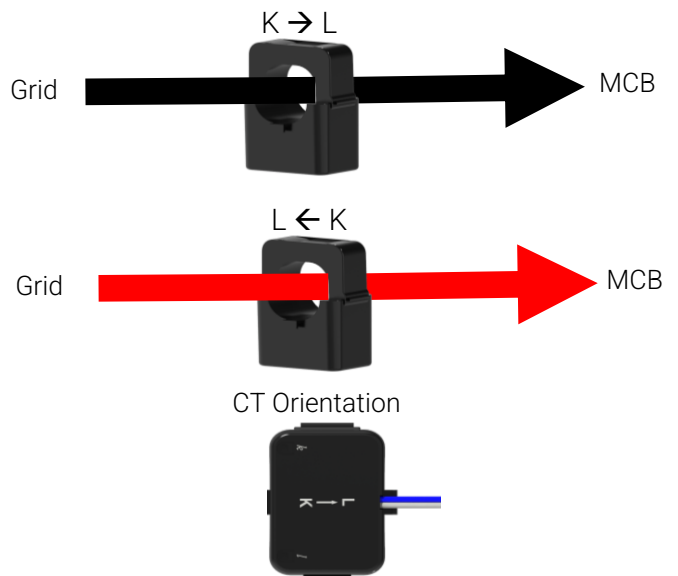
CT Orientation

The CT's orientation on L1 shall be from Grid to MCB (k → L). For L2 shall be from MCB to Grid (k → L) as shown in pictures above.

E-Stop Connection (Optional)

Install an Emergency Stop Switch as per the local codes or standard requirements.
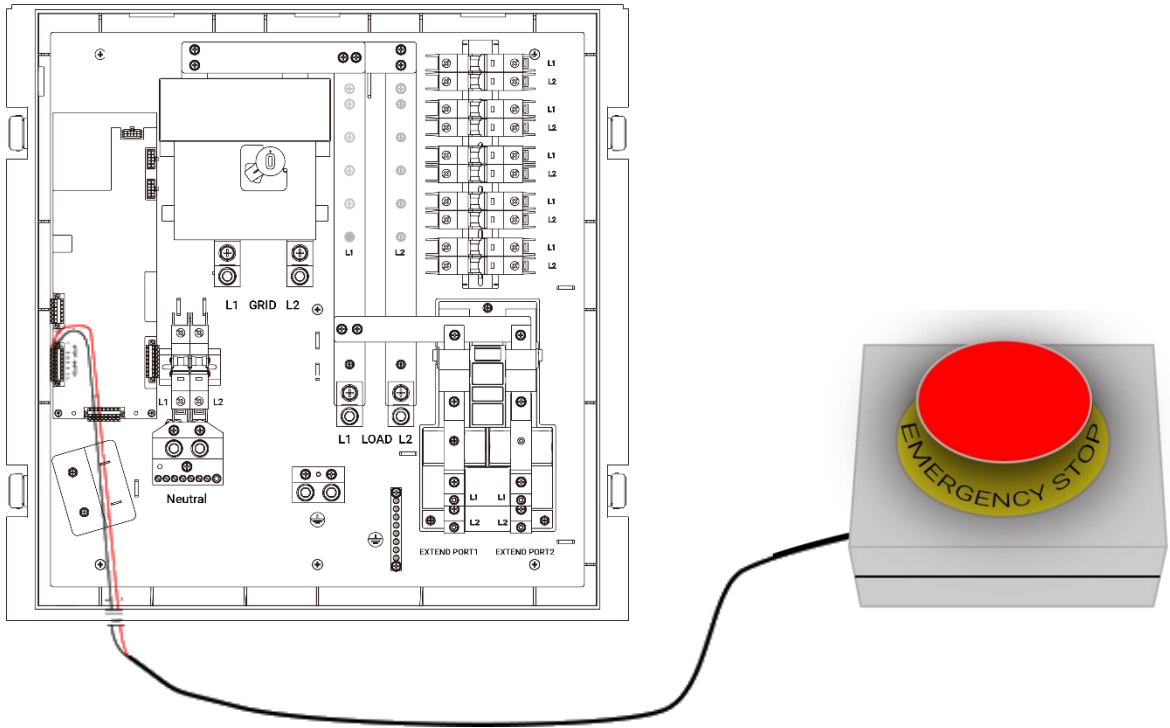
Emergency stop switch

SW 1B	1+
GND	1-
SW 2B	2+
GND	2-
SW 3B	3+
GND	3-
SW 4B	4+
GND	4-

STOP SWITCH
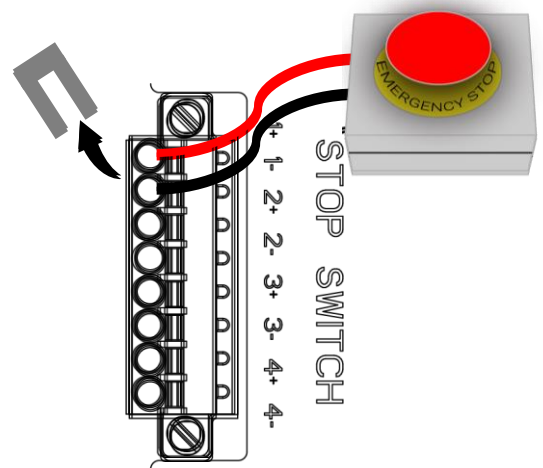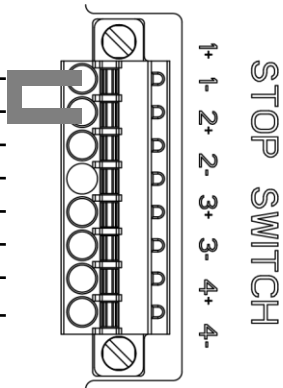
Remove the connector, insert E-stop cables to the terminal.

Neutral-Ground Bonding (Optional)

If Smart Gateway is installed as the unique distribution device (Without Electrical Distribution Board), bond Neural to Ground.
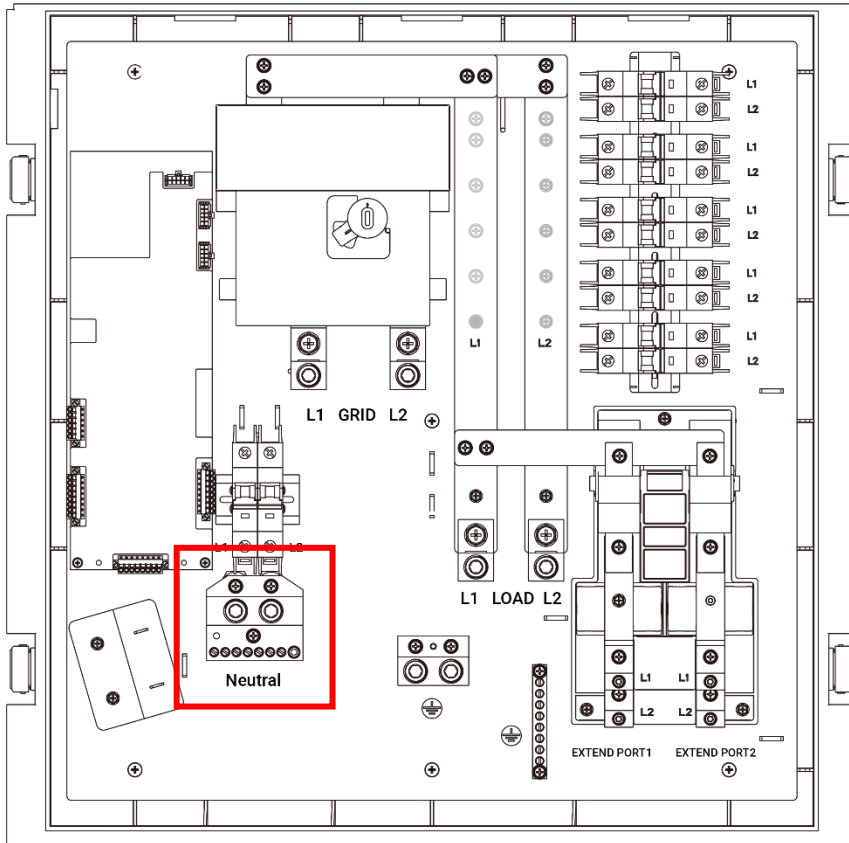
Neutral Terminal
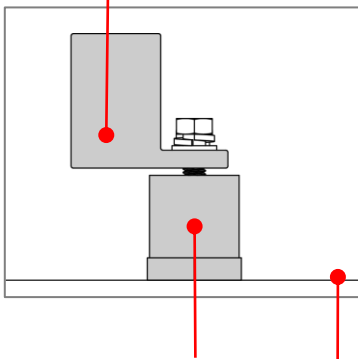
Insulation pillars

Support panel (grounded)
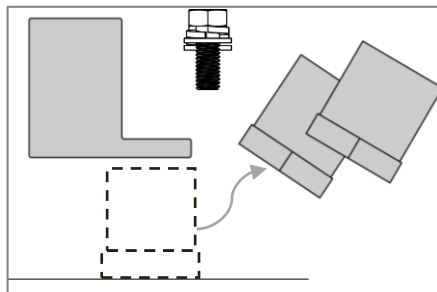
Remove the insulation pillars
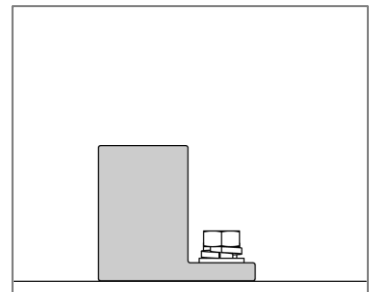
Bond Neutral to support panel

Energize Smart Gateway and Hybrid

1. Re-install the deadfront covers on SG and Hybrid.
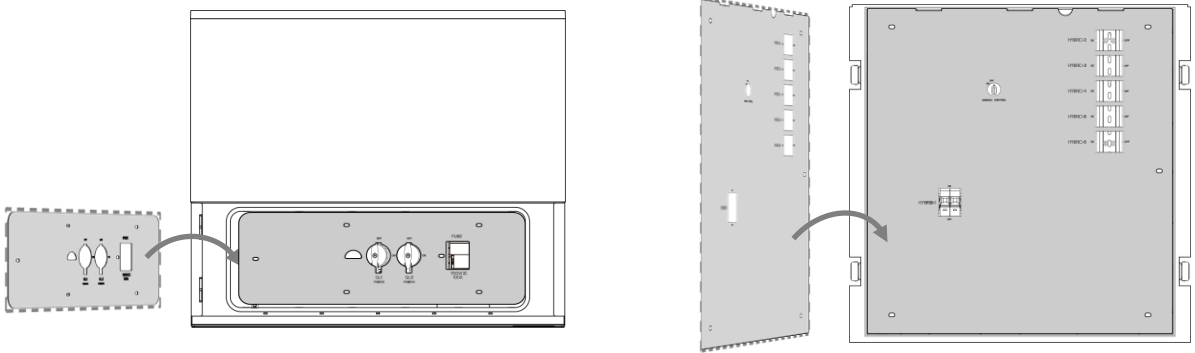
2. Connect the Battery Fuse, and then turn on the PV switches in the Hybrid Inverter.
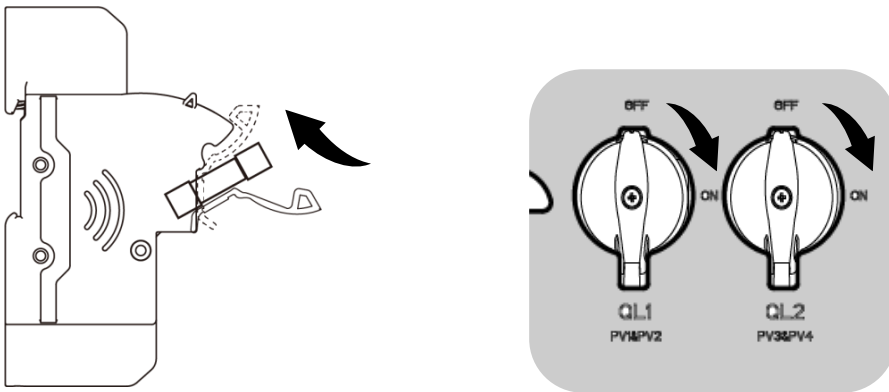
3. Turn on Hybrid-1 Circuit Breaker in SG.
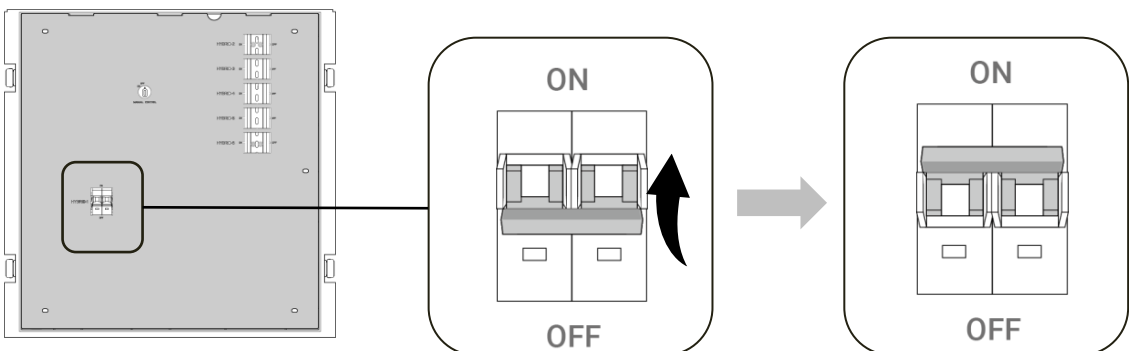
4. Turn on SG Grid input power MCB in electric panel.
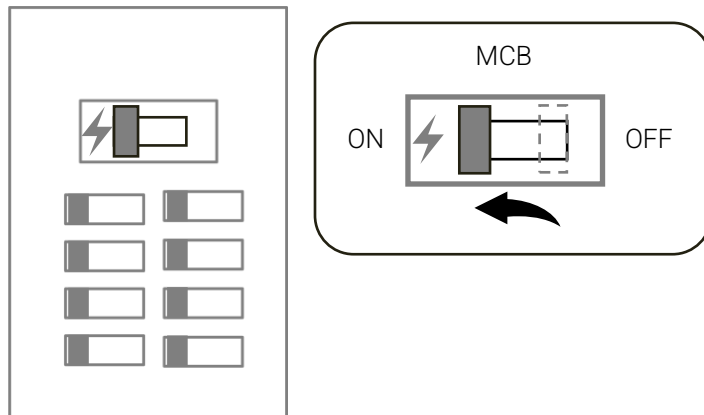
5. Install the front panels.
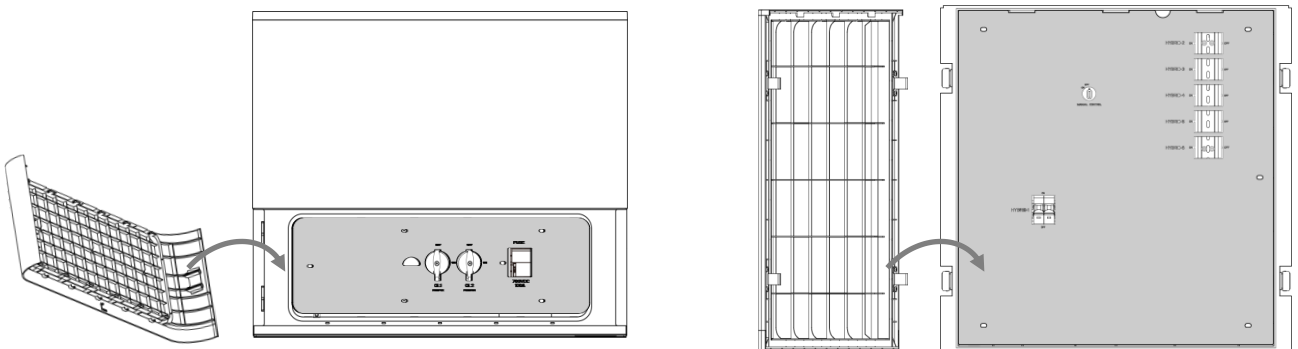
⚠️ **Note:** Do not turn on the EP Cube Hybrid and Smart Gateway by pressing down the power on/off buttons on both Hybrid and Smart Gateway, at this stage (prior to commissioning process).

Commissioning Via EP Cube APP
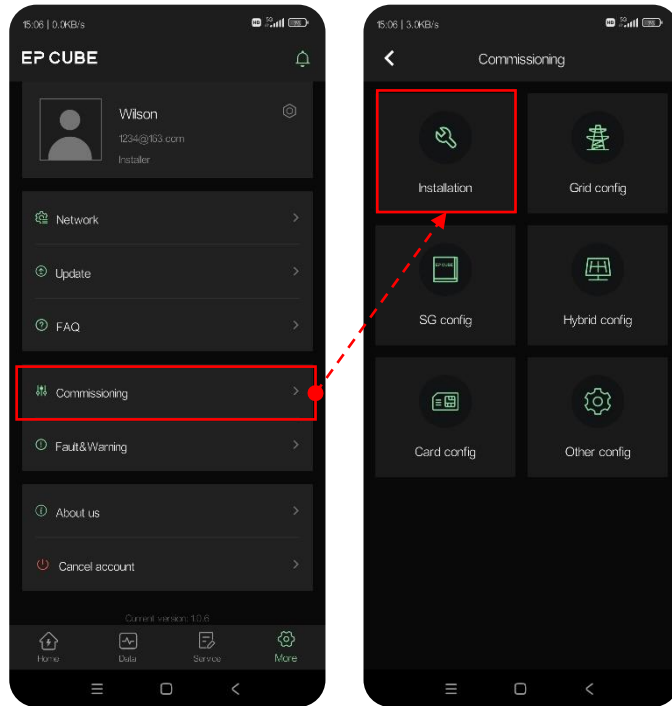
Log in with the installer account, Click More -----> Commissioning -----> Installation.

1	2	3	4	5	6	7	8	9
Add device	Bluetooth config	Wi-Fi config	Device update	Grid config	Smart Gateway config	Hybrid config	Card config	Warranty Registration
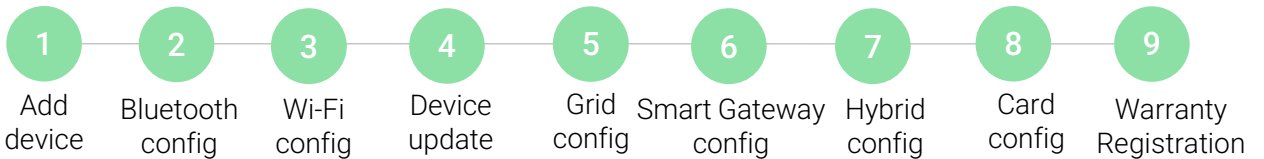
Follow the step-by-step process till the end to complete the system configuration.
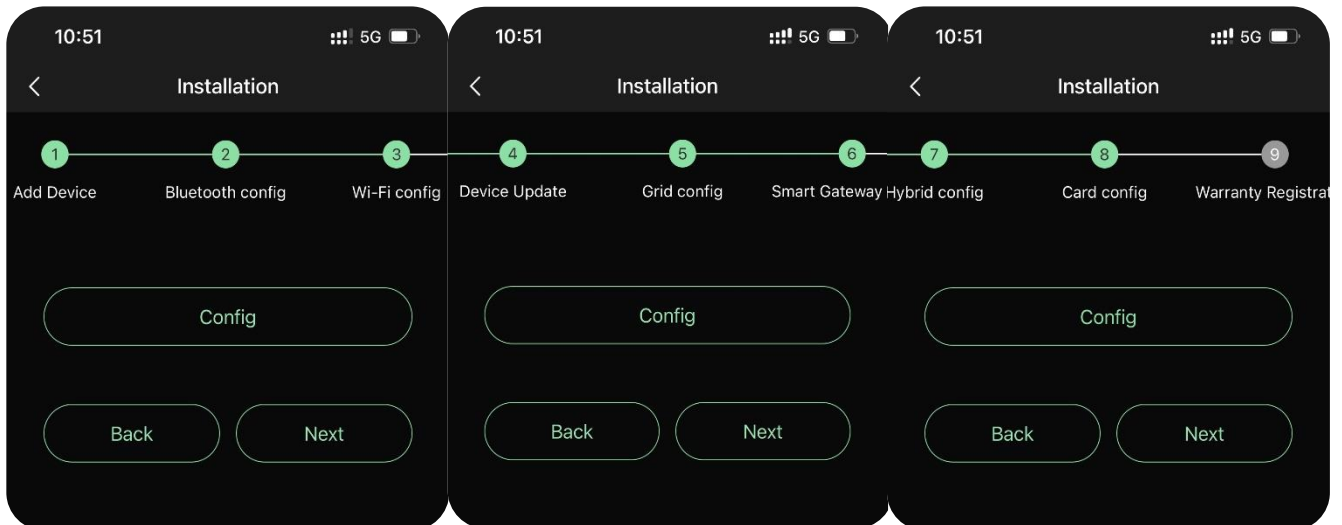
1	2	3	4	5	6	7	8	9
Add device	Bluetooth config	Wi-Fi config	Device update	Grid config	Smart Gateway config	Hybrid config	Card config	Warranty Registration

Add SG, Hybrid, battery modules and base according to your system configuration. Scan the QR code to add the SN of each module or input the SN individually.
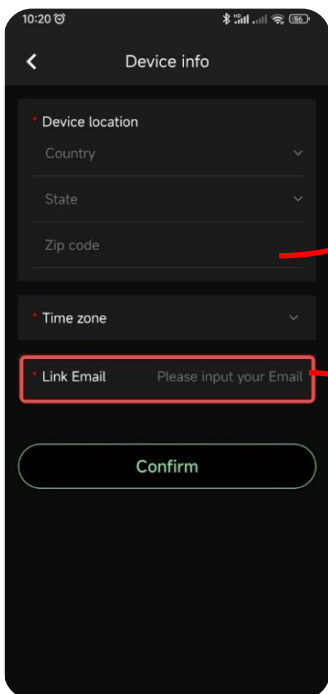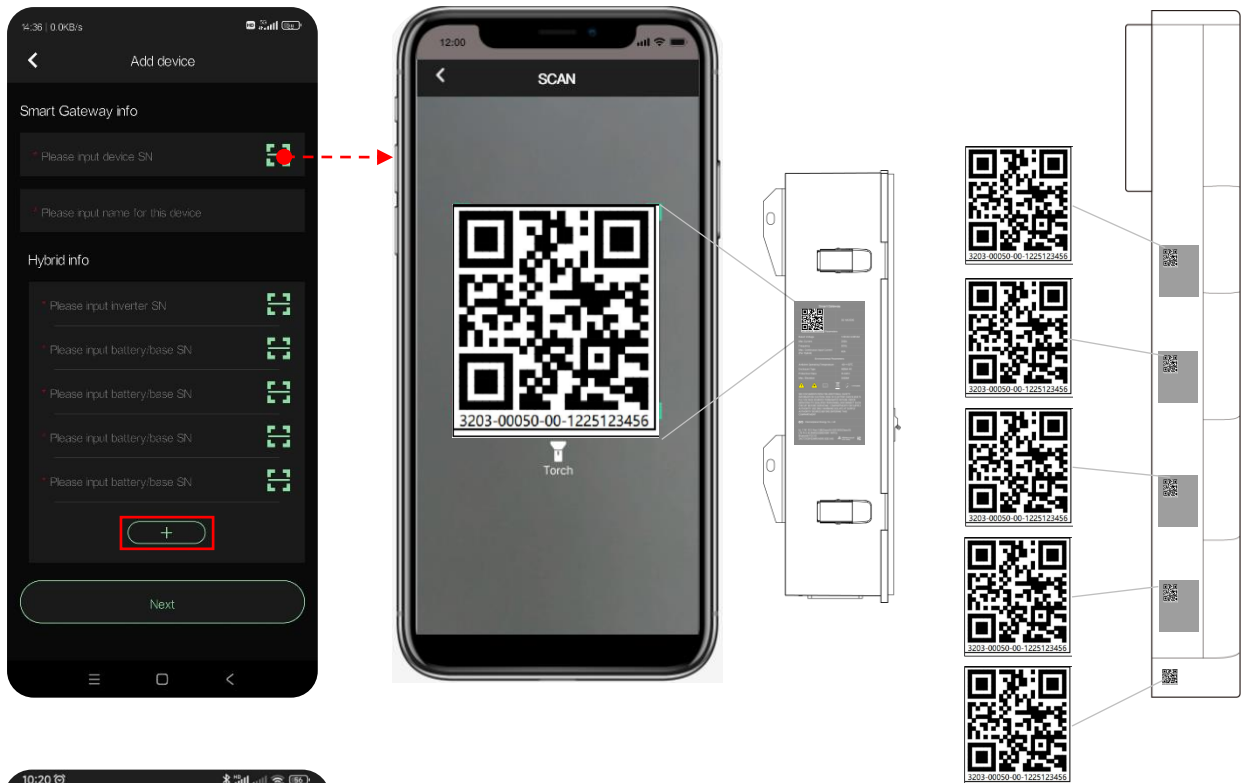
Device Location	Country	Choose country name from the list
	State	Choose state name from the list
	Zip Code	Write area zip code
Time Zone	Time zone	Choose applicable time zone from the list
Link Email	Email	Input customer's email address

Note: Installer must ensure that End User Account has been already created on EP Cube App to successfully link it at add device step during commissioning process.

In the second step, the Bluetooth configuration is completed. Click on your desired device to set it as the current device. And click connect button.
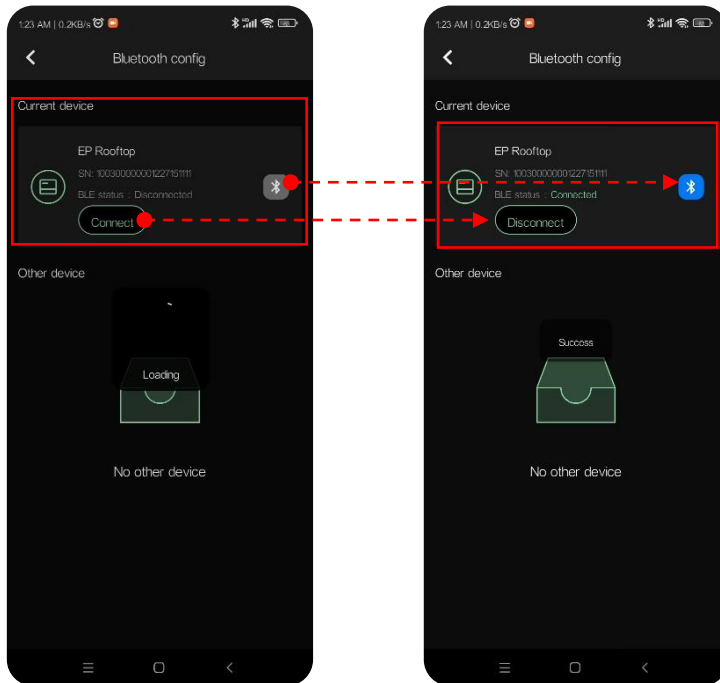
Allow EP Cube to connect to nearby devices via Bluetooth.

Once allowed, you will be asked to turn on Bluetooth. Click confirm and the phone's Bluetooth will be turned on.

In the next step, select your newly added device and click on the connect button of the selected device. The Bluetooth status will change to connected and Bluetooth icon will turn blue.

1- Turn on your phone's Bluetooth
2- Choose your added device
3- Click on connect button
4- Upon success, Bluetooth icon will turn blue
5- A disconnect button will appear now instead of connect.

Note: EP Cube can only connect with 2.4Ghz WIFI Networks.
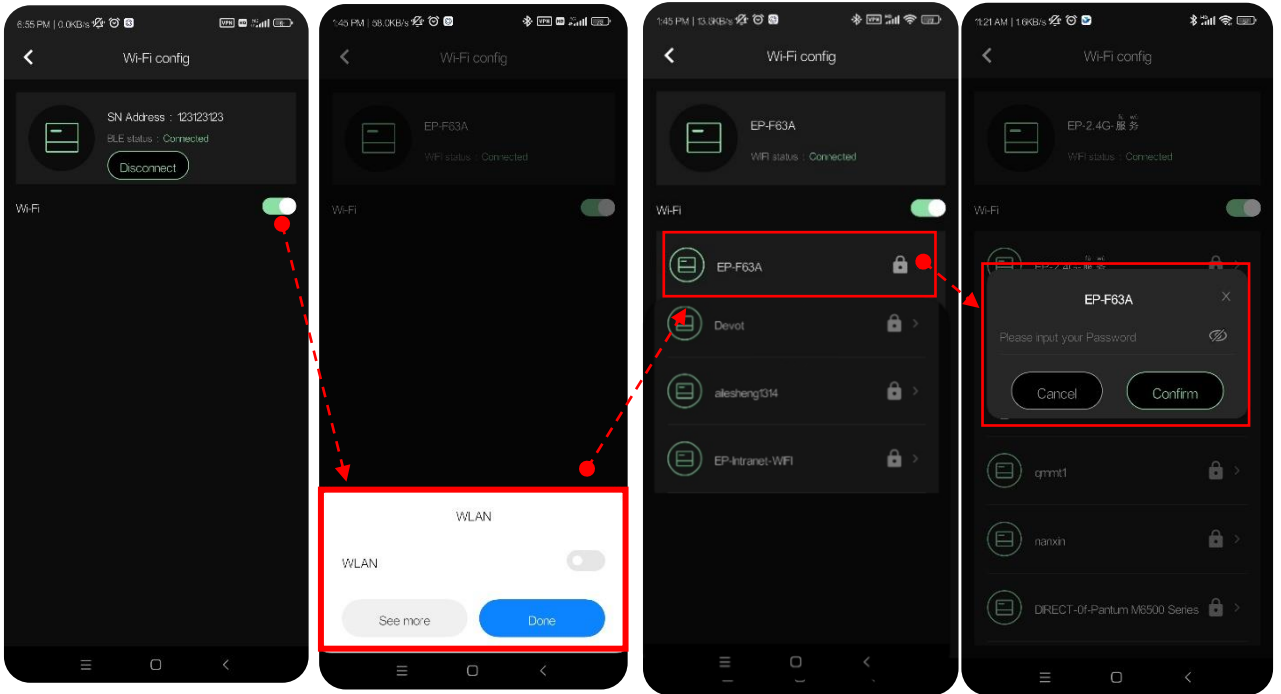
Turn on WIFI

Input the password and confirm

Note: Ensure that your installation site must have WIFI coverage and strong signal strength.

5G ✗   2.4G ✓

** For the iOS version, the list of WIFI networks will not be displayed. If your iPhone is connected to a WIFI network, only that network will be displayed. To add a new WIFI, click add WIFI Button to add desired WIFI name and Password.
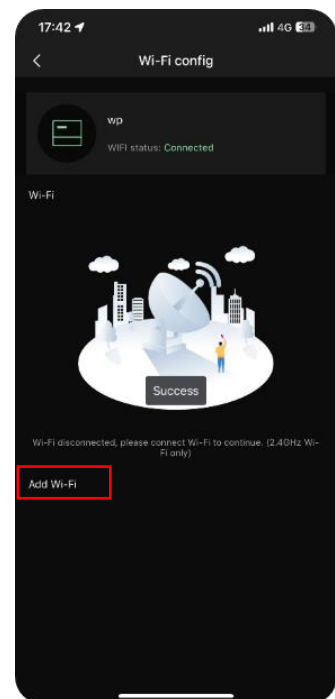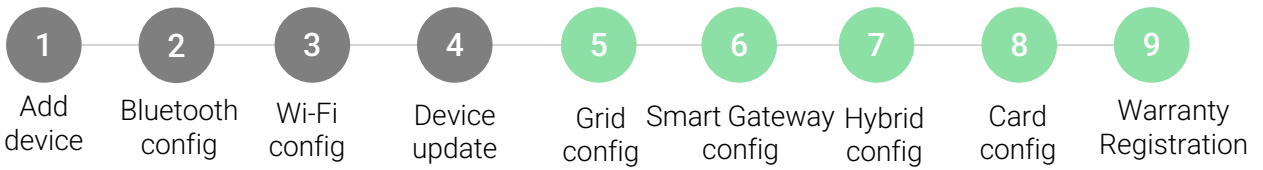
In this step firmware of the RTU Module and EP CUBE are updated to latest available version automatically. In 1st step, click the update button to start RTU update process. Pay attention to the tips on the screen.

Click update Button

Update Progress
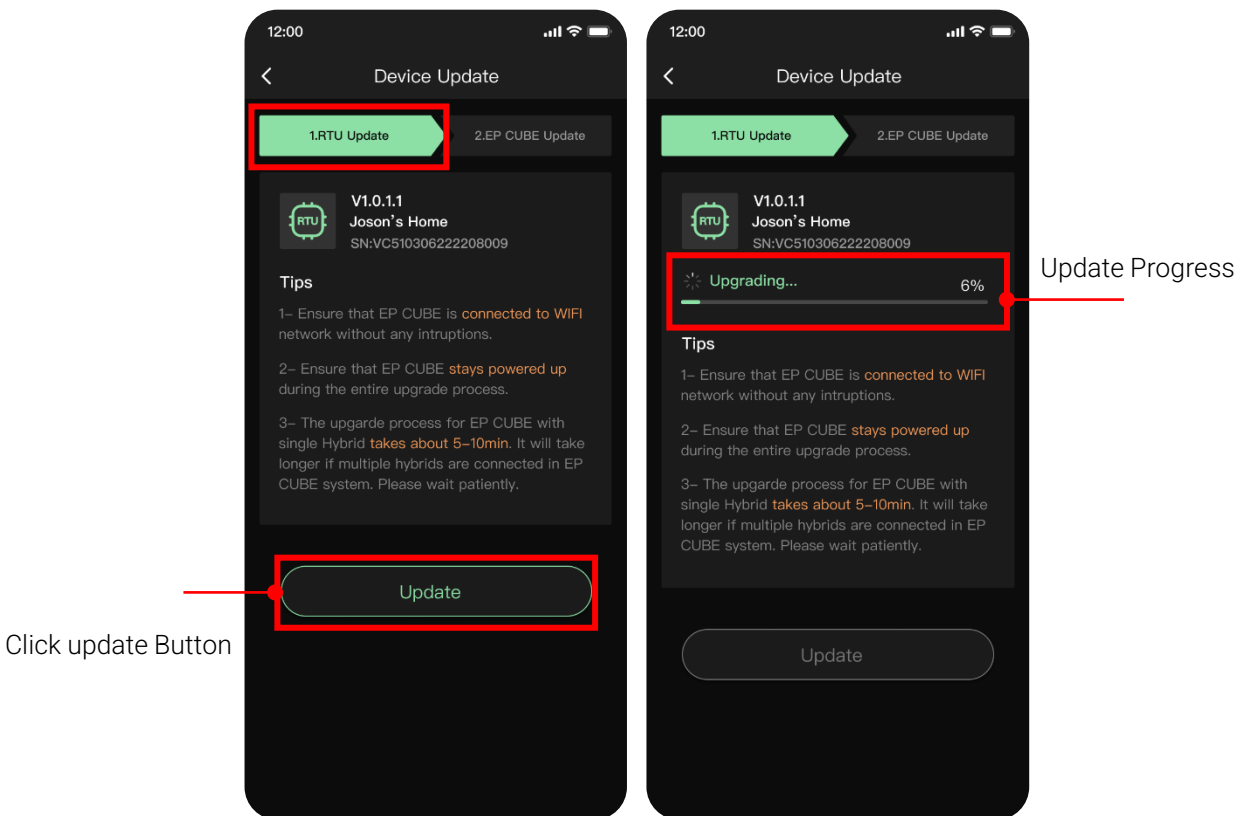
Once the update is completed successfully, Enter EP CUBE button will appear. Clicking on the button will start the second part of the update that's EP CUBE system firmware update. Refer to Fig. EP CUBE update on the next page.

Note:
Single Hybrid: Ensure that Hybrid MCB in the Smart Gateway is turned on.

Multiple Hybrid: If multiple Hybrid units are connected with a single Smart Gateway, the EP Cube Update step has to be repeated for each Hybrid Unit. Perform EP Cube update for each hybrid one by one and ensure that during the update Hybrid MCB's for all other hybrid units are turned off.

EP CUBE Update page

Monitor Module Update completed

Click to start EP CUBE Update

Click to view EP CUBE Update page
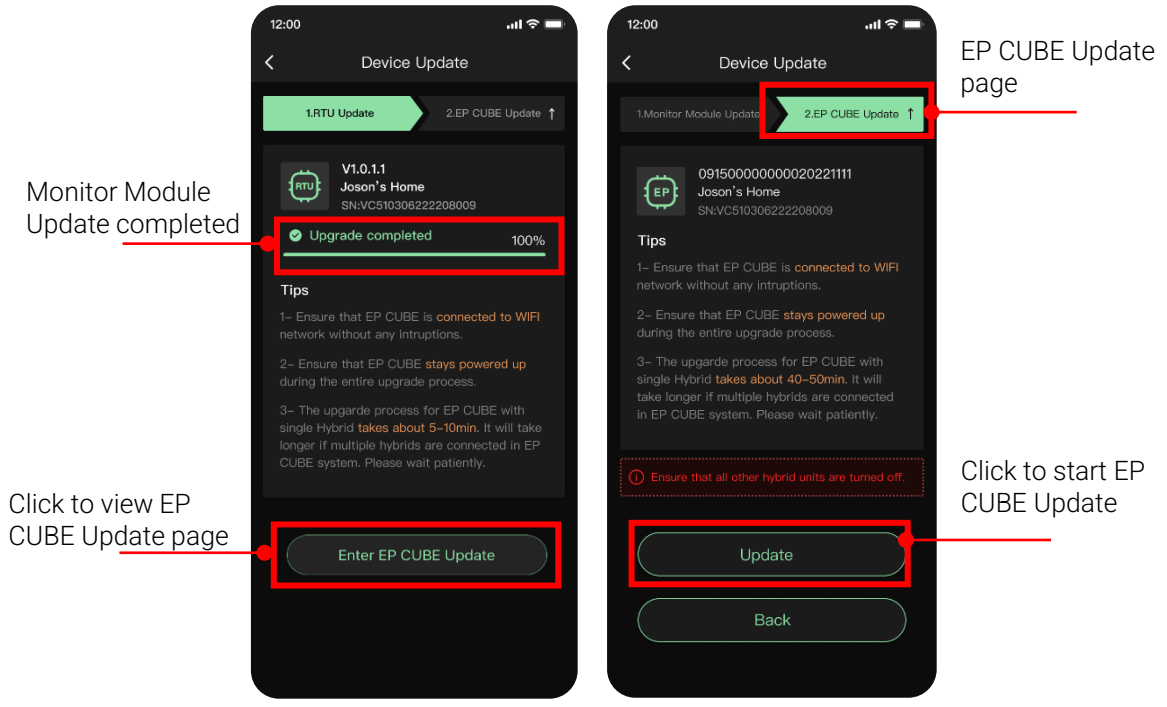
Click update button on EP CUBE page to start the update. Once the update is completed successfully, click the finish button to complete. If there are multiple hybrids connected then click on the "Need to update again?" line item to proceed to second hybrid unit update process.

Update Progress

EP CUBE Update completed

Click Finish to complete Update

Click to start EP Cube Update Again*
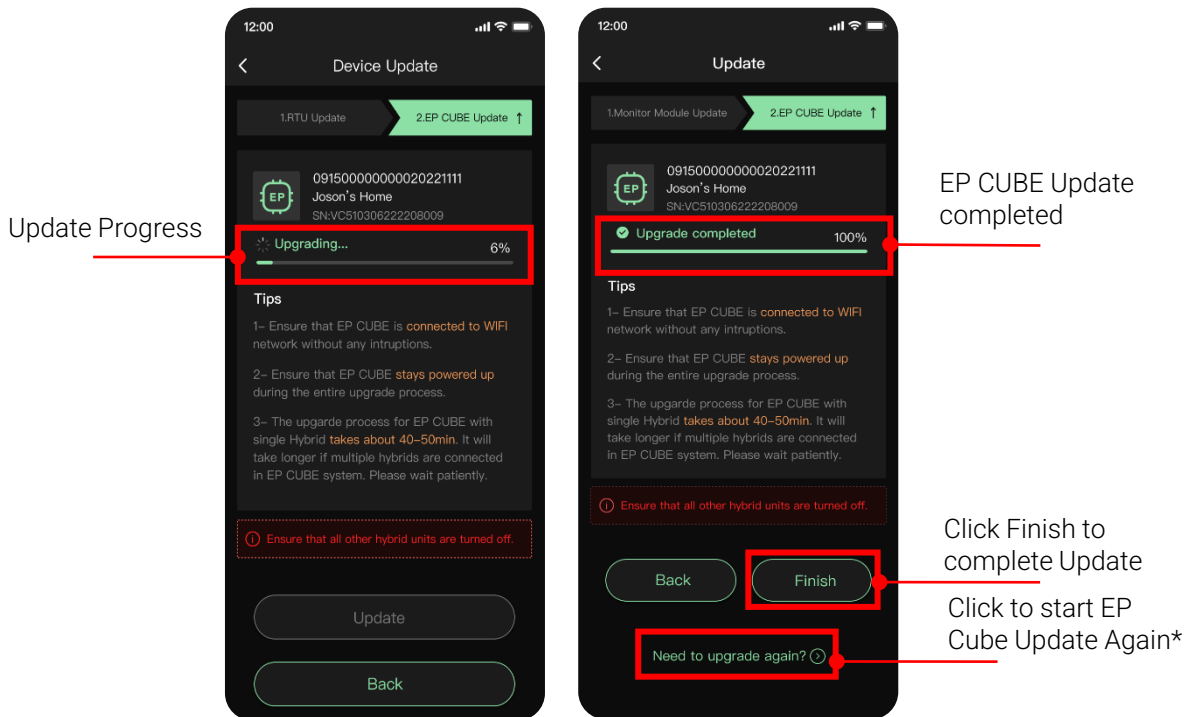
* If multiple hybrid units are connected in parallel with a single Smart Gateway, EP Cube app update step need to be repeated for each hybrid unit.
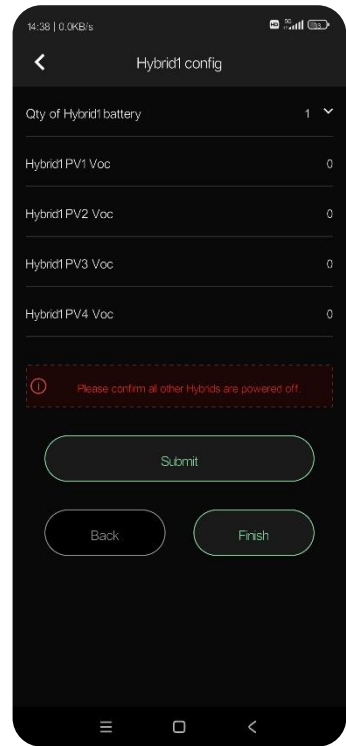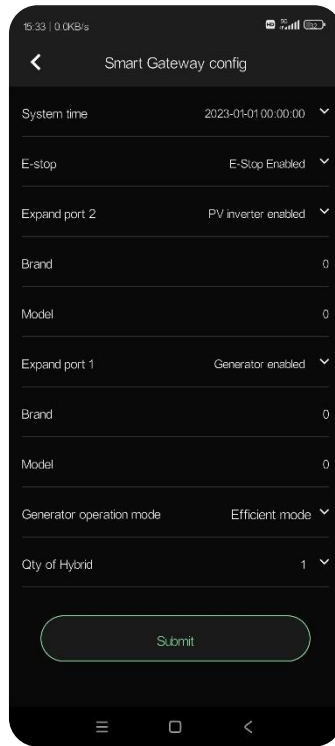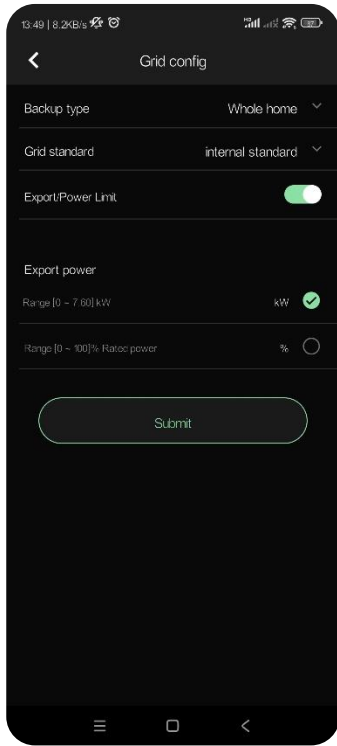
	Backup type	Partial home/whole home backup based on wiring connection topology
Grid config	Grid standard	Local/State rule/Interconnection Agreement
	Export Power Limit	Enable/Disable Export Power Limit Choose to limit power either by a value in kW or % of rated power
Smart Gateway config	System time	Set the time for product
	E-Stop	Enable E-Stop if connected
	Extend Port 2	Enable Inverter/Generator/EV Charger if connected
	Extend Port 1	Enable Inverter or EV Charger if connected
	Generator Operation Mode	Choose desired mode efficient/Quiet mode
	Qty of Hybrid	Number of installed Hybrid units
Hybrid config	Qty of Hybrid 1 Battery	number of battery modules in Hybrid 1
	Hybrid 1 PV1 Voc	String OCV* between PV1+ and PV1-
	Hybrid 1 PV2 Voc	String OCV between PV2+ and PV2-
	Hybrid 1 PV3 Voc	String OCV between PV3+ and PV3-
	Hybrid 1 PV4 Voc	String OCV between PV4+ and PV4-

| 1	2	3	4	5	6	7	8	9
Add device	Bluetooth config	Wi-Fi config	Device update	Grid config	Smart Gateway config	Hybrid config	Card config	Warranty Registration

5- Multiple Hybrid Config:

If multiple Hybrids are connected with a single SG in parallel, than it requires special attention to details as it also involves Hardware operation. Follow the below steps in sequence:

Step a. Select the appropriate number from the dropdown list to input quantity of connected hybrids with the single Smart Gateway. In below example, we choose 2 Hybrids.
Step b. Go to the Hybrid config page, and Hybrid1 Config page will display.
Step c. Keep the MCB of Hybrid1 in the smart gateway in ON state, and turn off the MCBs of all other Hybrid units at this step.
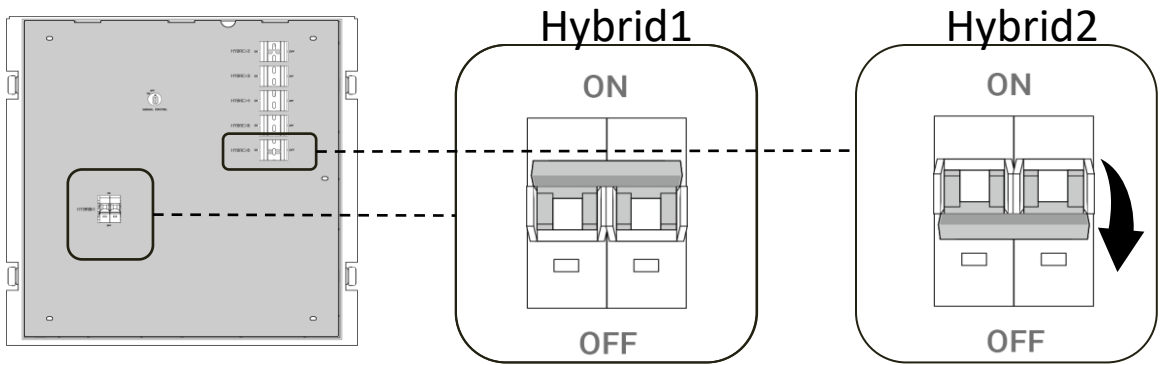
Step d. Start configuration for Hydrid1, Input the number of batteries connected with Hybrid1 and input open circuit voltages for the connected PV arrays. Click submit to save and click the next button.
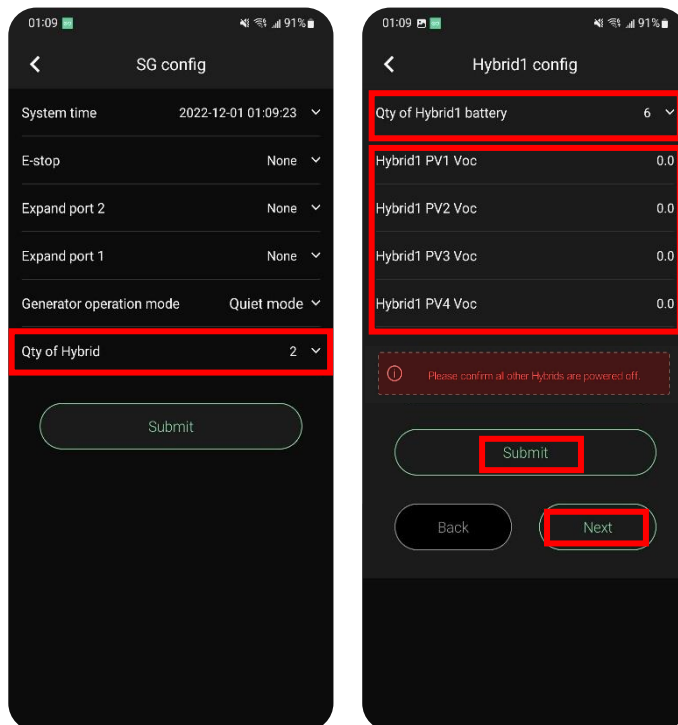
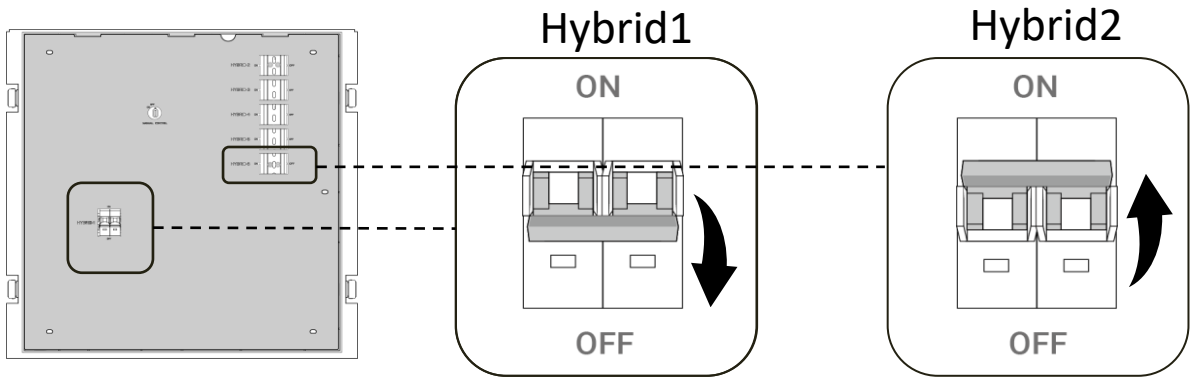Step e. Now, turn off the MCB of Hybrid1 in the Smart Gateway and turn on the MCB of Hybrid2 installed on the din rail. Wait a few sec for the hybrid1 to completely turn off.


Step f. On the Hybrid2 config page, start the configuration of Hybrid2 now. Input the number of batteries connected with Hybrid2 and input open Circuit voltages for the connected PV arrays. Then click submit to save, and click finish to return to Installation steps.
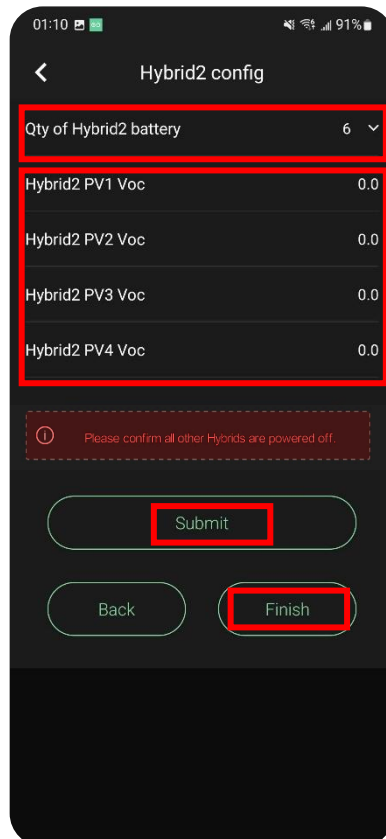
⚠️ Note: It is critical to configure all Hybrid Units one by one. Ensure that during configuration of a certain Hybrid unit, all other Hybrid units power is disconnected by turning off the respective MCBs. This is done to ensure that the communication between the Smart Gateway and Configured Hybrid unit don't have any interference.

Activate communication card. So, when WIFI doesn't work, it can serve as a backup for remote monitoring.
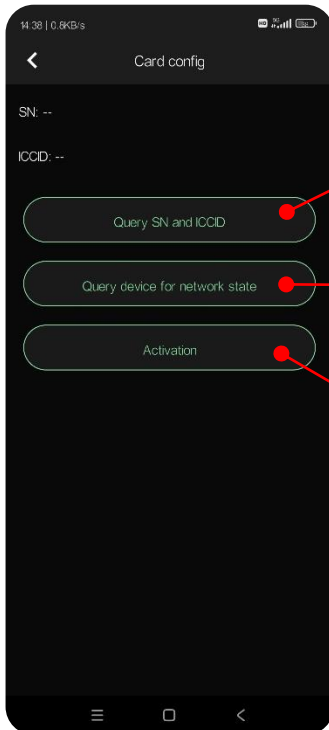
1. Click to read card information

2. Click to confirm that the card is connected to a network.

3. Activate the card if installed

1	2	3	4	5	6	7	8	9
Add device	Bluetooth config	Wi-Fi config	Device update	Grid config	Smart Gateway config	Hybrid config	Card config	Warranty Registration

In the last step, take and upload photos of the successful commissioning and submit for final approval by EP Team. The Installation approval is necessary for Warranty Registration.
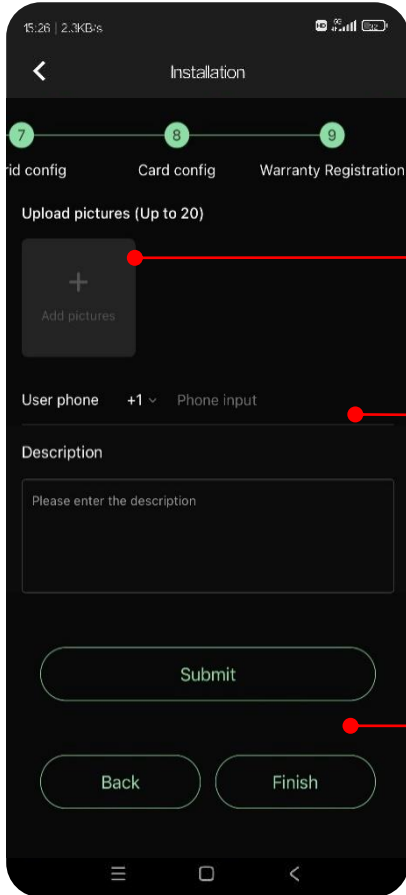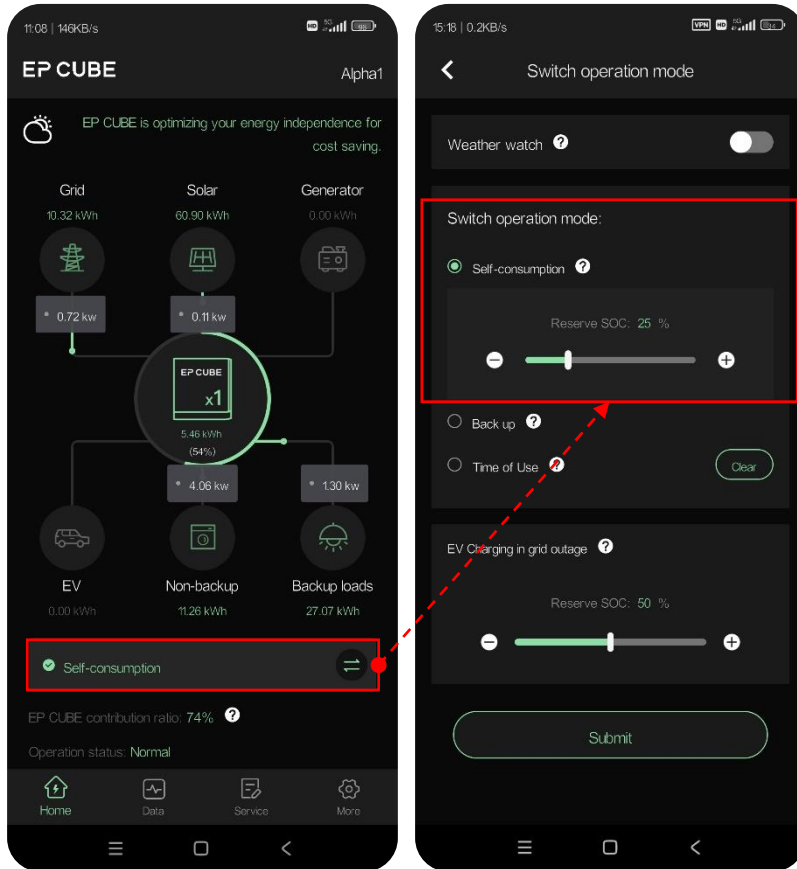
Click on the add photos section to upload photos

Add end user's phone number, and add any comments if needed.

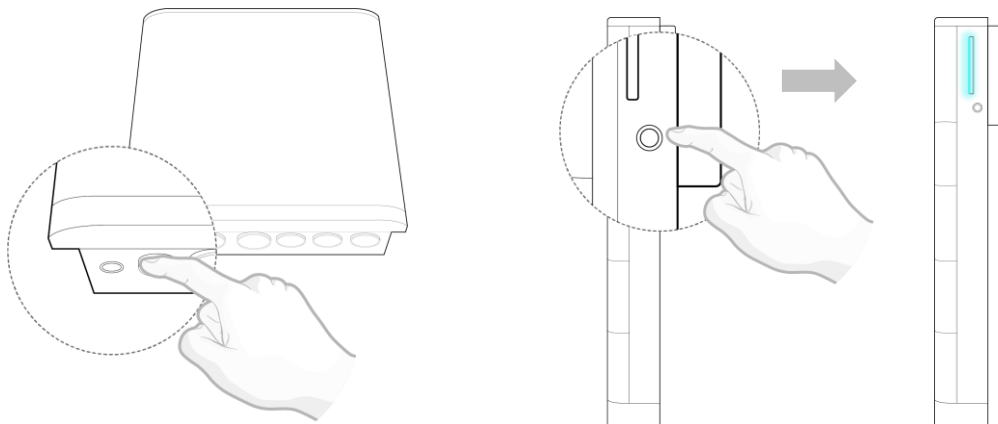Click submit button & then click finish to return to home page.

Click on home page button
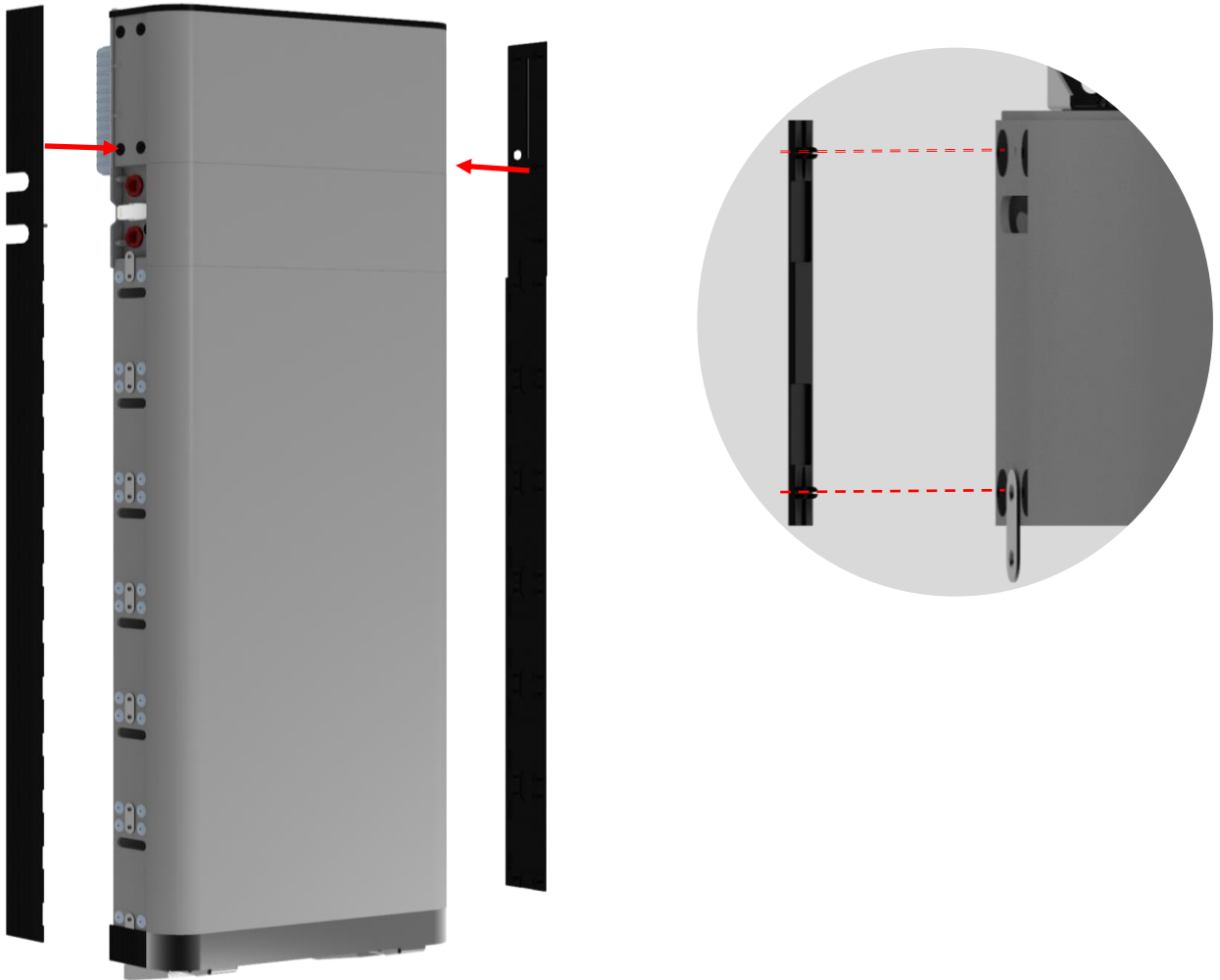

Click icon in front of current mode

Select desired operation mode and click submit.

After commissioning is completed, turn on the Smart Gateway, and then turn on the Hybrid.

Swipe down on the Home page to refresh the monitoring page, and for updated data.

Install Side Covers

Finally, when installation is finished, ensure that all connections are rated **NEMA 4X.**