



LEDVANCE USER MANUAL

THREE PHASE INVERTER

LT-3K F2

LT-8K F2

LT-4K F2

LT-10K F2

LT-5K F2

LT-12K F2

LT-6K F2



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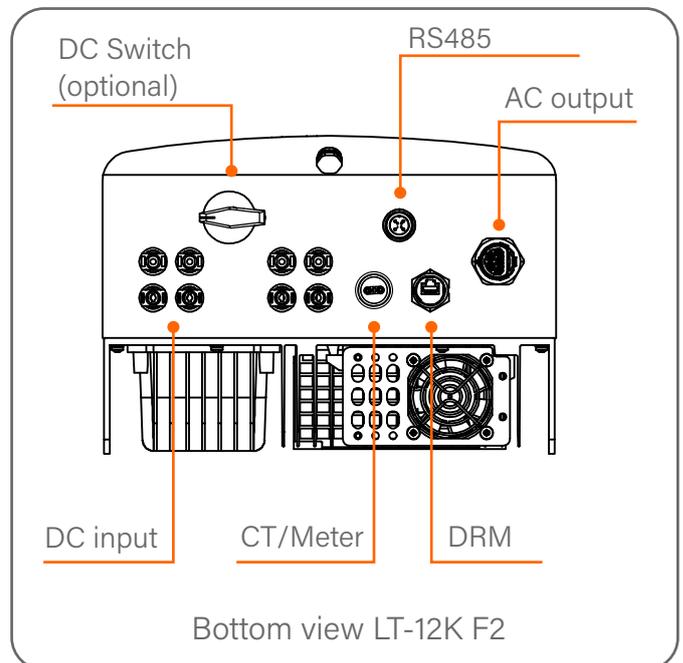
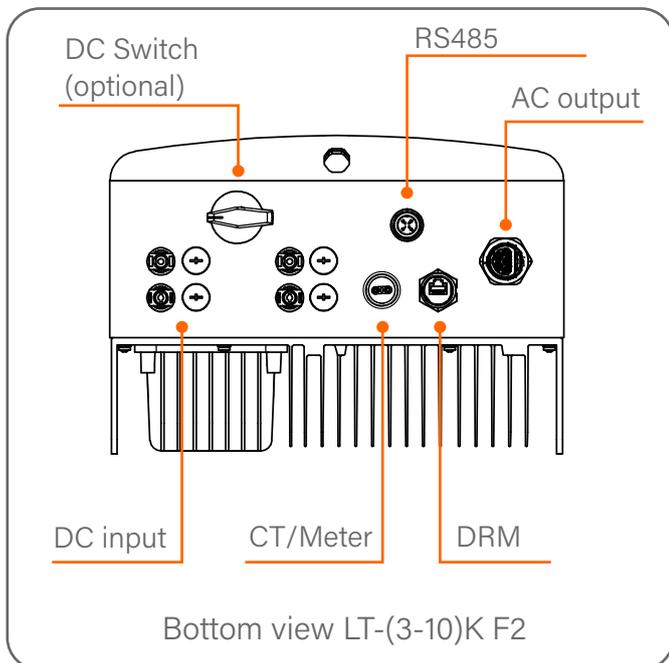
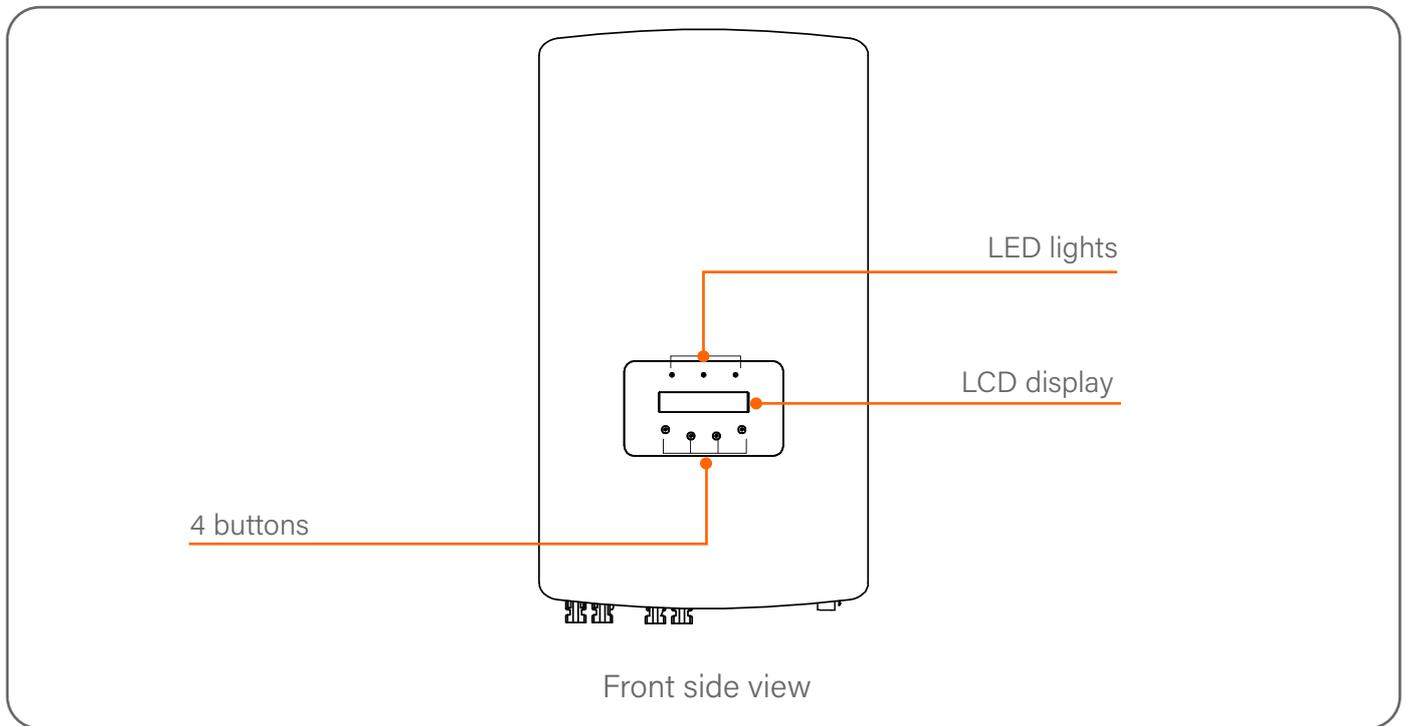
INTRODUCTION

PRODUCT DESCRIPTION

LEDVANCE three phase transformerless inverters converts the DC power from the PV array to grid-compliant AC power and feeds it into the utility grid. They integrate DRM and backflow power control functions, that are suitable for smart grid requirements.

This manual covers the three phase inverter models listed below:

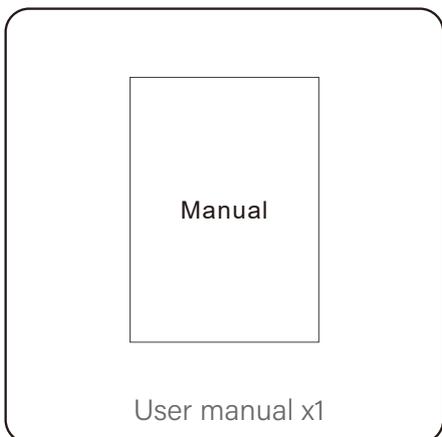
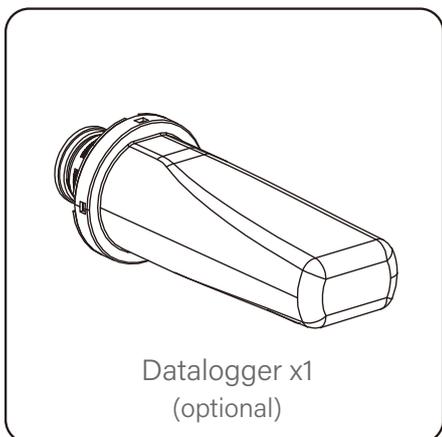
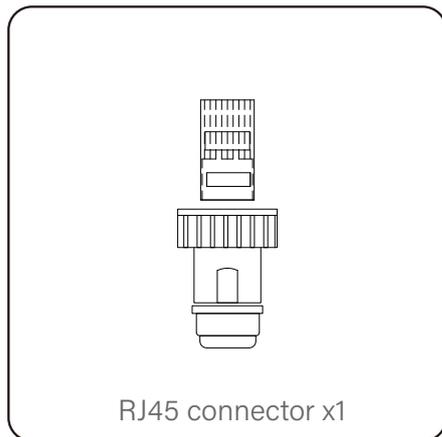
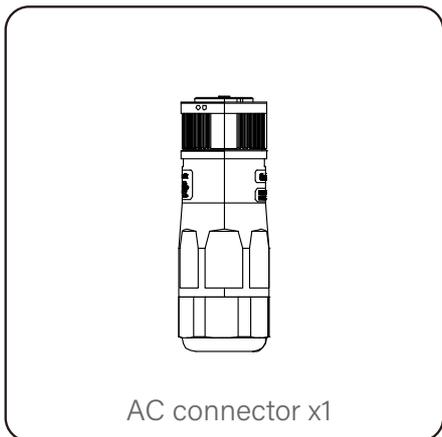
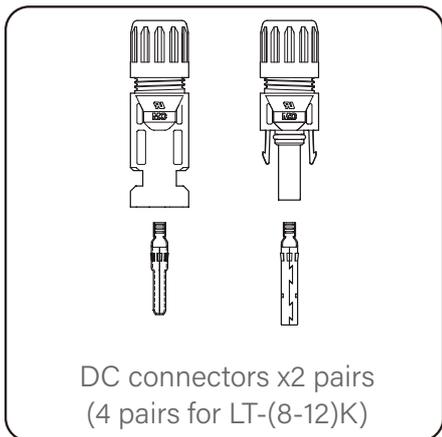
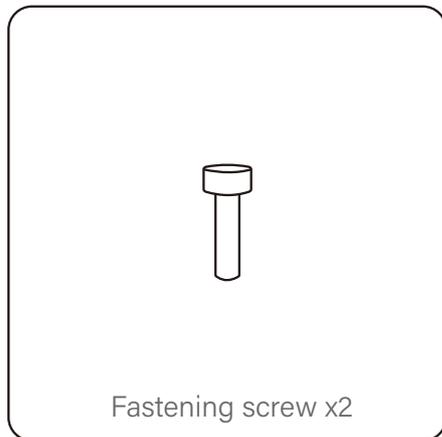
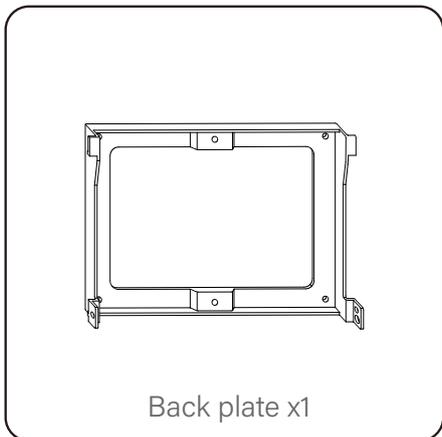
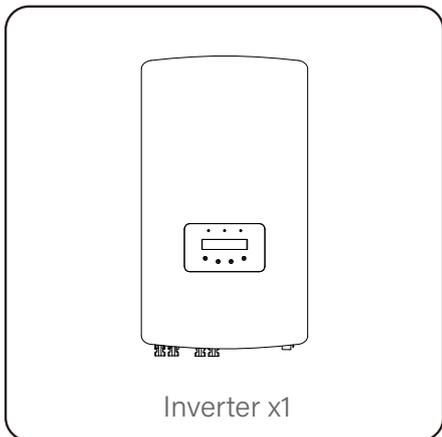
- LT-3K F2
- LT-4K F2
- LT-5K F2
- LT-6K F2
- LT-8K F2
- LT-10K F2
- LT-12K F2



PRODUCT INSTRUCTIONS

PACKAGING

Please ensure that the following items are included in the packaging with inverter:



If anything is missing, please contact your local LEDVANCE distributor.

SAFETY INSTRUCTIONS

SAFETY SYMBOLS

Safety symbols used in this manual, which highlight potential safety risks and important safety information, are listed as follows:



WARNING

WARNING symbol indicates important safety instructions, which if not correctly followed, could result in serious injury or death.



WARNING

NOTE symbol indicates important safety instructions, which if not correctly followed, could result in some damage or the destruction of the inverter.



CAUTION

CAUTION, RISK OF ELECTRIC SHOCK symbol indicates important safety instructions, which if not correctly followed, could result in electric shock.



CAUTION

CAUTION, HOT SURFACE symbol indicates safety instructions, which if not correctly followed, could result in burns.

GENERAL SAFETY INSTRUCTIONS



WARNING

Please don't connect PV array positive(+) or negative(-) to ground, it could cause serious damage to the inverter.



WARNING

Electrical installations must be done in accordance with the local and national electrical safety standards.



WARNING

To reduce the risk of fire, over-current protective devices (OCPD) are required for circuits connected to the Inverter.

The DC OCPD shall be installed per local requirements. All photovoltaic source and output circuit conductors shall have disconnects that comply with the NEC Article 690, Part II. All LEDVANCE three phase inverters feature an integrated DC switch.



WARNING

Risk of electric shock. Do not remove cover. There is no user serviceable parts inside. Refer servicing to qualified and accredited service technicians.



WARNING

The PV array (Solar panels) supplies a DC voltage when they are exposed to sunlight.

SAFETY INSTRUCTIONS



CAUTION

Risk of electric shock from energy stored in capacitors of the Inverter. Do not remove cover for 5 minutes after disconnecting all power sources (service technician only). Warranty may be voided if the cover is removed without unauthorized.



CAUTION

The surface temperature of the inverter can exceed 75°C. To avoid risk of burns, DO NOT touch the surface when inverter is operating. The inverter must be installed out of reach of children.

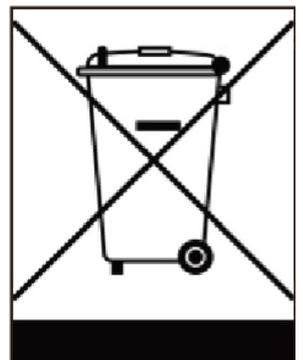
NOTICE FOR USE

The inverter has been constructed according to the applicable safety and technical guidelines. Use the inverter in installations that meet the following specifications only:

- Permanent installation is required.
- The electrical installation must meet all the applicable regulations and standards.
- The inverter must be installed according to the instructions stated in this manual.
- The inverter must be installed according to the correct technical specifications.
- To startup the inverter, the Grid Supply Main Switch (AC) must be switched on, before the solar panel's DC isolator shall be switched on. To stop the inverter, the Grid Supply Main Switch (AC) must be switched off before the solar panel's DC isolator shall be switched off.

NOTICE FOR DISPOSAL

This product shall not be disposed of with household waste. They should be segregated and brought to an appropriate collection point to enable recycling and avoid potential impacts on the environment and human health. Local rules in waste management shall be respected.



OVERVIEW

FRONT PANEL DISPLAY



Front Panel Display

INTELLIGENT LED INDICATORS

There are five indicators on the The LEDVANCE inverter (battery, power, wi-fi, ethernet and bluetooth) which indicate the working status of the inverter.

LIGHT	STATUS	DESCRIPTION
● POWER	ON	The inverter can detect DC power.
	OFF	No DC power or low DC power.
● OPERATION	ON	The inverter is operating properly.
	OFF	The inverter has stopped to supply power.
	FLASHING	The inverter is initializing.
● ALARM	ON	Alarm or fault condition is detected.
	OFF	The inverter is operating without fault or alarm.

Status of LED indicators

OVERVIEW

KEYPAD

There are four keys in the front panel of the Inverter (from left to right): ESC, UP, DOWN and ENTER keys. The keypad is used for:

- Scrolling through the displayed options (the UP and DOWN keys)
- Access to modify the adjustable settings (the ESC and ENTER keys)

LCD

The two-line Liquid Crystal Display (LCD) is located on the front panel of the Inverter, which shows the following information:

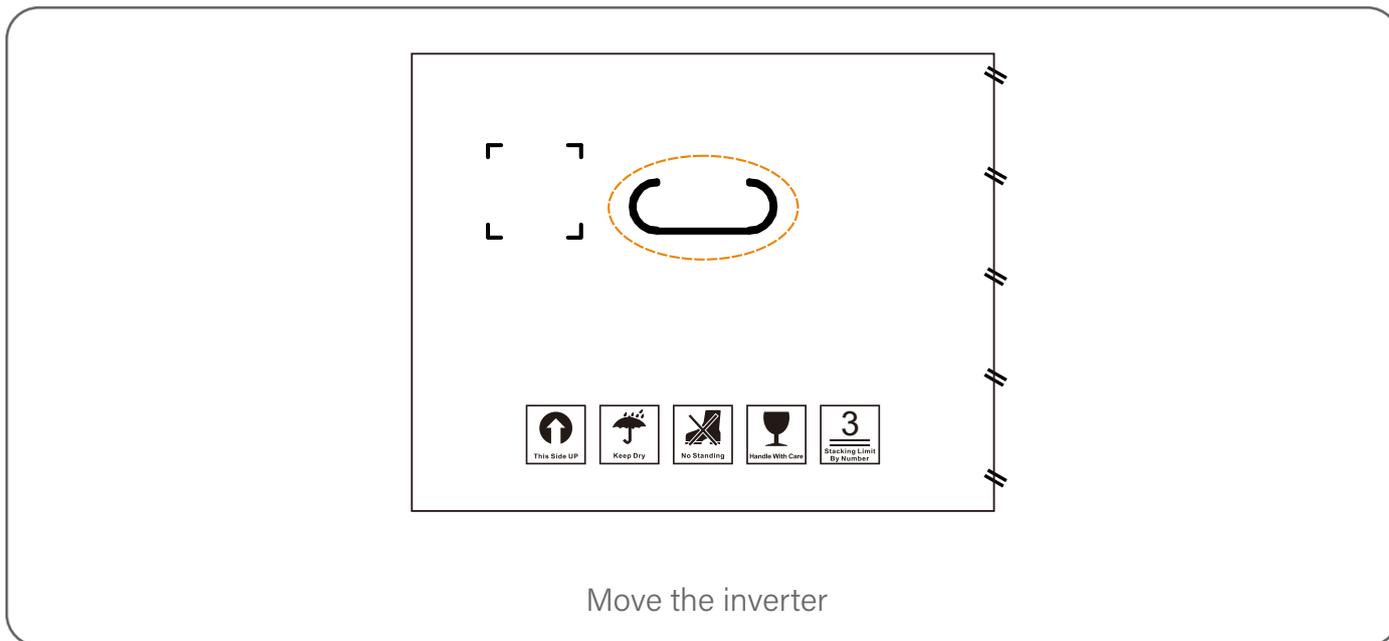
- Inverter operation status and data
- Service messages for operator
- Alarm messages and fault indications

PRODUCT HANDLING AND STORAGE

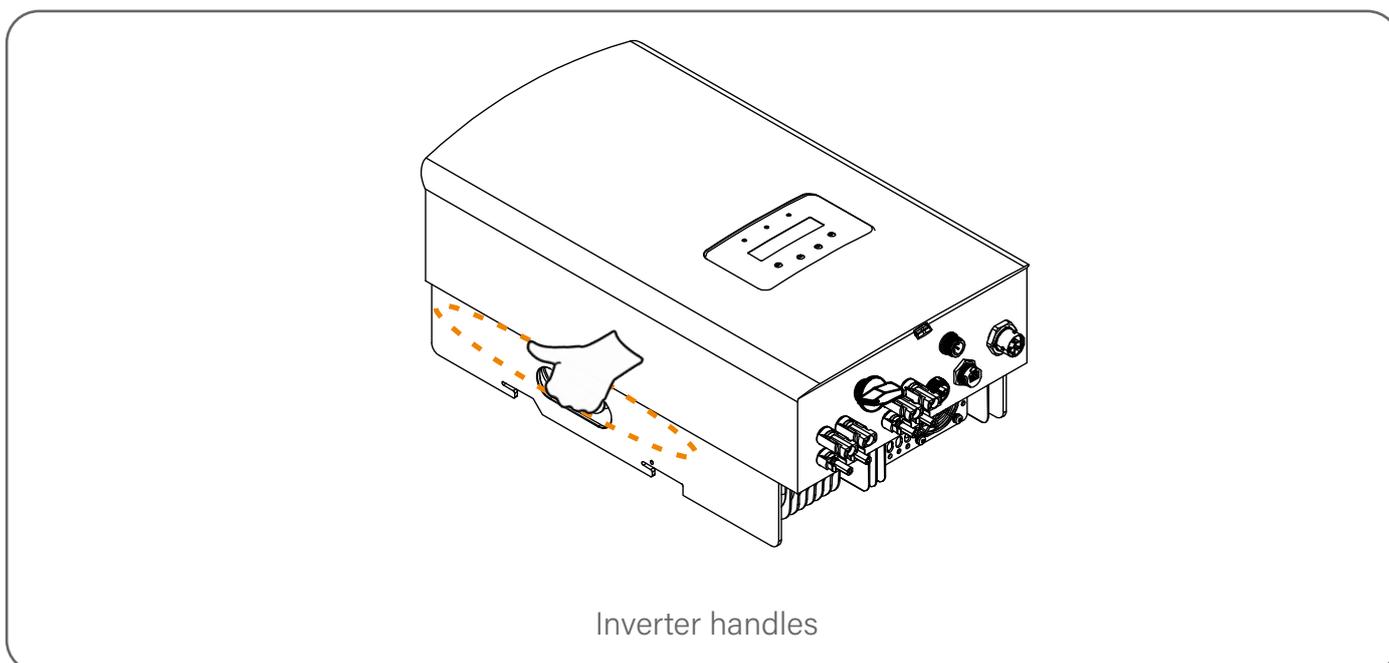
PRODUCT HANDLING

Please review the instruction below for handling the inverter:

1. The red circles below denote cutouts on the product package. Push in the cutouts to form handles for moving the inverter.



2. Open the carton, then handle both sides of inverter through the area denoted dotted line.



PRODUCT HANDLING AND STORAGE

PRODUCT STORAGE

If the inverter is not to be installed immediately, storage instructions and environmental conditions are below:

- Use the original box to repackage the inverter, seal with adhesive tape with the desiccant inside the box.
- Store the inverter(s) in a clean and dry place, free of dust and dirt.
- Storage temperature must be between -40°C and 70°C and the humidity should be between 0 and 95% non-condensing.
- Stack no more than three (3) inverters high.
- Keep box(es) away from corrosive materials to avoid damage to the inverter enclosure.
- Inspect packaging regularly. If packaging is damaged (wet, pest damage, etc), repackage the inverter immediately.
- Store the inverter(s) on a flat, hard surface - not inclined or upside down.
- After long-term storage, the inverter needs to be fully examined and tested by qualified service or technical personnel before using.
- Re-use after a long period of storage requires the equipment to be inspected and, in some cases, the removal of oxidation and dust that has settled inside the equipment may be required.

INSTALLATION

SELECT A LOCATION FOR THE INVERTER

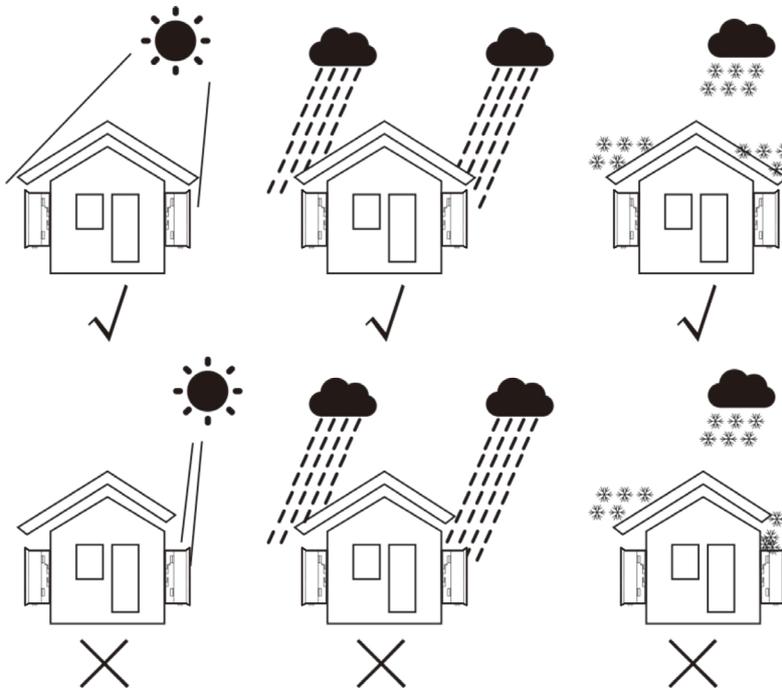
To select a installation location for the inverter, the following criteria should be considered:



WARNING: RISK OF FIRE

Despite careful construction, electrical devices can cause fires.

- Do not install the inverter in areas containing highly flammable materials or gases.
 - Do not install the inverter in potentially explosive atmospheres.
 - The mounting structure where the inverter is installed must be fireproof.
-
- Do not install in small closed spaces, where air can not circulate freely. To avoid overheating, always make sure the flow of air around the inverter is not blocked.
 - Exposure to direct sunlight will increase the operational temperature of the inverter and may cause output power limiting. LEDVANCE recommends inverter installed to avoid direct sunlight or raining.
 - To avoid over heating ambient air temperature must be considered when choosing the inverter installation location. LEDVANCE recommends using a sun shade minimizing direct sunlight when the ambient air temperature around the unit exceeds 40°C.



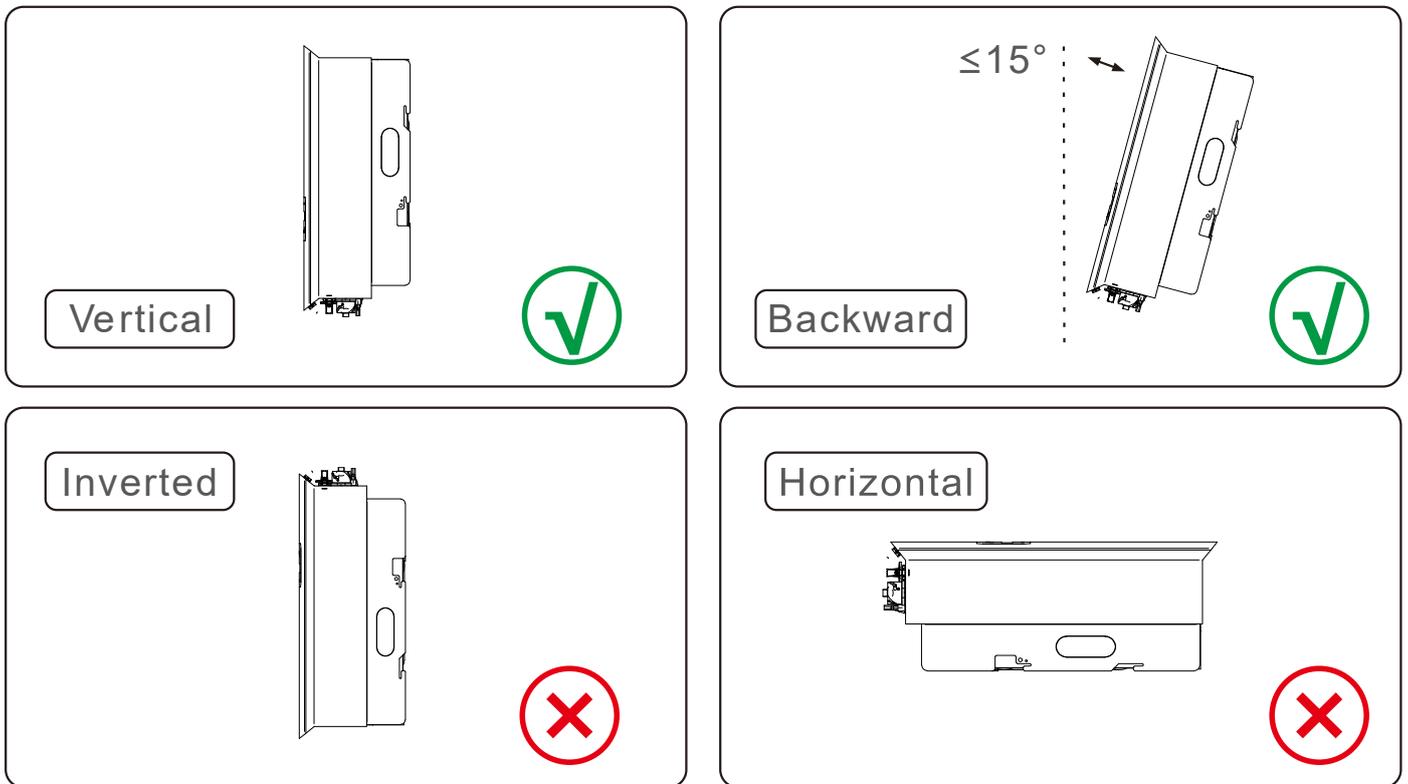
Recommended installation locations



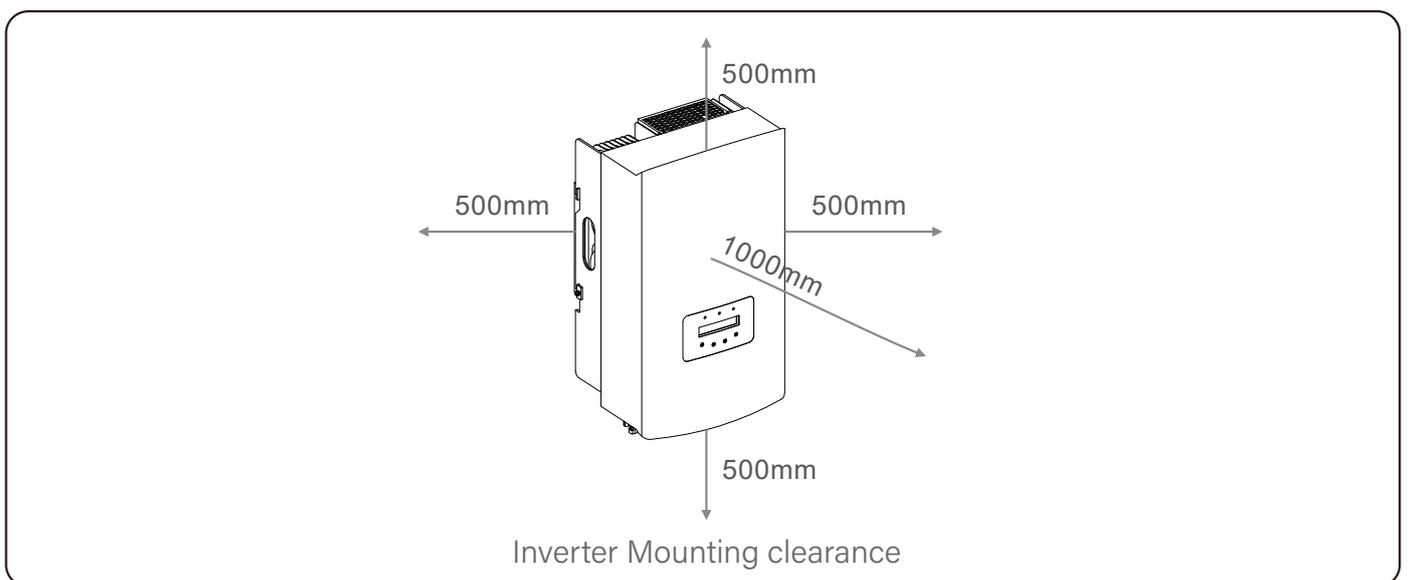
NOTE

Nothing should be stored on or placed against the inverter.

INSTALLATION



- The visibility of LED status indicator lights and LCD should be considered.
- Install vertically ($\pm 5^\circ$) or tilted backward ($\leq 15^\circ$).
- Don't mount inverter on the tilted forward wall.
- Don't mount inverter horizontally.

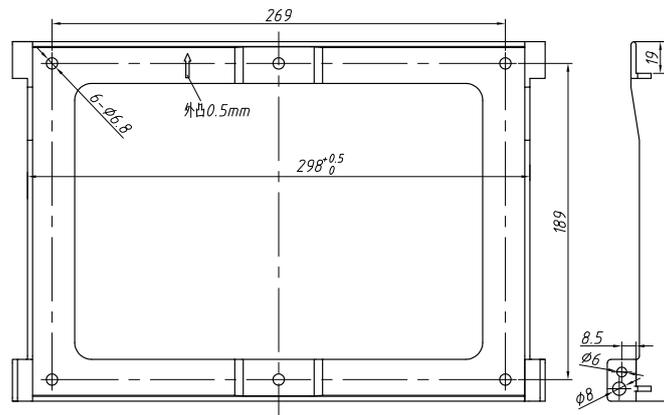


- Temperature of inverter heat sink might be 75°C .

INSTALLATION

- Inverter is designed for working extreme environment, operation temperature range: 25°C~65°C.
- When 1 or more inverters are installed in one location, a minimum 500mm clearance should be kept between each inverter or other object. The bottom of the inverter should be 500mm clearance to the ground.

Dimensions of mounting bracket:



Inverter Mounting clearance

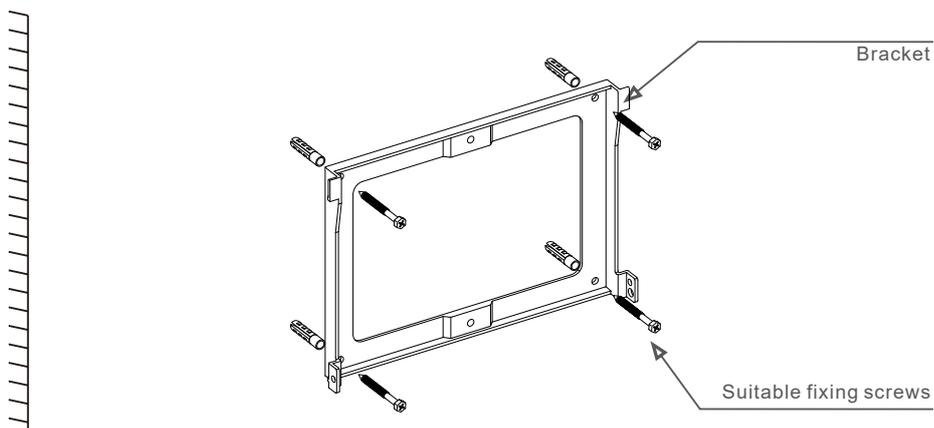


WARNING

The inverter must be mounted vertically.

The steps to mount the inverter are listed below.

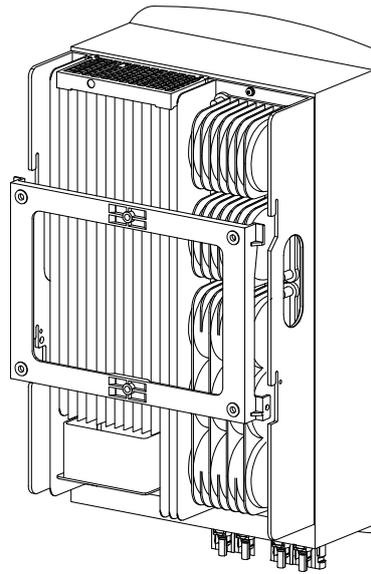
1. The holes for the expansion bolts should be made using impact drilling with a 10 mm diameter drill bit at a minimum depth of 60 mm. The hole must be made perpendicular to the mounting plane of the inverter.



Inverter wall mounting

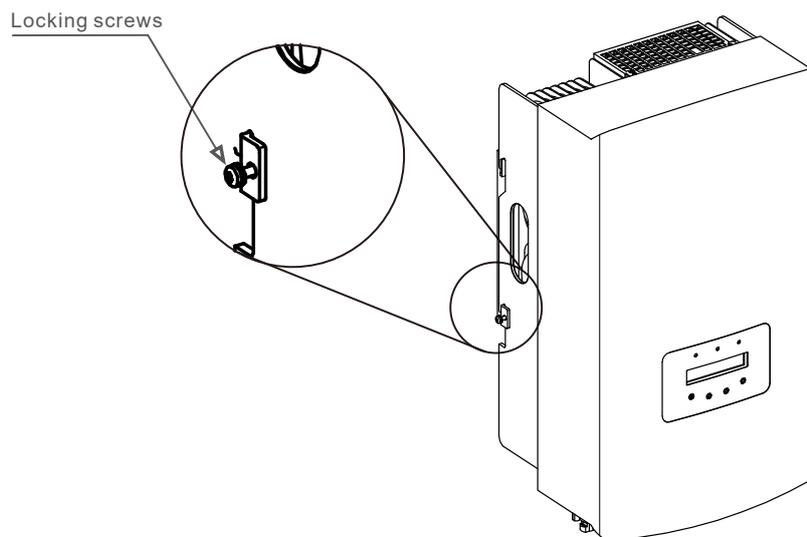
INSTALLATION

2. Make sure the bracket is horizontal and the mounting holes are marked correctly. Drill the holes into wall at your marks.
3. Use the suitable expansion screws to fix the bracket on the wall.



Hang the inverter

4. Lift the inverter and hang it on the bracket. Screw in the locking screws on both sides of the inverter.

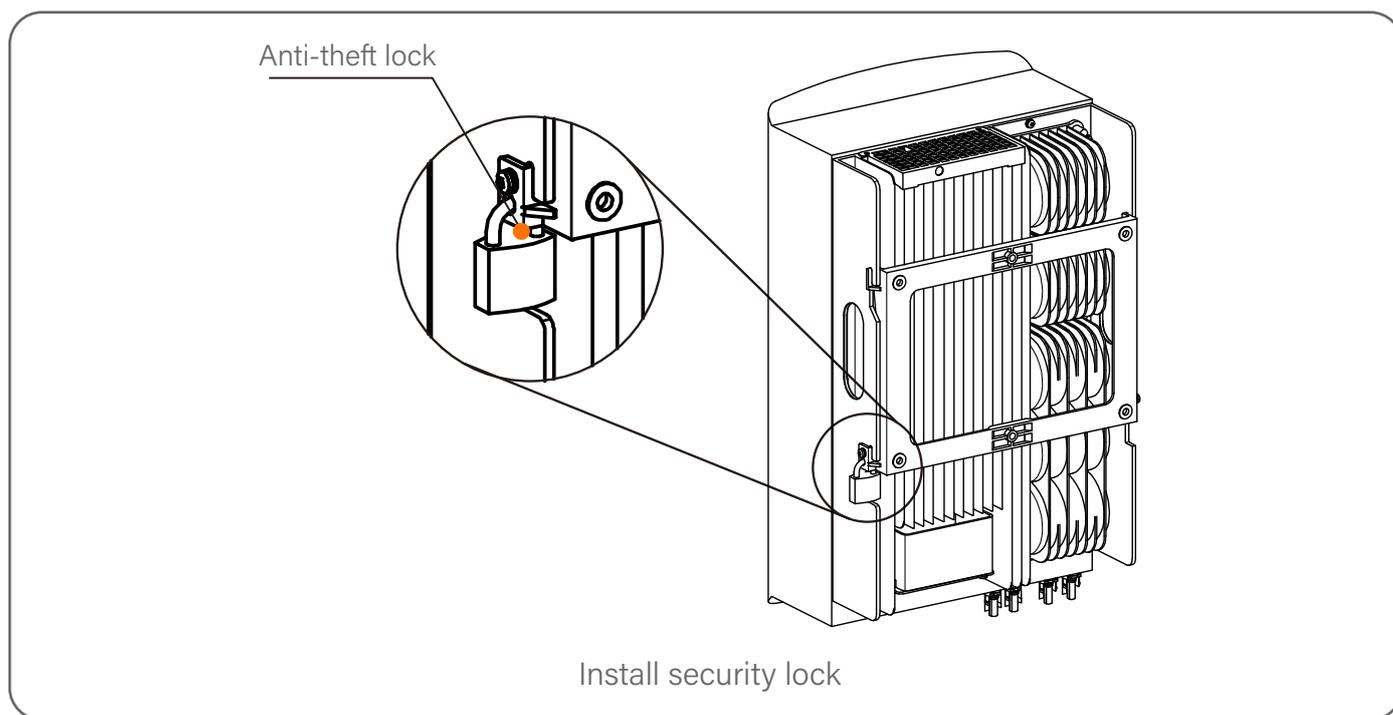


Fixed inverter

INSTALLATION

5. Anti-theft lock mount (optional)

Inverter theft protection can be installed on the bracket. For this purpose installation of the own weatherproof padlock is needed. The diameter of the mounting hole is 5 mm.



ELECTRICAL CONNECTIONS

The inverter has quick connectors for electrical connection, so the housing does not need to be opened during installation. For a description of the electrical connectors, see the following table. All electrical connections are comply with the local and national standard.

+	Positive DC input terminal
-	Negative DC input terminal
DC 1	DC input terminal
DC 2	DC input terminal
DC SWITCH	Switch of DC input terminals
COM	RJ45 and terminal block for RS485 communication port
GRID	Connecting terminal of the Grid

Electrical connection symbols

INSTALLATION

The electrical connection of the inverter must follow the steps listed below:

1. Switch the Grid Supply Main Switch (AC) OFF.
2. Switch the DC Isolator OFF.
3. Assemble PV input connector to the Inverter.

GROUNDING

To effectively protect the inverter, two grounding methods must be performed:

- Connect the AC grounding cable.
- Connect the external grounding terminal.

To connect the grounding terminal on the heat sink, please follow the steps below:

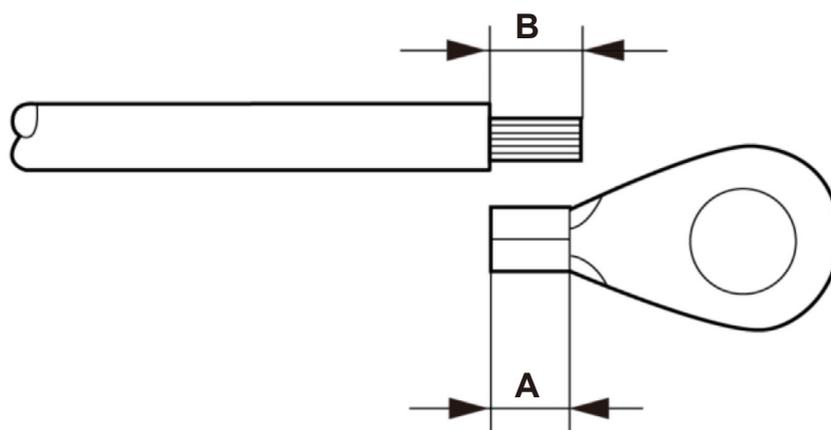
1. Prepare the grounding cable: recommend to use the $\geq 6\text{mm}^2$ outdoor copper-core cable.
2. Prepare OT terminals: M6.



IMPORTANT

For multiple inverters in parallel, all inverters should be connected to the same ground point to eliminate the possibility of a voltage potential existing between inverter grounds.

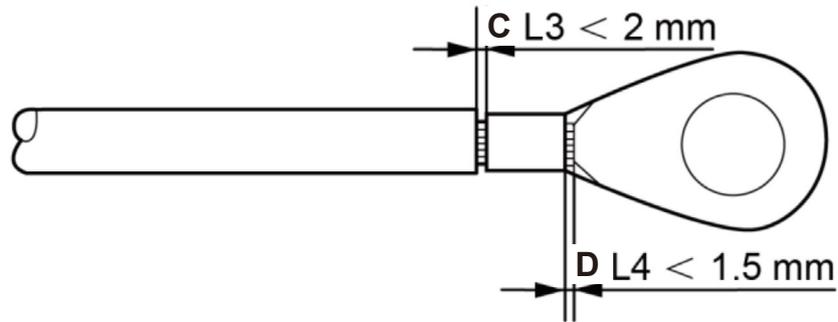
3. Strip the ground cable insulation to a suitable length.



IMPORTANT

B (insulation stripping length) is 2mm~3mm longer than A (OT cable terminal crimping area) 2mm~3mm.

INSTALLATION



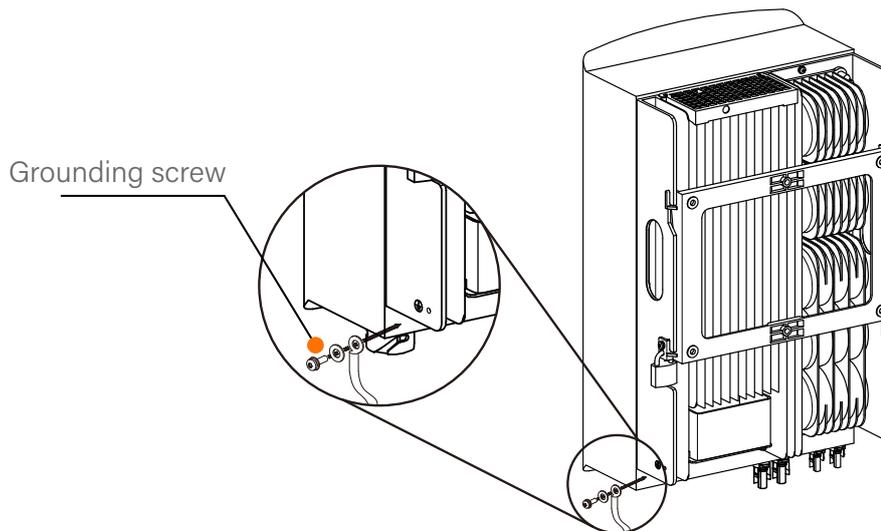
Strip wire



IMPORTANT

After crimping the terminal to the wire, inspect the connection to ensure the terminal is solidly crimped to the wire.

5. Remove the screw from the heat sink ground point.
6. Connect the grounding cable to the grounding point on the heat sink and tighten the grounding screw, torque is 3Nm.



Fixed cable



IMPORTANT

For improving anti-corrosion performance, after ground cable installed, apply silicone or paint to protect.

INSTALLATION



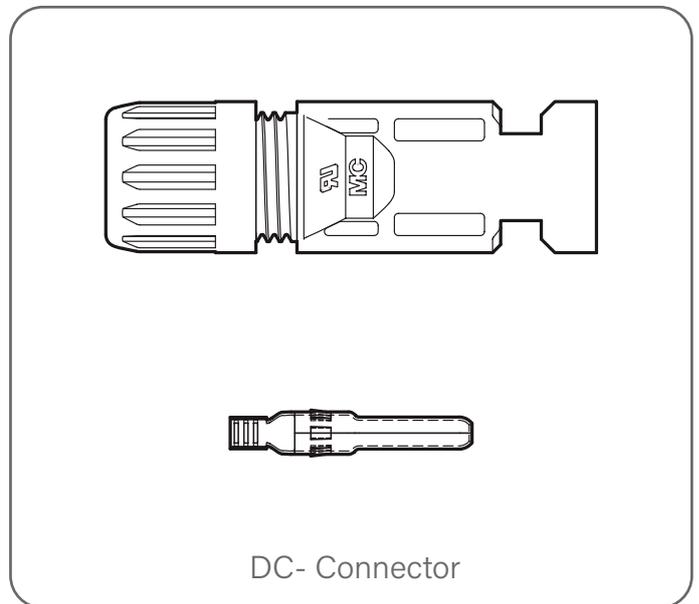
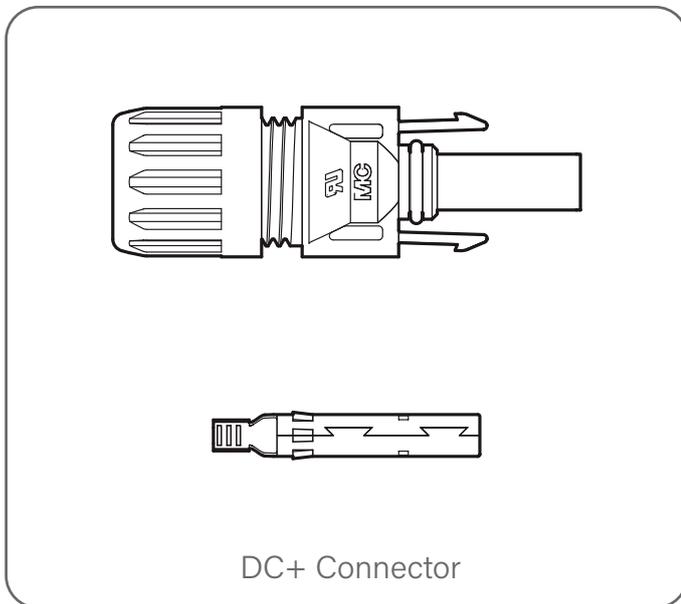
Before connecting inverter, please make sure the PV array open circuit voltage is within the limit of the inverter.



Before connection, please make sure the polarity of the output voltage of PV array matches the "DC+" and "DC-" symbols.



Before connecting inverter, please make sure the PV array open circuit voltage is within the limit of the inverter.



Please use approved DC cable for PV system.

CABLE TYPE	CROSS SECTION (mm ²)	
	RANGE	RECOMMENDED VALUE
PV cable	4.0~6.0 (12~10 AWG)	4.0 (12 AWG)

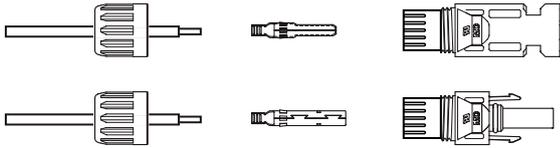
The steps to assemble the DC connectors are listed as follows:

1. Strip off the DC wire for about 7mm, disassemble the connector cap nut.
2. Insert the wire into the connector cap nut and contact pin.
3. Crimp the contact pin to the wire using a proper wire crimper.
4. Insert metal connector into top of connector, until you hear a loud click. Tighten nut with torque 2.5-3 Nm.

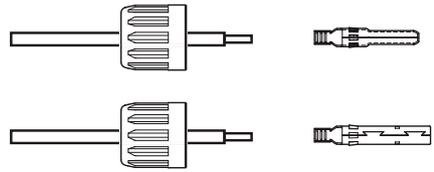
INSTALLATION

5. Measure PV voltage of DC input with multimeter, verify DC input cable polarity, and ensure that voltage of each string is in working range of inverter.

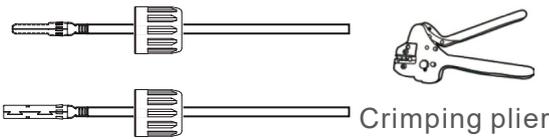
Connect DC connector with inverter until hearing a slight clicking sound indicates connection succeed.



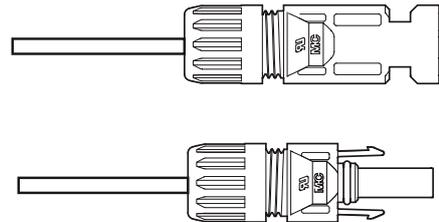
Disassemble the connector cap nut



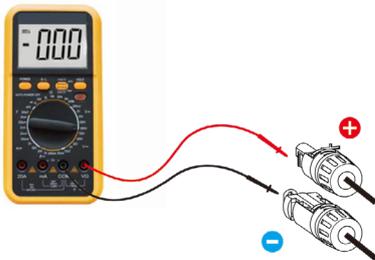
Insert the wire into the connector cap nut and contact pin



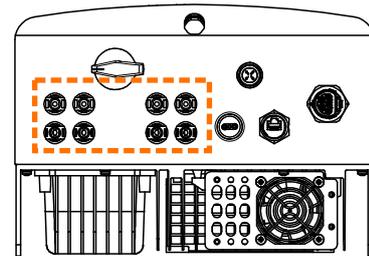
Crimp the contact pin to the wire



Connector with cap nut screwed on



Multimeter measurement



Connect the DC connectors to the Inverter



CAUTION

If DC inputs are accidentally reversely connected or inverter is faulty or not working properly, it is NOT allowed to turn off the DC switch as it will damage the inverter and even leads to a fire.

The correct actions are:

*Use a clip-on ammeter to measure the DC string current.

*If it is above 0.5A, please wait for the solar irradiance reduces until the current decreases to below 0.5A.

*Only after the current is below 0.5A, you are allowed to turn off the DC switches and disconnect the PV strings.

Please note that any damages due to wrong operations are not covered in the device warranty.

INSTALLATION

CONNECT GRID SIDE OF INVERTER

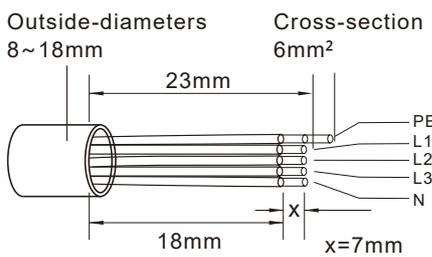
For all AC connectors, cables with 6mm² diameter are required to be used.
Please make sure the resistance of AC cable is lower than 1.5 ohm.



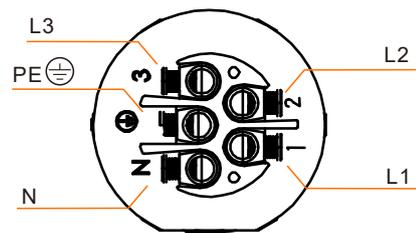
Internal of AC connector signs "L1","L2","L3","N" and "PE" five connection ports. Three phase lines shall be connected to the "L1", "L2" and "L3" terminals respectively, grounding wire shall be connected to "PE" and neutral wires shall be connected to "N" terminal.



AC connector



Stripped and bared wire

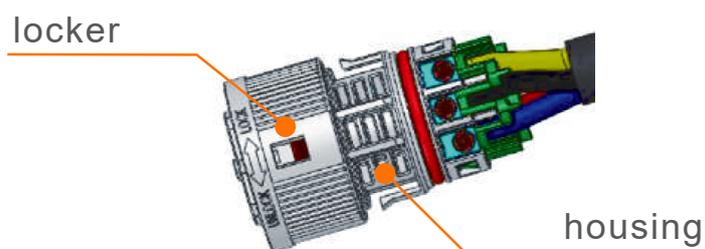


Internal structure of AC connector

INSTALLATION

The steps of AC grid terminal connector for installation are as follows:

- A) Fix the wires into the correct position and the torque is 0.8 Nm.
Please try to pull out the wire slightly to make sure that the wires are well connected.



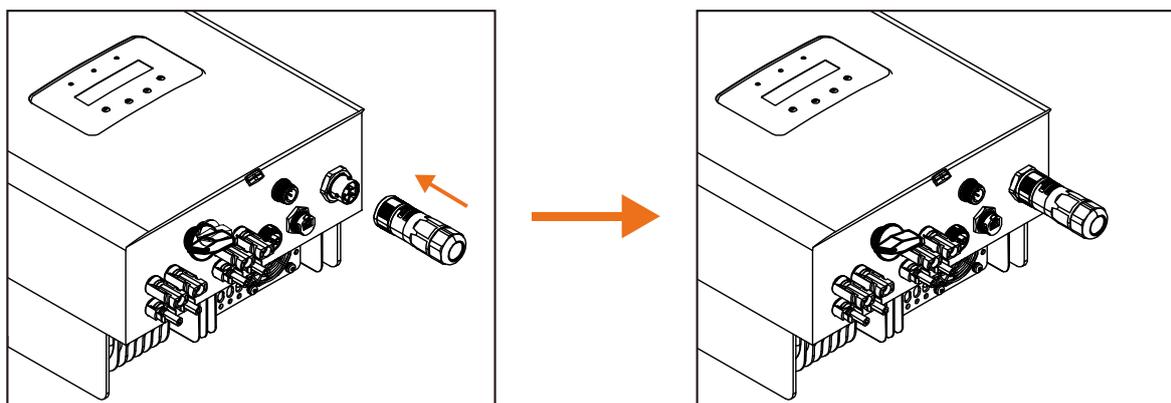
Connect wires to the terminal

- B) Insert the seal and clamp finger into body, then tighten up nut at a torque of 2.5 Nm.



Tighten up the cap on the terminal

- C) Connect the AC grid connector to the inverter, until hearing a slight click sound that indicates the connection succeed.



Connect AC connector to inverter

INSTALLATION

MAX. OVER CURRENT PROTECTION DEVICE (OCPD)

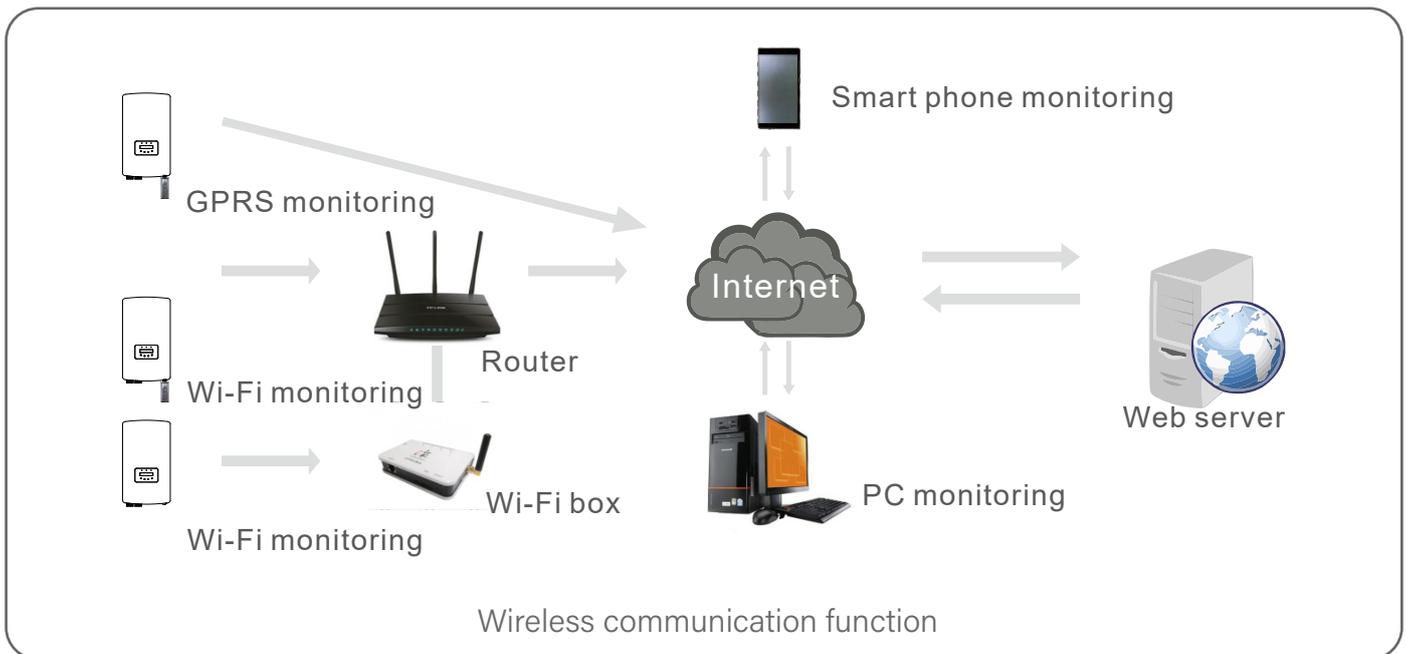
To protect the inverter's AC grid connection conductors, LEDVANCE recommends installing breakers that will protect against overcurrent.

The following table defines OCPD ratings for the LEDVANCE three phase inverters.

INVERTER	RATED VOLTAGE (V)	RATED OUTPUT CURRENT (A)	CURRENT FOR PROTECTION DEVICE (A)
LT-3K	220/380; 230/400	4.5/4.3	20
LT-4K	220/380; 230/400	6.1/5.8	20
LT-5K	220/380; 230/400	7.6/7.2	20
LT-6K	220/380; 230/400	9.1/8.7	20
LT-8K	220/380; 230/400	21.1/11.6	20
LT-10K	220/380; 230/400	15.2/14.5	32
LT-12K	220/380; 230/400	18.2/17.4	32

INVERTER MONITORING CONNECTION

The inverter can be monitored via Wi-Fi. All LEDVANCE communication devices are optional.



INSTALLATION

METER CONNECTION (OPTIONAL)

The inverter can work with a three phase smart meter to achieve Export Power Management function and/or 24 hour consumption monitoring function.



NOTE

To achieve Export Power Management function, the smart meter can be installed on either grid side or load side.

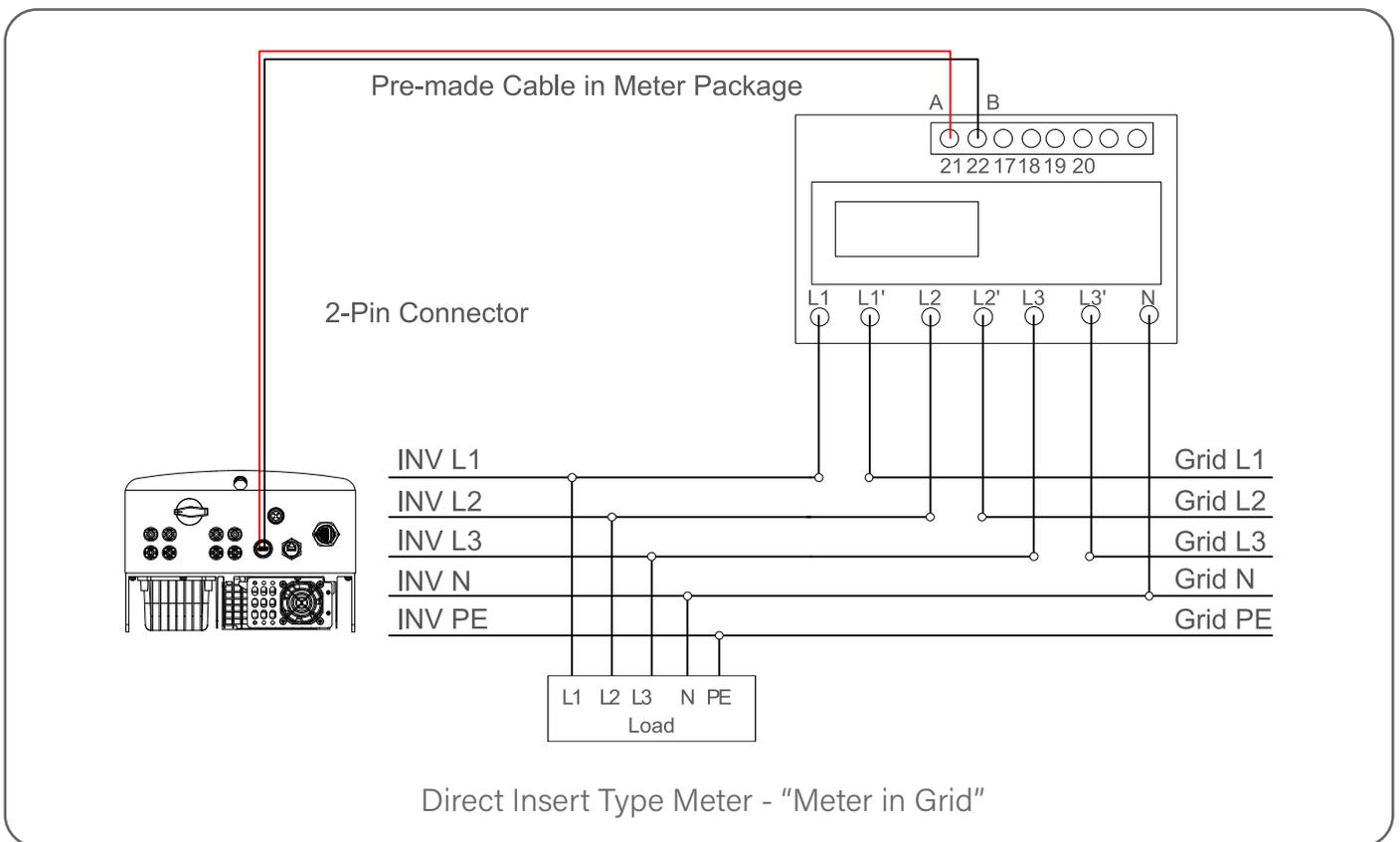
To achieve 24hour consumption monitoring function, the smart meter can only be installed on grid side.

Two types of meters are supported:

- Direct Insert Type Meter - Max input current 80A (DTSD1352-Direct Insert Type).
- External CT Type Meter - 150A/5A CTs are supplied (DTSD1352-External CT Type).

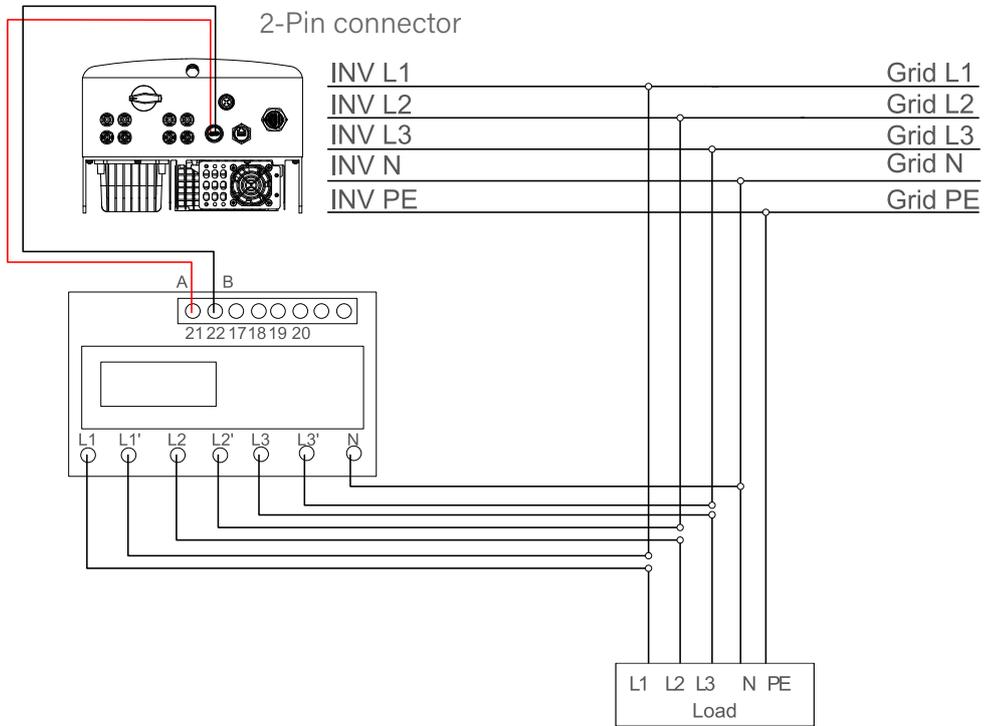
Customer can place the order for a suitable meter from LEDVANCE Sales Reps.

Below are the connection diagrams of different meters connecting to different grid points.



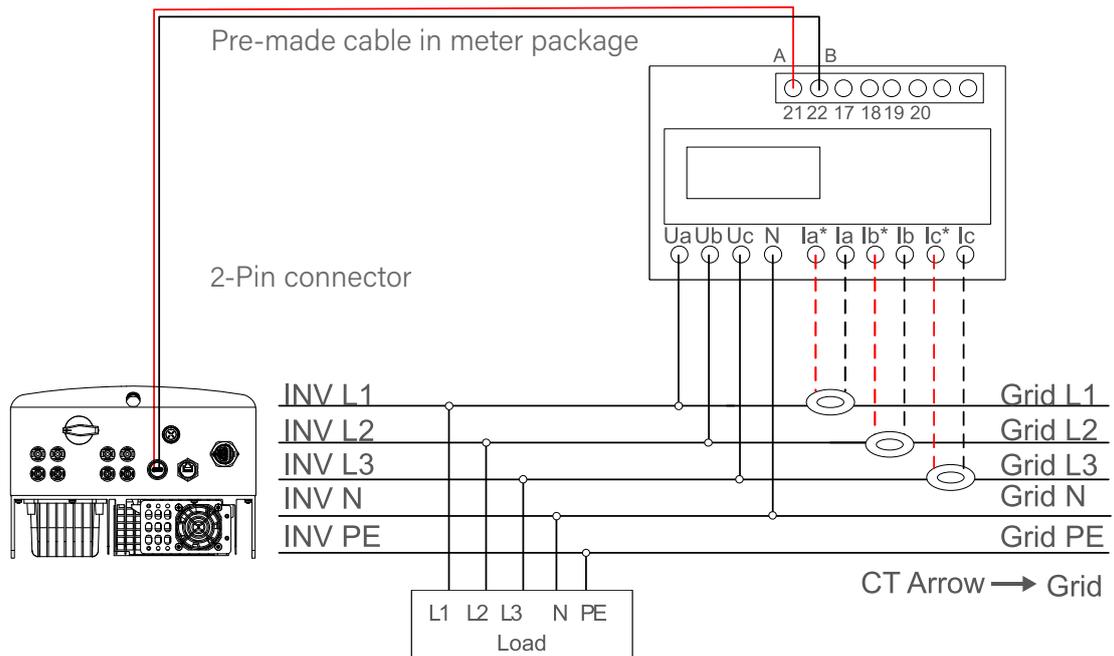
INSTALLATION

Pre-made cable in meter package



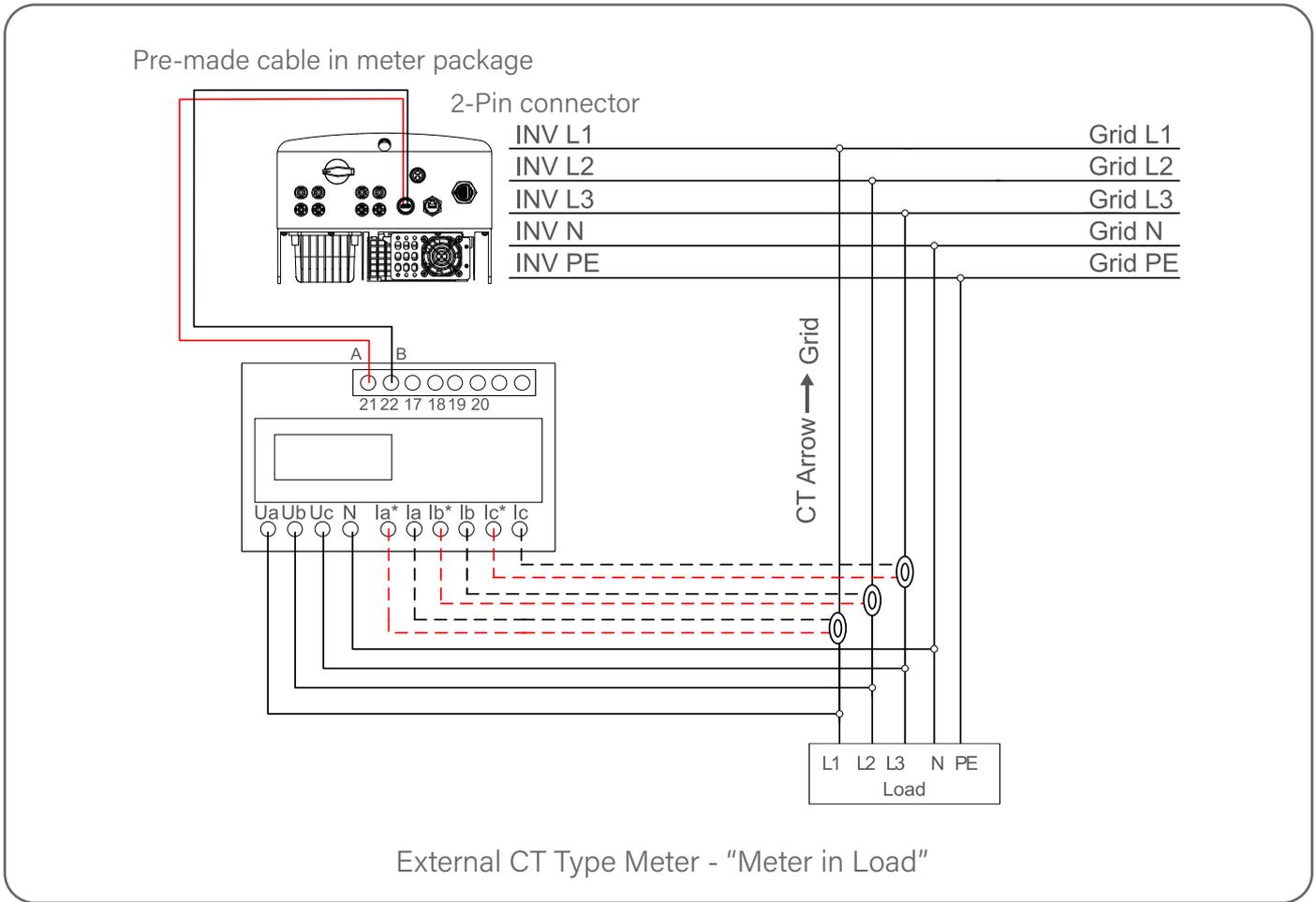
Direct Insert Type Meter - "Meter in Load"

Pre-made cable in meter package



External CT Type Meter - "Meter in Grid"

INSTALLATION



INSTALLATION

LOGIC INTERFACE CONNECTION

Logic interface is required by some local regulations that can be operated by a simple switch or contactor (Not available in South Africa).

When the switch is closed the inverter can operated normally. When the switch is opened, the inverter will reduce it's output power to zero within 5s. Pin5 and Pin6 of RJ45 terminal is used for the logic interface connection.

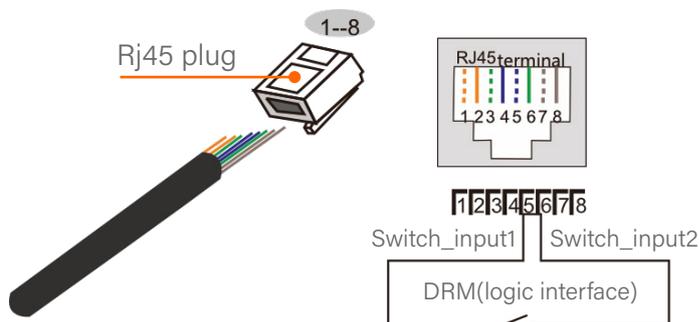
Please follow below steps to assemble RJ45 connector.

1. Insert the network cable into the communication connection terminal of RJ45.



RJ45 communication connection terminals

2. Use the network wire stripper to strip the insulation layer of the communication cable. According to the standard line sequence on picture below, connect the wire to the plug of RJ45, and then use a network cable crimping tool to make it tight.



Correspondence between the cables and the stitches of plug, pin5 and pin6 of RJ45 terminal is used for the logic interface, other pins are reserved.

Pin 1: Reserved;	Pin 2: Reserved;
Pin 3: Reserved;	Pin 4: Reserved;
Pin 5: Switch_input1;	Pin 6: Switch_input2;
Pin 7: Reserved;	Pin 8: Reserved.

Strip the insulation layer and connect to RJ45 plug

3. Connect RJ45 to DRM (logic interface) . After wire connection, please refer to "Logic Interface Settings" chapter to enable the logic interface function.

INSTALLATION

START THE INVERTER

To start up the Inverter, it is important that the following steps are strictly followed:

1. Switch the grid supply main switch (AC) ON first.
2. Switch the DC switch ON. If the voltage of PV arrays are higher than start up voltage, the inverter will turn on. The red LED power will light.
3. When both the DC and the AC sides supply to the inverter, it will be ready to generate power. Initially, the inverter will check both its internal parameters and the parameters of the AC grid, to ensure that they are within the acceptable limits. At the same time, the green LED will flash and the LCD displays the information of INITIALIZING.
4. After 30-300 seconds (depending on local requirement), the inverter will start to generate power. The green LED will be on continually and the LCD displays GENERATING.



WARNING

Do not touch the surface when the inverter is operating. It may be hot and cause burns.

STOP THE INVERTER

To stop the inverter, it is mandatory that the steps below are followed in the exact order outlined.

1. Select "Grid Off" in the Advanced Setting of Inverter LCD.
2. Turn off the AC Switch between LEDVANCE inverter and Grid.
3. Wait approximately 30 seconds (during this time, the AC side capacitors are dissipating energy). If the inverter has DC voltage above the start-up threshold, the red POWER LED will be lit. Switch the DC switch OFF.
4. Confirm all LED's switch OFF (~one (1) minute).

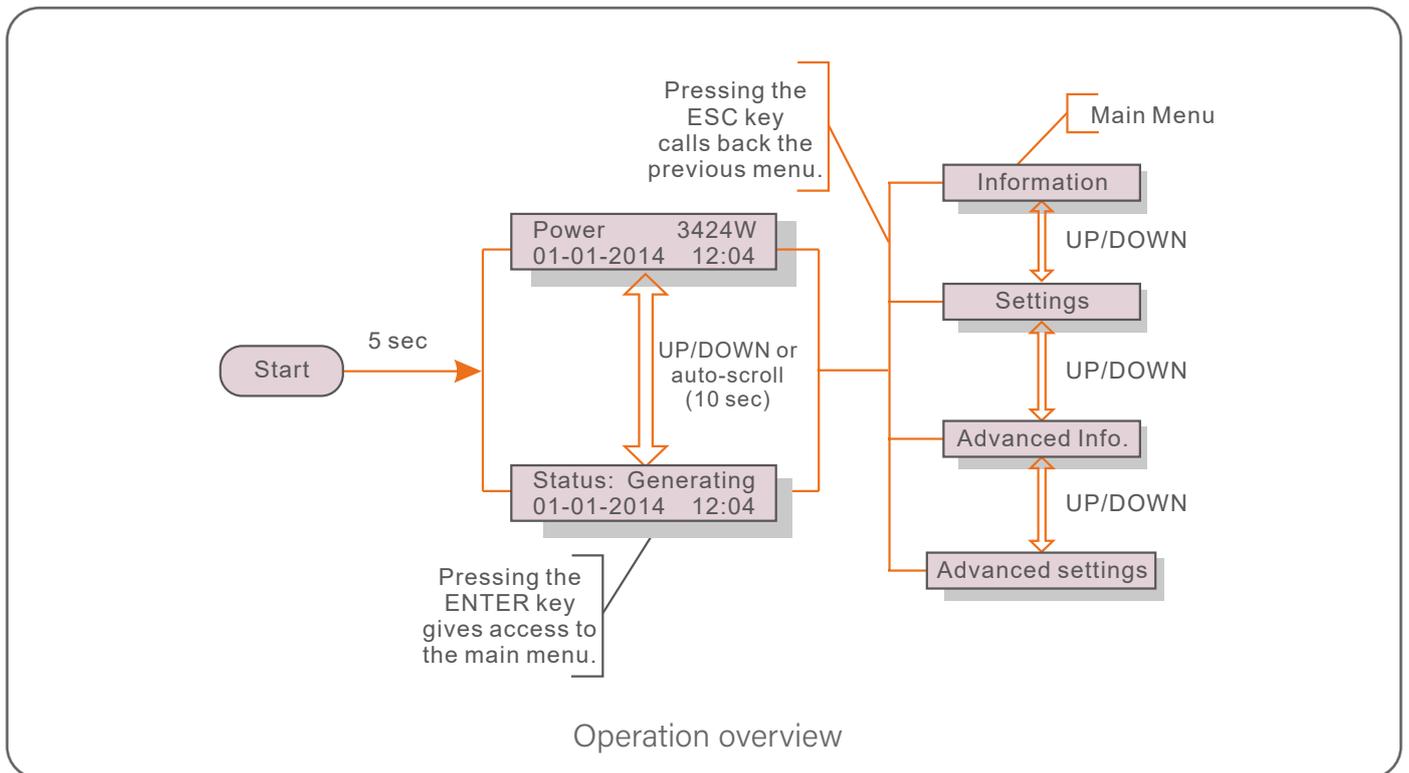


CAUTION

Although the inverter DC disconnect switch is in the OFF position and all the LED's are OFF, operators must wait five (5) minutes after the DC power source has been disconnected before opening the inverter cabinet. DC side capacitors can take up to five (5) minutes to dissipate all stored energy.

OPERATION

In normal operation, LCD screen alternatively shows inverter power and operation status.
The screen can be scrolled manually by pressing the UP/DOWN keys.
Pressing the ENTER key gives access to main menu.



MAIN MENU

There are four submenus in the main menu:

1. Information
2. Settings
3. Advanced Info.
4. Advanced Settings

INFORMATION

The LEDVANCE three phase inverter main menu provides access to operational data and information. The information is displayed by selecting "Information" from the menu and then by scrolling up or down.

OPERATION

Display	Duration	Description
V_DC1 350.8V I_DC1 5.1A	10 sec	V_DC1: Shows input 01 voltage value. I_DC1: Shows input 01 current value.
V_DC2 350.8V I_DC2 5.1A	10 sec	V_DC2: Shows input 02 voltage value. I_DC2: Shows input 02 current value.
V_A 230.4V I_A 8.1A	10 sec	V_A: Shows the grid's voltage value. I_A: Shows the grid's current value.
V_C 230.4V I_C 8.1A	10 sec	V_C: Shows the grid's voltage value. I_C: Shows the grid's current value.
Status: Generating Power: 1488W	10 sec	Status: Shows instant status of the Inverter. Power: Shows instant output power value.
Grid Frequency F_Grid 50.06Hz	10 sec	F_Grid: Shows the grid's frequency value.
Total Energy 0258458 kwh	10 sec	Total generated energy value.
This Month: 0123kwh Last Month: 0123kwh	10 sec	This Month: Total energy generated this month. Last Month: Total energy generated last month.
Today: 15.1kwh Yesterday: 13.5kwh	10 sec	Today: Total energy generated today. Yesterday: Total energy generated yesterday.
Inverter SN 00000000000000	10 sec	Display serial number of the inverter.

Information list

LOCK SCREEN

Pressing the ESC key returns to the main menu. Pressing the ENTER key locks or unlocks the screen.



Locks and unlocks the screen of LCD

OPERATION

SETTINGS

The following submenus are displayed when the settings menu is selected:

1. Set Time
2. Set Address

SET TIME

This function allows time and date setting. When this function is selected, the LCD will display a screen as shown below.



NEXT=<ENT> OK=<ESC>
01-01-2016 16:37

Set Time

Press the UP/DOWN keys to set time and data. Press the ENTER key to move from one digit to the next (from left to right). Press the ESC key to save the settings and return to the previous menu.

SET ADDRESS

This function is used to set the address when many inverters are connected as one PV plant. The address number can be assigned from "01" to "99". The default address number of LEDVANCE Inverter is "01".



YES=<ENT> NO=<ESC>
Set Address: 01

Set Address

Press the UP/DOWN keys to set the address. Press the ENTER key to save the settings. Press the ESC key to cancel and return to the previous menu.

OPERATION

ADVANCED INFO - TECHNICIANS ONLY



NOTE

To access to this area is for fully qualified and accredited technicians only. Enter menu "Advanced Info." and "Advanced settings" (need password).

Select "Advanced Info." from the main menu. The screen will require the password as below:

YES=<ENT> NO=<ESC>
Password:0000

Enter password

The default password is "0010".

Please press "down" to move the cursor, press "up" to select the number.

After enter the correct password the main menu will display a screen and be able to access to the following information.

**1. Alarm Message | 2. Running message | 3. Version | 4. Daily Energy | 5. Monthly Energy
6. Yearly Energy | 7. Daily Records | 8. Communication Data | 9. Warning Message**

The screen can be scrolled manually by pressing the UP/DOWN keys. Pressing the ENTER key gives access to a submenu. Press the ESC key to return to the main menu.

ALARM MESSAGE

The display shows the 100 latest alarm messages. Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ESC key to return to the previous menu.

Alm000: OV-G-V
T: 00-00 00:00 D: 0000

Alarm Message

RUNNING MESSAGE

This function is for maintenance person to get running message such as internal temperature, standard no. 1, 2, etc.

Screens can be scrolled manually by pressing the UP/DOWN keys.

RUNNING MESSAGE

The screen shows the model version of the inverter. The software version will be shown by pressing the UP and DOWN button at the same time.

OPERATION

Model: 08
Software Version: D20001

Model version and software version

DAILY ENERGY

The function is for checking the energy generation for selected day.

YES=<ENT> NO=<ESC>
Select: 2019-01-01

Select date for daily energy

Press DOWN key to move the cursor to day, month and year, press UP key to change the digit.
Press Enter after the date is set.

2019-01-01: 051.3kWh
2019-01-01: 061.5kWh

Daily energy

Press UP/DOWN key to move one date from another.

MONTHLY ENERGY

The function is for checking the energy generation for selected month.

YES=<ENT> NO=<ESC>
Select: 2019-01

Select month for monthly energy

Press DOWN key to move the cursor to day and month, press UP key to change the digit.
Press Enter after the date is set.

2019-01: 0510kWh
2019-01: 0610kWh

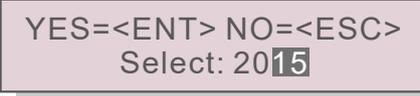
Month energy

Press UP/DOWN key to move one date from another.

OPERATION

YEARLY ENERGY

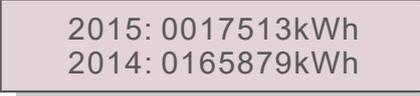
The function is for checking the energy generation for selected year.



YES=<ENT> NO=<ESC>
Select: 2015

Select year for yearly energy

Press DOWN key to move the cursor to day and year, press UP key to change the digit.
Press Enter after the date is set.



2015: 0017513kWh
2014: 0165879kWh

Yearly energy

DAILY RECORD

The screen shows history of changing settings. Only for maintenance personnel.

COMMUNICATION DATA

The screen shows the internal data of the Inverter, which is for service technicians only.

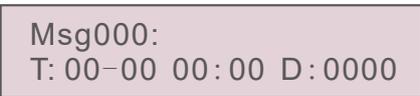


01-05: 01 25 E4 9D AA
06-10: C2 B5 E4 9D 55

Communication data

WARNING MESSAGE

The display shows the 100 latest warning messages. Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ESC key to return to the previous menu.



Msg000:
T: 00-00 00:00 D:0000

Warning message

OPERATION

ADVANCED SETTINGS - TECHNICIANS ONLY



NOTE

To access to this area is for fully qualified and accredited technicians only. Default password to this menu is "0010".

Select "Advanced Settings" from the Main Menu to access the following options:

1. Select Standard | 2. Grid ON/OFF | 3. 24H Switch | 4. Clear Energy | 5. Reset Password | 6. Power Control | 7. Calibrate Energy | 8. Special Settings | 9. STD. Mode Settings | 10. Restore Settings | 11. HMI Update | 12. Internal EPM Set | 13. External EPM set | 14. Restart HMI | 15. Debug Parameter | 16. DSP Update | 17. Compensation Set

SELECTING STANDARD

This function is used to select the grid's reference standard.

YES=<ENT> NO=<ESC>
Standard:G59/3

Press the UP/DOWN keys to select the standard (G59/3, UL-480V, VDE0126, AS4777-15, AS4777-02, CQC380A, ENEL, UL-380V, MEX-CFE, C10/11 and "User-Def" function). Press the ENTER key to confirm the setting. Press the ESC key to cancel changes and returns to previous menu.



NOTE

This function is for technicians use only.

Selecting the "User-Def" menu will access to the following submenu.

– OV-G-V1: 260V
OV-G-V1-T: 1S



NOTE

The " User-Def" function can be only used by the service engineer and must be allowed by the local energy supplier.

OPERATION

Below is the setting range for "User-Def". Using this function, the limits can be changed manually.

OV-G-V1: 220---374V	OV-G-F1: 50.1-65Hz
OV-G-V1-T: 0.01---300S	OV-G-F1-T: 0.01---300S
OV-G-V2: 220---374V	OV-G-F2: 50.1-65Hz
OV-G-V2-T: 0.01---300S	OV-G-F2-T: 0.01---300S
UN-G-V1: 110---277V	UN-G-F1: 45-59.9Hz
UN-G-V1-T: 0.01---300S	UN-G-F1-T: 0.01---300S
UN-G-V2: 110---277V	UN-G-F2: 45-59.9Hz
UN-G-V2-T: 0.01---300S	UN-G-F2-T: 0.01---300S
Startup-T: 10-600S	Restore-T: 10-600S

Setting ranges for User-Def (L-N)

Press the UP/DOWN keys to scroll through items. Press the ENTER key to edit the highlighted item. Press the UP/DOWN keys again to change the setting. Press the ENTER key to save the setting. Press the ESC key to cancel changes and returns to the previous menu.



NOTE

For different countries, the grid standard needs to be set according to local requirements. If there is any doubt, please consult LEDVANCE service technicians for details.

GRID ON/OFF

This function is used to start up or stop the power generation of LEDVANCE Inverter.

— Grid ON
Grid OFF

Set Grid ON/OFF

Screens can be scrolled manually by pressing the UP/DOWN keys. Press the ENTER key to save the setting. Press the ESC key to return to the previous menu.

OPERATION

24H SWITCH

This function controls the 24-hour consumption function enable or disable.

– Enable
Disable

Set 24H ON/OFF



NOTE

When this is enabled, the inverter LCD will still be alive at night with the power LED light on. If the grid is in malfunction at night, the system can't recover even after the grid is back to normal but the consumption data will still be recorded in the meter. Until the sunrise, the system will start to work again while the meter data can be uploaded to the LEDVANCE monitoring system to calibrate the load consumption data.

CLEAR ENERGY

Clear energy can reset the history yield of inverter.



These two functions are applicable by maintenance personnel only, wrong operation will prevent the inverter from working properly.

RESET PASSWORD

This function is used to set the new password for menu "Advanced info." and "Advanced information".

YES=<ENT> NO=<ESC>
Password: 0000

Set new password

Enter the right password before set new password. Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

OPERATION

POWER CONTROL

Active and reactive power can be set through power setting button.
There are 5 item for this sub menu:

1. *Set output power* | 2. *Set Reactive Power* | 3. *Out_P With Restore* | 4. *Rea_P With Restore* | 5. *Select PF Curve*



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

CALIBRATE ENERGY

Maintenance or replacement could erase value of total energy. Use this function could allow user to revise the value of total energy to the same value as before.
If the monitoring website is used the data will be synchronous with this setting automatically.

YES=<ENT> NO=<ESC>
Energy:0000000kWh

Set 24H ON/OFF

Press the DOWN key to move the cursor, Press the UP key to revise the value. Press the ENTER key to execute the setting. Press the ESC key to return to the previous menu.

SPECIAL SETTINGS



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

STD MODE SETTINGS

There are 5 setting under STD. Mode settings.

1. *Working mode* | 2. *Power Rate limit* | 3. *Freq. Derate set* | 4. *10mins OV-G-V set.* | 5. *Initial Settings*



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

OPERATION

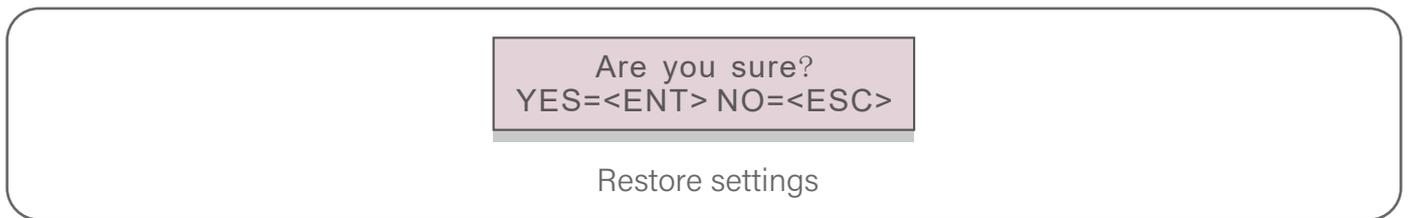
LOGIC INTERFACE SETTINGS

When select G98 or G99 standard to use the logic interface function, please follow below settings to enable the DRM. DRM default setting is "OFF", if DRM set "ON", but the logic interface un-connected to the switch or the switch is open, the inverter HMI will display "Limit by DRM" and the inverter output power will be limited to zero.

1. Select "Initial Settings"
2. Select DRM and set it "ON"

RESTORE SETTINGS

There are 5 items in initial setting submenu.
Restore setting could set all item in special settings to default.
The screen shows as below:



Press the Enter key to save the setting after setting grid off.
Press the ESC key to return the previous menu.

HMI UPDATE

This function is used for updating the LCD program.



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

OPERATION

INTERNAL EPM SET



NOTE

This section includes two functions related to the smart meter.

Function 1: Internal Export Power Management Function

Inverters can work with a smart meter to dynamically limit the export power of the system. Zero injection can be achieved.

Smart meter can be installed either on the grid side or the load side.

Function 2: 24 Hour Consumption Monitoring Function

Only applicable if LEDVANCE monitoring system is used.

Inverters can work with a smart meter to monitor the load consumption data for the whole day and the data will be displayed on the LEDVANCE monitoring system.

Smart meter can only be installed on the grid side.



NOTE

Please refer to below instructions for different user scenarios.

Scenario 1. Only Function 1 is required

Step1: Refer to Section "Meter Connection" to connect the smart meter on the grid side or load side.

Step 2: In EPM Settings: Mode Select as Option 2(Meter in Load) or Option 3 (Meter in Grid) accordingly.

Step 3: Configure the Section "Backflow Power" to set the allowed backflow power.

Step 4: Configure the Section "Fail safe ON/OFF" to enable the failsafe function (If necessary).

Step 5: Configure the Section "Backflow Work Mode" to modify the work mode (If necessary).

Scenario 2. Both Function 1 and 2 are required

Using a Smart Meter:

Step 1: Refer to Section "Meter Connection" to connect the smart meter on the grid side.

Step 2: Select the Section "Mode Select" as Option 3 (Meter in Grid).

Step 3: Select the Function 24H Switch as "Enable".

Step 4: Configure the Section "Backflow Power" to set the allowed backflow power.

Step 5: Configure the Section "Fail safe ON/OFF" to enable the failsafe function (If necessary).

Step 6: Configure the Ledvance monitoring system (Please refer to the manual of monitoring device).

If customer does not want to enable the export power control function, please change the "backflow power" to the max output power of the inverter in Step 4 OR simply select the mode as "consumption monitor" in Step 2 and skip Step 4-5.

Select "EPM Settings" from the main menu to access the following options:

1. Mode Select | 2. Backflow Power | 3. Fail safe ON/OFF | 4. Backflow Work Mode

OPERATION

MODE SELECT

There are 4 settings in this menu as below:

1. OFF | 2. Meter in Load | 3. Meter in Grid | 4. Consumption Monitor

- **OFF:** Functions are disabled
- **Meter in Load:** Smart meter is connected in the load branch circuit.
- **Meter in Grid:** Smart meter is connected in the grid connection point (The backflow power is default as 0W).
- **Consumption Monitor:** Smart Meter is connected in the grid connection point (The backflow power setting is not applicable).

BACKFLOW POWER

The setting is used to define the allowed export power into the grid.

The setting range is between 00000W to 29900W.

->Set Backflow Power

Set the backflow power

YES=<ENT> NO=<ESC>
Power:-00000W

Press the UP/DOWN keys to set data. Press the ENTER key to set backflow power.

Then press DOWN keys to move the cursor, press UP to change the number.

Press the ESC key to save the settings and return to the previous menu.

FAIL SAFE ON/OFF

This setting is used to give out an alarm (stop inverter generation as well) when the meter connection is lost during operation.

It can prevent potential backflow power into the grid when the system loses control.

YES=<ENT> NO=<ESC>
Fail Safe Set:ON

Set the "Fail Safe" ON/OFF

OPERATION

It is only mandatory to turn on this function when the inverter is installed in UK due to the G100 regulation. For other regions, customers can enable or disable the function as they desire.



NOTE

When the failsafe function is ON and CT/Meter is disconnected somehow, the inverter will stop generation and give "Fail Safe" alarm on the LCD. When the failsafe function is OFF and CT/meter is disconnected somehow, the inverter will keep the output power as the last moment when the CT/meter is still connected. After a restart, the inverter will output at full power without limit.

BACKFLOW WORK MODE

This submenu is used for set backflow work mode: 01, 02. "01" is the default mode.

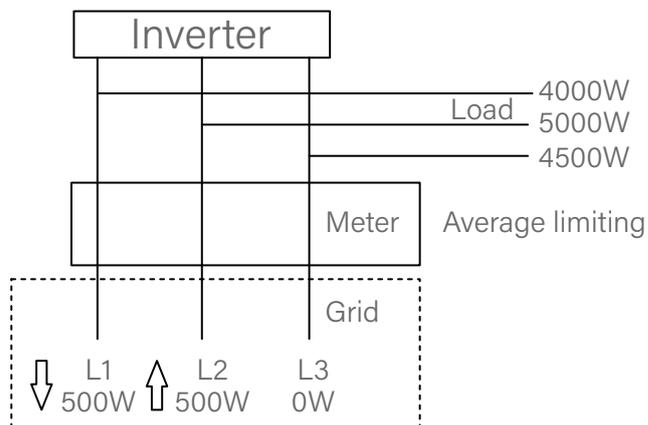
->Backflow Work Mode

Set the backflow work mode

YES=<ENT> NO=<ESC>
Mode:01

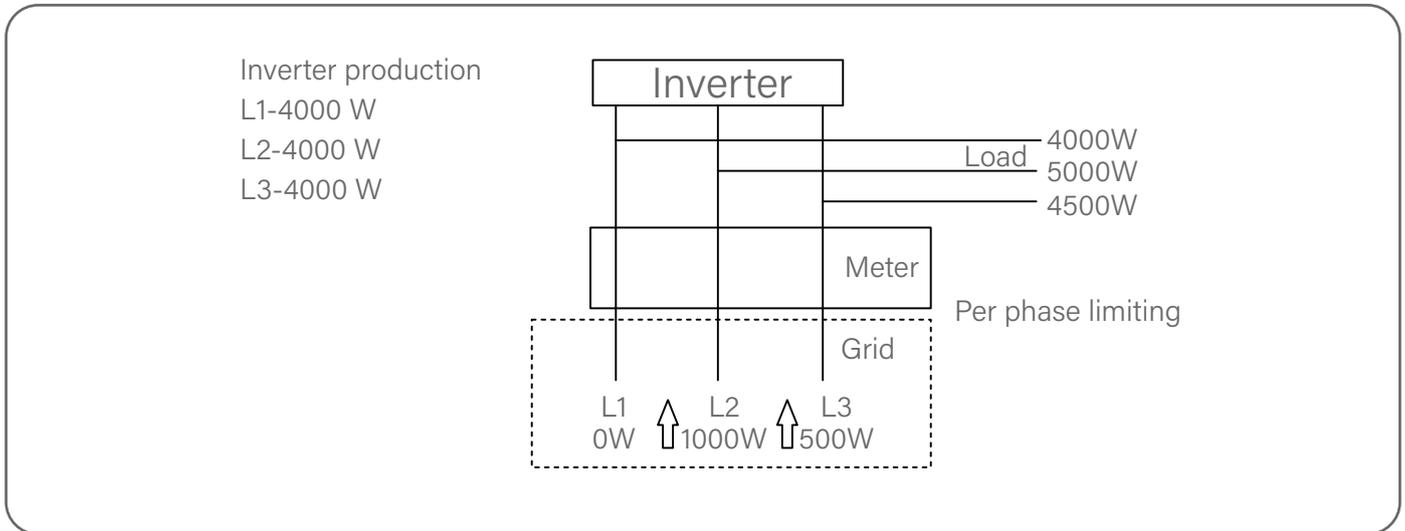
Mode "01", as shown in the figure below, is the "Average limiting mode". The output power of each phase is the average of the three-phase load power, and it is more than the phase of the lowest power in three phases.

Inverter production
L1-4500 W
L2-4500 W
L3-4500 W



OPERATION

Mode "02", as shown in the figure below "Per phase limiting mode". The inverter only generate the power that equals to one of three-phase load power that is the lowest load power of a certain phase.



RESTART HMI

The function is used for restart the HMI.



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

DEBUG PARAMETER

This function is used for manufacturer maintenance personnel only.

DSP UPDATE

The function is used for update the DSP.



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

COMPENSATION SET



This function is applicable by maintenance personnel only, wrong operation will prevent the inverter from reaching maximum power.

OPERATION

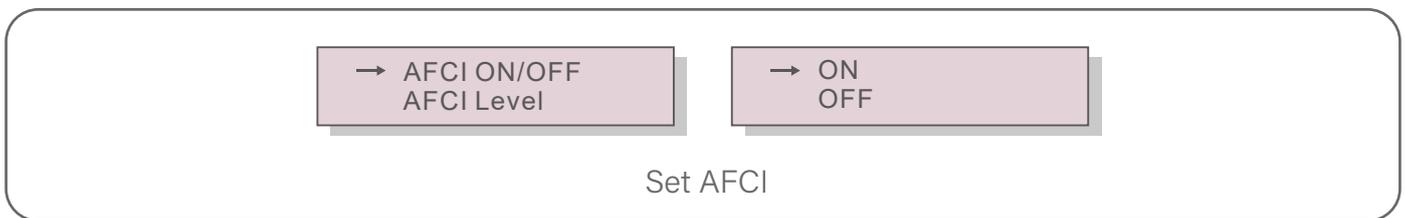
AFCI FUNCTION

LEDVANCE inverters have the built-in AFCI function which can detect the arc fault on the DC circuit and shut down the inverter to prevent a fire disaster.

ENABLE THE AFCI FUNCTION

The AFCI function can be enabled in the following.

Path: Advanced Setting -> Password: 0010 ->Special Settings -> AFCI Set -> AFCI ON/OFF -> ON



WARNING

The "AFCI Level" is reserved for LEDVANCE technicians ONLY. Do not change the sensitivity otherwise it will lead to frequent false alarms or malfunctions. LEDVANCE is not responsible for any further damages caused by unauthorized modifications.

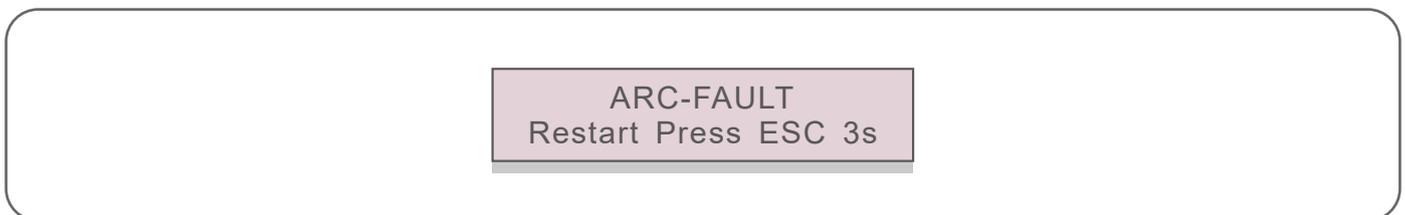


NOTE

The setting corresponds to the current status as well which can be used to inspect the ON/OFF state of the AFCI function.

ARC FAULT

During the normal operation, if an DC arc is detected, the inverter will shut down and give out the following alarm:



Installer needs to thoroughly inspect the DC circuit to ensure all the cables are correctly fastened. Once the DC circuit issue has been fixed or it is confirmed to be OK, press "ESC" for 3s and wait for the inverter to restart.

MAINTENANCE

LEDVANCE Three Phase Inverter does not require any regular maintenance. However, cleaning the dust on heat-sink will help the inverter to dissipate the heat and increase its lifetime. The dust can be removed with a soft brush.



CAUTION

Do not touch the inverter's surface when it is operating. Some parts of the inverter may be hot and cause burns. Turn off the inverter and wait for a cool-down period before any maintenance or cleaning operation.

The LCD and the LED status indicator lights can be cleaned with a damp cloth.



NOTE

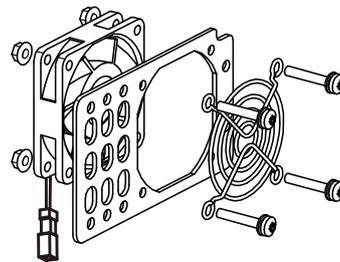
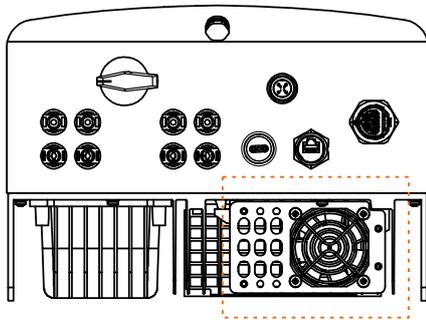
Never use any solvents, abrasives or corrosive materials to clean the inverter.

FAN MAINTENANCE

If the fan does not work properly, the inverter will not be cooled effectively, and it may affect the effective operation of the inverter.

Therefore, it is necessary to clean or replace a broken fan as follows:

1. Disconnect the AC power.
2. Turn the DC switch to "OFF" position.
3. Wait for 10 minutes at least.
4. Disconnect all electric connection.
5. Place the inverter on the platform.
6. Remove the 4 screws on the fan plate and pull out the fan assembly slowly.



7. Disconnect the fan connector carefully and take out the fan.
8. Clean or replace the fan. Assemble the fan on the rack.
9. Connect the electrical wire and reinstall the fan assembly. Restart the inverter.

TROUBLESHOOTING

The inverter is designed in accordance with the most important international grid-tied standards and safety and electromagnetic compatibility requirements. Before delivering to the customer, the inverter has been subjected to several tests to ensure its optimal operation and reliability.

In case of failure, the LCD screen will display an alarm message. In this case, the inverter may stop feeding into the grid. The failure descriptions and their corresponding alarm messages are listed in table below:

ALARM MESSAGE	FAILURE DESCRIPTION	SOLUTION
No power	Inverter no power on LCD	<ol style="list-style-type: none"> 1. Check PV input connections 2. Check DC input voltage (single phase >120V, three phase >350V) 3. Check if PV+/- is reversed
LCD show initializing all the time	Can not start-up	<ol style="list-style-type: none"> 1. Check if the connector on main board or power board are fixed. 2. Check if the DSP connector to power board are fixed.
OV-G-V01/02/03/04	Over grid voltage	<ol style="list-style-type: none"> 1. Resistant of AC cable is too high. Change bigger size grid cable 2. Adjust the protection limit if it's allowed by electrical company.
UN-G-V01/02	Under grid voltage	<ol style="list-style-type: none"> 1. Use user define function to adjust the protection limit if it's allowed by electrical company.
OV-G-F01/02	Over grid frequency	
UN-G-F01/02	Under grid frequency	
G-IMP	High grid impedance	
NO-GRID	No grid voltage	<ol style="list-style-type: none"> 1. Check connections and grid switch. 2. Check the grid voltage inside inverter terminal.
OV-DC01/02/03/04	Over DC voltage	<ol style="list-style-type: none"> 1. Reduce the module number in series
OV-BUS	Over DC bus voltage	<ol style="list-style-type: none"> 1. Check inverter inductor connection 2. Check driver connection
UN-BUS01/02	Under DC bus voltage	
GRID-INTF01/02	Grid interference	<ol style="list-style-type: none"> 1. Restart inverter 2. Change power board
OV-G-I	Over grid current	
IGBT-OV-I	Over IGBT current	

TROUBLESHOOTING

ALARM MESSAGE	FAILURE DESCRIPTION	SOLUTION
DC-INTF OV-DCA-I	DC input overcurrent	<ol style="list-style-type: none"> 1. Restart inverter 2. Identify and remove the string to the fault MPPT 3. Change power board
IGFOL-F	Grid current tracking fail	1. Restart inverter or contact installer.
IG-AD	Grid current sampling fail	
INI-FAULT	Initialization system fault	1. Restart inverter or contact installer.
DSP-B-FAULT	Comm. failure between main and slave DSP	
12Power-FAULT	12V power supply fault	
OV-TEM	Over Temperature	<ol style="list-style-type: none"> 1. Check inverter surrounding ventilation. 2. Check if there's sunshine direct on inverter in hot weather.
PV ISO-PRO 01/02	PV isolation protection	<ol style="list-style-type: none"> 1. Remove all DC input, reconnect and restart inverter one by one. 2. Identify which string cause the fault and check the isolation of the string.
ILeak-PRO 01/02/03/04	Leakage current protection	<ol style="list-style-type: none"> 1. Check AC and DC connection 2. Check inverter inside cable connection.
RelayChk-FAIL	Relay check fail	1. Restart inverter or contact installer.
DCinj-FAULT	High DC injection current	
AFCI self-detection (model with AFCI module)	AFCI module self-detect fault	1. Restart inverter or contact installer.
Arcing protection (model with AFCI module)	Detect arc in DC circuit	1. Check inverter connection whether arc exists and restart inverter.
Screen OFF with DC applied	Inverter internally damaged	<ol style="list-style-type: none"> 1. Do not turn off the DC switches as it will damage the inverter. 2. Please wait for the solar irradiance reduces and confirm the string current is less than 0.5A with a clip-on ammeter and then turn off the DC switches. 3. Please note that any damages due to wrong operations are not covered in the device warranty.

Fault message and description

TROUBLESHOOTING



NOTE

If the inverter displays any alarm message as listed in table above; please turn off the inverter and wait for 5 minutes before restarting it. If the failure persists, please contact your local distributor or the service center. Please keep ready with you the following information before contacting us.

1. Serial number of LEDVANCE Three Phase Inverter;
2. The distributor/dealer of LEDVANCE Three Phase Inverter (if available);
3. Installation date.
4. The description of problem (i.e. the alarm message displayed on the LCD and the status of the LED status indicator lights. Other readings obtained from the Information submenu will also be helpful);
5. The PV array configuration (e.g. number of panels, STC power of panels, number of strings, etc.);
6. Your contact details.

SPECIFICATIONS

MODEL	LT-3K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	3000
Max. output power (Watts)	3300
Max. apparent output power (VA)	3300
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	4.6/4.3
Max. output current (Amps)	4.7
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C. . . +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the brazilian market

SPECIFICATIONS

MODEL	LT-4K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	4000
Max. output power (Watts)	4400
Max. apparent output power (VA)	4400
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	6.1/5.8
Max. output current (Amps)	6.4
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C. . . +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the Brazilian market

SPECIFICATIONS

MODEL	LT-5K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	5000
Max. output power (Watts)	5500
Max. apparent output power (VA)	5500
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	7.6/7.2
Max. output current (Amps)	7.9
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C... +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the Brazilian market

SPECIFICATIONS

MODEL	LT-6K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	6000
Max. output power (Watts)	6600
Max. apparent output power (VA)	6600
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	91/8.7
Max. output current (Amps)	9.5
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310W*563H*219D (mm)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C. . . +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the Brazilian market

SPECIFICATIONS

MODEL	LT-8K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	8000
Max. output power (Watts)	8800
Max. apparent output power (VA)	8800
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	12.2/11.5
Max. output current (Amps)	12.7
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C... +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the Brazilian market

SPECIFICATIONS

MODEL	LT-10K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	10000
Max. output power (Watts)	1100
Max. apparent output power (VA)	1100
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	15.2/14.4
Max. output current (Amps)	15.9
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C. . . +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the brazilian market

SPECIFICATIONS

MODEL	LT-12K F2
Max. DC input voltage (Volts)	1100
Rated DC voltage (Volts)	600
Start-up voltage (Volts)	180
MPPT voltage range (Volts)	160...1000
Max. input current (Amps)	16+16
Max short circuit input current (Amps)	20+20
MPPT number/Max input strings number	2/2
Rated output power (Watts)	12000
Max. output power (Watts)	13200
Max. apparent output power (VA)	13200
Rated grid voltage (Volts)	3/N/PE~220/380, 230/400
Rated output current (Amps)	18.2/17.3
Max. output current (Amps)	19.1
Power Factor (at rated output power)	>0.99 (0.8 leading - 0.8 lagging)
THDi (at rated output power)	<2%
Rated grid frequency (Hertz)	50/60
Operating frequency range (Hertz)	45...55 or 55...65
Max. efficiency	98.3%
EU efficiency	97.7%
Dimensions	310*563*219 mm (W*H*D)
Weight	17.8 kg
Topology	Transformerless
Self consumption (night)	< 1 W
Operating ambient temperature range	-25 °C... +60 °C
Relative humidity	0~100%
Ingress protection	IP66
Noise emission (typical)	<30 dBA
Cooling concept	Natural convection
Max. operation altitude	4000 m
Grid connection standard	G98 or G99, VDE-AR-N 4105 / VDE V 0124, EN 50549-1, VDE 0126 / UTE C 15 / VFR:2019, RD 1699 / RD 244 / UNE 206006 / UNE 206007-1, CEI 0-21, C10/11, NRS 097-2-1, TOR, EIFS 2018.2, IEC 62116, IEC 61727, IEC 60068, IEC 61683, EN 50530
Safety/EMC standard	IEC 62109-1/-2, EN 61000-6-1/-2/-3/-4
DC connection	Stäubli MC4
AC connection	Quick connection plug
Display	LCD
Communication connections	RS485, DO, DI, Optional: Wi-Fi, GPRS, USB*
Warranty Terms	5 Years (Extend to 20 Years)

*Optional USB: only for the Brazilian market

APPENDIX

GRID STANDARD SELECTION GUIDE



NOTE

Please check if the grid code setting comply with local requirement.

For different countries and regions, corresponding grid code needs to be selected in the inverter LCD to meet the requirements of local network provider. This instruction indicates how to change the grid code and what code should be selected in different places.

This following list illustrates the grid standard options in the inverter which are subject to change. It is for your reference only. If customer has any doubts or uncertainty, please consult LEDVANCE service department for confirmation. To set the correct grid code, please enter the following path:

Advanced Settings -> Password:0010 -> Select Standard

Detailed protection limits can be viewed when choosing the code.

Please select "Save&Send" to enforce the code.

NO.	CODE IN LCD	COUNTRY/REGION	COMMENTS
1	VDE4015	Germany	For German Low Voltage Grid.
2	EN50549 PO	Poland	For Polish Low Voltage Grid
3	EN50549 NL	Netherland	For Dutch Low Voltage Grid
4	EN50438 L	-	General EN50438 Requirement. Possible to be used in Austria, Cyprus, Finland, Czech Republic, Slovenia, etc.
5	EIFS- SW	Sweden	For Swedish Low Voltage Grid
6	France	France	For French Low Voltage Grid
7	C10/11	Belgium	For Belgian Low Voltage Grid
8	NRS097	South Africa	For South African Low Voltage Grid
9	CEI0-21	Italy	For Italian Low Voltage Grid
10	EN50549L (EN50549-1)	-	General EN50549-1 requirement which meets local requirements of most European countries
11	G98	UK	For UK Low Voltage Grid <16A
12	G99	UK	For UK Low Voltage Grid >16A
13	G98 NI	North Ireland	For North Ireland Low Voltage Grid <16A
14	G99 NI	North Ireland	For North Ireland Low Voltage Grid >16A
15	User-define	-	Customized Protection Limits
16	Gen50	-	Generator Connected, Frequency-Derating, 50Hz
17	Gen 60	-	Generator Connected, Frequency-Derating, 60Hz
18	DK1	East Denmark	For East Danish low voltage grid
19	DK2	West Denmark	For West Danish low voltage grid
20	50438IE	Ireland	For Irish low voltage grid
21	RD1699	Spain	For Spanish low voltage grid
22	EN50549	-	General EN50549 Requirement. Possible to be used in Cyprus, Finland, Czech Republic, Slovenia, Jamaica