FelicityESS WiFi Micro inverter
Installation User Manual

X-RAY-BDM2000/2250

Manufacturer

Guangdong Felicity New Energy Co., Ltd
(KongGangBaiYun)No. 2, Donghua Huaye Road, Renhe Town, Baiyun Area,
Guangzhou, Guangdong, P. R. CHINA
Web: https://www.felicityess.com/

DISCLAIMERS

The information in these documents is the property of Guangdong Felicity New Energy Co., Ltd., hereafter referred to as FelicityESS.

No part of this document may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, mechanical, electronic, photographic, magnetic or otherwise, without the prior written permission of FelicityESS. Internal reproduction used solely for the purpose of product evaluation or other proper use is allowed and does not require prior approval.

FelicityESS makes no representations or warranties, express or implied, with respect to this documentation or any of the equipment and/or software it may describe, including without limiting the generality of the foregoing, to any implied warranties of utility, merchantability, or fitness of any particular purpose. All such representations or warranties are expressly disclaimed. Neither FelicityESS nor its distributors or dealers shall be liable for any indirect, incidental, or consequential damages under any circumstances.

The exclusion of implied warranties may not apply in all cases under some statutes, and thus the above exclusion may not apply.

This document and the material furnished within is believed to be complete, accurate and up-to-date. Readers are cautioned, however, that product improvements and field usage experience may cause FelicityESS to make changes to specifications and contents without prior notice, or per contract provisions in those cases where a supply agreement requires advance notice. FelicityESS assumes no responsibility for the use of this material, and no responsibility for any damages, including indirect, incidental or consequential damages, caused by reliance on the material presented, including, but not limited to, omissions, typographical errors, arithmetical errors or listing errors in the content material.

Specifications and contents in these documents are continually reviewed, and subject to change without prior notice where necessary. However, discrepancies cannot be excluded. No guarantee is made for the completeness of these documents.

FelicityESS WARRANTY

You can download the latest warranty terms and conditions from website at https://www.felicityess.com/.

For technical problems concerning FelicityESS products and requiring assistance, please refer to CONTACT.

Trademarks

All trademarks, including company, brand products and service names, are recognized, even if not explicitly identified as such. Missing designations do not mean that a product or brandis not a registered trademark.

SAFETY INSTRUCTIONS

WARNING:

BE AWARE THAT INSTALLATION OF THIS EQUIPMENT INCLUDES RISK OF ELECTRIC SHOCK. NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED WHEN A GROUND FAULT IS INDICATED.

1、Lightning Surge Suppression

Lightning does not actually need to strike the equipment or building where PV system is installed to cause damage. Often, a strike nearby will induce voltage spikes in the electrical grid that can damage equipment. Our inverters has integrated surge protection, greater than most string inverters. However, if the surge has sufficient energy, the protection built into the inverter can be exceeded, and the equipment can be damaged.

Since the FelicityESS Limited Warranty does not cover "acts of God" such as lightning strikes, and since lightning strikes can occur anywhere, it is best practice to install surge protection as part of any solar installation. Installation of surge protection devices should follow vendor instructions.

2、FCC COMPLIANCE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

OVERVIEWING THE PRODUCT

Product Overview

1	AC Output Cable
2	WiFi Dongle (optional)
3	LED display
4	DC input (+)
5	DC input (-)

INSTALLING THE PRODUCT

Safety

⚠ WARNING

BE AWARE THAT INSTALLATION OF THIS EQUIPMENT INCLUDES RISK OF ELECTRIC SHOCK. NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED WHEN A GROUND FAULT IS INDICATED.

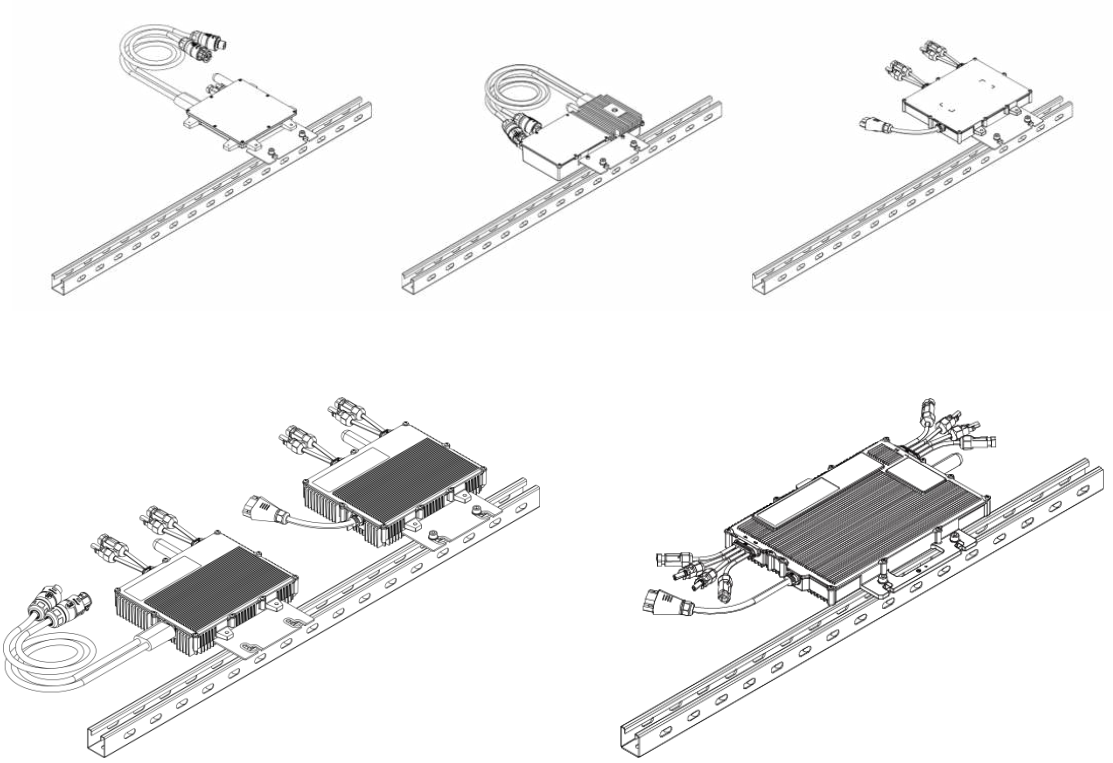
DO NOT CONNECT inverters TO THE UTILITY GRID OR ENERGIZE THE AC CIRCUIT(S) UNTIL YOU HAVE COMPLETED ALL OF THE INSTALLATION PROCEDURES AS DESCRIBED IN THE FOLLOWING SECTIONS.

Preparation

The PV module(s) should be securely attached to the racking.
- Check if the MI is intact without missing components.
- A end cable is prepared.
- End cable has 3 different length (5m, 10m, 15m), if the cable received is not suitable for the installation, contact your distributor for an exchange.

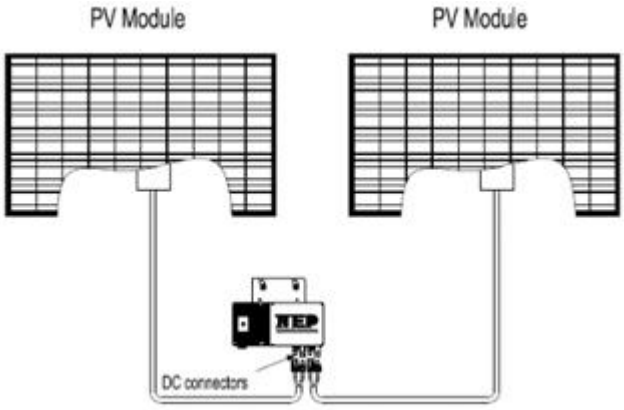
Mount the Micro inverter

Mount the MI on the racking or PV module frame



DC Connection

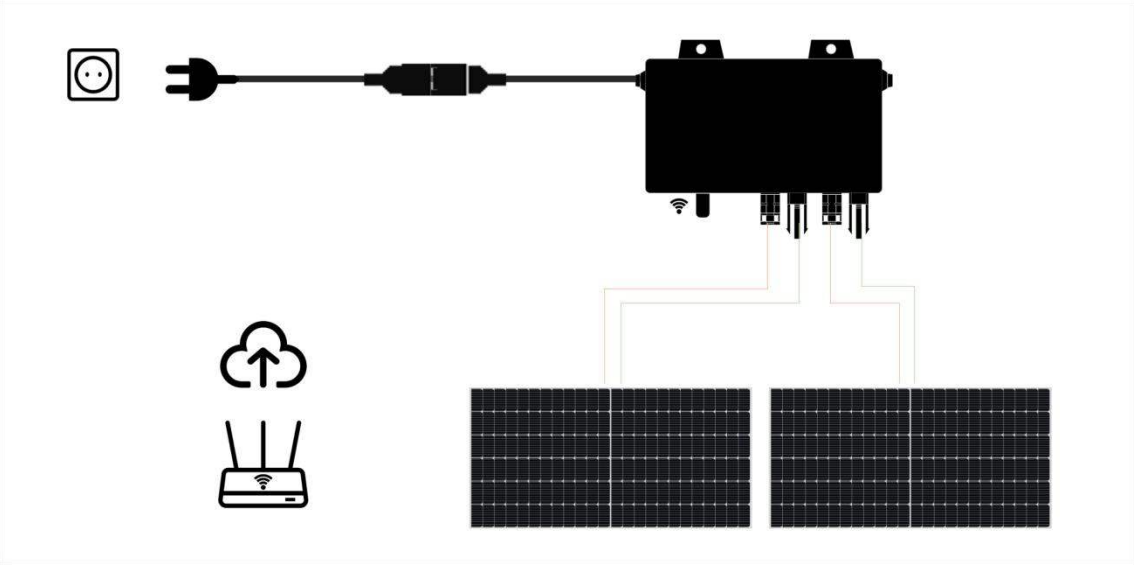
- Plug in the MC4/QC4 terminals to DC socket on MI
- Make sure each PV module is connecting to the corresponding DC socket pair.



AC Connection

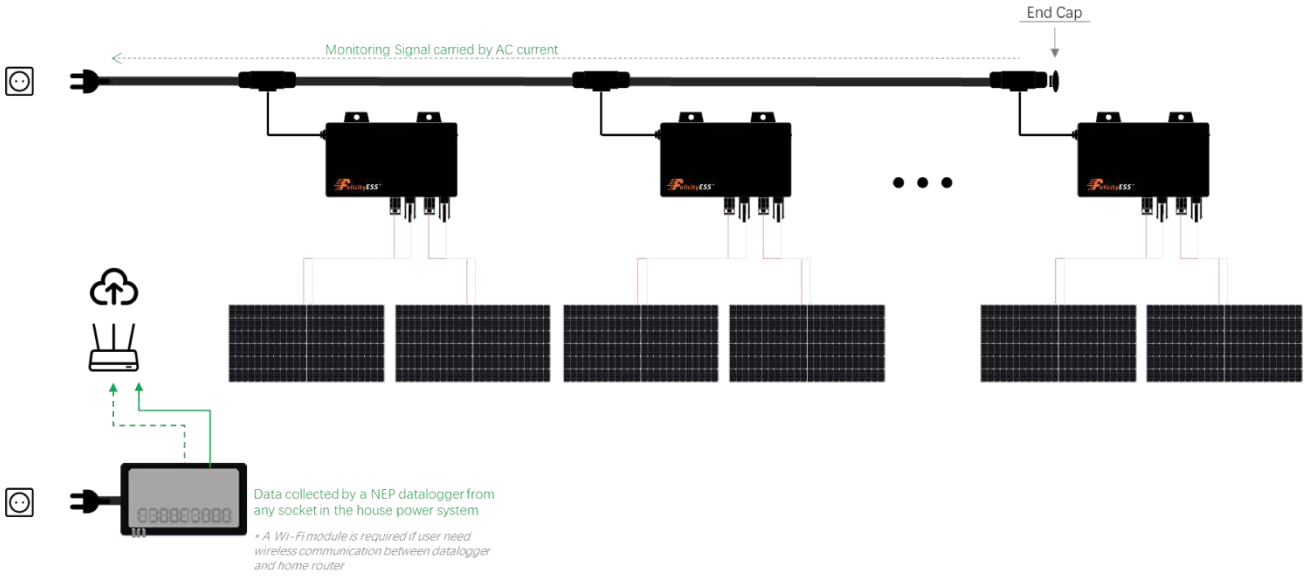
Typical Balcony Solution Topology

For Balcony Solution products, the AC output terminals are customized and different from standard issue products.

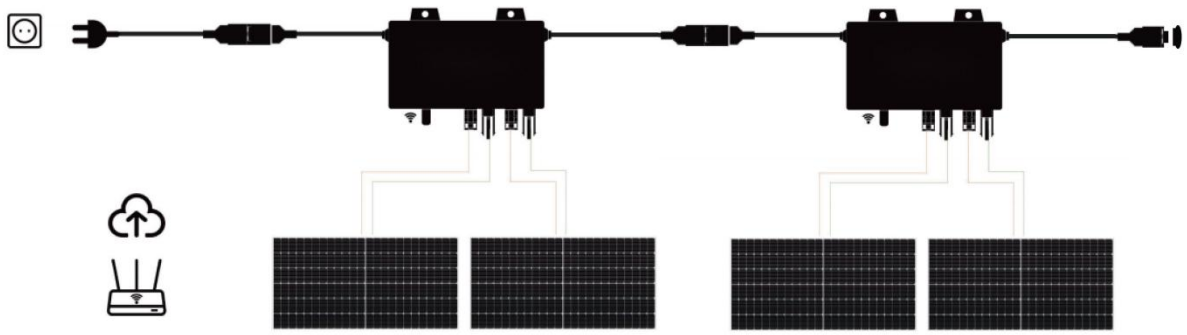


> For balcony solution, there is only one inverter in the system. The monitoring is realized by WIFI connection between WiFi dongle on the inverter and home router.

Typical Trunk Cable Topology



Typical Daisy Chain AC BUS Topology



Monitoring Configuration

NOTICE

DO NOT CONNECT AC

In the state of DC connected, AC disconnected, AP mode of the microinverter will be activated.

If AC connected by accident, please unplug AC, DC to wait for memory clearance of the microinverter.

NOTICE

Find the AP Number

An eight-digit string can be found under the barcode on the sticker.
This is the **AP Number**

Obtain Fsolar APP

FSOLAR

App Store Google Play

Search for Fsolar in App Store or Google Play

* Android users can visit https://download.felicityess.com for latest version APK file

WiFi configuration

Please see ' FelicityESS APP User Guide' for detailed instructions.

Running status

The micro inverter is powered on when sufficient DC voltage from the module is applied. The status LED will start flashing after sufficient DC power is applied as an indication that the micro inverter is live.

LED	Status	Meaning
Green Light Flashing every **two** seconds	Standby	OK
Red Light Flashing every **two** seconds	Standby	Error
Orange Light Flashing every **two** seconds	Standby	no communication
Green Light Flashing every **one** seconds	Producing	Standby
Red Light Solid	Producing	Grounding Fault
Orange Light Flashing every **one** seconds	Producing	no communication

TROUBLESHOOTING

In case of fault, BDM inverter has multiple protective functions and stops output power. The fault message may be sent through WiFi internet connection, and can be monitored through Fsolar APP(please refer to the tech note "Configuring BDM WiFi"). The alert message is a 16-bit code.

Error code	Error
Bit-0	DC over voltage
Bit-1	DC under voltage
Bit-2	hardware error
Bit-3	Inverter over voltage
Bit-4	Frequency over
Bit-5	Frequency under
Bit-6	AC voltage RMS over
Bit-7	AC voltage RMS under
Bit-8	Peak AC voltage over
Bit-9	AC current RMS over
Bit-10	Peak AC current over
Bit-11	Temperature over
Bit-12	ADC error
Bit-13	GFDI fault indicator
Bit-14	Relay fault

SPECIFICATION

MODEL	X-RAY-BDM2000	X-RAY-BDM2250
INPUT(AC)		
Max Recommended PV Power (W)	750x4	750x4
Max DC Open Circuit Voltage (Vdc)	60	60
Max DC Input Current (Adc)	20 x 4	20 x 4
MPPT Tracking Range (Vdc)	22-55	22-55
OUTPUT(AC)		
Rated AC Output Power (W)	2000	2250
Rated AC Output Current (Aac)	8.69	9.78
Nominal Power Grid Frequency (Hz)	50/60	50/60
THD (at rated power)	<5%	<5%
Power Factor	>0.99 (at full load)	>0.99 (at full load)
PROTECTION FUNCTIONS		
Protective Class	Ip66/Ip67	
Environment Temperature	-40℃ ~ +65℃	
WiFi Frequency band	2.412GHz-2.472GHz	
WiFi Transmitting power	802.11b:+17dBm+1.5dBm(@11Mbps) 802.11g:+15dBm +1.5dBm(@54Mbps) 802.11n:+14dBm1.5dBm(@HT20,MCS7)	

FelicityESS™

Guangdong Felicity New Energy Co., Ltd

KongGangBaiYun)No. 2, Donghua Huaye Road, Renhe Town, Baiyun Area, Guangzhou, Guangdong, P. R. CHINA

https://www.felicityess.com/