



NEO 1200M-X
NEO 1600M-X
NEO 2000M-X

Installation & Operation Manual

Important Notice

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1 Notes on this manual

1.1 Introduction

This manual describes the assembly, installation, troubleshooting and maintenance of the following Microinverters manufactured by Shenzhen Growatt New Energy Co., Ltd. (hereinafter referred to as Growatt):

NEO 1200M-X

NEO 1600M-X

NEO 2000M-X

1.2 Target Group

This manual is intended for qualified personnel. Qualified personnel should have received training and have demonstrated skills and knowledge in the construction and operation of this device. Qualified personnel are trained to deal with the dangers and hazards involved in installing electrical devices.

1.3 Additional information

Find further information on special topics in the download area at en.growatt.com. The manual and other documents must be stored in a convenient place and be available at all times. We assume no liability for any damage caused by failure to observe instructions specified in this document. For possible changes in this manual, Growatt accepts no responsibilities to inform the users.

1.4 Symbols in this document

1.4.1 Warning symbols in this document

The warning symbols warn against improper operations, which may cause personal injury or device damage. Prior to installing and operating the NEO Microinverter, please familiarize yourself with the symbols and their meanings.

Symbol	Meaning
 DANGER	DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
 NOTICE	NOTICE is used to address practices not related to personal injury.

1.4.2 Markings on this product

Label	Description
	Beware High Voltage
	Risk of fire or explosion
	Risk of burns
	Residual voltage exists after the Microinverter is powered off. Wait for 5 minutes before performing any operation.
	Point of connection for grounding protection
	Direct Current (DC)
	Alternating Current (AC)
	Refer to the manual
	CE marking This product complies with the requirements of the applicable EU directives.
	The inverter must not be disposed of with the household waste.

1.5 Radio Interference Statement

Growatt Microinverters have been tested and found to comply with the CE EMC directives, designed to protect against harmful interference in a residential installation. However, if not properly installed and used in accordance with the manual, the Microinverter may cause harmful interference to radio communications, which can be determined by turning the equipment off and on. If the Microinverter does cause harmful interference to radio or television reception, you can try to correct the interference by the following measures:

- Reorient or relocate the receiving antenna of the electronic sensitive device.
- Place the Microinverter and WeLink far apart from the sensitive electronic devices.
- Connect the equipment to an outlet different from that to which the electronic sensitive devices are connected.

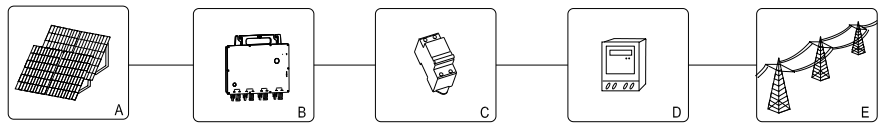
If the problem persists, please consult Growatt customer service and support.

2 Safety

2.1 Intended Use

The NEO Microinverter converts the DC power generated by the photovoltaic (PV) modules to single-phase and grid-compliant AC power and feeds the energy to the grid.

Working principle of a PV plant with the NEO Single-phase Microinverter



Position	Description
A	PV modules
B	Microinverter
C	AC load circuit breaker
D	Energy meter
E	Utility grid

The NEO Microinverter should be operated with a permanent connection to the public grid. It is not intended for mobile use. Any use of the product other than that described in the Intended Use section does not qualify as appropriate. Damages caused by improper use are beyond the scope of warranty and should be the responsibility of the user.

2.2 Installation personnel requirements and Grid connection approval

Only qualified and well-trained personnel are permitted to install the NEO Microinverter. Prior to installing the equipment, ensure that it is permitted by the local authority. The NEO Microinverter can only operate when it is properly connected to the grid. Before connecting it to the public grid, ensure that you have consulted the responsible grid operator and obtain any approval needed.

2.3 Safety instructions

The NEO Microinverter is designed and tested according to international safety requirements. As with all electrical devices, there are residual risks despite careful construction. Improper use may cause fatal hazards to the operator, device damages and property loss. Therefore, it is essential to read through the instruction manual carefully while also ensuring compliance with the safety instructions during use.

2.4 Installation Warnings

 WARNING	➤ Prior to installation, check if there is any damage caused during transportation or handling, which might affect the insulation integrity and the safety performance. Failure to do so may lead to personal injury and device damage. ➤ Unauthorized removal of necessary protection devices, improper use, incorrect installation and operation may lead to serious safety hazards and/or equipment damage. ➤ In order to minimize the potential of a shock hazard due to high voltages, cover the entire solar module with dark material prior to connecting it to any equipment.
 CAUTION	➤ Ground the Microinverter and the PV module rack in compliance with local requirements to avoid personal injury and device damage.

2.5 Electrical Connection Warnings

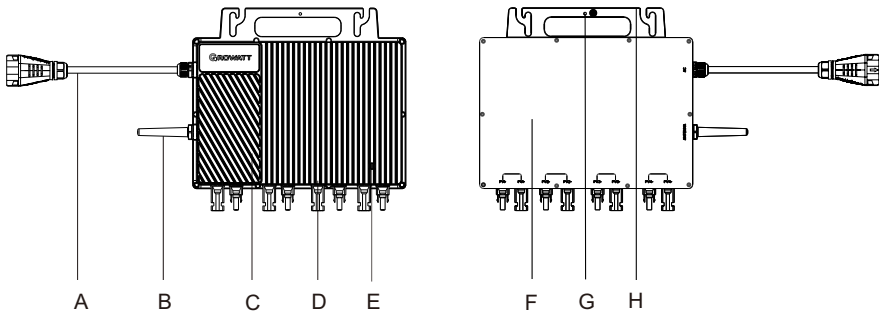
 DANGER	➤ High voltages are present in the conductive components of the product. Touching live parts could result in death or lethal injuries due to electric shock. • Do not remove the cover of the Microinverter. • Only professional electricians are permitted to install, repair and replace the equipment. • Do not touch damaged Microinverters. ➤ Danger to life due to high voltages in the Microinverter • Residual voltage exists after the Microinverter is powered off. Wait for 5 minutes before performing any operation. ➤ Persons with limited physical or mental abilities may only work with the Growatt Microinverter following proper instructions and under constant supervision. ➤ Ensure that the Microinverter is inaccessible to children
 WARNING	➤ Perform all electrical connections (e.g. conductor termination, PE connection, etc.) in accordance with locally applicable regulations. When working with the inverter powered on, adhere to all prevailing safety regulations to minimize the risk of accidents. ➤ Solar systems with inverters typically require additional control devices (e.g. switches, disconnects) or protective devices (e.g. fuse, circuit breakers). Choose specific types of control and protective devices depending on the prevailing safety rules.

2.6 Operation Warnings

 WARNING	➤ Ensure all connectors are sealed and secured during operation. ➤ Some surfaces of the Microinverter may become hot during operation. To reduce the risk of injury, do not touch the product while it is in operation. ➤ If an incorrect number of PV modules are connected in parallel, it might cause high PV voltage, damaging the device. ➤ Disconnect the device from the AC power source before disconnecting the PV module.
 CAUTION	➤ All operations regarding transportation, installation, commissioning and maintenance must be operated by qualified and well-trained personnel and in compliance with all prevailing codes and regulations. ➤ Once the Microinverter is disconnected from the grid, operate with extreme caution as some components may retain charge which might cause an electric shock. ➤ In special cases, interference may occur in a particular installation despite adhering to standardized emission limits. For example, when the sensitive equipment is located at the setup location or when the setup location is near radio or television receivers. In this case, the operator is obliged to take proper action to clear the interference. ➤ Keep a safe distance of at least 20 cm from the inverter at all times.

Product description 3

3.1 Overview



Position	Description
A	AC branch wire
B	Antenna
C	Heat sink
D	PV terminal
E	LED
F	Back plate
G	Grounding hole
H	Handle

3.2 Nameplate

The nameplate provides a unique identification of the Microinverter, including the model of the product and the device-specific characteristics.

GROWATT PV Micro Inverter Inversor FV Grid-tie NEO 2000M-X			
Max.continuous output power:	2000 W	Max.input current of the MPP tracker:	15 Adc*4
Max.continuous output current:	9.3A	Max.input short circuit current:	18.8Adc*4
Default grid voltage setting:	240 Vac	Range of input voltage:	16 - 60 Vdc
Range of grid voltage:	Split Phase	Max.input voltage:	60 Vdc
Range of grid voltage:	160 - 285 Vac	Output power factor:	>0.99
Nominal grid voltage:	@240 Vac	Enclosure:	Type 6
Nominal grid frequency:	240 Vac	Inverter type:	Isolated
Range of grid frequency:	60 Hz	Operation Ambient Temperature:	-40 - +65°C(Power derating above 50°C)
Conforms to UL STD.1741	54 - 65 Hz		-40 - +149°F(Power derating above 122°F)
IEEE STD.1547,1547A,1547.1			
 			
Intertek 4003184			
Made in China			



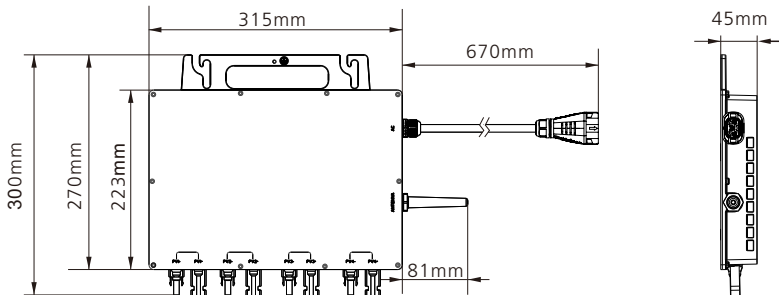
PV Micro Inverter
Inversor FV Grid-tie
NEO 2000M-X

Max. PV voltage Tensão c.c. Máxima	60 d.c.V	Max. output current Corrente c.a. Máxima	9.3 a.c.A
PV voltage range Faixa de tensão PV	16 - 60 d.c.V	Nominal output frequency Frequência de saída nominal	50/60 Hz
PV Isc Corrente de curto circuito PV (Isc)	18.8 d.c.A*4	Power factor range Fator de Potência	>0.99
Max. input current Corrente c.c. Máxima	15 d.c.A*4	Safety level Nível de segurança	Class I
Max. output power Potência c.a. Máxima	2000 W	Ingress protection Grau de Proteção IP	IP67
Max. apparent power Potência v.a. Máxima	2000 VA	Operation ambient temperature Faixa de temperatura de Operação	-40 - +65°C
Nominal output voltage Tensão c.a. Nominal	220 a.c.V		



Made in China
Feito na China

3.3 Dimensions and weight



Dimensions and weight

Model	Width	Height (H)	Depth (D)	Weight
NEO 1200-2000M-X	396 mm	300 mm	45mm	5kg

3.4 Highlights

- Peak output power up to 2000 W
- Wide input voltage range: 16--60Vdc
- 3-4 independent MPP trackers
- High-performance RF communication with ShineWeLink
- IP67-rated (NEMA 6) enclosure

Microinverter Installation 4

4.1 Safety instructions

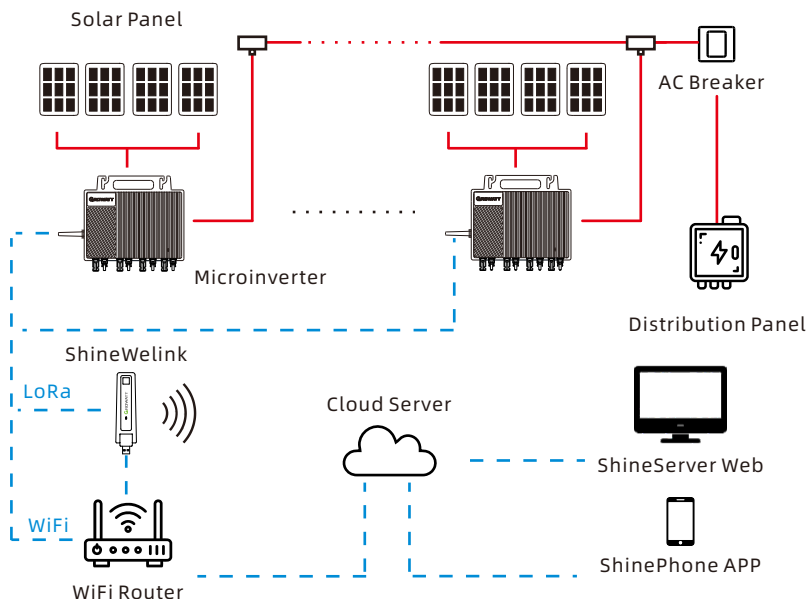
	Danger to life due to high voltages! High voltages which may cause electric shocks are present in the conductive parts of the Microinverter. Prior to performing any operations on the Microinverter, disconnect the device from all power sources.
	Danger to life due to fire or explosion ➤ Do not install or use in potentially flammable and explosive atmospheres. ➤ Do not allow terminator to come in contact with open flame.
	Risk of burns due to hot enclosure parts The Microinverter should be protected against accidental contact.
	Electromagnetic Radiation ➤ In special cases, interference may occur in a particular installation despite adhering to standardized emission limits. For example, when the sensitive equipment is located at the setup location or when the setup location is near radio or television receivers. In this case, the operator is obliged to take proper action to clear the interference. ➤ Never install the inverter near sensitive devices, such as the radio, the telephone and the television. ➤ Keep a safe distance of at least 20 cm from the Microinverter at all times. ➤ Growatt assumes no responsibility for compliance to EMC regulations for the entire system.

4.2 Decisive Voltage Class (DVC) indicated for ports

Port Name	Class
AC	C
DC	C

4.3 Microinverter system

The following diagram shows a solar system which consists of three key components:
GROWATT NEO Microinverter
GROWATT ShineWeLink (LoRa version)
GROWATT monitoring and analysis system



NOTICE

The NEO Microinverter supports both WiFi and LoRa communication. For remote monitoring, the Microinverter with integrated LoRa module should be connected to ShineWeLink. If the WiFi signal is weak, please install a WiFi booster at a suitable place between the microinverter and the router. Position the ShineWeLink next to the router, but maintain a minimum distance of 0.5m to avoid distortion resulting from the excessively strong signal. Do not place the inverter, the router and Welink on the same vertical line to avoid affecting the signal strength.

4.4 Selection of the Over Current Protection Device and the Cable

1. Growatt NEO Microinverters can be connected using the 12 AWG or 10 AWG AC trunk cable and the AC trunk connector. The limits on the number of Microinverters on each AC branch shown below should be strictly adhere to.

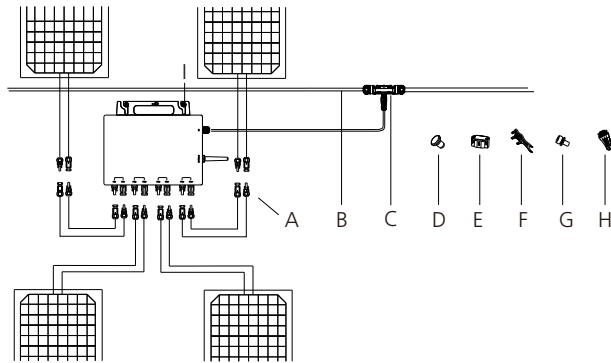
	1200M-X	1600M-X	2000M-X	Max. over current protection device
Maximum number per 12AWG AC trunk cable	4	3	2	25A
Maximum number per 10AWG AC trunk cable	5	4	3	32A

2. For connection to the Male AC Sub Connector, it is recommended to use the 14 AWG AC cable. The recommended cable length must be strictly adhered to.

Cable suggestion length:

Cable	Max.cable length		
	NEO 1200M-X	NEO 1600M-X	NEO 2000M-X
14AWG	40m	30m	25m
16AWG	25m	20m	15m

4.5 Accessories



Position	Description
A	PV Extension Cable
B	AC Trunk Cable (AWG 12/10)
C	AC Trunk Connector
D	AC Trunk End Cap
E	AC Trunk Port Cap
F	2-in-1 Unlock Tool
G	Grounding screw (M4*6)
H	Male AC Sub Connector
I	M8*22 mounting screws (Prepared by the installer)

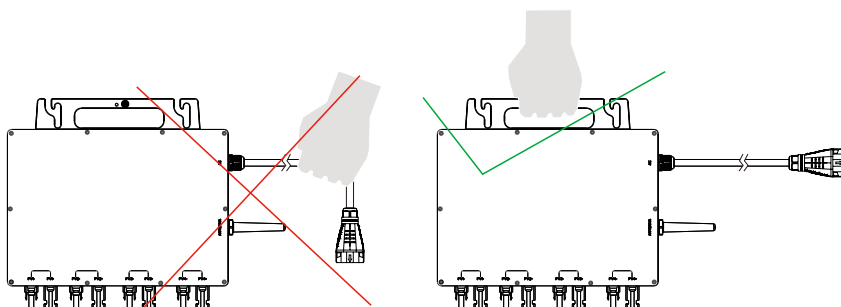
NOTE: All accessories listed above are not included in the package and should be purchased separately.

4.6 Installation Steps

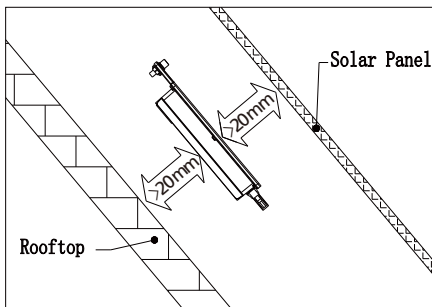
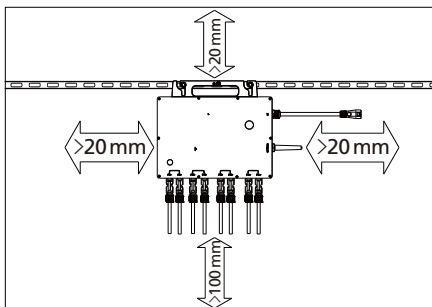
WARNING

- It is recommended to use the TC-ER 3C AWG 12 or 10 cables when the AC Trunk Connector is used.
- It is recommended to use the TC-ER 3C AWG 14 cable when the Male AC Sub Connector is used.
- Consider the maximum current of the AC trunk cable concerning the maximum number of Microinverters permitted for installation.

 WARNING	The solar modules connected to the inverter must conform to the Class A requirements of the IEC 61730 standard. ➤ Please use male and female PV connectors of the same brand.
 WARNING	Danger to life due to lethal voltages! ➤ The PV module generates voltage when exposed to sunlight, which might cause personal injury. Therefore, cover the entire solar module with dark material prior to connecting it to the Microinverter and ensure that the AC breaker is disconnected. ➤ NEVER connect or disconnect the DC connectors under load. ➤ Make sure the maximum open circuit voltage(Voc) of each PV string is less than the maximum input voltage of the inverter. ➤ Check the design of the PV plant. The Max. open-circuit voltage, which may occur when the temperature of the solar panel is -40°C, must not exceed the Max. input voltage of the inverter.
 WARNING	Improper operation during the wiring process can cause fatal injury to operators or unrecoverable damage to the inverter. Only qualified personnel can perform the wiring work. ➤ Check the connection cables of the PV modules for correct polarity and make sure that the maximum input voltage of the inverter is not exceeded.
 NOTICE	We advise to install a RCD breaker only if it is required by the local electrical code. Growatt recommends the use of a type-A RCD breaker with a rated residual current over 100 mA.
 NOTICE	The sequence can be changed based on your installation plan. When crimping the AC trunk cable, a hexagonal wire crimper must be used.



 WARNING	Do not carry the Microinverter by pulling the AC cable. Hold the handle instead.
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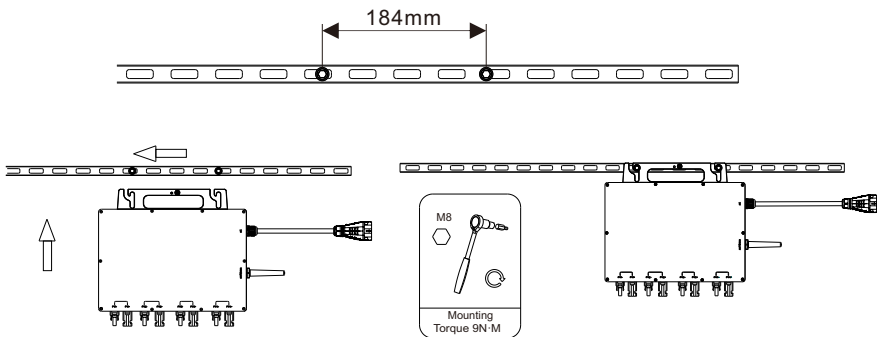


NOTICE

Reserve a clearance of at least 20 mm around the Microinverter to ensure sufficient space for ventilation and heat dissipation.

Step 1 Install the Microinverter

- Mark the location of the Microinverter on the rack with respect to the arrangement of the PV modules.
- Mount the Microinverters at the marked positions using accessories recommended by your module racking vendor.



Step 2 Ground the system

- An earth wire is incorporated in the AC cable, which is sufficient to secure the grounding.
- In areas with special grounding requirements, external grounding can be done by grounding the screw hole on the handle.

Step 3 Connect the AC cable

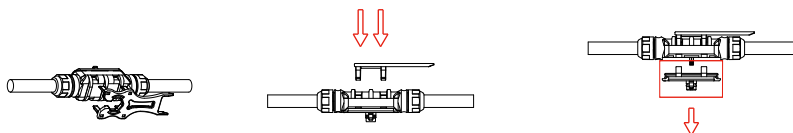
- Use the AC Trunk Connector, which is applicable to the system with a single Microinverter or multiple Microinverters.
- Connect the Microinverter to the distribution panel using an AC trunk cable.
 - Check the spacing between the Microinverters.
 - Determine the number of Microinverters that will be installed on each branch and prepare the AC trunk connectors and the AC trunk cable accordingly.

3. There are two ways to build an AC trunk cable:

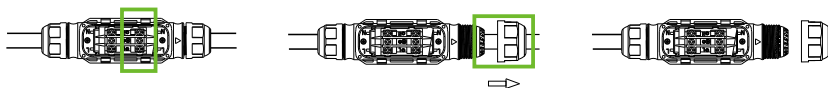
- if an AC trunk cable with multiple AC trunk connectors is available, you can take out the segments of the AC trunk cable to make AC branch ;
- you can build an AC trunk cable with AC Trunk Connectors and cables.

b) Disassemble the AC Trunk Connector and remove the cable from one end.

1. Unlock the connector's bottom cover using the 2-in-1 Unlock Tool.



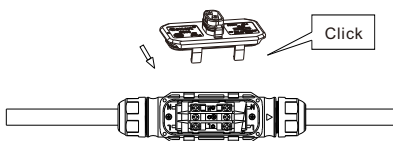
2. Loosen the three screws with the screwdriver, untighten the cap and remove the cable.



3. Install the AC Trunk End Cap at one side of AC Trunk Cable.



4. Install the cover back to the Trunk connector.

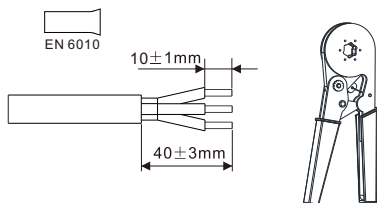


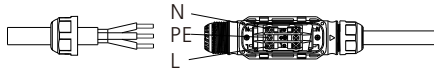
c) Build an AC Trunk Cable with AC Trunk Connectors and cables:

1. Insert the AC Trunk End cap and screw the cap back to port, then tighten the cap.

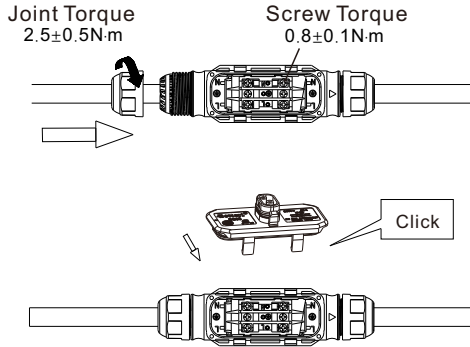


2. Crimp an EN6010 non-insulated cold-pressed terminal with each cable using a hexagonal wire crimper. Thread the cables through the cover and sealing plug. Connect the L, N and PE cables to the corresponding slots, and then tighten all screws.

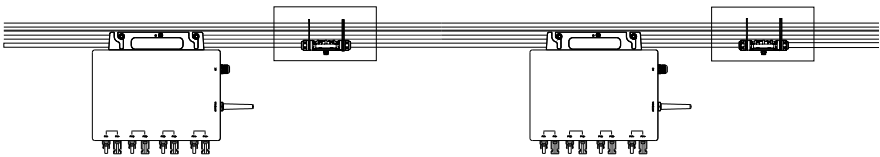




3. Tighten all screws, and tighten the cap. Install the cover back to the Trunk connector.

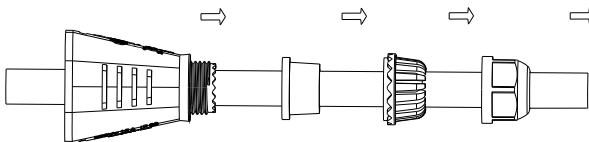


4. Attach the AC trunk cable to the mounting rack and fix the AC Trunk Connector with tie wraps.

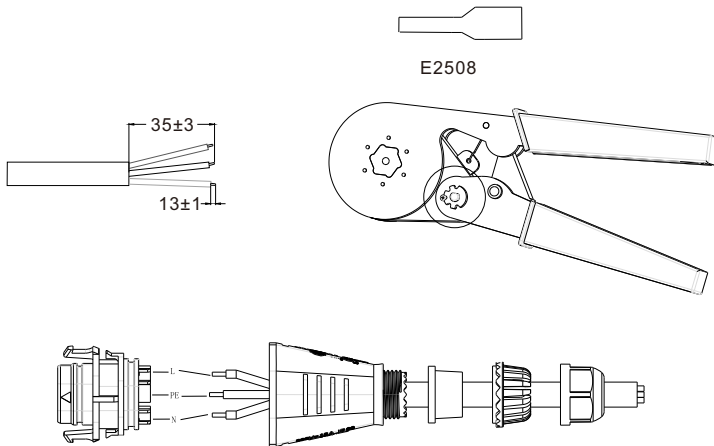


➤ Use the Male AC Sub Connector, which is applicable to the system with a single Microinverter.

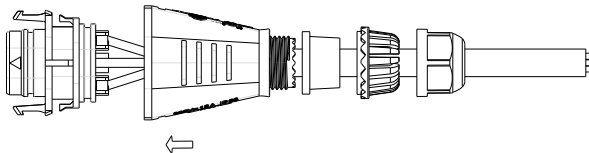
a) Prepare the Male AC Sub Connector. Loosen the cover of the connector then thread the cable through the connector.



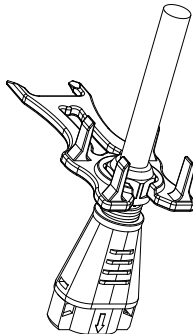
- b) Strip each cable to a length of 13 mm and crimp the E2508 cord end terminal with the hexagonal wire crimper. Assign the L, N and PE cable to the corresponding slots, then tighten the screws.



- c) Assemble the Connector.



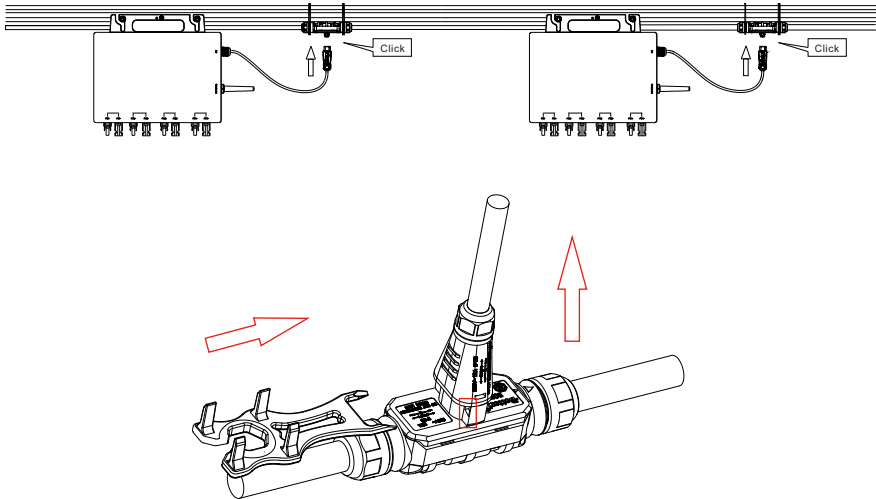
- d) Fasten the nut with the 2-in-1 Unlock Tool.



Step 4. Complete the AC Connection

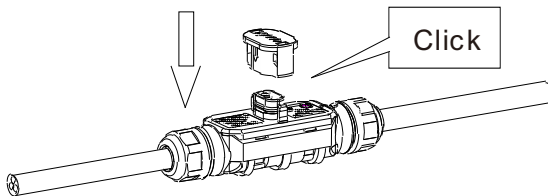
1. Connecting multiple Microinverters using the AC Trunk Connector.

a) Push the Microinverter AC Sub Connector to the AC Trunk Connector. The connectors are coupled correctly when a click is heard. You can disconnect the AC Sub connector from the AC trunk connector using the removal tool.



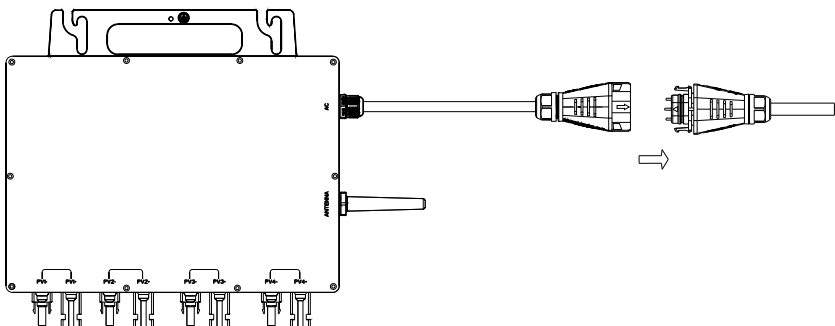
b) Connect the AC end cable to the distribution panel, and wire it to the local grid network.

c) Please fit the AC Trunk Port Cap on each vacant AC Trunk Port to keep them watertight and dustproof..



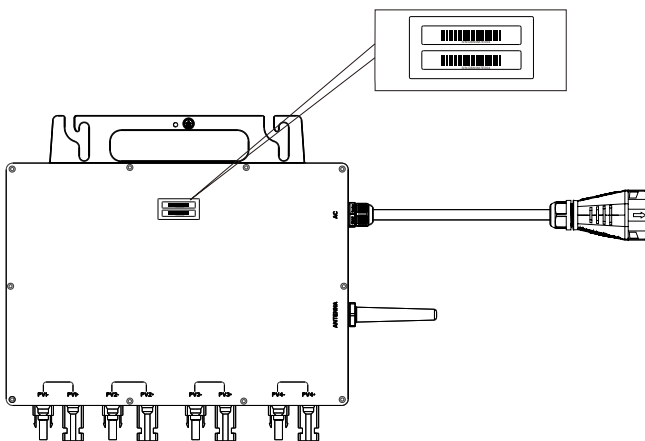
2. Connecting a single Microinverter using the Male AC Sub Connector.

Connect the female connector of the AC Branch Cable to the Male AC Sub Connector. Ensure that you hear the "Click" sound which indicates a reliable connection.



Step 5. Create an Installation Map

a) Peel the removable serial number label from each Microinverter.



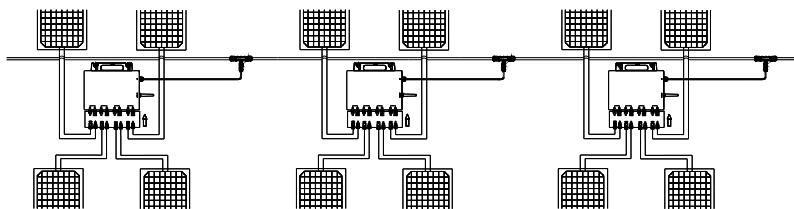
Please Make N for North Azimuth: _____ Tilt: _____			PV Array Type: Qty: _____ Microinverter Type: Qty: _____			Owner: _____ Installer: _____			Welink Serial Number: _____ Date of Installation: _____ Sheet _____ of _____	
↑ N	1	2	3	4	5	6	7	8	9	10
A										
B										
C										
D										
E										
F										
G										
H										
J										
K										
L										

b) Stick the serial number label on the diagram (found in the appendix), according to the layout on the roof.

Step 6. Connect the PV Module

 NOTICE	If the DC cable is too short for installation, use the PV Extension Cable to connect PV modules to the NEO Microinverter, otherwise the PV terminals will be damaged. The total length of the PV cable must not exceed 5m. It's forbidden to connect the positive PV terminal and the negative PV terminal of one module into two different input channels. It is recommended to use the PV1-F cable. The DC connectors and the DC input terminals on the Microinverter must be of the same brand.
 NOTICE	The NEO Microinverter (including DC and AC connectors) should avoid direct expose to the sunlight, rain or snow. Do not place the Microinverter in the gap between PV modules. Reserve a clearance of at least 20 mm around the Microinverter to ensure sufficient space for ventilation and heat dissipation. The rack must be properly grounded.

- Mount the PV modules above the Microinverter.
- Connect the DC cables of PV modules to the DC input ports of the Microinverter.



Step 7. Power on the system

- Turn on the AC breaker of the branch circuit.
- Turn on the main AC breaker. The system will start generating power in about two minutes.

Step 8. Set up the monitoring system

Please refer to the ShineWeLink Configuration Guide or the NEO WiFi Quick Configuration Guide to set up the monitoring system. You can scan the QR code below to download the documents.



【ShinePhone APP】



【ShineWeLink
Configuration Guide】



【NEO WiFi Quick
Configuration Guide】

Step 9. Check the installation (For qualified installer only)

No.		Check items	Y/N
1	DC	All DC connectors are connected to PV modules securely	
2	AC	The Microinverter's AC output cable is properly connected to the trunk cable	
3		Unused Sub AC ports on trunk cable are sealed with AC trunk port cap	
4		The AC trunk cable end is sealed with end cap	
5		The ground wire is properly installed (optional)	
6	Installation map	The installation map is completed	
7	Monitor	The monitoring system is working properly	

Troubleshooting 5



NOTICE

All faults will be reported to ShinePhone APP or ShineServer Webpage. For details, please refer to ShineServer.

Should any technical problems occur during installation and operation, qualified personnel can refer to the following instructions to rectify the fault.

5.1 Error Messages

An error message will be displayed on ShinePhone APP when a fault occurs. The faults can be divided into system faults and inverter faults.

Please have the following information ready when contacting Growatt support:

- Serial number
- Model number
- Error code
- Grid voltage
- DC input voltage
- Has this problem occurred in the past?
- What were the ambient conditions like when the problem occurred?

Information concerning the PV panels:

- Manufacturer and model number of the PV panel
- Output power of the panel
- Voc of the panel
- Vmp of the panel
- Imp of the panel

If it is necessary to replace the unit, please ship it in the original box.

5.2 System faults

System faults generally occur due to an exception in the system rather than the Microinverter. Please check the items as instructed below before replacing the inverter.

Event code	Description	Suggestion
PV Voltage High Error: 202(1-14)*	PV input voltage exceeds 60V	1. Check the voltage of each PV module with a multimeter. 2. If the voltage of the PV string is lower than 60V, please contact your dealer or Growatt customer service.

Event code	Description	Suggestion
PV Isolation Low Warning: 223	Insulation problem	1. Check if the inverter is grounded properly. 2. Check the insulation of PV cables. 3. Check the impedance between PV (+) & PV (-) and PE cable, which must be more than $2K\Omega$. If the value is within the acceptable range and warning message persists, please contact your dealer or Growatt customer service.
AC V Outrange Error: 300(1~7)	300(1~3): Grid under-voltage 300(4~6): Grid over-voltage 300(7): 10-minute average over-voltage	1. Check the AC wiring, especially the neutral and ground wires. 2. Check if the grid voltage complies with local grid standards. 3. Restart the inverter, if the problem persists, please contact your dealer or Growatt customer service.
No AC connection Error: 302	No AC connection	1. Check the AC wiring. 2. Check the status of the AC breaker
AC F Outrange Error: 304(1~7)	304(1/2/7): Grid under-frequency 304(3/4/6): Grid over-frequency 304(5): ROCOF Fault	1. Check the AC wiring, especially the neutral and ground wires. 2. Check if the grid frequency complies local grid standards. 3. Restart the inverter. If the problem persists, please contact your dealer or Growatt customer service.

5.3 Inverter warnings

Warning code	Description	Suggestion
Warning:220 String Disconnected (1-14)*	String1-4 Disconnected PV input voltage is lower than 5V	1. Check the output voltage of each PV module with a multimeter. 2. Check whether the DC connections are in poor contact.
Warning:404 EEPROM abnormal	EEPROM abnormal	Restart the inverter. If the warning still exists, please contact Growatt customer service.

5.4 Inverter faults

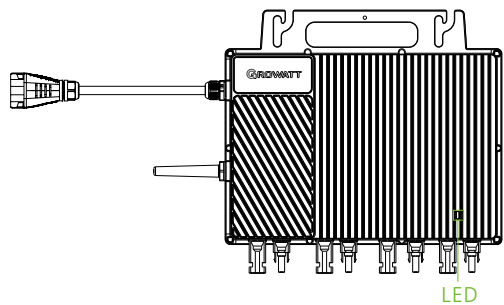
Error code	Description	Suggestion
Error: 408	Over-temperature	Wait until the ambient temperature is below 65°C and restart the inverter. If the error message persists, please contact your dealer or Growatt customer service.
Error: 416	Device failure	Please contact your dealer or Growatt customer service.

*

Code	PV4	PV3	PV2	PV1	Note
1	0	0	0	1	PV1 Warning
2	0	0	1	0	PV2 Warning
3	0	0	1	1	PV1&PV2 Warning
4	0	1	0	0	PV3 Warning
5	0	1	0	1	PV1&PV3 Warning
6	0	1	1	0	PV2&PV3 Warning
7	0	1	1	1	PV1&PV2&PV3 Warning
8	1	0	0	0	PV4 Warning
9	1	0	0	1	PV1&PV4 Warning
10	1	0	1	0	PV2&PV4 Warning
11	1	0	1	1	PV1&PV2&PV4 Warning
12	1	1	0	0	PV3&PV4 Warning
13	1	1	0	1	PV1&PV3&PV4 Warning
14	1	1	1	0	PV2&PV3&PV4 Warning

5.5 LED Indicator Status

The LED indicator flashes at start-up. Steady green indicates a successful start-up.



System status	Indicator status	Description
Waiting	Flashing green (on for 1s and off for 5s)	Requirements are not met: PV voltage is not within the start-up range; phase locking fails; grid voltage or frequency is not within the permissible range.
Countdown for grid-connection	Flashing green (on for 1s and off for 1s)	When the requirements are met, the Microinverter will count down to connect to the grid.
Grid-tied	Steady green	Successfully connected to the grid and the router.
	Flashing green (on for 5s and off for 5s)	Successfully connected to the grid, but failed to connect to the router.
Fault	Steady red	Hardware damaged.
	Flashing red (on for 1s and off for 1s)	Recoverable fault caused by the field environment.
Programming	Flashing yellow and green (on for 1s and off for 1s)	Update firmware online.

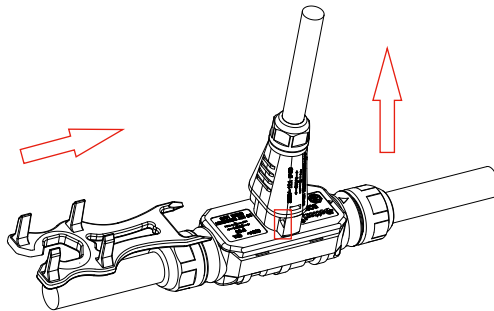
The Microinverter is powered by PV modules. If the LED indicator is off, please check the DC side connection. If the connection is correct and the PV voltage is higher than 16V, contact your distributor or Growatt customer service.

5.6 Microinverter Replacement

 WARNING	➤ Do not attempt to repair the Microinverter by yourself. Please contact your local customer service for technical support. ➤ Never disconnect the PV connectors under load. Ensure that no current presents in the DC cables prior to disconnecting. ➤ Always disconnect the AC breaker before disconnecting the PV module from the Microinverter.
 CAUTION	Danger of burn injuries due to hot enclosure parts! ➤ Wait 15 minutes before removing the Microinverter until the enclosure cools down.

a) If the microinverter replacement is authorized, perform the following steps:

1. Turn off the branch circuit breaker.
2. Remove the PV module from the rack and cover the module.
3. Disconnect the AC sub connector from the AC trunk connector with the 2-in-1 Unlock Tool.



4. Disconnect the PV module DC wire connectors from the Microinverter.
- b) Install a replacement unit to the rack.
- c) Connect the AC Sub connector of the replacement unit to the AC trunk connector.
- d) Close the branch circuit breaker and check the operation status of the replacement unit.
- e) Add the new device on the ShinePhone APP or the ShineServer Webpage to update the relevant information. Replace the label with the serial number of the new unit on the installation map.

6 Warranty

Please refer to the warranty card or other relevant documents.

7 Decommissioning

7.1 Removing the Microinverter

1. Disconnect the Microinverter from all power sources.
2. Remove all cables connected to the Microinverter.
3. Remove the microinverter from the rack.

7.2 Packing the Microinverter

If the original packing box is available, please put the Microinverter in its original carton and secure it with tension belts. If it is no longer available, you can also use an equivalent carton. The box must be capable of being closed completely and made to support both the weight and the size of the inverter.

7.3 Storage and Transportation

To store or transport the NEO Microinverter, it is recommended to place it in the original packing carton. A maximum of 4 carton boxes can be stacked.

- If you opt to store the Microinverter in your warehouse, please select an appropriate location. The storage temperature should be always between -40°C and +65°C. Keep the storage relative humidity lower than 95%.
- After long-term storage, the local installer or personnel from Growatt service department should perform a comprehensive test before installation.

7.4 Disposal



Do not dispose of faulty Microinverters or accessories together with household waste. Please comply with the disposal regulations for electronic waste which apply at the installation site.

Technical Data 8

8.1 Specifications

Specifications \ Model	1200	1600	2000
Input data(DC)			
Max. recommended PV power(for module STC)	1.8k	2.4k	3k
Max. DC voltage	60V		
Start-up voltage	20V		
Nominal voltage	45V		
MPP voltage range	16-55V		
No. of MPP trackers	3	4	4
No. of PV module per MPP tracker	1/1/1	1/1/1/1	1/1/1/1
Max. input current per MPP tracker	15A		
Max. short-circuit current per MPP tracker	18.8A		
Output data(AC)			
AC nominal power	1200W	1600W	2000W
Max. AC apparent power	1200VA	1600VA	2000VA
Nominal AC voltage/range*	220 230 240/160~285V		
AC grid frequency/range*	50-60Hz/44-55Hz;54-65Hz		
Rated output current	5.45A 5.22A 5A	7.27A 6.96A 6.67A	9.09A 8.7A 8.33A
Max. output current	5.58A	7.44A	9.3A
AC BUS Maximum Current	32A		
Max. output overcurrent protection	10A	10A	16A
Max. inrush current (Peak value/duration time)	<10A/<200us		
Max. output fault current (Peak value/duration time)	<40A/<30us		
Max. inverter backfeed current to the PV array	0A		
Power factor(@nominal power)	>0.99		
THDi	<3%		
AC grid connection type	Single phase		

Specifications \ Model	1200	1600	2000
Overvoltage category	PV:II AC:III		
Efficiency			
Max. efficiency	96.5%		
CEC efficiency	96%		
MPPT efficiency	99.5%		
Protection			
DC reverse-polarity protection	Integrated		
AC surge protection	Type III		
AC short-circuit protection	Integrated		
Grid monitoring	Integrated		
Anti-islanding protection	Integrated		
General data			
Dimensions (W/H/D) in mm	396/300/45		
Weight	5kg		
Operating temperature range	-40 °C ~ +65°C		
Noise emission (typical)	≤ 25 dB(A)		
Max. altitude	4000m		
Night Power Consumption	50mW		
Topology	Isolated		
Cooling	Natural convection		
Protection degree	IP67(NEMA 6)		
Relative humidity	0~100%		
DC connection	VP-D4/ MC4(opt)		
AC connection	Quick connector		
Interfaces			
Display	LED+APP		
Monitoring	WiFi version/LoRa version (optional)*		
Warranty:12/15 years	Yes/Optional		

Specifications \ Model	1200	1600	2000
Wireless parameters(2.4GHz WiFi)			
Wireless standard	802.11 b/g/n		
Wireless frequency	2412-2472MHz		
Maximum output power	+20dBm		
Encryption scheme	AES		
Wireless parameters(LoRa)			
Wireless frequency	868 MHz (EU) / 915 MHz		
Maximum output power	14dBm (EU) / 17dBm		
Certificates and approvals			
Grid regulation	ABNT NBR 16149:2013; ABNT NBR 16150:2013; ABNT NBR IEC 62116: 2012 IEEE1547;		
EMC	IEC/EN 62920,IEC/EN 61000-6-1/-2/-3/-4, IEC/EN 61000-3-2/-3		
Safety	IEC/EN62109-1,IEC/EN62109-2;UL1741		

All specifications are subject to change without notice.

* The AC Voltage and Frequency Range may vary depending on specific country grid standard.

* Growatt microinverter is available in two versions: WiFi and LoRa, make sure to select the appropriate version when purchasing.

8.2 DC connector info

DC connector	VP-D4/ MC4(opt)
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8.3 Torque

AC Trunk Connector	2.5 N·m
Grounding Screw	0.8 N·m

9 Contact

- If you have technical problems with our products, contact the GROWATT Service Line or visit Growatt official website to leave a message.

Shenzhen Growatt New Energy Co., Ltd.

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For local customer support, please visit <https://en.growatt.com/support/contact>



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