User Manual

ARCB Ver 00

Table of Contents

Symbols	01
Safety	02
Installation	03
3.1 Unpacking	03
3.2 Appearance and Size	04
3.3 Equipment Installation	04
3.4 Electrical Connection	06
Electrical Connection	07
4.1 AC Input and Output Connection	07
4.2 Communication Cable Connection	11
Indicator Lights	26
Reset and Reload	27
Operate with EzExplorer	28
7.1 New EzLogger	28
7.2 Edit EzLogger	29
7.3 Delete EzLogger	32
7.4 Memory Status	33
7.5 View Property	35
7.6 Summary	36
7.7 Set date Collect Period	38
7.8 Update Password	40
Technical Parameters	42
8.1 Operation Conditions	42
8.2 Operation Limitation	42
8.3 Data Storage	42
Warranty	43
9.1 Warranty Period	43
	Safety Installation 3.1 Unpacking 3.2 Appearance and Size 3.3 Equipment Installation 3.4 Electrical Connection Electrical Connection 4.1 AC Input and Output Connection 4.2 Communication Cable Connection Indicator Lights Reset and Reload Operate with EzExplorer 7.1 New EzLogger 7.2 Edit EzLogger 7.3 Delete EzLogger 7.4 Memory Status 7.5 View Property 7.6 Summary 7.7 Set date Collect Period 7.8 Update Password Technical Parameters 8.1 Operation Conditions 8.2 Operation Limitation 8.3 Data Storage Warranty

10、	Contact	45
	9.4 Scope of Warranty	43
	9.3 Warranty Conditions	43
	9.2 Warranty Card	43

1. Symbols

\triangle	Caution! - Failure to observe a warning indicated in this manual may result injury.
X	Product should not be disposed as household waste.
<u>†</u>	This side up; the package must always be transported, handled and stored in such a way that the arrows always point upwards.
<u>E</u>	Components of the product can be recycled.
	Fragile; the package/product should be handled carefully and never be tipped over or slung.
	Keep dry; the package/product must be protected from excessive humidity and must be stored under cover.
(€	CE Mark

2. Safety

The ARCB of Jiangsu GoodWe Power Supply Technology Co. Ltd. (hereinafter referred to as GoodWe) strictly conforms to related safety rules in design and test. Safety regulations relevant to the location shall be followed during installation, commissioning, operation and maintenance. Improper operation may cause serious injury, electric shock and/or damage to equipment and property.

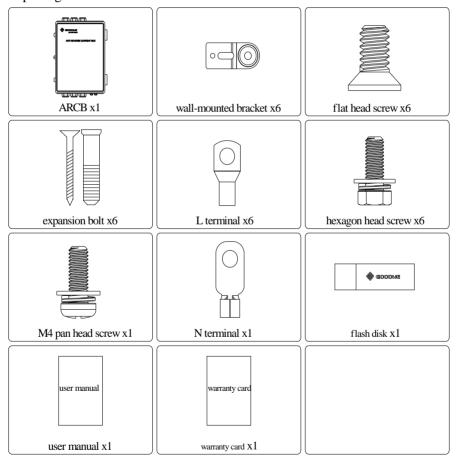
- ▶ Ensure children are kept away from ARCB.
- ▶ Apart from performing work at the wiring terminal (as instructed in this manual), touching or changing components without authorization may cause injury to people, damage to ARCB and annulment of the warranty.
- ▶ Static electricity may damage electronic components.

 Appropriate methods must be adopted to prevent such damage to the ARCB; otherwise the ARCB may be damaged and the warranty annulled.

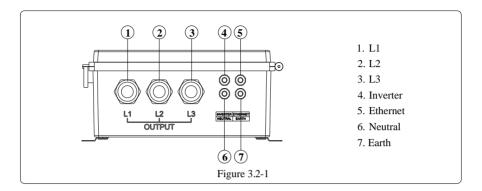
3. Installation

3.1 Packing List

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:



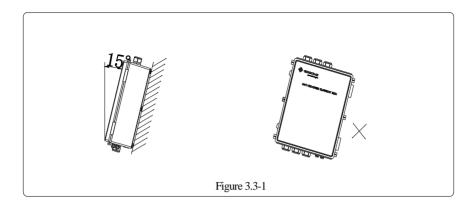
3.2 Product Overview



3.3 Selecting Mounting Location

Mounting location should be selected based on the following aspects:

- The installation method and mounting location must be suitable for the ARCB's weight and dimensions.
- Mount on a solid surface.
- Install vertically or tilted backward by max 15°. The device cannot be installed with a sideways tilt. The connection area must point downwards. Refer to Figure 3.3-1.



- In order to achieve optimal performance, the ambient temperature should be lower than 45 °C.
- ARCB should NOT be installed near inflammable and explosive items.
 Any strong electro-magnetic equipment should be kept away from installation site.
- Product label and warning symbol shall be clear to read after installation.
- Please avoiding direct sunlight, rain exposure, snow lay up when installing.

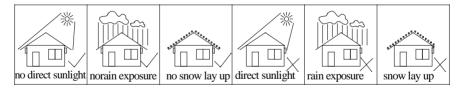
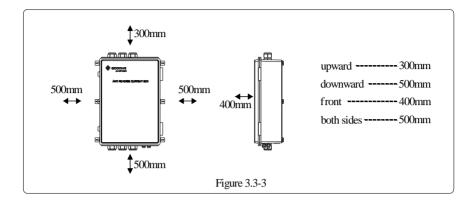


Figure 3.3-2

• In consideration of convenient installation and maintenance, the minimum clearances around the ARCB should be no less than the following value:

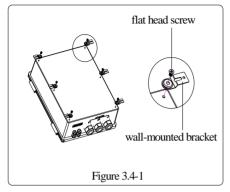


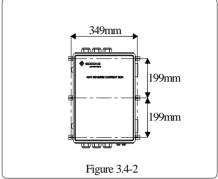
3.4 Mounting

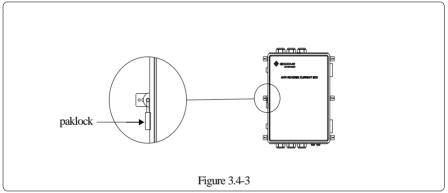


Remember that this ARCB is heavy! Please be carefully when lifting out from the package.

- 1. Put flat head screws through the wall-mounted brackets and fasten it with ARCB together. Refer to Figure 3.4-1.
- 2. Use the ARCB as a template and drill 6 holes on the wall, 10 mm in diameter and 80 mm deep. Refer to Figure 3.4-2.
- 3. Fix the wall-mounted bracket on the wall with six expansion bolts in accessory bag.
- 4. Use a padlock to fix the ARCB. Refer to Figure 3.4-3.





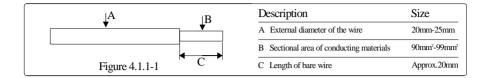


4. Electrical Connection

4.1 AC Input and Output Connection

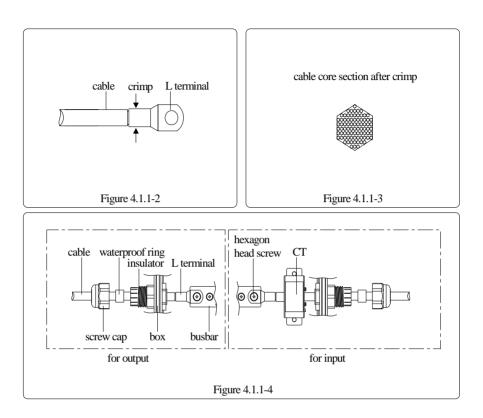
4.1.1 L polarity connection

It's very important for system safety and efficient operation to use appropriate cable for AC connection. To reduce risk of injury, please use the proper recommended cable size. Refer to Figure 4.1.1-1.



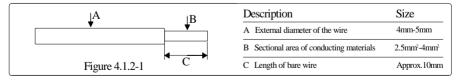
Please follow below steps to implement L polarity connection:

- 1. Check the grid voltage and frequency at the connection point of the ARCB. It should meet GoodWe product Spec.
- 2. Put the cable into L terminal and Compress the terminal head by professional tool. Refer to Figure 4.1.1-2 and Figure 4.1.1-3.
- 3. Disconnect screw cap from insulator.
- 4. Disconnect waterproof ring from insulator.
- 5. Put the cable with L terminal through the components in this order: screw cap, waterproof ring, insulator, box and CT (only for input), then fasten it on busbar with hexagon head screw in accessory bag. Refer to Figure 4.1.1-4.
- 6. Screw down screw cap again.



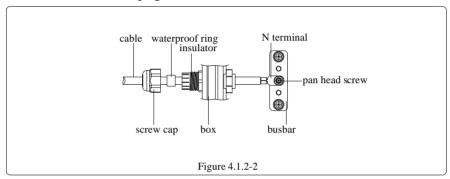
4.1.2 N polarity connection

It's very important for system safety and efficient operation to use appropriate cable for N polarity connection. To reduce risk of injury, please use the proper recommended cable size. Refer to Figure 4.1.2-1.



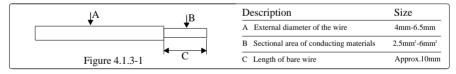
Please follow below steps to implement N polarity connection:

- 1. Disconnect screw cap from insulator.
- 2. Disconnect waterproof ring from insulator.
- 3. Put the cable through the components in this order: screw cap, waterproof ring, insulator, box and N terminal, then Compress the terminal head by professional tool. Finally, fasten it on busbar with pan head screw in accessory bag. Refer to Figure 4.1.2-2.
- 4. Screw down screw cap again.



4.1.3 Earth connection

It's very important for system safety and efficient operation to use appropriate cable for earth connection. To reduce risk of injury, please use the proper recommended cable size. Refer to Figure 4.1.3-1.

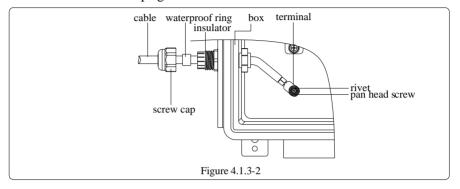


Please follow below steps to implement earth connection:

- Disconnect screw cap from insulator.
- 2. Disconnect waterproof ring from insulator.
- 3. Put the cable through the components in this order: screw cap, waterproof ring, insulator, box and terminal, then Compress the terminal

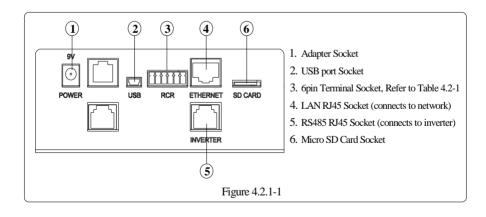
head by professional tool. Finally, fasten it on rivet with pan head screw. Refer to Figure 4.1.3-2.

4. Screw down screw cap again.



4.2 Communication Connection

4.2.1 Interface Instruction



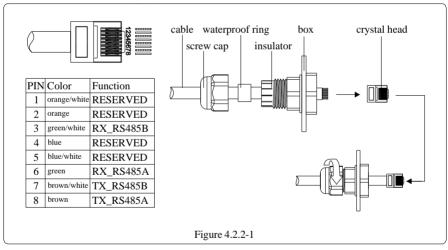


Please do not mix interface 4 and 5 up which will lead to damage to ARCB!

4.2.2 Installation Procedure

Please follow below steps to implement communication connection:

- 1. Disconnect screw cap from insulator.
- 2. Disconnect waterproof ring from insulator.
- 3. Put the cable through the components in this order: screw cap, waterproof ring, insulator and box. Refer to Figure 4.2.2-1.
- 4. Put cable cores insert into the corresponding slots and compress the crystal head by professional tool, then screw down screw cap slight. Refer to Figure 4.2.2-1.
- 5. Put crystal head insert into the corresponding inner slots of ARCB.
- 6. Screw down screw cap again.



4.2.3 Connection Procedure

Part A: Made up the cable connection

Step1: First of all, make up cables

NOTICE: In order to implement waterproof, the CAT5E STP cables should be made up by hand strictly obey the guidance in manual of inverter.

The line sequence of both plugs of RS485 cable should be made up same as shown in Fig4.2.3-1 and obey TIA/EIA-568B criterion strictly, from 1 to 8 as:

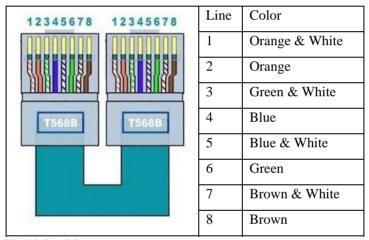


Fig4.2.3-1 Line sequence

Besides that, each cable should be tested by LAN cable tester to ensure the cable is OK. These cables will be used to connect not only ARCB and inverter but also inverter and inverter.

Step2: Check the cable daisy chain

The whole system should be made up as shown in below.

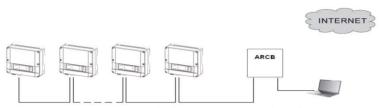


Fig4.2.3-2 Whole system connection diagram

Before complete the whole connection, it should be tested as below:

Test the connection from plug 1a to plug (N+1)b as shown in Fig4.2.3-3. If everything is ok, the LAN cable tester will tell the line 3/6/7/8 is OK. **Neglect the status of line 1/2/4/5** because the line1 is shorted to line2 and line4 is shorted to line5 in inverter.

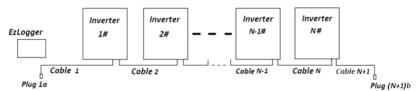


Fig4.2.3-3. Check the whole RS485 cable connection

If the line 3/6/7/8 is not ok, please pull out the plug Nb from inverter N#, and test the connection from plug1a to plug Nb, as shown in Fig4.2.3-4.

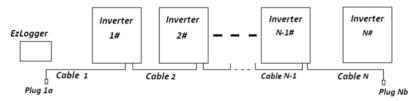


Fig4.2.3-4 Check the connection between 1a and Nb

If the test result is ok, it means there is something wrong with inverter N#. First re-check cable N+1 using LAN cable tester and make sure it is OK

and insert the plug back into inverter N#. Then insert plug Nb into inverter N#, and pull out plug Na from inverter (N-1)# as shown in Fig4.2.3-5. Check and make sure the connection of plugs and sockets is firmly good. Then test the connection between plug Na and plug (N+1)b. If the connection is OK, insert plug Na into inverter (N-1)#. Then re-test connection from plug 1a to plug (N+1)b and the result will pass.

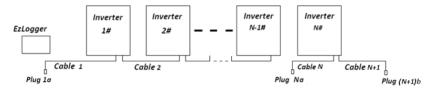


Fig4.2.3-5 Check the connection between Na and (N+1)b

Repeat steps above can find the bug and then fix it one by one until the whole daisy chain connection is ok.

At last pull out cable N+1 from inverter N# and fasten the cover and then insert plug1a to ARCB.

Step3: Power on the ARCB and all inverters. Observe the status of LED indicators on EzLogger.

We need to check the communication protocol of inverter according to the user manual. It needs to be set as '.VS. Monitor Device' for SS/DS model and as 'Set ModBus' for DT model and as 'Set Web' for Smart DT model. If everything is OK, it should be like below:

Power Led: always on

If not, check the power supply adaptor of ARCB.

Speed Led: always on after the LAN cable is connected to the Ethernet

network

Link Led: flash frequently after the LAN cable is connected to the Ethernet network

If not, check the connection between ARCB and laptop.

RS485 Led: flash every 1 minute

If not, it means the communication between ARCB and inverters is not OK. We need to re-check the connection of the cable daisy chain and confirm the protocol.

Part B: Acquire LAN Parameters:

A: Check the IP Address (i), Subnet Mask (ii) and Gateway (iii) Click Start, and click 'Control Panel' as shown in Fig4.2.3-6.



Fig4.2.3-6 Click Start, and click 'Control Panel'

You will get:

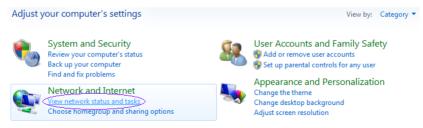


Fig4.2.3-7 Click 'View network status and tasks'

Click 'View network status and tasks' as shown in Fig4.2.3-7 and you will get:

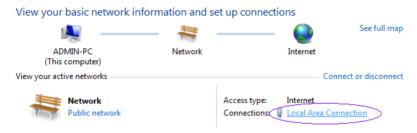


Fig4.2.3-8 Click 'Local Area Connection'

Click 'Local Area Connection' and you will get as Fig4.2.3-8, then click 'Details':

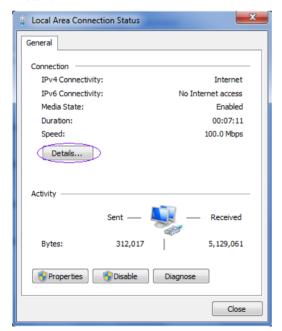


Fig4.2.3-9 Click 'Details'

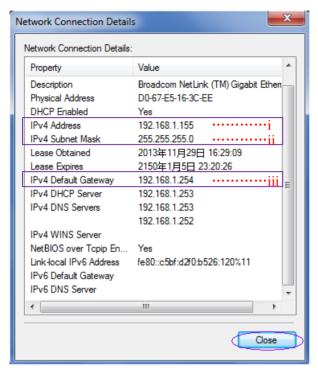


Fig4.2.3-10 Write the 3 items down and it will be used later

Part C: Configure ARCB

Step4: Set IP address to 192.168.1.100 on your laptop. Refer to

Fig4.2.3-11~13 below. Remember its original settings

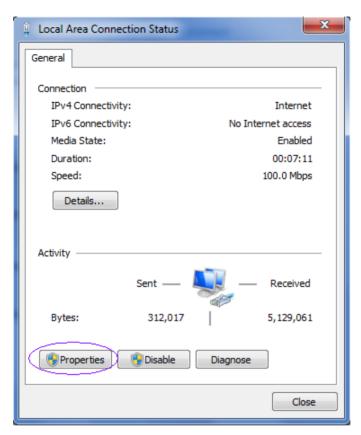


Fig4.2.3-11 click 'Properties' button

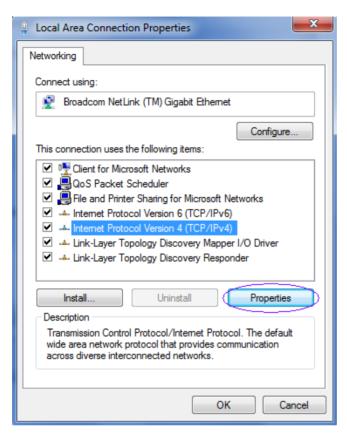


Fig4.2.3-12 Choose 'Internet Protocol' and click

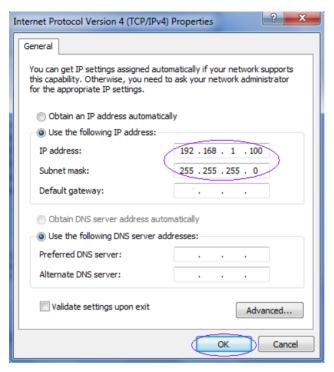


Fig4.2.3-13 Choose 'Use the following IP address' and key the digital in purple circle as above and click 'OK' button

Step 5: Using a CAT5E STP cable connect ARCB to PC DIRECTLY; Step 6: Switch on AC breaker of switchboard and power ARCB on.

Step 7: Install software 'EzConfig' on computer and run it.

EzConfig is located in the USB flash disk

If the 'Connection Status' is 'Connect Fail', please check the IP address of your laptop is 192.168.1.100 or not.



Step7.1 Time Configuration

Once EzConfig.exe connects with EzLogger successfully, it will set the system time of the laptop to EzLogger automatically. If there is time difference from local time, you can click 'Set Time' button to set time.

Step7.2 ARCF Configuration

First of all, enable anti reverse current function. If the 'ARCF Enable' is not active, please click it to activate it.



Fig4.2.3-14 ARCF Configuration

There are 3 items need to be configured before the function is applied.

First item is three phase or single phase. IF you are configuring a three phase system, please choose three phase option; otherwise please choose single phase option.

Second item is total capacity of inverters installed in the system. It can be calculated as sum of rated power of all inverters in the system.

The third item is the action threshold of anti reverse current function. When the power from grid consumed by the system including local loads is less than the action threshold, the ARCB will take action and send command of reducing power to inverters to ensure that there will be no

reverse current to grid. The threshold is the 10 percent of total capacity of system as default.

Step7.3 Real-Time Data Display

Click 'Refresh' button to get new data from ARCB which will be displayed in the table including grid voltage, grid current and consumption power from grid. When the power is shown as negative power, it means there is power feeding to grid.

You cannot disable this function if ARCB function is active.

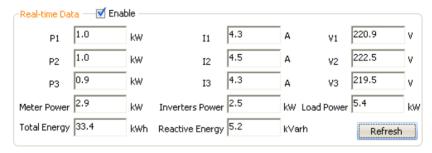


Fig4.2.3-15 Real-Time Data Display

Step7.4 Inverter Information

Click 'Refresh' button to acquire connection status of inverter. The inverter list will show all the inverters which are communicating with ARCB well. If the amount of online inverters does not match the actual number of inverter in the system, please check the connection following step2.



Fig4.2.3-16 Inverter List

Step7.5 LAN configuration

After everything is confirmed ok, we need to make LAN configuration. If you are not planning to monitor ARCB by EzExplorer or by portal, you can ignore it.

Key the digital as shown in Fig4.2.3-10, or you can get a new IP address from IT engineering. And click 'Set' button to apply it to the ARCB. Whichever IP address is applied, you need to ensure that the IP address has access to internet.



Fig4.2.3-17 LAN Configuration

NOTE: Once set new IP address to ARCB, the connection between EzConfig and ARCB will break immediately. So ensure that before set new IP address to ARCB everything is set OK.

Step 8: Connect ARCB and PC to LAN

Pull out LAN cable plug from laptop and insert it into switch or router.

4.2.4 Registration in GoodWe Portal

Browse http://www.goodwe-power.com, and click the "Register" button. Select "End User" as user type, and fill in the register table and the registration is completed.

4.2.5 Create PV Station in GoodWe Portal

Fill in the table of the "New Station" web page according to the actual location of your station. In the "Maintain ARCB" column, enter the information of the ARCB including S/N and Check Code, and click "Add" button. Then enter the information of the inverter that is connected with the ARCB including S/N, Check Code, Type and Description, and click "Add" button.

If you have several inverters connected with ARCB, you need to enter their information one by one. Click "Create Station" after you fill in all the information needed, and then everything is OK now. Then switch on the inverters and several minutes later you can view the data of inverter in web portal.

NOTICE: you can find S/N and Check Code on the back side of ARCB and right side of inverter.

NOTICE: ONLY THE DATA FROM INVERTER WHOSE INFORMATION ENTERED CORRECTLY IN THE WEBSITE CAN BE VIEWED.

5. Indicator Lights

There are 6 indicator lights on left side of the front cover.

Label	Light On	Light Off	Colour
POWER	Powered on	Powered off	Green
SPEED	Joined to	Disconnected from	Yellow
	local network	local network	
RCR	Received command	No command	Yellow
	from RCR	from RCR	

Table 5-1

Label	Flickering	Light Off	Colour
LINK	Joined to	Disconnected from	Yellow
	local network	local network	
RS485	Communicates with	Data Interval	Yellow
	Inverter		
USB	File Transmission to	No File Transmission	Yellow
	PC		

Table 5-2

6, Reset and Reload ARCB

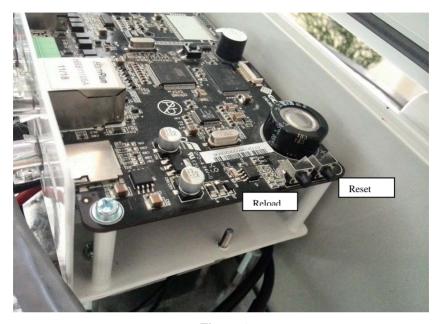


Figure 6

There are two buttons in the right side of ARCB.

One is 'Reset' button, press this button to restart the ARCB.

The 'Reload' button is used to reload the default configuration of network parameter of ARCB. Press this button longer than 3 seconds to the change the ARCB to default configuration.

Notice: All configurations have to be reset after using reload function.

7. Operate ARCB with EzExplorer

7.1 New EzLogger

Click "New EzLogger" under "EzLogger" menu (or click new EzLogger of EzLogger menu in menu bar). The interface is as follow:

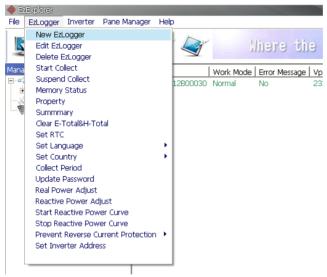


Figure 7.1-1

After click the "new EzLogger" menu, there will be a new EzLogger dialog box. The interface of new EzLogger dialog box is as follow:

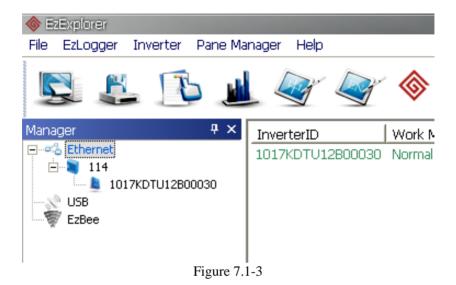


Figure 7.1-2

In the new EzLogger dialog box, you can name the EzLogger. The name must be composed of numbers or English letters (capital letters or lower-case letters). Otherwise the setting "New EzLogger" will be failed.

Please fill the IP address of ARCB which is set before using EzConfig. However, if it is not changed before, then IP 192.168.1.200 is default setting. The port is set to 1234 as default which could not be changed.

After click OK button the icon of EzLogger will become gray at first. If the EzLogger is connected with PC the color will become to yellow soon. It means the connection between EzExplorer and EzLogger is ok. The color will become blue if there is/are inverter(s) connected with EzLogger. It means EzExplorer acquired data of inverter via ARCB successfully.



7.2 Edit EzLogger

If you have completed IP configuration via EzConfig, please ignore this section. Otherwise you need to modify the network parameters such as IP address, subnet mask and gateway to suit for your local network after the ARCB connect successfully at first time.

Change the IP address to the same network segment with local network and make sure that the IP is not occupied by other device.

Right click one EzLogger icon under Ethernet icon in manager area and click the edit EzLogger menu (or click edit EzLogger of EzLogger menu in menu bar). The interface is as follow:



Figure 7.2-1

After click the edit ARCB menu, there will be an edit ARCB dialog box. Fill in the proper parameter according to your local network. Please see below example:



Figure 7.2-2

In the 'Edit EzLogger' dialog box, when editing the name, it must be composed of numbers, or '_', or English letters (capital letters or lowercase letters). Otherwise the setting "Edit EzLogger" will be failed.

The IP Address edit box can be changed to fix your local network segment or the IP address is conflict to other device.

7.3 Delete EzLogger

Right click one EzLogger icon under Ethernet icon in manager area and click the delete EzLogger menu (or click delete EzLogger menu of EzLogger menu in menu bar). The interface is as follow:

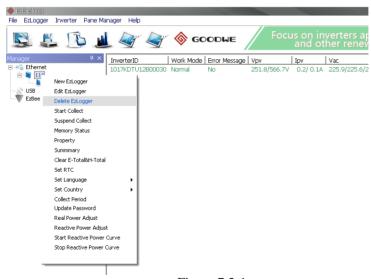


Figure 7.3-1

After that, there will pop up a "Set Local Password" window:



Figure 7.3-2

After click the 'delete EzLogger' menu, there will be "Prompt" dialog. The interface is as follow:



Figure 7.3-3

In the above prompt dialog, click the "Yes" to delete it or click "No" to abandon.

7.4 Memory Status

Right click one EzLogger icon under Ethernet icon in manager area and click the memory status menu (or click memory status menu of EzLogger menu in menu bar). You can also click Memory Status button in toolbar. The interface is as follow:

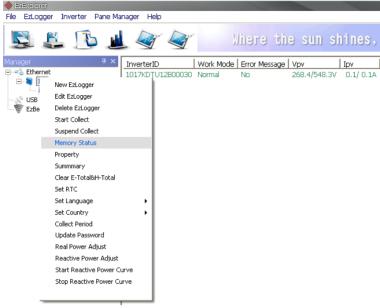


Figure 7.6-1

After click the memory status menu, there will be a memory status dialog box. The interface of memory status dialog box is as follow:



Figure 7.6-2

In the memory statue dialog box, it will display 2 items: total memory

size, used memory size. So you can see the usage situation of the memory of the selected EzLogger. It is invalid to modify the data of the 2 items, and they can be read only.

7.5 Property

Right click one EzLogger icon under Ethernet icon in manager area and click the property menu (or click property menu of EzLogger menu in menu bar). The interface is as follow:

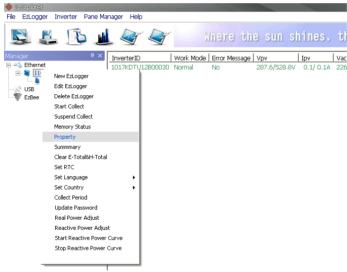


Figure 7.7-1

After click the property menu, there will be a property dialog box. The interface of property dialog box is as follow:



Firgure 7.7-2

The information in the property dialog box can be not changed. And every edit box of the property dialog box should be not blank.

7.6 Summary the yield energy

This function is used to view the power yield by all the inverter attached to the selected EzLogger.

Right click one EzLogger icon under Ethernet icon in manager area and click the summary menu (or click the summary menu of EzLogger in menu bar), and then the window will display the summary. The related interface is as follow:

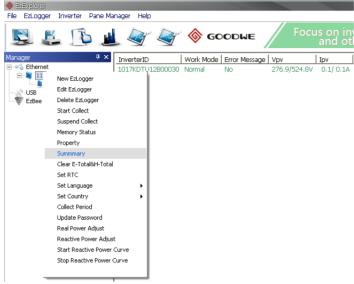


Figure 7.8-1

The default interface of EzLogger summary is as follow:

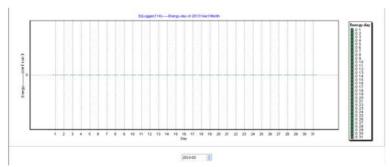


Figure 7.8-2

The summary of EzLogger has 3 levels: yield energy histogram of everyday of one month, generated energy histogram of every month of

one year, generated energy histogram of every year.

7.7 Set Data Collect Period

Click the Collect Period menu of EzLogger menu in menu bar(or right click the EzLogger icon under the Ethernet icon in manager panel and click the Collect Period menu). The interface is as follow:

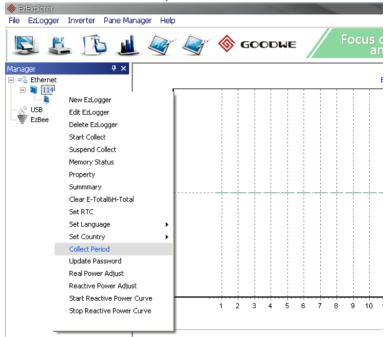


Figure 7.9-1

After that, there will pop up a "Require Password for Setting" window:

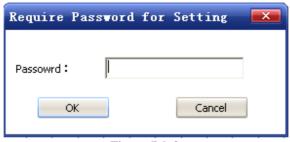


Figure 7.9-2

Then input the password and click "OK" button. The default password is 123456. After that, it will pop up a "Set Collect Period" window:

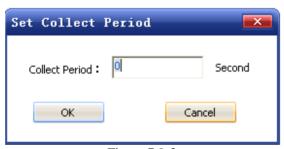


Figure 7.9-3

In the "Set Collect Period" window, please input a number higher than 180 and click "OK" button. After that, it will display the result of the operation in message panel.

Collect period means the period of EzLogger stores data of inverters. Such as: set collect period 180 seconds, and it means EzLogger will store data from inverters once every 180 seconds.

7.8 Update Password

Click the Update Password menu of EzLogger menu in menu bar(or right click the EzLogger icon under the Ethernet icon in manager panel and click the Update Password menu). The interface is as follow:

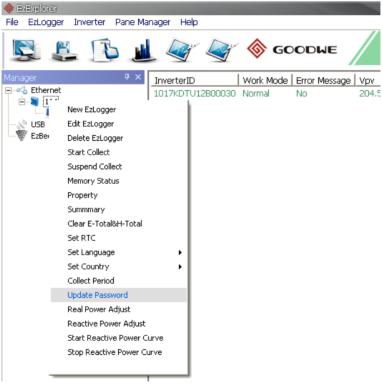


Figure 7.11-1

After that, there will pop up a "Update Password" window:



Figure 7.11-2

Then input the old password and new password (the default password is 123456). After that, it will display the result of the operation in message panel.

8. Technical Parameters

8.1 Operation Conditions

ARCB can be installed indoor only; it will cause damage if it runs out of range of following conditions:

Input Voltage	9 VDC
Input Current	500m A
Power Consumption	1 W
Operating Temperature Range	-20∼60°C
Humidity Range	0% - 95%

Table 8.1

8.2 Operation Limitation

Communication	Communication	Distance Limitation
Interface	Mode	
RS485	RJ45	MAX. 800 m Cable
USB Port	MiniUSB_B	MAX. 2 m Cable
Net Port	Network	MAX. 100m Cable

Table 8.2

8.3 Data Storage

The data of inverter is storage as csv format files in micro SD card. Its capacity is 2GB which is only available for data of 20 inverters not longer than 3 years. When the space is using up, the oldest data files will be deleted. And you can download the csv file via a micro SD card reader or the USB cable.

9. Warranty

9.1 Warranty Period

GoodWe provides a standard warranty of 2 years for ARCB. Additional provision will be subject to contract.

9.2 Warranty Card

The warranty card and purchase invoice should be properly kept for the product warranty period. Meanwhile, the nameplate on products shall be kept clearly visible. Otherwise GoodWe may reject warranty service or only provide paid service.

9.3 Warranty Conditions

According to the GoodWe product description and instructions, if a device becomes defective within the warranty period, and it is proved that further functional performance is impossible due to a problem with product quality, the device will be, as decided by GoodWe:

- A Returned to the factory for maintenance; or
- **B** Repaired onsite; or
- C Replaced (If the original model is no longer produced, GoodWe will provide a replacement device of equivalent value according to model and age.)

9.4 Scope of Warranty

Warranty is not valid in the following situations:

- ▶ Products or fittings exceed warranty period (excluding any warranty extension agreement signed beforehand).
- ▶ Fault or damage is caused by improper operation or not following the user manual, product instructions, or relevant safety regulations.
- Insufficient ventilation of the unit.
- ▶ Fault or damage due to improper installation, repair, change or removal by persons who are not authorized by GoodWe.
- ▶ Fault or damage due to unpredictable accidental factors, human errors or force majeure.
- ▶ Fault or damage unrelated to product quality.

10. Contact

If you have any enquiries or technical problems concerning a GoodWe SS series inverter, please contact our customer services.

Address: No.189 Kun Lun Shan Road, Suzhou New District, Jiangsu, China (Jiangsu GoodWe Power Supply Technology Co., Ltd.)

Tel: +86 512 6239 6771

Fax: +86 512 6239 7972

E-mail: service@goodwe.com.cn

Website: www.goodwe.com.cn