
INSTALLATION MANUAL

Q.HOME CORE
A5



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1 Information in this Manual

1.1 About This Manual

This is the installation manual for Q.HOME CORE A5. Please read this installation and user manual carefully before installing and operating Q.HOME CORE A5. It contains important safety instructions. The warranty will be void if you fail to follow the instructions in this manual.

1.2 Target Group

Electricians and qualified technicians who are allowed to install and to connect electrical systems.

1.3 Symbols Used in This Manual



WARNING

This symbol indicates a hazardous situation which could result in death or serious injury, if not avoided.



CAUTION

This symbol indicates a hazardous situation which could result in minor or moderate injury, if not avoided.



Prohibited.

Note

This indicates valuable tips for installation of the product.

2 Safety

The safety section may not include all regulations for your locale; personnel working with Q.HOME CORE A5 must review applicable federal, state and local regulations and the industry standards regarding this product.

2.1 Intended Use

Q.HOME CORE A5 is designed for residential use only. It should not be used for commercial or construction area. It is a single-phase, Grid-connected system of solar energy sources and Li-Ion Battery energy storage.

Q.HOME CORE A5 uses solar energy power connected to the input/output terminal installed on the side of the device in order to:

- charge the Li-Ion Battery energy storage,
- provide a supply to the household load, and
- convert direct current (DC) electricity of the Battery to alternating current (AC) to discharge as household single-phase load or electric system.

This device should not be used for any purpose other than the purpose described in this installation manual. Any substitute use of this device, random change in any of its parts, and use of components other than sold or recommended by Qcells will nullify the product's guarantee.

For example, Qcells Li-Ion Battery energy storage should not be replaced by other manufacturer's Battery storages. For further information on proper use of this device, contact the Qcells Service-Hotline.

2.2 Safety Precaution

The following safety precautions and the warning messages described in this section must be observed. If any of the following precautions are not fully understood, or if you have any questions, contact the customer support for guidance.



- All work on the ESS and electrical connections must be carried out by qualified personnel only.
- High voltages in power conditioning circuits. Lethal hazard of electric shock or serious burns. Wear rubber gloves and protective clothing (protective glasses and boots) when working on high voltage/high current systems such as the inverter and battery systems.
- This product provides a safe source of electrical energy when operated as intended and as designed. But a potentially hazardous circumstance such as excessive heat or electrolyte mist may occur due to improper operating conditions, damage, misuse and/or abuse.
- Do not connect or disconnect PVs, batteries, and grid connectors with the power on. Otherwise, it may generate electric arcs or sparks, causing fire or injury.
- Do not open the enclosure while the inverter is operating. Touching inner components under running condition may lead to electric shock, causing death or serious injury.
- Before maintenance, turn off the equipment for at least 5 minutes and strictly comply with the safety precautions stated in this manual.



CAUTION

- This product is intended to be used for PV source inputs and residential home grids (AC 230V). If not used as intended, the protection provided by the equipment may be impaired.
- This product is designed appropriate for two-PV string structure. Therefore, the PV string 1 and PV string 2 must be connected to PV input 1 and PV input 2, respectively. Do not split one PV string output for connecting it into the PV input terminal 1 and input terminal 2.
- After disconnecting the inverter from the battery pack or PV, wait 5 minutes to discharge the inverter.
- Do not touch the PV cable when the product is connected to the PV arrays. When the photovoltaic array is exposed to light, it supplies DC voltage to the product.
- In case of short circuit, high-voltage components inside the inverter may influence the product or other properties. Cover the product or take other precautions to prevent metal objects from entering inside during installation and wiring.

2.3 Earth Fault Alarm

When an earth fault occurs, the inverter stops operation and the buzzer operates for 2 minutes.

Note: This feature is only supported on models released in Australia.

2.4 Product Safety Labels



Wear eye protection at all times (installation, maintenance, etc.)



Follow the instruction in this manual for service and replacement.



Caution: Risk of Electric Shock

Alternating current (AC) and direct current (DC) sources are connected to this device. To prevent risk of electric shock during installation or maintenance, ensure that all AC and DC connections are disconnected.



Caution: Hot Surface

Metallic parts of enclosure may be hot during operation.



Caution: Risk of Electric Shock

Hazardous voltage is still present 5 minutes after all power sources have been disconnected. Wait for at least 5 minutes before maintenance to prevent electric shock.



Warning: Explosion

Do not expose to heat or flame. Keep away from flammable substances.



Warning: Corrosive Substances Leaking

Do not disassemble or modify the battery. Otherwise, corrosive substances may leak.

2.5 Disposal

Disposal of Q.VOLT



- When this crossed-out wheeled bin symbol is attached to a product, it means the product is covered by the European Directive 2002/96/EC.
- All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
- The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
- For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

Disposal of Q.SAVE



- When this crossed-out wheeled bin symbol is attached to batteries/accumulators of your product, it means they are covered by European Directive 2006/66/CE.
- This symbol may be combined with chemical symbols for mercury(Hg), cadmium(Cd) or lead(Pb) if the battery contains more than 0.0005% of mercury, 0.002% of cadmium or 0.004% of lead.
- All batteries/accumulators should be disposed separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
- The correct disposal of your old batteries/accumulators will help to prevent potential negative consequences for the environment, animal and human health.
- For more detailed information about disposal of your old batteries/accumulators, please contact your city office, waste disposal service or the shop where you purchased the product.

3 Product Overview

Q.HOME CORE A5 includes the inverter, battery charger/discharger, li-ion battery, and EMS. The basic operating modes consist of stand-alone (back-up) mode, PV generation mode, PV generation and charge/discharge mode. The operation mode of this product is automatically determined by the EMS algorithm.

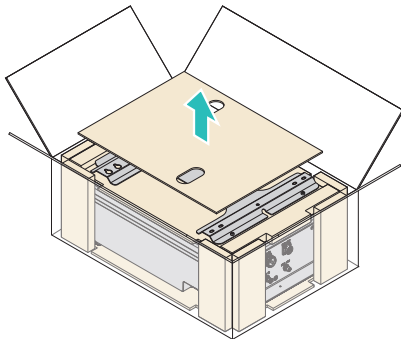
3.1 Unpacking



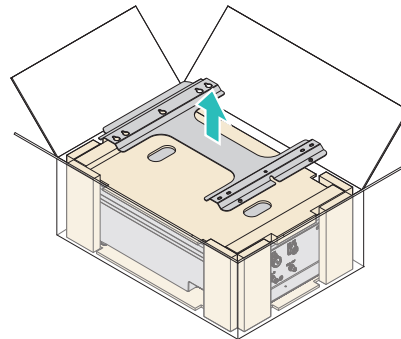
CAUTION

The Q.VOLT weighs about 33.9kg and Q.SAVE weighs about 61.1kg. Therefore, special care is required when handling. At least two people have to carry and take it out.

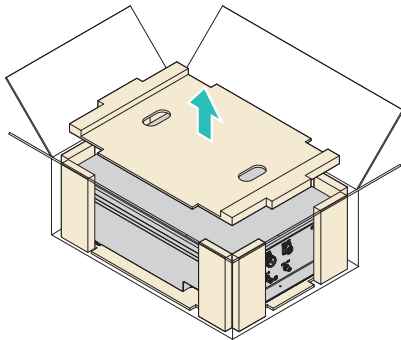
1 Open the box and remove the top pad.



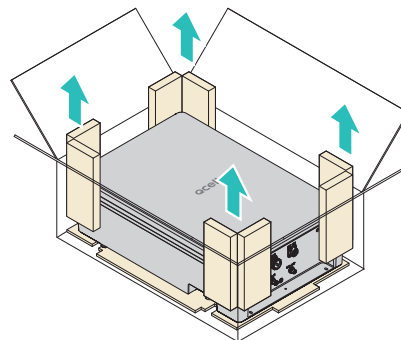
2 Take the mounting bracket out of the box.



3 Remove the middle pad.

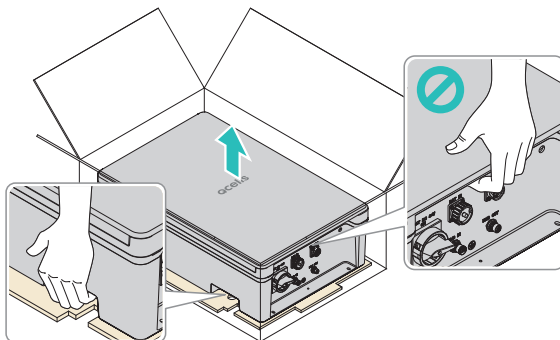


4 Remove the side pads.




5 Take the product out of the box.

- When lifting the product, do NOT hold the cover. Hold the slots on both sides of the product to lift it.

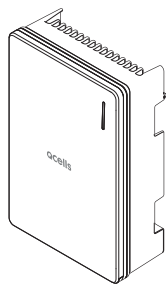


3.2 Package Contents

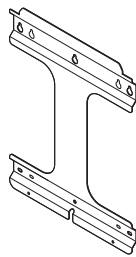
Check for any damages that may have occurred during transportation. If there is any damage to the product or packaging, please contact your supplier immediately.

 Do not operate with other components not approved by Qcells. (Connecting other products to Qcells products may result in abnormal operation.)
CAUTION

Q.VOLT Package Contents



Q.VOLT (Inverter): 1EA



Mounting bracket 1EA



Quick guide: 1EA

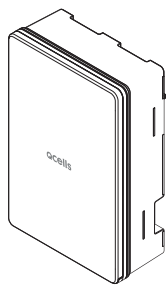


Wall mount bolt & anchor: 6EA

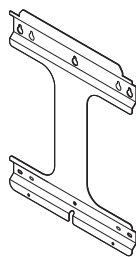


Bracket mount bolt (M6): 2EA

Q.SAVE Package Contents



Q.SAVE (Battery): 1EA



Mounting bracket: 1EA



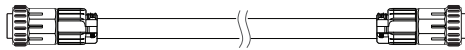
Quick guide: 1EA



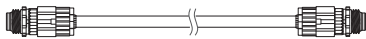
Wall mount bolt & anchor: 6EA



Bracket mount bolt (M6): 2EA

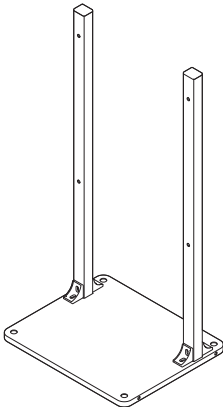


Battery Power Cable (0.6m): 1EA



BMS (Battery Management System) communication cable (0.6m): 1EA

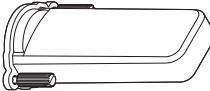
Options



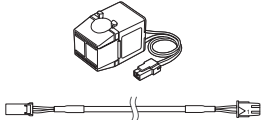
Stand for floor mount



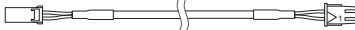
Wi-Fi dongle



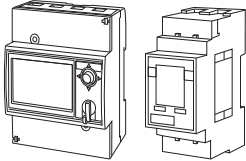
Wi-Fi/LTE waterproof cover



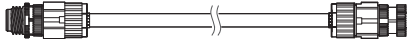
CT (Current Transformer) & CT cable (3m)



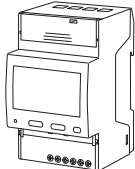
CT Extension Cable (20 m)



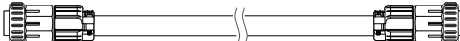
Energy Meter (EM24, EM112)



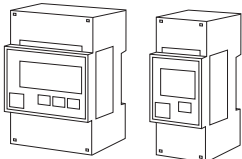
BMS communication extension cable (1m, multi-linkable)



Energy Meter (EM530, EM540)

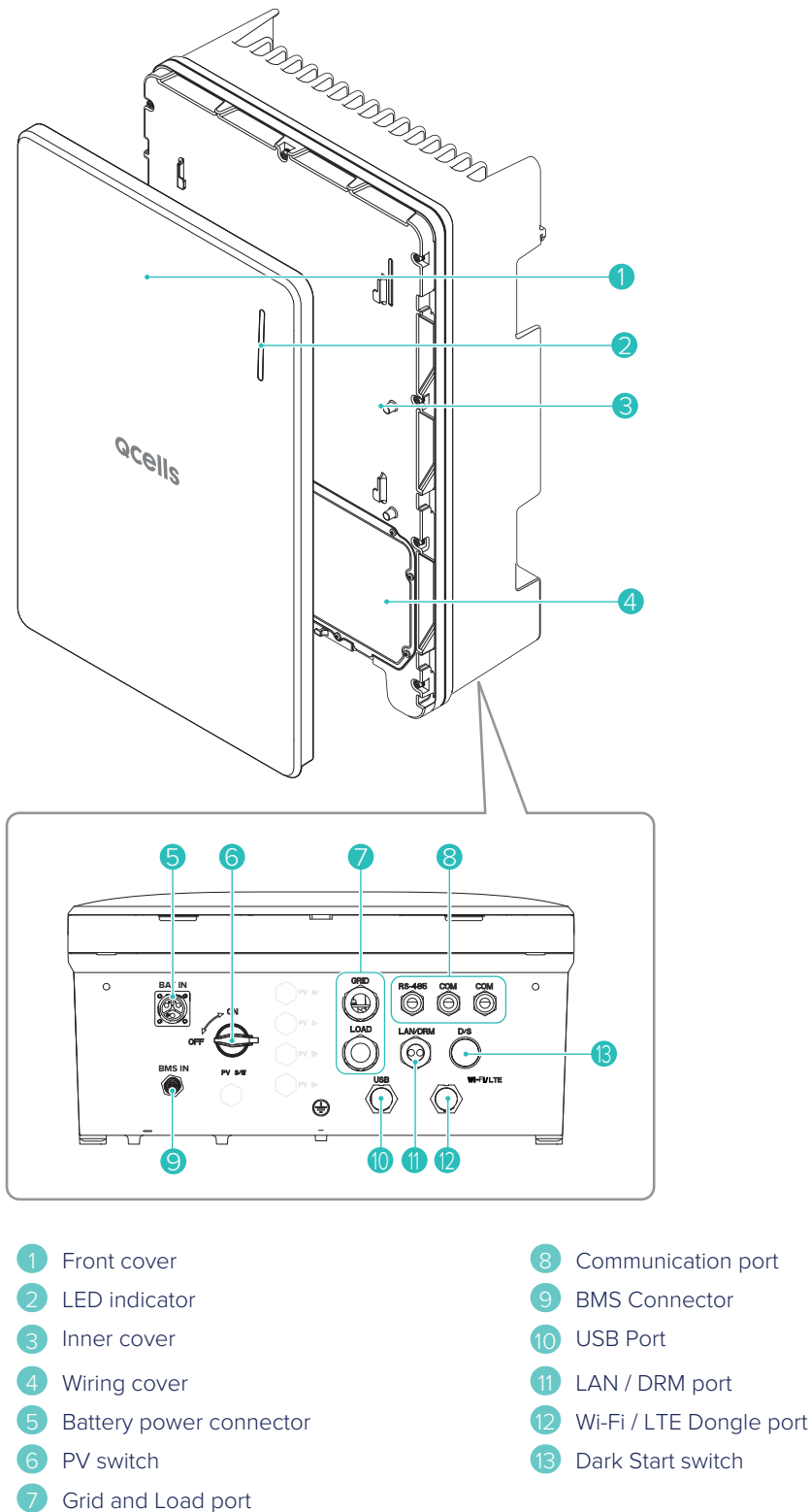


Battery Power Cable (1.6 m, 2.6 m)



Energy Meter (DTSU666, DDSU666)

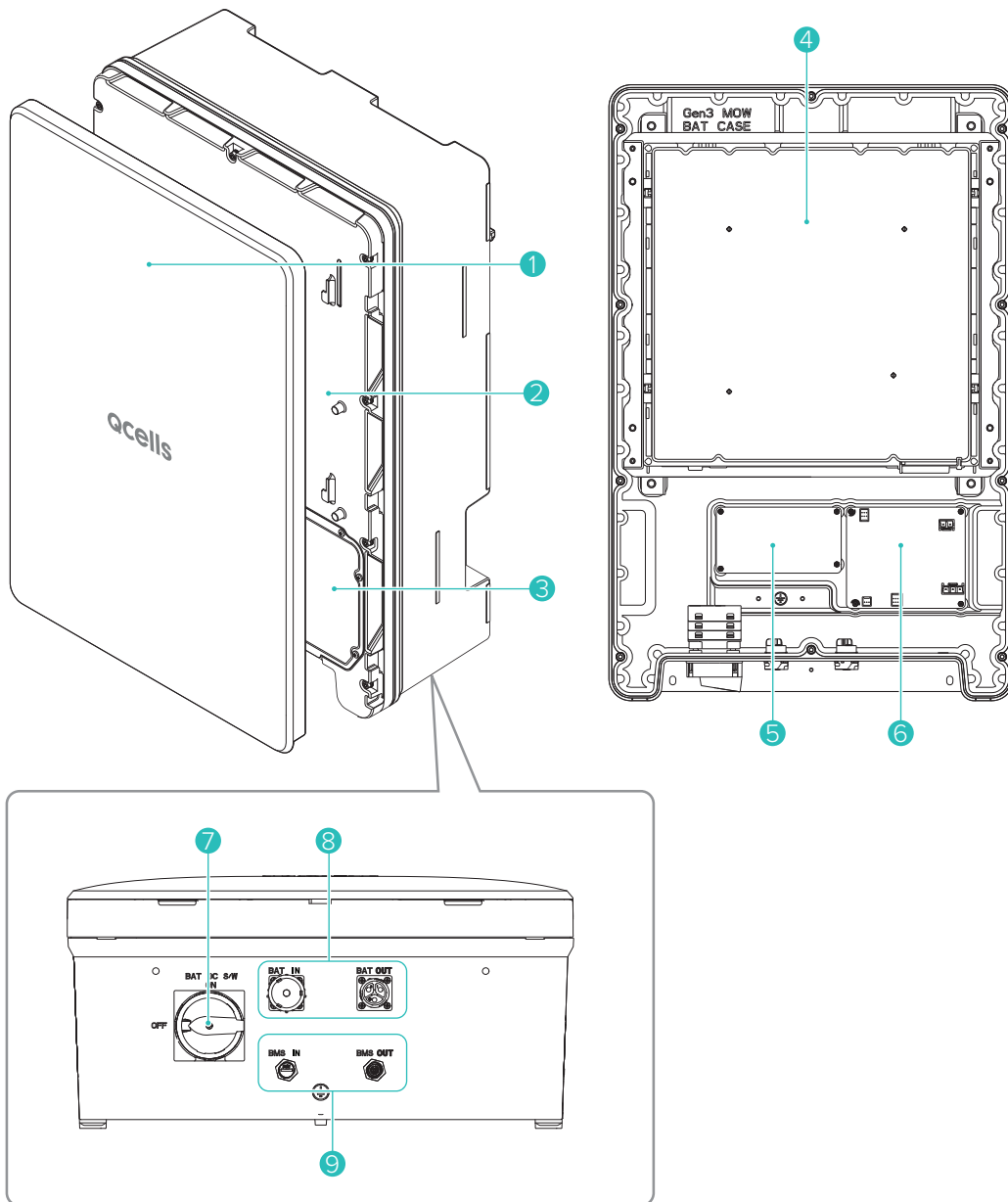
3.3 Q.VOLT Overview



Note

For information about how to open the covers, see "7 Opening the Covers" on page 28.

3.4 Q.SAVE Overview



- 1 Front cover
 - 2 Inner cover
 - 3 Wiring cover
 - 4 Battery module
 - 5 Relay board
- 6 BMS board
 - 7 Battery DC Switch
 - 8 Battery Power Connector
 - 9 BMS Connector

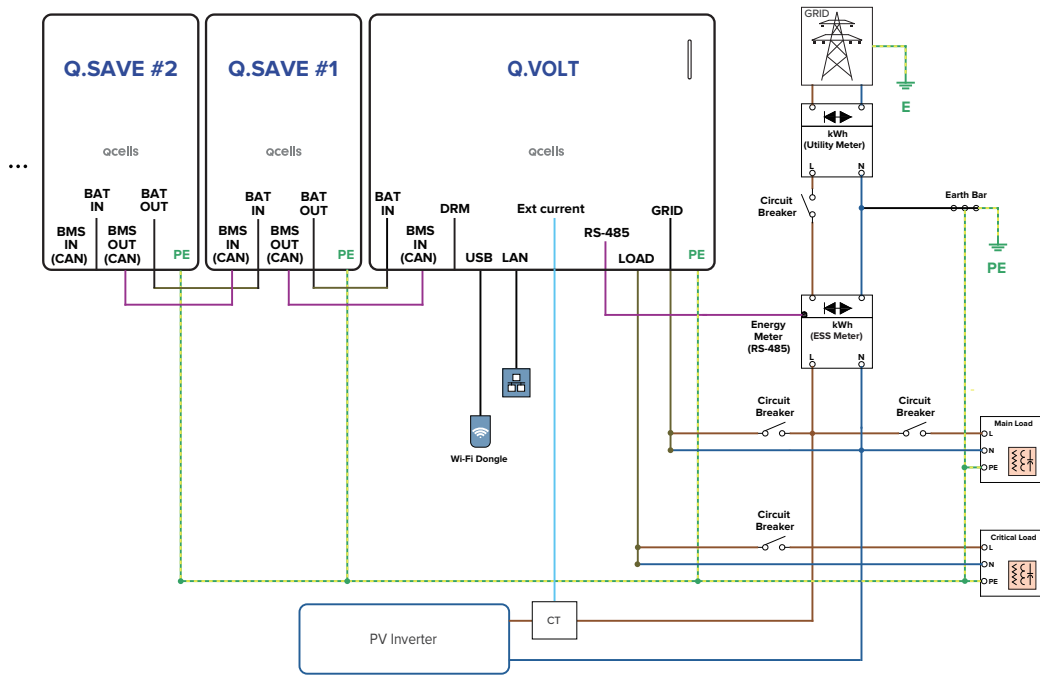
3.5 Specifications

GENERAL PRODUCT INFORMATION		
Dimensions Inverter Module / Battery Module (W × H × D)	[mm]	460 × 700 × 221, 238 (From Wall)
Weight Inverter Module / Battery Module	[kg]	33.9 / 61.1
Operating Temperature Range	[°C]	Q.VOLT: -20 to 60 / Q.SAVE: -10 to 45
Relative Humidity	[%]	4 to 100 (Condensing)
Protection Degree / Class		IP65
Mounting		Wall-Mounted or Floor-Mounted Options
Max. Operation Altitude	[m]	2,000
Cooling Method		Natural air cooling
Product Warranty / Performance Warranty		15 / 15 years
Noise Emissions		≤ 40 dB (A) @ 1m
Over Voltage Category		OVC II (DC) / OVC III (AC)
Communications		LAN, RS485, CAN, Wi-Fi (optional), LTE (optional)
Remote Monitoring		Web, Mobile & App
Software Update		Online update
Energy Management System		Integrated
Country of Manufacturer		Republic of Korea
GRID DATA (AC)		
Max. Apparent Power / Rated Output Power	[kVA/kW]	5 / 5
Nominal Voltage / Range	[V]	230 / 180 to 260
Nominal Grid Frequency / Range	[Hz]	50, 60 / -5 Hz to +5 Hz
Feed-in Phase / Connection Phase		Single / Single
Nominal Current / Max. Current / Max. Over-Current Protection	[A]	21.7 / 25 / 30
Power Factor Range		0.8 lagging to 0.8 leading
Total Harmonic Distortion	[%]	≤ 5
BACKUP POWER OUTPUT (ALTERNATING CURRENT)		
Connection Phase		Single
Rated Apparent Power / Rated Power (Only Battery)	[kVA/kW]	3.3 to 4.5 / 3.3 to 4.5 @ 1 Battery Pack, 5 / 5 @ 2, 3 Battery Pack
Rated Voltage	[V]	230
Rated Frequency	[Hz]	50, 60
Switch over Time to Backup Power		less than 0.1 seconds
Overload support		30 sec for 5.0 - 5.5 kVA, 20 sec for 5.5 - 6.0 kVA, 10 sec for 6.0 - 6.5 kVA @ 2, 3 Battery Pack and Off-grid
* The backup power output of load terminal is not suitable to supply inductive or capacitive load that causes high inrush current.		

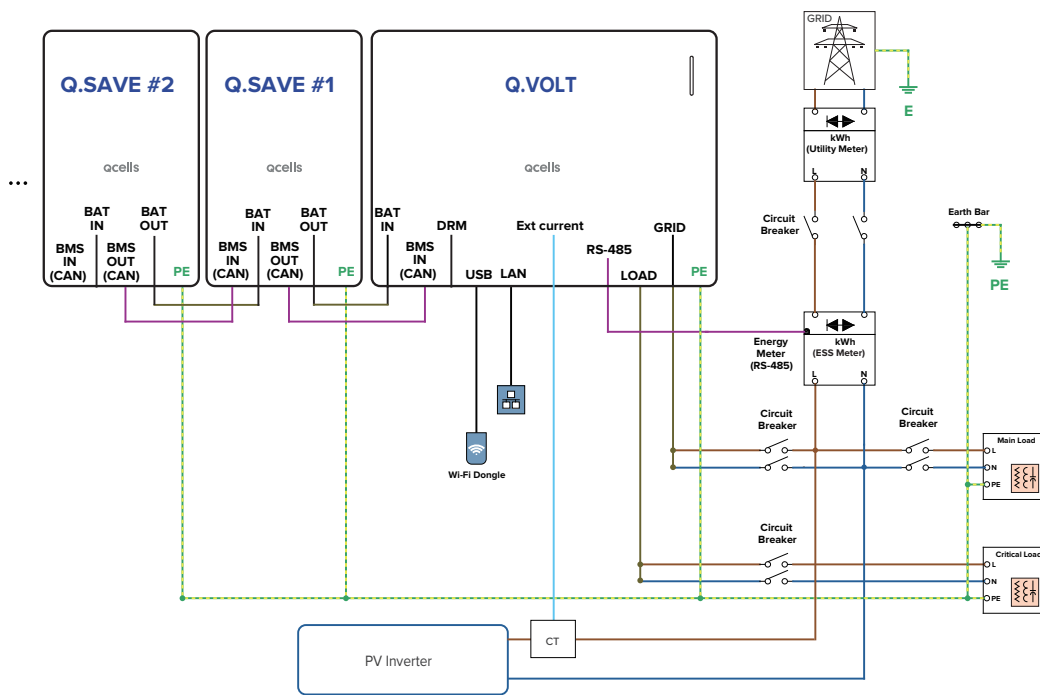
EFFICIENCY		
Max. Efficiency (Battery to Grid)	[%]	96.3
BATTERY UNIT (DC)		
Battery Technology		Lithium-ion NCA (Samsung SDI)
Battery Energy	[kWh]	6.8/13.7/20.5 (6.86 kWh/pack)
Battery Usable Energy	[kWh]	6.51/13.03/19.55
Max. Charge Power/Max. Discharge Power	[kW]	3.8/4.5 @ 1 Battery Pack, 5.0/5.0 @ 2, 3 Battery Pack
Converter Technology		Non-isolated
Rated Battery Voltage/Battery Voltage Range	[V _{DC}]	202.8/168.0 to 228.2
Maximum Charge/Discharge Current	[A]	16.9/20 (for each Q.SAVE unit)
Depth of Discharge (DoD)	[%]	95
CERTIFICATES AND APPROVALS		
Inverter Model Name		Q.VOLT A5S
Battery Model Name		Q.SAVE B6.8S
Certificates and Approvals		AS/NZS 4777.2:2020, CE, IEC 62109-1, IEC 62109-2, IEC 62040-1, IEC 62619, IEC 62477-1, EN 61000-6-2, EN 61000-6-3, IEC 60068.2-52, IEC 60730-1ANNEX.H

3.6 Network System Diagram

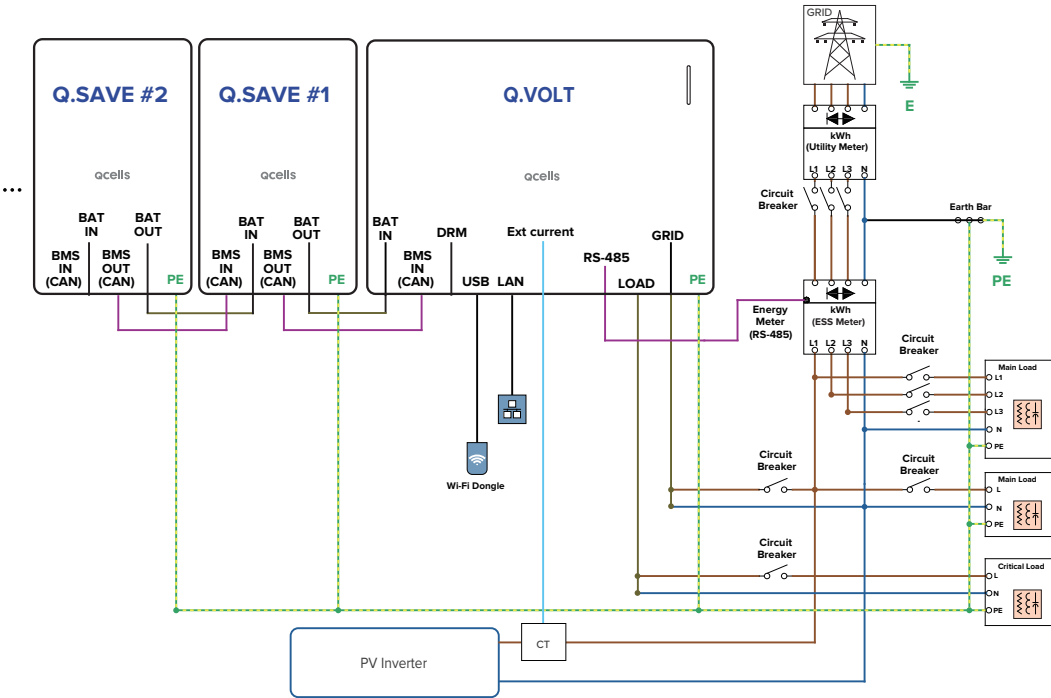
TN-S Network System (Single-Phase)



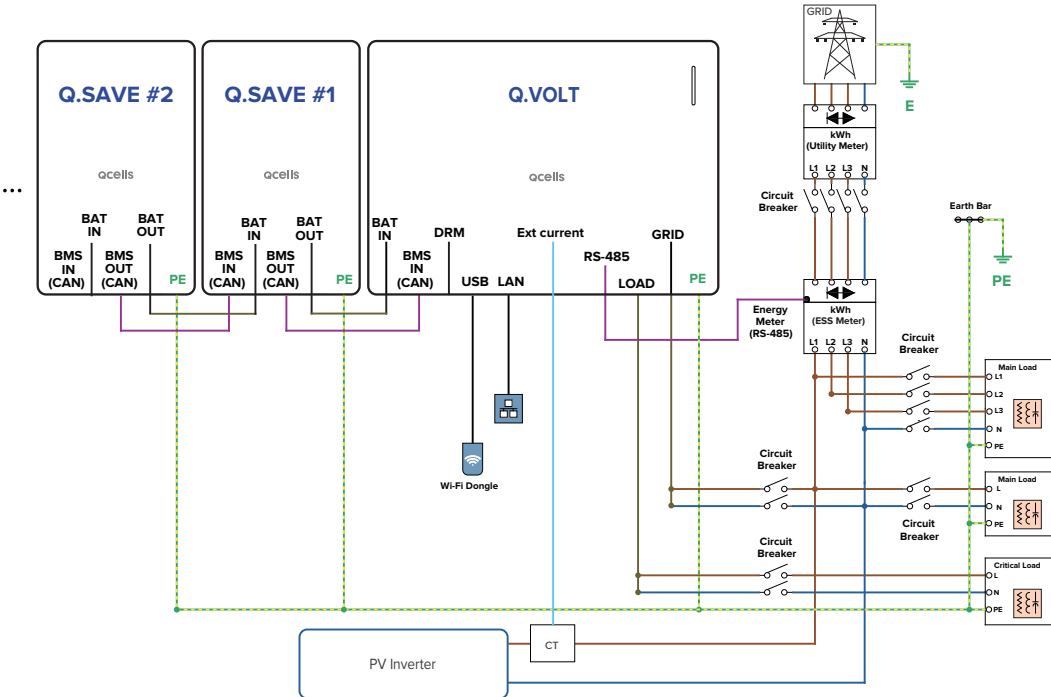
TT Network System (Single-Phase)



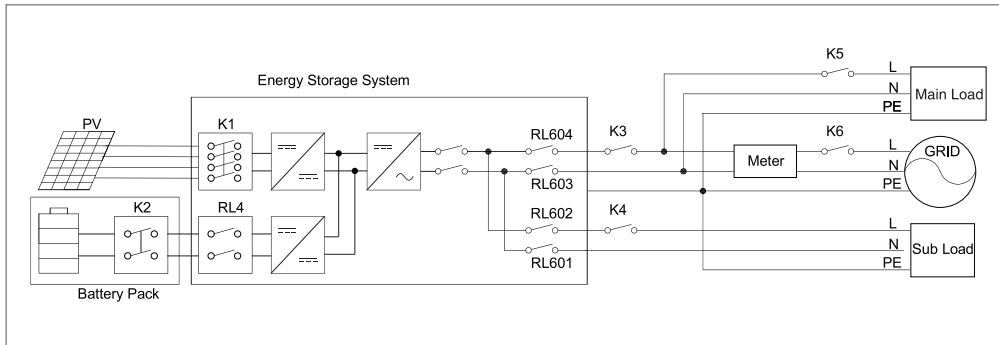
TN-S Network System (Three-Phase)



TT Network System (Three-Phase)



3.7 MEN Link



- 1 SW1 is PV input DC Switch. SW2 is battery breaker. SW3 is grid breaker, SW5 is main load breaker. SW6 is total grid breaker. SW4 is sub_load breaker.
- 2 MEN Link : The INVERTER maintains connection for the internal relay(RL603, RL601) on neutral wire when entering the off-gird mode.

4 Installation requirements

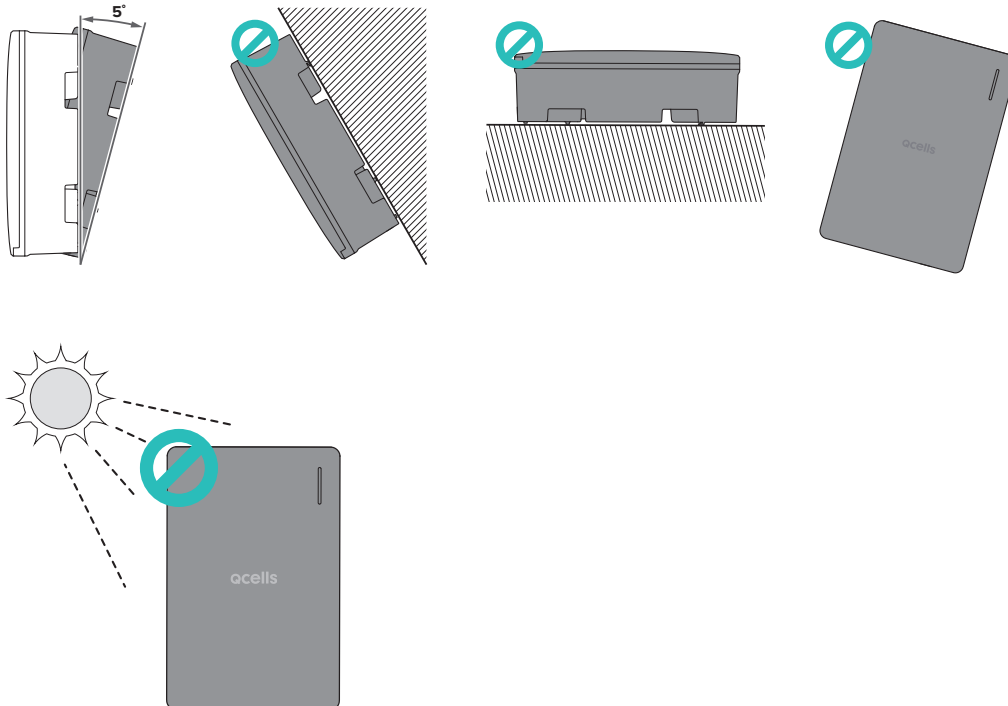
4.1 Installation Environment



- Although it supports the waterproof performance equivalent to the IP65 rating, install in a place not directly exposed to direct sunlight, rain, and snow.
- If the product is installed in direct sunlight, abnormal operation may occur due to high internal temperature of the product, and if the product is damaged or malfunctions due to this, the product may be excluded from the warranty.

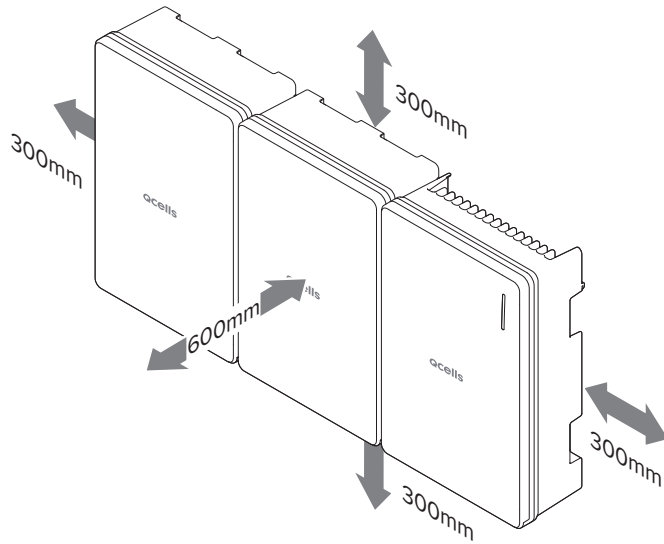
Make sure the installation site meets the following conditions:

- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not near the television antenna or antenna cable.
- Not higher than an altitude of about 2000 m above sea level.
- Under good ventilation conditions.
- The ambient temperature in the range of -10 °C to 45 °C
- While it can be installed by slanting it backward up to 5 degrees or lower, do not install it tilted on the side. The wiring area should point downward.

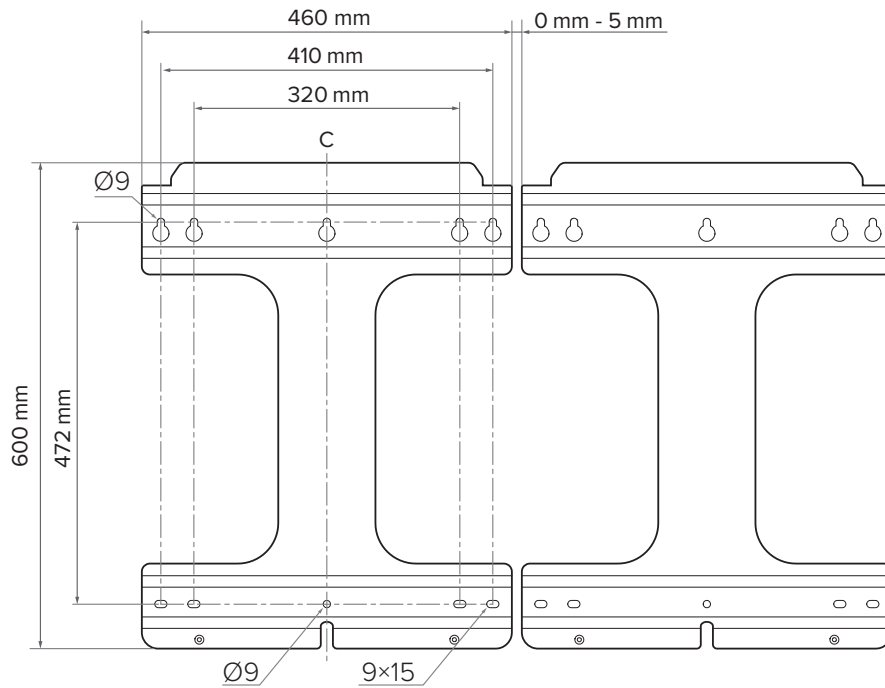


4.2 Installation Space

For effective heat dissipation, there must be sufficient distance from surrounding objects and sufficient space for cabling work is required.



4.3 Mounting Bracket Dimensions



4.4 Safety Gear



WARNING

All tasks regarding the PV module, inverter, and battery system must be performed by certified personnel. Wear safety gloves and protective clothing while working.

Wear the following safety gear when installing the product. Installers must meet the relevant requirements of international standards, such as IEC 60364 or the domestic legislation.



Insulated Gloves



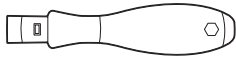
Safety Goggles



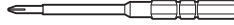
Safety Shoes

4.5 Tools

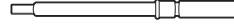
These tools are required to install the Q.HOME CORE A5 system.



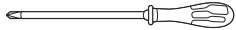
Torque screwdriver



Phillips-screwdriver bit



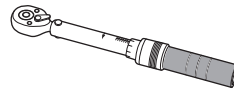
Hex-key bit



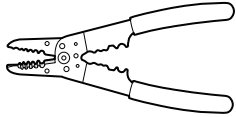
Phillips-head screwdriver



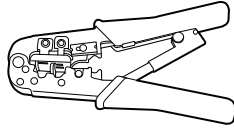
Flat-head screwdriver



Torque wrench



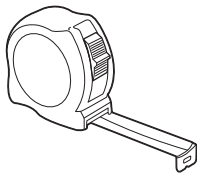
Wire stripper



Cable crimper



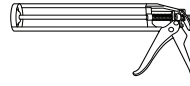
Voltmeter



Tape measure



Drill



Sealant gun

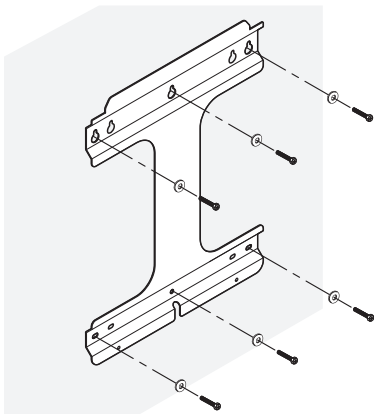


USB cable for mobile

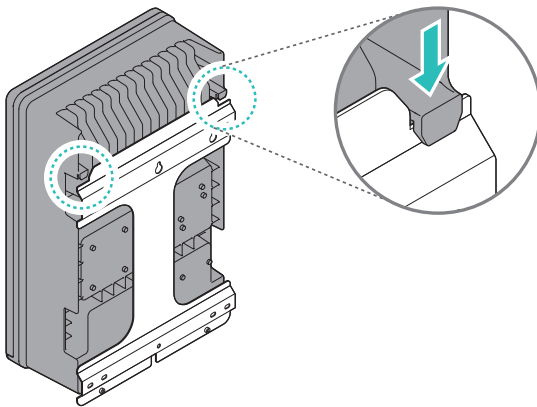
5 Mounting Q.HOME CORE

5.1 Wall Mount

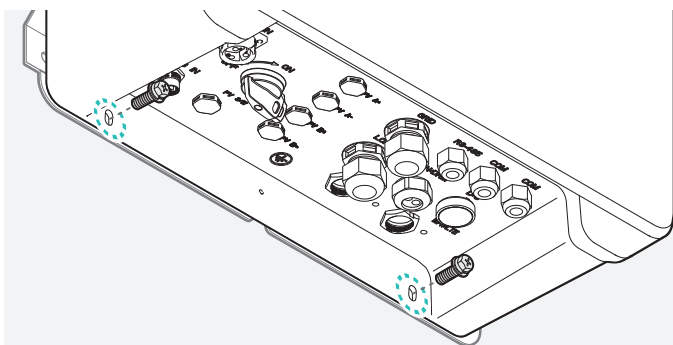
- 1 Check the location of a hole of the bracket and drill a hole on the wall.
 - Mounting hole: $\varnothing 9$ mm
- 2 Insert an anchor into the hole and fix the bracket with a bolt.
 - Use the wall mount bolts included in the package.
 - At least 4 bolts are required to secure the bracket.
 - Anchor bolt: 10 N-m (100 kgf-cm)
 - M8 bolt: 12.5 N-m (127.5 kgf-cm)



- 3 Place the product on the bracket.



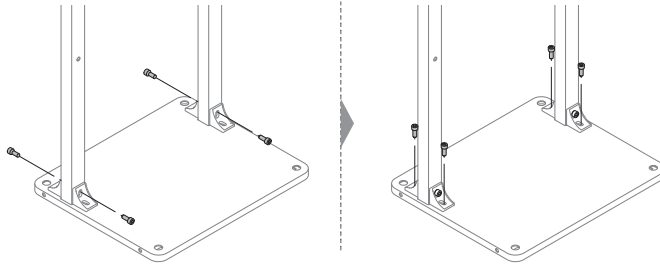
- 4 Secure the bottom of the product to the bracket using the M6 bolts.



5.2 Stand for Floor Mount (Option)

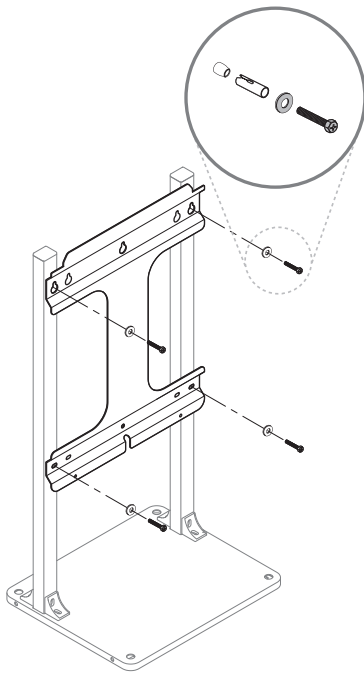
1 Assemble the stand legs.

- Bolt: M8 × 16 (included in the package.)



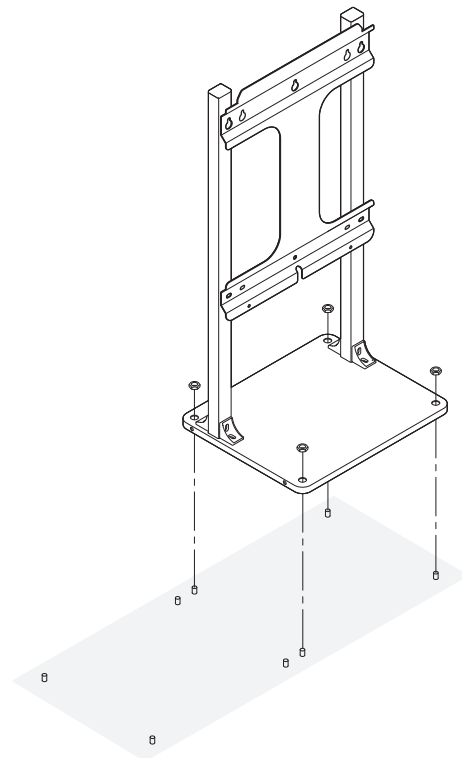
2 Fix the bracket to the stand legs.

- Use the wall mount bolts included in the package.
- The anchor is not needed. Remove the anchor from the wall mount bolt.



3 Fix the stand on the floor.

- Mounting hole: Ø17.5 mm
- Nut: M12 to M16 (not included in the package)



4 Place the product on the bracket and secure the product to the bracket using the M6 bolt.

- See steps 3 and 4 in the "5.1 Wall Mount".

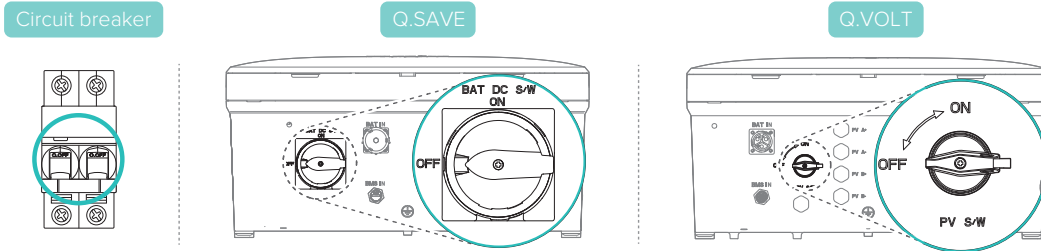
6 Electrical Connection Overview



CAUTION

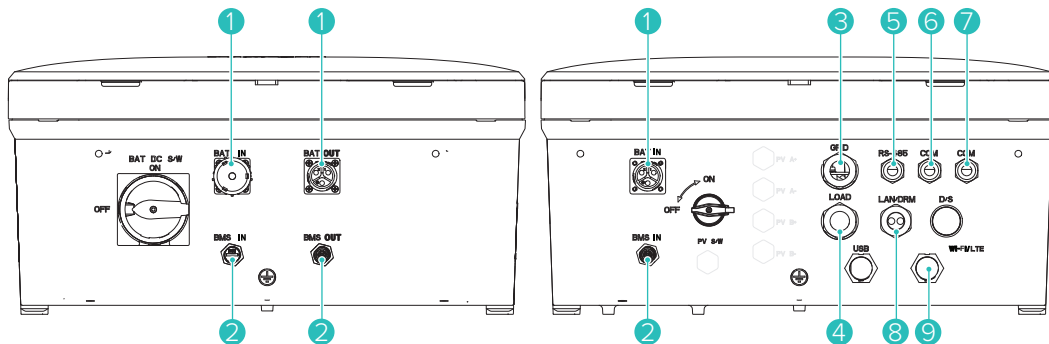
- Make sure to match the polarity of the cables properly when installing. Otherwise, it may cause electric shock or the product may permanently be damaged. The damage from this is not covered by the warranty.
- Before batteries are connected, all other connections should be done and the battery interrupter must be off.

Before connecting electrical cables, make sure the AC circuit breaker, PV switch, and DC switch are OFF.



6.1 Connectors and Ports Layout

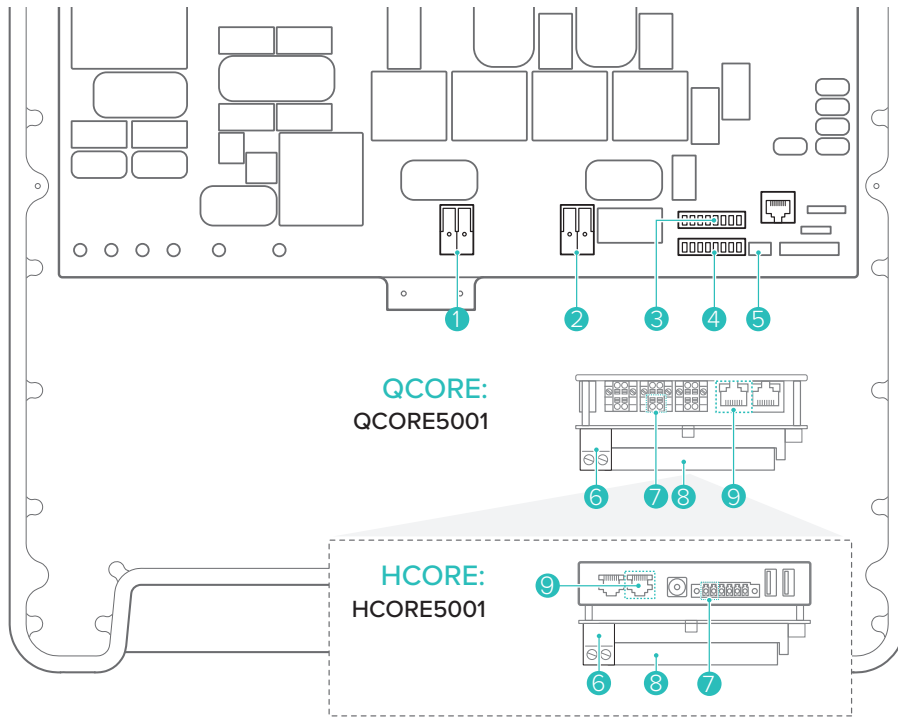
External Connectors and Ports



- 1 Battery
- 2 BMS communication
- 3 Grid
- 4 Load
- 5 RS-485

- 6 COM
- 7 COM (Spare)
- 8 LAN/DRM (RJ45)
- 9 Wi-Fi/LTE

Internal Connectors and Ports



- 1 Load
- 2 Grid
- 3 Ext. comm. 2
- 4 Ext. comm. 1
- 5 Ext. CT
- 6 RS485 for Energy Meter
- 7 (Optional) RS485 for Secondary Energy Meter
- 8 Battery for Dark Start
- 9 LAN (DHCP)

Note

For information about how to open the covers, see "7 Opening the Covers" on page 28.

6.2 Power Cable Specification

The power cables must correspond to the AC/DC input and output specifications for this product.

Cables are not included in the product package.

Cable	Wire Size	Nominal Voltage	Color	
			EU (DE, FR) and GB	AU
Grid (L, N, PE)	6 mm ²	600 V or more	L: Brown or Black N: Blue PE: Green/Yellow	L: Brown or Red N: Blue or Black PE: Green/Yellow or Green
Load (L, N, PE)	6 mm ²	600 V or more	Recommend DC+ : RED, DC- : Black, PE: Green/Yellow or Green	
Battery DC	6 mm ²	400 V or more		

6.3 Circuit Breaker

AC Circuit Breaker and DC Disconnection Switch

The circuit breaker on the distribution board varies depending on the installer.

Follow the installation standards to install a circuit breaker satisfying the voltage and current specification of the Grid and PV cable.

	Standard	Short Circuit Current Rating
AC Circuit Breaker	230 VAC/32 A	minimum 10 kA
DC Disconnect	650 VDC/27 A or more	

RCD (Residual Current Device)

The product can cause a residual-current in the external protective earthing conductor.

Q.HOME CORE has a built-in RCMU (Residual Current Monitoring Unit), which protects residual-current under continuous and sudden conditions. If the RCD must be applied in a particular area, 30mA or higher Type B RCD must be applied.



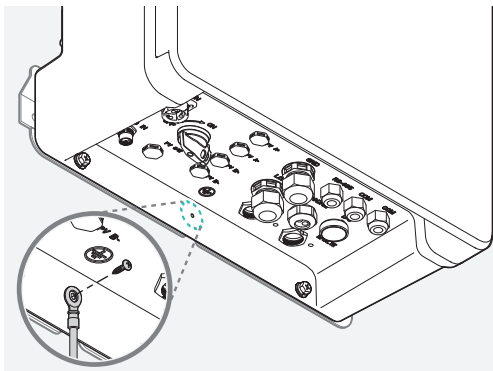
CAUTION

- It must be used Type B RCD for Q.HOME CORE.
- (optionally available) Type A RCD can be optionally used for critical load only for the following manufacturers.
 1. NHP
 2. CLIPSAL
- However, when Type A RCD is used, a ground-side DC component leakage current exceeding 6 mA may cause magnetization of the RCD with electromagnetic coil in such cases. This may negatively affect the function of the protection device.
- The use of Type A RCD other than the manufacturer listed above may not work properly to cut off leakage current of Q.HOME CORE. It's the responsibility of the installer to ensure the RCD used adheres to local installation and regulation requirements.

6.4 Grounding Q.HOME CORE

Q.SAVE and Q.VOLT must be connected to an additional ground on the enclosure.

- PE bolt: M4
- Torque for PE bolts: 1.2 to 1.9N·m



Note

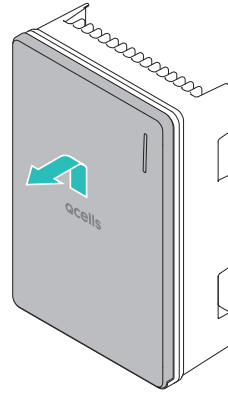
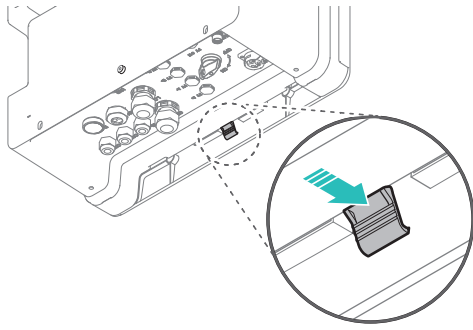
For details about crimping the ring terminal, see "Crimping the PE Wire" on page 29

7 Opening the Covers

7.1 Opening the Front Cover

To remove the front covers from the inverter and battery packs:

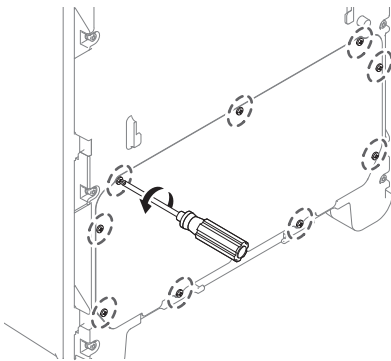
After pressing the latch at the bottom of the cover, raise the cover upward to open it.



7.2 Opening the Wiring Cover

Remove the 9 bolts and open the wiring cover.

- Bolt: M4



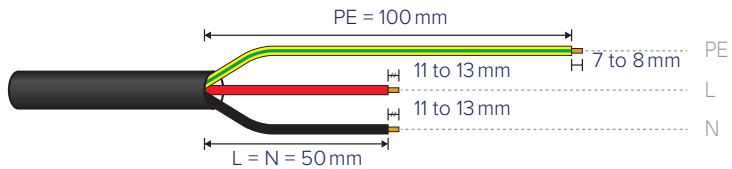
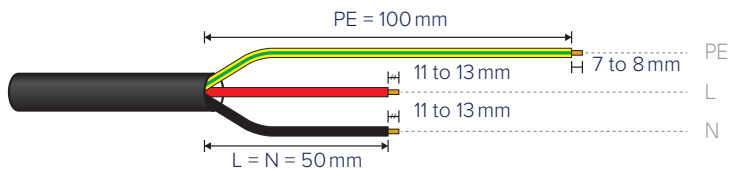
8 Grid and Load Connection

8.1 Grid and Load Cables Description

For information about the Grid and Load cables specification, see "6.2 Power Cable Specification" on page 26.

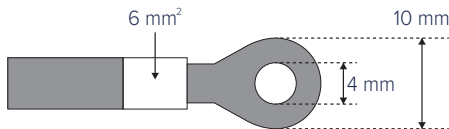
Stripping the Load and Grid Cables

The Grid and Load wire need to be stripped as follows:

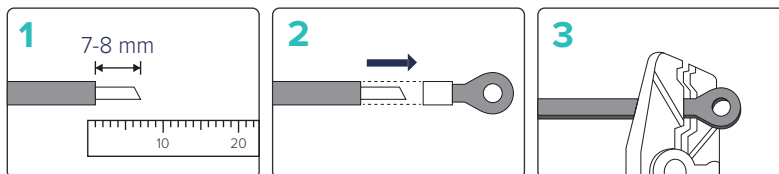
Type	Strip Length
Grid	
Load	

Crimping the PE Wire

The ground wire (PE) must be grounded by crimping the ring terminal.



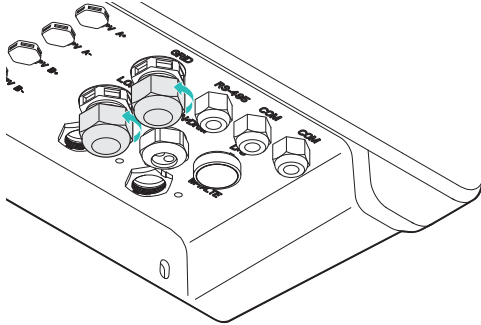
To crimp the ring terminal:



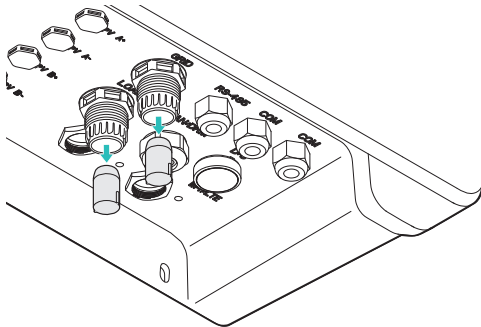
8.2 Connecting the Load and Grid Cables

To connect the load and grid cables:

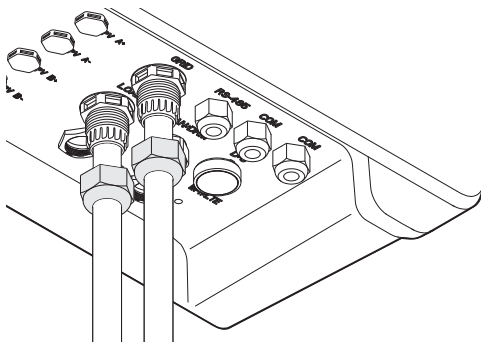
- 1 Remove the sealing nuts from the load and grid glands.



- 2 Remove the blind plugs from the load and grid glands.
 - Dispose of the blind plugs.



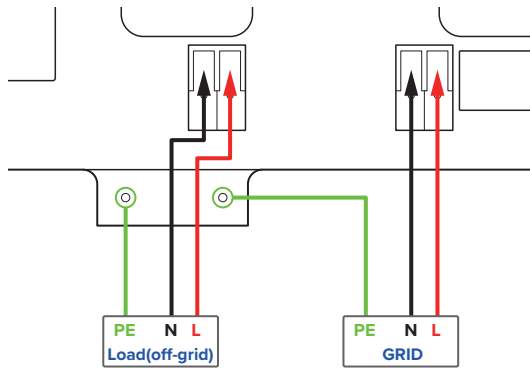
- 3 Strip the cables and insert them into the sealing nut and the cable gland.



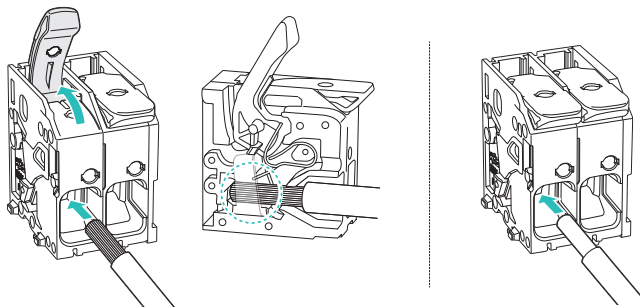
4 Connect the L, N, and PE wires for the load and grid cables.



If you don't strip the ends of wire properly or don't engage connectors properly, it may lead to fire.

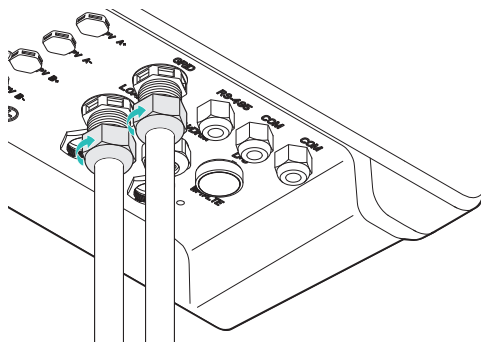


- PE bolt: M4
- Torque for PE bolts: 1.2 to 1.9N·m
- If the L and N wires are a fine-stranded conductor type, raise the lever and insert the wire, and then lower the lever to secure the wire.
- If the L and N wires are a single solid conductor type, the wire can be inserted without raising the lever.



- After connect the wires, make sure the wires are correctly connected. When the wires are pulled, they should not come out of the connectors.

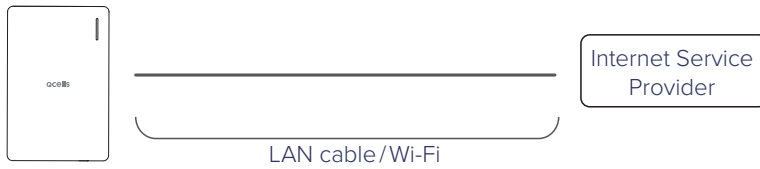
5 Assemble the sealing nut to secure the cables.



9 Communication Connection

9.1 Internet & DRM Connection

The product can be connected to the Internet via Wi-Fi or ethernet cable (at least CAT 5e).



Note

- When using the ethernet cable, use category 5e or higher cable.
- When connecting to the Internet, using a LAN cable is strongly recommended.
- When using a Wi-Fi extender device, the Internet connection may be unstable. (It is recommended to use up to one Wi-Fi extender.)
- For details about system settings after connecting to the internet, see "14.2 Local Commissioning with the Q.OMMAND GO App" on page 65.
- DRM connection is only for Australia.
- The LAN and DRM cable is not included in the package.

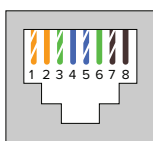
DRM Specification

The inverter supports the DRM (Demand Response Mode) function as specified in AS/NZS 4777.2.

Mode	Description
DRM 0	The inverter is in the state of "Key-stop."
DRM 1	The import power from the grid is 0.
DRM 2	The import power from the grid is no more than 50 % of the rated power.
DRM 3	The import power from the grid is no more than 75 % of the rated power.
DRM 4	The import power from the grid is no more than 100 % of the rated power, but subject to the constrains from other active DRMs.
DRM 5	The export power from the grid is 0.
DRM 6	The export power from the grid is no more than 50 % of the rated power.
DRM 7	The export power from the grid is no more than 75 % of the rated power.
DRM 8	The export power from the grid is no more than 100 % of the rated power, but subject to the constrains from other active DRMs.

Corresponding relationship between cables and pins (568B) is as follows:

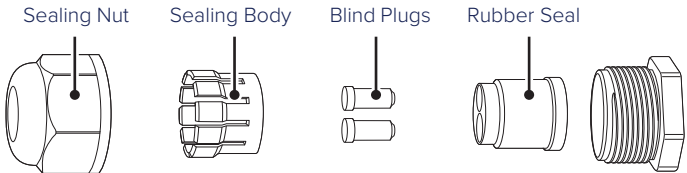
T568B	Corresponding DRM
Pin 1: White-orange	DRM 1/5
Pin 2: Orange	DRM 2/6
Pin 3: White-green	DRM 3/7
Pin 4: Blue	DRM 4/8
Pin 5: White-blue	RefGen
Pin 6: Green	Com. DRM 0
Pin 7: White-brown	-
Pin 8: Brown	-



Connecting the LAN or DRM cable

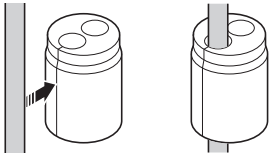
To connect the LAN or DRM cable:

- 1 Disassemble the LAN/DRM gland.



- 2 Pass the cable through the sealing nut and sealing body.
 - LAN cable outer diameter: 4 to 6 mm

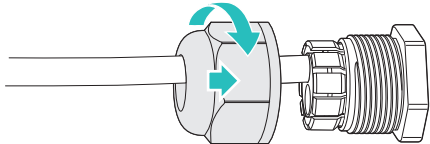
- 3 Push the cable through the side of the rubber seal.



- 4 Insert the cable into the LAN/DRM gland.

- 5 Connect the RJ45 plug to the appropriate connector.
 - For information about LAN and DRM connector, see "6.1 Connectors and Ports Layout" on page 25

- 6 Assemble the LAN/DRM gland.



Note

If only one cable is used, close the remaining hole in the rubber seal with the blind plug.

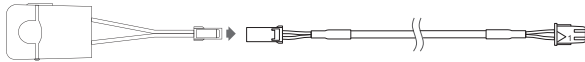
9.2 CT Connection

CT is needed in A5 only. H4 and H5 do not require CT installation.

To connect CT:

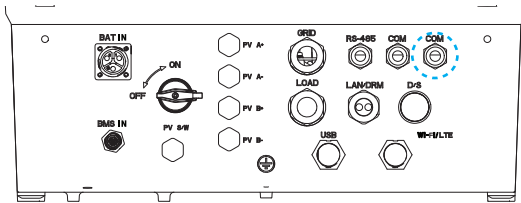
- 1 Connect CT(AKW4802B) to the CT cable.

- Default: 3 m
- Option: 20 m

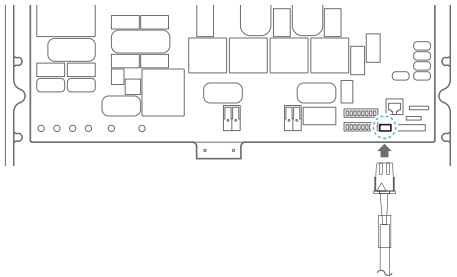


- 2 Insert the CT cable into the COM (spare) gland.

- Dispose of the blind plug in the COM gland after opening the gland nut.

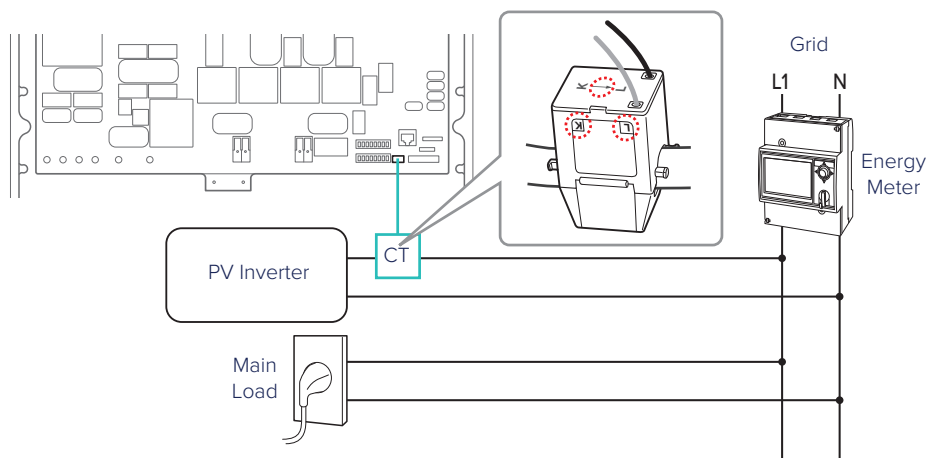


- 3 Connect the CT cable to the Ext. CT connector.



- 4 Attach the CT to the wire from the PV inverter to the grid (K → L).

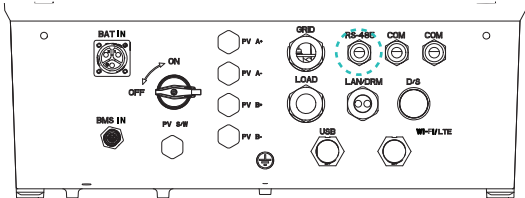
- **Note:** The arrow direction on the CT must point to the grid.



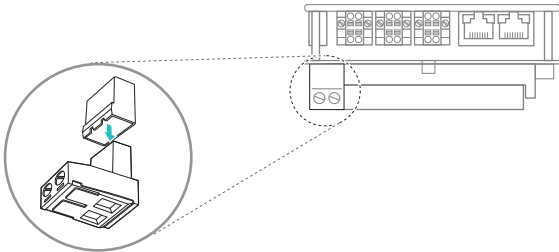
9.3 Energy Meter Connection

To connect an energy meter:

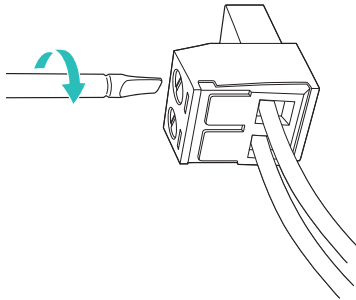
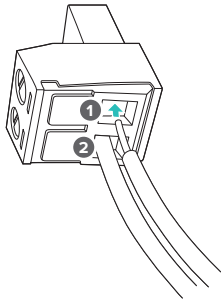
- 1 Insert two wires into the RS-485 gland.
 - Dispose of the blind plug in the RS-485 gland after opening the gland nut.
 - Required Wire: 1 to 2.5 mm², 28 to 12 AWG



- 2 Strip the wires.
 - Strip length: 7 to 8 mm
- 3 Remove the terminal block from the RS-485 connector.



- 4 Insert the wires to the terminal block.
 - Port 1: RS485_POS
 - Port 2: RS485_NEG
- 5 Secure the wires to the terminal block using a flat-head screw driver.
 - Screw: M3
 - Torque: 0.5 N·m



- 6 Insert the terminal block to the RS-485 connector.

Note

For details about connecting and setting an energy meter, see "12 Energy Meter Installation" on page 41.

10 Closing the Covers



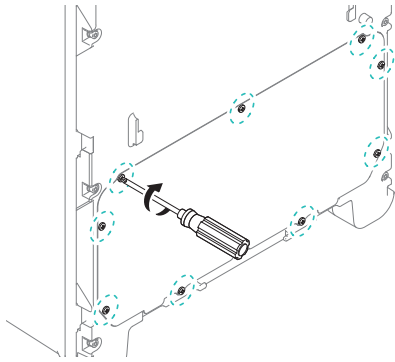
CAUTION

Before turning on the product, the covers must be closed.

To close the covers:

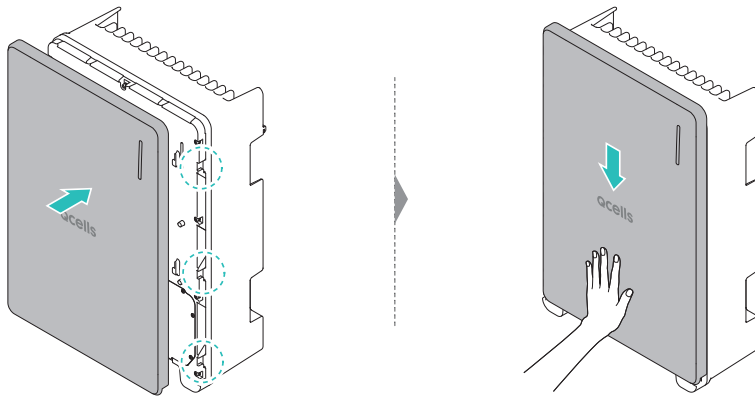
1 Close the wiring cover and tighten the 9 bolts.

- Bolt: M4
- Torque: 18 kgf·cm/15.6 lbf·in



2 Close the front cover.

- a. Insert the cover to fit into the grooves on the main body.
- b. Slide it down while pressing the front side against the latch at the bottom.



11 Battery Connection

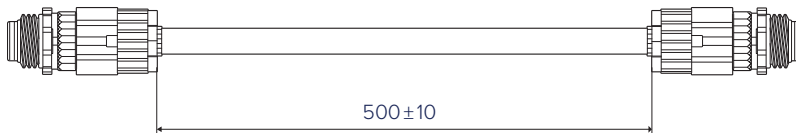


CAUTION

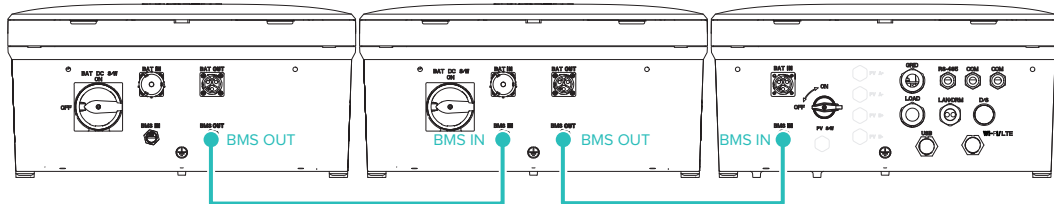
Batteries can be replaced only by qualified personnel. If the battery needs to be replaced, you must use a battery that meets the manufacturer's specifications.

11.1 Connecting the BMS Communication Cables

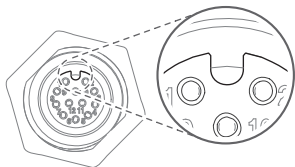
Use the BMS communication cable included in the product package.



Connect the BMS communication cables to communicate with or control the battery packs as follows:



When connecting the BMS communication cable, check the protruding part of the cable terminal.



Make sure the cable aligns with the terminal and slots in without resistance. Turn the sealing nut to tighten the connection.

11.2 Battery Power Connection

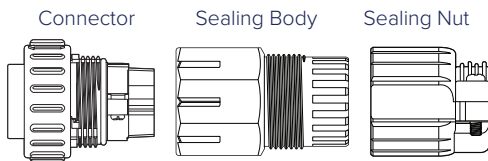
Amphenol PWL-03BFMA-TL7001 is used to connect the battery DC cable.

Note

- The battery DC cable is not included in the package.
- For information about the battery DC cable specification, see "6.2 Power Cable Specification" on page 26.

Assembling the Battery DC Cable

Disassemble the connector housing as follows:



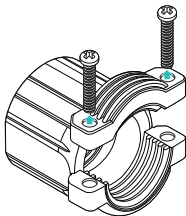
To assemble the battery DC cable:



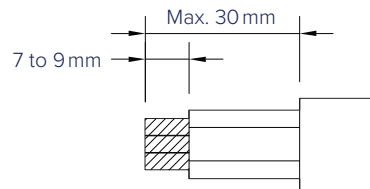
WARNING

Steps from 2 to 5 must be observed.
If you don't follow the process properly, it may lead to fire.

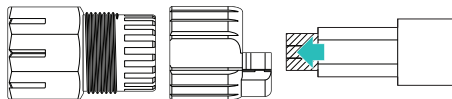
1 Remove the screw from the sealing nut.



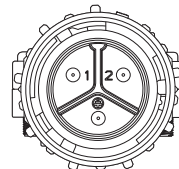
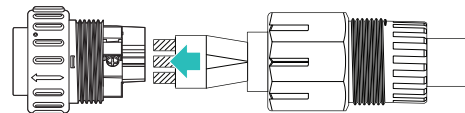
2 Strip the cable.



3 Insert the stripped cable into the sealing nut and sealing body.



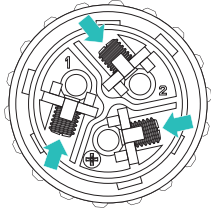
4 Insert wires to the connector.



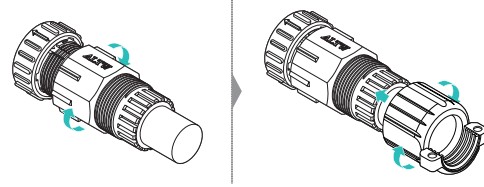
Pin #	Wire
1	BAT+
2	BAT-
3	PE

5 Secure the wires by using screws.

- Torque: 4.5 kgf·cm

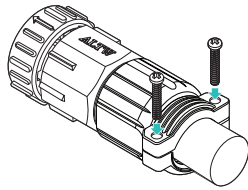


6 Connect the sealing body to the connector and then connect the sealing nut to the sealing body.



7 Secure the cable by using screws.

- Torque: 10 to 12 kgf·cm

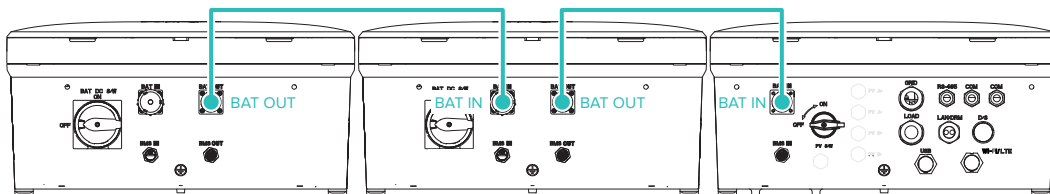


Note

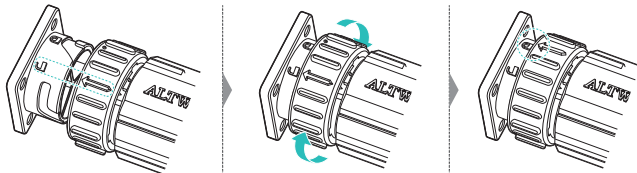
For more details about assembling the battery DC connector, refer to the connector manufacturer's manual.

Connecting the Battery DC Cables

Connect the Battery DC Cables as follows:



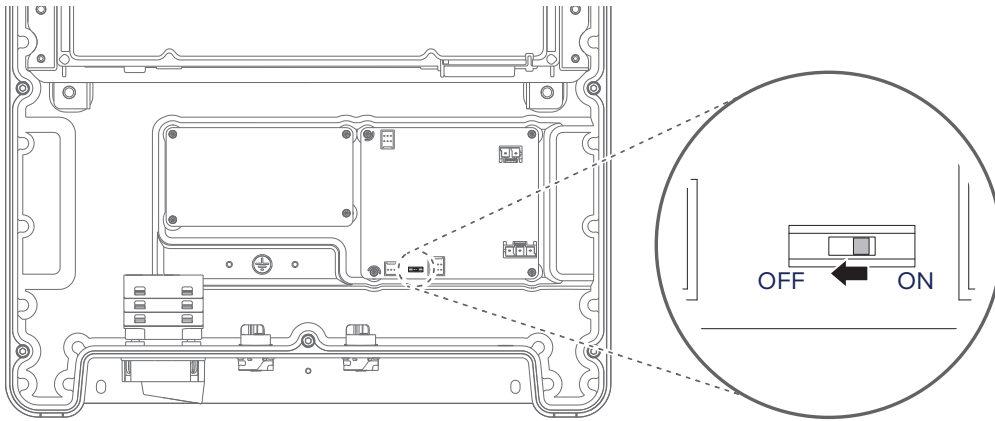
Align the arrow with the unlock mark when connecting the battery power cable.



11.3 Setting the Termination Resistance

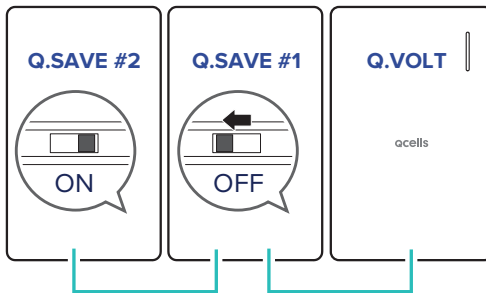
Q.SAVE has built-in termination resistance. By default, the termination resistance switch is on. The termination resistance must be set only for the last battery connected.

If more than one battery is connected, turn off all the termination resistance switches except the last battery.

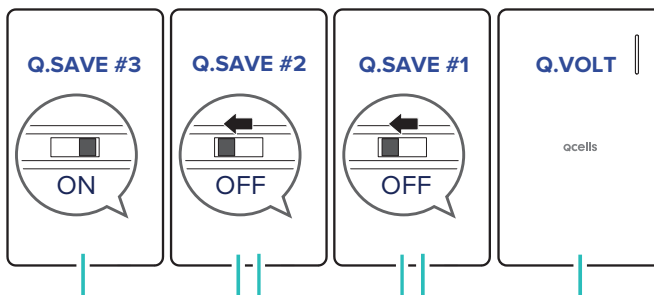


For example,

- When 2 batteries are connected:



- When 3 batteries are connected:



12 Energy Meter Installation

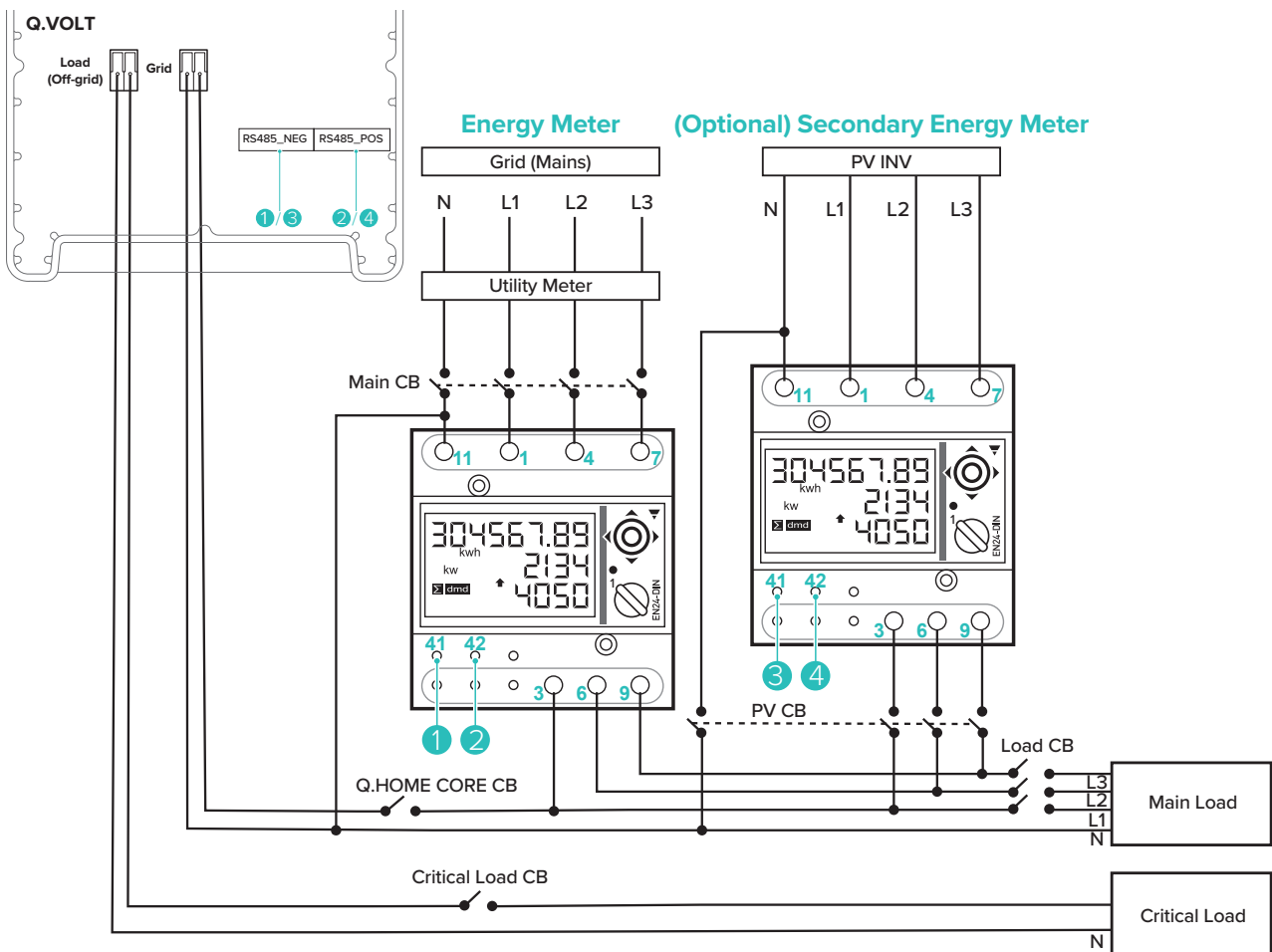
The installation of the digital energy meter must comply with the instruction provided by the energy meter manufacturer.

Note

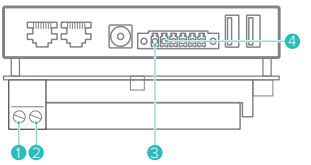
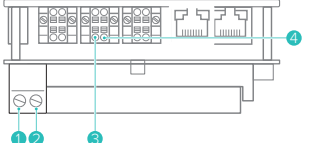
For information about how to connect the wires to the RS-485 connector in the inverter, see "9.3 Energy Meter Connection" on page 35.

12.1 EM24, Carlo Gavazzi (Three-Phase)

Energy Meter Wiring



Energy Meter Installation

Model name	Q.VOLT to Energy Meter	(Optional) Q.VOLT to Secondary Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 41: A- 2: RS485_POS → 42: B+	3: RS485_NEG → 41: A- 4: RS485_POS → 42: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 41: A- 2: RS485_POS → 42: B+	3: RS485_NEG → 41: A- 4: RS485_POS → 42: B+

Energy Meter Settings

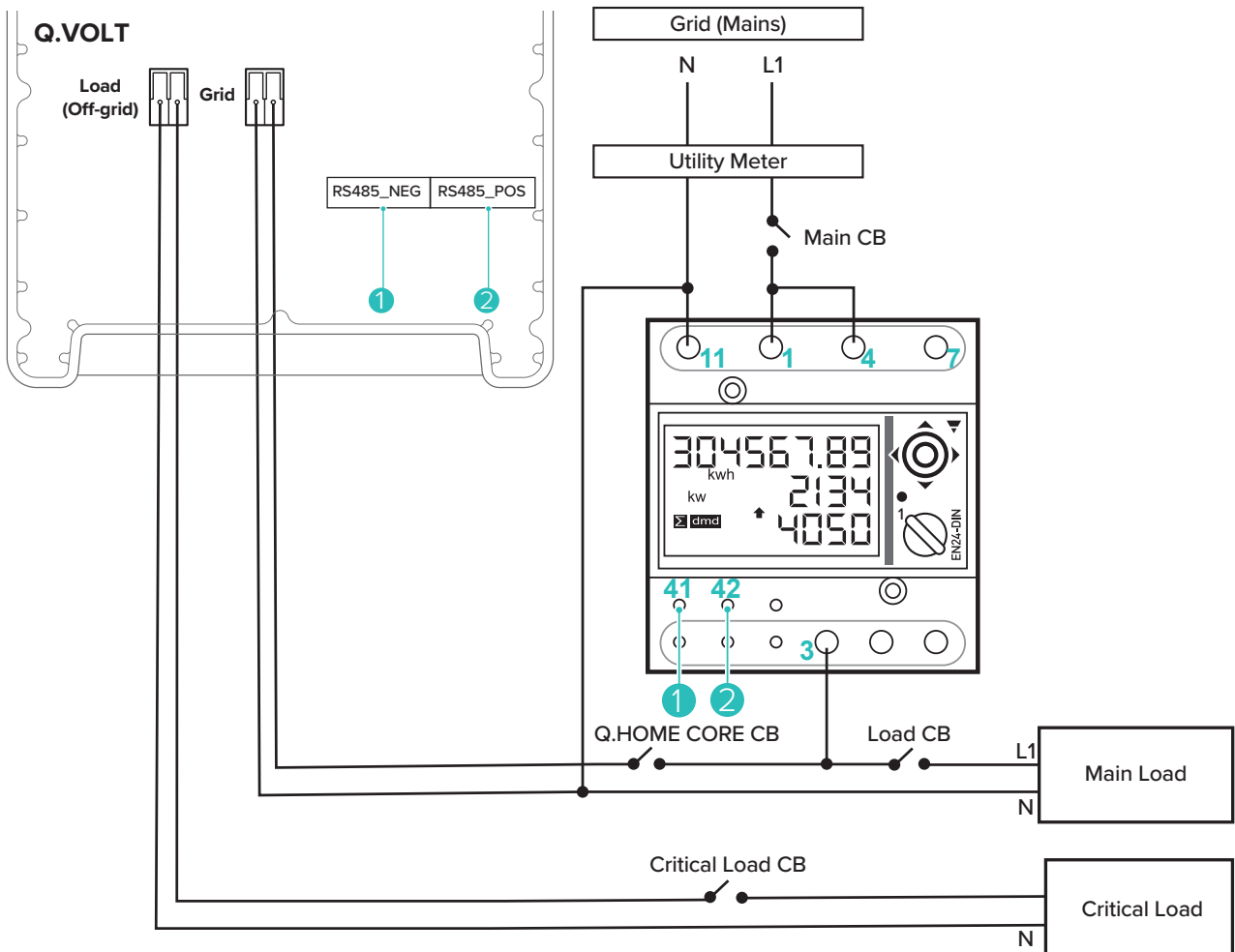
- Application: F
- SYS: 3P.n
- P int.ti: 1
- ModBus Address: 1 (default value)
- Baud Rate: 9600 (default value)

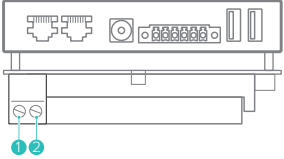
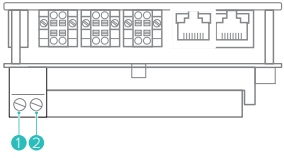
Note

Put the energy meter on position '1' for setting then back to the 'lock' position on normal operation mode.

12.2 EM24, Carlo Gavazzi (Single-Phase)

Energy Meter Wiring



Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 41: A- 2: RS485_POS → 42: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 41: A- 2: RS485_POS → 42: B+

Energy Meter Settings

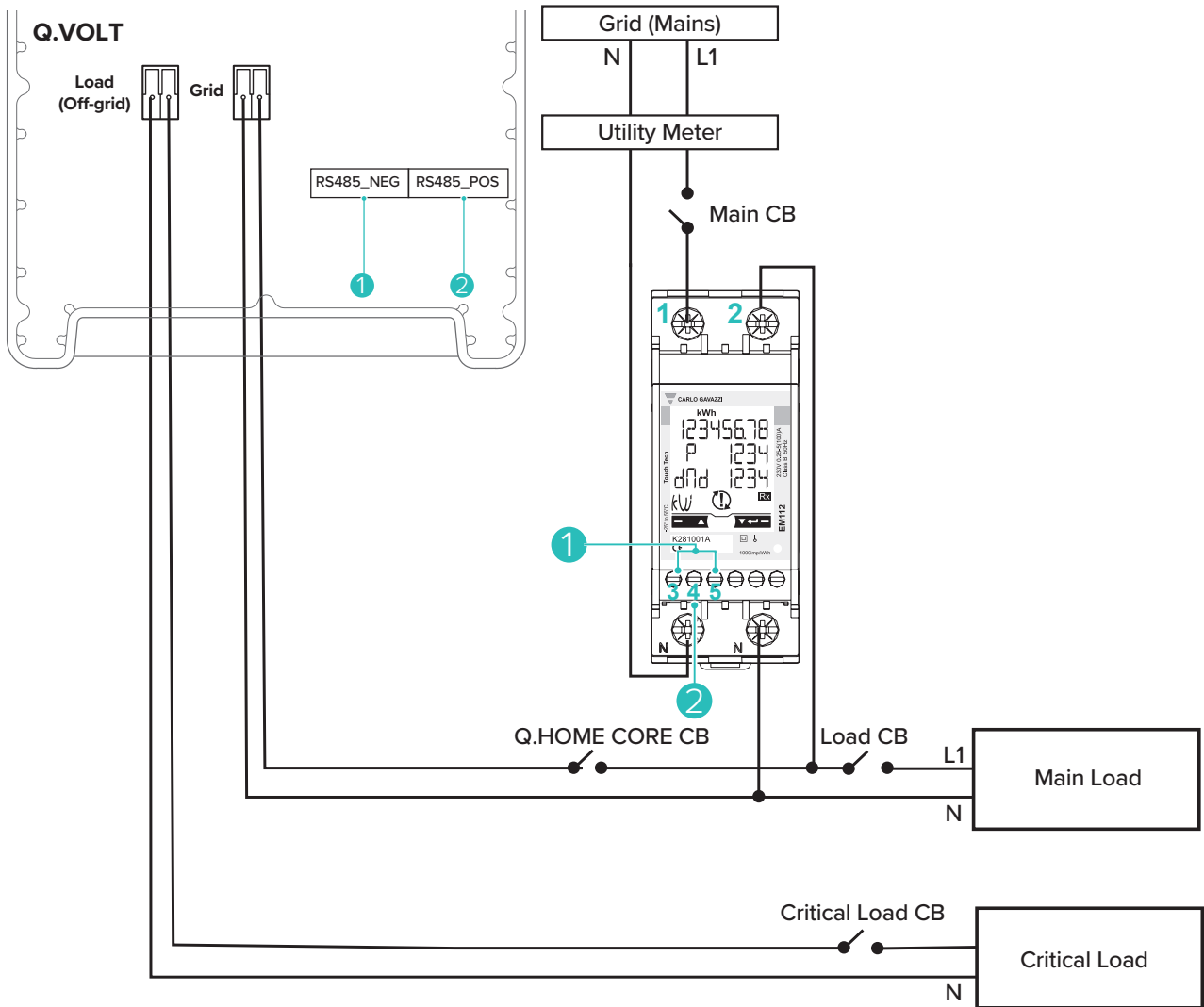
- Application: F
- SYS: 1P
- P int.ti: 1
- ModBus Address: 1 (default value)
- Baud Rate: 9600 (default value)

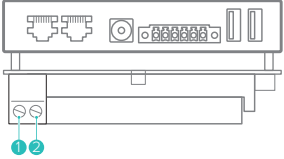
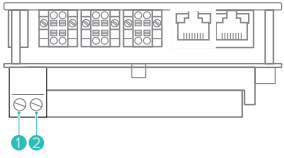
Note

Put the energy meter on position '1' for setting then back to the 'lock' position on normal operation mode.

12.3 EM112, Carlo Gavazzi (Single-Phase)

Energy Meter Wiring



Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 3, 5: A- 2: RS485_POS → 4: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 3, 5: A- 2: RS485_POS → 4: B+

Energy Meter Settings

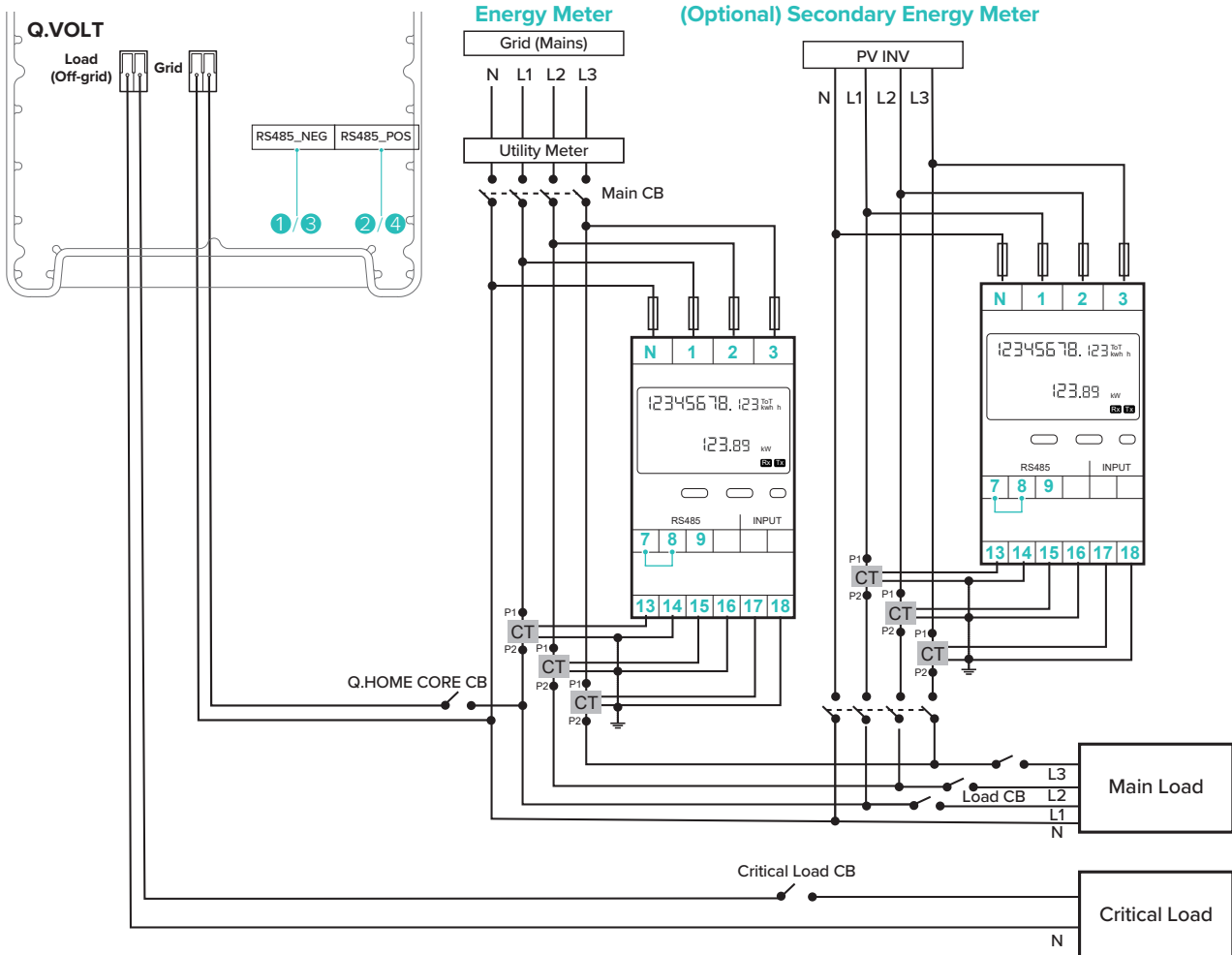
- Measure: b
- Tariff: Yes
- Address: 1
- Baud Rate: 9.6

Note

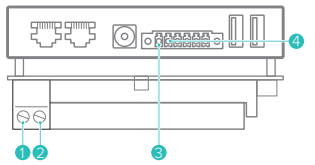
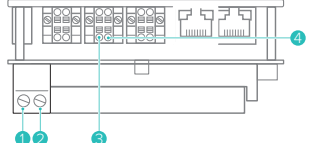
For EM112, the total power value may differ from the actual value when using loads with large reactive power.

12.4 EM530, Carlo Gavazzi (Three-phase)

Energy Meter Wiring



Energy Meter Installation

Model name	Q.VOLT to Energy Meter	(Optional) Q.VOLT to Secondary Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+	3: RS485_NEG → 9: A- 4: RS485_POS → 8: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+	3: RS485_NEG → 8: B+ 4: RS485_POS → 9: A-

Energy Meter Settings

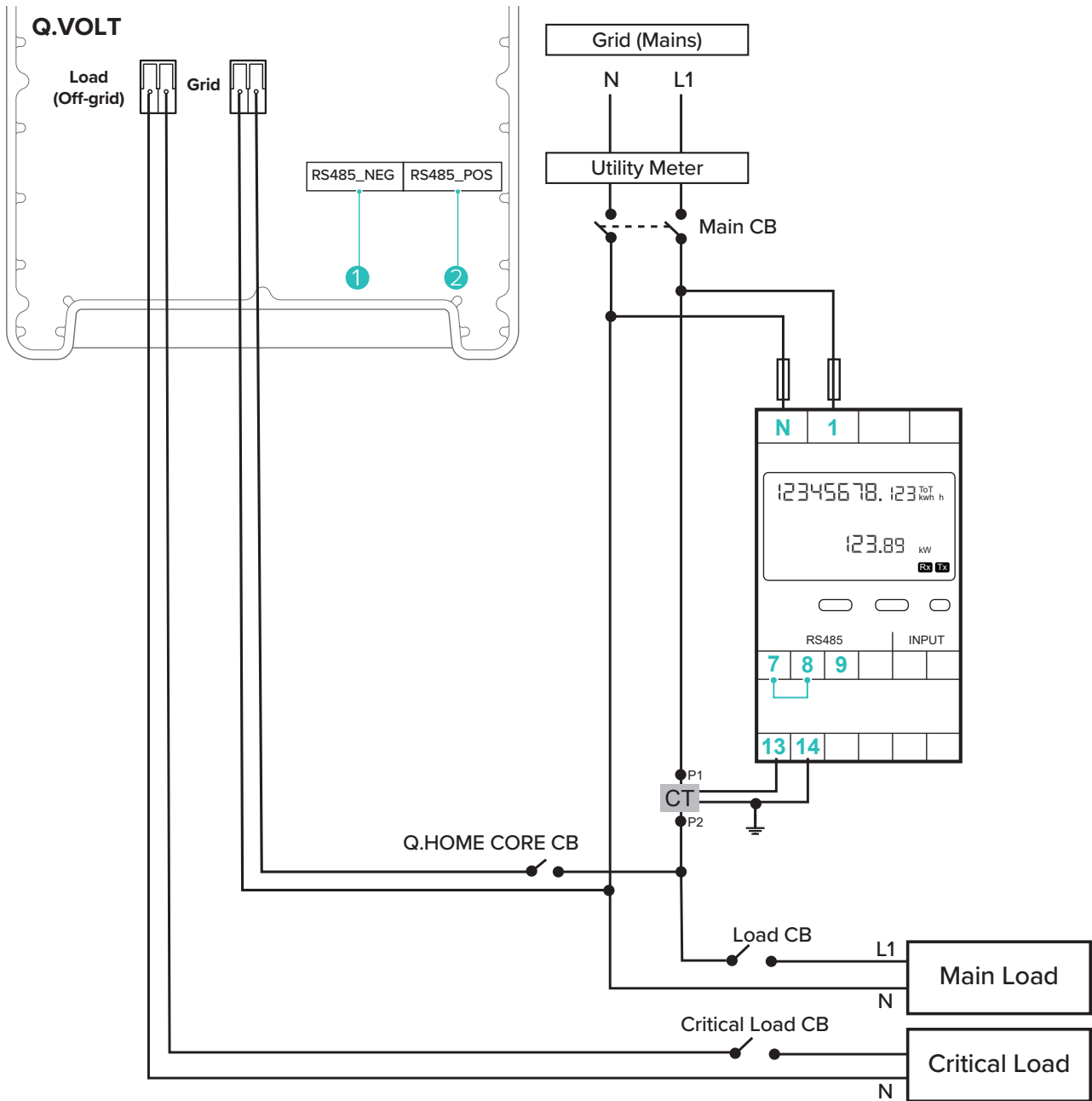
- Measure: C
- SYS: 3P.n
- Current Ratio : 20
- ModBus Address: 1 (default value)
- Baud Rate: 115200

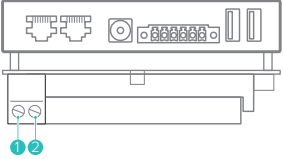
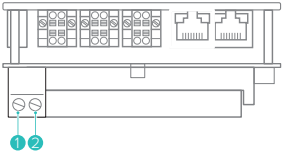
Note

Open the sliding terminal cover, to connect the wire, and close the cover until you hear a clicking sound.

12.5 EM530, Carlo Gavazzi (Single-phase)

Energy Meter Wiring



Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+

Energy Meter Settings

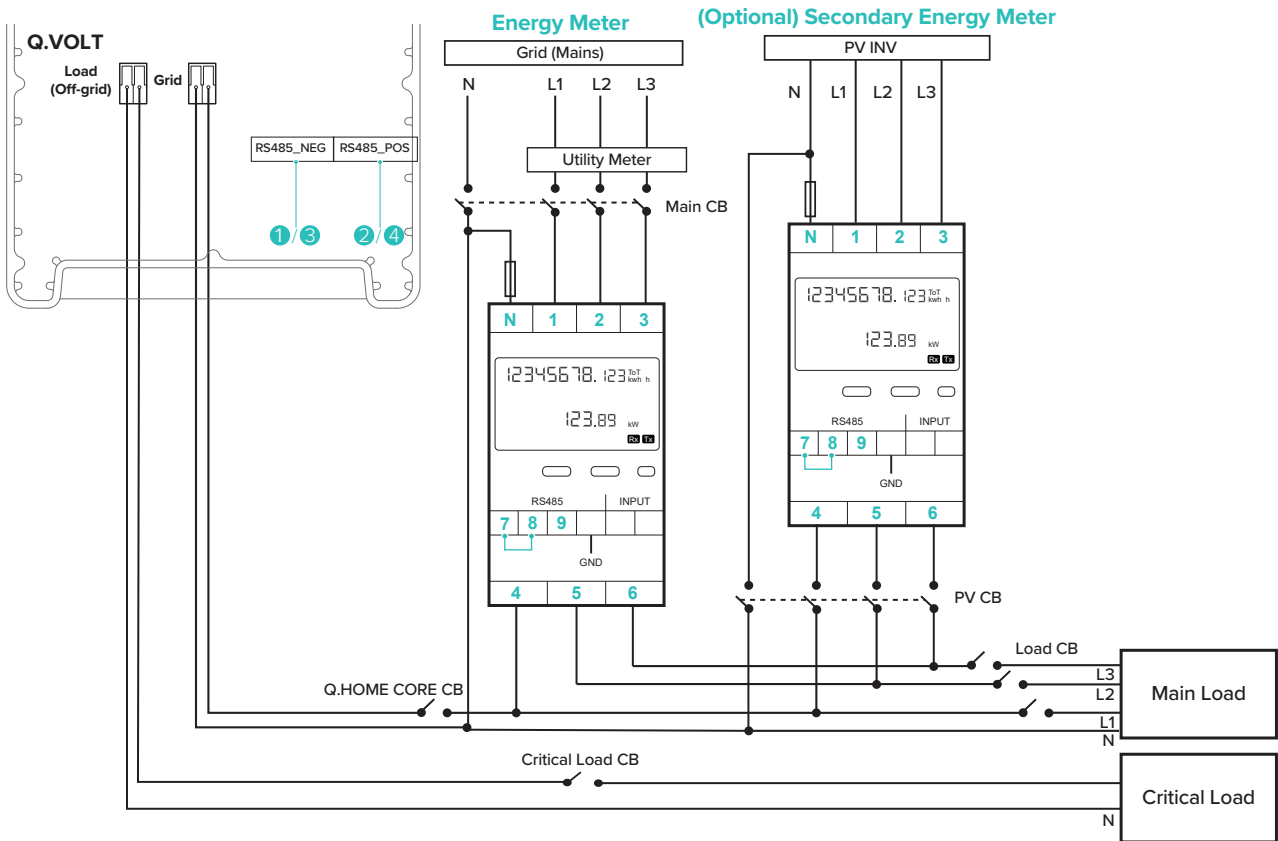
- Measure: C
- SYS: 2P
- Current Ratio : 20
- ModBus Address: 1 (default value)
- Baud Rate: 115200

Note

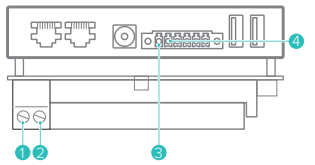
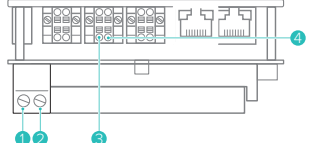
Open the sliding terminal cover, to connect the wire, and close the cover until you hear a clicking sound.

12.6 EM540, Carlo Gavazzi (Three-phase)

Energy Meter Wiring



Energy Meter Installation

Model name	Q.VOLT to Energy Meter	(Optional) Q.VOLT to Secondary Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+	3: RS485_NEG → 9: A- 4: RS485_POS → 8: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+	3: RS485_NEG → 8: B+ 4: RS485_POS → 9: A-

Energy Meter Settings

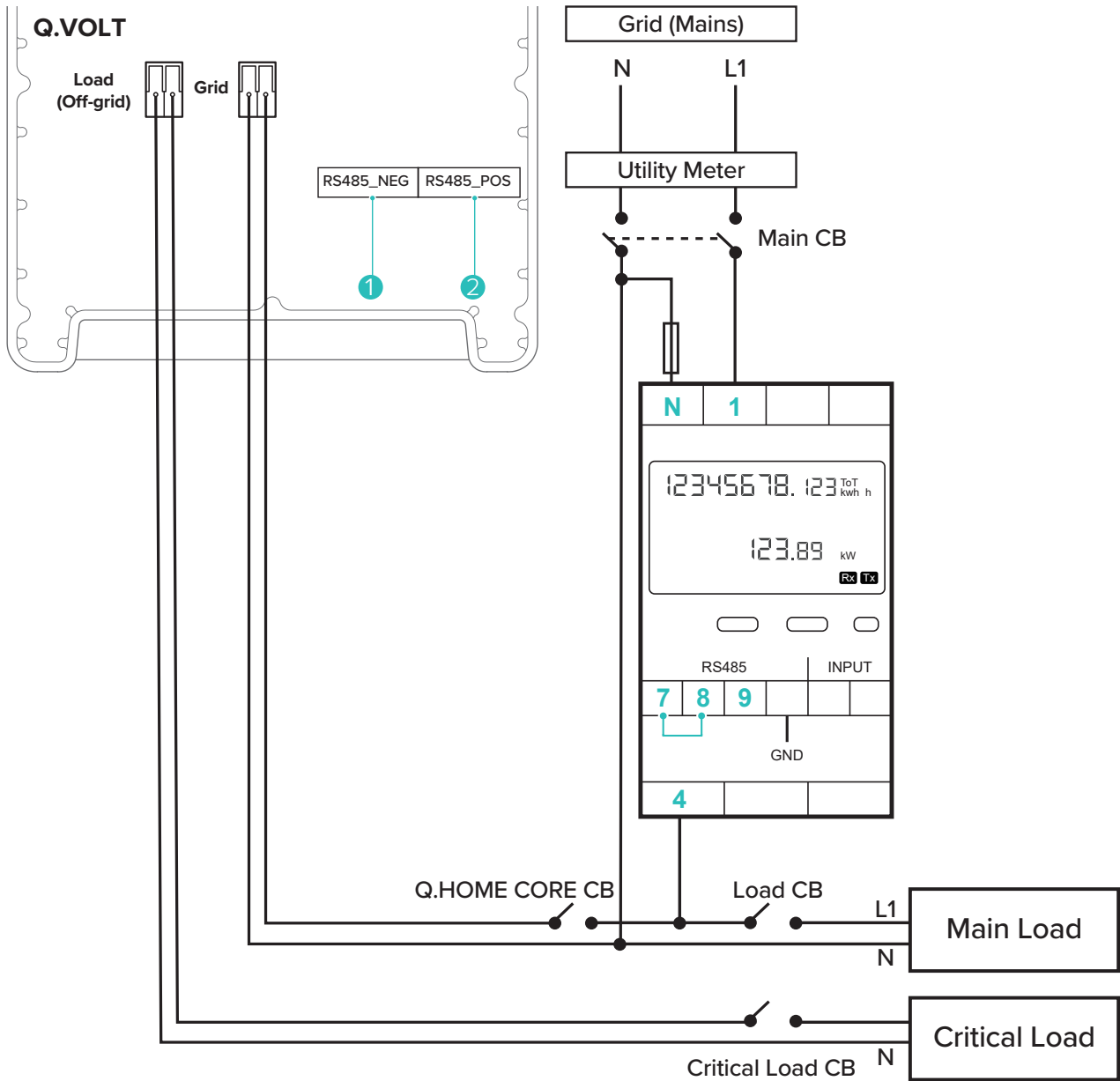
- Measure: c
- SYS: 3P.n
- ModBus Address: 1 (default value)
- Baud Rate: 115200

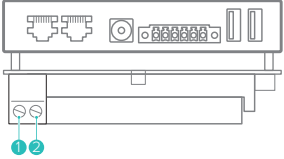
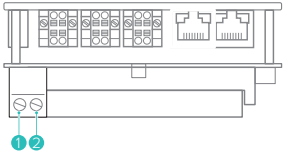
Note

Open the sliding terminal cover, to connect the wire, and close the cover until you hear a clicking sound.

12.7 EM540, Carlo Gavazzi (Single-phase)

Energy Meter Wiring



Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 9: A- 2: RS485_POS → 8: B+

Energy Meter Settings

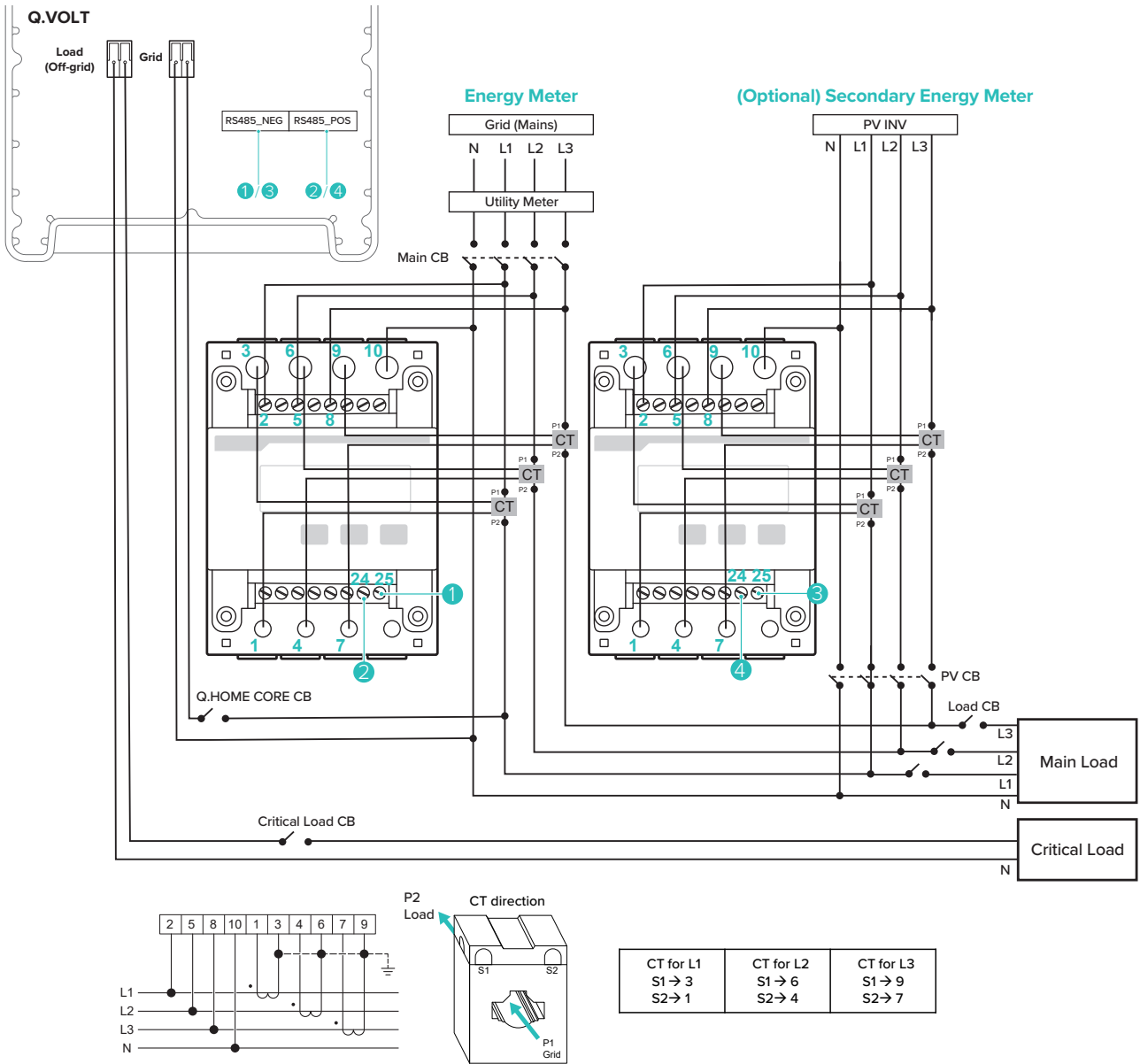
- Measure: c
- SYS: 2P
- ModBus Address: 1 (default value)
- Baud Rate: 115200

Note

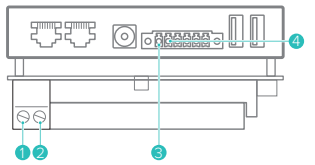
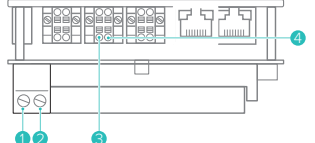
Open the sliding terminal cover, to connect the wire, and close the cover until you hear a clicking sound.

12.8 DTSU666, CHINT (Three-phase)

Energy Meter Wiring



Energy Meter Installation

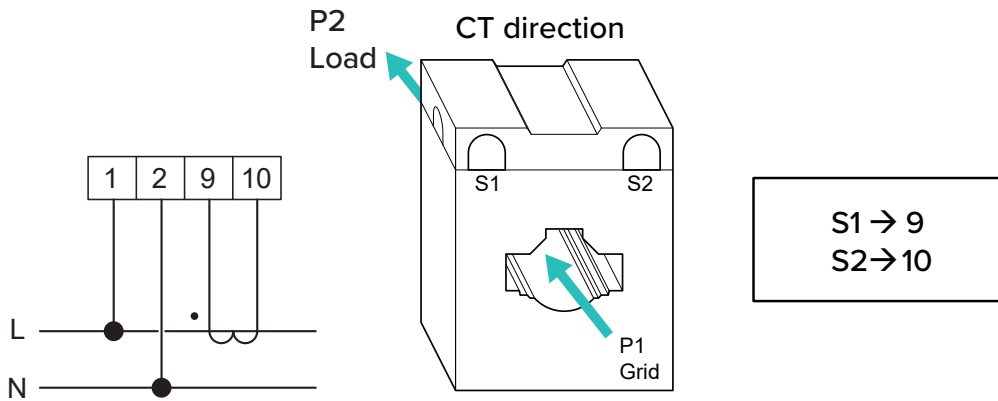
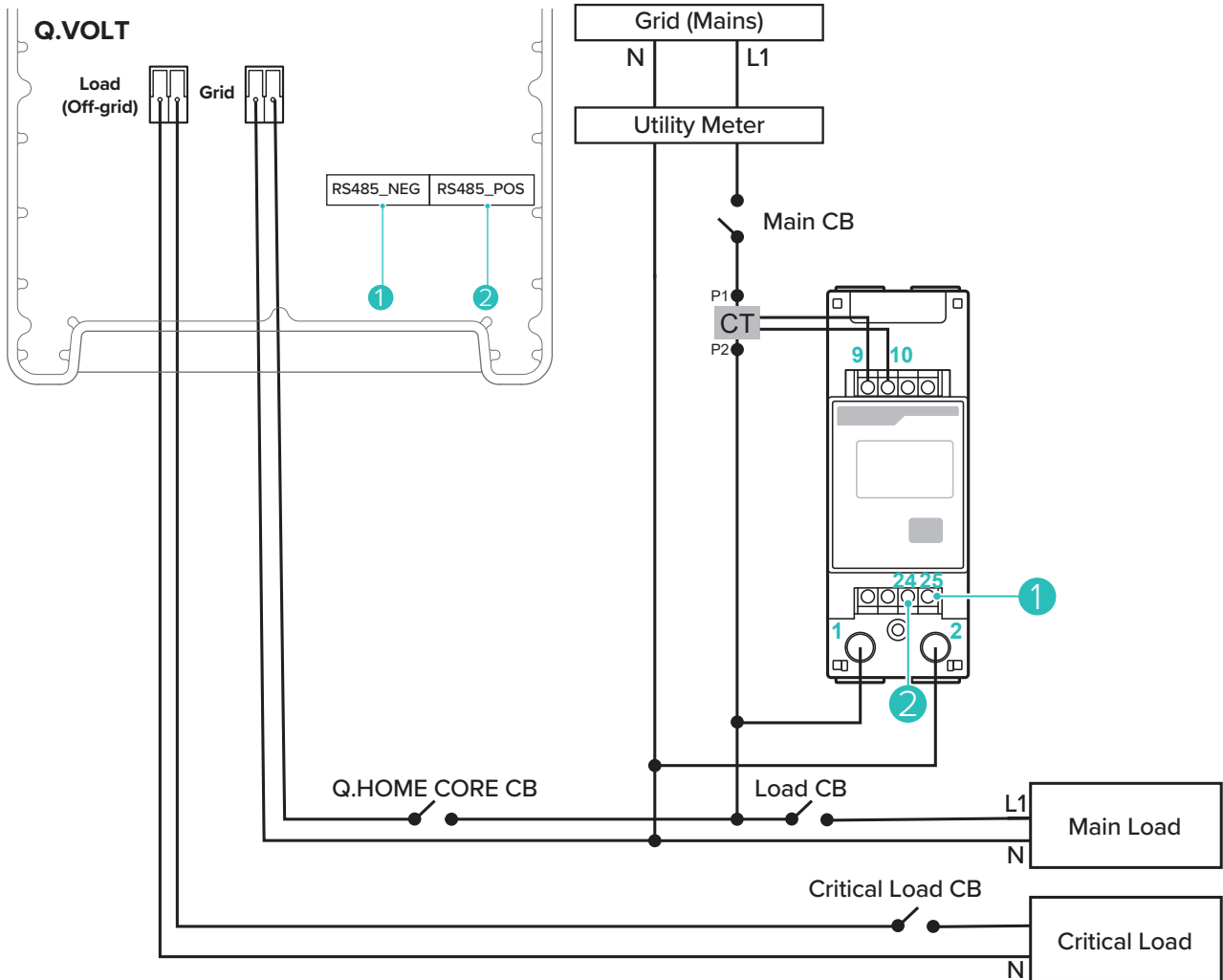
Model name	Q.VOLT to Energy Meter	(Optional) Q.VOLT to Secondary Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+	3: RS485_NEG → 25: B- 4: RS485_POS → 24: A+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+	3: RS485_NEG → 25: B- 4: RS485_POS → 24: A+

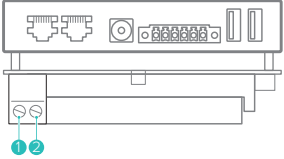
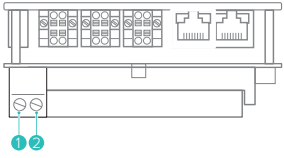
Energy Meter Settings

- Current Ratio: 40
- ModBus Address: 1
- Baud Rate: 9600
- Phase: n.34 (Three phase four wire)

12.9 DDSU666, CHINT (Single-phase)

Energy Meter Wiring



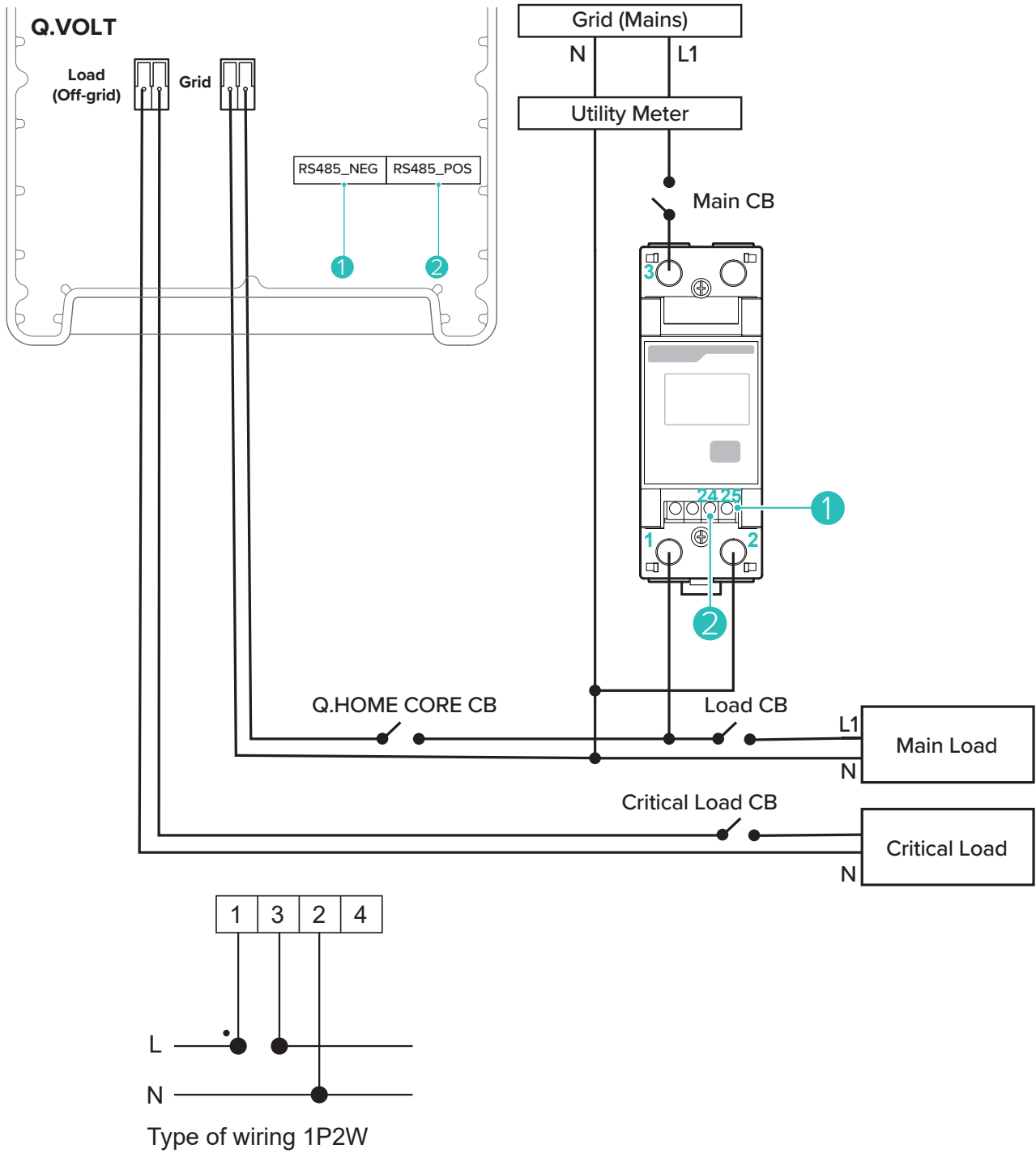
Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+

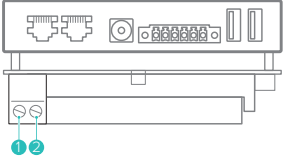
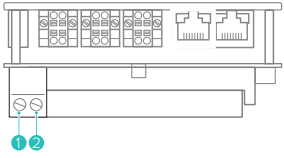
Energy Meter Settings

- ModBus Address: 1
- Baud Rate: 9600

12.10 DDSU666-Direct, CHINT (Single-phase)

Energy Meter Wiring



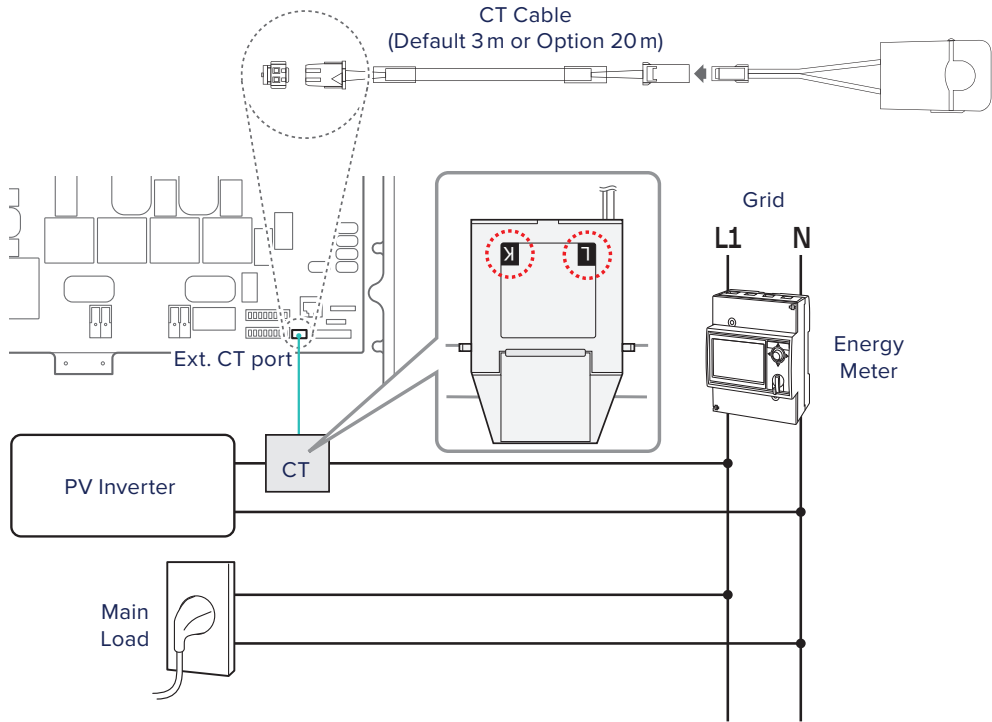
Model name	Q.VOLT to Energy Meter
HCORE5001H/HCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+
QCORE5001H/QCORE5001A 	1: RS485_NEG → 25: B- 2: RS485_POS → 24: A+

Energy Meter Settings

- ModBus Address: 1
- Baud Rate: 9600

12.11 CT Wiring in AC coupled

Attach a CT to the wire from the PV inverter to the grid (K → L).

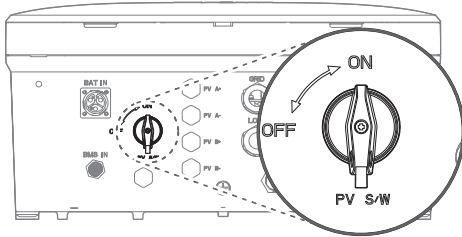


13 Power On

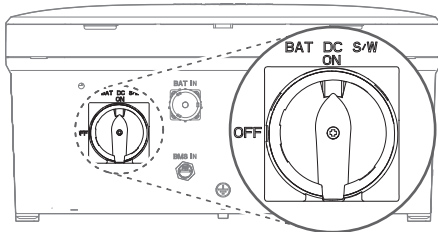
13.1 Turning On Q.HOME CORE

To turn on the Q.HOME CORE:

- 1 Turning on the AC circuit breaker.
- 2 Turning on the PV switch.



- 3 Turning on the battery DC switch.



13.2 Checking the LED indicator

After turning on the Q.HOME CORE, check the status of the LED indicator on the front.

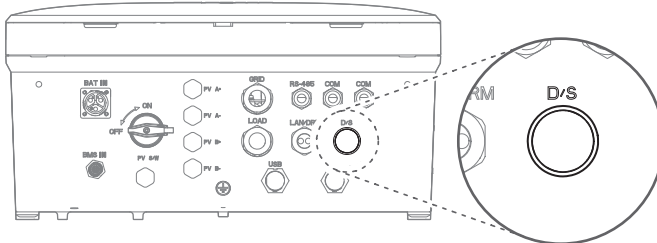
The meanings of the LEDs by color and behavior are as follows:

LED Color	LED Behavior	Description
Sky Blue	Solid	Charging or discharging in online mode
	Flashing	Standby in online mode
Magenta	Solid	Charging or discharging in offline mode
	Flashing	Standby in offline mode
Green	Solid	Charging or discharging in off-grid mode
	Flashing	Standby in off-grid mode
Blue	Solid	All operations are paused
Red	Solid	Error status
	Flashing	Reduced system access
Yellow	Solid	Initial setting mode
	Flashing	Setting mode
White	Flashing	Upgrading firmware

13.3 Using the Dark Start button

To turn on Q.HOME CORE when there are no PV and Grid:

Press the **Dark Start** button for about 10 seconds.



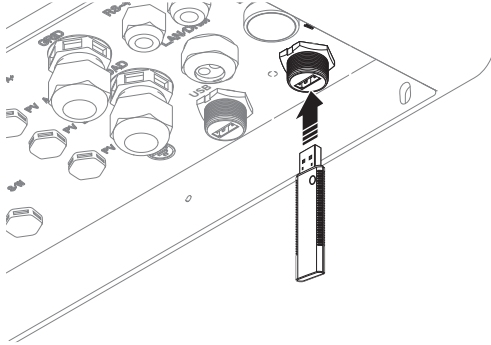
- Once the power is supplied and the LED turns blue, release the **Dark Start** button.
- Once the inverter enters the Off-grid mode and starts operation, the LED turns green.

14 Commissioning the System

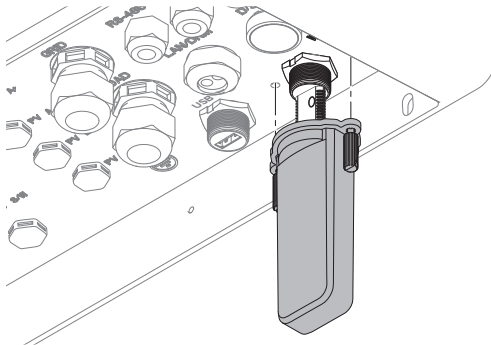
14.1 Connecting to the System

Using the Wi-Fi Dongle

- 1 Connect the Wi-Fi dongle to the inverter.

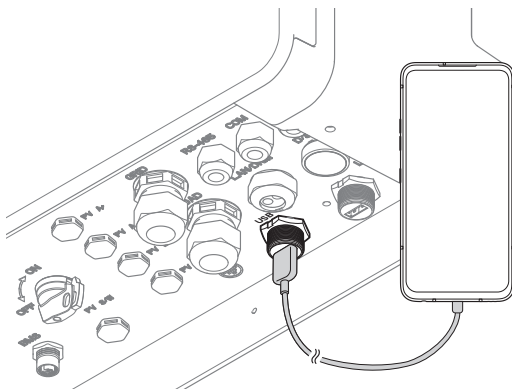


- 2 Assemble the Wi-Fi/LTE waterproof cover to protect the Wi-Fi dongle from dust and water.



Using the USB Tethering

- 1 Connect the mobile device to the inverter with a USB cable.



- 2 Turn on the USB tethering function on the mobile device.
 - For details about turning on the tethering function, see the user manual for your mobile device.

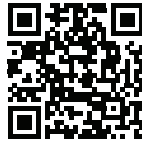
14.2 Local Commissioning with the Q.OMMAND GO App

Note: To get started with Q.HOME CORE, you should register your product on the server using Q.OMMAND PRO first. After that, visit the site and complete the initial setup with Q.OMMAND GO. This way, you can download the latest version of FW during the initial setup.

- 1 Search and install Q.OMMAND GO on the Apple AppStore or Google Play Store.



Android



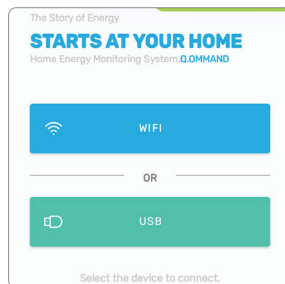
iOS

The app runs with the following versions or higher. Check OS version of the mobile device.

- Android: 6.0 or higher
- iOS: 11.0 or higher

- 2 Open the Q.OMMAND GO app.

- 3 Select **WIFI** or **USB**.



- The WIFI signal "DIRECT-QHomeAP" should be showing on the WIFI list of your mobile. If not, press the WIFI dongle button for 2seconds to turn the setting mode on.
- The setting mode will be automatically turn off after 1 hour. To turn the setting mode back ON/OFF, please press the white button on the dongle for 2 seconds.

- 4 Select your language and enter the password.
 - Password is the last 4 digits of the serial number of your product.

5 Set wired or wireless network.

- Wired Network

IP address

Gateway

DNS

- Wireless Network

Available network (SSID)

Select

Password

Connect

SKIP >

UNDO NEXT

6 Check firmware update.

Q.OMMAND

Network Online Update Region & Time System

Online Update

	EMS	PCS	BMS
Current	X06.10.21	NA	NA
New	R05.01.00	01.01.00	N/A

A newer version of application is available.

⌘ During the software update, all operations are stopped and it takes time depending on the network speed.

LATER YES

NEXT

7 Check region and time.

Q.OMMAND

Network Online Update Region & Time System

Region & Time

Country

Australia

Timezone

Australia/Sydney

Date

2021-10-21

Time

18:59

NEXT

8 Set system parameters.

Q.OMMAND

Network Online Update Region & Time System Password

System

Grid

Grid Code

VDE-AR-N 4105 : 2018

Feed In Limit

4600 [W]

Multiple Earthed Neutral(MEN) System

Disable

External Device

External Control

Disable

Third Party Inverter

Disable

Energy Policy

NEXT

14.3 Energy Policy Mode

Standby: Stops the operation.

Self consumption:

- Controls the power autonomously.
- The electricity generated with PVs is first supplied to in-house loads. If there is any remaining electricity, it is used to charge the battery. If there is any electricity remaining after that, it is sold to the power company.

Zero Export Mode:

- The electricity generated in-house is not sold to the power company.
- The electricity generated with PVs is first supplied to in-house loads. If there is any remaining electricity, it is used to charge the battery. If there is any electricity remaining after that, it reduces the electricity generation through PVs.

Time-based Mode:

- Controls the electricity in accordance with the preset schedule.
- Controls the charging and discharging of batteries on an hourly basis.

Available actions are the followings:

- None: Q.HOME CORE will be on standby, pausing all operations.
- Auto: Q.HOME CORE will operate in the same manner as Self Consumption.
- Inverter: By entering Power (–5000W to 5000W), you can control charging and discharging of batteries.
 - If you enter negative value (–5000 to –1), Q.HOME CORE will start charging from the grid.
 - If you enter positive value (1 to 5000), Q.HOME CORE will start discharging.

External Generation Mode: In the Off-grid mode, it prevents electricity from flowing to the in-house generator.

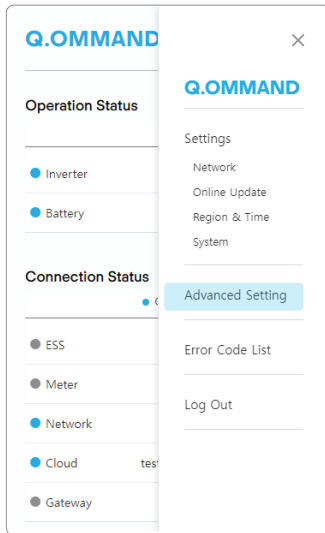
The screenshot shows the Q.OMMAND app interface. At the top, there is a menu icon and the text 'Q.OMMAND'. Below this, there is a section for 'External Device' with a toggle for 'External Control' set to 'Disable'. The main section is 'Energy Policy', which has a dropdown menu open showing options: 'Self consumption' (selected), 'Standby', 'Self consumption', 'Zero Export Mode', and 'Time-based Mode'. Below the dropdown, there is a 'COUNT' field with the value '2'. There are two 'PV Power' fields, both set to '4000 [W]'. At the bottom, there is a 'Meter' section with a toggle set to 'Disconnected' and a 'Meter Model' dropdown set to 'EM24'.

The screenshot shows the Q.OMMAND app interface with 'Time-based Mode' selected in the Energy Policy dropdown. The 'Start Date' is set to '2022-09-01' and the 'End Date' is set to '2022-09-30'. There are two tables for 'Weekdays' and 'Weekend'. Each table has columns for 'Time', 'Action', and 'Inverter Ref(W)' with a '+' icon. At the bottom, there is a 'PV Settings' section with a toggle set to 'Disconnected' and a note: 'Choose either String or Module level to record actual values of installed PV.'

14.4 Advanced Settings

After finishing the initial settings, set the advanced settings:

- 1 Tap  on the top left corner.
- 2 Tap **Advanced Setting**.



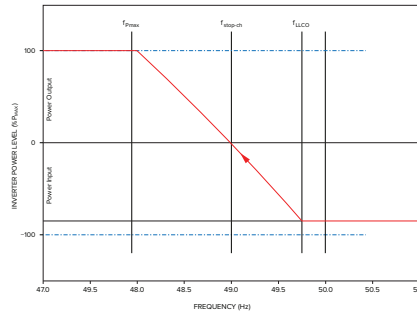
10Min Avg Protection AU

If the average system voltage for 10 minutes exceeds the detection level, the inverter is blocked from the system within 3 seconds.

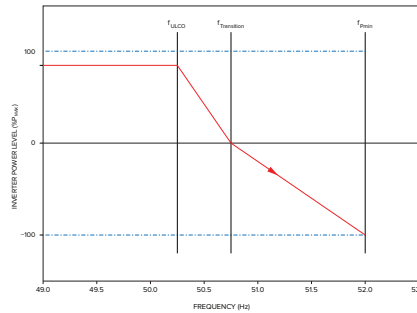
Parameter	Default Values				Range
	Australia A	Australia B	Australia C	New Zealand	
Detection Level	258 V	258 V	258 V	249 V	244 V to 258 V

Freq-Watt P(Freq) **AU**

- **When frequency decreases:** When frequency decreases below f_{LLCO} during ESS charging operation, the inverter responds in 2 levels depending on frequency.
 - Level 1: It decreases charging active power of ESS until frequency reaches f_{stop_CH} .
 - Level 2: If frequency decreases more than f_{stop_CH} , it increases active power output until it reaches f_{Pmax} .



- **When frequency increases:** When frequency increase more than f_{ULCO} during ESS charging operation, the inverter responds in 2 levels depending on frequency.
 - Level 1: If frequency exceeds f_{ULCO} , ESS linearly decreases electric power output until it reaches $f_{Transition}$.
 - Level 2: If frequency exceeds $f_{Transition}$, it increases charging active power according to the increase in frequency until it reaches f_{Pmin} .



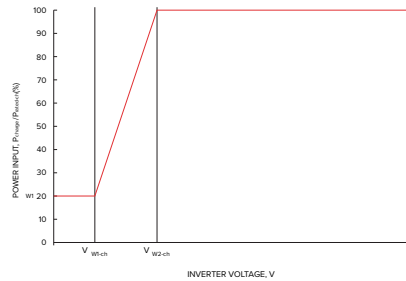
Parameter	Default Values of Frequency Response Limits				Range
	Australia A	Australia B	Australia C	New Zealand	
f_{Pmax} [Hz]	48	48	47	48	47 to 49
f_{stop_CH} [Hz]	49	49	48.25	49	48 to 49.5
f_{LLCO} [Hz]	49.75	49.85	49.5	49.8	49.5 to 49.9
f_{ULCO} [Hz]	50.25	50.15	50.5	50.2	50.1 to 50.5
$f_{Transition}$ [Hz]	50.75	50.75	51.75	51	50.5 to 52
f_{Pmin} [Hz]	52	52	53	52	51 to 53

- **f_{Pmax} [Hz]:** Frequency where power output level is maximum
- **f_{stop_CH} [Hz]:** Frequency where power output level is zero
- **f_{LLCO} [Hz]:** Lower limit of continuous operation range
- **f_{ULCO} [Hz]:** Upper limit of the continuous operation range
- **$f_{Transition}$ [Hz]:** Frequency where power output level is zero
- **f_{Pmin} [Hz]:** Frequency where power input level is minimum

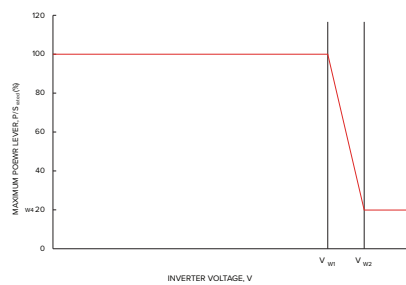
Volt-Watt P(V) AU

The inverter changes the maximum input-output active power depending on system voltage. The inverter responds in two ways depending on charging or discharging operation.

- During charging operation:** If voltage decreases below V_{W2_CH} , it decreases input active power, and it does not exceed the designated active power input constraint $W1$ below V_{W1_CH} .



- Discharging mode:** It decreases input active power from the voltage of V_{W1} , and it does not exceed the designated active power output constraint $W4$ above V_{W2} .



Parameter	Default Values of Volt-Watt Response				Range
	Australia A	Australia B	Australia C	New Zealand	
$W1$ [%]	20	0	20	20	0 to 20
V_{W1_CH} [V]	207	195	207	216	180 to 230
V_{W2_CH} [V]	215	215	215	224	180 to 230
V_{W1} [V]	253	250	253	242	235 to 255
V_{W2} [V]	260	260	260	250	240 to 265
$W4$ [V]	20	20	20	20	0 to 20

- $W1$ [%]:** Inverter maximum active power Input level below V_{W1_CH}
- V_{W1_CH} [V]:** Voltage where power input level is $W1$
- V_{W2_CH} [V]:** Lower limit of continuous operation range
- V_{W1} [V]:** Upper limit of the continuous operation range
- V_{W2} [V]:** Voltage where power output level is $W4$
- $W4$ [V]:** Inverter maximum active power output level above V_{W2}

Fixed Power factor AU

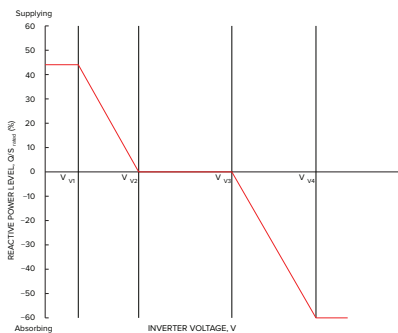
The setting range for the fixed power factor mode is 0.8 to 1.0 and supplying and absorbing can be set for reactive power. The default power factor is set to 1.0.

Fixed Q (Reactive power mode) AU

The reactive power mode outputs reactive power in the fixed rate for apparent power. The minimum setting range for the reactive power (vars) rate for apparent power is 60% or higher from 60% absorption to 60% supply, and the default reactive power is set to 0%.

Volt-Var Q (Volt-var response mode) AU

A volt-var response mode changes reactive power absorbed or supplied by an inverter depending on system voltage. The response curve needed for the volt-var response is operated according to the four default values of volt response and the corresponding reactive power standard.



Parameter	Default Values of Volt-Var Response				Range
	Australia A	Australia B	Australia C	New Zealand	
Vv1 [V]	207	205	215	207	180 to 230
Vv2 [V]	220	220	230	220	180 to 230
Vv3 [V]	240	235	240	235	230 to 265
Vv4 [V]	258	255	255	244	230 to 265

Gradient of P Limit AU

Power speed limit (WGra) is the ramp speed of active power output, and is defined as a percentage of the rated power per minute. Nominal ramp time (Tn) is the nominal time for 100% change of the power output.

Limit Control AU



CAUTION

If at least one limit control function is enabled when an energy meter is not connected, an error occurs and an inverter is not operated.

- **Export Hard Limit:** If the inverter output active power exceeds the Export Hard Limit for 15 seconds, the inverter is blocked from the Export Hard Limit Time system.
- **Export Soft Limit:** If the inverter output active power exceeds the Export Soft Limit, the inverter decreases the output apparent power below the Export Soft Limit Level.
- **Generation Hard Limit:** If the inverter output active power exceeds the Generation Hard Limit for 15 seconds, the inverter is blocked from the Generation Hard Limit Time system.
- **Generation Soft Limit:** If the inverter output apparent power exceeds the Generation Soft Limit, the inverter decreases the output apparent power below the Generation Soft Limit Level within the Generation Soft Limit Level.

Parameter	Default Values	Range
Export Hard Limit Level [%]	100	0 to 100
Export Hard Limit Time [s]	5	0 to 100
Export Soft Limit Level [%]	100	0 to 100
Export Soft Limit Time [s]	15	0 to 100
Generation Hard Limit Level [%]	100	0 to 100
Generation Hard Limit Time [s]	5	0 to 100
Generation Soft Limit Level [%]	100	0 to 100
Generation Soft Limit Time [s]	15	0 to 100

Fixed Power DE

It limits the inverter output power below fixed power with Active Power SetPoint Gradient (= Pmax per s)

Parameter	Default Values	Range
SetPoint Value [%]	100	0 to 100
Active Power SetPoint Gradient [%]	0.5	0.33 to 0.66

Freq-Watt P (Freq) DE

The inverter changes the inverter output active power according to the system frequency in order to support the system. Ramp rate of power and start frequency can be set as in the table below

Parameter	Default Values	Range
Ramp rate [%]	1	2 to 12
Start frequency [Hz]	50.2	50.2 to 50.5

Fixed cos Φ DE

You can set the inverter output power factor as well as leading (over) and lagging (under) of reactive power.

Parameter	Default Values	Range
Cos Φ Value	1	0.95 to 100
Response time [ms]	10000	6000 to 60000

Cos Φ (P) curve DE

If inverter output power is generated more than 50%, it outputs lagging reactive power and is operated in the power factor of 0.95 in the maximum output. At this time, the response time can be set and the default time is 6000ms

14.5 Checking the Settings Information

Once settings are selected at commissioning, they are locked to view only.


To check the firmware version:

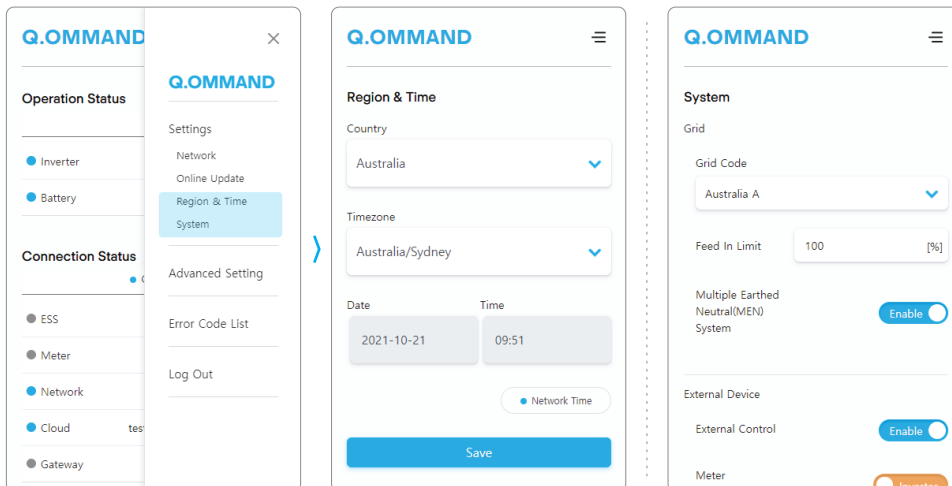
The firmware version can be found in the Information section on the initial page of Q.OMMAND.

Information	
EMS	
Model Name	HCORE5001H
Serial Number	111131250011901143
H/W Version	1.10
S/W Version	X06.10.17 (2021/10/17_09:47:51)
Mac Address	eth0 : 00:01:c0:2b:97:61 eth1 : 00:01:c0:2c:3f:68

The appropriate region and grid code must be selected because grid protection settings and power quality response modes may vary by region.

To check the region or grid code setting:

- 1 Tap  on the top left corner.
- 2 Tap **Region & Time** in the **Settings** menu to check the region setting.
Tap **System** in the **Settings** menu to check the grid code setting.



Note

After commissioning, resetting all the settings can be performed only by an authorized installer.

15 Power Off



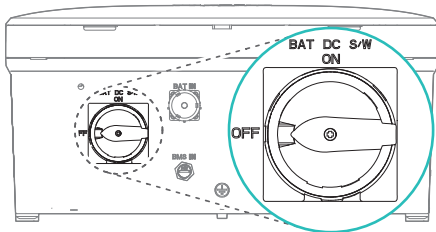
CAUTION

If the AC circuit breaker cannot remain switched on after commissioning (e.g. because the new meter has not yet been installed), the DC switch on the hybrid inverter must remain switched on to avoid deep discharge of the battery. Alternatively, the device can also be switched off completely.

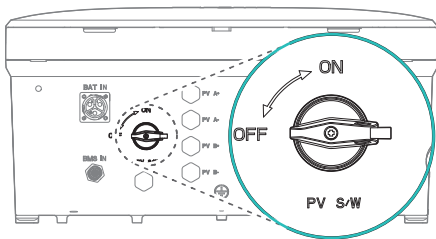
15.1 Turning Off Q.HOME CORE

To turn off Q.HOME CORE:

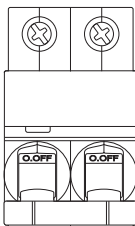
- 1 Turning off the battery DC switch.



- 2 Turning off the PV switch.



- 3 Turn off the AC circuit breaker in the junction box.

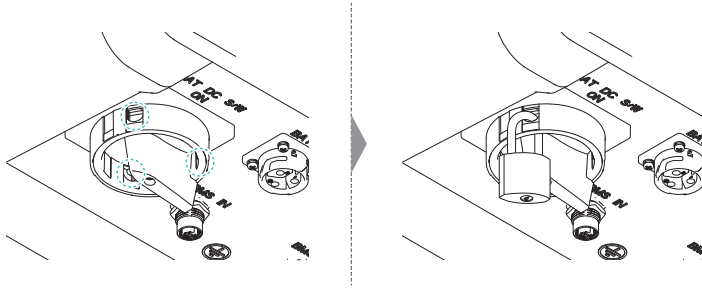


15.2 Locking the DC and PV Switches

After turning off the DC and PV switches, you can lock the switches with a padlock for safety if needed.

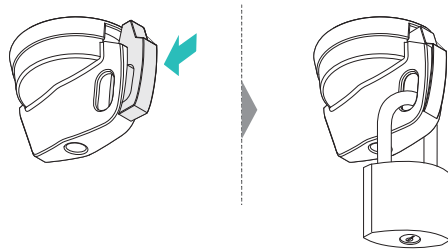
Locking the DC Switch

When the battery DC switch is off, the switch can be locked with a padlock.



Locking the PV Switch

To lock the PV switch, press the yellow knob when the PV switch is off and lock with a padlock.



16 Maintenance

16.1 Battery Maintenance



CAUTION

- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- A battery can present a risk of electrical shock and high short-circuit current.
- Take off watches, rings, or other metallic objects before handling batteries.
- Use tools with insulated handles and wear rubber gloves, eye protection glasses and boots when working with the battery systems.
- Do not lay tools or metal parts on top of batteries.
- Disconnect charging source prior to connecting or disconnecting battery terminals.
- The battery power line should be disconnected from the ground. If not, electrical shock may occur.

All maintenance work or service on the ESS must be performed by qualified personnel of the authorized service center. For inquiries on related matters, please contact the number on the last page of the installation manual.

17 Registering the Product

17.1 Q.OMMAND Web

The app runs with the following versions or higher. Check OS version of the mobile device.

- Android: 6.0 or higher
- iOS: 11.0 or higher



To register the product on the server, visit the web site: qommand.qcells.com

Note: If you don't have an account, please register as an installer account.

17.2 Q.OMMAND PRO App

The app runs with the following versions or higher. Check OS version of the mobile device.

- Android: 6.0 or higher
- iOS: 11.0 or higher

It is also possible to register the product on the server by using the "Q.OMMAND Pro" app.

Search and install Q.OMMAND Pro on the Apple AppStore or Google Play Store, or use the QR code below.



Android



iOS

18 Troubleshooting with Error Code



- The measures in case of a system failure should be conducted by a qualified technician.
- When a system failure occurs, do not arbitrarily repair the product or replace a component. Hanwha Solutions is not responsible for any problems caused by arbitrary repair.

If there is an error after installing the product, please refer to the error code screen in the Q.OMMAND Go app and get support from the service center.

Q.OMMAND

Error Code List

View

ALL S(Solar) D(BDC)
 G(Grid) P(PCS) B(Battery)
 E(EMS)

Severity	Code	Description
M	S01M	PV1 Over_Voltage Protection
M	S02M	PV2 Over_Voltage Protection
M	S03M	PV3 Over_Voltage Protection
N	S04N	PV1 Over_Current Protection
N	S05N	PV2 Over_Current Protection
N	S06N	PV3 Over_Current Protection
M	S07M	PV1 String Reverse_Conexion Protection
M	S08M	PV2 String Reverse_Conexion Protection
M	S09M	PV3 String Reverse_Conexion Protection
N	S10N	PV1 INSULATION Protection
N	S11N	PV2 INSULATION Protection
N	S12N	PV3 INSULATION Protection
W	S13W	PV1 INSULATION Protection
W	S14W	PV2 INSULATION Protection
W	S15W	PV3 INSULATION Protection



Hanwha Solutions Corp. Qcells

86 Cheonggyecheon-ro Jung-gu Seoul Korea 04541

Hanwha Q CELLS GmbH

Sonnenallee 17-21 Bitterfeld-Wolfen OT Thalheim, 06766 Germany

Hanwha Q CELLS Australia Pty Ltd

Suite 1, Level 1, 15 Blue Street, North Sydney NSW 2060 Australia

TEL. +49 3494 6699 23333

WEB www.q-cells.eu

TEL. +61 (0)2 9016 3033

WEB www.qcells.com/au/