

Installation and Operating Instructions

ComBox

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1. About this Manual

This manual contains a detailed description of the ComBox, including precautions, methods of installation and operating instructions.

The specifications described in this document apply to the current version of the product. We reserve the right to make changes or update our product to introduce new functions and overall improvements. This specification is subject to change without prior notice. Please contact Zeversolar to confirm the latest revision.

1.1 Scope of Application

This manual applies to the ComBox firmware version 16B21-663R+16B21-658R and later versions.

1.2 Target Reader

This manual is intended for authorized skilled installers, who have knowledge of electrical safety. Safety warnings can be found in section 2.6. Please read this manual carefully before installing.

1.3 Abbreviations

Table 1-1: Abbreviations

Abbreviation	Designation
E-Today	Daily Energy
E-Total	Total Energy
LAN	Local Area Network
WAN	Wide Area Network
WLAN	Wireless Local Area Network
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
PV	Photovoltaic
Pac	Alternating Current Output Power

2. Introduction

The monitoring system plays an important role in the PV plant. Users can view the PV Plants power generation data and fault information to avoid unnecessary loss of power and non-scheduled downtime. Users can also maximize the energy generating efficiency according to power generating data and report. ComBox has two versions: ComBox and ComBox WiFi.

2.1 Product Overview

The ComBox is an integrated monitoring device, which can be installed inside the inverter, and collects the inverter's data and events in the PV plant. When an Internet connection is present, the ComBox will upload the collected data to the ZeverCloud to facilitate on-line web monitoring and data analysis. The system structure shows in Fig. 2-1.

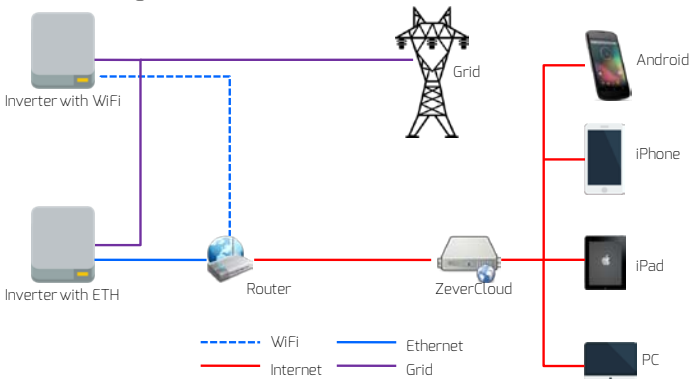


Fig.2-1: System structure

2.2 Function and Feature

- PV Plant monitoring via the ZeverCloud
- Remote monitoring via Ethernet or WiFi
- Power Management Capability
- Integrated memory
- Smart energy support
- O-export support

2.3 Scope of Application

ComBox can be installed in the following inverters:

Model	Active power	O-export	DRMs
-------	--------------	----------	------

	limit		
Zevelution 1000-3000S	Yes	Yes	Yes
Zevelution 3680-5000	Yes	Yes	Yes
Evershine TLC4000~6000	Yes	Yes	Yes
Eershine TLC8000~10000	Yes	Yes	Yes



The sections marked with a * apply to the WiFi version.

2.4 Scope of Delivery

The details information about Scope of Delivery please refers to the ComBox Quick Installation Guide.

2.5 Environment and Attention

The ComBox operational ambient temperature is -25 ° C to 75 ° C.

2.6 Safety Symbols

Please pay attention to the following safety symbols in the manual:



Information

Provides information about installation or use.



Notice

Indicates the instructions must be followed in the correct order to prevent problems.



Warning

Indicates the instructions must be followed in order to prevent serious problems or injuries.

3. Mounting

3.1 Preparation

Table 3-1: Preparation


Type	Requirements	Quantity
Network cable	1. Comply with the standards for structured cabling according to EIA/TIA-568. 2. Shielded Ethernet cable (CAT-5E or higher). 3. UV resistant if used outdoors.	Max. 100m
DRMs cable	1. The same as network cable line	Max. 1000m

3.2 Assembling the ComBox

3.2.1Electrical Checks

Risk of lethal electric shock when opening the inverter may cause death or serious injury. Therefore before assembly, ensure that the inverter is isolated from all sources of AC and DC power (see inverter Installation Guide).

Electrostatic discharge can damage the inverter. Please ground yourself before touching components by touching the protective conductor (PE) or a non-coated part of the inverter enclosure.



1. In order to ensure safety, before assembly, please read the inverter user manual carefully.
2. Assembly is strictly prohibited when the inverter connected to electricity or is in operation.

3.2.2 Assembly

For details regarding mounting please refer to the ComBox Quick Installation Guide.

4. Connecting to the Internet

The ComBox requires an Internet connection in order to provide remote monitoring via Ethernet or WiFi.

The ComBox uses network port #6655 and #80 to communicate with the ZeverCloud. Both of these two ports must be opened otherwise the ComBox cannot connect to the ZeverCloud and upload data.



If the IP address of the ComBox is different from the network segment assigned by the router,

Troubleshooting:

1. Make sure the DHCP service of router has been activated if ComBox use DHCP function.
 2. Check the connection between the ComBox and the router.
 3. Check whether the ComBox was using a fix IP address.
 4. If the ComBox cannot obtain an IP address from the router, it will use 169.254.1.100 or 0.0.0.0
-

4.1 Connecting via Ethernet

The ComBox is connected to the Ethernet by simply connecting the Ethernet cable from the router to the Ethernet port. The connection between the ComBox and the Internet is shown in Fig. 4-1.



Fig. 4-1: Network connection

The ComBox obtains an IP address from the router via DHCP automatically and displays it on the LCD of the inverter. The time it takes to connect to the Internet depends on the network communication conditions. At the same time the router needs to support DHCP services and the DHCP services must be activated if the ComBox has been set up to use the DHCP function.

4.2 * Connecting via WiFi

If users use the ComBox's WiFi to connect the router for remote monitoring, the connection diagram is shown in Fig. 4-2.



Fig. 4-2: WiFi connection

In order to achieve remote monitoring reliably, the following steps must be taken.

Step1: Power on the inverter, which will also power ComBox, and use a mobile device or laptop to search for the wireless access point (AP) of the Combox WiFi. A new AP of ZEVERSOLAR -XXXX is displayed, Select this AP to connect. The password is "zeversolar". As shown in Fig. 4-3.



Fig. 4-3 WiFi connection page



1. "XXXX" stands for the last four digits in the Registry ID of the ComBox.

Step2: Start the web browser and enter <http://160.190.0.1>. The internal website opens.

Step3: Select the wireless page and select a wireless local network in the area to connect. The Password/Security Key dialog box opens, as shown in Fig. 4-4.

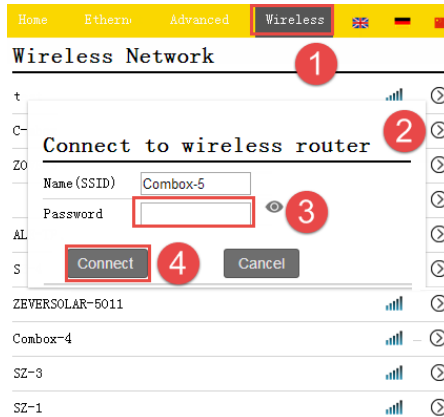



Fig. 4-4 connect to router

Step4: Enter the password of the wireless local network that you wish to connect to. Do not enter the password of the router.

Step5: After approximately one minute the WiFi of the ComBox will connect to the wireless local network. The status indicator on the Wireless page should display the  icon, as shown in Fig. 4-5.

WiFi Connected


Combox-5 	
<input checked="" type="checkbox"/> Obtain an IP address automatically	
IP Address	192.168.8.189
Subnet Mask	255.255.255.0
Gateway	192.168.8.1
MAC Address	C8-93-46-C7-9F-7E
<input checked="" type="checkbox"/> Obtain DNS server address automatically	
DNS Address	192.168.9.20

Fig. 4-5 WiFi Connection Instructions

4.3 Connecting the energy meter

ComBox can connect to Eastron smart energy meter to limit the exported power of a PV plant. The energy meter must be connected at the grid connection point, as shown in Fig. 4-6.

Please refer to the user manual of Eastron smart meter for its wiring details.

The ComBox WiFi supports the following Eastron energy meter model:

- SDM630DC Modbus
- SDM630CT Modbus
- SDM120 Modbus
- SDM220 Modbus
- SDM230 Modbus

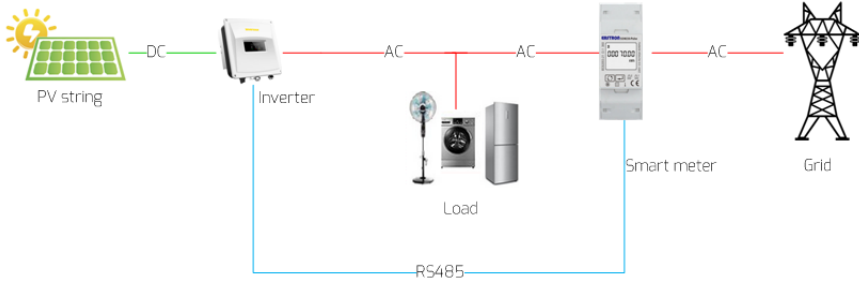


Fig. 4-6: System Connection with Eastron smart energy meter



Smart meter "+/-" Pac means: Import power from grid/export power to grid



ComBox smart meter communication parameters: Baud rate 9600bps; parity is none; 1 stop bit.



The maximum cable length of RS485 is 1000m. Communication quality will be affected if the distance is longer than this value.

4.4 Connecting to DRMs

The inverter shall detect and initiate a response to all supported demand response commands according to AS/NZS 4777.2:2015. The demand response modes are described as follows:


Table 4-1: DRMs requirement

Mode	Requirement
DRM 0	Operate the disconnection device
DRM 1	Do not consume power
DRM 2	Do not consume at more than 50% of rated power
DRM 3	Do not consume at more than 75% of rated power ANDSource reactive power if capable
DRM 4	Increase power consumption(subject to constraints from other active DRMs)
DRM 5	Do not generate power
DRM 6	Do not generate at more than 50% of rated power
DRM 7	Do not generate at more than 75% of rated power ANDSink reactive power if capable
DRM 8	Increase power generation(subject to constraints from other active DRMs)



Only DRM0, DRM5, DRM6, DRM7, DRM8 available.

Table 4-2: DRMs RJ45 Pin definition

Pin	Pin definition	
1	DRM1/5	
2	DRM2/6	
3	DRM3/7	
4	DRM4/8	
5	REF GEN/0	
6	COM Load/0	
7	NC	
8	NC	

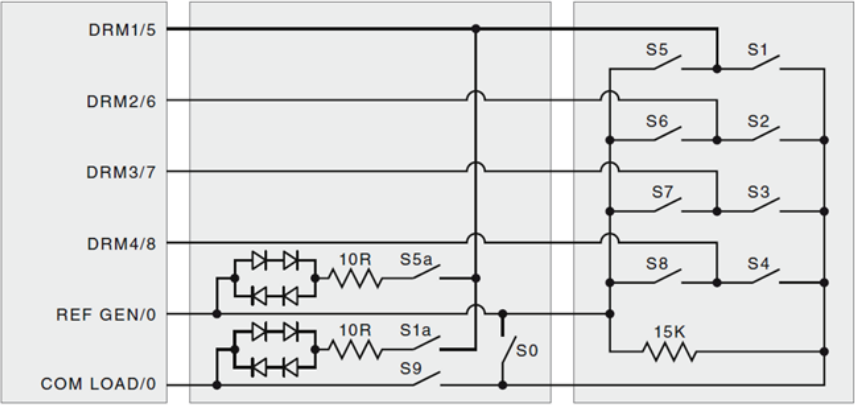


Fig. 4-7 DRMs RJ45 Connection Circuit

The DRMs function parameters setting, please refer to 5.4.1.

5. Web Server

The ComBox has an integrated internal web server. The running state of the inverter can be checked from the internal web server page. You can also enable some advanced functions such as output power limitation and adjusting the inverter's safety parameters.

The interface structure of the built-in web server is shown in Fig. 5-1.

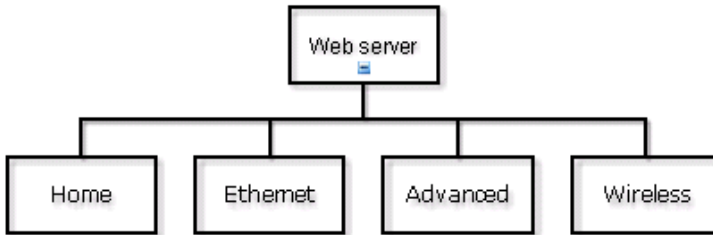


Fig. 5-1: Structure of the web server

5.1 Visiting the Web Server

There are two ways to visit the internal web server of the ComBox: via Ethernet or via WiFi (if the ComBox is equipped with the WiFi module).

5.1.1 Visiting via Ethernet

Input the IP address of the ComBox (shown on the inverter's LCD) in the browser's address bar. For example, if the IP address shown on the inverter is 192.168.6.144, then enter 192.168.7.67 in the browser's address bar and press the Enter key to open the web page, as shown in Fig. 5-2.

5.1.2 *Visiting via WiFi

You also can visit the web page via WiFi, please refer to section 4.2. Once you are wirelessly connected to the ComBox, input "160.190.0.1" in the browser's address bar, press the Enter key to display the internal web page of ComBox, as shown in Fig. 5-2.

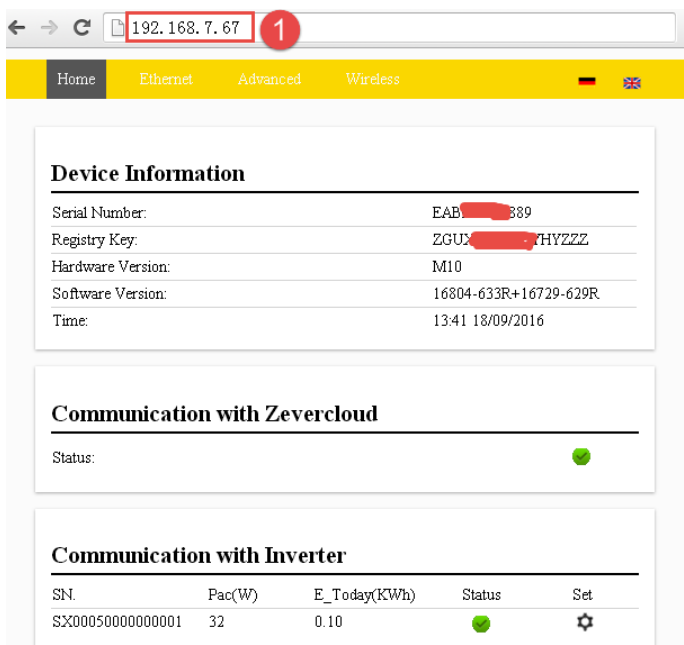




Fig. 5-2: ComBox Web Server

5.2 Home

This page shows the information and state of the ComBox. It also shows the state of the inverter. See Fig. 5-2.

If the inverter is working normally, it shows a green  icon; otherwise the red  icon will be shown.

You also can set the inverter power on/off by set menu.

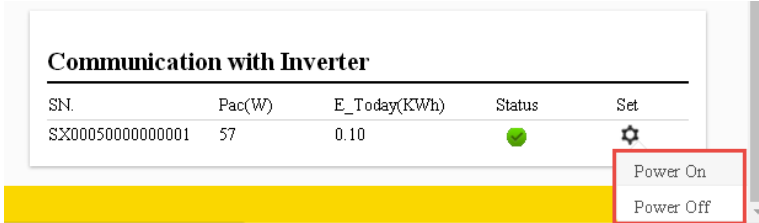


Fig. 5-3: Inverter power on/off function

5.3 Ethernet

Clicking the "Ethernet" tab will open the Ethernet page. On this page you can set the Ethernet port parameters. You can set the ComBox using a static IP address or obtaining the IP address automatically.

Local Area Connection	
<input checked="" type="checkbox"/> Obtain an IP address automatically	
IP Address	192.168.7.67
Subnet Mask	255.255.255.0
Gateway	192.168.7.1
MAC Address	EA-B9-60-07-88-89
<input checked="" type="checkbox"/> Obtain DNS server address automatically	
DNS Address	192.168.9.20

Fig. 5-4: Ethernet page

5.4 Advanced

The Advanced web page shows the advanced settings of the ComBox, Such as the power management and safety setting.

In addition, the firmware of the ComBox and Inverter can be upgraded from this webpage.

5.4.1 Power Management

The ComBox can regulate the power of the inverter according to the value of installed inverter capacity or the energy meter reading, which are set by the user.

a) Active Power Limit

Tick "Active Power Limit" and fill in the total Inverter AC capacity to active Power limit function. There are three modes of active power limitation which can be selected.



1. Please make sure the inverter AC capacity is correct, otherwise the power limitation function cannot work properly.

Power Management

☒ Active Power Limit

Inverter AC Capacity

3000

W

☒ Output power

<=

100

%

Limit output power based on the installed inverter AC capacity

☐ Output power

<=

0

W

Limit output power based on the energy meter reading

Energy meter

SDM120

▼

Choose the energy meter model

☐ Output power

Q

60

%

The Q value is decided by the AS DRM7 Command

Load speed

16.67

%

Limit output power based on the AS DRMs Safety

Fig. 5-5: Set Active Power Limitation Method

The following ways will introduce how to configure the three kinds of power limitation.

For correct operation of this method the parameter: tem A – total inverter AC capacity of PV system that must be entered, please refer to Fig. 5-6:

■ Based on the Installed Inverter AC Capacity

In this method the AC output of the PV system will not exceed a set percentage of the installed inverter AC capacity. For example, if a 20 % limitation on a 3 kWp PV system connected to an Zeverlution 3000S has been set then the AC output will not exceed 0.6kWac.

Click the "OK" button in bottom-right of this web page to ensure the setting parameters take effect.

☒ Active Power Limit

Inverter AC Capacity

a

3000

W

1

☒ Output power

b

<=

100

%

Limit output power based on the installed inverter AC capacity

☐ Output power

<=

0

W

Limit output power based on the energy meter reading

Energy meter

SDM120

▼

Choose the energy meter model

☐ Output power

Q

60

%

The Q value is decided by the AS DRM7 Command

Load speed

16.67

%

Limit output power based on the AS DRMs Safety

The Fig. 5-6: Set parameters based on the AC capacity

~16~

Table 5-1: The indicator of the Item

Parameter	Definition
a	The inverter ac capacity (Wac)
b	The percentage of power output limitation based on parameter b

■ Power Limitation Based on the Energy Meter Reading

In this method the export power of the PV system at the point of connection will not exceed the set value. For example, if 0 kWac export limit has been set in "limit output power based on the energy meter reading " then a 3 kWp PV system connected to zeverlution 3000S(3 kWac inverter) will reduce its AC output power to ensure the export power at the smart meter won't exceed 0 kWac.

Example for 0-export setting:

Please make sure all wire connection is correct before doing the settings on web server.

Step 1: Tick "Active Power Limit" and fill in the total Inverter AC capacity to active Power limit function.

Step 2: Select "limit output power based on the energy meter reading" and set output power $\leq 0W$

Step 3: Select the correct smart meter of the PV system

Step 4: Click the "OK" button in bottom-right of this web page to ensure the setting parameters take effect.

The PV system will automatically to regulate inverter's output power to make sure inverter's output power won't exceed the load power, in this case, no PV power can feed into the grid.

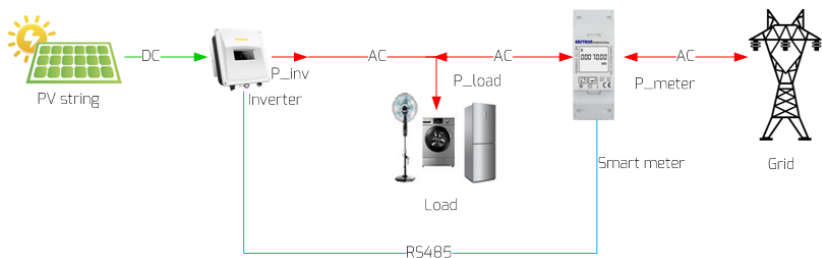


Fig. 5-7: Power flow & limitation based on the energy meter reading

For this method position 2 in Fig. 5-8 should be ticked.

Click the “OK” button in bottom-right of this web page to ensure the setting parameters take effect.



The system power is calculated as following:
 $P_{load} - P_{inv} = P_{meter}$

☒ Active Power Limit

Inverter AC Capacity **a** W

☐ Output power \leq % Limit output power based on the installed inverter AC capacity

2 ☒ Output power **c** \leq W Limit output power based on the energy meter reading

d Energy meter Choose the energy meter model

☐ Output power Q % The Q value is decided by the AS DRM7 Command

Load speed % Limit output power based on the AS DRMs Safety

Fig. 5-8: Set parameters based on the energy meter reading

The “output power” value is e when $P \geq P_{meter}$

Table 5-2: The indicator of the Item

Parameter	Definition
A	The inverter ac capacity (W_{ac})
C	It expect power reading of the energy meter
D	The energy meter model

■ Based on the AS DRMs Safety

The output power is be decided by DRMs command. Please refer the section 4.3.

☒ Active Power Limit

Inverter AC Capacity	a	3000	W	
<input type="radio"/> Output power	<=	100	%	Limit output power based on the installed inverter AC capacity
<input type="radio"/> Output power	<=	0	W	Limit output power based on the energy meter reading
Energy meter		SDM120	▼	Choose the energy meter model
3 <input type="radio"/> Output power	e Q	60	%	The Q value is decided by the AS DRM7 Command
f Load speed		16.67	%	Limit output power based on the AS DRMs Safety

Fig. 5-9: Set parameters based on AS DRMs safety

The "output power" value is e when $P \geq P_{\text{meter}}$

Table 5-3: The indicator of the Item

Parameter	Definition
E	Q value: The reactive value of inverter when received the AS DRM7 Command
f	It expect power reading of the energy meter

b) Active power feed-in at over frequency Limit

☒ Active power feed-in at over frequency Limit

☒ Non-hysteresis ☐ Hysteresis

F-start	50.12	Hz	F-stop	51.02	Hz
F-back	50.0	Hz	Load speed	10.00	%

Ok

The Fig. 5-10: Set active power feed-in at over frequency Limit

c) Active power feed-in at over volt Limit

☒ Active power feed-in at over volt Limit

Point1: U/Un	50	%	P/Pn	80	%
Point2: U/Un	60	%	P/Pn	80	%
Point3: U/Un	100	%	P/Pn	80	%
Point4: U/Un	110	%	P/Pn	80	%

Ok

The Fig. 5-11: Set active power feed-in at over volt limit

d) Reactive Power Limit

There are four modes of reactive power limitation can be selected.

- Cos(phi) fix mode: In this mode, the ComBox will regulate the reactive power of inverter according to the Cos(phi) value which is set by the user. Enter the Cos(phi) value and choose the phase as shown in Fig.5-12.

Choose Mode Fixed Cos(phi)

Cos(phi) 1.0 (0.8~1) Phase Leading

Ok

Fig. 5-12: Cos(phi) fix mode

- Cos(phi) variable mode: In this mode, the ComBox will produce a curve according to the "P/Pn", "Cos(phi)" and the phase of points 1,2,3 and 4, and will regulate the reactive power according to this curve, as shown in Fig. 5-14.

Choose Mode Variable Cos(phi)

Point 1: P/Pn	20	% (0-100%)	Cos(phi)	0.95	(0.8~1)	Phase	Leading
Point 2: P/Pn	40	% (0-100%)	Cos(phi)	1	(0.8~1)	Phase	Leading
Point 3: P/Pn	60	% (0-100%)	Cos(phi)	1	(0.8~1)	Phase	Leading
Point 4: P/Pn	80	% (0-100%)	Cos(phi)	0.95	(0.8~1)	Phase	Lagging
Response time	5	s (0~60s)					

Fig. 5-13: Cos(phi) variable mode

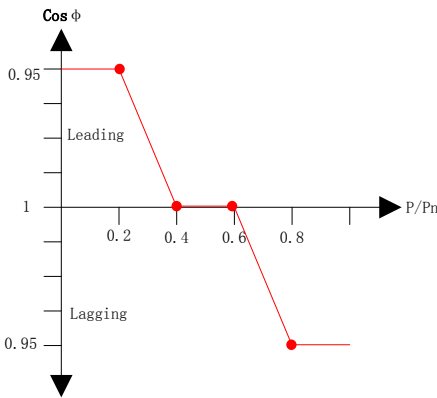


Fig. 5-14: Cos(phi) variable Cure

- Q fix mode: In this mode, the ComBox will regulate the reactive power of the inverter according to the Q value which is set by the user. You need to input the Q value and choose the phase as shown in Fig. 5-15.

Choose Mode **Fixed Q**

Q **90** % (0~100%) Phase **Leading**

Ok

Fig. 5-15: Q fix mode

- Q variable mode: In this mode, the ComBox will produce a curve according to the "U/Un", "Q value" and phase position of points 1,2,3 and 4, and will regulate the reactive power according to this curve, as shown in Fig. 5-17.

Choose Mode **Variable Q**

Point 1: U/Un **96** % (0~120%) Q **50** % (0~100%) Phase **Lagging**

Point 2: U/Un **100** % (0~120%) Q **100** % (0~100%) Phase **Leading**

Point 3: U/Un **108** % (0~120%) Q **100** % (0~100%) Phase **Leading**

Point 4: U/Un **112** % (0~120%) Q **50** % (0~100%) Phase **Leading**

Response time **5** s (0~60s)

Fig. 5-16: Q variable mode

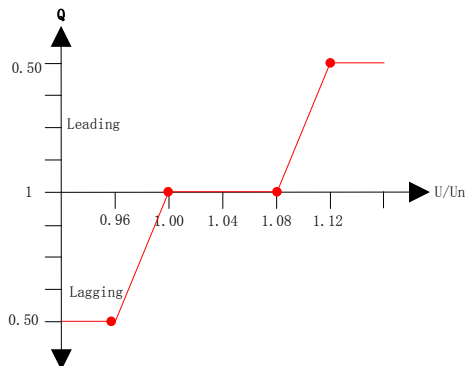


Fig. 5-17: Q variable Cure

To cancel the output power limit function untick the checkbox and click the "OK" button.



Please ensure that the inverter supports the Output Power Limit function.

5.4.2 Safety Setting

The ComBox also supports setting the safety parameters of the inverter. Choose the safety standard and then set the protect threshold below. And press the "OK" button.

Safety Setting -

Standard DE VDE-AR-N 4105

OVP3:	264.5	V(240~295)	120	ms(20~5100)
OVP2:	264.5	V(240~295)	120	ms(20~720000)
OVP1:	264.5	V(240~295)	120	ms(20~720000)
OVPR:	253.0	V(230~OVP1)		
UVPR:	195.5	V(UVP1~230)		
UVP1:	184.0	V(110~230)	120	ms(20~720000)
UVP2:	184.0	V(110~230)	120	ms(20~720000)
UVP3:	184.0	V(110~230)	120	ms(20~5100)
OFF3:	51.50	Hz(45~65)	160	ms(20~5100)
OFF2:	51.50	Hz(45~65)	160	ms(20~720000)
OFF1:	51.50	Hz(45~65)	160	ms(20~720000)
OFFR:	50.05	Hz(45~OFF1)		
UFPR:	47.53	Hz(UFP1~65)		
UFP1:	47.50	Hz(45~65)	160	ms(20~720000)
UFP2:	47.50	Hz(45~65)	160	ms(20~720000)
UFP3:	47.50	Hz(45~65)	160	ms(20~5100)
10-minute mean	253.0	V(220~300)		

Ok

Fig. 5-18: Safety Parameters

5.4.3 Updating Firmware

The ComBox can update the firmware of itself, and can also update the firmware of the connected inverter.

The ComBox can distinguish the update file type and update it automatically.

Enter the Advanced page and click the "choose file" in the Update Firmware section to select the new firmware and then click the "OK" button to update.

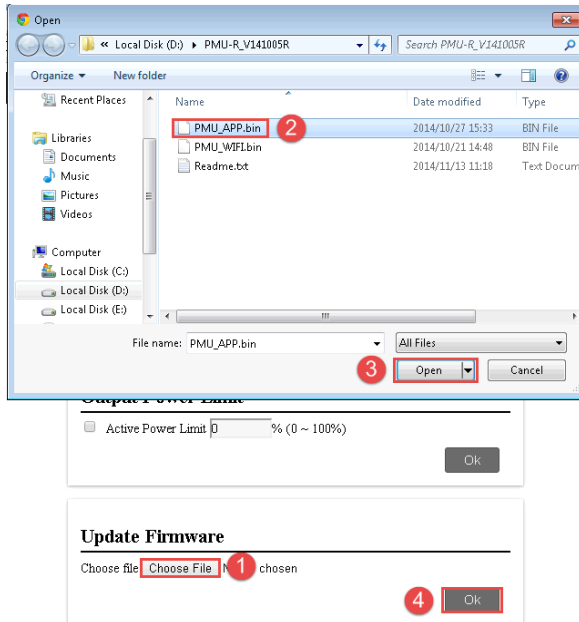


Fig. 5-19: Update Firmware

5.4.4 Restart

Enter the Advanced page of the ComBox and click the "OK" button at the Restart section to restart the device.



Fig. 5-20: Restart the device

5.4.5 Restore to Factory

Enter the Advanced page of the ComBox and click the "OK" button in the Restore to Factory section to restore all the parameters of the ComBox to the factory settings.



Fig. 5-21: Restore to Factory



This operation will delete all user data

5.5 *Wireless

This page shows the wireless network of ComBox. You can also configure the wireless network. If you want to change the connected WiFi network, please refer to section 4.2.

Wireless Network:

D-Link_DIR_615		
1234567		
zeversolar-ef		
ZEVERSOLAR-3F-1		
HETAO		
ZTE-9340E0		
Zeversolar-SZ		
jerrylaptop		
ZEVERSOLAR-0024		

Refresh

Fig. 5-22: Wireless Network

The wireless network IP information was shown as below. To change these settings please refer to section 5.3.

Wifi Connected

AND-TEST-HUAWEI	
<input checked="" type="checkbox"/> Obtain an IP address automatically	
IP Address	192.168.6.135
Subnet Mask	255.255.255.0
Gateway	192.168.6.1
MAC Address	C8-93-46-45-5A-0D
<input checked="" type="checkbox"/> Obtain DNS server address automatically	
DNS Address	192.168.9.20
Ok	

Fig. 5-23: Wireless IP information

This page shows the WiFi SSID and password information, you can change the SSID and WiFi password accordingly (default password is 'zeversolar'). To ensure highest security of your system, please change the default password 'zeversolar' and keep the new password confidential. If you do not change the password, you expose your system to a risk of unauthorized access by persons who know the default password and are within the reach of the WiFi network.

Device Wireless Setting	
Name (SSID)	ZEVERSOLAR-9103
Password
Ok Cancel	

Fig. 5-24: SSID & Password reset

6. ZeverCloud APP

ZeverCloud APP is a terminal application used on smartphone for users provided with a Zeversolar ComBox data loggers. These data loggers transfer the operational data to the ZeverCloud server via the internet and enable the users to monitor their PV plants and inverters remotely via a smart mobile device. You can visit and download ZeverCloud APP via the following website on your mobile phone :

Android:

<https://www.zeversolar.com/products/productline-detail/productline/detail/en-zevercloud/#download-data-link>



Fig. 6-1: Android QR code

iOS:

<https://itunes.apple.com/cn/app/zevercloud/id1147038131?l=zh&ls=1&mt=8>



Fig. 6-2: IOS QR code

6.1 Account Registration

First time users of the ZeverCloud APP are required to register an account via the ZeverCloud APP or via the ZeverCloud website. Monitoring can then be

performed after the user has registered and created a PV plant.

Step 1: Open ZeverCloud APP which has been downloaded and installed on your device, as shown in fig. 6-3.



Fig. 6-3: Home Page

Step 2: Click the button marked with a '1' in Fig. 6-3 to enter the login page, as shown in Fig. 6-4

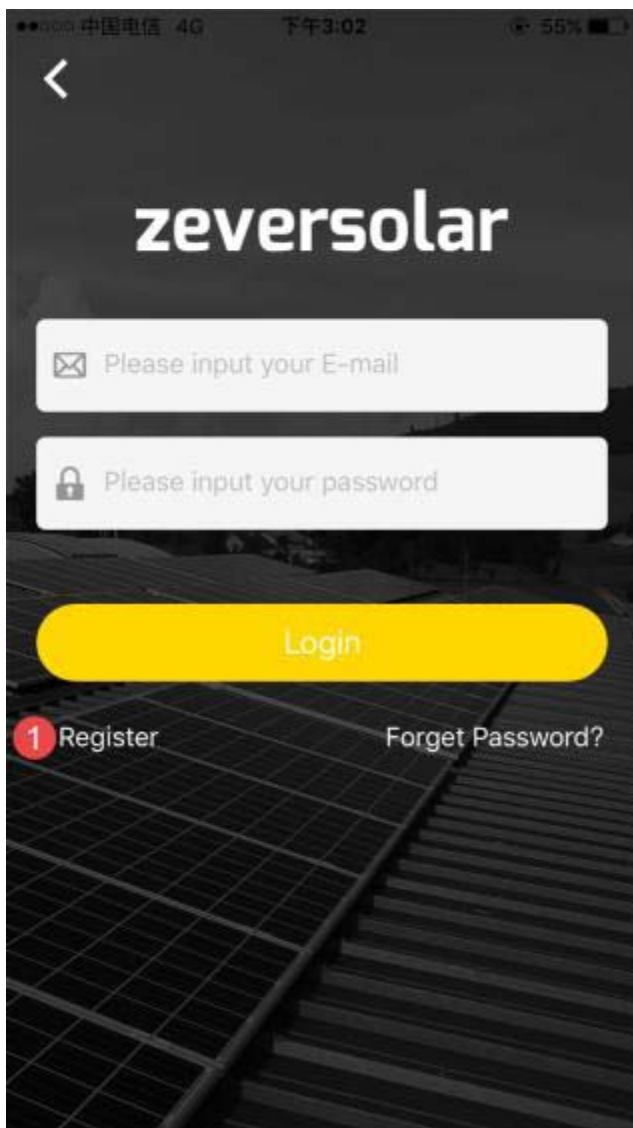


Fig. 6-4: Login

Step 3: Click the button marked with a '1' in Fig. 6-4, click 'Register' to enter the registration page, input the available e-mail address and login password (password length must be over 6 digits and less than 32 digits, capital and small English letter A(a)-Z(z) and numbers 0-9 can be accepted).

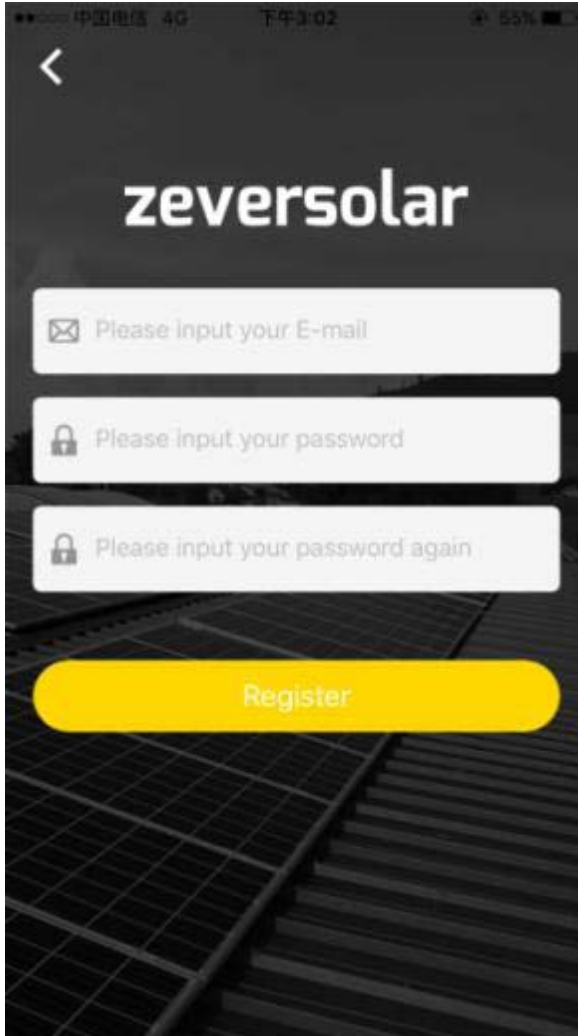


Fig. 6-5: Registration

Step 4: After the registration has been completed, ZeverCloud will send an activation e-mail. Activate your ZeverCloud account according to the information in the e-mail. If there is no activation mail in your inbox, please check your spam folder.

6.2 Create a PV plant

Step 1: Open ZeeverCloud APP which has been downloaded and installed already, as shown in Fig. 6-3

Step 2: Click the button marked with a '1' in Fig.6-3 to enter the login page, as shown in Fig.6-4

Step 3: Input your user name and password in the area as shown in Fig.6-4 to login to ZeeverCloud APP. If the login is successful you will enter the page with a PV plant list as shown in Fig.6-6 (prompt: if you have not created, nor being shared with any PV plant, the PV plant list will be blank).



Fig.6-6: PV plant list

Step 4: Click the “Create New Plant” button in the navigation bar at the bottom of the screen as shown in Fig. 6-6 to enter the PV plant create page as shown in Fig.

6-7. Follow the prompts on the page to establish a PV plant, input ComBox and PV plant information to finish the creation of PV plant. The serial

number and registry number of the monitoring device can be entered by clicking the scan button marked with a '1' as shown below to scan the QR code on the label of Inverter.

Create New Plant

Monitor Serial Number

1

Registry Key

Plant Name

2016-10-13

Installed Capacity

kw

CO2 Avoided Factor

kg/Kwh

Income Factor

[\$]/KWh>

Timezone

2

>

Country, State, City

>

Longitude, Latitude

Plant List

Create New Plant

Connect WiFi

My Profile

Fig.6-7: Create a PV plant



During PV plant creation, it is very important to choose the correct time zone. Please select the correct time zone where the PV plant is located in Position 2 shown in Fig. 6-7.



When establishing a PV plant, it is necessary to input the serial number and registry number of the ComBox WiFi., or or to scan a QR code which contains these two pieces of information. This information can be found on the Inverter label.

6.3 Connect Monitoring Management Device through WiFi

Keep APP logging in.

Open WLAN configuration on your mobile devices, search WiFi SSID of your Combox/ZeverCom. The default WiFi SSID of Combox/ZeverCom starts with ZEVERSOLAR-XXXX, i.e.: Testing SSID: ZEVERSOLAR-8894 as shown in fig. 6-8 below:

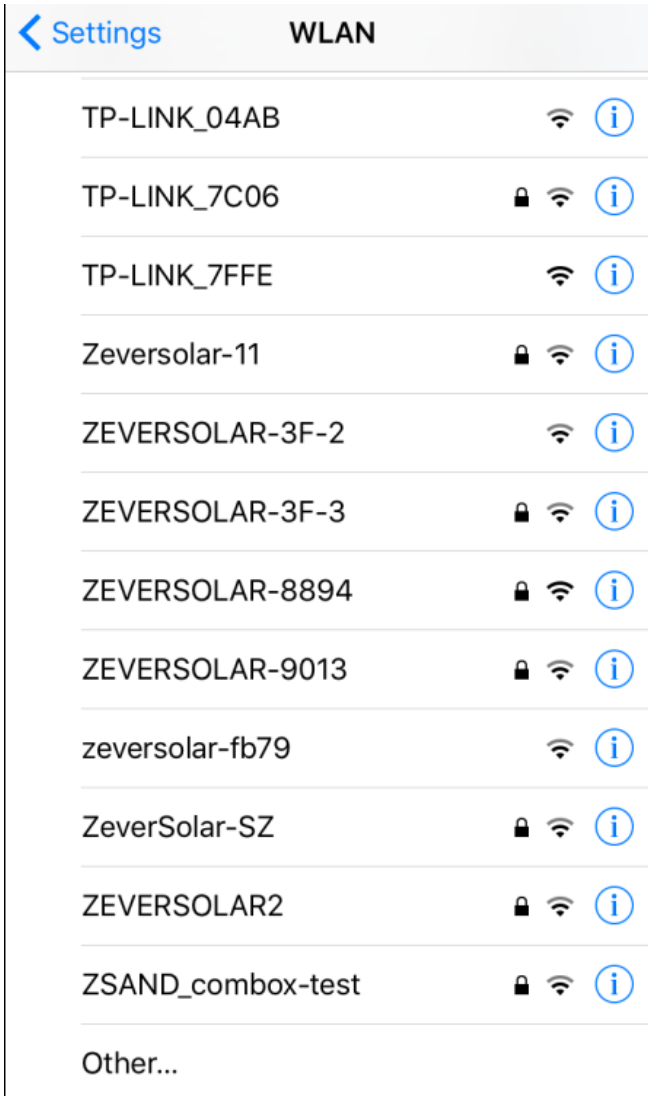


Fig.6-8: Wireless network list

Click SSID of Combox/ZeverCom, type in password as shown in fig (default password: zeversolar).

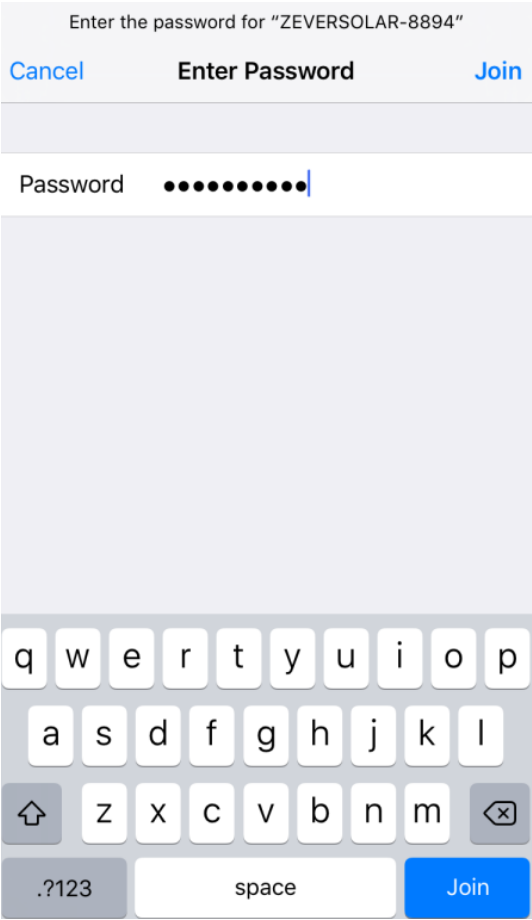


Fig. 6-9: Enter password
Smartphone connected to Combox/ZeverCom successfully, as shown in Fig. 6-9.

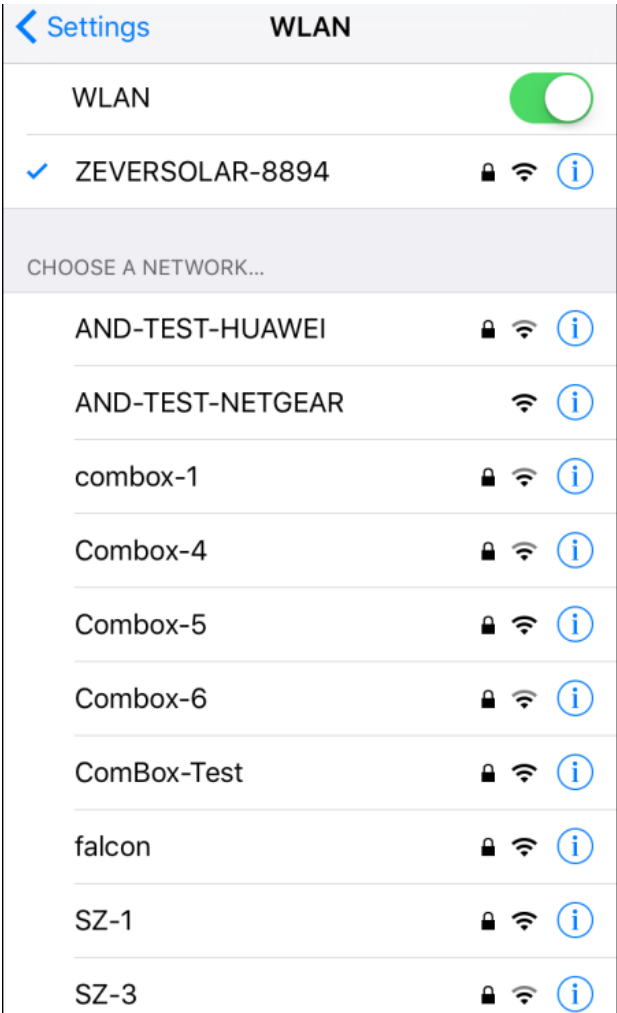


Fig.6-10: Connected to WiFi

Click the 'Connect WIFI' button in the navigation bar at bottom as shown in Fig. 6-6 to enter the WiFi configuration page as shown in Fig.6-10. Here you can modify the WIFI password of the monitoring devices, as well as modify the account name and password of the router. You can switch routers here as well as shown in the area marked with '1' in Fig. 6-11.

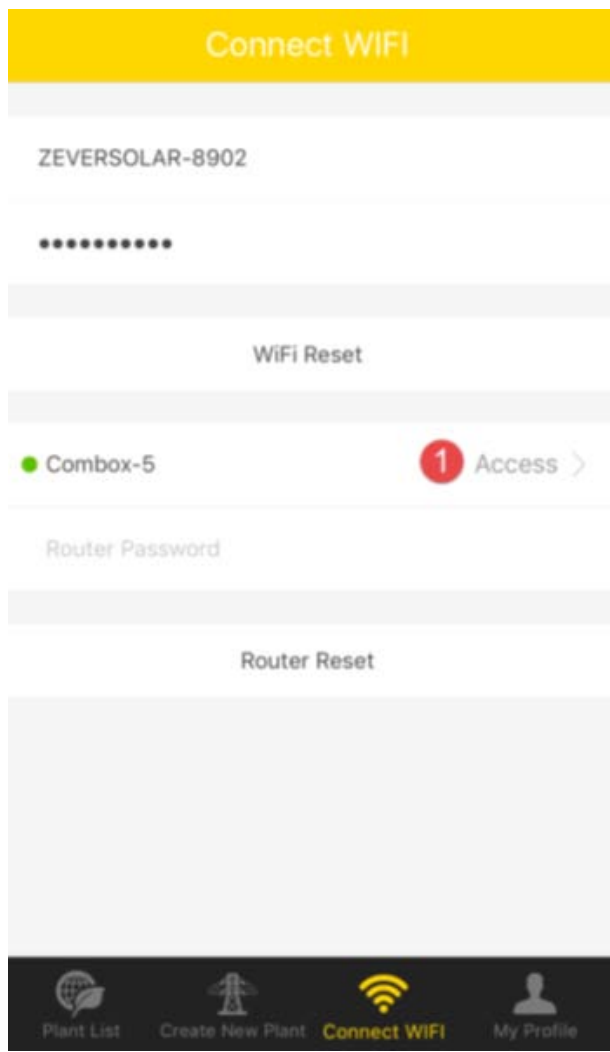


Fig. 6-11 WiFi configuration



Before open the page of "Connect WIFI", make sure you have manually connected your terminal mobile device to the WiFi of the monitoring device.

6.4 Browse PV plant

You can enter any PV plant by clicking the plant list as shown in Fig.6-6.This

allows you to view the power generation data of the PV plant as well as inverter events. The menu structure is shown in Fig.6-12:

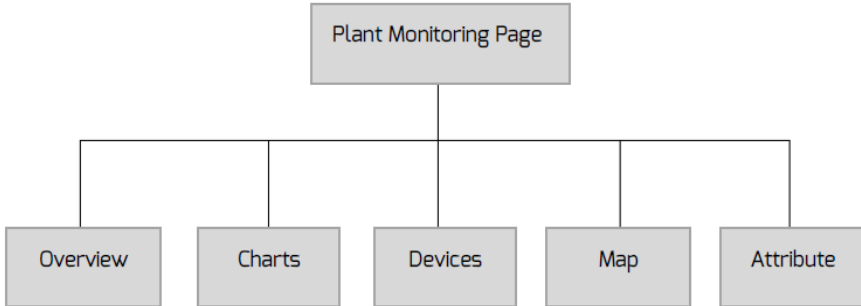


Fig.6-12: Menu structure of PV plant monitoring page

6.4.1 Overview

This menu provides summarized information such as current Power, Total Income, E-Today, E-Month, E-Total as well as power generation charts like, current day real-time power, current month's daily power, current year's monthly power, annual summarized power generation, as shown in Fig. 6-13.

E-Total: is the total energy that generated by all inverters connected to the monitoring device from the day the PV plant is created



Fig.6-13: Overview

6.4.2 Charts

This menu provides detailed curve graphs, i.e: DC input voltage V_{pv} , DC input current I_{pv} and AC output power P_{ac} of the PV plant and every inverter, as shown in Fig.6-14:



Fig.6-14: Charts

6.4.3 Devices

This menu provides the status of monitoring devices, as well as other contents such as relevant parameter error information of inverters that are connected to this monitoring device, as shown in Fig.6-15

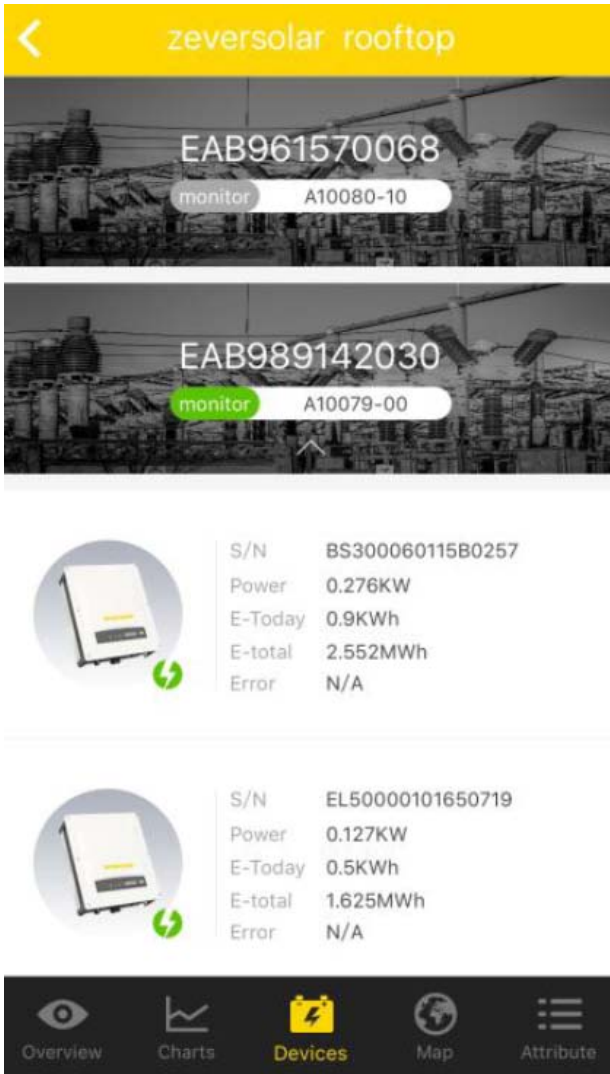


Fig.6-15: Devices
tude and latitude data by touching and holding the map.

7. ZeverCloud website

The ZeverCloud is a cloud service platform for users provided by Zeversolar. The ComBox transfers the operation data to the ZeverCloud server via the Internet to enable the users to monitor their PV plants and inverters remotely through a computer or a mobile device.

You can visit ZeverCloud via the following website on a PC:

<http://www.zevercloud.com>. For the Android or IOS user, refer section 6.0 to download ZeverCloud APP.



To monitor the PV plant and inverter with ZeverCloud, the Internet must be functioning normally.

7.1 Account Registration

Users who use ZeverCloud for the first time are required to register an account in ZeverCloud. Monitoring can then be performed after the user has registered.

Step 1: Input <http://www.zevercloud.com> in the browser and open the main page of ZeverCloud as shown in Fig. 7-1.

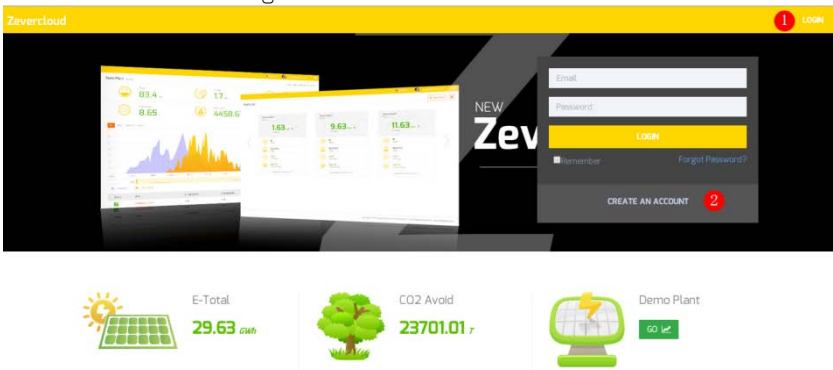


Fig. 7-1: Registration and login page

Step 2: Click the button marked with a "1" in Fig. 7-1, click "CREATE AN ACCOUNT" to enter the registration page, and register a user account according to the prompts.

Step 3: After the registration has been completed, ZeverCloud will send an activation email. Activate your ZeverCloud account according to the information

in the email. If there is no activation mail in your inbox, please check your spam box.



If you did not receive an email from Zevercloud, it could be:

1. The email was identified as junk mail. Please check the spam folder. If the email from ZeverCloud was identified as junk mail, please add the address of ZeverCloud into your white list to avoid future emails from ZeverCloud being identified as junk mail.
2. You may have input an email address which is different from the one you used for registration. Please confirm if the email was sent to another email address. Please reregister if you entered an unknown email address when entering account information.

7.2 Create a PV plant

Step1: Enter <http://www.zevercloud.com> in the address bar of the browser and open the home page of ZeverCloud as shown in Fig. 7-1.

Step2: Input your user name and password in the area marked with a "1" in Fig. 7-1 to login to ZeverCloud. If the login is successful you will enter the web page with a PV plant list as shown in Fig. 7-2.

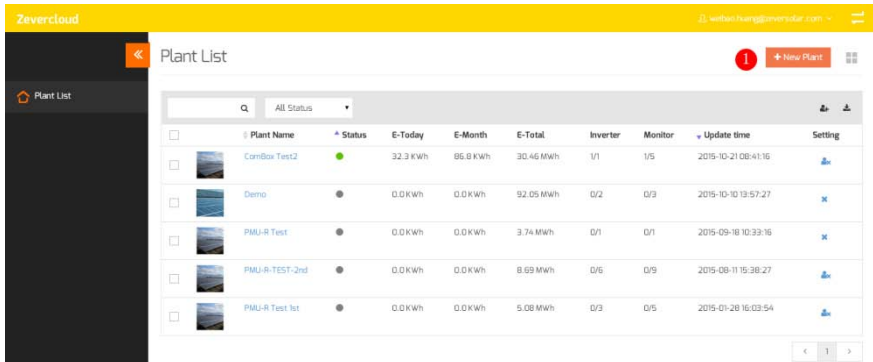


Fig. 7-2: Setting up a new PV plant

Step3: Click Position 1 in Fig. 7-2 to enter the PV plant establishing page as shown in Fig. 7-3. Follow the prompts on the page to establish a PV plant.

Zeevercloud

web@zhang@zeevercloud.com

New Plant

1 Device Information 2 Plant Information 3 Plant Parameters 4 Location Information

Serial Number *

Registry Key *

Continue

Fig. 7-3: Enter the ComBox and PV plant information to finish the creation of PV plant



During PV plant creation, it is very important to choose the correct time zone. Please select the correct time zone where the PV plant is located in Position 4 shown in Fig. 7-3.



When establishing a PV plant, it is necessary to input the serial number and registry number of the ComBox. This information can be found on the inverter table.

7.3 Browse PV plant

You can enter any PV plant by clicking the plant list. This allows you to view the power generation data of the PV plant as well as inverter events. The menu structure is shown in Fig. 7-4:

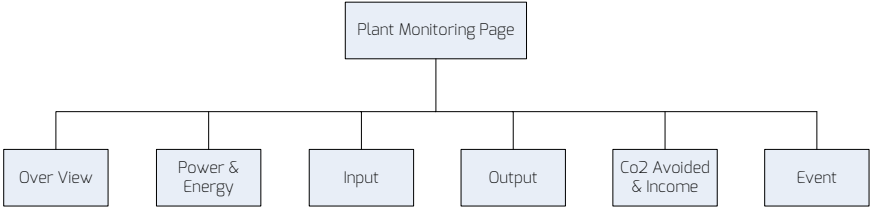


Fig. 7-4: Menu structure of PV plant monitor page

7.3.1 Overview

This menu provides information such as E-Today, E-Total and the Yield of the entire PV plant. It also provides the power generation graph of the PV plant.

7.3.2 Power & Energy

This menu provides detailed graphs such as power & energy of each inverter in the PV plant.

7.3.3 Input

This menu provides detailed graphs such as Input PV Vpv & Ipv of each inverter in the PV plant.

7.3.4 Output

This menu provides detailed graphs such as Vac, Iac & Fac of each inverter in the PV plant.

7.3.5 Co2 Avoided & Income

This menu provides detailed graphs such as Co2 Avoided & Income.

7.3.6 Event

This menu provides detailed information of each inverter's work state.

7.4 Add a ComBox

A ComBox can be added to a PV plant as follows:

Step1: Login to ZeverCloud and enter Configuration→**Device Management page**.

Step2: Enter the serial number and registry key of the ComBox WiFi into the textbox shown in Fig. 7-5.

Demo Device Management

Registry ID Registry Key [+ Add Monitor](#) [Delete Monitor](#)

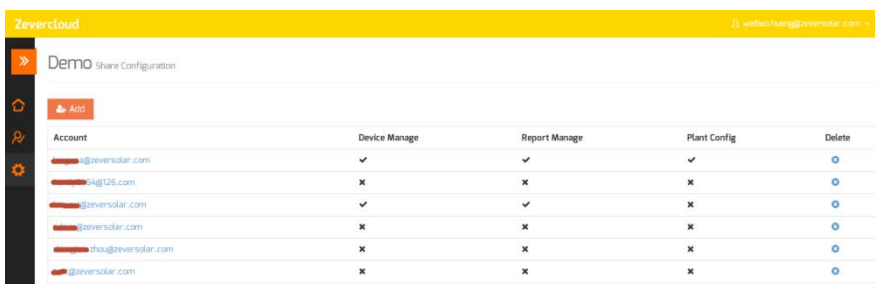
Fig. 7-5: Add more ComBox to the PV plant

Step3: Click the “Add monitor” button and the new ComBox will be added.

7.5 PV plant Sharing


Your PV plant can be shared with other ZeverCloud users, to enable other users to view your PV plant. You can also configure the sharing authority when sharing it.

Step1: Login into ZeверCloud and enter the Configuration→**Shared Configuration** page.



Account	Device Manage	Report Manage	Plant Config	Delete
h@zeversolar.com	✓	✓	✓	ⓘ
6ag@126.com	✗	✗	✗	ⓘ
@zeversolar.com	✓	✓	✗	ⓘ
@zeversolar.com	✗	✗	✗	ⓘ
rhoul@zeversolar.com	✗	✗	✗	ⓘ
@zeversolar.com	✗	✗	✗	ⓘ

Fig. 7-6: PV plant sharing

Step2: Click  an "Add a shared user window" will appear; enter the user account that needs to be shared.

Step3: In the check box in Fig. 7-6, you can configure the authorities of the shared users.

7.6 Configuration Report

ZeверCloud can email you the daily and monthly operation state of the PV plant, including the amount of generated energy, yield, CO₂ emission reduction and other information. In addition it can also inform you of events of the PV plant by email. This function can be configured as follows:

Step1: Login to ZeверCloud and enter Configuration→**Report Configuration** page.

Step2: First click "No" to activate this function as shown in Fig. 7-7.

The screenshot shows the 'Zevercloud' website interface. On the left is a dark sidebar with navigation icons: a right arrow, a home icon, a refresh icon, and a gear icon. The main content area has a yellow header bar with 'Zevercloud' text. Below this, there are three report configuration sections: 'Daily Report', 'Monthly Report', and 'Error Report'. Each section has an 'Active' toggle switch (all are set to 'Yes'), a 'Send Report At' or 'Send Report Every' field with a dropdown menu, and an 'Option' field with radio buttons. At the bottom, there is an 'Email Address' section with a 'Contact List' dropdown menu showing 'huang@zevercloud.com'. At the very bottom, there are two buttons: a grey 'Test' button and an orange 'Save' button.

Daily Report

Active ☒ Yes

Send Report At 21:00

Monthly Report

Active ☒ Yes

Error Report

Active ☐ No

Send Report Every 2 hour

Option

- ☒ Only earth fault
- ☐ Except earth fault
- ☐ All alarm

Email Address

Contact List huang@zevercloud.com

Test Save

Fig. 7-7: Activate the configuration report

Step3: After the above steps, click the "Save" button to save your settings, then click "Test" button to send to an email immediately.

8. Trouble Shooting

8.1 LED Indication of Network Interface

LED	Status	Description	Solutions
Yellow light(link)	Off	No connection established	Check whether the connection between router and ComBox is normal. Ensure the router is turned on.
	On	Connection established	NA
Green light (activity)	off	Communication is abnormal	Check whether the connections between router/switch and ComBox are normal.
	Flashing	Data is being transmitted or received	NA

8.2 FAQ

Q1. How can I confirm whether the ComBox is successfully connected to ZeverCloud?

Check the LCD on the Inverter. If it shows "Connected", it means the ComBox is successfully connected to the ZeverCloud. "Disconnected" means the ComBox is disconnected from the ZeverCloud.

Q2. Why can't I open the web page of the ComBox's web server?

Check whether the IP address displayed on the LCD of Inverter and the IP address of the computer are in the same network segment. If not, please use a computer that is in the same network segment with the ComBox to login.

9. Technical Parameters

Model	A10080-00	A10080-10
Electrical Data		
Power supply	Inverter	Inverter
Max. power consumption	1.0W	2.0W
Communication		
Communicate with router	Ethernet	Ethernet
WiFi communication	--	2.4GHz 802.11 b/g/n WEP/WPA/WPA2 PSK
Communicate with energy meter	2-wires RS485	2-wires RS485
Interface		
Ethernet	10/100 Mbit/s, RJ45	10/100 Mbit/s, RJ45
Max. communication range		
Ethernet	100m	100m
Meter(RS485)	1000m	1000m
DRMs	1000m	1000m
Environmental conditions		
Operation	-25°C to +75 °C	-25°C to +75 °C
Storage and shipment	-30°C to +80 °C	-30°C to +80 °C
Relative air humidity	5% to 95%, non-condensing	5% to 95%, non-condensing

10. Disposal

This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your old equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment.



The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

11. ContactUs

If you have any technical problems concerning our products, please contact Zeversolar service.

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