# Photovoltaic Grid-connected

## Microinverter(G4)

Model:SUN-E60/80/100/110G4-EU-Q0

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# 1. Instructions and Compliance

This manual contains important instructions that must be followed during installation and maintenance of the Photovoltaic Grid-connected Inverter (microinverter). To reduce the risk of electrical shock and ensure safe installation and operation of the microinverter, the following warning symbols are used in this document to indicate dangerous situations and important safety instructions.

**Please be kindly noted:**

- ✔ Specifications are subject to change without notice.
- ✔ Be sure to download the latest version of the manual from the manufacturer's official website www.deyeinverter.com.

**WARNING:** Indicate that failing to follow instructions appropriately may cause severe hardware damage or personnel injuries. Please take extra care when carrying out this task.

**NOTE:** Indicate important information for optimal microinverter operation. Please follow these instructions strictly.

**CAUTION: INDICATE IMPORTANT INFORMATION THAT NEEDS TO BE READ CAREFULLY AND KEPT FOR EVENTUAL REQUESTS.**

## 1.1 Safety Instructions

- ✔ **DO NOT** disconnect PV modules from the microinverter without disconnecting the AC power.
- ✔ Only qualified personnel can install and/or replace the microinverters.
- ✔ Please perform all electrical installations under local electrical codes.
- ✔ Please read all the instruction and precaution markings in the technical documents and on the microinverter and the solar array before installing or using the microinverter.
- ✔ Be aware that the body of the microinverter is the heat sink and can reach a temperature of 80°C. **DO NOT** touch the body of the microinverter to avoid being scalded.
- ✔ When the microinverter is working properly, please maintain a distance of at least 20cm from it.

✔ **DO NOT** try to repair the microinverter. If the device fails to work properly, please contact technical support to obtain an RMA number for replacement. Damaging or opening the microinverter will void the warranty.

✔ CAUTION!

* The external protective earthing conductor is connected to the microinverter's protective earthing terminal through an AC connector.
* For safe system connection, connect the AC connector first to ensure the inverter is grounded, and then carry out DC connections.
* For safe system disconnection, turn off the circuit breakers of each branch to disconnectthe AC power first. Remain the protective earthing conductor of the circuit breaker connected to the microinverter. Finally, disconnect the DC inputs.

✔ **DO NOT** connect DC inputs to the microinverter when the AC connector is unplugged in any circumstances.

✔ Please install isolation switches on the AC side of the microinverter.

## 1.2 Radio Interference Statement

The equipment may radiate radio frequency energy. If the instructions are not followed during installation and use of the equipment, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation situation. If this equipment causes harmful interference to radio or television reception, the following measures can be taken to resolve the problem:

✔ Relocate the receiving antenna away from the equipment.
✔ Seek assistance from the distributor or an experienced radio/TV technician.

Changes or modifications not expressly approved by the party responsible for compliance may void the user's authority to operate the equipment.

Wi-Fi Information
Frequency range: 2.412~2.472GHz
Wi-Fi maximum transmitting power: 16dBm ± 2dBm
Antenna: external
Antenna gain: 2.00dBi

## 1.3 Meaning of Symbols

| Labels | Description |
| --- | --- |
|  | **Caution**<br>Risk of electric shock. |
|  | **Caution**<br>Risk of burn. Do not touch. |
|  | **Caution**<br>Hot surface. |
|  | **Treatment**<br>A compliance with European Directive 2002/96/EC on Waste Electrical and Electronic Equipment. Indicate that the device, accessories, and packaging must not be disposed of as unsorted municipal waste and require separate collection at end-of-life. Please comply with local disposal regulations or consult the manufacturer's authorized distributor for equipment decommissioning guidance. |
|  | **CE Mark**<br>Attached to verify that the equipment complies with the requirements of the European RED Directives. |
|  | The user shall read the documentation. |
| **Qualified personnel** | It refers to individuals who can recognize dangers and avoid harm caused by electricity under the proper guidance or supervision of an electrical technician. In the context of safety information in this manual, "Qualified personnel" refers to those who are familiar with safety, refrigeration systems, and EMC requirements, and are authorized to energize, ground, and label equipment, systems, and circuits according to established safety procedures. Inverters and end systems can only be commissioned and operated by qualified personnel. |

# 2. System Introduction

## 2.1 Product Introduction

The microinverter is widely applied to grid-tied scenarios with active interactions with the utility grid. To make sure the equipment operate normally, please refer to Section 6.1 technical data to check the PV string input data of microinverters and ensure they match with PV modules.

| Inverter Model | SUN-E60/80/100/110G4-EU-Q0 |
|---|---|
| PV Input Voltage | 42.5V (20V~60V) |
| PV Array MPPT Voltage Range | 25V~55V |
| No. of MPP Trackers | 2 |
| No. of Strings per MPP Tracker | 1 |

NOTE: If the wireless signal is weak in the area where the microinverter is installed, a Wi-Fi signal booster should be added at an appropriate location between the router and the microinverter.

## 2.2 System Highlights

This integrated system improves safety, maximizes solar power generation, increases system reliability, and simplifies system design, installation, maintenance, and management.

✔ Maximizing Solar Power Generation

Each PV module is equipped with its own Maximum Power Point Tracking (MPPT) control, ensuring that the maximum power is delivered to the grid, regardless of how the other modules are performing. If some modules in the array are affected by factors like shade, dust, or orientation, causing them to underperform, the microinverter optimizes the performance of each individual module to ensure the overall array operates at its best.

✔ More Reliable than Centralized or String Inverters

The distributed microinverter system eliminates the risk of a single point of failure in the PV system. Microinverters are built to perform at full power even in outdoor environments with temperatures up to 113°F (45°C). The inverter enclosure is designed for outdoor use with IP67 protection rating.

✔ Easy Installation and Management

Users can install individual PV modules in any combination of quantity, orientation, type, and power rating. The ground wire (PE) of the AC cable connects directly to the microinverter chassis, possibly eliminating the need for a separate grounding wire (check local regulations).

# 3. Installation Guidance

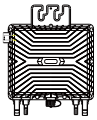
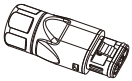
A solar PV system with microinverters is easy to install. Each microinverter can be quickly mounted on the PV bracket, just under the PV module. Low-voltage DC cables connect the PV module directly to the microinverter. This design removes the risk of high DC voltage. Make sure the installation follows all local rules and technical requirements.

WARNING: Electrical work must follow local electrical codes.
WARNING: Only qualified personnel can install and/or replace the microinverters.
WARNING: Before installation or use, please read all instructions and warning labels on the Microinverter, PV system, and technical documents.
WARNING: There is a risk of electric shock during installation. Please take proper precautions.
NOTE: It is strongly recommended to install surge protection devices in the dedicated meter box.
NOTE: This equipment is suitable for residential, commercial and light industrial use. It is not suitable for heavy industrial environments.

## 3.1 Installation Tools

**A. What's in the box**

Refer to the following table and check if all necessary items are included in the package:

| Picture | Item | Quantity |
|---|---|---|
|  | Microinverter | 1 |
|  | 3-Core AC Male Connector | 1 |
|  | User Manual | 1 |

**B. Necessary tools**

Besides the PV array and its accessories, the following tools and materials are also needed:

√ One or more AC connection junction boxes

√ Mounting hardware that fits your solar panel bracket

√ Sockets and wrenches for the mounting hardware

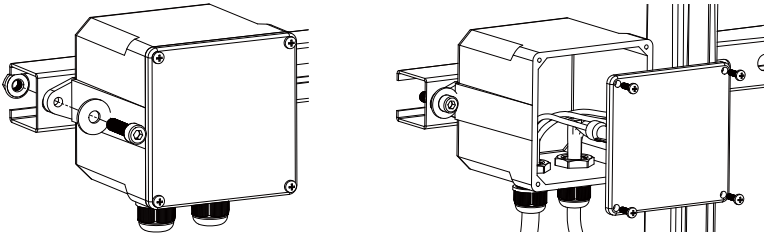
√ Continuous grounding conductor and grounding washers

√ A Phillips screwdriver

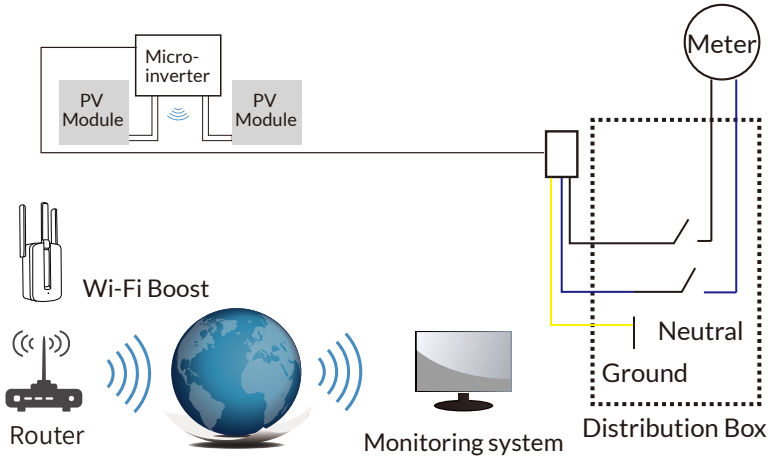
√ A torque wrench

## 3.2 Installation Steps

**Step 1. Install the AC branch circuit junction box**



A. Mount a junction box on the PV rack at a suitable place, usually at the end of a row of PV modules.
B. Insert the open end of the AC cable into the junction box using a proper cable gland or strain relief.
C. Connect the junction box to the grid connection point (usually inside a distribution box).



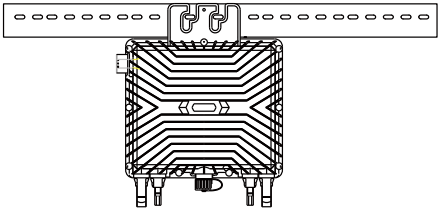

System Diagram - 2 MPPTs

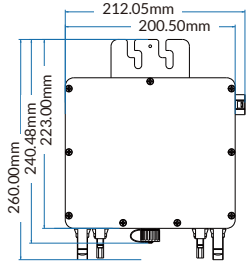
WARNING: Wiring color codes may vary depending on local regulations, so always check all installation cables before connecting them to the AC cable to ensure they match correctly. Incorrect wiring can cause permanent damage to the microinverter, and such damage is not covered by the warranty.
WARNING: Please install AC breakers on the AC side of the microinverter.

**Step 2. Mount the microinverters to the bracket or the PV module frame**

A. Mark where each microinverter will go on the bracket, making sure it's positioned well in relation to the PV module, junction box, and any other obstacles.

B. Use mounting hardware approved by your bracket supplier to attach one microinverter at each marked spot.






Mounting-E60/80/100/110 G4 (2 MPPTs)

* The AC cable on the microinverter is a TC-ER type with a wire size of 1mm² (18AWG).

WARNING: Before installing any microinverters, make sure the grid voltage at the connection point matches the rated voltage shown on the microinverter label.

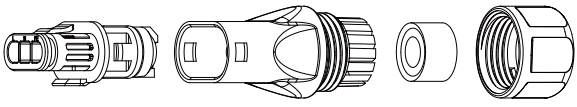
WARNING: Do not install the microinverters (including DC and AC connectors) in areas exposed to sun, rain, or snow—including gaps between modules. Leave at least 3/4 inch (1.5 cm) between the roof and the bottom of the microinverter for proper airflow.

**Step 3. Connect the microinverter to the junction box**

The 3-core AC male connector consists of four parts: socket, sleeve, sealing ring, and locking nut.

① Remove the sealing ring and sleeve from the AC male connector in order.

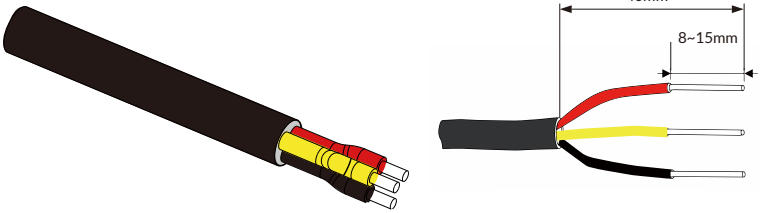
② As shown in the diagram below, separate the sleeve from the socket. There are two locking holes on the connector body—press the locking tabs inward to release the sleeve from the socket.



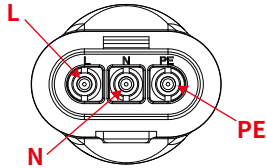

1. socket; 2. Sleeve; 3. Sealing ring; 4. Locking nut;

3-Core AC Male Connector Structure

③ Prepare the AC cable. Use a wire stripper to remove about 40mm of the outer sheath, then strip about 8–15mm of insulation from each conductor, as shown in the diagram.



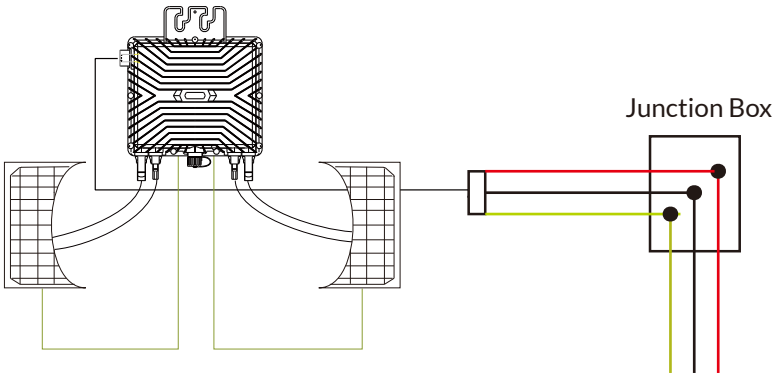
④ Insert the L (Live), N (Neutral), and PE (Ground) wires of the cable through the locking nut, sealing ring, and sleeve—in that exact order and direction.
⑤ Use an internal hex screwdriver to loosen the screws on the socket. Insert each wire into its corresponding terminal hole, then tighten all screws securely. Refer to the diagram below for correct wire placement in the connector.




3-Core AC Male Connector

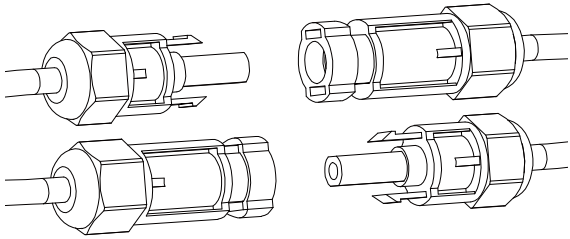
| Inverter Model | Wire Size | Cable (mm²) | Max. Torque Value | Max. Cable Length |
|---|---|---|---|---|
| SUN-E60/80/100/ 110G4-EU-Q0 | 12AWG | 2.5 | 1.0Nm | Outside Cable (L+N+PE) 20m |

⑥ Slide the sealing ring and sleeve along the wires until the sleeve clicks into place on the socket. Make sure the sealing ring fits tightly inside the sleeve around the wires. Finally, tighten the locking nut. The 3-core AC male connector is now ready to use.
⑦ Connect the prepared 3-core AC male connector to the microinverter and the open end to the N, L, and PE terminals in the junction box.




WARNING: Make sure the N, L, and PE wires are connected to the correct terminals. Incorrect wiring can lead to a system short circuit.

**Step 4. Connect the PV modules to the microinverter**

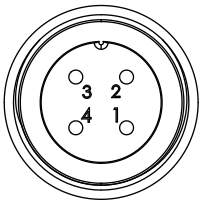


A. Connect the PV modules to the DC input ports on the microinverter.
B. To meet local regulations, the DC cable length must be less than 3 meters. Please check with your local power provider to ensure the DC cables meet local rules.

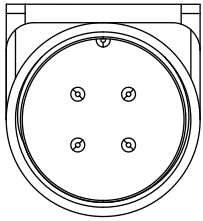
| Inverter Model | Cross Section ($mm^2$) | |
|---|---|---|
| | Range | Recommended Value |
| SUN-E60/80/100/110G4-EU-Q0 | 2.5~4.0 (12~10AWG) | 2.5 (12AWG) |

NOTE: When plugging in the DC cables:
√ If AC power is already available, the microinverter will blink in red and start working within the set time (60 seconds in default).
√ If AC power is not available, the microinverter will blink red three times, pause for 1 second, then repeat until the AC power is available.

**Step 5. RS485 Communication**
Connect the Data logger to the communication port.



Data logger side


Inverter side

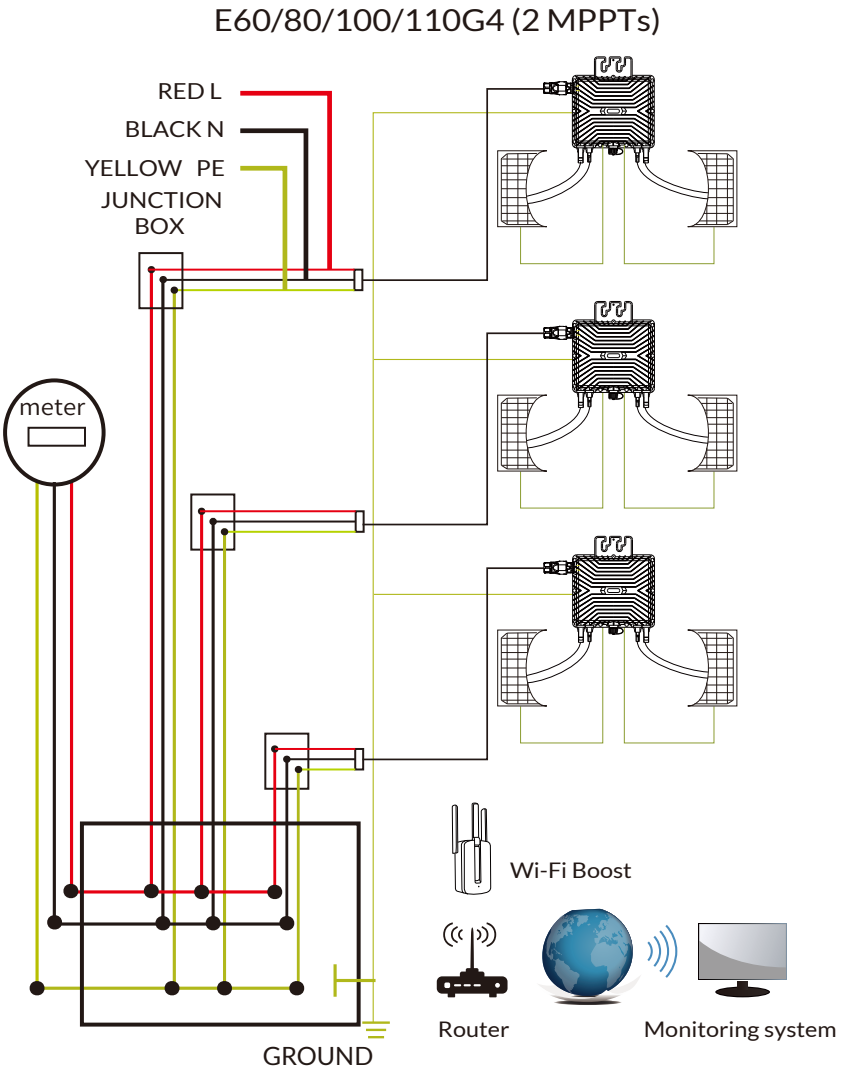
| No. | RS485 |
|---|---|
| Pin 1 | VCC |
| Pin 2 | Ground |
| Pin 3 | A+（RS485） |
| Pin 4 | B-（RS485） |

## 3.3 Wiring Diagrams

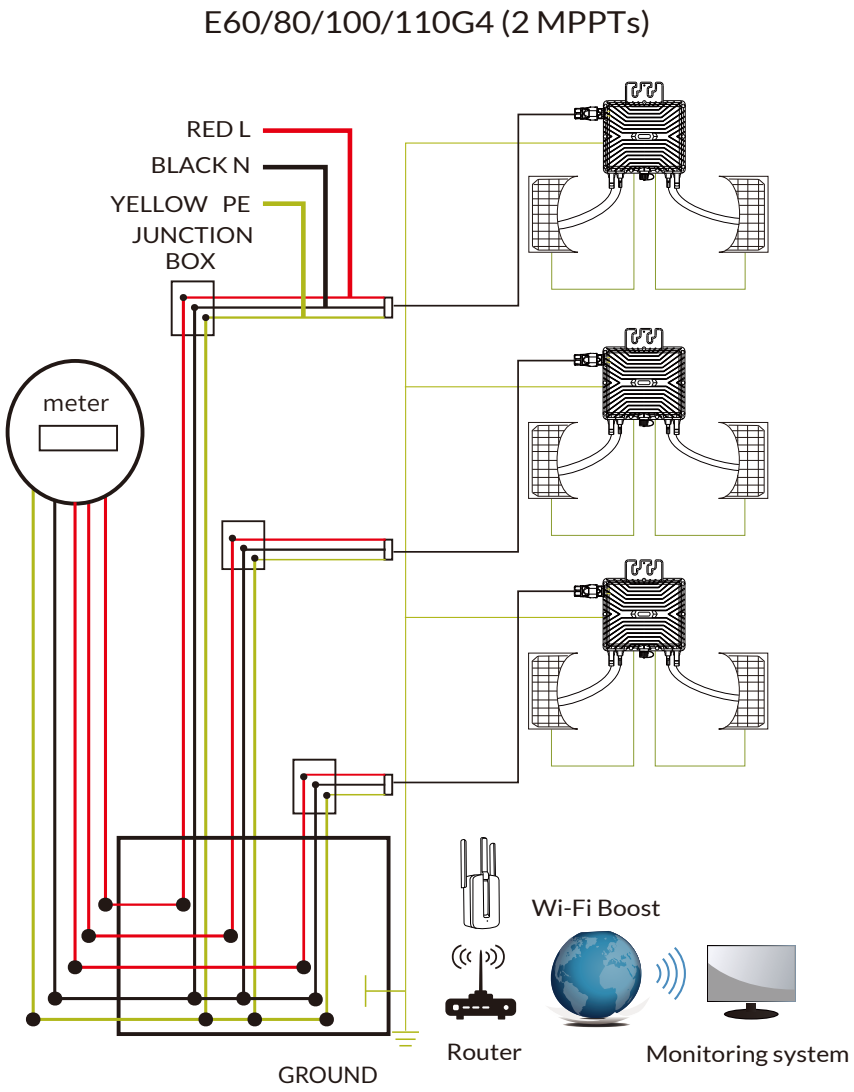
**Step 4. Connect the PV modules to the microinverter**

The microinverters can be connected to a single-phase grid or create a three-phase setup with multiple microinverters on single-phase connections.

**A. Sample Wiring Diagram of Single-Phase System**



**B. Sample Wiring Diagram of Three-Phase System**



# 4. Operation Instructions

## 4.1 Start Operating

After a successful installation of the microinverter solar PV system, start the system operating by following the instructions:

**Step 1.** Turn ON the AC circuit breaker for each microinverter's AC branch circuit.

**Step 2.** Turn ON the AC circuit breaker for the grid.

**Step 3.** The microinverter will start blinking in red for about one minute and when it turns blue, it indicates that the microinverter is producing power normally. The faster the blue blinking is, the more power is generated.

**NOTE:** When AC power is connected but the microinverter has not started, a power meter may show about 0.1A current and 25VA for each microinverter. This is reactive power and is not actually consumed from the grid.

## 4.2 Status Indications and Error Reporting

Qualified personnel can do the following troubleshooting if the solar PV system does not operate normally.

**Startup LED**

About one minute after DC power is first applied to the microinverter:

√ One short red blink indicates that the microinverter has started up successfully.

√ Two or more short red blinks indicate a failure during the microinverter startup process.

**Operation LED**

| LED Indicator | Status Description | Recommended Action |
|---|---|---|
| Slow Blue Blinking | Low Power Generation | If occurring under adequate sunlight, check for dust accumulation or shading on the PV modules. |
| Fast Blue Flashing | High Power Generation | Normal operation. No action required. |

**Error Reporting**

| LED Indicator | Status Description | Recommended Action |
|---|---|---|
| ≥ 2 Short Red Blinks After Initial DC Power-On | Microinverter startup failure | Restart the microinverter. Verify that the PV input current is within the allowable range. |
| 2 Red Blinks | DC under-voltage or over-voltage | Check whether the actual PV module voltage is within the specified operating range. |
| 4 Red Blinks | GFDI (Ground Fault Detector Interrupter) Error | Check whether the PV module frame is properly grounded. |
| 7 Red Blinks | Grid failure | Check if the AC output circuit is properly connected. Verify that the grid voltage and frequency are within allowable limits. |

**WARNING:** Do not disconnect the DC connectors while under load. Ensure that there is no current flowing through the DC cables before disconnection. To prevent current flow, an opaque material may be used to cover the PV module before disconnecting.

## 4.3 Reasons for Not Operating

If the microinverter is not operating normally, check the following guidance to find out the problem:

**A. Problems with Microinverter**

Check section 4.2 for detailed information.

**B. Communication Problems Between the Microinverter and the Router**

Indicate a situation where the microinverter itself is working normally but the communication between the microinverter and router is having problems. To quickly determine whether the issue lies with the microinverter or with the communication system, perform a diagnosis through the network:

√ If no data is displayed on the web platform or mobile app, check the network configuration.

√ If the microinverter is shown as online but no data is displayed, it may be due to the cloud platform server undergoing an update.

## 4.4 Resolutions for Not Operating

To troubleshoot a microinverter that is not operating normally, please follow the steps below:

**Step 1.** Verify that the grid voltage and frequency are within the ranges specified in the technical data (refer to section 6.1 in this manual).

**Step 2.** Check the connection to the grid. First, disconnect the AC power, then disconnect the DC power. Ensure that the grid voltage can be measured at the AC connector. Do not disconnect the DC cables while the microinverter is producing power. After that, reconnect the DC connectors and check LED light status.

**Step 3.** Check the AC branch circuit interconnections between all microinverters. Confirm that each microinverter is properly energized by the grid, as described in the last step.

**Step 4.** Ensure that all AC circuit breakers are functioning correctly and are in the closed position.

**Step 5.** Check the DC connections between the microinverter and the PV module.

**Step 6.** Verify that the DC voltage from the PV module is within the allowable range specified in the technical data (refer to section 6.1 in this manual).

**Step 7.** If the problem still exists, please contact us for technical support.

**WARNING:** Do not try to repair the microinverter. If troubleshooting steps do not resolve the issue, please contact the distributor or the Deye support team for assistance.

## 4.5 Microinverter Replacement

**Step 1. Disconnect the microinverter from the PV Module**

√ Turn off the circuit breaker for each AC branch to disconnect the AC circuit.

√ Disconnect the AC connector from the microinverter.

√ Cover the PV module with an opaque material to block sunlight.

√ Disconnect the DC connectors of the PV module from the microinverter.

√ Remove the microinverter from the PV array racking.

**Step 2. Replace with a new microinverter**

√ Install a new microinverter to the bracket step by step (refer to Section 3 Installation Guidance in this manual).

√ Remove the opaque material used for blocking sunlight.

√ Observe the LED light status immediately after the new microinverter is connected to the DC cables.

**Step 3. Connect the AC cables of the new microinverter**

# 5. Appendix

## 5.1 Technical Data

**WARNING:** Be sure to verify the voltage and current specifications of your PV module match with those of the microinverter. Please refer to the datasheet or user manual.

**WARNING:** The DC operating voltage range of the PV module must be matched with the allowable input voltage range of the microinverter.

**WARNING:** The maximum open circuit voltage of the PV module must not exceed the specified maximum input voltage of the microinverter.

| Model | SUN-E60G4-EU-Q0 | SUN-E80G4-EU-Q0 | SUN-E100G4-EU-Q0 | SUN-E110G4-EU-Q0 |
|---|---|---|---|---|
| **PV String Input Data** | | | | |
| Max. PV Input Power (W) | 210-420(2 Pieces) | 210-560(2 Pieces) | 210-700(2 Pieces) | 210-770(2 Pieces) |
| Max. PV Input Voltage (V) | 60 | | | |
| Start-up Voltage (V) | 20 | | | |
| PV Input voltage range(V) | 20-60 | | | |
| MPPT Voltage Range (V) | 25-55 | | | |
| Full Load MPPT Voltage Range(V) | 30-55 | 33-55 | 37.5-55 | 38-55 |
| Rated PV Input Voltage (V) | 42.5 | | | |
| Max. Input Short Circuit Current (A) | 27x2 | | | |
| Max. Operating PV Input Current (A) | 18x2 | | | |
| No. of MPP Trackers/ No. of Strings MPP Tracker | 2/1 | | | |
| Max. Inverter Backfeed Current To the Array | 0 | | | |
| **AC Output Side** | | | | |
| Rated AC Output Active Power (W) | 600 | 800 | 1000 | 1100 |
| Max. AC Output Apparent Power (VA) | 600 | 800 | 1000 | 1100 |
| Rated AC Output Current (A) | 2.8/2.7 | 3.7/3.5 | 4.6/4.4 | 5/4.8 |
| Max. AC Output Current (A) | 2.8/2.7 | 3.7/3.5 | 4.6/4.4 | 5/4.8 |
| Max. Output Fault Current(A) | 8 | | | |
| Max. Output Overcurrent Protection (A) | 21 | | | |
| Rated Output Voltage/Range (V) | 220/230 0.85Un-1.1Un | | | |
| Grid Connection Form | L/N/PE | | | |
| Rated Output Grid Frequency/Range(Hz) | 50/45-55, 60/55-65 | | | |
| Power Factor Adjustment Range | 0.9leading-0.9lagging/0.95leading-0.95lagging(VDE4105) | | | |
| Total Current Harmonic Distortion THDi | <3% | | | |
| DC Injection Current | <0.5%In | | | |
| **Efficiency** | | | | |
| Max. Efficiency | 96.5% | | | |
| Euro Efficiency | 96.0% | | | |
| MPPT Efficiency | >99% | | | |
| **Equipment Protection** | | | | |
| DC Reverse Polarity Protection | Yes | | | |
| AC Output Overcurrent Protection | Yes | | | |
| AC Output Overvoltage Protection | Yes | | | |
| AC Output Short Circuit Protection | Yes | | | |
| Thermal Protection | Yes | | | |
| Insulation Impedance Detection | Yes | | | |
| Anti-islanding protection | Yes | | | |
| Surge Protection Level | TYPE II(AC) | | | |

| Model | SUN-E60G4-EU-Q0 | SUN-E80G4-EU-Q0 | SUN-E100G4-EU-Q0 | SUN-E110G4-EU-Q0 |
|---|---|---|---|---|
| **Interface** | | | | |
| Communication Interface | RS485 | | | |
| **General Data** | | | | |
| Operating Temperature Range (°C) | -40 to +65°C, >45°C Derating | | | |
| Permissible Ambient Humidity | 0-100% | | | |
| Permissible Altitude (m) | 2000m | | | |
| Noise (dB) | ≤25 | | | |
| Ingress Protection(IP) Rating | IP 67 | | | |
| Inverter Topology | Isolated | | | |
| Over Voltage Category | OVC II(DC), OVC III(AC) | | | |
| Cabinet Size (WxHxD mm) | 200.5×177.8×35.5 (Excluding Connectors and Brackets) | | | |
| Weight (kg) | 2.4 | | | |
| Warranty | Standard 10 years, extended warranty | | | |
| Type of Cooling | Natural Cooling | | | |
| Grid Regulation | IEC 61727,IEC 62116,CEI 0-21,EN 50549， NRS 097,RD 140,UNE 217002, G98,VDE-AR-N 4105 | | | |
| Safety EMC/Standard | IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2 | | | |

**Maintenance:** Deye microinverters do not require any specific regular maintenance.

**Troubleshooting:** If you have any problems when using Deye products, please contact our after services team for help by email at service@deye.com.cn. For more details, please refer to product warranty policies.