Energy Monironing Unit -BYR990

User Manual

ZHEJIANG BENYI NEW ENERGY CO.,LTD.
Address : Changjiang Rd, Wenzhou Daqiao Industry Park,
Beibaixiang Town, Yueqing, Wenzhou City, Zhejiang Province, China, 325600
TEL : +86-577-5717 7008 Email : benyi@zjbeny.com
VERSION : 20230218
For the latest version of specification, please refer to www.beny.com or contact to benyi@zjbeny.com
We reserve the right to explain the terms of specification.

WWW.BENY.COM

Table of Contents

© 2023 BENY NEW ENERGY CO.,LTD.

1 Safety Information

This manual contains important instructions for the installation and maintenance of the BENY microinverter Gateway EMU BYR990.
The EMU BYR990 is only compatible with the BENY BYM series of microinverters.

1.1 Safety Instructions

Symbol	Usage
	Danger: indicates a dangerous situation that can lead to a fatal electric shock hazard, serious personal injury or fire hazard.
	Warning: It means that this part must be fully understood and mastered to avoid potential safety risks, resulting in equipment damage and personal injury.
	Indicate which actions should be taken with caution and should be fully understood by the operator before operation.

Table 1.1 Precautions when installing EMU BYR990.

Note:
①: Only professional personnel should install or replace the EMU BYR990.
②: Do not attempt to repair the EMU BYR990 on your own without BENY's permission. If the EMU BYR990 is damaged, repair or replacement should be carried out according to the prescribed procedures. Any EMU BYR990 that is dismantled without BENY's permission will not be covered by the warranty.
③: Please read the instructions and warning regulations contained in this technical manual carefully.
④: Do not use BENY's products in a way that is not recommended in the technical manual. Otherwise, it may cause equipment damage, endanger personal safety, and even cause death in serious cases.

1.2 User Instructions

This manual is for professional installation and maintenance personnel use only.

1.3 Contact Information

If you have any technical questions about our products, please contact your installer or distributor. If you require further technical support, please contact benyi@zjbeny.com.

1.4 Other Information

Product information is subject to change without prior notice. The user manual will be regularly updated. To view the latest version, please refer to the BENY official website at www.beny.com.

2 BENY Microinverter System

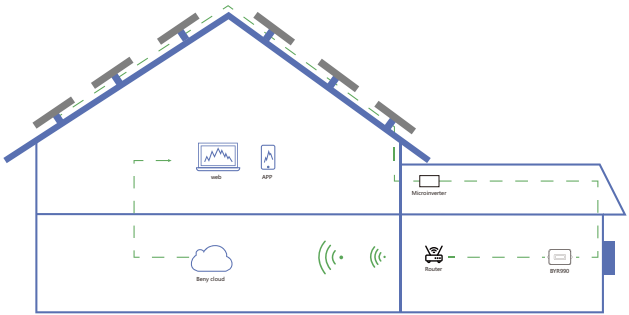


Figure 1.1 Complete BENY PV microinverter System.

The complete BENY PV microinverter system consists of PV microinverters, BENY gateway EMU BYR990, and BENY PV data management platform.
The microinverter converts DC power to AC power and sends the generation and operational data of each microinverter to the EMU BYR990. The EMU BYR990 can communicate with multiple microinverters, collect their operating data, and send it to the BENY PV management system.
In the BENY PV management system, you can observe real-time data of each PV module, and perform a series of remote operations.

2.1 Microinverter

The BYM micro inverter converts the DC output of the photovoltaic modules into AC power that meets the requirements of the power grid.The BYM500 / 550 / 600 and BYM700 / 2000 / 2400 / 2800 are characterized by high power and high efficiency.The static MPPT efficiency is up to 99.8%.

2.2 BENY PV Data Management Platform

Collecting the operational data of microinverters in the system provides module-level monitoring for users and maintenance personnel, bringing a better user experience for customers.

3 Gateway Interface Instructions

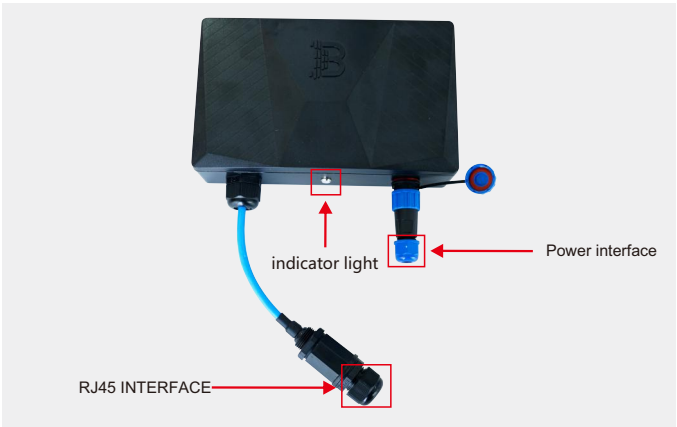


Figure 2.1 Appearance of EMU BYR990

Figure 2.2 Cross-section of RJ45 interface

Figure 2.4 Cross-section of power interface

Figure 2.3 Disassembled view of RJ45 interface

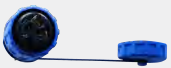


Figure 2.5 Disassembled view of power interface

4 Preparation and Installation Instructions

4.1 Preparation

4.1.1 System Description

In the BENY PV microinverter system, one EMU BYR990 can monitor up to eight microinverters. If the communication between the EMU BYR990 and the microinverters is affected by the installation conditions, the number of microinverters that can be monitored by the EMU BYR990 may be reduced.

Note: Only by meeting the installation conditions described in the EMU BYR990 and BENY microinverter manuals, can the maximum number of microinverter components be used in an open space.

4.1.2 EMU BYR990 Installation Environment Instructions

1) The installation of EMU BYR990 should be far from dust, liquids, and acidic or corrosive gases.
2) The ambient temperature should be between -40ºC and 65ºC.

4.2 Dimensional Specifications

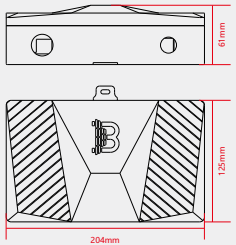


Figure 3.1 Illustration of RJ45 dimensions.

4.3 Installation Steps

Step 1: Install the LCF filter to eliminate PLCC communication interference.
Use a suitable AC cable to connect the LCF filter (pay attention to the installation direction) to the distribution box or AC socket, and pay attention to the current carrying capacity of the AC cable, which must be compatible with the total output current of all microinverters connected to the filter. For example, when connecting 2 microinverters, the cable carrying capacity must be greater than 5A, and when connecting 8 microinverters, the cable carrying capacity must be greater than 20A. It is recommended to use a 10AWG cable.

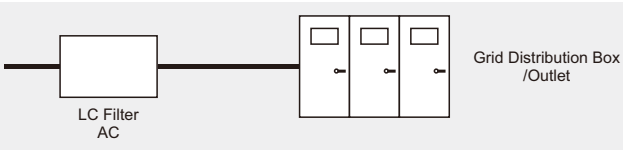


Figure 3.2 LCF Filter Connection Diagram

Figure 3.3 LCF Filter Physical Image

Note:
1.When installing the LCF filter, pay attention to the connection direction, with the LOAD end connected to the distribution box or AC socket, and the LINE end connected to the AC cable of the microinverter.
2.If the number of microinverters connected is more than 8, another AC busbar should be added and relevant accessories such as LCF filter and monitoring device EMU should be added according to the requirements.

Step 2: Install monitoring device EMU BYR990.
a.Connect the L and N wires of the EMU BYR990 to the LCF filter, paying attention to the polarity of the wires.

Note: The connection point must be on the side away from the distribution box or socket, and must be on the same side of the LCF as the AC interface or bus of the microinverter.

Connect the network cable (RJ45 cable) of the EMU BYR990 to the LAN port of a router that has direct access to the internet.

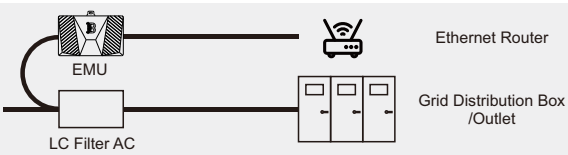


Figure 3.4 Network Connection Diagram

Note:
① The network connection used by EMU must be able to access the Internet normally.
② The Ethernet router must support DHCP function to ensure that BYR990 can obtain a network IP.
③ Customers need to register for a BYDAS account through the APP or WEB Browser.
④ Customers need to create their own power station.
⑤ The monitoring equipment (EMU) and inverter with the correct SN number need to be added to the power station.

After completing the electrical connection and the above steps, when the microinverter system is working, the BYR990 will automatically connect to the microinverter for data communication and send the operating data to the BENY photovoltaic management system.

Step 3: Install the AC bus
Open the cover of the EMU BYR990.
Connect the wires to the device according to the wire order silk-screened on the wiring terminals.
Step 4: Mount the BENY microinverter on the bracket or solar panel frame.
Step 5: Connect the AC port of the BENY microinverter to the AC bus junction tightly or ensure that it is connected to the same power source.

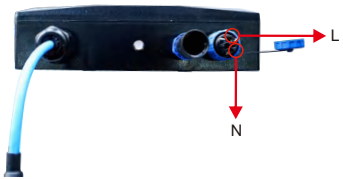


Figure 3.5 Power interface marking


Figure 3.6 Connection completed actual photo

Note:
There is silk printing with the letters "L" and "N" on the AC bus connector. Pay attention to the wire sequence when installing.

Step 6: Install waterproof protection covers on the AC bus end and unused female connectors (skip if not available).
Step 7: Connect the solar panels and connect each microinverter to the photovoltaic panel.
Step 8: Complete the BENY microinverter system installation diagram.
Step 9: Start operation.

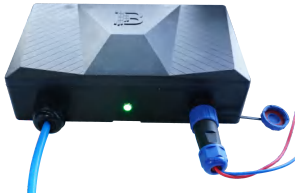


Figure 3.7 Normal operation photo

Step 10: Check if the communication between the microinverter and EMU BYR990 is normal.
The EMU BYR990 product shell has a green indicator light, and its indication rules are:
(1) No microinverter power generation data is collected and no connection is established with the platform; steady on.
(2) Microinverter power generation data is collected but no connection is established with the cloud platform; fast blinking, 200ms blink once.
(3) The cloud platform is connected successfully but no microinverter power generation data is collected; fast blinking, 200ms blink once.
(4) Microinverter power generation data is collected and the cloud platform connection is successful; slow blinking, 2 seconds blink once.
Step 11: Log in to BENY's PV data management platform and create an account and a solar plant.
Step 12: Add the BYR990 ID and bind the solar inverters under the solar plant.
Step 13: View data on the BENY photovoltaic data management platform.

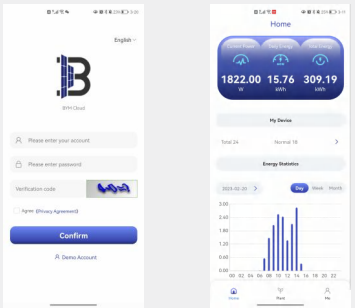
5 BENY Microinverter App User Instructions

5.1 App Download

To download the BYM Cloud app, you can search for "BYM Cloud" in the App Store (iOS)or Google Play Store (Android), or scan the QR code to download and install the application.

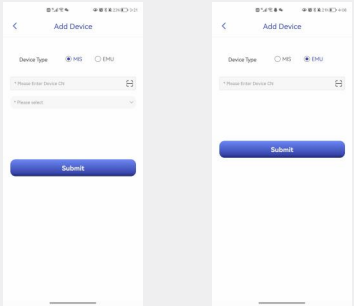
5.2 App Usage Instructions

(1) Open the application and enter your account and password to log in. If you are a new user of BENY, please apply for an account from your dealer in advance.

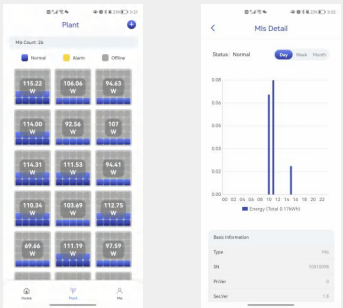


(2) After logging in, the homepage can display data related to the operation of micro-inverters under the current account (such as the total number of micro-inverters, device status, etc.), and one account corresponds to one power station.

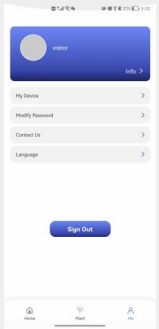
(3) Select the "plant" tag at the bottom, and then select the upper right corner of the page ⊕ to add new devices (microinverters or gateways). You can add new microinverters or gateways by entering the ID or scanning the QR code attached to the microinverter or gateway.



(4) Device description:
You can view device details and power generation information separately. Click on a device to view its current power generation status.

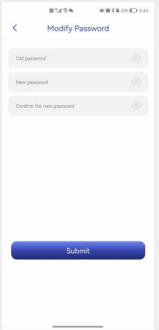


(5) In "Me", you can view the devices under the current account and manage personal information, modify passwords, and so on.



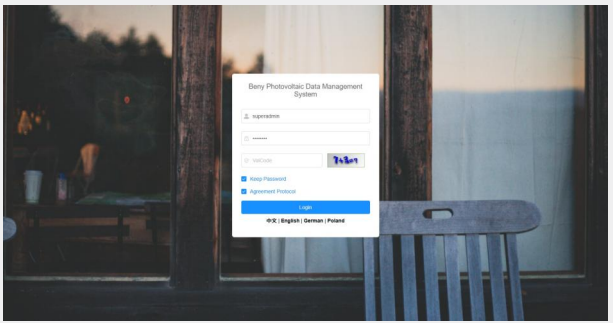
Click "My Device" to view the devices under the current account

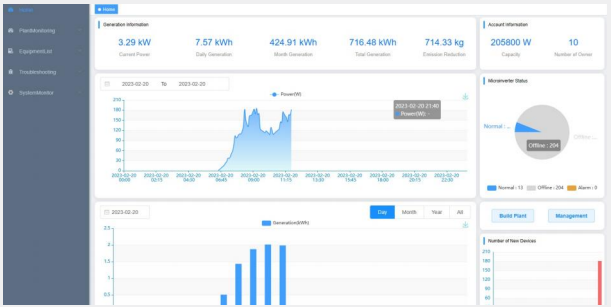
Click "Modify Password" to change the password.



6 BENY PV Data Management Platform

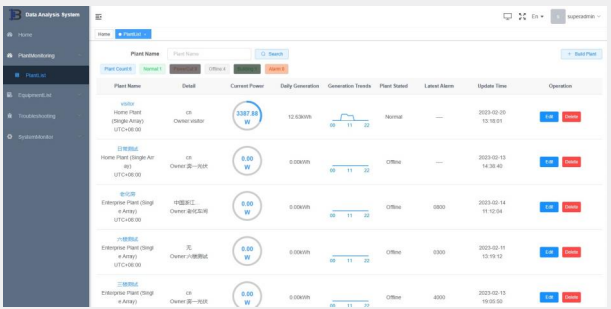
(1) Enter your account and password to log in to BENY Photovoltaic Data Management Platform.



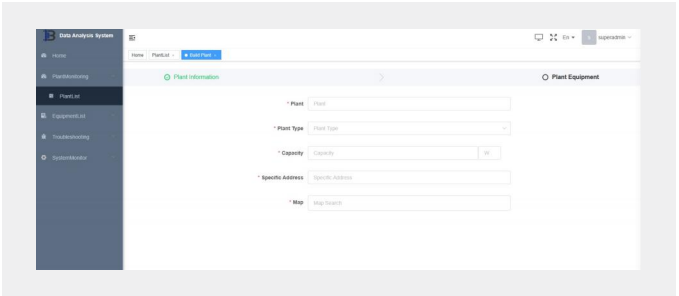


(2) Create a power station:

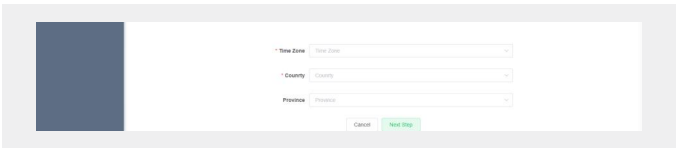
1) Click on the top right corner to enter ＋ Build Plant the power station creation interface.



enter the required power station type and related information.



2) Click "Next" after entering the information.

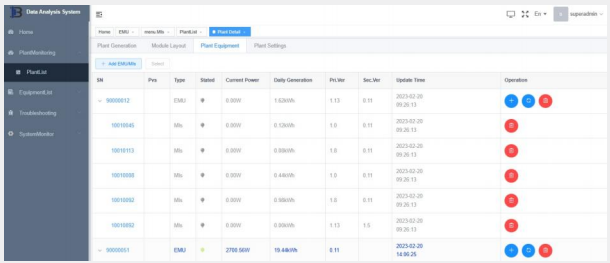


3) Click Next Step after completing the information, create the new power station. (3)

(3) Add devices

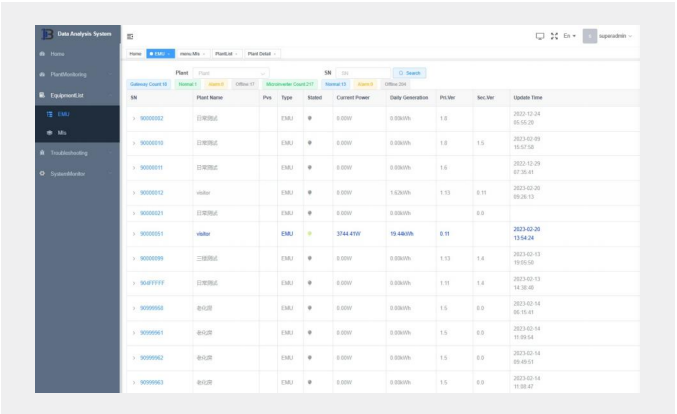
1) Click on the top left corner  enter the power station.

2) Click  to add the gateway and microinverters.

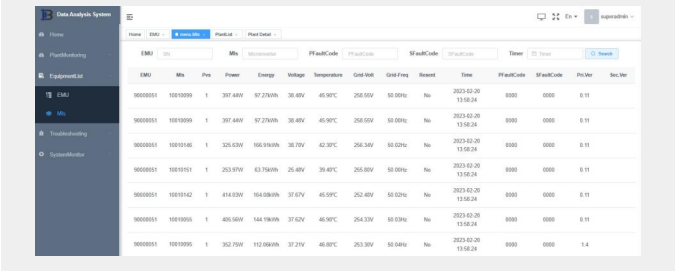


(4) View data

1) View gateway operation data.



2) View microinverter operation data.



7 EMU BYR990 Specifications

Communication Method	PLCC (Power Line Carrier)
Display	LED
Network connection	RJ45
Adapted Grid	Single-Phase Grid (220/230/240V, 50/60Hz)
Number of PV panels supported	Up to 24 in a single phase system
Power Consumption	<3W
Ambient Temperature Range	−40°C to +65°C
Ingress Protection	IP65
Compliance	IEC 62368-1
Warranty	5 Years