

USER MANUAL



GT3 75-125kW
GT3 36-75kW-L
GT3 100-150kW-M

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Var.02

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1.About This Manual

1.1 Scope

This manual is valid for grid tied Inverter:

GT3-75K-1	GT3-75K-11	GT3-100K-1	GT3-110K-1	GT3-110K-11
GT3-125K-1	GT3-125K-11	GT3-36KL1	GT3-36KL11	GT3-40KL1
GT3-40KL11	GT3-50KL1	GT3-60KL1	GT3-60KL11	GT3-75KL1
GT3-100KM1	GT3-124KM1	GT3-125KM1	GT3-150KM1	GT3-100KM11
GT3-75K-12	GT3-100K-12	GT3-110K-12	GT3-50KL11	GT3-60KL12
GT3-124KM11	GT3-90K-11	GT3-95K-11	GT3-99K-11	GT3-90K-1
GT3-95K-1	GT3-99K-1			

1.2 Intended Audience

The manual is intended for photovoltaic (PV) inverter operating personnel and qualified electrical technicians. Any electrical Installation and maintenance of this inverter must be performed by a qualified electricians by a professional electrical with the above qualification.

1.3 Symbols Used

Safety instructions will be highlighted with the following symbols. These important instructions must be followed during installation, operation and maintenance of the inverter.

Symbol	Description
 DANGER	Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.
 WARNING	Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a situation that, if not avoided, could result in equipment or property damage.

1.4 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.

The information in this manual is subject to change without notice. Please check www.livoltek.com for more information.

2 Safety

2.1 Product Description

LIVOLTEK this series grid tied inverter, ideal for home, business and remote locations. The inverter generates renewable electricity from solar energy, and provides Pure Sine Wave AC output for connected equipment. Please read and follow all the instructions and cautions on the inverter and this user manual during installation, operation or maintenance at all times.

2.2 Important Safety Instructions

The safety instructions in this manual cannot cover all the precautions that should be followed. Perform operations considering actual onsite Conditions. LIVOLTEK shall not be held liable for any damage caused By violation of the safety instructions in this manual.

2.2.1 Personnel Safety

- The inverter must be installed, electrically connected, operated and maintained by specially trained technician;
- The qualified technician must be familiar with the safety regulations of electrical system, working process of PV power generation system, and standards of local power grid;
- The technician must read through this User Manual carefully before any operations.

2.2.2 Inverter Protection



Do not disconnect the PV connectors when the inverter is running. Ensure that there is no voltage or current before installing or disconnecting any connectors.

All safety instructions, warning labels, and nameplate on the inverter should not be removed or covered.



When the photovoltaic array is exposed to light, it supplies a DC voltage to this equipment.



Do not touch any hot parts (such as the heat sink) during operation.

**CAUTION**

Hot surfaces – To reduce the risk of burns – Do not touch.

"Do not remove cover until 5 minutes after disconnecting all sources of supply."

NOTICE

As soon as receiving the inverter please check if it is damaged during its transportation. If yes, please contact your dealer immediately.

Only qualified personnel can change the country settings.

- Adequate ventilation must be provided for inverter installation location
Mount the inverter in vertical direction, and ensure that no objects block the heat dissipation

2.3 Symbol on the Type Label

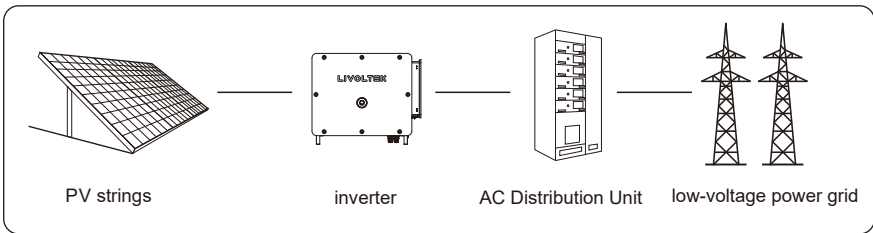
Symbol	Explanation
	CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	UKCA mark. The inverter complies with the requirements of the applicable UKCA guidelines.
	UKNI mark. The inverter complies with the requirements of the applicable UKNI guidelines.
	Direct Current (DC)
	Alternating Current (AC)
	Point of connection for grounding protection.
	RCM remark.
	SAA certification.
	Beware of hot surface. The inverter can become hot during operation. Avoid contact during operation.
	Danger of high voltages. Danger to life due to high voltages in the inverter!
	Danger Risk of electric shock!
	Observe enclosed documentation.
	The inverter can not be disposed together with the household waste. Disposal information can be found in the enclosed documentation.
	Danger to life due to high voltage. There is residual voltage in the inverter which needs 5 min to discharge. • Wait 5 min before you open the upper lid or the DC lid.

3 Product Overview

3.1 System Diagram

This series inverter is a transformerless three-phase grid-tied inverter. As an indispensable part of the photovoltaic power generation system, the inverter mainly converts the direct current generated by the PV modules into alternating current that is compatible with the grid, and can feed the alternating current into the public grid.

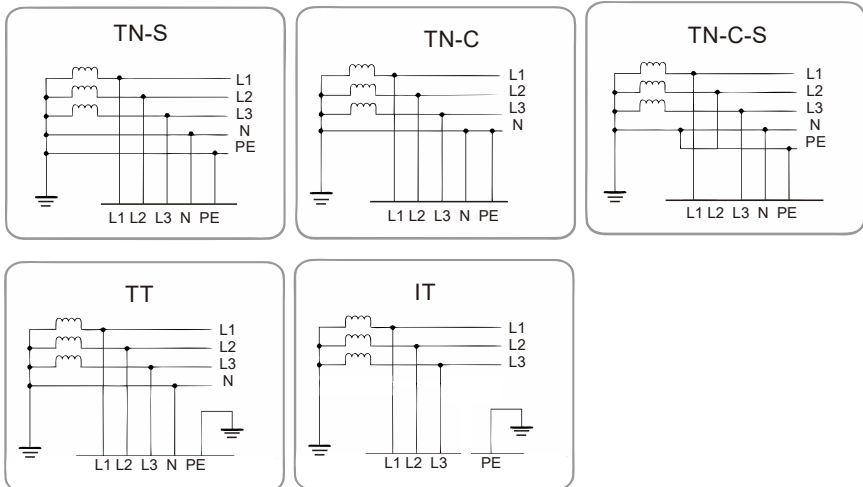
A low-voltage grid-tied PV power system



This series inverter is suitable for TN-S, TN-C, TN-C-S, IT and TT power grid systems.

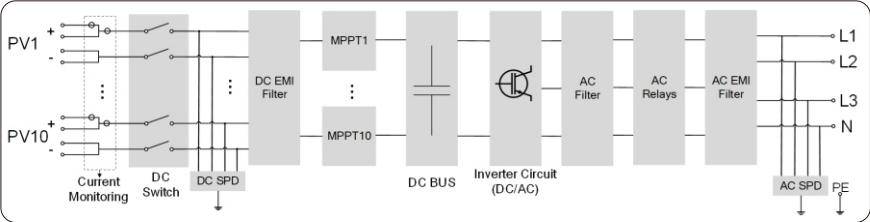


In IT power grid, single-phase over/under voltage and single-phase high low voltage ride through may occur due to the lack of connection of N line.

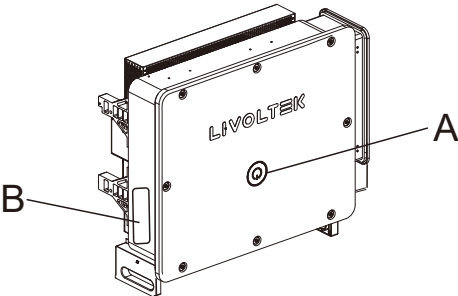


3.2 Circuit Diagram

The figure below is the schematic diagram of the main circuit of the inverter. PV input goes through the lightning protection circuit and DC EMI filter circuit and then through the previous BOOST circuit to achieve maximum power tracking and boost functions. The inverter uses three-level technology to convert the DC voltage into a three-phase AC voltage, filters out high frequency components through an output filter, and then outputs high-quality AC power through a two-stage relay and an EMI filter.

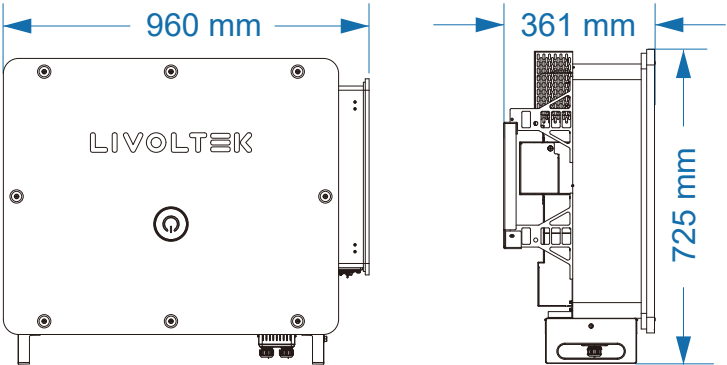


3.3 Appearance

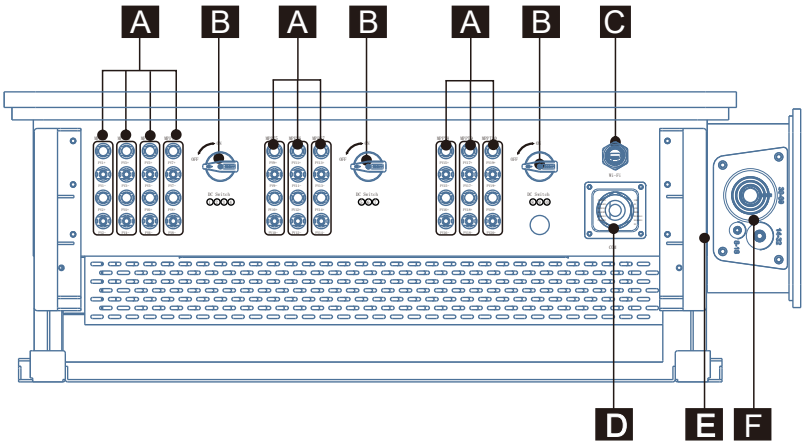


No.	Description
A	LED indicator
B	Label

3.4 Dimension



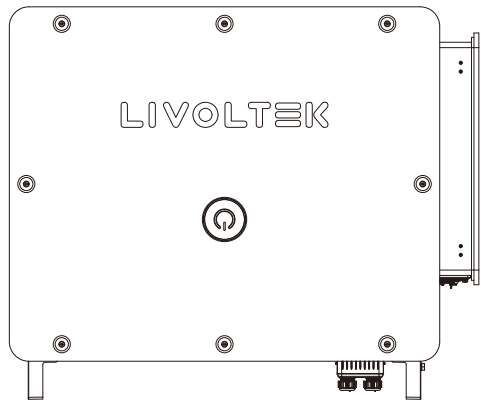
3.5 Ports of the Inverter



No.	Port	Function
A	PV connection ports	For PV cable connection
B	DC switches	For turning on/off DC power supply
C	Wi-Fi port	For a stick logger connection
D	Communication port	For meter, parallel and other communication connection
E	Grounding port	For grounding cable connection
F	AC output port	For grid cable connection

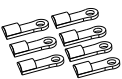
3.6 LED Indicators of the Inverter

The LED indicator on the front of the inverter indicates the working state of the inverter.



Indicator	Color	Status	Description
	Green	On	The inverter is running normally.
		Off	The inverter is not operating normally.
		Blink	Standby
	Green/Red	Blink	System upgrading
	Green	On	PID repair
	Red	On	Fault occurs
		Off	No fault occurs

4 Scope of Delivery

 A	 B	 C	 D	 E
 F	 G	 H	 I	 J
 K	 L	 M	 N	

No.	QTY	Description	Remark
A	1 pcs	Inverter	/
B	1 pcs	Bracket	For hanging the inverter
C	6 pairs	Expansion tubes & self-tapping screws	For securing the bracket
D	8~20 pairs	Positive & negative PV pin terminals and PV connectors	For PV cables assembling
E	1 pcs	Grounding terminal	For PE cable assembling
F	1 pcs	Shorting stub	For parallel connection
G	3 pcs	Terminal blocks	For signal cable connection
H	16/24 pcs	Pin terminals	For signal cable assembling
I	7 pcs	OT terminals	For grid cable assembling
J	4 pcs	M12 nuts	For securing grid cables
K	2 pcs	M5 screws	For securing the inverter with the bracket
L	4 pcs	Handles	For carrying the inverter
M	1 pcs	Stick logger	For communication and monitoring
N	2 pcs	Documents	Quick Installation Guide & certificate

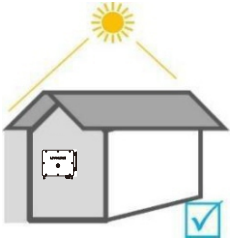
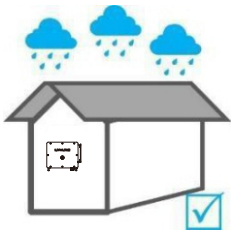
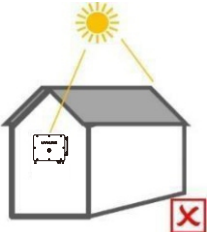
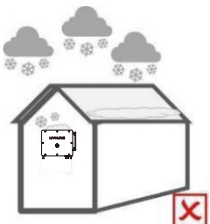
5 Mechanical Mounting

5.1 Requirements for Mounting

5.1.1 Location Requirements

To prevent electric shock or personal injury, ensure that no electrical wiring or plumbing systems are present before drilling any holes. Strictly follow the instructions when moving and positioning the inverter.

Improper operation may cause personal injuries or serious wounds. Insufficient ventilation may compromise system performance.

 No direct sunlight	 No rain exposure	 No snow lay up
 Direct sunlight	 Rain exposure	 Snow lay up

Choose an optimal installation location that ensures safe operation, maximizes service life, and delivers expected performance.

During installation and operation, avoid placing the inverter in areas where personnel might come into contact with its casing or heat sink, as these components become extremely hot during operation.

5.1.2 Environment Requirements

The inverter must be installed in a ventilated environment to ensure good heat dissipation. Ensure that the installation site meets the following conditions:

- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not in cool air directly.
- Not near the television antenna or antenna cable.
- Not higher than altitude of about 4000m above sea level.
- Not in the environment of precipitation or humidity ($>95\%$).
- Under good ventilation condition.
- The ambient temperature in the range of $-30^{\circ}\text{C}\sim+60^{\circ}\text{C}$.
- The slope of the wall should be within $\pm 5^{\circ}$.

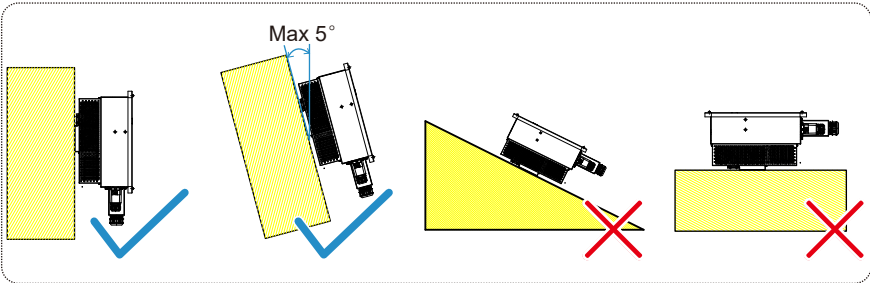
The wall hanging the inverter should meet conditions below:

- The wall must be solid enough to bear the weight of the inverter.
- Do not install the inverter on a wall made of gypsum boards or similar materials with weak sound insulation to avoid noise disturbance in a residential area.

5.1.3 Angle and Space Requirements

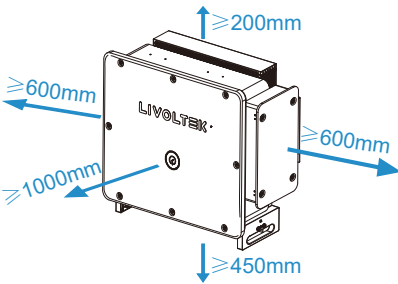
NOTICE

Never install the inverter horizontally, or with a forward tilt or with a backward tilt or even with upside down. The horizontal installation can result in damage to the inverter. Install the inverter upright or at a maximum back tilt of 15 degrees to facilitate heat dissipation.



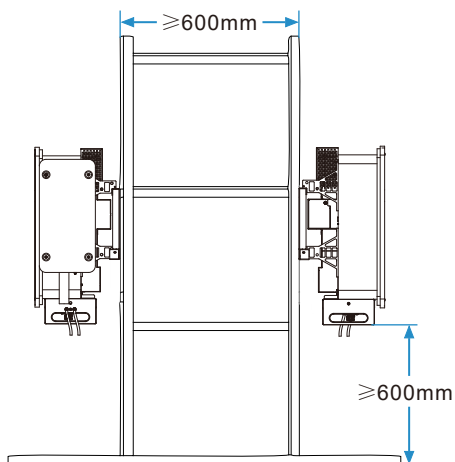
Reserve enough space when installing the inverter for heat dissipation, maintenance, safety and etc.

Single Inverter

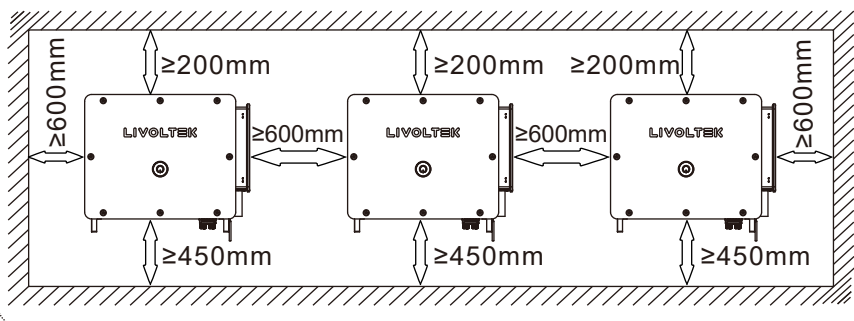


Position	Min Distance
Left	600 mm
Right	600 mm
Up	200 mm
Down	450 mm
Front	1000 mm

Single Inverter

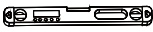
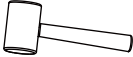
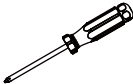
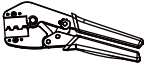
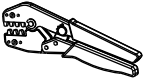
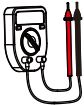


Multiple Inverters



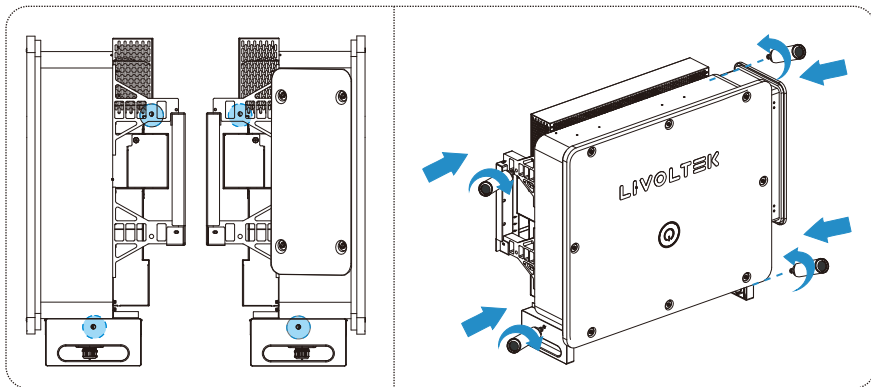
5.2 Tools Preparation

Here below are recommended tools for installation and wiring.

				
Spirit level	Hammer	Drill	Measuring tape	Utility knife
				
Marker	Cross screwdriver	Flat screwdriver	MC4 crimping tool	Crimping tool for pin terminal
				
Socket spanner	Wire stripper	Spanner	Crimping tool	Hydraulic press
				
Heat gun	Heat shrink tubing	Insulating tape	Clamp current meter	Multimeter
				
Safety gloves	Safety boots	Safety goggles	Anti-dust mask	

5.3 Moving Inverter

Before installation, transport the inverter with outer package to the installation site, remove the package, take out accessories, install the four handles on both sides of the inverter and carry the inverter out of the package box.



CAUTION

Improper handling may cause personal injury!

- For safety, arrange an appropriate number of personnel to carry the inverter in accordance with its weight.
- Before any operation, installation personnel should wear protective equipment such as safety boots, safety gloves and etc.
- Pay attention to the center of gravity of the inverter to avoid device tilting when moving the inverter.
- Do not place the inverter on a hard floor to avoid inverter's enclosure damage. Put the inverter on protective materials such as sponge pad or foam cushion.
- Hold the handles installed for device carrying. Do not carry the inverter by holding terminals of the inverter.

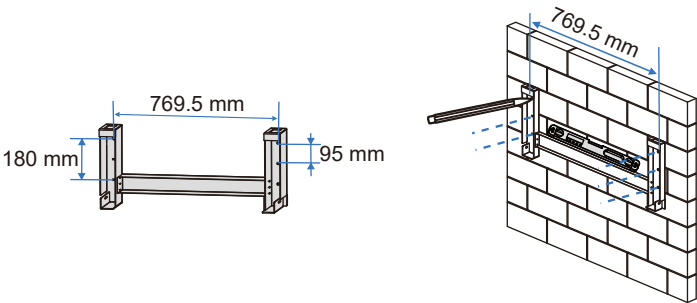
5.4 Mounting Procedure

5.4.1 Wall-mounted Procedure

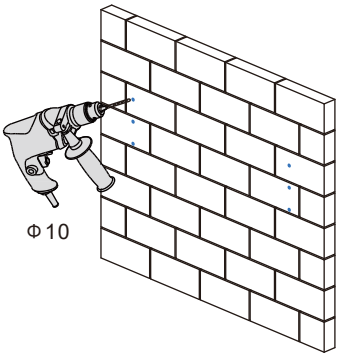
Item	Quantity	Source
Inverter	1 pcs	Delivery scope
Bracket	1 pcs	Delivery scope
Expansion tubes & self-tapping screws	6 pairs	Delivery scope
M5 screws	2 pcs	Delivery scope

Step 1: Locate the position of the bracket.

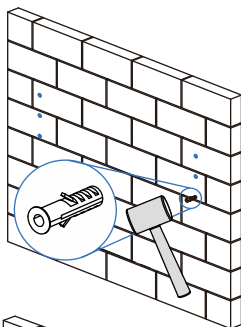
- Put the bracket on the wall with a spirit level on the top of the bracket to ensure it's level.
- Mark the position of the bracket with a marker.



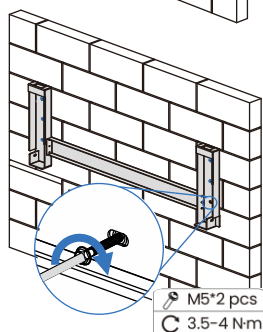
Step 2: Drill holes on the wall in accordance with the marked dots.



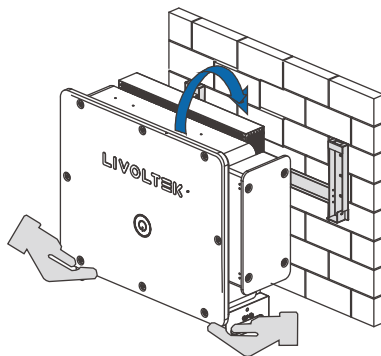
Step 3: Knock the expansion tubes into the wall.



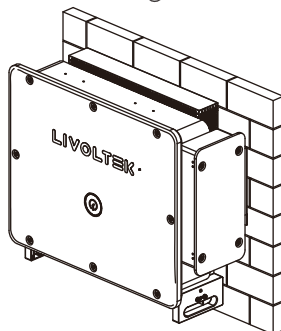
Step 4: Insert self-tapping screws through the bracket and then into the wall.



Step 5: Carry and hang the inverter on the bracket.



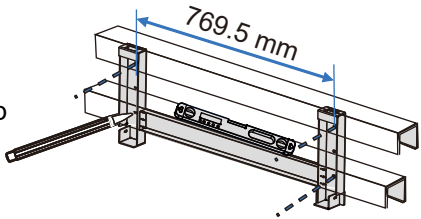
Step 6: Secure the inverter and the bracket with M5 screws.



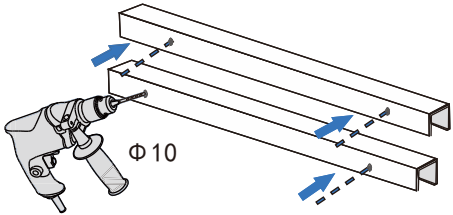
5.4.2 Installed on the PV Bracket (under PV Modules)

Item	Quantity	Source
Inverter	1 pcs	Delivery scope
Bracket	1 pcs	Delivery scope
Expansion tubes & self-tapping screws	6 pairs	Delivery scope
M5 screws	2 pcs	Delivery scope
Self-tapping screws	4 pcs	Self-prepared
PV bracket	1 pcs	Self-prepared

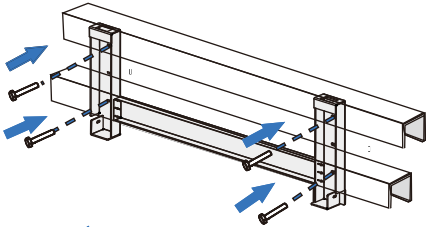
Step 1: Put the bracket on the PV bracket with a spirit level on the top of the bracket.



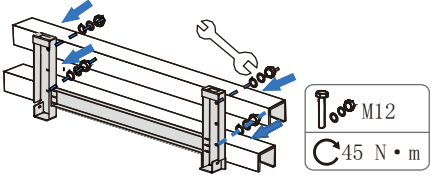
Step 2: Drill holes. (Skip **step 1** and **step 2** if the PV bracket already has three holes suitable for installing.)



Step 3: Knock self-tapping screws through the bracket into the PV bracket.



Step 4: Secure the inverter bracket with the PV bracket.



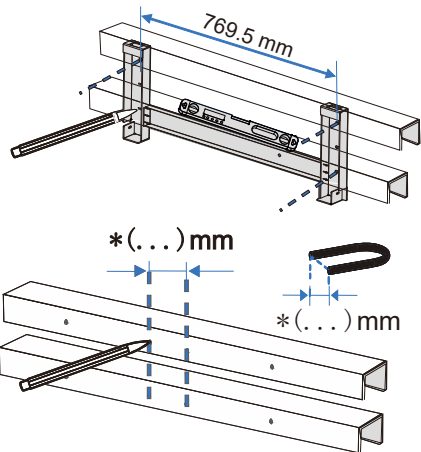
Step 4: Refer to **Wall-mounted Procedure** to hang the inverter on the bracket and secure the inverter with the inverter bracket with M5 screws.

5.4.3 Mounted on the Pole

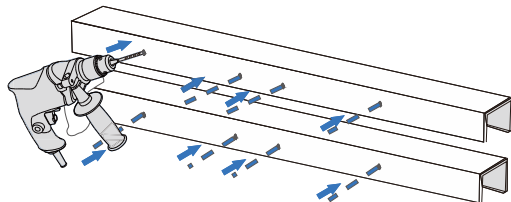
Item	Quantity	Source
Inverter	1 pcs	Delivery scope
Bracket	1 pcs	Delivery scope
Expansion tubes & self-tapping screws	6 pairs	Delivery scope
M5 screws	2 pcs	Delivery scope
U-beam/ U-shaped hoop	2 pcs	Self-prepared
Nut assembly	4 pcs	Self-prepared

Step 1: Mark positions.

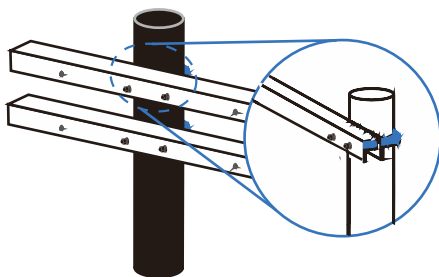
1. Put the bracket on the PV bracket with a spirit level on the top of the bracket.
2. Mark the position of the U-shaped hoop.



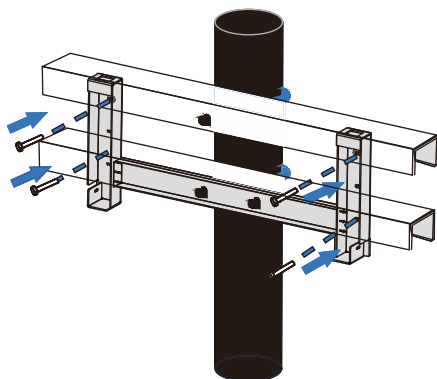
Step 2: Drill holes.



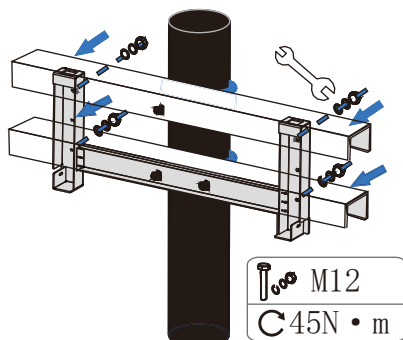
Step 3: Secure the brackets with U-shaped hoops.



Step 4: Install the inverter bracket.



Step 5: Secure the inverter bracket with the brackets.



Step 6: Refer to **Wall-mounted Procedure** to hang the inverter on the bracket and secure the inverter with the inverter bracket with M5 screws.

6 Electrical Connection

This chapter mainly describes the cable connections of the system. Prior to any electrical connections, keep in mind that the inverter has dual power supplies. It is mandatory for the qualified personnel to wear personal protective equipments (PPE) during the electrical work.



DANGER

Danger to life due to a high voltage inside the inverter!

- The PV string will generate lethal high voltage when exposed to sunlight.
- Before starting electrical connections, disconnect the DC and AC circuit breakers and prevent them from inadvertent reconnection.
- Ensure that all cables are voltage free before performing cable connection.



WARNING

- Any improper operations during cable connection can cause device damage or personal injury.
- Only qualified personnel can perform cable connection.
- All cables must be firmly attached, undamaged, properly insulated and adequately dimensioned.

NOTICE

- Comply with the safety instructions related to the PV strings and the regulations related to the utility grid.
- All electrical connections must be in accordance with local and national standards.

6.1 Additionally Prepared Materials

No.	Cable	Type	Cross-sectional Area(mm ²)
1	DC cable	PV cable complying with 1100V standard	12~10 AWG / 4~6 mm ²
2	Additional PE cable	Outdoor single-core copper wire cable	The same as that of the PE wire in the AC cable
3	AC cable	Outdoor five-core copper wire cable Outdoor five-core aluminum wire cable ⁽¹⁾	L1/ L2/ L3/ N: 70~240 mm ² PE: refer to the table "PE Wire Requirements"
4	Communication cable	Shielded multi-core signal cable	0.2~1.5 mm ²

Suggested AC circuit breaker

Product AC Power	75kW	90kW/ 95kW/ 99kW/ 100kW		110kW	125kW
Circuit Breaker Current	160A	200A		250A	250A
Product AC Power	36kW_L	40kW_L	50kW_L	60kW_L	75kW_L
Circuit Breaker Current	160A	160A	200A	250A	250A
Product AC Power	100kW_M	124kW_M	125kW_M	150kW_M	
Circuit Breaker Current	250A	250A	250A	250A	

Note (1): A copper to aluminum adapter terminal is required when an aluminum cable is used.

Note (2): Select AC cables that meet local standards and safety regulations based on the requirements listed in the table.

PE Wire Requirements

PE Wire Cross Section	Note
S/2 S: Phase wire cross-section	The specifications are valid only when the phase wire and PE wire use the same material. If otherwise, ensure that the cross section of the PE wire produces a conductance equivalent to that of the wire specified in the table.

Other sizes of grounding cables that meet local standards and safety regulations can also be used for grounding connections. But Livoltek shall not be liable for any damage caused.

6.2 PE Connection (Mandatory)

DANGER

- When performing electrical connections of the inverter, ground the PE cable first.
- Before powering on the inverter, ensure that the PE cable is reliably grounded. Otherwise, damages caused therefrom will not be covered by warranty.

WARNING

- Before any electrical connection, ensure that the inverter is completely disconnected from power.
- Proper grounding enhances surge voltage protection and improves EMI performance. Connect the assembled grounding terminal to the external protective grounding port before AC connection, PV connection and communication connection.
- The external protective grounding port provides a reliable ground connection. Please use the grounding terminal in the inverter accessory, otherwise, it may cause product damage or personal injury.
- In accordance with local rules and regulations, please also ground the PV panel subconstruction to the same common grounding port (PE Bar) in addition to local lightning protection rules.

WARNING

The external protective grounding terminal must meet at least one of the following requirements.

- The cross-sectional area of the grounding cable is not less than 10 mm² for copper wire or 16 mm² for aluminum wire. It is recommended that the external protective grounding terminal and the grounding terminal on the AC side should be reliably grounded.
- If the cross-sectional area of the grounding area is less than 10 mm² for copper wire or 16 mm² for aluminum wire, ensure that both the external protective grounding terminal and the grounding terminal on the AC side are reliably grounded.

If the grounding cable can be wired by other means in accordance with the local standards and regulations, and Livoltek shall not be reliable for the possible consequences.

NOTICE

- All metal parts and device enclosures, such as brackets of PV modules and inverter enclosure, should be grounded.
- For a single inverter: connect the PE (Protective Earth) cable to the ground.

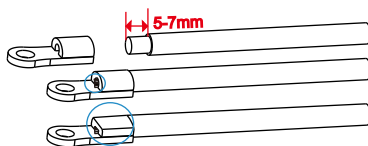
NOTICE

- For multiple inverters: connect the external protective grounding terminals of all inverters and the grounding points of the PV module brackets to ensure equipotential connections to ground cables (in accordance with the onsite conditions).
- If the PV side of the inverter is not properly grounded, the unit will illuminate a red warning light and generate an Earth Fault alarm. This inverter meets earth fault monitoring requirements as specified in IEC 62109-1, Clause 13.9.

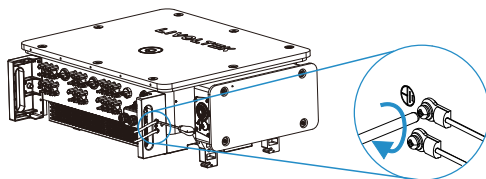
Material preparation

Item	Source	Item	Source	Item	Source
PE cable	Self-prepared	OT terminal	Delivery Scope	Heat shrink tubing	Self-prepared

Step 1: Prepare a PE cable, strip 5~7 mm insulation off, thread the heat shrink tubing through the cable and then insert the grounding terminal into the cable, crimp the terminal into the cable, crimp the terminal, pull the tubing backward and blow the tubing with a heat gun to ensure that no conductor of the cable is exposed.



Step 2: Loosen the M8 screw from the PE port, connect the assembled PE cable to the PE port and secure it with the M8 screw (Torque: 12 N·m).



6.3 Grid Connection



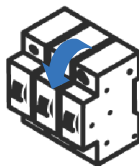
WARNING

- The grid voltage and frequency must be in the permissible range.
- An external AC breaker must be installed between inverter and Grid input power source.
This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of Grid input.
- All wiring must be performed by a qualified personnel.
- Before making Grid input/output connection, be sure to open DC protector or disconnection first.
- Disconnect the circuit breaker and secure it against reconnection.

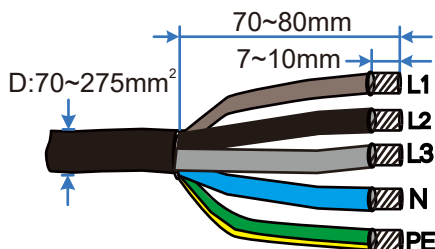
Material preparation

Item	Source
AC cable	Self-prepared
OT terminal	Scope of Delivery
M12 nut	Scope of Delivery
Heat shrink tubing	Self-prepared

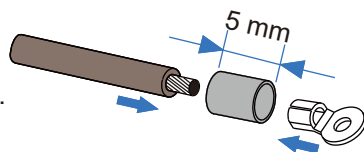
Step 1: For safety, cut off power first.



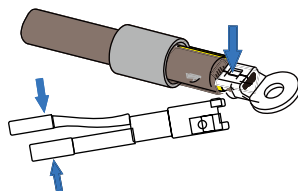
Step 2: Strip the grid cable.



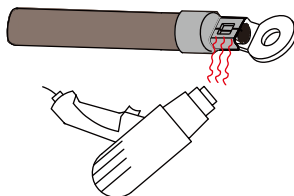
Step 3: Thread the cable through heat shrink tubing and then into the OT terminal.



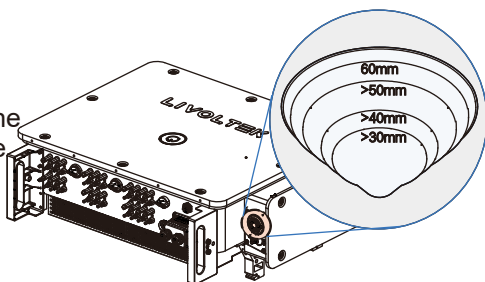
Step 4: Crimp the OT terminal with a hydraulic press.



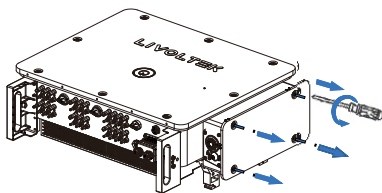
Step 5: Pull the tubing backward and bow the tubing to ensure that no conductor is exposed.



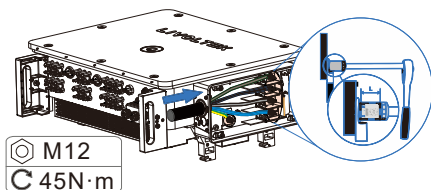
Step 6: Cut the membrane of the port in accordance with the cable diameter selected.



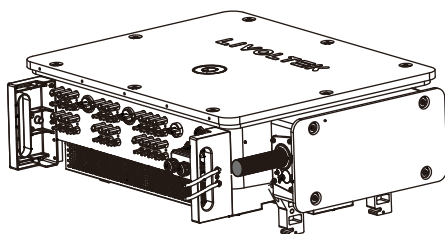
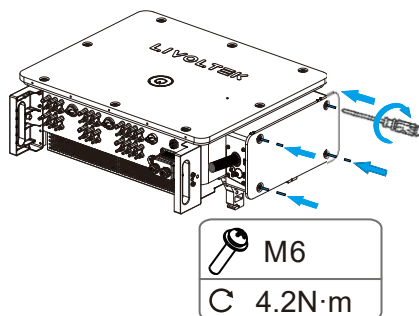
Step 7: Remove the inverter side cover.



Step 8: Connect the assembled grid cables to the inverter and secure cables with M12 nuts.



Step 9: Install the inverter side cover.



6.4 PV Connection



WARNING

- This unit is not provided with a GFDI device. This inverter controller must be used with an external GFDI device as required by the article 690 of the National Electrical Code for the installation location.

Please only use the PV connectors from the accessory box for connection.

Before connecting, please make sure:

- The voltage, current and power ratings of the panels to be connected within the allowable range of the inverter. Ensure polarity is correct. Please refer to the Technical Data chapter for voltage and current limits.
- Since the inverter is transformerless, please do not ground either output of the PV panels. Ground the panel frames.
- Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.
- To avoid any malfunction, do not connect any PV modules with possible current leakage to the inverter. For example, grounded PV modules will cause current leakage to the inverter. When using CIGS modules, please be sure NO grounding.
- If the inverter is equipped with a three-level lightning protection device. It's requested to use PV junction box with surge protection. Otherwise, it will cause damage on inverter when lightning occurs on PV modules.



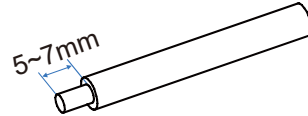
WARNING

- Use IEC61730 class-A Rating PV modules.
- When exposed to light, PV panels will generate DC voltage.
- Turn off the DC circuit breaker before connecting any wiring.
- All wiring must be performed by a qualified personnel.
- It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

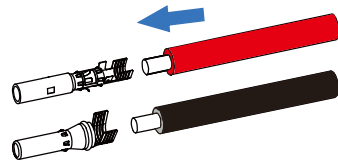
Material Preparation

Item	Source
12~10 AWG/ 4~6mm ² PV cable	Self-prepared
PV pin terminal	Delivery Scope
PV connector	Delivery Scope

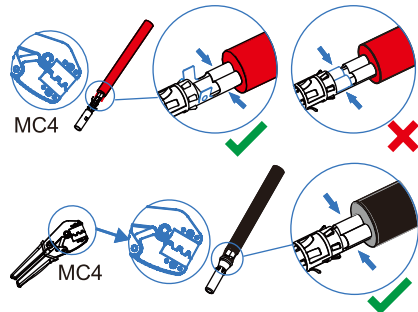
Step 1: Strip 5~7 mm off PV cables.



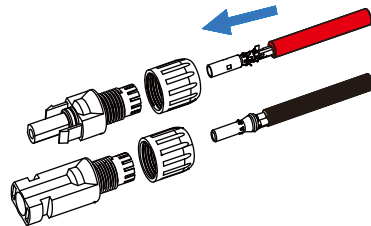
Step 2: Insert positive and negative PV cables into positive and negative PV pin terminals respectively.



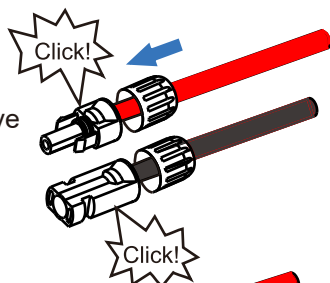
Step 3: Crimp positive and negative PV pin terminals with a MC4 crimping tool.



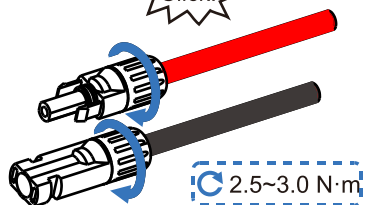
Step 4: Thread positive and negative assembled PV cables through sleeves and into positive and negative PV connectors respectively.



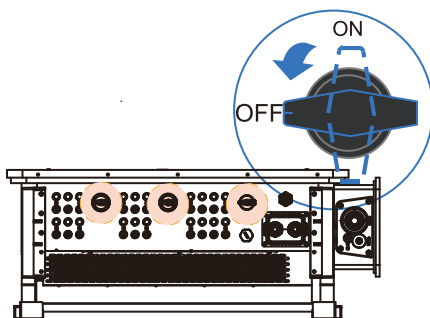
Step 5: Insert assembled positive and negative PV cables into positive and negative PV connectors until a “click” sound is heard.



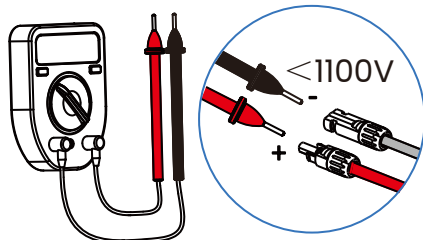
Step 6: Tighten the PV connector.



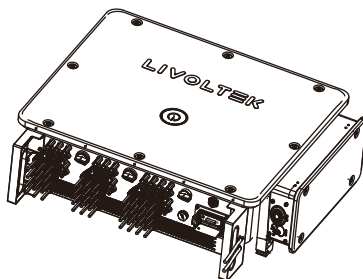
Step 7: Check and confirm that DC switches of the inverter are turned off.



Step 8: Measure the PV connectors and confirm that the PV+/ PV- voltage is lower than 1100V.



Step 9: Connect assembled positive and negative PV cables to the PV+/ PV- ports on the inverter.

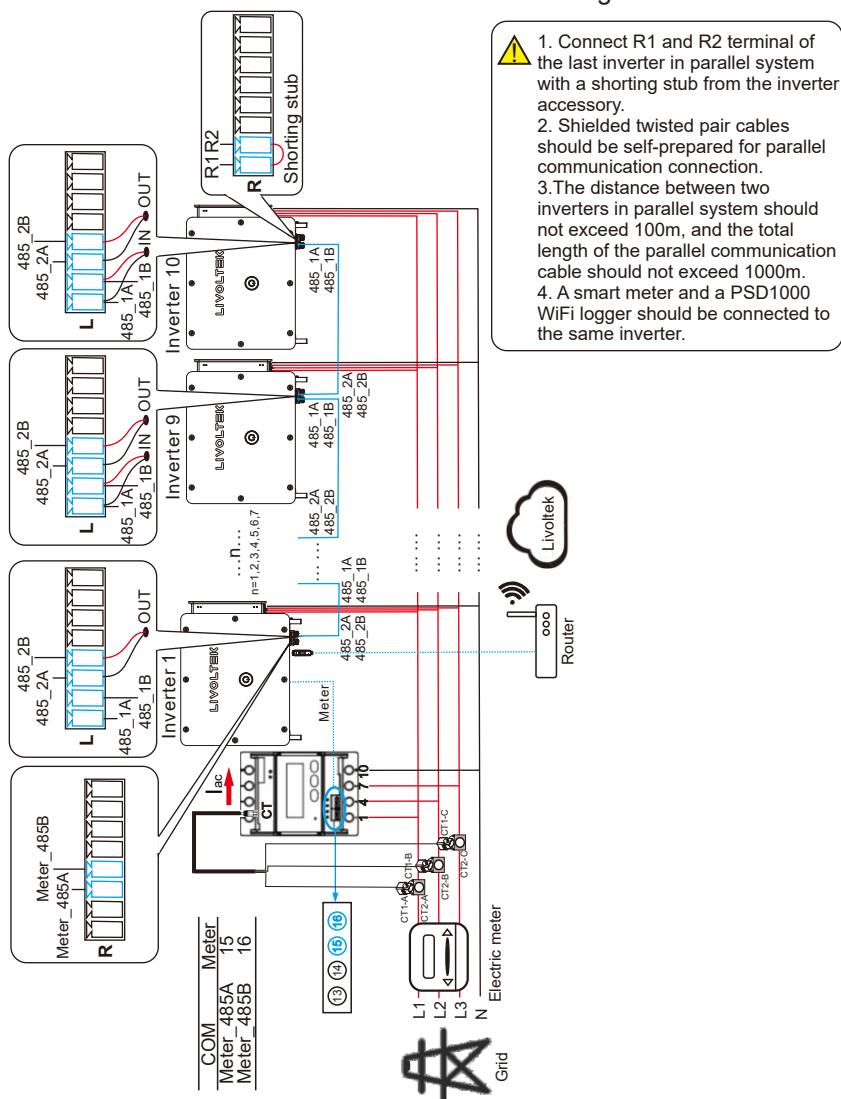


6.5 COM Connection

6.5.1 Parallel Connection (optional)

Up to 10 inverters connected in parallel and matched with a PSD1000 logger and a meter in the system can achieve zero feed-in, power management and etc.

In the parallel system, all inverters are connected via RS485 communication cables in a daisy-chain configuration. And the last slave inverter should be connected with a shorting stub.



6.5.2 Meter Connection (Optional)

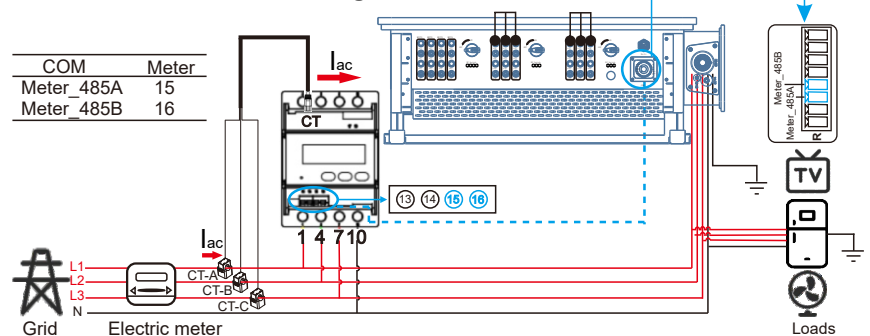
This series grid-tied inverters should work with electric meter or current sensors to monitor load electricity consumption and limit the inverter's output power to the mains. In addition, the electricity meter can transmit the relevant electricity consumption data to the inverter or platform, which is convenient for users to read at any time.

Please note that the meter brand required by Livoltek must be used.

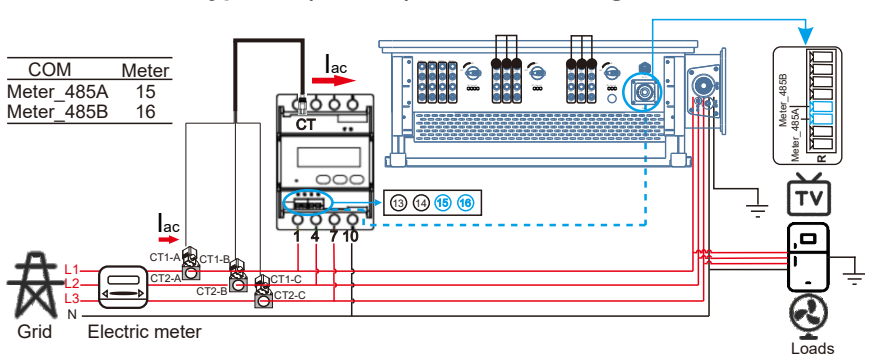
NOTICE

- Smart meter data, I_{ac} flow to the inverter is positive, flow to the grid side is negative.
- When this series inverters are connected in parallel, you only need to install a smart meter with Cts on the inverter set as the host. The installation method is the same as “Meter for CT connection diagram”.

Smart meter connection diagram:



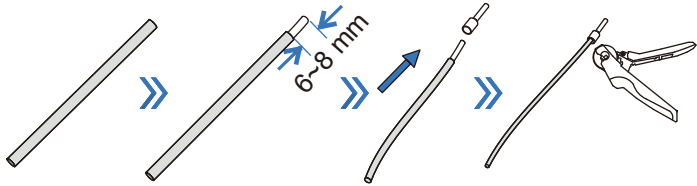
Meter with Two-type CT (> 250A) connection diagram:



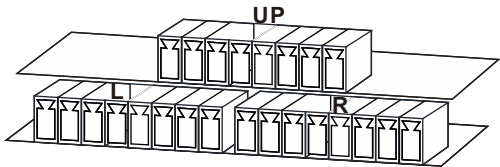
6.5.3 COM Connection Procedure

Item	Source
Pin terminal	Delivery Scope
Terminal block	Delivery Scope
Shielded multi-core signal cable	Self-prepared

Step 1: Strip signal cables and crimp them with pin terminals.



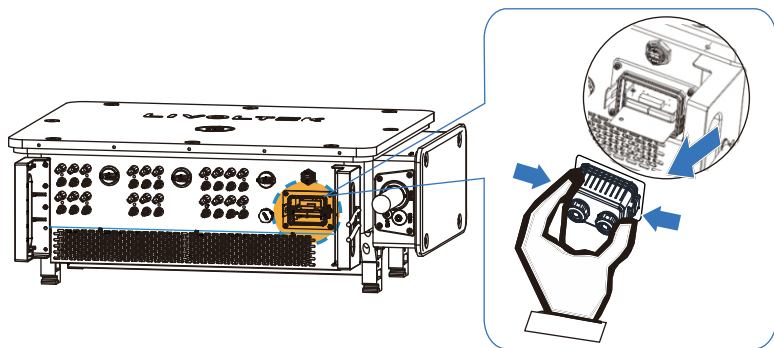
Step 2: Acquire the pin definition of terminal blocks.



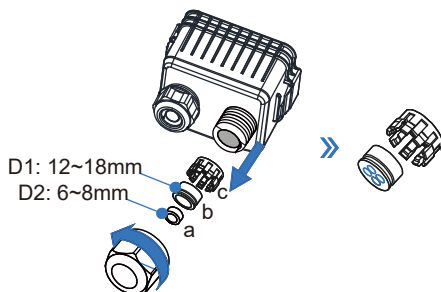
Terminal block	No.	Pin definition	Function	Terminal block	No.	Pin definition	Function
UP	1	DRM1/5	DRM or ripple control function	L	1	485_1A	parallel COM terminal 1
	2	DRM2/6			2	485_1B	
	3	DRM3/7			3	485_2A	parallel COM terminal 2
	4	DRM4/8			4	485_2B	
	5	REF			5	485_3A	reserved
	6	COM			6	485_3B	
	7	DRM1/5			7	DI	backup (short-circuit for detecting external DI signal)
	8	REF			8	GND	

Terminal block	No.	Pin definition	Function	Terminal block	No.	Pin definition	Function
R	1	R1	parallel terminal (short-circuited with a short stub in the last slave inverter)	R	5	DO_1	digital output dry contact
	2	R2			6	DO_2	
	3	Meter 485A	meter COM terminal		7	CAN_H	reserved
	4	Meter 485B			8	CAN_L	

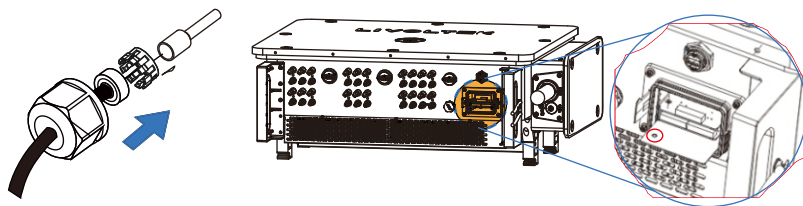
Step 3: Pinch the tabs of the COM connector and remove it from the inverter.



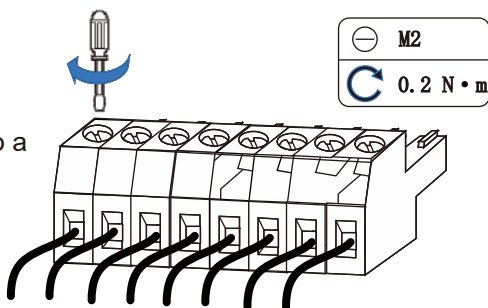
Step 4: Disassemble the COM connector.



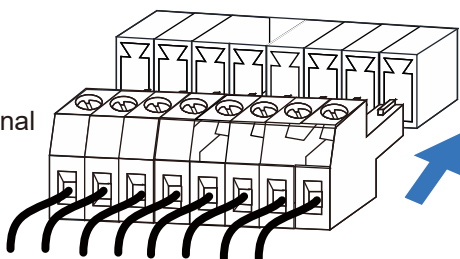
Step 5: Thread assembled signal cables through the connector. shielded wires of signal cables are connected to the point marked in the figure as needed.



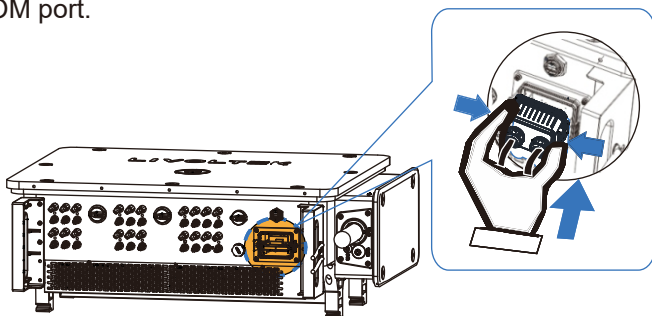
Step 6: Connect signal cables to a terminal block as needed.



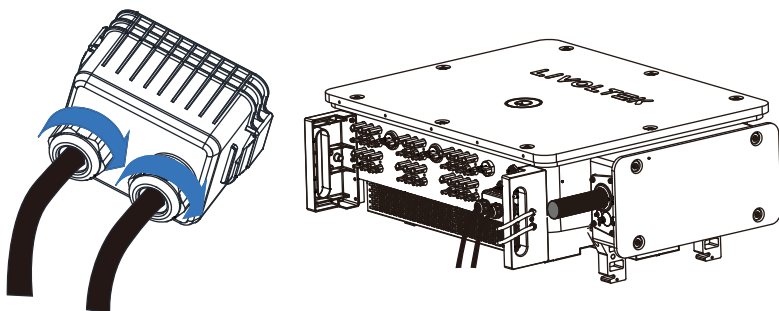
Step 7: Connect assembled terminal block to the COM port.



Step 8: Pinch tabs on both sides of the COM connector and connect it to the COM port.



Step 9: Tighten the swivel nuts of the COM connector.

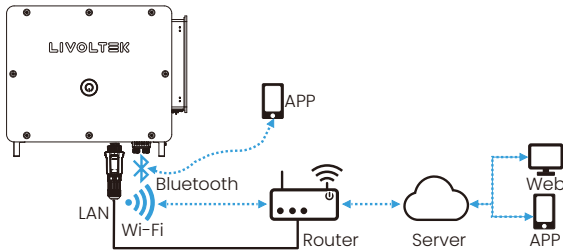


6.6 Wi-Fi Connection

The inverter provides a monitoring module port, which can transmit data of the inverter to the monitoring website via Wi-Fi. (If necessary, purchase) products from Livoltek)

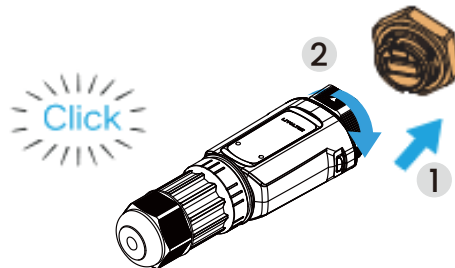
Wi-Fi module implements communication with cloud server through wireless or ethernet network to monitor inverter's data status. For more details, refer to the stick logger's user manual.

Monitoring module connection diagram:



Step 1: Remove the waterproof cap on the Wi-Fi port and insert the stick logger to it.

Step 2: Rotate to tighten the logger.



6.7 Installation Verification

Check the following items after the inverter is installed.

- No other objects put on the inverter.
- All screws especially the screws used for electrical connections are tightened.
- The inverter is installed correctly and securely.
- Ground, AC, DC and Communications cables are connected tightly correctly and securely.
- Check there is no open circuit or short circuits at AC and DC terminals using a multi-meter.
- Idle terminals are sealed.
- All safety warning symbols are intact and complete on the inverter.

6.8 AFCI (Optional)

Arc-Fault circuit interrupter (AFCI) refers to a photovoltaic module or cable that is not properly connected or damaged, and may produce an arc.

According to UL 1699B:2018, the inverter has an arc detection and interrupt identification system, which produces an arc situation, and the inverter must trip within the specified time, and can only be manually reset arc.

According to UL 1699B:2018, the inverter has an arc detection and interrupt identification system, which produces an arc situation, and the inverter must trip within the specified time, and can only be manually reset log on to the Livoltek APP, cloud platform, local Bluetooth to turn off. (go to the **Advanced Settings** interface, select **AFCI function> Setting >Disable**).

AFCI fault alarm cleared

Warning

- If an arc fault error occurs, follow the steps below to troubleshoot the AFCI fault and restart the inverter.
- Do not turn off AFCI permanently.

This series has an automatic clearance mechanism for AFCI alarms. If an alarm is triggered less than 4 times in a 24-hour period and lasts less than 5 minutes, the inverter will automatically clear the alarm.

If more than 5 consecutive alarms are triggered within 24 hours, this series inverter lock protection. Manual intervention is required to manually clear the alarm and restore the normal operation of the inverter.

When **AFCI Fault** is prompted, an arc has occurred in the PV system. The inverter will trip and shut down.

When **AFCI self-test fault** is prompted, an arc occurs in the PV system self-test. The inverter retest starts.

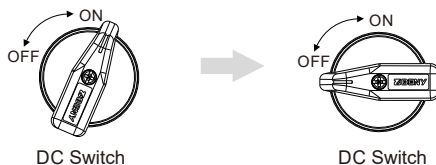
How do I manually remove alarms?

Method 1: My Livoltek App / Livoltek Cloud Platform / Local Bluetooth.

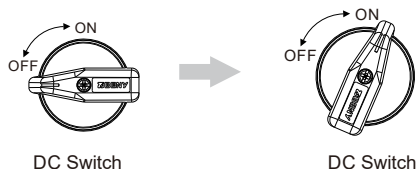
Log in to **My Livoltek APP** /Livoltek cloud platform, the main menu enters **Settings > Advanced Settings** interface, click **Restart**.



Method 2: Rotate DC switches to **OFF** position and turn off AC breakers. Wait for the screen to turn off.



Check the wiring of the PV assembly, if there is a switch in the front stage of the PV, you need to check whether the switch wiring is abnormal. After troubleshooting, reboot the inverter, rotate DC switches to ON position and turn on AC breakers.



Remark

- If the system fault display is not eliminated, please contact customer service.
- After the circuit breaker or open and close between the inverter and the power grid, the inverter will start the countdown self-test, and the self-test will jump out **AFCI self-test...** After the self-test is normal, it can be connected to the power grid.

7 System Operation

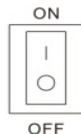
7.1 Powering on the Inverter

Step 1: Rotate DC switches to ON position and turn on AC breakers.

Wait a few seconds and the inverter will start a self-test procedure when the indicator light flashes, when it is done successfully, the green led should be solid on and the graphical display should start displaying.

Step 2: Switch on the loads.

The load parameters should show. It is recommended to turn on one by one to avoid triggering the protection action due to a large instantaneous impact when the loads are turned on at the same time.



7.2 Powering off the Inverter

Step 1: Turn off the loads; (If setting 0 feed-in function).

Step 2: Turn off the PV.

Step 3: Turn off AC breakers.

Step 4: Wait for at least 5 minutes after the inverter LED blacks out for discharging internal circuit energy.

Step 5: Disconnect all power cables and communication cables if needed.

WARNING

After the inverter powers off the remaining electricity and heat may still cause electrical shock and body burns. Please only begin Servicing The inverter ten minutes after the power-off.

8 Communication Mode Description

8.1 Downloading and Installing

My Livoltek is a platform to communicate with your device via a stick logger, you can obtain real-time datum and achieve the remote control of your device.

You can login on our web (link as below) on your computer, also you can scan the QR code to download the APP on your phone.

APP:
Search for My Livoltek on Apple App Store, Google Play.


Mobile Explorer


Google Play


Download on the App Store

i

NOTE

- All interfaces below are based on APP version V4.2.3 The specific setting interfaces are subject to your actual APP version.
- The device model in all interfaces is for reference only. Please refer to your actual device model.

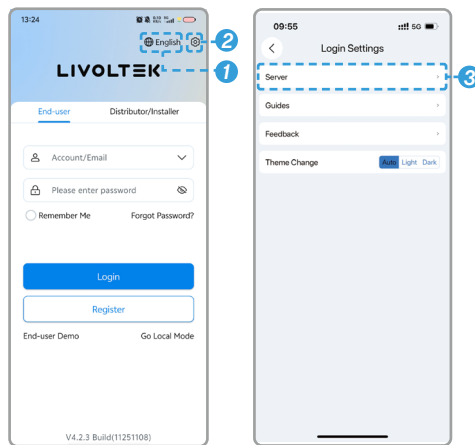
8.2 Configuration

General Setting

Before any settings on the APP, you can modify the system language as needed, check and confirm that APP server address is consistent with the address for account registration.

Table APP server selection

Area	Server selection
For Asia, Latin American, Australia and others	International Server https://www.livoltek-portal.com/
For Europe, Middle East Regions, Africa	EU&MEA Server https://evs.livoltek-portal.com/



Network Configuration

Network configuration has two steps: bluetooth connection between your logger and the APP, network configuration among the logger, the router, the server and your APP or Web.

Network configuration should be completed under APP's local mode at the installation site.

Bluetooth Connection between the Logger and the APP

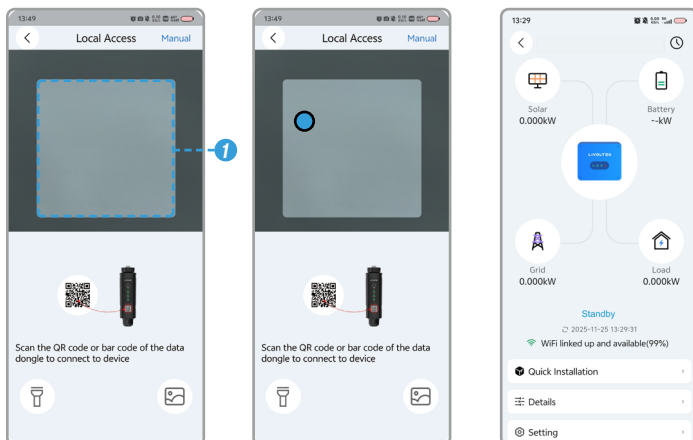
Step 1: Click **Go Local Mode** → **Bluetooth Mode** → **PSD400** to enter **Local Access** interface.

Step 2: Scan the QR code on your stick logger to enter another **Local Access** interface.

Step 3: Set **Switch user: End-user** or **Distributor/ Installer** and click **Confirm** in the **Local Access** interface to enter the power flow interface.

NOTE

Setting items in the **Setting** interface differ in the end-user's or installer's power flow interface.



NOTE

Apart from scanning QR code, you can also connect to the stick logger manually.

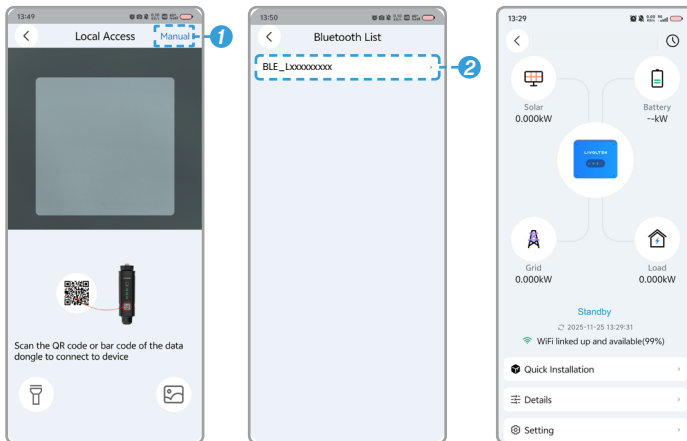
Step 1: In **Local Access** interface, click **Manual** to **Bluetooth List** interface.

Step 2: Connect to your stick logger bluetooth in accordance with the last digits of the logger's SN (BLE_XXXXXXXX) to enter another **Local Access** interface.

Step 3: Set **Switch user: End-user** or **Distributor/ Installer** and click **Confirm** in the **Local Access** interface to enter the power flow interface.

NOTE

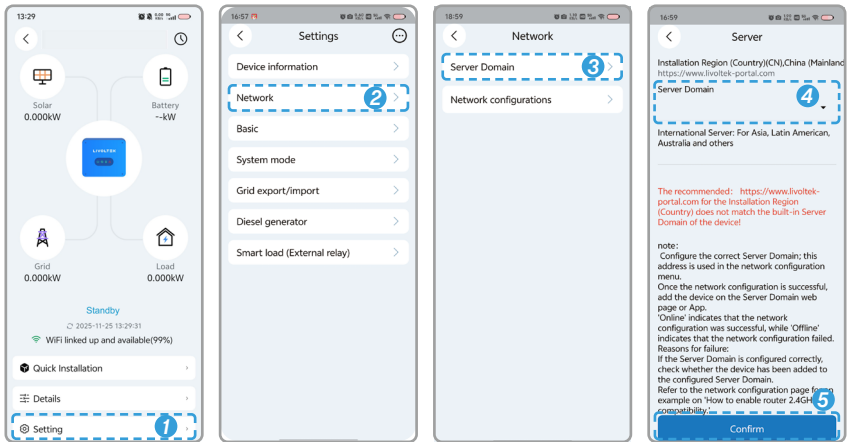
Setting items in the **Setting** interface differ in the end-user's or installer's power flow interface.



Network Configuration among the Logger, the Router, the Server and Your APP or Web in Local Mode

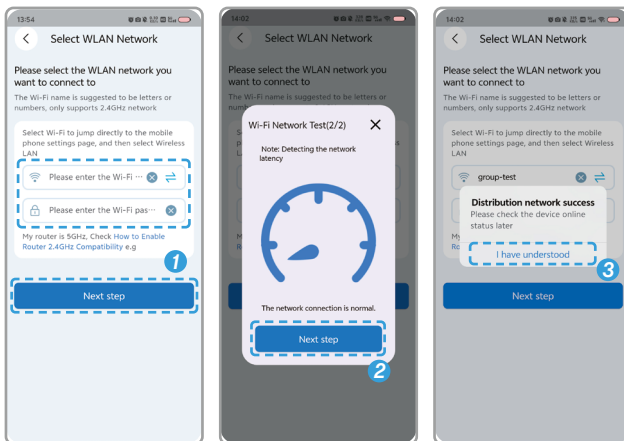
Step 1: Click **Setting** (in **Power Flow** interface in local mode) → **Network** → **Server Domain** and set the server domain in accordance with the APP server address in "General Setting" and ensure that the two addresses are consistent.

Area	Server selection
For Aisia, Latin American, Australia and others	International Server https://www.livolttek-portal.com/
For Europe, Middle East Regions, Africa	EU&MEA Server https://evs.livolttek-portal.com/



Step 2: Click **Setting** (in **Power Flow** interface in local mode) → **Network** → **Network configurations** to connect to your home router. When network detection is normal, network distribution is successful.

- Enter the Wi-Fi name and password (the router's Wi-Fi) and click **Next step**.
- Wait and click **Next step** to complete network connection detection.
- The "**Distribution network success**" pop-up appears, click **I have understood** to complete network configuration.



* Notice: Only 2.4GHz network. 5G Wi-Fi is unavailable.

8.3 Account Registration, New Site Creation, Device Addition

Account Registration

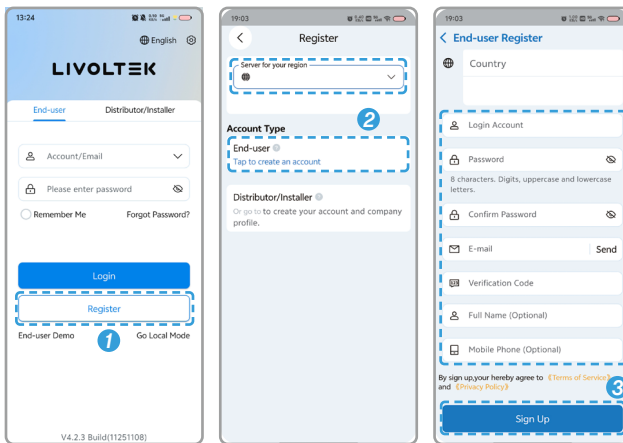
NOTE

- If you already have an account, skip this section.
- **APP Download, Bluetooth Connection** and **Network Configuration** must be completed in local mode before the following operations.

Step 1: Click **Register** in the login interface.

Step 2: Set **Server for your region** in accordance with the installation site, click **Tap to create an account** and enter **End-user Register** interface.

Step 3: Fill in information and click **Sign Up** to complete the account registration.



NOTE

- If you want to register a **Distributor/ Installer** account, go to your APP server address and register a new account.

New Site Creation

Creating a site can improve the device management. Users can follow the following steps to create your first site.

Step 1: Click **Create A Site Now**.

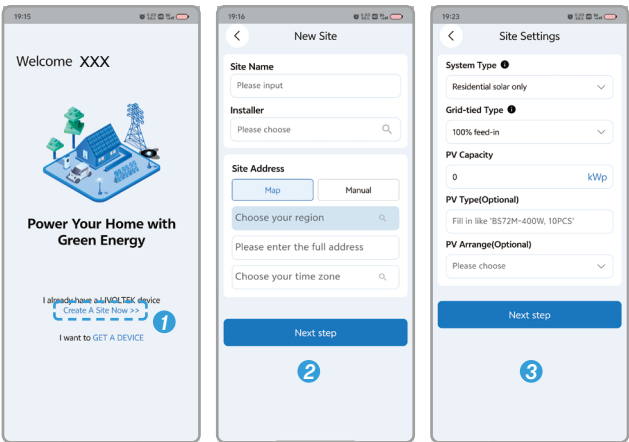
NOTE

- Only when a new account is registered, will the site creation interface pop-up as a prompt.

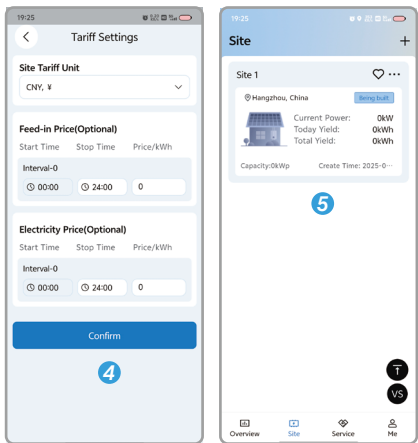
Step 2: Fill in your **Site Name**, select **Installer (My Livoltek)**, set **Site Address** and click **Next step**. **Site Address: Map:** automatically locate and select the address; **Manual:** fill in the address manually.

Step 3: Set **System Type** as **Residential solar only**, set **Grid-tied Type** as needed in accordance with the table below and fill in PV Capacity for your site. Click **Next step**.

Grid-tied Type	Description
100% feed-in	Whole energy generated by solar system will be exported to the utility grid.
Self-use first	Solar and storage energy will meet the self-consumption first, the surplus energy will be exported to the utility grid.
0% feed-in	Whole solar and storage energy will meet the self-consumption without surplus.
Off-grid	No matter if the inverter support input from grid, there is no grid connection point in the output.

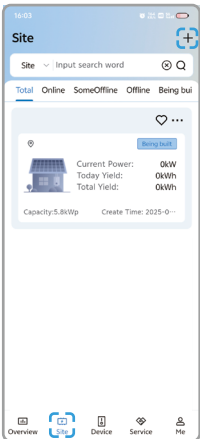


Step 4: Set **Site Tariff Unit**, click **Confirm** and the new site is created.



NOTE

- If you already have an account or already have a site in your account and plan to create a new site, click **Site** → **+** on the top right corner of the interface below, repeat the above steps to create a new site.



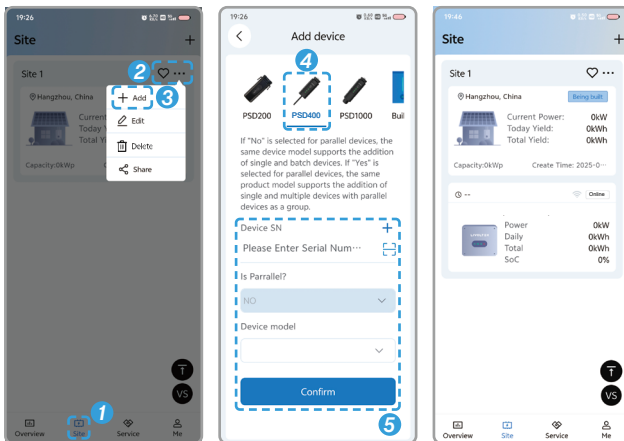
Device Addition

Follow the steps below to add a device (inverter) into your site.

Step 1: Click **Site** → ... (at the right corner of your site) → **+Add** (in the drop-down menu) to enter **Add device** interface.

Step 2: Click **PSD400**, scan the SN number on the label of your inverter or manually enter the device (inverter) SN number.

Step 3: Select **Device Mode** in accordance with the specific inverter connected. Click **Confirm** and successfully add the device (inverter) into your site.



9 Troubleshooting and Maintenance

9.1 Troubleshooting

Error Message	Causes	Measures Recommended
Grid Over Volt Fault	Grid voltage is higher than permissible range or high voltage duration exceeds high voltage ride through setting.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2. Check the protection parameter setting through APP or WEB, and modify the over-voltage protection value with the consent of local power operator; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid Inst Volt High Fault	Grid voltage is higher than permissible range or high voltage duration exceeds high voltage ride through setting.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2. Check the protection parameter setting through APP or WEB, and modify the over-voltage protection value with the consent of local power operator; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid Under Volt Fault	Grid voltage is lower than permissible range.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2. Check whether the protection parameter setting meets the requirements through APP or WEB; 3. Check whether the AC wiring is tight; 4. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
AC overcurrent instantaneous	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Grid Over Freq Fault	Grid frequency is higher than permissible range.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid frequency, if the grid frequency is indeed out of the set range, please contact your local power company for a solution; 2. Check whether the protection parameter setting meets the requirements through APP or WEB; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid Under Freq Fault	Grid frequency is lower than permissible range.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. Measure the actual grid frequency, if the grid frequency is indeed out of the set range, please contact your local power company for a solution; 2. Check whether the protection parameter setting meets the requirements through APP or WEB; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid power down	1. There is no power from the grid; 2. The AC line or AC switch is disconnected.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. Check the power grid is reliably supplied; 2. Check whether the AC wiring is tight; 3. check whether the AC cable is connected to the correct terminals (whether the fire wire is connected to the N wire inversely); 4. Check whether the AC circuit breaker is closed; 5. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
DC component exceed standard	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.

Hardware version get fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Mode high temperature	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Ambient temperature is too high	The temperature inside the chassis is too high; Excessive temperature of the operating environment.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. Check if the ambient temperature of the machine is too high 2. Check whether the machine is in an easily ventilated place 3. Check whether the machine is in direct light, if so, please appropriate shade 4. Check whether the fan is running normally, if not, please replace the fan 5. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
System low insulation impedance	Insulation impedance of the battery board to ground is less than the standard value.	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. Check whether the ISO impedance protection value is too high through APP or WEB, and confirm that it meets the requirements of local regulations; 2. Check the PV and DC cable impedance to ground, if there is a short circuit or cable insulation is broken, please take corrective measures; 3. If the cable is normal and the fault occurs on a rainy day, reconfirm after the weather improves; 4. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Leakage current sample fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Current unbalance fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Input config abnormal	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
R-phase current sample fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
S-phase current sample fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Fan alarm	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. The inverter can continue to running; 2. Check whether cables and terminals related to the alarm are abnormal, and rectify the anomalies such as foreign bodies in the environment. 3. If the alarm persists, contact the Livoltek customer service center.
AC lightning protect alarm	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. The inverter can continue to running; 2. Check whether cables and terminals related to the alarm are abnormal, and rectify the anomalies such as foreign bodies in the environment. 3. If the alarm persists, contact the Livoltek customer service center.

Current leakage excess	The leakage current exceeds the permissible range.	1. Humid environment of the PV panel or bad light will lead to this fault, normally, the inverter will be re-connected to the grid after the environment is improved; 2. If the environment is normal, check whether the insulation of DC and AC cables is normal; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid abnormal	Self-test before Grid-connection	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2.If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
10 min grid over voltage	Grid voltage is higher than the set voltage protection value or the duration of high voltage exceeds the set value of high voltage ride-through	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2. Check the protection parameter setting through APP or WEB, and modify the over-voltage protection value with the consent of local power operator; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Inversion side software overcurrent	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Grid Volt Unbalan Fault	Inverter detects voltage imbalance between phases of the grid	Normally, the inverter will re-connect to the grid when the grid returns to normal. If the fault occurs repeatedly: 1. measure the actual grid voltage, if the grid voltage is really higher than the set value, please contact the local electric power company to seek a solution; 2. If the phase voltage difference of each phase is within the permissible range of the local power company, modify the grid voltage imbalance parameter via APP or WEB; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
Grid protect self check fail	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Bypass overload fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
Bus voltage instant over	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
PV access fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
BUS Volt Unbalance	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.
DC contactor fault	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1.Wait for the system to return to normal 2.Disconnect the AC side switch and DC switch, if there is a battery, you need to disconnect the battery side switch, wait for 15 minutes and then close the AC and DC switches in turn, restart the system, if the fault still exists, please contact LIVOLTEK Customer Service Centre.

PID impedance anomaly alarm	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. The inverter can continue to running; 2. Check whether cables and terminals related to the alarm are abnormal, and rectify the anomalies such as foreign bodies in the environment. 3. If the alarm persists, contact the Livoltek customer service center.
PID function anomaly alarm	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. The inverter can continue to running; 2. Check whether cables and terminals related to the alarm are abnormal, and rectify the anomalies such as foreign bodies in the environment. 3. If the alarm persists, contact the Livoltek customer service center.
AFCI Fault	AFCI fault on DC side of inverter	1.Disconnect the DC power, check whether there are broken cables, loose connection terminals or fuses and poor contact on the DC side, or burn marks on the parts; if there are, replace the broken cables, tighten the loose connection terminals or fuses, and replace the parts with burn marks; 2.After completing step 1 DC side inspection and rectification and repair, reconnect the DC power and clear the AFCI fault through APP or WEB, the inverter will operate normally again; 3. If you confirm that the fault is not caused by the above reasons and still exists, please contact LIVOLTEK's customer service centre.
External fan 1 stall	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal 3. There's a foreign object, causing a blockage
External fan 2 stall	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal	1. Abnormal internal system modules 2. System related wiring or terminals are abnormal 3. There's a foreign object, causing a blockage

9.2 Routine Maintenance



DANGER

Danger to life due to a high voltage!

- Wear safety gloves and safety boots and operate with insulated equipment.
- Before any maintenance, turn off AC circuit breaker and DC switches of the inverter. If faults that may cause personal injuries or device damage before maintenance, turn off AC circuit breakers and wait until night before touching DC switches. Otherwise, a fire or an explosion of the inverter may occurs and thus causing personal injuries.
- Only when qualified personnel power off the inverter, wait at least 5 minutes, measure and confirm there is no voltage or current, can peronnel who wear protective equipment operates any maintenance on the device.
- Do not touch the inverter in case of burns during operating or when the inverter is just turned off.
- Contact Livoltek after-sales team or qualified personnel authorized by Livoltek for equipment maintenance. Livoltek shall not be liable for any damage caused by unauthorized equipment dismantling for maintenance or repair.



CAUTION

- Post prominent warning signs or demarcate a safe area to remind unrelated personnel to enter this area, touch or do any operation.

NOTICE

- Restart the inverter after clear faults reported on the inverter.
- Do not dismantle the inverter and repair any parts inside the inverter.
- Please follow safety instructions inside the user manual and related safety regulations and laws to avoid electric shock.

Checking item	Method	Period
Device clean	• Check whether the air outlet and heat sink are blocked by dust or other objects. • Check if the air inlet and outlet are normal. Clean the air inlet and outlet with a soft brush or vacuum cleaner, if necessary.	Six months to a year (depend on the dust contents in air)
Fan	• Check whether there is a fan fault on the APP. • Check whether there is any abnormal noise when the fan is rotating. • Clean or replace the fans if necessary (see the following section).	Six months to a year
Cable entry	• Check whether the cable entry without cable threading through is sufficiently sealed, and reseal the entry when necessary.	Six months to a year
Electrical connection	• Check whether cables are loose or fall off. • Check whether the cable is damaged, especially the part in contact with the metal enclosure.	Six months to a year

9.3 Fan Maintenance

WARNING

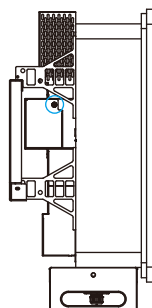
- Before fan maintenance, disconnect the inverter from all power supplies.
- After powering off the inverter for 5 minutes, measure the voltage and current with professional instrument. Only when there is no voltage nor current on the inverter, can qualified personnel who wear protective equipment start maintenance.
- Only qualified personnel is allowed to perform maintenance.
- Only external fans of the inverter are allowed to be replaced.

When an inverter runs, heat is generated inside the device and fans inside the inverter are used for heat dissipation to ensure normal and efficient operation of the inverter. Therefore, it is necessary to clean fans and replace the broken fan in time.

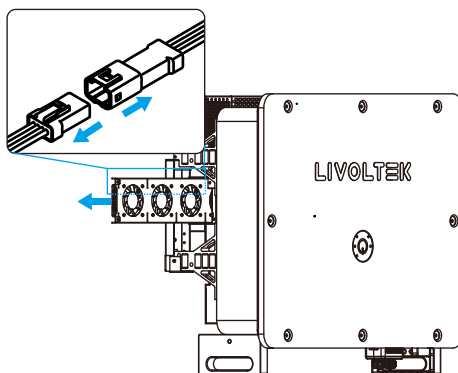
The following procedure is how to replace the fans.

Step 1: Disconnect all power supply.

Step 2: Loosen the screw on the left side of the inverter with a Phillips screwdriver.



Step 3: Slightly pull out the fan bracket, release cable buckles and completely pull out the whole bracket.



Step 4: Clean fan or loosen screws on the fans and replace them.

Step 5: Slightly put the assembled fan bracket back to the inverter, fasten the buckle, put the bracket in place and reinstall the screw on the left side of the inverter.

10 Technical Data

Technical Data	GT3-75K-12	GT3-75K-11	GT3-75K-1	GT3-100K-12
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	1100			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	600			
MPPT Operating Range[V]	180-1000			
Max. DC Input Current[A]	4*40	6*40	8*40	6*40
Max. Short Circuit current[A]	4*52	6*52	8*52	6*52
No. of MPPTs	4	6	8	6
No. of Strings per MPP Tackers	4*2	6*2	8*2	6*2
AC Output Data				
Nominal Output Power [W]	75000	75000	75000	100000
Max. Output Power [W]	75000	75000	75000	100000
Max. Apparent Power [VA]	75000	75000	75000	100000
Rated AC Grid Output Current [A] @230V	108.3	108.3	108.3	144.3
Rated AC Grid Output Current[A]	114.0	114.0	114.0	151.9
Max. AC Output Current [A] @230V	108.3	108.3	108.3	144.3
Max. AC Output Current[A]	114.0	114.0	114.0	167.1
Rated AC Grid Voltage[V]	3L/N/PE, 3L/PE, 220/380, 230/400, 240/415			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.50%	98.50%	98.50%	98.50%
Euro Efficiency[%]	98.30%	98.30%	98.30%	98.30%
MPPT Efficiency[%]	>99%			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤87			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display	LED+APP			
Communication	RS485 (Meter/GEN/DRM 0) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-100K-11	GT3-100K-1	GT3-110K-12	GT3-110K-11
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	1100			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	600			
MPPT Operating Range[V]	180-1000			
Max. DC Input Current[A]	8*40	10*40	6*40	8*40
Max. Short Circuit current[A]	8*52	10*52	6*52	8*52
No. of MPPTs	8	10	6	8
No. of Strings per MPP Trackers	8*2	10*2	6*2	8*2
AC Output Data				
Nominal Output Power [W]	100000	100000	110000	110000
Max. Output Power [W]	100000	100000	110000	110000
Max. Apparent Power [VA]	100000	100000	110000	110000
Rated AC Grid Output Current [A]@230V	144.3	144.3	158.8	158.8
Rated AC Grid Output Current[A]	151.9	151.9	167.1	167.1
Rated AC Output Current [A]@230V	144.3	144.3	158.8	158.8
Max. AC Output Current[A]	167.1	167.1	183.8	183.8
Rated AC Grid Voltage[V]	3L/N/PE, 3L/PE, 220/380, 230/400, 240/415			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.50%	98.50%	98.50%	98.50%
Euro Efficiency[%]	98.30%	98.30%	98.30%	98.30%
MPPT Efficiency[%]	>99%			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤87			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display				
Communication	RS485 (Meter/GEN/DRM 0) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-110K-1		GT3-125K-11	GT3-125K-1
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	1100			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	600			
MPPT Operating Range[V]	180-1000			
Max. DC Input Current[A]	10*40	8*40	10*40	
Max. Short Circuit current[A]	10*52	8*52	10*52	
No. of MPPTs	10	8	10	
No. of Strings per MPP Trackers	10*2	8*2	10*2	
AC Output Data				
Nominal Output Power [W]	110000	125000	125000	
Max. Output Power [W]	110000	125000	125000	
Max. Apparent Power [VA]	110000	125000	125000	
Rated AC Grid Output Current [A] @230V	158.8	180.4	180.4	
Rated AC Grid Output Current[A]	167.1	189.9	189.9	
Max. AC Output Current [A] @230V	158.8	180.4	180.4	
Max. AC Output Current[A]	183.8	208.9	208.9	
Rated AC Grid Voltage[V]	3L/N/PE, 3L/PE, 220/380, 230/400, 240/415			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.50%	98.50%	98.50%	
Euro Efficiency[%]	98.30%	98.30%	98.30%	
MPPT Efficiency[%]	>99%			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤87			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	−30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display	LED+APP			
Communication	RS485 (Meter/GEN/DRM 0) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-36KL1	GT3-36KL11	GT3-40KL1	GT3-40KL11
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	800			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	370			
MPPT Operating Range[V]	180-700			
Max. DC Input Current[A]	4*40	6*40	4*40	6*40
Max. Short Circuit current[A]	4*52	6*52	4*52	6*52
No. of MPPTs	4	6	4	6
No. of Strings per MPP Trackers	4*2	6*2	4*2	6*2
AC Output Data				
Nominal Output Power [W]	36000	36000	40000	40000
Max. Apparent Power [VA]	39600	39600	44000	44000
Rated AC Grid Output Current[A]	94.5	94.5	105.0	105.0
Max. AC Output Current[A]	103.9	103.9	115.5	115.5
Rated AC Grid Voltage[V]	3L/ (N) /PE,220/127			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.50%	98.50%	98.50%	98.50%
Euro Efficiency[%]	98.30%	98.30%	98.30%	98.30%
MPPT Efficiency[%]	>99			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤87			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display	LED+APP			
Communication	RS485 (Meter/GEN/DRM 0/CAN) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-50KL11	GT3-50KL1	GT3-60KL12	GT3-60KL11
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	800			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	370			
MPPT Operating Range[V]	180-700			
Max. DC Input Current[A]	4*40	6*40	4*40	6*40
Max. Short Circuit current[A]	4*52	6*52	4*52	6*52
No. of MPPTs	4	6	4	6
No. of Strings per MPP Trackers	4*2	6*2	4*2	6*2
AC Output Data				
Nominal Output Power [W]	50000	50000	60000	60000
Max. Apparent Power [VA]	55000	55000	66000	66000
Rated AC Grid Output Current[A]	131.2	131.2	157.5	157.5
Max. AC Output Current[A]	144.3	144.3	173.2	173.2
Rated AC Grid Voltage[V]	3L/ (N) /PE,220/127			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.50%	98.50%	98.50%	98.50%
Euro Efficiency[%]	98.30%	98.30%	98.30%	98.30%
MPPT Efficiency[%]	>99			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤87			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display	LED+APP			
Communication	RS485 (Meter/GEN/DRM 0/CAN) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-60KL1	GT3-75KL11	GT3-75KL1
PV Input Data			
Max. DC Input Power [Wp]	150%		
Max. DC Input Voltage[V]	800		
Min PV input voltage[V]	180		
Start-up DC Input Voltage[V]	200		
Nominal DC Input Voltage[V]	370		
MPPT Operating Range[V]	180-700		
Max. DC Input Current[A]	8*40	6*40	8*40
Max. Short Circuit current[A]	8*52	6*52	8*52
No. of MPPTs	8	6	8
No. of Strings per MPP Tackers	8*2	6*2	8*2
AC Output Data			
Nominal Output Power [W]	60000	75000	75000
Max. Apparent Power [VA]	66000	75000	75000
Rated AC Grid Output Current[A]	157.5	196.8	196.8
Max. AC Output Current[A]	173.2	196.8	196.8
Rated AC Grid Voltage[V]	3L/ (N) /PE,220/127		
Rated Grid Frequency [Hz]	50/60		
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)		
Output THDi (@Nominal Output)	<3%		
Efficiency			
Max. Efficiency[%]	98.50%	98.50%	98.50%
Euro Efficiency[%]	98.30%	98.30%	98.30%
MPPT Efficiency[%]	>99		
General Data			
Dimensions[W*H*D] [mm]	960*725*361		
Weight [kg]	≤87		
Mounting Information	Wall Mounting		
Protection Degree	IP66		
Cooling	Smart forced air cooling		
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)		
Relative Humidity	0-100%		
Max. Operating Altitude[m]	4000(≥3000)		
Typical Noise Emission[dB]	< 75		
Night Self Consumption [W]	< 4		
Display	LED+APP		
Communication	RS485 (Meter/GEN/DRM 0/CAN) ,Wi-Fi		
Topology	Transformerless		
Certifications and Standards			
Grid Regulation	IEC61727, IEC62116, EN50549		
Safety	IEC62109-1/-2		
EMC	EN61000-6-1/2/3/4		
Standard Warranty[years]	5 /10 (optional)		

Technical Data	GT3-100KM11	GT3-100KM1	GT3-124KM11	GT3-124KM1
PV Input Data				
Max. DC Input Power [Wp]	150%			
Max. DC Input Voltage[V]	1100			
Min PV input voltage[V]	180			
Start-up DC Input Voltage[V]	200			
Nominal DC Input Voltage[V]	720			
MPPT Operating Range[V]	180-1000			
Max. DC Input Current[A]	8*40	10*40	8*40	10*40
Max. Short Circuit current[A]	8*52	10*52	8*52	10*52
No. of MPPTs	8	10	8	10
No. of Strings per MPP Trackers	8*2	10*2	8*2	10*2
AC Output Data				
Nominal Output Power [W]	100000	100000	124000	124000
Max. Apparent Power [VA]	110000	110000	124000	124000
Rated AC Grid Output Current[A]	120.3	120.3	149.2	149.2
Max. AC Output Current[A]	132.3	132.3	149.2	149.2
Rated AC Grid Voltage[V]	3L/ (N) /PE,277/480			
Rated Grid Frequency [Hz]	50/60			
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)			
Output THDi (@Nominal Output)	<3%			
Efficiency				
Max. Efficiency[%]	98.80%	98.80%	98.80%	98.80%
Euro Efficiency[%]	98.40%	98.40%	98.40%	98.40%
MPPT Efficiency[%]	>99			
General Data				
Dimensions[W*H*D] [mm]	960*725*361			
Weight [kg]	≤86			
Mounting Information	Wall Mounting			
Protection Degree	IP66			
Cooling	Smart forced air cooling			
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)			
Relative Humidity	0-100%			
Max. Operating Altitude[m]	4000(≥3000)			
Typical Noise Emission[dB]	< 75			
Night Self Consumption [W]	< 4			
Display	LED+APP			
Communication	RS485 (Meter/GEN/DRM 0) ,Wi-Fi			
Topology	Transformerless			
Certifications and Standards				
Grid Regulation	IEC61727, IEC62116, EN50549			
Safety	IEC62109-1/-2			
EMC	EN61000-6-1/2/3/4			
Standard Warranty[years]	5 /10 (optional)			

Technical Data	GT3-125KM11	GT3-125KM1	GT3-150KM1
PV Input Data			
Max. DC Input Power [Wp]	150%		
Max. DC Input Voltage[V]	1100		
Min PV input voltage[V]	180		
Start-up DC Input Voltage[V]	200		
Nominal DC Input Voltage[V]	720		
MPPT Operating Range[V]	180-1000		
Max. DC Input Current[A]	8*40	10*40	10*40
Max. Short Circuit current[A]	8*52	10*52	10*52
No. of MPPTs	8	10	10
No. of Strings per MPP Tackers	8*2	10*2	10*2
AC Output Data			
Nominal Output Power [W]	125000	125000	150000
Max. Apparent Power [VA]	137500	137500	165000
Rated AC Grid Output Current[A]	150.4	150.4	180.4
Max. AC Output Current[A]	165.4	165.4	198.5
Rated AC Grid Voltage[V]	3L/ (N) /PE,277/480		
Rated Grid Frequency [Hz]	50/60		
Power Factor	> 0.99 Rated power (Adjustable 0.8 Leading - 0.8Lagging)		
Output THDi (@Nominal Output)	<3%		
Efficiency			
Max. Efficiency[%]	98.80%	98.80%	98.80%
Euro Efficiency[%]	98.40%	98.40%	98.40%
MPPT Efficiency[%]	>99		
General Data			
Dimensions[W*H*D] [mm]	960*725*361		
Weight [kg]	≤86		
Mounting Information	Wall Mounting		
Protection Degree	IP66		
Cooling	Smart forced air cooling		
Operating Temperature Range [°C]	-30 °C ... +60 °C (derating at 45°C)		
Relative Humidity	0-100%		
Max. Operating Altitude[m]	4000(≥3000)		
Typical Noise Emission[dB]	< 75		
Night Self Consumption [W]	< 4		
Display	LED+APP		
Communication	RS485 (Meter/GEN/DRM 0) ,Wi-Fi		
Topology	Transformerless		
Certifications and Standards			
Grid Regulation	IEC61727, IEC62116, EN50549		
Safety	IEC62109-1/-2		
EMC	EN61000-6-1/2/3/4		
Standard Warranty[years]	5 /10 (optional)		

Technical Data	GT3-90K-11	GT3-95K-11	GT3-99K-11
PV Input			
Max. DC Input Power [Wp]	135000	142500	148500
Max. DC Input Voltage [V]	1100		
Min. PV Input Voltage [V]	180		
Start-up DC Input Voltage [V]	200		
Nominal DC Input Voltage [V]	600		
MPPT Operating Range [V]	180 - 1000		
Max. DC Input Current [A]	8*40		
Max. Short Circuit Current [A]	8*52		
No. of MPPTs	8		
No. of Strings per MPP Trackers	8*2		
AC Output			
Nominal Output Power [W]	90000	95000	99000
Max. Apparent Power [VA]	99000	104500	108900
Rated AC Grid Output Current [A]	136.7	144.3	150.4
Max. AC Output Current [A]	150.4	158.8	165.5
Rated AC Grid Voltage [V]	3L/ N/ PE, 3L/ PE, 380/ 400/ 415		
AC Grid Voltage Range [V]	320 - 480		
Rated Grid Frequency [Hz]	50/ 60		
Grid Frequency Range [Hz]	45-55/ 55-65		
Power Factor	> 0.99 at rated power (adjustable 0.8 leading - 0.8 lagging)		
THDi [%]	< 3 (at rated power)		
Efficiency			
Max. Efficiency [%]	98.5	98.5	98.5
Euro Efficiency [%]	98.3	98.3	98.3
MPPT Efficiency [%]	> 99		
General Data			
Dimensions (W*H*D) [mm]	960 * 725 * 369		
Weight [kg]	87		
Mounting Information	Wall mounting		
Protection Degree	IP66		
Operating Temperature Range [°C]	-30 to +60 (Derating at 45)		
Relative Humidity [%]	0 - 100		
Max. Operating Altitude [m]	4000 (≥ 3000) derating		
Night Self Consumption [W]	< 5		
Display	LED + APP		
Communication	RS485, Wi-Fi		
Topology	Transformerless		
Certifications and Standards			
Grid Regulation	IEC61727, IEC62116		
Safety	IEC62109-1/ -2		
EMC	EN61000-6-1/ 2/ 3/ 4		

Technical Data	GT3-90K-1	GT3-95K-1	GT3-99K-1
PV Input			
Max. DC Input Power [Wp]	135000	142500	148500
Max. DC Input Voltage [V]	1100		
Min. PV Input Voltage [V]	180		
Start-up DC Input Voltage [V]	200		
Nominal DC Input Voltage [V]	600		
MPPT Operating Range [V]	180 - 1000		
Max. DC Input Current [A]	10*40		
Max. Short Circuit Current [A]	10*52		
No. of MPPTs	10		
No. of Strings per MPP Trackers	10*2		
AC Output			
Nominal Output Power [W]	90000	95000	99000
Max. Apparent Power [VA]	99000	104500	108900
Rated AC Grid Output Current [A]	136.7	144.3	150.4
Max. AC Output Current [A]	150.4	158.8	165.5
Rated AC Grid Voltage [V]	3L/ N/ PE, 3L/ PE, 380/ 400/ 415		
AC Grid Voltage Range [V]	320 - 480		
Rated Grid Frequency [Hz]	50/ 60		
Grid Frequency Range [Hz]	45-55/ 55-65		
Power Factor	> 0.99 at rated power (adjustable 0.8 leading - 0.8 lagging)		
THDi [%]	< 3 (at rated power)		
Efficiency			
Max. Efficiency [%]	98.5	98.5	98.5
Euro Efficiency [%]	98.3	98.3	98.3
MPPT Efficiency [%]	> 99		
General Data			
Dimensions (W*H*D) [mm]	960 * 725 * 369		
Weight [kg]	87		
Mounting Information	Wall mounting		
Protection Degree	IP66		
Operating Temperature Range [°C]	-30 to +60 (Derating at 45)		
Relative Humidity [%]	0 - 100		
Max. Operating Altitude [m]	4000 (≥3000) derating		
Night Self Consumption [W]	< 5		
Display	LED + APP		
Communication	RS485, Wi-Fi		
Topology	Transformerless		
Certifications and Standards			
Grid Regulation	IEC61727, IEC62116		
Safety	IEC62109-1/ -2		
EMC	EN61000-6-1/ 2/ 3/ 4		

11 Decommissioning

11.1 Disassemble the Inverter

- Remove DC input line and AC output line of inverter.
- Wait for at least 5 minutes to power.
- Remove all cable connections from the inverter.
- Remove inverter from finger support the bracket.
- Remove the bracket if necessary.
- Load the inverter into the original package if possible.

11.2 Packing

- Load the inverter into the original package if possible.
- If the original package can not be found, you can also use the following requirements of the carton packaging:
 - Bearing capacity of more than 30 kg.
 - Easy to carry.
 - Can completely seal the cover.

11.3 Storage and transportation

- Store the inverter in a dry, temperature $-40^{\circ}\text{C}\sim 70^{\circ}\text{C}$ environment.
- Pay attention to less than four machines on each stack board
- During storage and transportation.

11.4 Waste disposal

If it is necessary to scrap the inverter or other related parts, be sure to send the waste inverter and packaging materials to the designated location for recycling by the relevant department.

12 Disclaimer

This series inverters are transported, used and operated under limited condition, such as environmental, electrical etc.

Livoltek shall not be able to provide the service, technical support or compensation under conditions listed below, including but not limited to:

- . Inverter is damaged or broken by force majeure (such as earthquake, flooding, thunderstorm, lighting, fire hazard, volcanic eruption etc.).
- . Inverter's warranty is expired and doesn't buy extended warranty.
- . Can't provide the inverter's SN, warranty card or invoice.
- . Inverter is damaged by man-made cause.
- . Inverter is used or operated against any items in local policy.
- . Inverter's installation, configuration, commissioning doesn't follow the requirements mentioned in this manual.
- . Inverter is installed, refitted or operated in improper ways mentioned in this manual without authority from Livoltek.
- . Inverter is installed, operated under improper environment or electrical condition mentioned in this manual without authority from Livoltek.
- . Inverter is changed, updated or disassembled on hardware or software without authority from Livoltek.
- . Obtain the communication protocol from other illegal channels.
- . Build monitoring, control system without authority from Livoltek.
- . Livoltek will keep right to explain all the contents in this user manual.

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