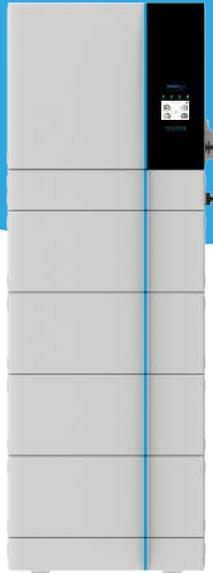# TOMMATECH TRIO HYBRID S SERIES
THREE PHASE HV AIO HYBRID INVERTER

Trio Hybrid S 5K HV AIO

Trio Hybrid S 6K HV AIO

Trio Hybrid S 8K HV AIO

Trio Hybrid S 10K HV AIO

Trio Hybrid S 12K HV AIO

Trio Hybrid S 15K HV AIO

Trio Hybrid S 20K HV AIO

USER MANUAL

Contents

	Model
Inverter	Trio Hybrid S 5/6/8/10/12/15/20K HV AIO
Battery System	Hightech Power S 4kWh HV

About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

How to Use This Manual

Read the manual and other related documents before performing any operation on the inverter. Documents must be stored carefully and be available at all times.

Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.

1. Safety Introductions

Labels description

| Label	Description
⚠️ (electric shock symbol)	Caution, risk of electric shock symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.
⚠️ (exclamation)	The DC input terminals of the inverter must not be grounded.
⚠️ (high temperature)	Surface high temperature, Please do not touch the inverter case.
⚠️ 5min	The AC and DC circuits must be disconnected separately, and the maintenance personnel must wait for 5 minutes before they are completely powered off before they can start working.
CE	CE mark of conformity
📖	Please read the instructions carefully before use.
🗑️ (crossed-out wheelie bin)	Symbol for the marking of electrical and electronics devices according to Directive 2002/96/EC. Indicates that the device, accessories and the packaging must not be disposed as unsorted municipal waste and must be collected separately at the end of the usage. Please follow Local Ordinances or Regulations for disposal or contact an authorized representative of the manufacturer for information concerning the decommissioning of equipment.

· This chapter contains important safety and operating instructions. Read and keep this manual for future reference.
· Before using the inverter, please read the instructions and warning signs of the battery and corresponding sections in the instruction manual.
· Do not disassemble the inverter. If you need maintenance or repair, take it to a professional service center.
· Improper reassembly may result in electric shock or fire.
· To reduce risk of electric shock, disconnect all wires before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
· Caution: Only qualified personnel can install this device with battery.
· Battery needs to be recharged within 48 hours after fully discharged.
· Never charge a frozen battery.
· For optimum operation of this inverter, please follow required specification to select appropriate cable size. It is very important to correctly operate this inverter.
· Be very cautious when working with metal tools on or around batteries. Dropping a tool may cause a spark or short circuit in batteries or other electrical parts, even cause an explosion.
· Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to "Installation" section of this manual for the details.
· Grounding instructions - this inverter should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
· Never cause AC output and DC input short circuited. Do not connect to the mains when DC input short circuits.

2. Product Introductions

This is a multifunctional inverter, combining functions of inverter, solar charger and battery charger to offer uninterruptible power support with portable size. Its comprehensive LCD display offers user configurable and easy accessible button operation such as battery charging, AC/solar charging, and acceptable input voltage based on different applications.

2.1 Product Overview

Inverter
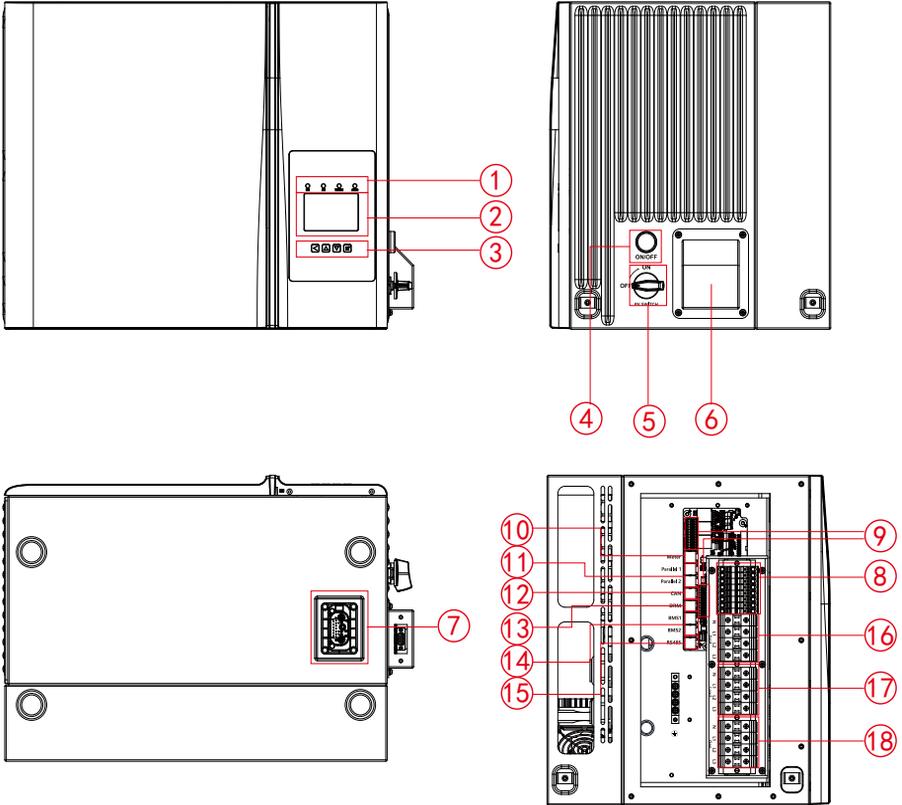
1: Inverter indicators
2: LCD display
3: Function buttons
4: Power on/off button
5: DC switch
6: WiFi Interface

7: Battery input connectors
8: PV input
9: Function port
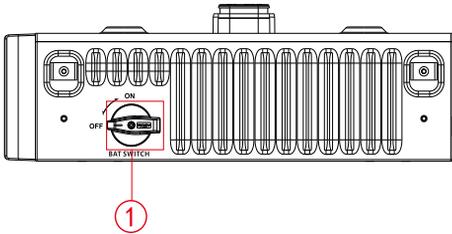10: Meter port
11: Parallel port
12: CAN port

13: DRM port
14: BMS port
15: RS485 port
16: Grid
17: Load
18: Generator input

High Voltage Control Box

1: High Voltage DC switch

2.2 Product Size

Inverter Size

High Voltage Control Box Size
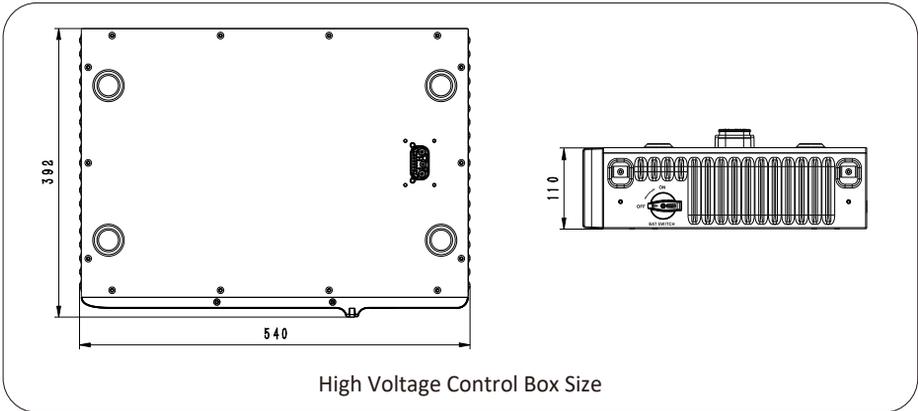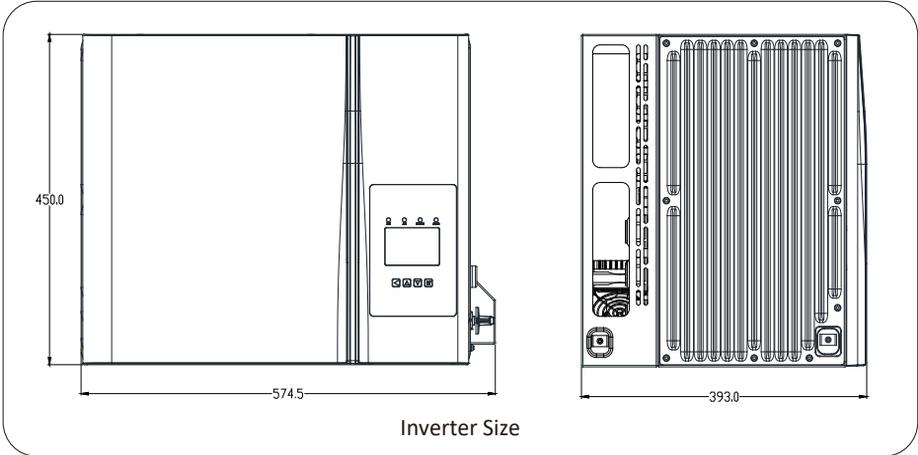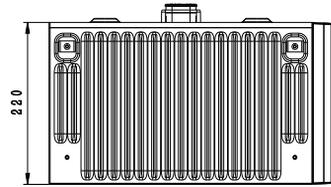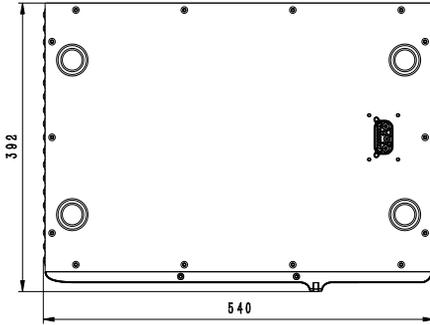
Battery Module Size
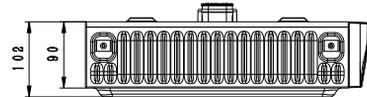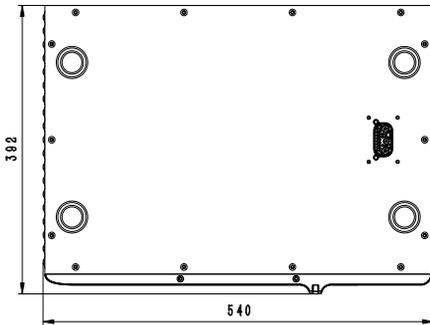
Battery Base Size

2.3 Product Features

- 230V/400V Three phase Pure sine wave inverter.
- Self-consumption and feed-in to the grid.
- Auto restart while AC is recovering.
- Programmable supply priority for battery or grid.
- Programmable multiple operation modes: On grid, off grid and UPS.
- Configurable battery charging current/voltage based on applications by LCD setting.
- Configurable AC/Solar/Generator Charger priority by LCD setting.
- Compatible with mains voltage or generator power.
- Overload/over temperature/short circuit protection.
- Smart battery charger design for optimized battery performance
- With limit function, prevent excess power overflow to the grid.
- Supporting WIFI monitoring and build-in 2 strings for 1 MPP tracker, 1 string for 1 MPP tracker.
- Smart settable three stages MPPT charging for optimized battery performance.
- Time of use function.
- Smart Load Function.

2.4 Basic System Architecture

The following illustration shows basic application of this inverter.
It also includes following devices to have a complete running system.
- Generator or Utility
- PV modules

Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances in home or office environment, including motor type appliances such as refrigerator and air conditioner.
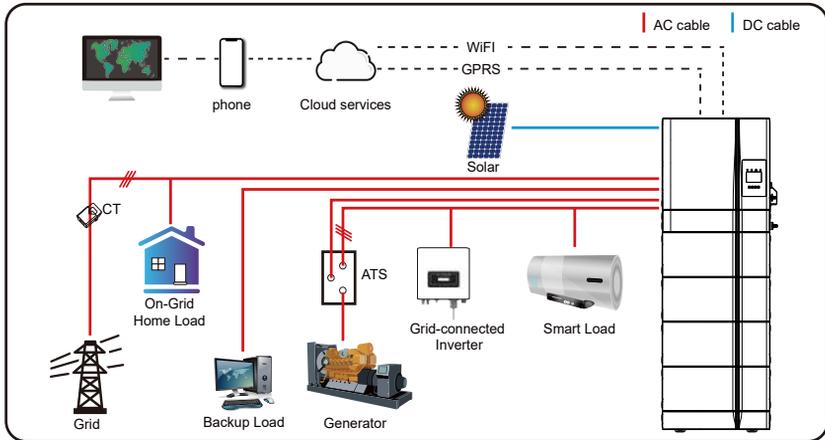
2.5 Product handling requirements

Lift the inverter out of the packaging box and transport it to the designated installation location.

transport
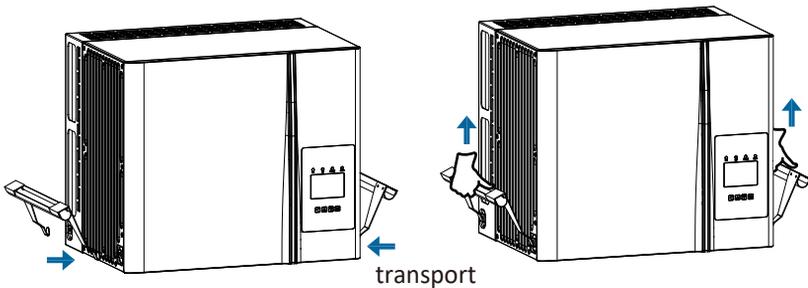
⚠	**CAUTION:**

CAUTION:
Improper handling may cause personal injury!
 • Arrange an appropriate number of personnel to carry the inverter according to its weight, and installation personnel should wear protective equipment such as anti-impact shoes and gloves.
 • Placing the inverter directly on a hard ground may cause damage to its metal enclosure. Protective materials such as sponge pad or foam cushion should be placed underneath the inverter.
 • Move the inverter by one or two people or by using a proper transport tool.
 • Move the inverter by holding the handles on it. Do not move the inverter by holding the terminals.

3. Installation

3.1 Parts List

Check the equipment before installation. Please make sure nothing is damaged in the package.
You should have received the items in the following package:

Inverter package

Hybrid inverter x1	Parallel communication cable x1	Sensor Clamp x3	Data logger(optional) x1	Stainless steel mounting screws M4*12 x2
Meter(optional) x 1	User manual x 1	**1** Magnetic ring for commuication cable of Meter x1(33×23×15 mm)(white)	**2** Magnetic ring for CT x1 (31×29×19 mm) (The outside is black and the inner ring is green)	**3** Magnetic rings for Grid ports x1 (50×32×20 mm)(black)
4,5 Magnetic rings for GEN and load ports x2 (50×65×25 mm)(black)	**6,7** Magnetic rings for PV x2 (35×25×15 mm)(green)			
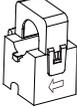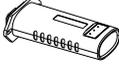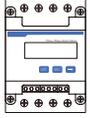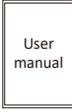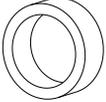
Hightech Power S HV BMS AIO package

Hightech Power S HV BMS AIO x1	Base x1	ECOM Cable2.0 x1	Wall Fixing Plate x2	Box fixing plate x4
Screws(M4*12) x8	Movable handle x2	Screw(M4*8) x8	Expansion screws （M6*100) x2	
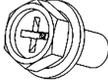
Hightech Power S 4kWh HV battery package

Hightech Power S 4kWh HV x1	Box fixing plate x4	Screws(M4*12) x8

3.2 Mounting instructions

Installation Precaution

This Hybrid inverter is designed for outdoor use(IP65), Please make sure the installation site meets below conditions:

· Not in direct sunlight
· Not in areas where highly flammable materials are stored.
· Not in potential explosive areas.
· Not in the cool air directly.
· Not near the television Antenna or antenna cable.
· Not higher than altitude of about 2000 meters above sea level.
· Not in environment of precipitation or humidity(>95%)

Please AVOID direct sunlight, rain exposure, snow laying up during installation and operation.

Before connecting all wires, please take off the metal cover by removing screws as shown below:
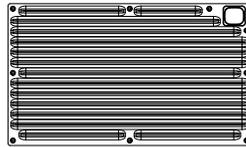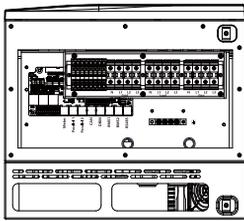
Installations Tools

Installation tools can refer to the following recommended ones. Also, use other auxiliary tools on site.

Protective goggles	Anti-dust mask	Earplugs	Work gloves	Work shoes	Utlity Knife	Slotted screwdriver
Cross screwdriver	Percussion drill	Pliers	Marker	Level	Rubber hammer	socket wrenches set
Anti-static wrist strap	Wire cutter	Wire stripper	Hydraulic pliers	Heat gun	Crimping tool4-6mm²	Multimeter ≥1100 Vdc
RJ45 crimping plier	Cleaner					
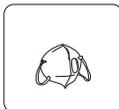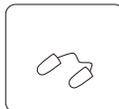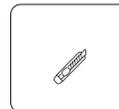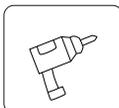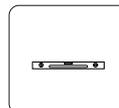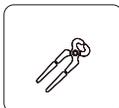
3.3 Battery connection

Inverter

Battery Pack

Inverter

Battery Port

High Voltage Control Box

Battery Port
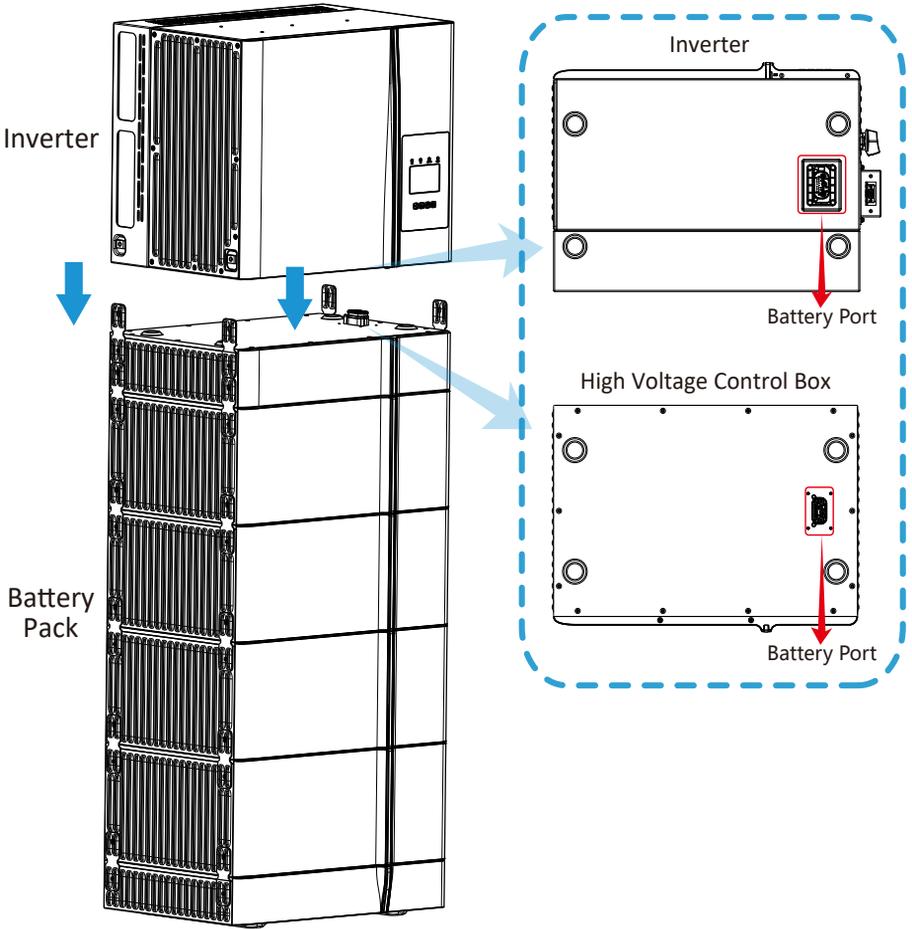
3.3.1 Install the Battery

Installation Place Requirement

· Installed on the surface with enough dryness, horizontal and flat, and has sufficient carrying
  capacity. (For example, concrete or masonry).
· The altitude of the installation location must not be higher than 2000 meters. (The output
  power of the battery will decrease with the height of the altitude).
· If in the flood area, you must pay attention to ensure that the battery is installed in an
  appropriate altitude and prevent contact with water.
· Ensure there is no fire source, and it must be equipped with an independent fire alarm device.
· Cannot be exposed to corrosive environments.
· The working temperature range should be-20℃ to Max.+60℃.
· The maximum environment humidity is 90%.
· Can't be exposed to the sun or beside the heat source directly.
· The installation site must be away from the children and the old.
· The installation position must be compatible with the weight and size of the battery.

Tools Requirements

When installing the battery system, wear the following safety equipment：

Gloves

Goggles

Safety Shoes

When installing the battery system, prepare the following spare parts：
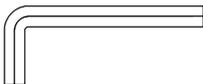
Socket Head Wrench

External Hexagonal wrench

Electric Drill

Attention:

· Because the DC cable or connector on the battery system may cause electric shock or very dangerous life,do not contact the end of the non-insulating cable.

· If the battery module incorrectly lifts or falls in the process of transportation or installation, it may cause the risk of injury due to the weight of the battery module.

· Carefully transport and lift the battery module. Consider the weight of the battery module.

· For those who work for the battery system,please wear qualified personal protection equipment.

Note: Before the battery is installed, please switch off the Air Switch of the high Voltage Control Box.

Note: Wear gloves, goggles and safety shoes before installation.

Installation steps

> *CAUTION!*
>
> · Before installation, please make sure to wear the safety shoes to prevent foot injury.
> · The weight of a battery module over 30kg. Use the movable handle tool, and two people should work together to move it.
> · Do not use the movable handle tool to carry the battery module when the distance is ≥10m.
> · Before using the transport tools, check whether they are reliable.
> · The installation humidity ranges from 5% to 90%.

1. Take out the base and battery module. Place the base on hard floor, lift the battery module on top of the base using a movable handle tool.
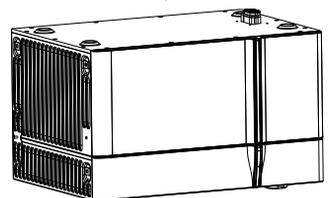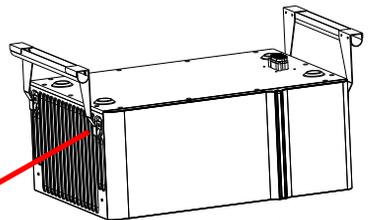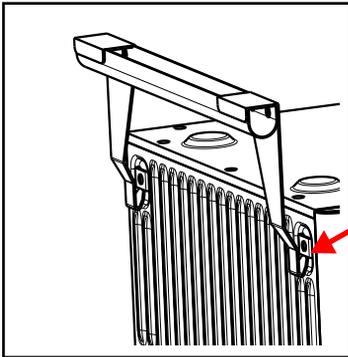
After the battery module is connected to the base, the battery module plug-in port is electriferous. Take good insulation protection, pay attention to high voltage dangers and shot circuit dangers!

2. Stack the corresponding connection ports at the bottom of the battery module. The number of stackable battery modules for a single battery system ranges from 2 to 6.
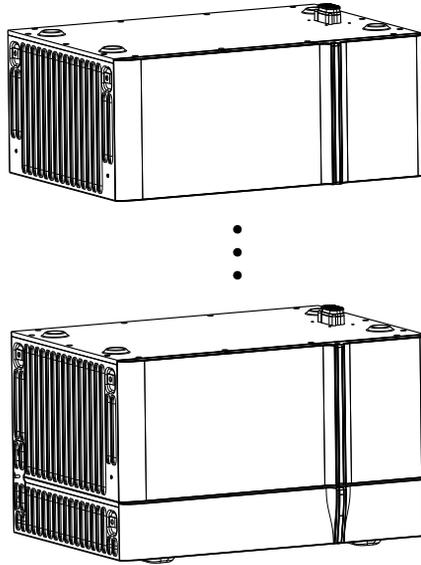
3. Take out the high voltage box, and install the wall fixing plate on the pre-mounting hole of the high voltage box with M4*8 screws.
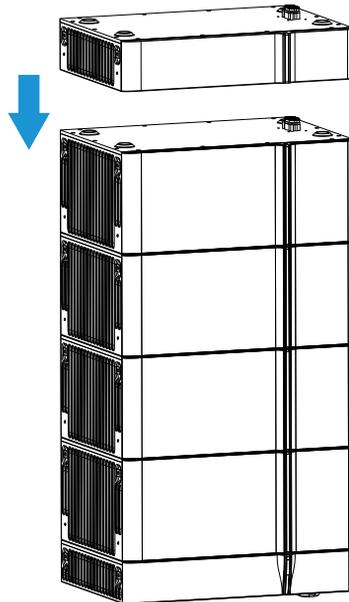
4. Finally, install the high voltage box to the top layer of the battery module.
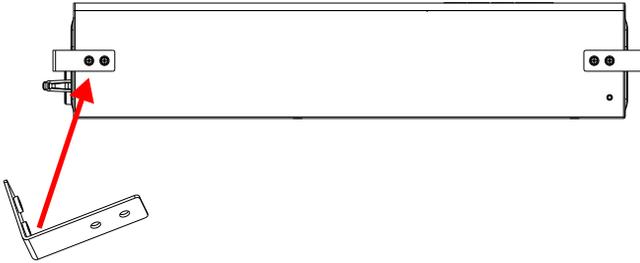
5. Use M4*12 hex socket screws to install the box fixing plate between the base and the battery module, between the battery modules, between the battery module and the high voltage box as well.
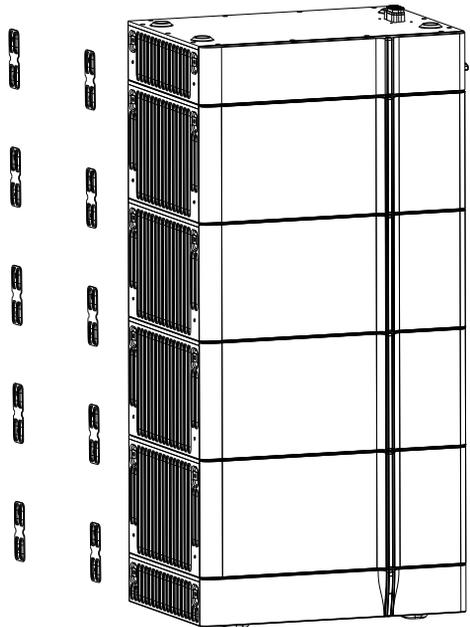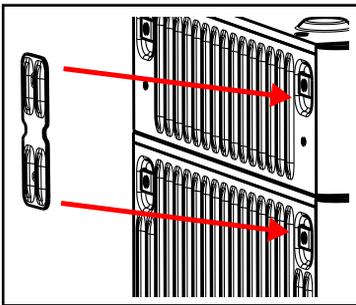
6. Place the high voltage box on one side of the wall, mark the positions of fixing holes, drill two holes in the wall with a depth of 100-110mm using the electrical drill, secure the high voltage box to the wall and install expansion bolts in the holes with a proper hammer.
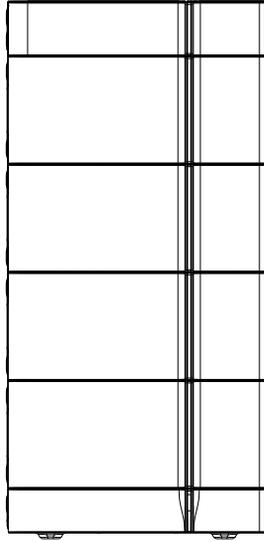
Selection of installation sites

The installation location is recommended to meet the size requirements of the figure below:

Wall

≥600mm
(Recommended)

Wall

≥600mm
(Recommended)

H ≥300mm
(Recommended)

H

Ground

10mm≤ L ≤35mm

Wall

L

L

Ground
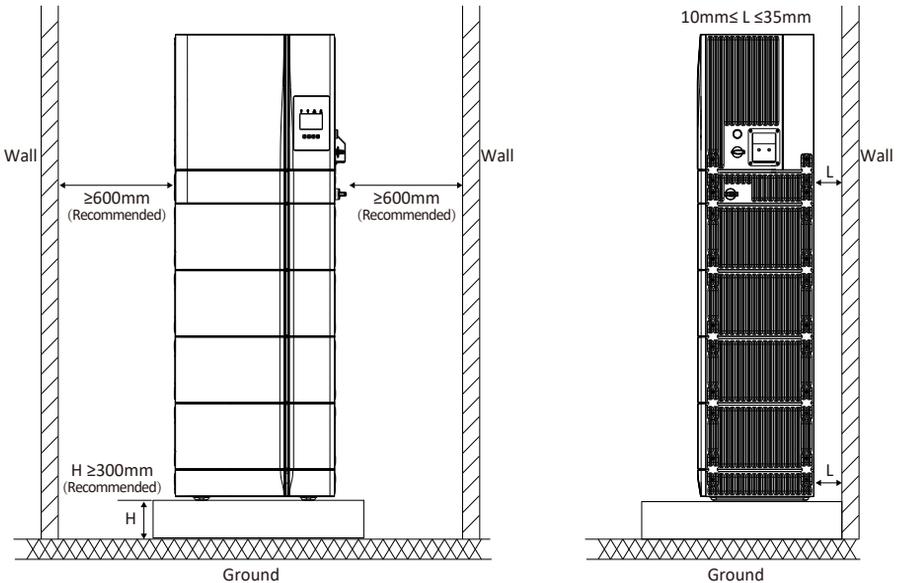
3.3.2 Function port definition

Inverter

CN1

1 2 3 4 5 6 7 8 9 10 11 12

CN2

1 2 3 4 5 6 7 8 9 10 11 12

CT -R

CT -S

CT -T

Gen start-up
N/O Relay
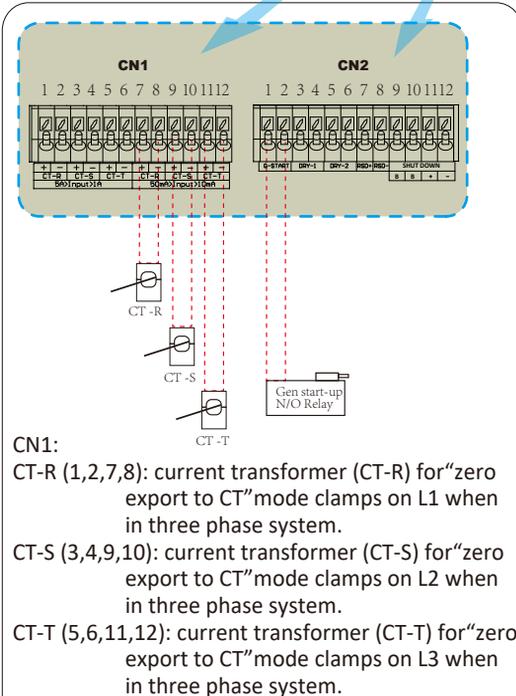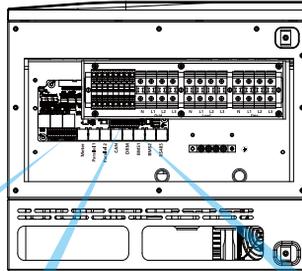
CN1:

CT-R (1,2,7,8): current transformer (CT-R) for"zero export to CT"mode clamps on L1 when in three phase system.

CT-S (3,4,9,10): current transformer (CT-S) for"zero export to CT"mode clamps on L2 when in three phase system.

CT-T (5,6,11,12): current transformer (CT-T) for"zero export to CT"mode clamps on L3 when in three phase system.

CN2:

G-start (1,2): dry contact signal for startup the diesel generator. When the "GEN signal" is active, the open contact (GS) will switch on (no voltage output).

DRY-1 (3,4): Dry contact output. When the inverter is in off-grid mode and the "signal island mode" is checked, the dry contact will switch on.

DRY-2 (5,6): reserved.

RSD+,RSD- (7,8): When battery is connected and the inverter is in "ON" status, it will provide 12Vdc.

SHUT DOWN (9,10,11,12): when the terminal "B" & "B" is short-circuited with additional wire connection, or there's 12Vdc input at the terminal "+ & - ", then the 12Vdc of RSD+ & RSD- will disappear immediately, and the inverter will shutdown immediately.

Meter Parallel_1 Parallel_2 CAN DRM BMS1 BMS2 RS485
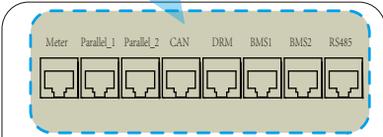
Meter: for energy meter communication.

Parallel_1: Parallel communication port 1.

Parallel_2: Parallel communication port 2 .

CAN: reserved.

DRM: Logic interface for AS/ NZS 4777.2:2020.

BMS1: BMS port for battery communication port 1.

BMS2: BMS port for battery communication port 2.

RS485: RS485 port.

coil

open contact

relay

G   S

GS (diesel generator startup signal)

Thread the end of the CT's wires through the magnetic ring 2 and wrap the wires around it two laps. Fix the magnetic ring near the wiring terminals, as shown in the above diagram. Repeat this operation for the other two CTs.

3.4 Grid connection and backup load connection

· Before connecting to the grid, a separate AC breaker must be installed between the inverter and the grid, and also between the backup load and the inverter. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current. For the 5/6/8/10/12/15/20kW model, the recommended AC breaker for backup load 5/6kW is 63A, 8/12/15/20kW is 80A. For the 5/6/8/10/12/15/20kW model, the recommended AC breaker for grid 5/6/8/10kW is 50A, 12/15/20kW is 100A.

· There are three terminal blocks with "Grid" "Load"and "GEN" markings. Please do not misconnect input and output connectors.

⚠️ **Note:**
In final installation,breaker certified according to IEC 60947-1 and IEC 60947-2 shall be installed with the equipment.

All wiring must be performed by a qualified personnel.It is very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable as below.

Grid connection and backup load connection (Copper wires) (bypass)

Model	Wire Size	Cable(mm²)	Torque value(max)	Phase
5/6/8/10K	8AWG	6	3.4Nm	3L+N
12/15/20K	4AWG	16	4.0Nm	3L+N

Grid connection and backup load connection (Copper wires)

Model	Wire Size	Cable(mm²)	Torque value(max)	Phase
5/6K	12AWG	2.5	2.8Nm	3L+N
8K	10AWG	4.0	2.8Nm	3L+N
10/12K	8AWG	6.0	2.8Nm	3L+N
15K	6AWG	10	2.8Nm	3L+N
20K	4AWG	16	3.4Nm	3L+N

Chart 3-3 Recommended Size for AC wires

Please follow below steps to implement Grid, load and Gen port connection:

1. Before making Grid, load and Gen port connection, be sure to turn off AC breaker or disconnector first.
2. Remove insulation sleeve 10mm length, insert the wires according to polarities indicated on the terminal block. Make sure the connection is complete.
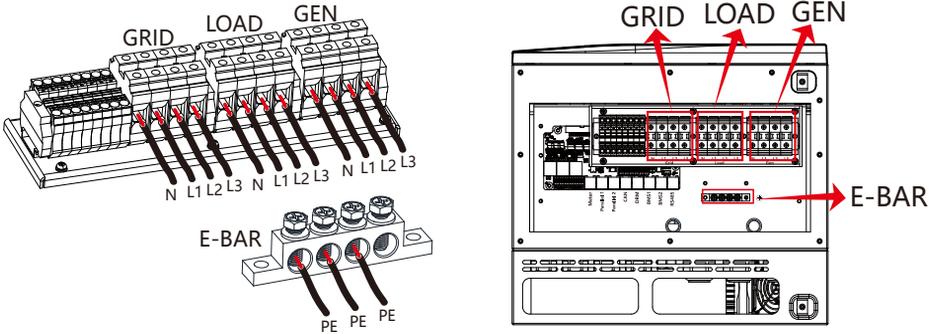
> ⚠ Be sure that AC power source is disconnected before attempting to wire it to the unit.

3. Then, insert AC output wires according to polarities indicated on the terminal block and tighten terminal. Be sure to connect corresponding N wires and PE wires to related terminals as well.
4. Make sure the wires are securely connected.
5. Appliances such as air conditioner are required at least 2-3 minutes to restart because it is required to have enough time to balance refrigerant gas inside of circuit. If a power shortage occurs and recovers in short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it is equipped with time-delay function before installation. Otherwise, this inverter will trigger overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner

3.5 PV Connection

Before connecting to PV modules, please install a separately DC circuit breaker between inverter and PV modules. It is very important for system safety and efficient operation to use appropriate cable for PV module connection.

> ⚠️ To avoid any malfunction, do not connect any PV modules with possible leakage current to the inverter. For example, grounded PV modules will cause leakage current to the inverter. When using PV modules, please ensure the PV+ & PV- of solar panel is not connected to the system ground bar.
>
> ⚠️ It is requested to use PV junction box with surge protection. Otherwise, it will cause damage on inverter when lightning occurs on PV modules.

Cable type	Cross section (mm^2)	
	Range	Recommended value
Industry generic PV cable (model: PV1-F)	2.5-4 (12-10AWG)	4(10AWG)

Chart 3-4

> ⚠️ *Safety Hint:*
> Please use approved DC cable for PV system.
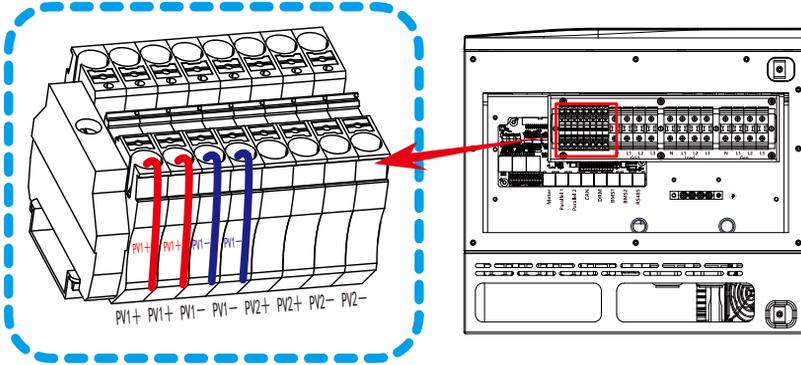
3.5.1 PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:
1) Open circuit Voltage (Voc) of PV modules can not exceed max. PV array open circuit voltage of inverter.
2) Open circuit Voltage (Voc) of PV modules should be higher than min. start voltage.
3) The PV modules used to connected to this inverter shall be Class A rating certified according to lEC 61730.

Inverter Model	5k	6k	8k	10k	12k	15k	20k
PV Input Voltage	600V (180V-1000V)						
PV Array MPPT Voltage Range	150V-850V						
No. of MPP Trackers	2						
No. of Strings per MPP Tracker	1+1				2+1		2+2

Chart 3-5

3.6 CT Connection

GRID

N L1 L2 L3

1 2 3 4 5 6 7 8 9 10 11 12

White wire

Black wire

CT

Arrow pointing to inverter

L3
CT3

L2
CT2

L1
CT1

N

Grid

PE

*Note： **when the reading of the load power on the LCD is not correct, please reverse the CT arrow.**

3.6.1 Meter Connection

CHNT DTSU666 — CHINT meter

	1	3	4	6	7	9	10	
Grid (1,4,7,10)	L1							Inverter (3,6,9,10)
	L2							
	L3							
	N							

RS 485 — 24 25 — A B

RS485A
RS485B

GRID
N L1 L2 L3

PE
N
L1
L2
L3
Grid

Meter   Parallel_1   Parallel_2

Eastron SDM630-Modbus V2 — Eastron meter

	1	2	3	4		5	6	7	8	
	L1									N
	L2									L3
	L3									L2
	N									L1
	Grid (1,2,3,4)					Load (5,6,7,8)				

RS 485 — B A G — RS485B RS485A GND

RS485B
RS485A
GND

GRID
N L1 L2 L3

N L3 L2 L1

PE
L1
L2
L3
N
Grid

Meter   Parallel_1   Parallel_2

GRID

N   L1 L2 L3

Meter   Parallel_1   Parallel_2

AC Breaker

RS485A   RS485B

PE
N
L1
L2
L3

Home Load

AC Breaker

PE
N
L1
L2
L3

Grid

CT1

CT2

CT3

Blue line
White line

Blue line
White line

Blue line
White line

Note: the arrow direction towards the inverter

CT Current Input   RS485
13 14   16   17   19   21   24 25
1A* 1A   A   B

| 3 | 6 | 9 | 10 | 13 | 14 | 16 | 17 | 19 | 21 |

L1
Grid   L2
(3,6,9,10) L3
N

RS 485 | 24 | 25 |
A   B

1A 5.000 A
Phase A current =5.000A

1b 5.001 A
Phase B current =5.001A

1C 5.002 A
Phase C current =5.002A

230/400V,3~
250A/50mA
50/60Hz

CHNT DTSU666

CHINT meter

PIN 13,16,19 : White cable of the CT
PIN 14,17,21 : Blue cable of the CT

GRID

N L1 L2 L3

Meter Parallel_1 Parallel_2

RS485A
RS485B
GND

AC Breaker

PE
N
L1
L2
L3

AC Breaker

Home Load

NA LA L1 L2 L3 N

meter

Eastron

PE
N
L1
L2
L3

CT1
CT2
CT3

Grid

Black line
Red line
Black line
Red line
Black line
Red line

Note: the arrow direction towards the inverter

9 10 11 12 13 14 15 16 17 18 19 20

Eastron

M
P
E

1 2 3 4 5 6 7 8

P2 P1
P2 P1 S2 S1
P2 P1 S2 S1
S2 S1

L1
L2
L3
N

3 PHASE 4 WIRE

| 1 | 2 | 3 | 4 | 5 | 6 | 15 | 16 | 17 | 18 | 19 | 20 |

Grid voltage sampling

Auxiliary power supply

Current inputs

Eastron SDM630MCT

Eastron meter

RS 485

| 14 | 13 | 12 |

RS485A RS485B GND

Meter connection

Thread the Meter communication cable through the magnetic ring 1 and wrap it around the magnetic ring 1 four times.

Grid connection

Thread the end of wires through the magneic ring 3 and connect these wires to the terminals of Grid ports corresponding to the indicaion of polarity.

Load and GEN connection

Thread the end of Load and GEN wires through the magnetic ring 4 and 5 separately and wrap them around the magnetic ring one lap, as shown in the diagram.

PV connection

Thread the PV+and PV - cables of the 1 or 2 PV strings (if any) planned to be connected to the PV1 inputs into magnetic ring 6 and wrap them around the magnetic ring 6 one lap. Repeat this step for magnetic ring 7 and the 1 or 2 PV strings (if any) that are planned to be connected to PV2 inputs .

Then push the buttons of PV1 intputs one by one and plug these wires of PV strings planned to connected to PV1 into the PV1 inputs according to the polarity indication. Repeat this action for the PV strings that are planned to connected to PV2.

① **Trio Hybrid S (5-10)K HV AIO (1+1)**

② **Trio Hybrid S (12-15)K HV AIO (2+1)**

③ **Trio Hybrid S 20K HV AIO (2+2)**
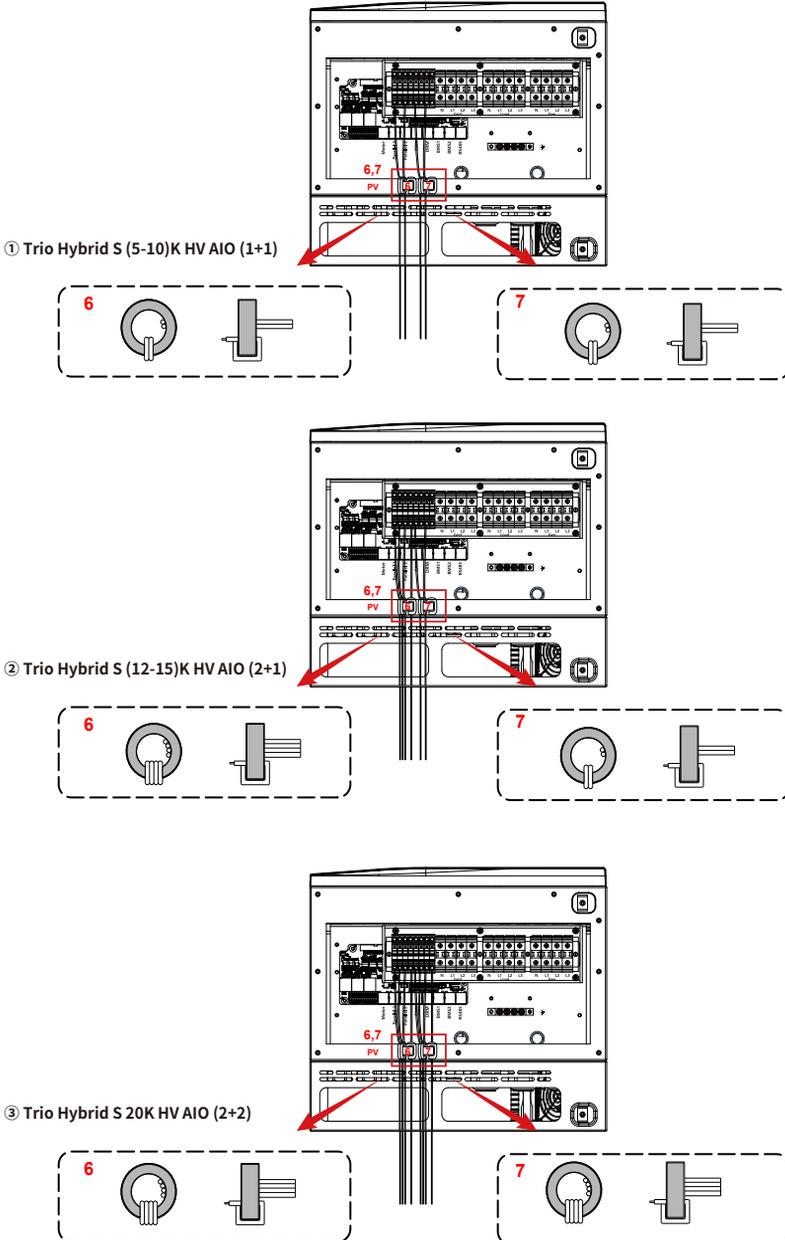
3.7 Earth Connection(mandatory)

Ground cable shall be connected to ground plate on grid side this prevents electric shock if the original protective conductor fails.

Thread the PE wire through the magnetic ring 2, and then connect it to the E-bar inside the inverter.
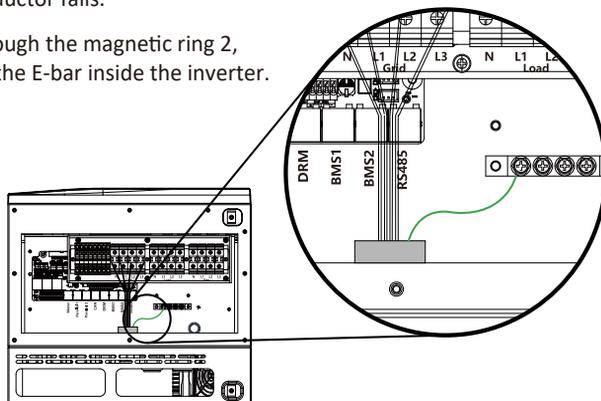
Earth Connection (Copper wires) (bypass)

Model	Wire Size	Cable(mm²)	Torque value(max)	Phase
5/6/8/10K	8AWG	6	3.4Nm	3L+N
12/15/20K	4AWG	16	4.0Nm	3L+N

Earth Connection (Copper wires)

Model	Wire Size	Cable(mm²)	Torque value(max)	Phase
5/6K	12AWG	2.5	2.8Nm	3L+N
8K	10AWG	4.0	2.8Nm	3L+N
10/12K	8AWG	6.0	2.8Nm	3L+N
15K	6AWG	10	2.8Nm	3L+N
20K	4AWG	16	3.4Nm	3L+N

The conductor should be made of the same metal as the phase conductors.

⚠️ **Warning:**
Inverter has built-in leakage current detection circuit,The type A RCD can be connected to the inverter for protection according to the local laws and regulations.If an external leakage current protection device is connected, its operating current must be equal to 300 mA or higher, otherwise inverter may not work properly.

3.8 WIFI Connection

For the configuration of Wi-Fi Plug, please refer to illustrations of the Wi-Fi Plug. The Wi-Fi Plug is not a standard configuration, it's optional.

3.9 Wiring System for Inverter
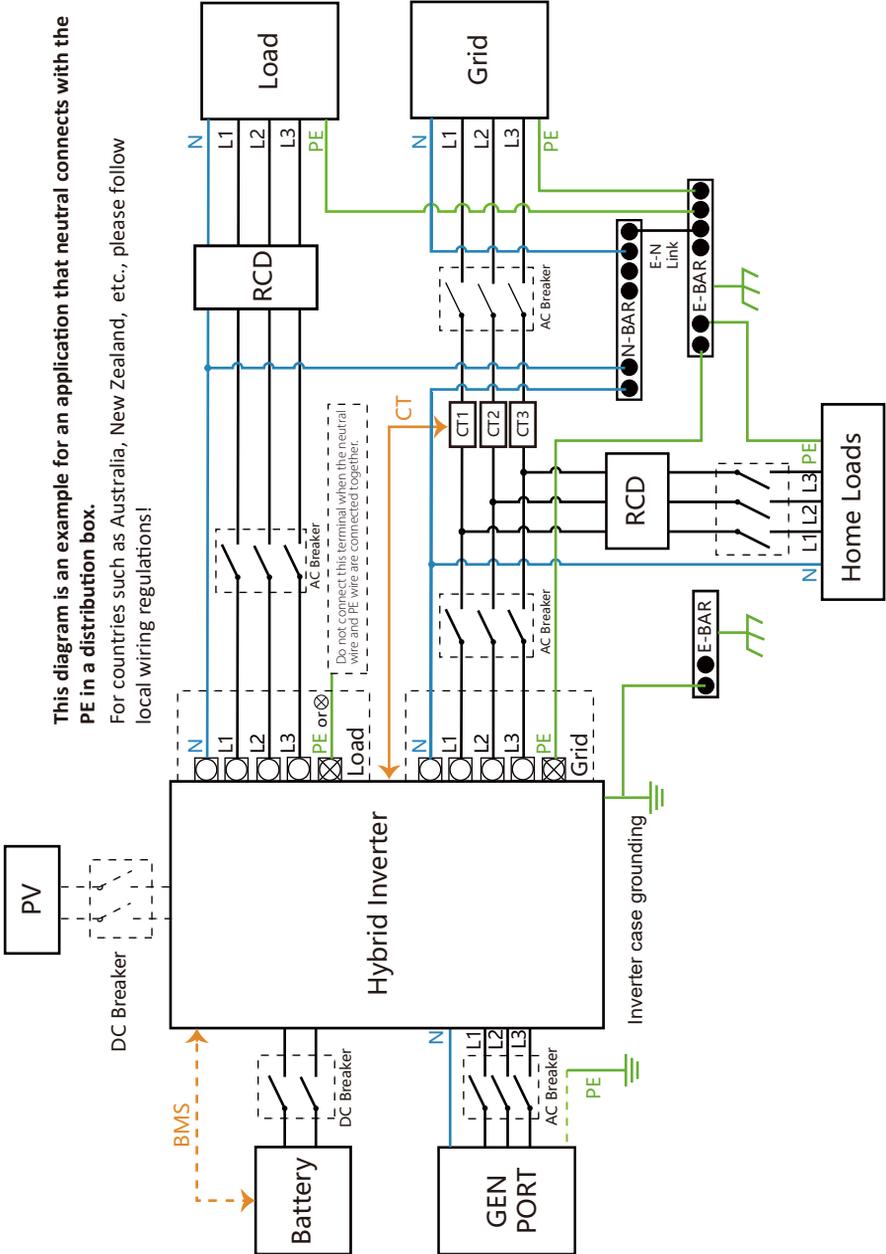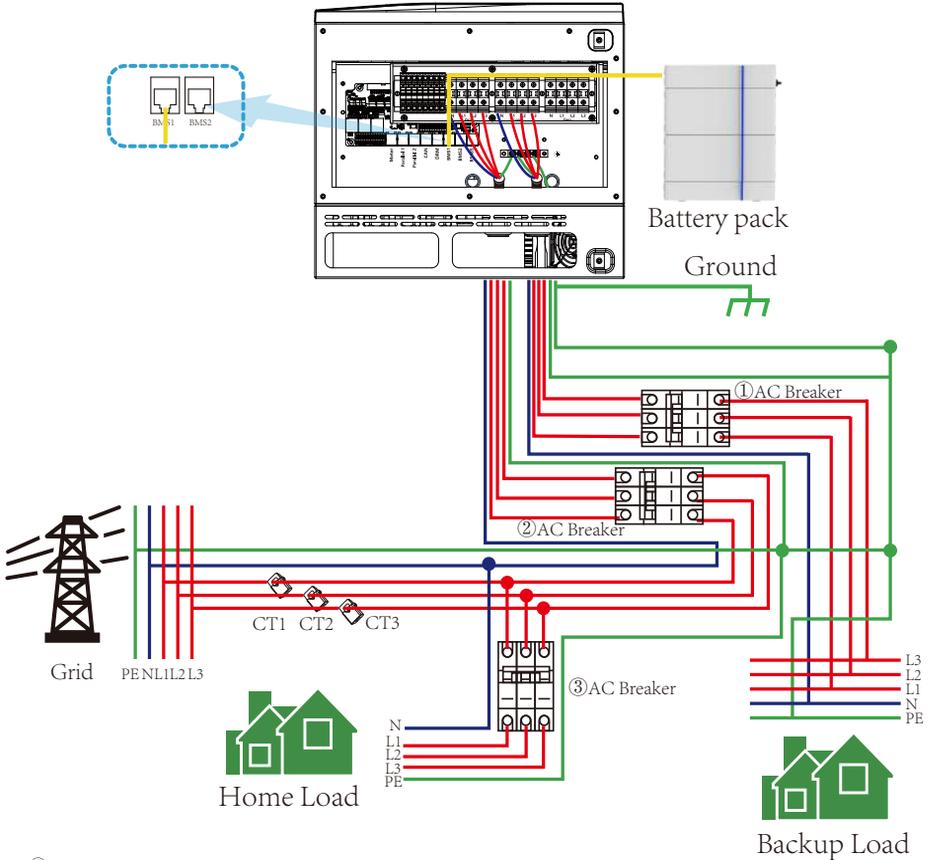
This diagram is an example for an application that neutral connects with the PE in a distribution box.

For countries such as Australia, New Zealand, etc., please follow local wiring regulations!

3.10 Wiring diagram

This diagram is an example for an application in which neutral is separated from the PE in the distribution box.

For countries such as China, Germany, the Czech Republic, Italy, etc., please follow local wiring reguations!

| CAN | L wire | N wire | PE wire |

Battery pack

Ground

① AC Breaker

② AC Breaker

CT1 CT2 CT3

Grid

PE N L1 L2 L3

③ AC Breaker

N
L1
L2
L3
PE

Home Load

L3
L2
L1
N
PE

Backup Load

BMS1 BMS2

① AC Breaker for backup load
Trio Hybrid S 5K HV AIO : 63A AC breaker
Trio Hybrid S 6K HV AIO: 63A AC breaker
Trio Hybrid S 8K HV AIO: 80A AC breaker
Trio Hybrid S 10K HV AIO: 80A AC breaker
Trio Hybrid S 12K HV AIO: 80A AC breaker
Trio Hybrid S 15K HV AIO: 80A AC breaker
Trio Hybrid S 20K HV AIO: 80A AC breaker

② AC Breaker for grid
Trio Hybrid S 5K HV AIO: 50A AC breaker
Trio Hybrid S 6K HV AIO: 50A AC breaker
Trio Hybrid S 8K HV AIO: 50A AC breaker
Trio Hybrid S 10K HV AIO: 50A AC breaker
Trio Hybrid S 12K HV AIO: 100A AC breaker
Trio Hybrid S 15K HV AIO: 100A AC breaker
Trio Hybrid S 20K HV AIO: 100A AC breaker

③ AC Breaker for home load
Depends on household loads

3.11 Typical application diagram of diesel generator

CAN — L wire — N wire — PE wire

G-start (1,2): dry contact signal for startup the diesel generator.

coil ☒ relay

open contact

G S

GS (diesel generator startup signal)

BMS1 BMS2

Battery pack

Ground

① AC Breaker for backup load
Trio Hybrid S 5K HV AIO : 63A AC breaker
Trio Hybrid S 6K HV AIO: 63A AC breaker
Trio Hybrid S 8K HV AIO: 80A AC breaker
Trio Hybrid S 10K HV AIO: 80A AC breaker
Trio Hybrid S 12K HV AIO: 80A AC breaker
Trio Hybrid S 15K HV AIO: 80A AC breaker
Trio Hybrid S 20K HV AIO: 80A AC breaker

② AC Breaker for Generator port
Trio Hybrid S 5K HV AIO: 50A AC breaker
Trio Hybrid S 6K HV AIO: 50A AC breaker
Trio Hybrid S 8K HV AIO: 50A AC breaker
Trio Hybrid S 10K HV AIO: 50A AC breaker
Trio Hybrid S 12K HV AIO: 100A AC breaker
Trio Hybrid S 15K HV AIO: 100A AC breaker
Trio Hybrid S 20K HV AIO: 100A AC breaker

①AC Breaker

Backup Load

N
R
S
T
PE

Remotely control signal line

②AC Breaker

N
R
S
T
PE

Generator

3.12 Three phase parallel connection diagram

CAN   L wire   N wire   PE wire

Meter Parallel_1 Parallel_2 CAN DRM BMS1 BMS2 RS485

Inverter No.3 (slave)

Battery pack

Note: unlike cases of other hybrid inverter with LV battery, HV battery can only be connected separately to HV hybrid inverters.

Note: For the parallel system, please choose the "Zero export to CT " mode.

①③⑤ AC Breaker for grid port
Trio Hybrid S 5K HV AIO: 50A AC breaker
Trio Hybrid S 6K HV AIO: 50A AC breaker
Trio Hybrid S 8K HV AIO: 50A AC breaker
Trio Hybrid S 10K HV AIO: 50A AC breaker
Trio Hybrid S 12K HV AIO: 100A AC breaker
Trio Hybrid S 15K HV AIO: 100A AC breaker
Trio Hybrid S 20K HV AIO: 100A AC breaker

②④⑥ AC Breaker for backup load
Trio Hybrid S 5K HV AIO : 63A AC breaker
Trio Hybrid S 6K HV AIO: 63A AC breaker
Trio Hybrid S 8K HV AIO: 80A AC breaker
Trio Hybrid S 10K HV AIO: 80A AC breaker
Trio Hybrid S 12K HV AIO: 80A AC breaker
Trio Hybrid S 15K HV AIO: 80A AC breaker
Trio Hybrid S 20K HV AIO: 80A AC breaker

⑦ AC Breaker for home load
Depends on household loads

Inverter No.2 (slave)

Battery pack

Ground

Inverter No.1 (master)

Battery pack

Ground

Grid

PEN L1L2L3

CT1 CT2 CT3

CT

Arrow pointing to inverter

Home Load

L3
L2
L1
N
PE

Backup Load

Master inverter   Slave Inverter   Slave Inverter

Advanced Function		Advanced Function		Advanced Function	
☑ Parallel Modbus SN	⬆ Paral. Set3	☑ Parallel Modbus SN	⬆ Paral. Set3	☑ Parallel Modbus SN	⬆ Paral. Set3
◉ Master 01		◉ Master 02		◉ Master 03	
○ Slave	⬇	○ Slave	⬇	○ Slave	⬇
☐ EX_Meter For CT	✖	☐ EX_Meter For CT	✖	☐ EX_Meter For CT	✖
Meter Select No Meter 0/3	✔	Meter Select No Meter 0/3	✔	Meter Select No Meter 0/3	✔

4. OPERATION

4.1 Power ON/OFF

Once the unit has been properly installed and the batteries are connected well, simply press On/Off button(located on the left side of the case) to turn on the unit. When system without battery connected, but connect with either PV or grid, and ON/OFF button is switched off, LCD will still light up(Display will show OFF), In this condition, when switch on ON/OFF button and select NO battery,system can still working.

4.2 Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes four indicators, four function keys and a LCD display, indicating the operating status and input/output power information.

LED Indicator		Messages
DC	Green led solid light	PV Connection normal
AC	Green led solid light	Grid Connection normal
Normal	Green led solid light	Inverter operating normal
Alarm	Red led solid light	Malfunction or warning

Chart 4-1 LED indicators

Function Key	Description
Esc	To exit setting mode
Up	To go to previous selection
Down	To go to next selection
Enter	To confirm the selection

Chart 4-2 Function Buttons

Light Meaning

- Light blue
- Red
- Blue
- Orange
- Green
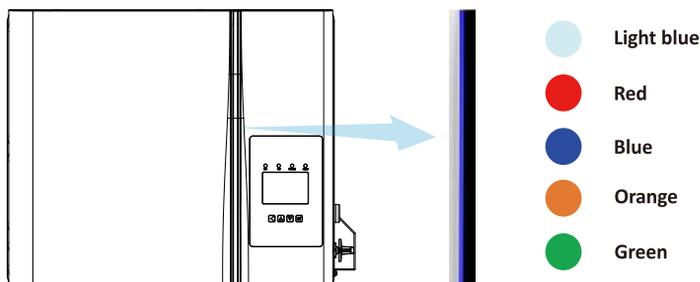
Light Meaning	Description
Self-check	Light-blue light, breathing at normal rate. If the duration exceeds 1 minute, restart the battery or contact maintenance personnel.
Fault	The red light is steady on when the system in faulty.
Normal	The blue light is steady on by default. If no PCS communication is available, the light switches to the breathing mode.
Alarm	Orange light, the light is always on when the insulation alarm is triggered.
Charging	Green light, breathing at normal rate.
Note:	If single battery cell under voltage alarm or battery pack under voltage alarm is triggered, The light will flash at slow rate with orange color. If one single battery cell voltage is between 2.3V and OV, the light will be turn off and turn on again when SOC is above15%.

Chart 4-2 Light Meaning

In addition to the LED lights,the battery fault information can be obtained through the screen and the upper computer. Can also read these information through remote WLAN connection.

5. LCD Display Icons

5.1 Main Screen

The LCD is touchscreen, below screen shows the overall information of the inverter.
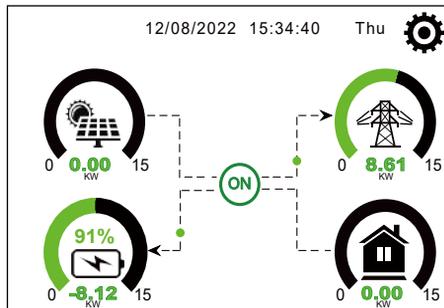
1.The icon in the center of the home screen indicates that the system is Normal operation. If it turns into "comm./F01~F64" , it means the inverter has communication errors or other errors, the error message will display under this icon(F01-F64 errors, detail error info can be viewed in the System Alarms menu).

2.At the top of the screen is the time.

3.System Setup Icon, Press this set button,you can enter into the system setup screen which including Basic Setup, Battery Setup, Grid Setup, System Work Mode, Generator port use, Advanced function and Li-Batt info.

4.The main screen showing the info including Solar, Grid, Load and Battery. Its also displaying the energy flow direction by arrow. When the power is approximate to high level, the color on the panels will changing from green to red so system info showing vividly on the main screen.

· PV power and Load power always keep positive.
· Grid power negative means sell to grid, positive means get from grid.
· Battery power negative means charge, positive means discharge.

5.1.1 LCD operation flow chart
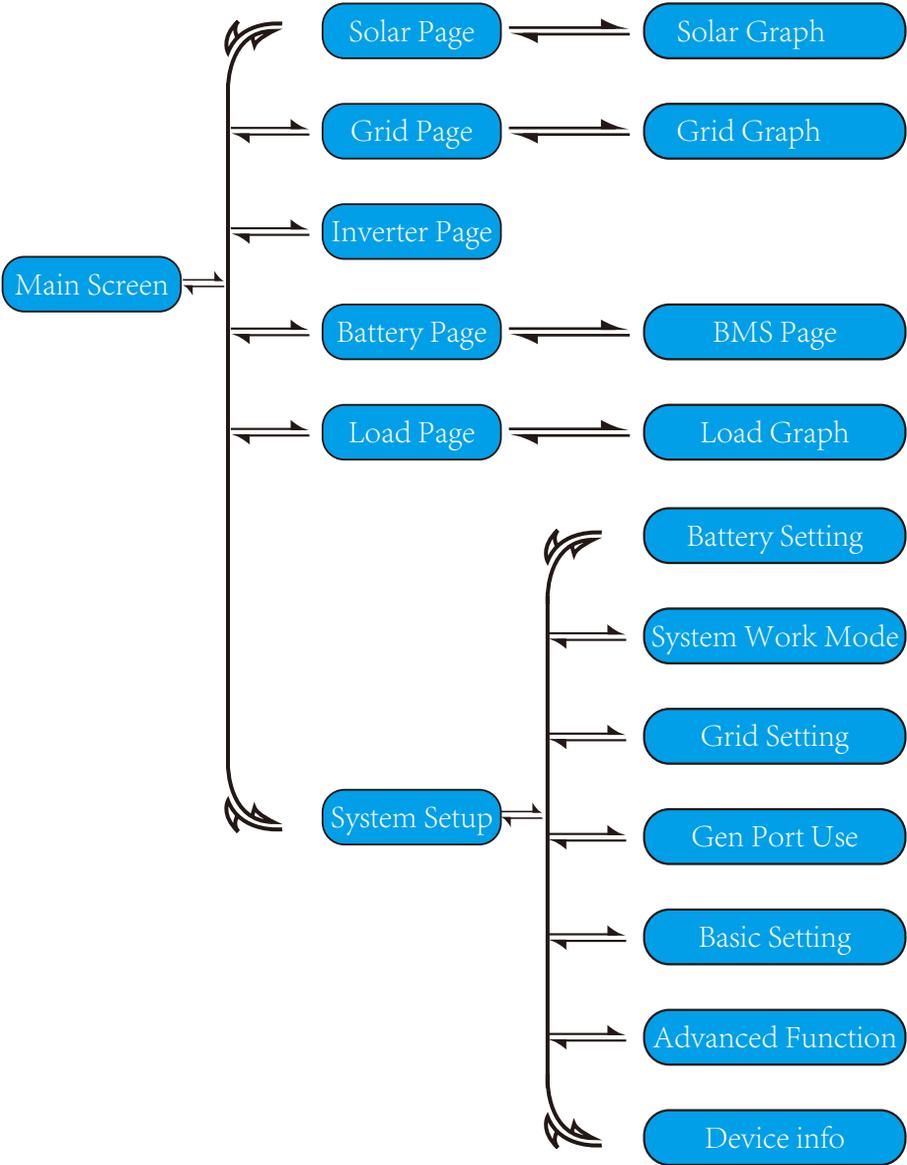
5.2 Solar Power Curve

Solar	This is Solar Panel detail page.
PV1-V: 286V PV1-I: 5.5A PV1-P: 1559W ② PV2-V: 286V PV2-I: 5.5A PV2-P: 1559W Power: 1560W ① Today=8.0 KWH Total =12.00 KWH ③ Energy	① Solar Panel Generation. ② Voltage, Current, Power for each MPPT. ③ Daily and total PV production. Press the "Energy "button will enter into the power curve page.

Inverter	This is Inverter detail page.

1166w 1244w / 50Hz -81w / 50Hz ①
L1N: 221v 0w L1N: 222v 0.8A L1N: 222v 0.1A
L2N: 229v 1166w L2N: 229v 5.0A L2N: 230v 0.1A
L3N: 225v 0w L3N: 229v 0.9A L3N: 223v 0.1A
HM: LD: INV_P:
Load -10W 28W -30W
21w 5W 1192W -26W AC_T:
0w | 0w 0W 24W -25W 38.8C
150V | 150V **Grid** **Inverter**
-0.41A | -0.41A 0W 0W
27.0C | 27.0C 0V 0V
Battery 0.0A 0.0A
PV
	① Inverter Generation.
	  Voltage, Current, Power for each Phase.
	  AC-T: mean Heat-sink temperature.

Load	This is Load detail page.
Power: 55W ① Today=0.5 KWH Total =1.60 KWH ③ L1: 220V P1: 19W ② L2: 220V P2: 18W L3: 220V P3: 18W Energy	① Load Power. ② Voltage, Power for each Phase . ③ Daily and total Load consumption . When you check "Selling First" or "Zero export to Load" on system work mode page, the information on this page is about backup load which connect on Load port of hybrid inverter. When you check "Zero export to CT"on system work mode page, the information on this page is including backup load and home load. Press the "Energy " button will enter into the power curve page.

Grid	This is Grid detail page.

Stand by ① BUY ③
0W Today=2.2KWH
0.0Hz Total =11.60 KWH
  SELL
CT1: 0W LD1: 0W ② Today=0.0KWH
CT2: 0W LD2: 0W Total =8.60 KWH
CT3: 0W LD3: 0W
 	
L1: 0V   L2: 0V   L3: 0V
Energy
	① Status, Power, Frequency.
	② L: Voltage for each Phase
	  CT: Power detected by the external current sensors
	  LD: Power detected using internal sensors on AC grid in/out breaker
	③ BUY: Energy from Grid to Inverter,
	  SELL: Energy from Inverter to grid.
	Press the "Energy " button will enter into the power curve page.

Batt

Battery 1
Stand by

U:170V

I:2.04A

Power: 101W

Temp:25.0C

Energy

This is Battery detail page.

if you use Lithium Battery, you can enter BMS page.

Li-BMS

Mean Voltage:170.0V	Charging Voltage :180.0V	Sum Data
Total Current:37.00A	Discharging Voltage :160.0V	
Mean Temp :23.5C	Charging current :30A	
Total SOC :38%	Discharging current :25A	Details Data
Dump Energy:57Ah		

Li-BMS

	Volt	Curr	Temp	SOC	Energy	Charge Volt	Charge Curr	Fault	
1	150.3V	19.70A	30.6C	52.0%	26.0Ah	0.0V	0.0A	0|0|0	Sum Data
2	150.2V	19.10A	31.0C	51.0%	25.5Ah	153.2V	25.0A	0|0|0	
3	150.1V	16.90A	30.2C	12.0%	6.0Ah	153.2V	25.0A	0|0|0	
4	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
5	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
6	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
7	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	Details Data
8	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
9	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
10	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
11	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
12	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
13	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
14	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	
15	0.00V	0.00A	0.0C	0.0%	0.0Ah	0.0V	0.0A	0|0|0	

5.3 Curve Page-Solar & Load & Grid

Solar Power Production:Day
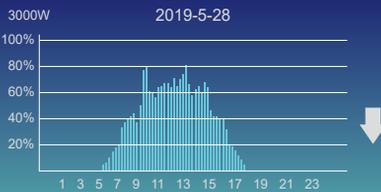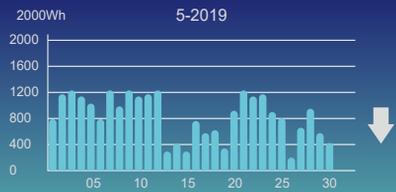
3000W   2019-5-28

100%
80%
60%
40%
20%

1 3 5 7 9 11 13 15 17 19 21 23

| CANCEL | Day | Month | Year | Total |

System Solar Power:Month

2000Wh   5-2019

2000
1600
1200
800
400
0

05   10   15   20   25   30

| CANCEL | Day | Month | Year | Total |

System Solar Power:Year

KWh   2019

200
160
120
80
40

1 2 3 4 5 6 7 8 9 10 11 12

| CANCEL | Day | Month | Year | Total |

System Solar Power:Total

2000KWh   TOTAL

2000
1600
1200
800
400
0

20 20 20 20 20 20 20 20 20 20 20 20 20
16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
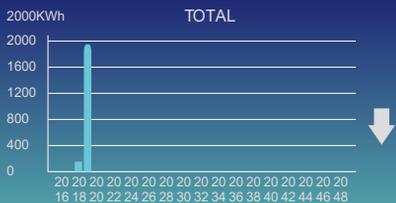
| CANCEL | Day | Month | Year | Total |

Solar power curve for daily, monthly, yearly and total can be roughly checked on the LCD, for more accuracy power generation, pls check on the monitoring system. Click the up and down arrow to check power curve of different period.

5.4 System Setup Menu

System Setup

Battery Setting	System Work Mode
	Grid Setting
	Gen Port Use
Basic Setting	Advanced Function
	Device Info.
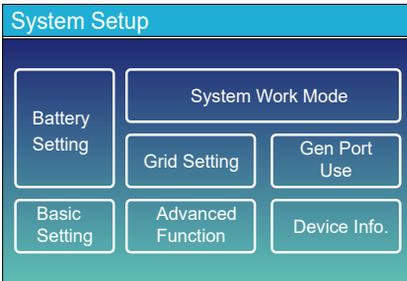
This is System Setup page.

5.5 Basic Setup Menu

Basic Setting

✓ Time Syncs   ✓ Beep   ✓ Auto Dim

Year	Month	Day
+ 2019 −	+ 03 −	+ 17 −

✓ 24-Hour

Hour	Minute
+ 09 −	+ 15 −

☐ Factory Reset   ☐ Lock out all changes

Basic Set
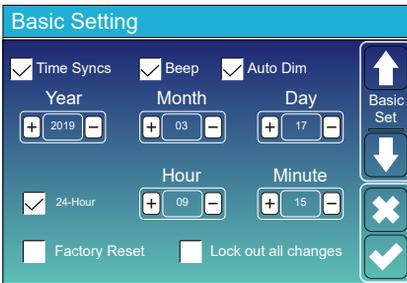
Factory Reset: Reset all parameters of the inverter.
Lock out all changes: Enable this menu for setting parameters that require locking and cannot be set up. Before performing a successful factory reset and locking the systems, to keep all changes you need to type in a password to enable the setting.
The password for factory settings is 9999 and for lock out is 7777.

PassWord

X--X--X--X	DEL

1	2	3
4	5	6
7	8	9
CANCEL	0	OK

Factory Reset Password: 9999

Lock out all changes Password: 7777

5.6 Battery Setup Menu

Battery Setting

Batt Mode

○ Lithium   Batt Capacity   `0Ah`
○ Use Batt V   Max A Charge   `0A`
○ No Batt   Max A Discharge   `0A`

☐ Parallel bat1&bat2

Batt Mode

Battery capacity: it shows your battery bank size to hybrid inverter.

Use Batt V: Use Battery Voltage for all the settings (V).

Max. A charge/discharge: Max battery charge/discharge current(0-30A for 5/6kW model, 0-37A for 8/10/12/15/20kW model).

For AGM and Flooded, we recommend Ah battery size x 20%= Charge/Discharge amps.

. For Lithium, we recommend Ah battery size x 50% = Charge/Discharge amps.

. For Gel, follow manufacturer' s instructions.

No Batt: tick this item if no battery is connected to the system.

Parallel bat1&bat2: if one set of battery was connected Bat 1 and Bat 2 then please enable this function.

Battery Setting

Start   `30%`   `30%`
A   `20A`   `37A`
① ☐ Gen Charge   ☑ Grid Charge ②
☐ Gen Signal   ☑ Grid Signal
Gen Max Run Time   `24.0 hours`
Gen Down Time   `0.0 hours` ③

Batt Set2

This is Battery Setup page. ① ③

Start =30%: Percent SOC below 30% system will AutoStart a connected generator to charge the battery bank.

A = 20A: Charge rate of 20A from the attached generator in Amps.

Gen Charge: uses the gen input of the system to charge battery bank from an attached generator.

Gen Signal: Normally open relay that closes when the Gen Start signal state is active.

Gen Max Run Time: It indicates the longest time Generator can run in one day, when time is up, the Generator will be turned off. 24H means that it does not shut down all the time.

Gen Down Time: It indicates the delay time of the Generator to shut down after it has reached the running time.

This is Grid Charge, you need select. ②

Start =30%: No use，Just for customization.

A = 37A: It indicates the Current that the Grid charges the Battery.

Grid Charge: It indicates that the grid charges the battery.

Grid Signal: Disable.
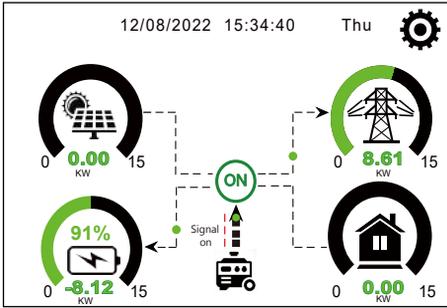
This page tells the PV and diesel generator power the load and battery.

Generator

Power: 6000W

Today=10 KWH

Total =10 KWH

V_L1: 230V
V_L2: 230V
V_L3: 230V

P_L1: 2KW
P_L2: 2KW
P_L3: 2KW

This page tells generator output voltage, frequency, power. And, how much energy is used from generator.

Battery Setting

Lithium Mode   00

Shutdown   10%

Low Batt   20%

Restart   40%

Batt Set3

Lithium Mode: This is BMS protocol.Please reference the document(Approved Battery).

Shutdown 10%: It indicates the inverter will shutdown if the SOC below this value.

Low Batt 20%: It indicates the inverter will alarm if the SOC below this value.

Restart 40%: Battery SOC at 40% AC output will resume.

Recommended battery settings

Battery Type	Absorption Stage	Float Stage	Equalization Voltage (every 30 days 3hr)
Lithium	Follow its BMS voltage parameters		

5.7 System Work Mode Setup Menu

System Work Mode

○ Selling First   [12000] Max Solar Power

◉ Zero Export To Load   ☑ Solar Sell

○ Zero Export To CT   ☑ Solar Sell

Max Sell Power [12000]   Zero-export Power [20]

Energy pattern ☑ BattFirst   ☐ LoadFirst

☑ Grid Peak Shaving [8000] Power

Work Mode1

Work Mode

Selling First: This Mode allows hybrid inverter to sell back any excess power produced by the solar panels to the grid. If time of use is active, the battery energy also can be sold into grid.

The PV energy will be used to power the load and charge the battery and then excess energy will flow to grid. Power source priority for the load is as follows:
1. Solar Panels.
2. Grid.
3. Batteries (until programable % discharge is reached).

Zero Export To Load: Hybrid inverter will only provide power to the backup load connected. The hybrid inverter will neither provide power to the home load nor sell power to grid. The built-in CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load and charge the battery.

Solar   Backup Load   On-Grid Home Load   Grid
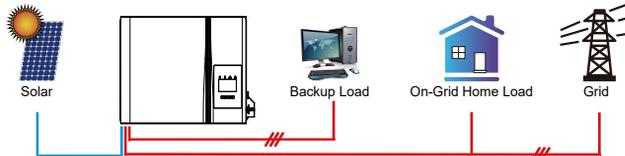
Zero Export To CT: Hybrid inverter will not only provide power to the backup load connected but also give power to the home load connected. If PV power and battery power is insufficient, it will take grid energy as supplement. The hybrid inverter will not sell power to grid. In this mode, a CT is needed. The installation method of the CT please refer to chapter 3.6 CT Connection. The external CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load, charge battery and home load.

Solar   Backup Load   On-Grid Home Load   Grid   CT
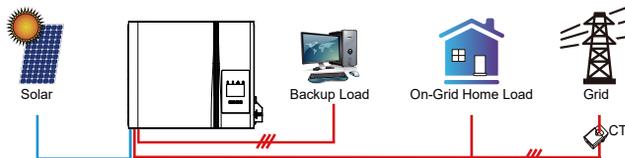
Solar Sell: "Solar sell" is for Zero export to load or Zero export to CT: when this item is active, the surplus energy can be sold back to grid. When it is active, PV Power source priority usage is as follows: load consumption and charge battery and feed into grid.

Max. sell power: Allowed the maximum output power to flow to grid.

Zero-export Power: for zero-export mode, it tells the grid output power. Recommend to set it as 20-100W to ensure the hybrid inverter won' t feed power to grid.

Energy Pattern: PV Power source priority.

Batt First: PV power is firstly used to charge the battery and then used to power the load. If PV power is insufficient, grid will make supplement for battery and load simultaneously.

Load First: PV power is firstly used to power the load and then used to charge the battery. If PV power is insufficient, Grid will provide power to load.

Max Solar Power: allowed the maximum DC input power.

Grid Peak-shaving: when it is active, grid output power will be limited within the set value. If the load power exceeds the allowed value, it will take PV energy and battery as supplement. If still can't meet the load requirement, grid power will increase to meet the load needs.

System Work Mode

Grid Charge	Gen	Time Of Use Time	Power	Batt	
		01:00 5:00	12000	160V	Work Mode2
		05:00 9:00	12000	160V	
✓		09:00 13:00	12000	160V	
✓		13:00 17:00	12000	160V	
✓		17:00 21:00	12000	160V	
✓		21:00 01:00	12000	160V	

Battery Setting

Start	30%		30%	Batt Set2
A	20A		37A	
	Gen Charge	✓	Grid Charge ①	
	Gen Signal	✓	Grid Signal	
Gen Max Run Time		24.0 hours		
Gen Down Time		0.0 hours		

System Work Mode

② Grid Charge	Gen	Time Of Use Time	Power	Batt	
✓		01:00 5:00	12000	80%	Work Mode2
✓		05:00 8:00	12000	40%	
		08:00 10:00	12000	40%	
✓		10:00 15:00	12000	80%	
		15:00 18:00	12000	40%	
		18:00 01:00	12000	35%	

Time of use: it is used to program when to use grid or generator to charge the battery, and when to discharge the battery to power the load. Only tick "Time Of Use" then the follow items (Grid, charge, time, power etc.) will take effect.

Note: when in selling first mode and click time of use, the battery power can be sold into grid.

Gen charge: utilize diesel generator to charge the battery in a time period.

Time: real time, range of 01:00-24:00.

Note: when the grid is present, only the "time of use" is ticked, then the battery will discharge. Otherwise, the battery won't discharge even the battery SOC is full. But in the off-grid mode (when grid is not available, inverter will work in the off-grid mode automatically).

Power: Max. discharge power of battery allowed.

Batt(V or SOC %): battery SOC % or voltage at when the action is to happen.

For example

During 01:00-05:00,
if battery SOC is lower than 80%, it will use grid to charge the battery until battery SOC reaches 80%.

During 05:00-08:00,
if battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%. At the same time, if battery SOC is lower than 40%, then grid will charge the battery SOC to 40%.

During 08:00-10:00,
if battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%.

During 10:00-15:00,
when battery SOC is higher than 80%, hybrid inverter will discharge the battery until the SOC reaches 80%.

During 15:00-18:00,
when battery SOC is higher than 40%, hybrid inverter will discharge the battery until the SOC reaches 40%.

During 18:00-01:00,
when battery SOC is higher than 35%, hybrid inverter will discharge the battery until the SOC reaches 35%.

System Work Mode

Mon	Tue	Wed	Thu	Fri	Sat	Sun	
✓	✓	✓	✓	✓	✓		Work Mode4

It allows users to choose which day to execute the setting of "Time of Use".
For example, the inverter will execute the time of use page on Mon/Tue/Wed/Thu/Fri/Sat only.

5.8 Grid Setup Menu

Grid Setting/Grid code selection

Grid Mode	General Standard	0/23

Grid Frequency: ○ 50HZ ○ 60HZ

Phase Type: ○ 0/120/240 ○ 0/240/120

Grid Set1

Grid Level: LN:220V/LL:380V(AC)

☐ IT system-neutral is not grounded
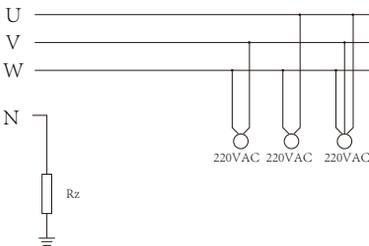
Grid Mode:
General Standard、UL1741 & IEEE1547、CPUC RULE21、SRD-UL-1741、CEI_0_21_Internal、EN50549_CZ-PPDS(>16A)、Australia_A、Australia_B、Australia_C、AS4777_NewZealand、VDE4105、OVE-Directive R25、EN50549_CZ_PPDS_L16A、NRS097、G98、G99、EN50549_1_Norway_133V、EN50549_1_Norway_230V、Japan_200VAC_3P3W、CEI_0_21_External、CEI_0_21_Areti、Japan_400VAC_3P3W、Japan_415VAC_3P4W、EN50549_1_Switzerland.
Please follow the local grid code and then choose the corresponding grid standard.

Grid level: there're several voltage levels for the inverter output voltage when it is in off-grid mode.
LN:220V/LL:380V(AC), LN:230V/LL:400V(AC).

IT system: If the grid system is IT system, then please enable this option. For example, the IT grid system voltage is 230Vac (the Line voltage between any two live lines in a three-phase circuit is 230Vac, and the diagram is as follow) then please enable "IT system" and tick the "Grid level" as LN:230V/LL:400V(AC) as below picture shows.

U
V
W
N

220VAC 220VAC 220VAC

Rz

Rz: Large resistance ground resistor. Or the system doesn't have Neutral line

Grid Setting/Grid code selection

Grid Mode	General Standard	0/23

Grid Frequency: ○ 50HZ ○ 60HZ

Phase Type: ○ 0/120/240 ○ 0/240/120

Grid Set1

Grid Level: LN:230V/LL:400V(AC)

☑ IT system-neutral is not grounded

Grid Setting/Connect

Normal connect		Normal Ramp rate	10s
Low frequency	48.00Hz	High frequency	51.50Hz
Low voltage	185.0V	High voltage	265.0V
Reconnect after trip		Reconnect Ramp rate	36s
Low frequency	48.20Hz	High frequency	51.30Hz
Low voltage	187.0V	High voltage	263.0V
Reconnection Time	60s	PF	1.000

Grid Set2

Normal connect: The allowed grid voltage/frequency range when the inverter first time connect to the grid.
Normal Ramp rate: It is the startup power ramp.

Reconnect after trip: The allowed grid voltage /frequency range for the inverter connects the grid after the inverter trip from the grid.
Reconnect Ramp rate: It is the reconnection power ramp.

Reconnection time: The waiting time period for the inverter connects the grid again.
PF: Power factor which is used to adjust inverter reactive power.

Grid Setting/IP Protection

Over voltage U>(10 min. running mean) 260.0V

HV3	265.0V			HF3	51.50Hz		
HV2	265.0V	--	0.10s	HF2	51.50Hz	--	0.10s
HV1	265.0V	--	0.10s	HF1	51.50Hz	--	0.10s
LV1	185.0V	--	0.10s	LF1	48.00Hz	--	0.10s
LV2	185.0V	--	0.10s	LF2	48.00Hz	--	0.10s
LV3	185.0V			LF3	48.00Hz		

Grid Set3

HV1: Level 1 overvoltage protection point;
① **HV2:** Level 2 overvoltage protection point; ② 0.10s—Trip time.
HV3: Level 3 overvoltage protection point.

LV1: Level 1 undervoltage protection point;
LV2: Level 2 undervoltage protection point;
LV3: Level 3 undervoltage protection point.

HF1: Level 1 over frequency protection point;
HF2: Level 2 over frequency protection point;
HF3: Level 3 over frequency protection point.

LF1: Level 1 under frequency protection point;
LF2: Level 2 under frequency protection point;
LF3: Level 3 under frequency protection point.

Grid Setting/F(W)

	F(W)		
Over frequency	Droop F	40%PE/Hz	
Start freq F	50.20Hz	Stop freq F	51.5Hz
Start delay F	0.00s	Stop delay F	0.00s
Under frequency	Droop F	40%PE/Hz	
Start freq F	49.80Hz	Stop freq F	49.80Hz
Start delay F	0.00s	Stop delay F	0.00s

Grid Set4

FW: this series inverter is able to adjust inverter output power according to grid frequency.

Droop F: percentage of nominal power per Hz

For example, "Start freq F＞50.2Hz, Stop freq F＜51.5, Droop F=40%PE/Hz" when the grid frequency reaches 50.2Hz, the inverter will decrease its active power at Droop F of 40%. And then when grid system frequency is less than 50.1Hz, the inverter will stop decreasing output power.

For the detailed setup values, please follow the local grid code.

Grid Setting/V(W) V(Q)

	V(W)		V(Q)		
			Lock-in/Pn	Lock-out/Pn	
			5%	20%	Grid Set5
V1	108.0%	P1	100%	V1 94.0%	Q1 44%
V2	110.0%	P2	80%	V2 97.0%	Q2 0%
V3	112.0%	P3	60%	V3 105.0%	Q3 0%
V4	114.0%	P4	40%	V4 108.0%	Q4 -44%

V(W): It is used to adjust the inverter active power according to the set grid voltage.

V(Q): It is used to adjust the inverter reactive power according to the set grid voltage.

This function is used to adjust inverter output power (active power and reactive power) when grid voltage changes.

Lock-in/Pn 5%: When the inverter active power is less than 5% rated power, the VQ mode will not take effect.

Lock-out/Pn 20%: If the inverter active power is increasing from 5% to 20% rated power, the VQ mode will take effect again.

For example: V2=110%, P2=80%. When the grid voltage reaches the 110% times of rated grid voltage, inverter output power will reduce its active output power to 80% rated power.
For example: V1=94%, Q1=44%. When the grid voltage reaches the 94% times of rated grid voltage, inverter output power will output 44% reactive output power.
For the detailed setup values, please follow the local grid code.

Grid Setting/P(Q) P(F)

	P(Q)		P(PF)		
			Lock-in/Pn	Lock-out/Pn	
			50%	50%	Grid Set6
P1	0%	Q1	2%	P1 0%	PF1 -0.000
P2	2%	Q2	0%	P2 0%	PF2 -0.000
P3	0%	Q3	21%	P3 0%	PF3 0.000
P4	22%	Q4	25%	P4 62%	PF4 0.264

P(Q): It is used to adjust the inverter reactive power according to the set active power.
P(PF): It is used to adjust the inverter PF according to the set active power.
For the detailed setup values, please follow the local grid code.
Lock-in/Pn 50%: When the inverter output active power is less then 50% rated power, it won't enter the P(PF) mode.
Lock-out/Pn 50%: When the inverter output active power is higher then 50% rated power, it will enter the P(PF) mode.
Note : only when the grid voltage is equal to or higher than 1.05times of rated grid voltage, then the P(PF) mode will take effect.

Grid Setting/LVRT

	L/HVRT			
HV3	0%	HV3_T	30.24s	Grid Set7
HV2	0%	HV2_T	0.04s	
HV1	0%	HV1_T	22.11s	
LV1	0%	LV1_T	22.02s	
LV2	0%	LV2_T	0.04s	

Reserved: This function is reserved.It is not recommended.

5.9 Generator Port Use Setup Menu

GEN PORT USE

Mode
- Generator Input Rated Power
  - 8000W
- GEN connect to Grid input

- SmartLoad Output
  - AC Couple Frz High
    - 55.00Hz
- On Grid always on

OFF 151.0V
ON 154.0V

- Micro Inv Input
  - MI export to Grid cutoff

PORT Set1

Generator input rated power: allowed Max. power from diesel generator.
GEN connect to grid input: connect the diesel generator to the grid input port.
Smart Load Output: This mode utilizes the Gen input connection as an output which only receives power when the battery SOC is above a user programmable threshold.
e.g. ON: 100%, OFF: 95%: When the battery bank SOC reaches 100%, Smart Load Port will switch on automatically and power the load connected. When the battery bank SOC < 95% , the Smart Load Port will switch off automatically.

Smart Load OFF Batt
• Battery SOC at which the Smart load will switch off.
Smart Load ON Batt
• Battery SOC at which the Smart load will switch on. simultaneously and then the Smart load will switch on.
On Grid always on: When click "on Grid always on" the smart load will switch on when the grid is present.
Micro Inv Input: To use the Generator input port as a micro-inverter on grid inverter input (AC coupled), this feature will also work with "Grid-Tied" inverters.
 * **Micro Inv Input ON**: When the hybrid inverter operates in off-grid mode and the SOC or voltage of battery drops to this set value, the relays on GEN port of hybrid inverter will turn to normally closed(ON), then the Grid-Tied inverter will generate solar power and feed into hybrid inverter. When the hybrid inverter operates in on-grid mode, this parameter will be invalid, the relays on GEN port of hybrid inverter will always be normally colsed(ON), Grid-Tied inverter can operate normally.
AC Couple Frz High: If choosing"Micro Inv input", as the battery SOC reaches gradually setting value (OFF), during the process, the microinverter output power will decrease linear. When the battery SOC equals to the setting value (OFF), the system frequency will become the setting value (AC couple Frz high) and the Microinverter will stop working.
MI export to grid cutsoff: Stop exporting power produced by the microinverter to the grid.

 * **Note**: Micro Inv Input OFF and On is valid for some certain FW version only.

5.10 Advanced Function Setup Menu

Advanced Function

- Solar Arc Fault ON
  - Clear Arc_Fault
- Backup Delay
  - 0ms
- System selfcheck
- Gen peak-shaving
- DRM
- 2000: 1 CT Ratio
- Signal Island Mode
- Asymmetric phase feeding
- CEI Report

Func Set1

Solar Arc Fault ON: This is only for US.
System selfcheck: Disable. this is only for factory.
Gen Peak-shaving: Enable When the power of the generator exceeds the rated value of it, the inverter will provide the redundant part to ensure that the generator will not overload.
**DRM:** For AS4777 standard.
Backup Delay: When the grid cuts off, the inverter will give output power after the setting time.
For example, backup delay: 3ms. the inverter will give output power after 3ms when the grid cuts off.
Note: for some old FW version, the function is not available.

Signal island mode: If "Signal island mode" is checked and When inverter is in off-grid mode, the relay on the Neutral line (load port N line) will switch ON then the N line (load port N line) will bind to inverter ground.

Inverter

Load port

L1 L2 L3 N

Shell

Relay

Ground cable
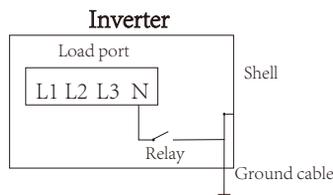
Asymmetric phase feeding: If it was checked, the inverter will take power from the grid balance of on each phase (L1/L2/L3) when needed.

Advanced Function

Parallel

Master

Slave

Modbus SN

00

Paral.
Set3

EX_Meter For CT

Meter Select

No Meter   0/3

CHNT

Eastron

Ex_Meter For CT: when using zero-export to CT mode, the hybrid inverter can select EX_Meter For CT function and use the different meters.e.g.CHNT and Eastron.

5.11 Device Info Setup Menu

Device Info.

Inverter ID: 2102199870   Flash
HMI: Ver 1001-8010 MAIN:Ver2002-1046-1707

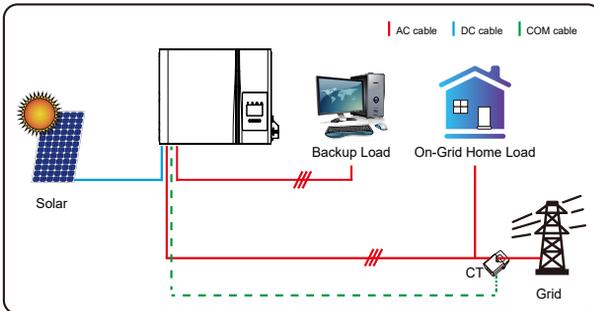| Alarms Code	Occurred
F13 Grid_Mode_changed	2021-06-11 13:17
F23 Tz_GFCI_OC_Fault	2021-06-11 08:23
F13 Grid_Mode_changed	2021-06-11 08:21
F56 DC_VoltLow_Fault	2021-06-10 13:05

Device
Info

This page show Inverter ID, Inverter version and alarm codes.

HMI: LCD version

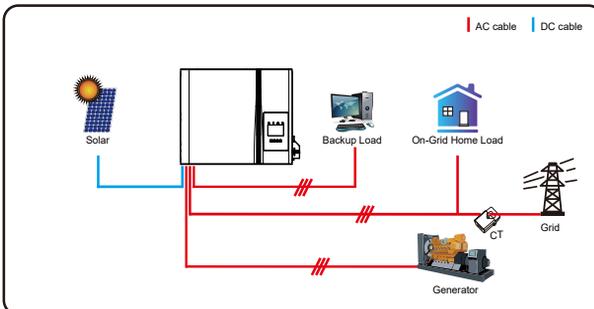**MAIN:** Control board FW version

6. Mode

Mode I:Basic

AC cable   DC cable   COM cable

Backup Load   On-Grid Home Load

Solar

CT

Grid

Mode II: With Generator

AC cable   DC cable

Solar

Backup Load   On-Grid Home Load

CT

Grid

Generator

Mode III: With Smart-Load
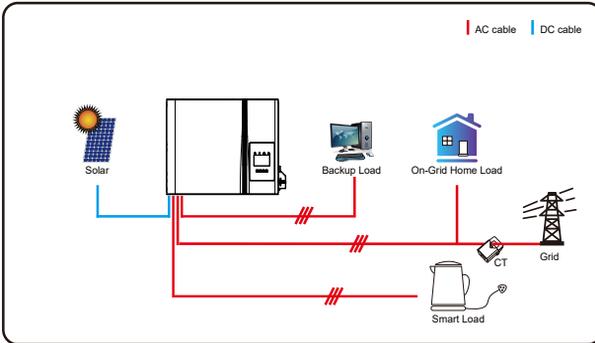
Mode IV: AC Couple
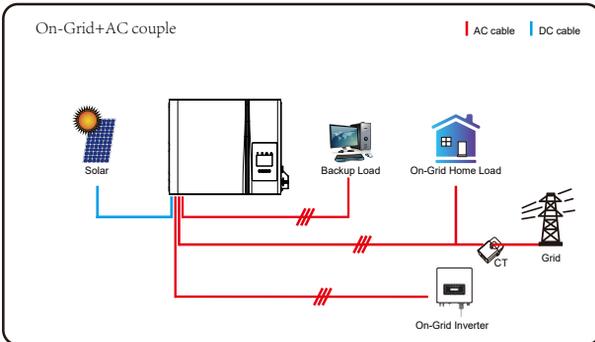
> ⚠️ The 1st priority power of the system is always the PV power, then 2nd and 3rd priority power will be the battery bank or grid according to the settings. The last power backup will be the Generator if it is available.

7. Limitation of Liability

In addition to the product warranty described above, the state and local laws and regulations provide financial compensation for the product's power connection (including violation of implied terms and warranties). The company hereby declares that the terms and conditions of the product and the policy cannot and can only legally exclude all liability within a limited scope.

Error code	Description	Solutions
F01	DC_Inversed_Failure	1，Check the PV input polarity 2，Seek help from us, if can not go back to normal state.
F07	DC_START_Failure	1，The BUS voltage can't be built from PV or battery. 2，Restart the inverter, If the fault still exists, please contact us for help
F13	Working_Mode_change	1. When the grid type and frequency changed it will report F13; 2. When the battery mode was changed to "No battery" mode,it will report F13; 3. For some old FW version, it will report F13 when the system work mode changed; 4, Generally, it will disappear automatically when shows F13; 5. If it remains same, turn on DC and AC switch for one minute, then turn on the DC and AC switch.; 6. Seek help from us, if can not go back to normal state.
F15	AC_OverCurr_SW_Failure	AC side over current fault 1. Please check whether the backup load power and common load power are within the range; 2. Restart and check whether it is normal; 3. Seek help from us, if can not go back to normal state.
F16	GFCI_Failure	Leakage current fault 1, Check the PV side cable ground connection 2, Restart the system 2-3 times 3, if the fault still existing, please contact us for help.
F18	Tz_Ac_OverCurr_Fault	AC side over current fault 1. Please check whether the backup load power and commonload power are within the range; 2. Restart and check whether it is normal; 3. Seek help from us, if cannot go back to normal state.
F20	Tz_Dc_OverCurr_Fault	DC side over current fault 1. Check PV module connection and battery connection; 2. When in the off-grid mode, the inverter startup with big power load, it may report F20. Please reduce the load power connected; 3. If it remains same, turn on DC and AC switch for one minute, then turn on the DC and AC switch.; 4. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F21	Tz_HV_Overcurr_fault	BUS over current. 1, Check the PV input current and battery current setting 2. Restart the system 2~3 times. 3. If the fault still exists, please contact us for help.
F22	Tz_EmergStop_Fault	Remotely shutdown 1, it tells the inverter is remotely controlled.
F23	Tz_GFCI_OC_Fault	Leakage current fault 1. Check PV side cable ground connection. 2. Restart the system 2~3 times. 3. If the fault still exists, please contact us for help.
F24	DC_Insulation_Fault	PV isolation resistance is too low 1. Check the connection of PV panels and inverter is firmly and correctly; 2. Check whether the PE cable of inverter is connected to ground; 3. Seek help from us, if can not go back to normal state.
F26	BusUnbalance_Fault	1. Please wait for a while and check whether it is normal; 2. When the load power of 3 phases is big different, it will report the F26. 3 .When there's DC leakage current, it will report F26 4. Restart the system 2~3 times. 5. Seek help from us, if can not go back to normal state.
F29	Parallel_Comm_Fault	1. When in parallel mode, check the parallel communication cable connection and hybrid inverter communication address setting; 2. During the parallel system startup period, inverters will report F29.But when all inverters are in ON status, it will disappear automatically; 3. If the fault still exists, please contact us for help.
F34	AC_Overload_Fault	1, Check the backup load connection, make sure it is in allowed power range 2, If the fault still exists, please contact us for help
F41	Parallel_system_Stop	1, Check the hybrid inverter work status. If there's 1pcs hybrid inverter shutdown, all hybrid inverters will report F41 fault. 2, If the fault still exists, please contact us for help
F42	Parallel_Version_Fault	1. Check whether the inverter version is consistent. 2. Please contact us to upgrade the software version.
F47	AC_OverFreq_Fault	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.
F48	AC_UnderFreq_Fault	Grid frequency out of range 1. Check the frequency is in the range of specification or not; 2. Check whether AC cables are firmly and correctly connected; 3. Seek help from us, if can not go back to normal state.

Error code	Description	Solutions
F52	DC_VoltHigh_Fault	BUS voltage is too high 1. Check whether battery voltage is too high; 2. check the PV input voltage, make sure it is within the allowed range; 3. Seek help from us, if can not go back to normal state.
F53	DC_VoltLow_Fault	BUS voltage is too low 1. Check whether battery voltage is too low; 2. If the battery voltage is too low, using PV or grid to charge the battery; 3. Seek help from us, if can not go back to normal state.
F54	BAT2_VoltHigh_Fault	1. Check the battery 2 terminal voltage is high; 2. Restart the inverter 2 times and restore the factory settings; 3. Seek help from us, if can not go back to normal state.
F55	BAT1_VoltHigh_Fault	1. Check the battery 1 terminal voltage is high; 2. Restart the inverter 2 times and restore the factory settings; 3. Seek help from us, if can not go back to normal state.
F56	BAT1_VoltLow_Fault	1. Check the battery 1 terminal voltage is low; 2. Restart the inverter 2 times and restore the factory settings; 3. Seek help from us, if can not go back to normal state.
F57	BAT2_VoltLow_Fault	1. Check the battery 2 terminal voltage is low; 2. Restart the inverter 2 times and restore the factory settings; 3. Seek help from us, if can not go back to normal state.
F58	Battery_comm_Lose	1, It tells the communication between hybrid inverter and battery BMS disconnected when "BMS_Err-Stop" is active; 2, If don't want to see this happen, you can disable "BMS_Err-Stop" item on the LCD; 3, If the fault still exists, please contact us for help
F62	DRMs0_stop	1, the DRM function is for Australia market only; 2, Check the DRM function is active or not; 3, Seek help from us, if can not go back to normal state after restart the system.
F63	ARC_Fault	1. ARC fault detection is only for US market; 2. Check PV module cable connection and clear the fault; 3. Seek help from us, if can not go back to normal state
F64	Heatsink_HighTemp_Fault	Heat sink temperature is too high 1. Check whether the working environment temperature is too high; 2. Turn off the inverter for 10mins and restart; 3. Seek help from us, if can not go back to normal state.

Chart 7-1 Fault information

Under the guidance of our company, customers return our products so that our company can provide service of maintenance or replacement of products of the same value. Customers need to pay the necessary freight and other related costs. Any replacement or repair of the product will cover the remaining warranty period of the product. If any part of the product or product is replaced by the company itself during the warranty period, all rights and interests of the replacement product or component belong to the company.

Factory warranty does not include damage due to the following reasons:

· Damage during transportation of equipment;
· Damage caused by incorrect installation or commissioning;
· Damage caused by failure to comply with operation instructions, installation instructions or maintenance instructions;
· Damage caused by attempts to modify, alter or repair products;
· Damage caused by incorrect use or operation;
· Damage caused by insufficient ventilation of equipment;
· Damage caused by failure to comply with applicable safety standards or regulations;
· Damage caused by natural disasters or force majeure (e.g. floods, lightning, overvoltage, storms, fires, etc.)

In addition, normal wear or any other failure will not affect the basic operation of the product. Any external scratches, stains or natural mechanical wear does not represent a defect in the product.

8. Datasheet

Model	Hightech Power S 4kWh HV				
Main Parameter					
CellChemistry	LiFePO4				
Module Energy(kWh)	4				
Module Nominal Voltage (V)	102.4				
Module Capacity(Ah)	40				
Battery Module Qty InSeries (Optional)	2	3	4	5	6
System Nominal Voltage (V)	204.8	307.2	409.6	512	614.4
SystemOperating Voltage (V)	166.4~700.8				
System Energy(kWh)	8	12	16	20	24
System Usable Energy (kWh)	7.2	10.8	14.4	18	21.6
Charge/Discharge Current (A)	Recommend	20				
	Nominal	40				
	Peak Discharge (2 mins,25°C)	50				
Working Temperature(°C)	Charge: -20~55 /Discharge: -20~55				
Communication Port	CAN2.0 ,RS485				
Humidity	5%~85%RH				
Altitude	≤2000m				
IP Rating of Enclosure	IP65				
Storage Temperature(°C)	0~35				
Dimension (W/D/H,mm)	540*385*650	540*385*870	540*385*1090	540*385*1310	540*385*1530
Weight(kg)	97	136	175	214	253
Installation Location	Floor Mount				
Recommend Depth of Discharge	90%				

Model	Trio Hybrid S 5K HV AIO	Trio Hybrid S 6K HV AIO	Trio Hybrid S 8K HV AIO	Trio Hybrid S 10K HV AIO
Battery Input Data				
Battery Type	Lithium-ion			
Battery Voltage Range(V)	160-700			
Max. Charging Current(A)	30		37	
Max. Discharging Current(A)	30		37	
Charging Strategy for Li-ion Battery	Self-adaption to BMS			
Number of Battery Input	1			
PV String Input Data				
Max. PV access power(W)	10000	12000	16000	20000
Max. PV Input Power(W)	8000	9600	12800	16000
Max. PV Input Voltage (V)	1000			
Start-up Voltage(V)	180			
PV Input Voltage Range(V)	180-1000			
MPPT Voltage Range(V)	150-850			
Full Load MPPT Voltage Range(V)	195-850	195-850	260-850	325-850
Rated PV Input Voltage (V)	600			
Max. Operating PV Input Current(A)	20+20	20+20	20+20	20+20
Max. Input Short-Circuit Current(A)	30+30	30+30	30+30	30+30
No. of MPP Trackers/No. of Strings MPP Tracker	2/1+1			
Max. Inverter Backfeed Current To the Array	0			
AC Input/Output Data				
Rated AC Input/Output Active Power(W)	5000	6000	8000	10000
Max. AC Input/Output Apparent Power(VA)	5500	6600	8800	11000
Peak Power (off-grid)(W)	1.5 time of rated power, 10 S			
Rated AC Input/Output Current(A)	7.6/7.3	9.1/8.7	12.2/11.6	15.2/14.5
Max. AC Input/Output Current(A)	8.4/8.0	10/9.6	13.4/12.8	16.7/16
Max. Continuous AC Passthrough (grid to load)(A)	40			
Max. Output Fault Current (A)	16.8	20	26.8	33.4
Max. Output Overcurrent Protection (A)	78			
Rated Input/Output Voltage/Range(V)	220/380V, 230/400V 0.85Un-1.1Un			
Grid Connection Form	3L+N+PE			
Rated Input/Output Grid Frequency/Range	50Hz/45Hz-55Hz 60Hz/55Hz-65Hz			
Power Factor Adjustment Range	0.8 leading to 0.8 lagging			
Total Current Harmonic Distortion THDi	<3% (of nominal power)			
DC Injection Current	<0.5% In			
Efficiency				
Max. Efficiency	97.60%			
Euro Efficiency	97.00%			
MPPT Efficiency	>99%			
Equipment Protection				
DC Polarity Reverse Connection Protection	Yes			
AC Output Overcurrent Protection	Yes			
AC Output Overvoltage Protection	Yes			
AC Output Short Circuit Protection	Yes			
Thermal Protection	Yes			
DC Terminal Insulation Impedance Monitoring	Yes			

DC Component Monitoring	Yes
Ground Fault Current Monitoring	Yes
Arc fault circuit interrupter (AFCI)	Optional
Power Network Monitoring	Yes
Island Protection Monitoring	Yes
Earth Fault Detection	Yes
DC Input Switch	Yes
Overvoltage Load Drop Protection	Yes
Residual Current (RCD) Detection	Yes
Surge Protection Level	TYPE II(DC), TYPE II(AC)
Interface	
Display	LCD+LED
Communication Interface	RS232, RS485, CAN
Monitor Mode	GPRS/WIFI/Bluetooth/4G/LAN (optional)
General Data	
Operating Temperature Range	-40 to +60℃, >45℃ Derating
Permissible Ambient Humidity	0-100%
Permissible Altitude	2000m
Noise	≤ 55 dB
Ingress Protection(IP) Rating	IP 65
Inverter Topology	Non-Isolated
Over Voltage Category	OVC II(DC), OVC III(AC)
Cabinet size(W*H*D) [mm]	535W×450H×393D (Excluding connectors and brackets)
Weight(kg)	40
Installation Style	Floor Mount
Warranty	10 Years
Type of Cooling	Natural Cooling / Intelligent Air Cooling
Grid Regulation	IEC 61727,IEC 62116,VDE-AR-N 4105, EN50549-1 Europe
Safety EMC/Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2

| Model	Trio Hybrid S 12K HV AIO	Trio Hybrid S 15K HV AIO	Trio Hybrid S 20K HV AIO
Battery Input Data			
Battery Type	Lithium-ion		
Battery Voltage Range(V)	160-700		
Max. Charging Current(A)	37		
Max. Discharging Current(A)	37		
Charging Strategy for Li-ion Battery	Self-adaption to BMS		
Number of Battery Input	1		
PV String Input Data			
Max. PV access power(W)	24000	30000	40000
Max. PV Input Power(W)	19200	24000	32000
Max. PV Input Voltage (V)	1000		
Start-up Voltage(V)	180		
PV Input Voltage Range(V)	180-1000		
MPPT Voltage Range(V)	150-850		
Full Load MPPT Voltage Range(V)	340-850	420-850	500-850
Rated PV Input Voltage (V)	600		
Max. Operating PV Input Current(A)	26+20	26+20	26+26
Max. Input Short-Circuit Current(A)	39+30	39+30	39+39
No. of MPP Trackers/No. of Strings MPP Tracker	2/2+1		2/2+2
Max. Inverter Backfeed Current To the Array	0		
AC Input/Output Data			
Rated AC Input/Output Active Power(W)	12000	15000	20000
Max. AC Input/Output Apparent Power(VA)	13200	16500	22000
Peak Power (off-grid)(W)	1.5 time of rated power, 10 S		
Rated AC Input/Output Current(A)	18.2/17.4	22.8/21.8	30.4/29.0
Max. AC Input/Output Current(A)	20/19.2	25/24	33.4/31.9
Max. Continuous AC Passthrough (grid to load)(A)	80		
Max. Output Fault Current (A)	40	50	66.8
Max. Output Overcurrent Protection (A)	78		114
Rated Input/Output Voltage/Range(V)	220/380V, 230/400V 0.85Un-1.1Un		
Grid Connection Form	3L+N+PE		
Rated Input/Output Grid Frequency/Range	50Hz/45Hz-55Hz 60Hz/55Hz-65Hz		
Power Factor Adjustment Range	0.8 leading to 0.8 lagging		
Total Current Harmonic Distortion THDi	<3% (of nominal power)		
DC Injection Current	<0.5% In		
Efficiency			
Max. Efficiency	97.60%		
Euro Efficiency	97.00%		
MPPT Efficiency	>99%		
Equipment Protection			
DC Polarity Reverse Connection Protection	Yes		
AC Output Overcurrent Protection	Yes		
AC Output Overvoltage Protection	Yes		
AC Output Short Circuit Protection	Yes		
Thermal Protection	Yes		
DC Terminal Insulation Impedance Monitoring	Yes		

DC Component Monitoring	Yes
Ground Fault Current Monitoring	Yes
Arc fault circuit interrupter (AFCI)	Optional
Power Network Monitoring	Yes
Island Protection Monitoring	Yes
Earth Fault Detection	Yes
DC Input Switch	Yes
Overvoltage Load Drop Protection	Yes
Residual Current (RCD) Detection	Yes
Surge Protection Level	TYPE II(DC), TYPE II(AC)
Interface	
Display	LCD+LED
Communication Interface	RS232, RS485, CAN
Monitor Mode	GPRS/WIFI/Bluetooth/4G/LAN (optional)
General Data	
Operating Temperature Range	-40 to +60℃, >45℃ Derating
Permissible Ambient Humidity	0-100%
Permissible Altitude	2000m
Noise	≤ 55 dB
Ingress Protection(IP) Rating	IP 65
Inverter Topology	Non-Isolated
Over Voltage Category	OVC II(DC), OVC III(AC)
Cabinet size(W*H*D) [mm]	535W×450H×393D (Excluding connectors and brackets)
Weight(kg)	40
Installation Style	Floor Mount
Warranty	10 Years
Type of Cooling	Intelligent Air Cooling
Grid Regulation	IEC 61727,IEC 62116,VDE-AR-N 4105, EN50549-1 Europe
Safety EMC/Standard	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2

9. Appendix I

Definition of RJ45 Port Pin for BMS1

No.	RS485 Pin
1	485_B
2	485_A
3	GND_485
4	CAN-H1
5	CAN-L1
6	GND_485
7	485_A
8	485_B

BMS1 Port
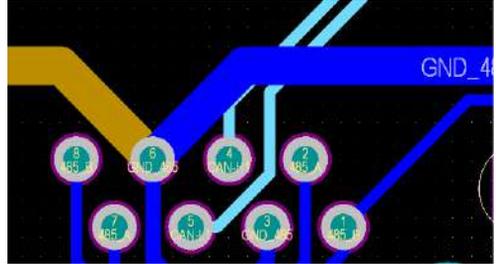
Definition of RJ45 Port Pin for Meter

No.	Meter-485 Pin
1	METER-485_B
2	METER-485_A
3	GND_COM
4	METER-485_B
5	METER-485_A
6	GND_COM
7	--
8	--

Meter Port
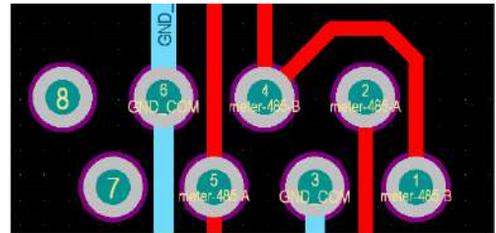
Definition of RJ45 Port Pin for RS485

No.	RS485 Pin
1	Modbus-485_B
2	Modbus-485_A
3	GND_485
4	--
5	--
6	GND_485
7	Modbus-485_A
8	Modbus-485_B

RS485 Port
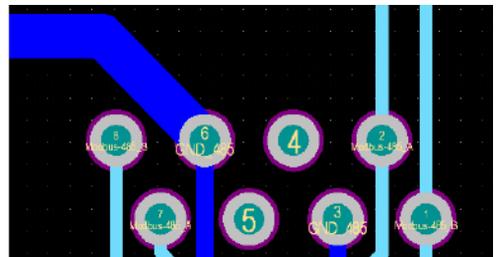
Definition of RJ45 Port Pin for CAN

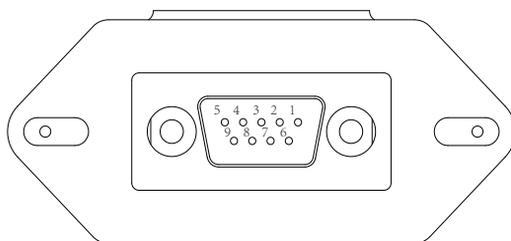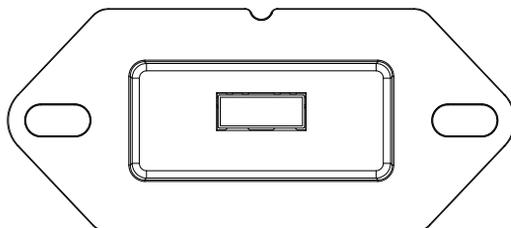| No.	CAN Pin
1	--
2	--
3	CHPT-CAN-H
4	CHPT-CAN-H
5	CHPT-CAN-L
6	CHPT-CAN-L
7	GND_COM
8	GND_COM

CAN Port
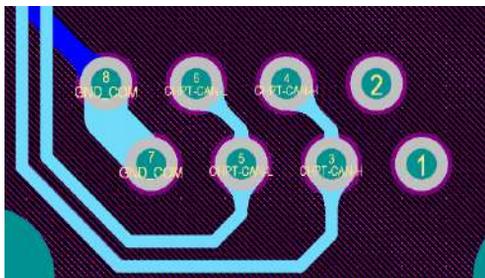
This model of inverter has two types of logger interfaces, DB9 and USB. Please refer to the actual inverter received for the actual interface type.

RS232

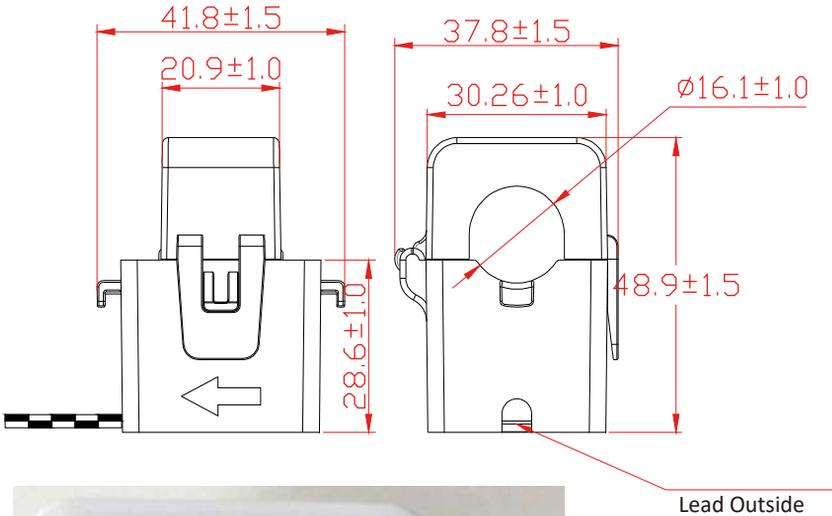| No.	RS232
1	
2	TX
3	RX
4	
5	D-GND
6	
7	
8	
9	12Vdc

DB9 (RS232)

USB

10. Appendix II

1. Split Core Current Transformer (CT) dimension: (mm)
2. Secondary output cable length is 4m.

Lead Outside

V2.4.1, 2025-04-11

Hybrid-Wechselrichter WLAN-Verbindungsanleitung

Schritt 1: Laden Sie die Apps **TommaTech Connect** und **TommaTech Cloud** aus dem **Google Play Store** oder **App Store** herunter. Alternativ können Sie die Apps auch direkt aufrufen, indem Sie die untenstehenden QR-Codes scannen.

Hybrid Inverter Wi-Fi Connection Guide

Step 1: Download the **TommaTech Connect** and **TommaTech Cloud** applications from the **Google Play Store** or **App Store**. Alternatively, you can scan the **QR codes** below to access the applications directly.

Hibrit Inverter Wi-Fi Bağlantı Rehberi

1.Adım: Google Play Store veya **App Store** üzerinden **TommaTech Connect** ve **TommaTech Cloud** uygulamalarını indiriniz. Alternatif olarak aşağıda yer alan **QR** kodlarını taratarak uygulamalara doğrudan erişim sağlayabilirsiniz.

TommaTech Connect

TommaTech Cloud

Schritt 2: Scannen Sie den untenstehenden **QR-Code** der **Hybrid-Verbindungsanleitung**. Klicken Sie in der Liste nacheinander auf die Anleitungen TommaTech Connect und TommaTech Cloud.

Schritt 3: Schließen Sie den Registrierungsvorgang der Anwendung ab, indem Sie die in den Anleitungen beschriebenen Verbindungsschritte befolgen.

Step 2: Scan the QR code of the Hybrid Connection Guide below.
From the list, click on the TommaTech Connect and TommaTech Cloud guides in order.

Step 3: Complete the application registration process by following the connection steps provided in the guides.

2.Adım: Aşağıda bulunan **Hibrit Bağlantı Kılavuzu** ''QR'' kodunu taratınız. Listeden sırasıyla TommaTech Connect ve Tommatech Cloud kılavuzlarına tıklayınız.

3.Adım: Kılavuzlardaki bağlantı adımlarını takip ederek uygulamaya kayıt işlemini tamamlayınız.

TommaTech Hybrid-Verbindungsanleitung

TommaTech Hybrid Connection Guide

TommaTech Hibrit Bağlantı Kılavuzu