SUNGROW

User Manual

EyeM4 Wireless Communication Module

About This Manual

This manual is intended for the wireless communication module researched and manufactured by Sungrow Power Supply Co., Ltd.

Intended Use

This manual is intended to provide users with detailed information on the wireless communication module as well as installation, operation, and maintenance description.

Related Documents

This manual may not cover all information on the wireless communication module. For more information, visit the website at www.sungrowpower.com or the website of the corresponding manufacturer.

Target Group

This manual is intended for technically qualified personnel who need to install, operate, and maintain the wireless communication module and end users who view plant information and perform operations through the iSolarCloud APP.

How to Use This Manual

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

The contents of the manual will be periodically updated or revised due to product development. It is probable that there are changes of manual in the subsequent inverter edition. The latest manual can be acquired via visiting the website at www.sungrowpower.com.

Symbols

Important instructions contained in this manual should be followed during installation, operation and maintenance of the inverter. They will be highlighted by the following symbols.

DANGER

Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.

WARNING

Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.

NOTICE

Indicates a situation that, if not avoided, could result in equipment or property damage.

Indicates additional information, emphasized contents or tips that may be helpful, e.g. to help you solve problems or save time.

Contents

1 Safety Instructions

The wireless communication module has been designed and tested in strict accordance with the international safety regulations. Read all safety instructions carefully prior to any work and observe them at all times when working on or with the wireless communication module.

Incorrect operation or work may cause:

- Injury or death to the operator or a third party.
- Damage to the inverter and other property safety of the operator or a third party.

All detailed work-related safety warnings and notices will be specified at critical points in the manual.

⚠ WARNING

All installations should be performed by technical personnel. They should have:

- **been trained/dedicatedly**
- **read this manual thoroughly and known related safety instructions**
- **been familiar with the electrical**

The qualified technical personnel can perform the following operations:

- Install the wireless communication module to the inverter bottom.
- Commission the wireless communication module.
- Operate and maintain the wireless communication module.

Before installation

NOTICE

Upon receiving, check whether the wireless communication module is damaged during transport. If there is any damage, contact SUNGROW or the forwarding company.

⚠ CAUTION

Risk of injury due to incorrect operations!

- **Always observe the instructions in this manual when moving and placing the wireless communication module.**
- **Incorrect operations on the wireless communication module can cause minor injury, serious injury, or bruise.**

Mechanical installation

⚠ CAUTION

Poor ventilation will compromise the system performance!

Ensure that the device is well ventilated and sufficiently cooled down during operation.

Electrical connection

NOTICE

All electrical connections must comply with local and national regulations.

During operation

⚠ WARNING

Never remove the wireless communication module if it is running or it carries voltage.

⚠ CAUTION

Danger of burning!

Never touch the hot components when the wireless communication module is running.

⚠ CAUTION

Keep unauthorized persons away!

Place warning signs or labels before starting electrical connections and maintenance, to ensure that unauthorized persons have no access to the electrical operating area.

NOTICE

- **Restart the wireless communication module only after the faults impairing the safety performance of the wireless communication module have been cleared.**
- **No serviceable components contained in the wireless communication module. If maintenance work is required, contact SUNGROW.**

NOTICE

Never replace the internal components without permissions. Otherwise, SUNGROW shall not be held liable for any damage caused.

NOTICE

The components can be damaged due to touching the PCB or other components sensitive to ESD or performing incorrect operations.

- **Avoid unnecessary touch to the PCB.**
- **Respect the ESD protection standards, for example, wear a wrist strap.**

Others

⚠ WARNING

Ensure that all warning labels and nameplates on the wireless communication module are:

- **Clearly legible**
- **Not removed or covered**

WARNING

Observe the following items:

- **Grid connection rules**
- **Safety descriptions of other electrical devices**

2 Product Description

2.1 System Diagram

The wireless communication module can obtain the inverter information and transmit the data to the remote server. The following figures show the typical application of the wireless communication module.

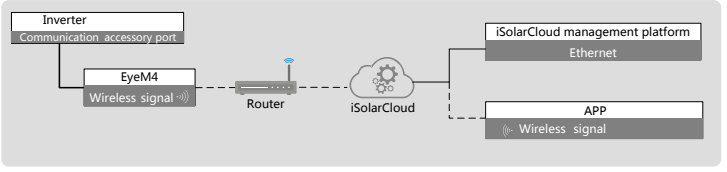


Fig. 2-1 Application of the wireless communication module (WLAN)

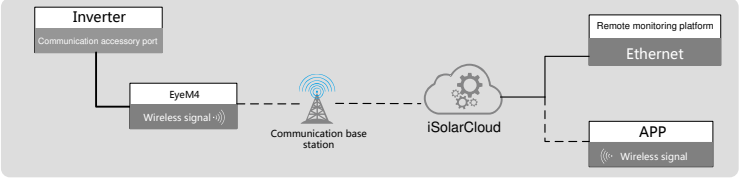


Fig. 2-2 Application of the wireless communication module (4G)

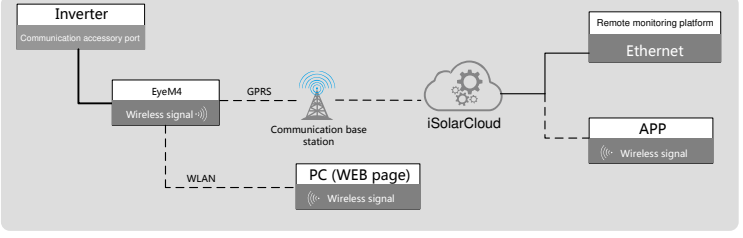


Fig. 2-3 Application of the wireless communication module (4G+WLAN)

2.2 Wireless Communication Module

2.2.1 Product Appearance

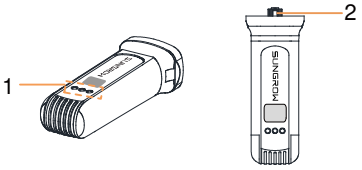


Fig. 2-4 Appearance

* The image shown here is for reference only. The actual product you receive may differ.

No.	Name	Description
1	Indicator	Indicating the running state of the module
2	RS485 communication	Used to connect the module with the inverter

Ensure that the wireless communication module is free of visible damages before performing the next operations.

* After the home router is configured, it takes about 2 minutes for the inverter Wi-Fi signal to be connected to the data server.

2.2.2 Principle Description

The wireless communication module can be connected to the inverter through the standard RS485 interface, thereby obtaining inverter running data. The running data is transmitted to the remote server in the Wi-Fi wireless communication manner.

2.2.3 Function Description

The wireless communication module mainly has the following functions:

- Data collection

  The wireless communication module can store system information such as running data and fault records.

- Communication interface

  RS485, Baud rate 9600, null check, 8 data bits, and 1 stop bit

- Remote management of the iSolarCloud

  The device can be periodically connected to the iSolarCloud server and transmit the data to the server.

3 Installation Flow

The overall installation flow of the wireless communication module is shown in the following figure 3-1.

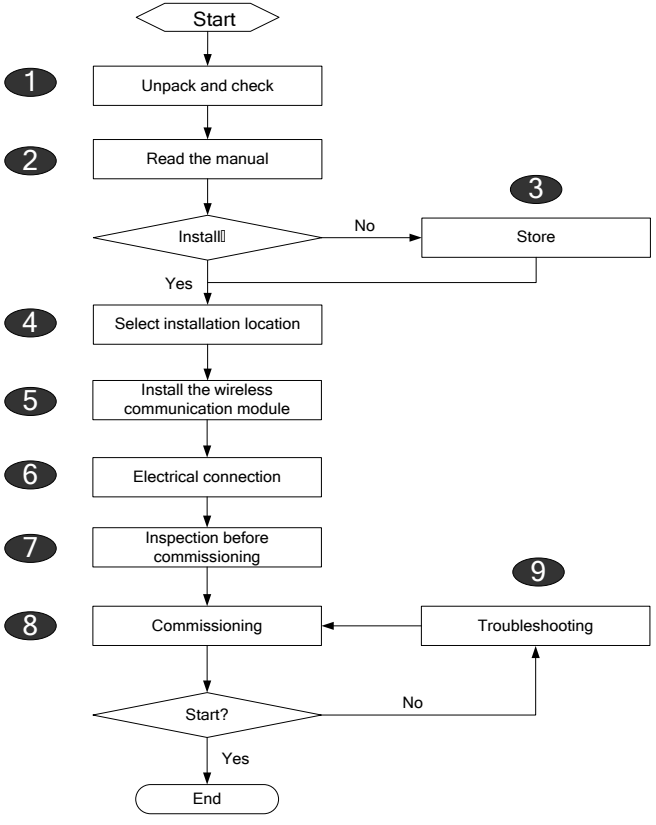


Fig. 3-1 Installation Flow

Tab. 3-1 Description of installation flow

Step	Description	Reference chapter
1	Unpack and check.	2.1
2	Read the user manual, especially the "Safety Instructions".	1
3	Store the wireless communication module properly if it is not installed immediately.	2.2
4	Select the optimum installation site.	3.1
5	Install the wireless communication module.	3.2
6	Electrical connection.	4 Electrical
7	Inspection before commissioning.	5.1
8	Start the wireless communication module.	5.2
9	Troubleshooting.	9.1

4 Unpacking and Storage

4.1 Unpacking and Inspection

The wireless communication module has been inspected and tested before delivery, but it may be damaged during transport. Check the module carefully upon receiving.

- Check whether the packing case is damaged.
- Check the scope of delivery for completeness and correctness according to the packing list.
- Check whether the device in the packing case is intact and is free of damage.

If there any damage, contact the forwarding company or SUNGROW. Take a picture of the damage, with which we can provide quicker service.

Do not dispose of the packing case. It is recommended to store the wireless communication module in its original packing case.

4.2 Nameplate

The nameplate is attached to the side of the wireless communication module, including information such as product model and manufacturer.

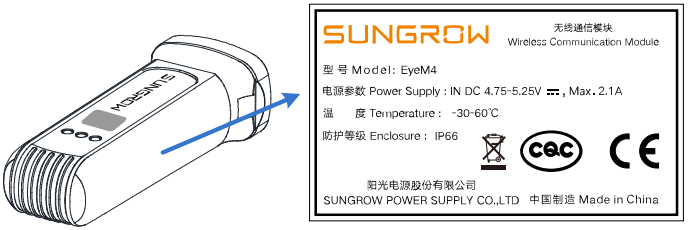
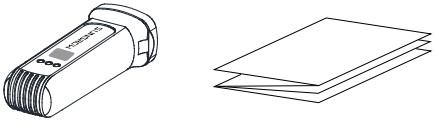


Table 4-1 Description of icons on the nameplate

Icon	Description
⎓	Direct current

Icon	Description
IP65	(IP: INGRESS PROTECTION) IP65 means that the product completely prevents foreign matter from entering, and can completely prevent dust from entering. When subjected to strong wave impact or strong water spray, the water intake of the appliance should not reach harmful effects.

4.3 Scope of Delivery



A B

Fig. 4-1 Scope of delivery

Item	Name	Description
A	Wireless communication module	Upload inverter data
B	Document	Quick installation guide

4.4 Storage

Store the wireless communication module in proper environment if it is not installed immediately. If otherwise, the wireless communication module may be rusted or its internal components may be damaged, and SUNGROW shall not be held liable for any damage caused.

- The wireless communication module must be packed in its original packing case with desiccant kept inside.
- The packing case must be sealed with adhesive tape.
- The wireless communication module must be stored in a clean and dry place with dustproof and waterproof measures taken.
- The storage temperature ranges from –40°C to 85°C; and the relative humidity ranges from 5% to 95%
- The wireless communication module must be stored in a place away from chemically corrosive materials.

- Regularly check the wireless communication module during storage (recommended: once every six months), and replace the packing material if necessary.
- The packing case must be upright.

5 Mechanical Installation

5.1 Installation Location

The wireless communication module is installed at the inverter bottom.

- With ingress of protection IP66, the wireless communication module can be installed both indoors and outdoors.
- The ambient temperature ranges from –30°C to 60°C
- The permissible relative humidity is 0–95%

Max. ambient temperature: **+60°C**

Min. ambient temperature: **-30°C**

Max. relative humidity: **95% (non-condensing)**

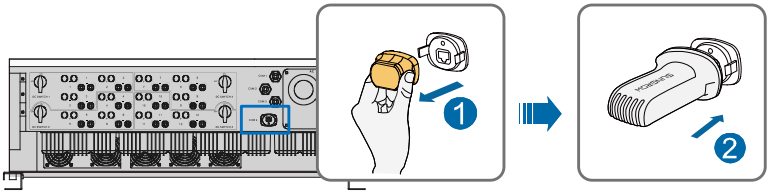
5.2 Installation

5.2.1 Preparation before Installation

- Adapter inverter: single-phase residential inverter and three-phase string inverter manufactured by SUNGROW.
- The inverter has been installed correctly and the DC side can be powered on (For details, refer to the corresponding user manual.).

5.2.2 Installation Steps

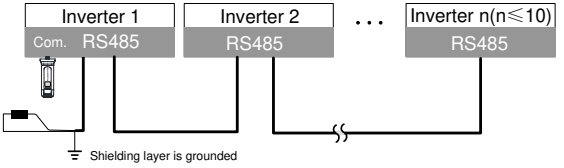
Step 1 Take out the wireless communication module from the packing case, and identify the correct connection manner.



Step 2 Insert the wireless communication module into the network port (COM) at the bottom of the inverter until it snaps into place with a "Click" sound. If the module is still loose, remove it from the communication port and check whether the port is damaged. If the port the normal, reinsert the wireless communication module.

The wireless communication module can be plugged in and out without switching off the inverter.

Step 3 If you need to collect information of several inverters, connect the inverters in the daisy chain manner through the RS485 communication cables as described in the corresponding user manual.



Multiple inverters in daisy chain

Step 4 After installation, the wireless communication module will automatically communicate with the inverter once the inverter is powered on.

- Press down the buckles on both sides when plugging/unplugging the module. Frequent plugging/unplugging operation is not recommended.
- •If the wireless communication module needs to be replaced during operation, replace it via the iSolarCloud App (For details, refer to the user manual of the iSolarCloud APP.).

6 Commissioning

6.1 Inspection Before Commissioning

Check the following items before starting the wireless communication module for the first time.

Environment inspection

1. The wireless communication module is installed in a place convenient for operation and maintenance.
2. Ensure again that the wireless communication module is firmly in place.
3. The installation environment is well-ventilated.
4. The wireless communication module is correctly connected to the inverter.
5. The cables are appropriately routed and well protected against mechanical damage.
6. Make sure the inverter to be connected has a correct SN number (product serial number).

6.2 Commissioning Steps

When all the foregoing items meet requirements, start the wireless communication module for the first time.

Step 1 Connect the AC circuit breakers.

Step 2 Connect the DC switches of the inverter.

Step 3 If the sunlight is sufficient, the PV panel starts to supply DC power to the inverter. When the DC voltage exceeds the start voltage of the inverter, the inverter will automatically start.

Wait about 15s for the wireless communication module to start automatically.

Step 4 Download the iSolarCloud APP and configure the parameters of the inverter connected with the wireless communication module. For details, refer to the corresponding quick operation guide.

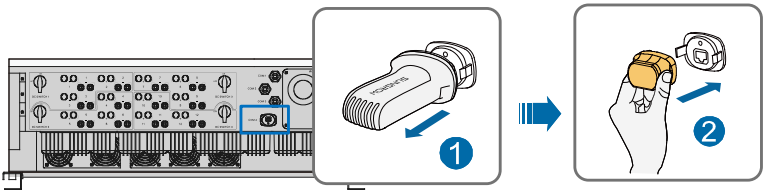
7 Removing and Disposing

7.1 Removal

Users can remove the wireless communication module in the reverse steps of electrical connection and mechanical installation.

Proceed as follows to unplug the wireless communication module from the inverter. Otherwise, the device may be damaged.

Step 1 Press and hold the buckles on both sides of the wireless communication module and unplug it from the RJ45 interface.



Step 2 Pack the wireless communication module in its original packing case and seal the RJ45 interface at the bottom of the inverter with supplied waterproof plug.

NOTICE

If the wireless communication module will be used in the future, refer to the chapter "4.4 Storage" to store it properly.

7.2 Disposal

If the wireless communication module reaches the end of its service life, users should dispose of it properly.

NOTICE

The wireless communication module consists of LED indicators and other components, which may cause environmental pollution. Users should dispose of it according to related regulations.

8 Appendix

8.1 Technical Information

Communication	
Max. number of devices	10
LED display	LED x 4
Wireless communication	
4G communication	FDD LTE: B1, B3, B5, B8
	TDD LTE: B38, B39, B40, B41
	TD-SCDMA: B34, B39
	CDMA: BC0
	GSM: 900MHz / 1800MHz
	WCDMA: B1, B8
Wi-Fi communication	802.11 b/g/n/ac
	HT20/40/80MHz
	2.4GHz / 5GHz
Power Supply	
DC input	5 Vdc, 0.9 A
Power consumption	≤4 W
Ambient conditions	
Operating temperature	-30℃ – 60℃
Relative air humidity	≤95% (non-condensing)
Elevation	≤4000 m
Protection class	IP66
Mechanical parameters	
Dimensions (W×H×D)	48 mm × 160 mm × 30 mm
Mounting type	Plug and Play

8.2 Transmitting Power

Mode	Rate (Mbps)	TRP	TIS (PER≤10%)
802.11g	6	≥13	≥ -84
802.11g	54	≥9	≥ -68
802.11b	1	≥14	≥ -86

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Mode	Rate (Mbps)	TRP	TIS (PER≤10%)
802.11b	11	≥19	≥ -91
802.11g	6	≥17	≥ -90
802.11g	54	≥11	≥ -73
802.11n HT20	MCS0	≥11	≥ -90
802.11n HT20	MCS7	≥10	≥ -71
802.11n HT40	MCS0	≥10	≥ -87
802.11n HT40	MCS7	≥9	≥ -68
802.11ac HT20	MCS0	≥8	≥ -84
802.11ac HT20	MCS7	≥7	≥ -65
802.11ac HT40	MCS0	≥8	≥ -81
802.11ac HT40	MCS9	≥7	≥ -60
802.11ac HT80	MCS0	≥7	≥ -78
802.11ac HT80	MCS9	≥6	≥ -54

8.3 Transmitting frequency

Network standard		Frequency band
2G	GSM900	B1/B4/B5/B8
	GSM1800	B3/B39/B40/B41
3G	TD-SCDMA	B1/B8
	WCDMA	B4/B39
4G	CDMA	B1
	GSM	GSM/WCDMA

Frequency band	Send (MHz)	Receive (MHz)
1	1920~1980	2110~2170
3(1800)	1710~1785	1805~1880
5	824~849	869~894
8(900)	880~915	925~960
34	2010~2025	2010~2025
39	1880~1920	1880~1920
40	2300~2400	2300~2400
41	2496~2690	2496~2690

8.4 Quality Assurance

When product faults occur during the warranty period, SUNGROW will provide free service or replace the product with a new one.

Evidence
During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

Conditions
- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

Exclusion of Liability
In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee.
- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in an environment, as described in the manual.
- The fault or damage is caused by installation, repair, modification, or disassembly performed by a service provider or personnel not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.

- The installation and use range are beyond stipulations of relevant international standards
- The damage is caused by unexpected natural factors

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.

8.5 Contact Information

Should you have any question about this product, please contact us.

We need the following information to provide you the best assistance:

- Type of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

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