User Manual

Zeliox eco

ENGLISH

zeliox®
EXCESSIVEPOWER

Preface

This user manual introduces in details of product structure, parameters, basic procedures and methods of installation, as well as operation and maintenance of the product.

Please follow below request during the procedure of installation, operation and maintenance

- Please connect wires properly while installation, do not reverse connect. To avoid short circuit, please do not connect positive and negative poles with conductor (Wires for instance).
- For your safety, product shall be grounded properly before normal use.
- Please ensure that the electrical parameters of the related equipments are compatible with each other before use.
- For long-term storage, the battery should be recharged once at least in every 3 months, and charge capacity shall exceed 80% of the rated one.
- For your safety, please do not arbitrarily dismantle any components in any circumstances unless a specialist. Product breakdown due to improper operation will not be covered under warranty.

The product has been strictly inspected before shipment. If you find abnormal phenomena such as swelling of the shell, please contact the sales. The use environment and storage method have a certain impact on the service life and reliability of this product, so environmental factors must be fully considered before installation and use to ensure that the system works in a suitable environment.

Disclaimer: Due to the continuous update and improvement of products and technologies, the content in this document may not completely match the actual product, please understand. For product updates, please contact your sales.

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Information contained in this document may be changed without prior notice.

1 Safety Instructions

1.1 Safety instructions

- Please pay attention to the safety signs on the product and manual.
- During product installation, operation, and maintenance, electrical safety regulations and related operating procedures must be observed; otherwise it may cause personal injury or product damage. The safety precautions mentioned in the manual are only a supplement to the safety regulations.
- The manufacturer does not assume any responsibility caused by violation of general safety operation requirements or violation of safety standards for design, production and use of equipment.

1.2 General safety precautions

- Please handle strictly in accordance with the requirements of this manual.
- It is strictly forbidden to put the product in water or fire to avoid explosion or other dangers.
- Please do not stab, hit, trample or strike the product in any other way.
- Avoid direct sunlight.
- Please do not remove the product from the original packaging before use.
- When the electrolyte of the built-in lithium battery leaks, it is necessary to prevent the electrolyte from contacting the skin or eyes; if it has been in contact, please wash it with water in time and seek medical attention as soon as possible.
- The product needs to be installed in a dry and clean environment.
- During use, when the system needs to be moved or rewired, the power must be completely cut off and the system must be completely shut down, otherwise there will be a risk of electric shock.
- In order to avoid fire and electric shock, please ensure that all cables have good electrical characteristics and suitable wire diameter; it is forbidden to use damaged or too small cables.
- When encountering a fire, please use a dry powder fire extinguisher to extinguish the fire. The use of a liquid fire extinguisher may cause secondary hazards.

This product should be kept away from water, dust and pollution sources. Please install the product in a well-ventilated environment.

1.3 Disposal or recycle

Disposal and recycling of lithium batteries should comply with local, state, and federal laws and regulations. Mixed treatment with other (industrial) waste is prohibited.

2 Product Introduction

2.1 Brief introduction

Zeliox ECO is an all-in-one power supply with built in lithium battery, booster charger and inverter charger.

2.2 Features

- Built-in lithium iron phosphate battery, using high-performance BMS, with over-discharge protection, over-charge protection, over-current protection, temperature protection and other protection functions. Built-in advanced low-temperature heating technology, allowing low-temperature charging
- Built-in booster charger, compatible with Euro 6 engine
- Built-in inverter charger, DC charging current max 120A
- Built-in MEZ monitoring unit with Bluetooth module, monitoring and controlling the system by mobile APP
- The capacity can be expanded by externally expanding lithium battery
- External wireless module for remote monitoring
- 1 set of remote switch interface
- 3 set of external output relay contacts, for D+ simulation, load distribution and to turn on the generator when the SOC is low
- With external charging activation function, Charge Only function
- Highly integrated product, small in size, and easy to install

2.3 Appearance and dimension

Figure 2-1 Product dimensions

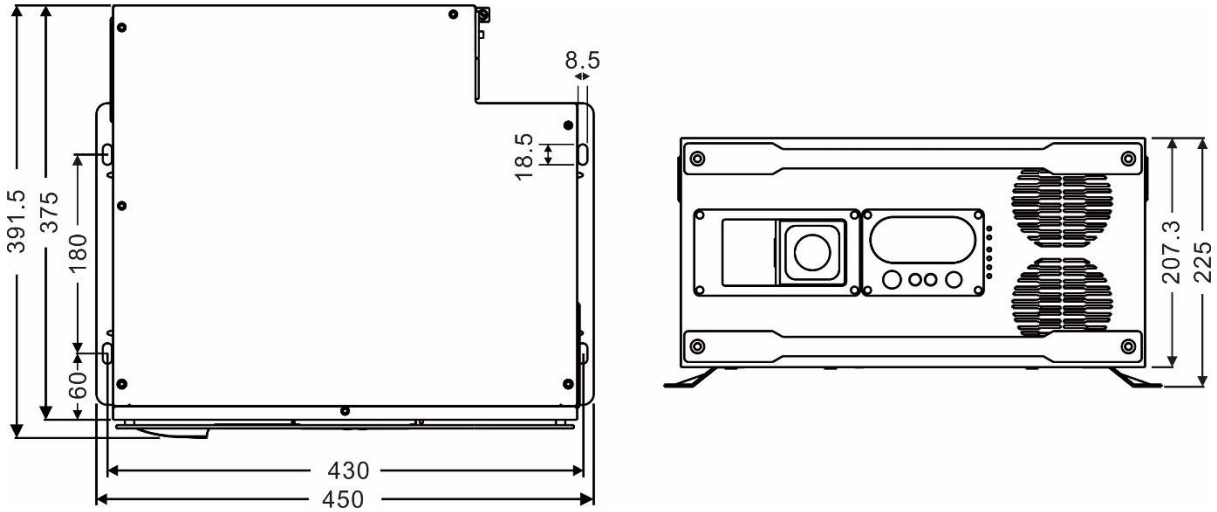


Figure 2-2 Product dimensions

For ECO I (1600VA/1.28kWh) and ECO II (2000VA/1.28kWh)

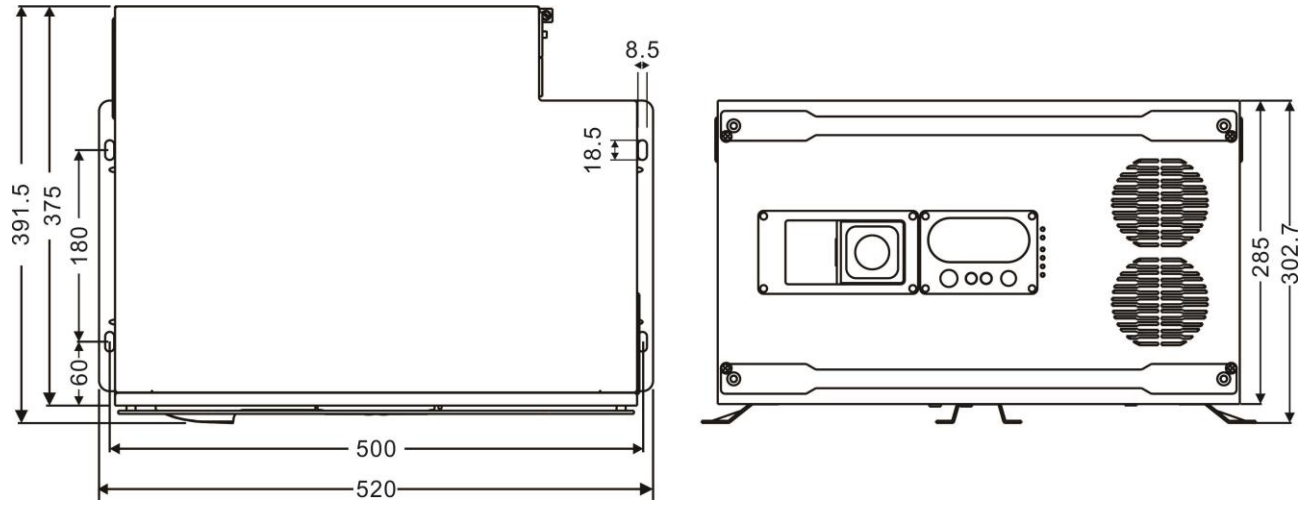


Figure 2-1 Product dimensions

For ECO II+ (2000VA/2.56kWh) and ECO III (3000VA/2.56kWh)

2.4 Interface definition

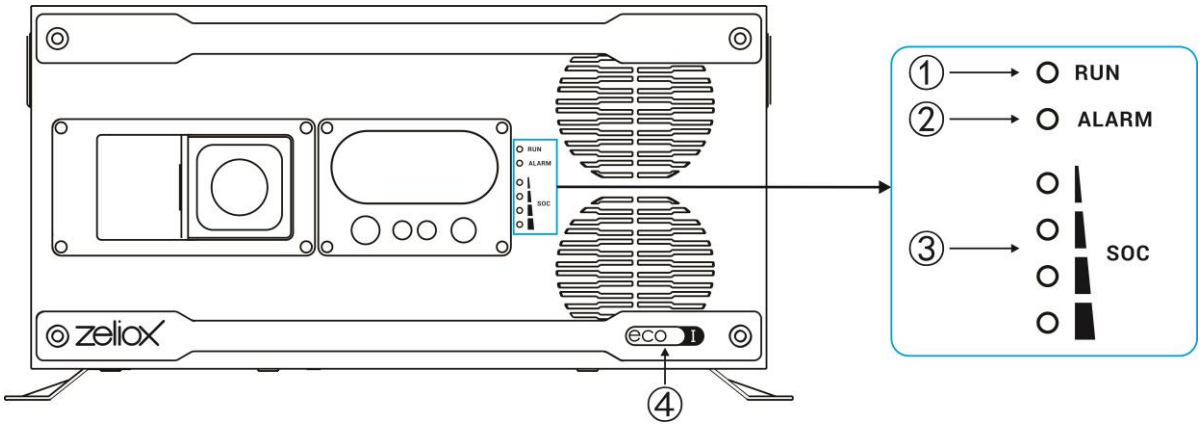


Figure 2-4 Interface definition

Silk screen		Definition	Description
①	RUN	System running indicator	See 2.4.3 for details
②	ALARM	Fault indicator	
③		SOC indicator	
④	eco I	1600VA/1.28kWh	
	eco II	2000VA/1.28kWh	
	eco II+	2000VA/2.56kWh	
	eco III	3000VA/2.56kWh	

Table 2-1 Interface definition from figure 2-4

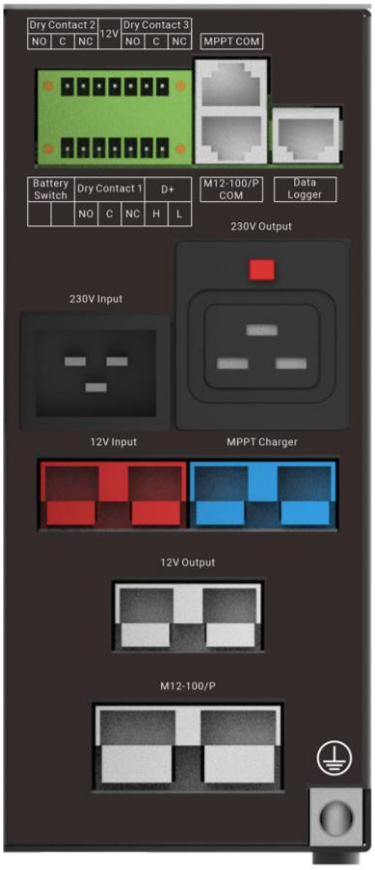


Figure 2-5 Zeliox ECO I and II

(1600VA/1.28kWh and 2000VA/1.28kWh)

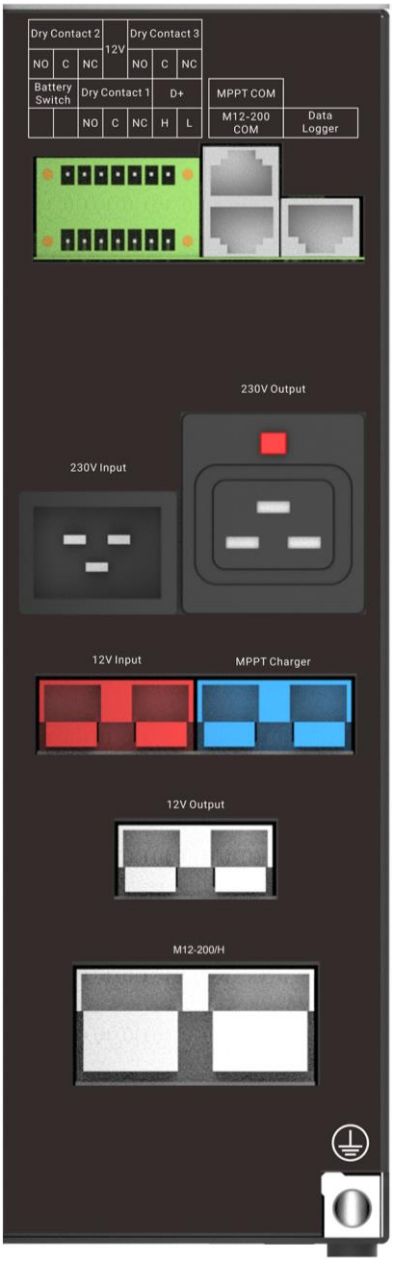


Figure 2-6 Zeliox ECO II+ and III

(2000VA/2.56kWh and 3000VA/2.56kWh)

Silk screen	Definition
M12-100/P COM M12-200/H COM	Lithium battery communication interface
Data Logger	WIFI/GPRS data collector interface
MPPT COM	Solar Mate communication interface
230V Input	AC input interface
230V Output	AC output interface
12V Input	Alternator input interface
MPPT Charger	Solar Mate interface
12V Output	DC load interface
M12-100/P	Lithium battery power interface for ECO I & ECO II
M12-200/H	Lithium battery power interface for ECO II+ & ECO III
	Grounded

Table 2-2 definition from figure 2-5 and figure 2-6

2.4.1 Dry contact interface definition

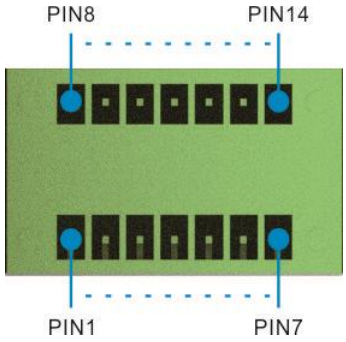


Figure 2-7 Dry contact interface

Pin terminal	Pin terminal		Definition
PIN1	Battery Switch	/	Remote switch interface Note: The rocker switch on the MEZ s hould remain closed if you want to s witch the product ON/OFF remotely.
PIN2		/	
PIN3	Dry Contact 1	NC	Relay output normally closed contact
PIN4		C	Neutral point of relay output
PIN5		NO	Relay output normally open contact
PIN6	D+	H	D+ signal high-level active interface
PIN7		L	D+ signal low-level active interface
PIN8	Dry Contact 2	NC	Relay output normally closed contact
PIN9		C	Neutral point of relay output
PIN10		NO	Relay output normally open contact
PIN11	+12V		Output 11.6V~14.2V for analog engine D+ signal

Pin terminal	Pin terminal		Definition
PIN12	Dry Contact 3	NC	Relay output normally closed contact
PIN13		C	Neutral point of relay output
PIN14		NO	Relay output normally open contact

Table 2-3 definition pin interface

2.4.2 MEZ display definition

No.	Icon	Definition
1		Inverter on, the icon always on; Inverter off, the icon is off
2		With AC input, the icon always on; Without AC input, the icon is off
3		Always on when charging; Off when discharging or standby
4		Flashes when the inverter is in overload alarm; always on when the inverter is in overload protection
5		Flashes when the battery is in under-voltage alarm; Always on when the battery is in under-voltage protection.

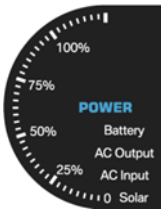
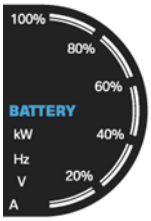
No.	Icon	Definition
6		Flashes when the BMS board is in over-temperature alarm; Always on when the SP/booster charger/inverter/BMS is/are in over-temperature protection
7		According to the current power, display as below: 0-25% display at 25% 25%-50% display at 50% 50%-75% display at 75% 75%-100% display at 100% Overload display at full range
8		① According to the current SOC value, display as below: When SOC 0%, no display; SOC 0-20% display at 20%; SOC 20%-40% display at 40%; SOC 40%-60% display at 60%; SOC 60%-80% display at 80%; SOC 80%-100% display at 100%. ② When charging, the SOC light where it is located flashes, and it does not flash at 100%; ③ No flashes during discharging.
9	ALM/Err	When the Zeliox ECO has an alarm, MEZ displays ALM; and when ECO has fault, it displays Err.

Table 2-4 definition MEZ display information

2.4.3 Indicator light definition

Battery status	SOC	LED1	LED2	LED3	LED4	ALM	RUN
Shut down		OFF	OFF	OFF	OFF	OFF	OFF
Power-on static state	75%≤SOC≤100%	ON	ON	ON	ON	Flashing when there is a fault, always on when normal	Flashing 1
	50%≤SOC＜75%	ON	ON	ON	OFF		Flashing 1
	25%≤SOC＜50%	ON	ON	OFF	OFF		Flashing 1
	0%＜SOC＜25%	ON	OFF	OFF	OFF		Flashing 1
	SOC=0	OFF	OFF	OFF	OFF		Flashing 1
Charging	SOC=100%	ON	ON	ON	ON		ON
	75%≤SOC＜100%	ON	ON	ON	Flashing 2		ON
	50%≤SOC＜75%	ON	ON	Flashing 2	OFF		ON
	25%≤SOC＜50%	ON	Flashing 2	OFF	OFF		ON
	0%≤SOC＜25%	Flashing 2	OFF	OFF	OFF		ON
Discharging	75%≤SOC≤100%	ON	ON	ON	ON		Flashing 3
	50%≤SOC＜75%	ON	ON	ON	OFF		Flashing 3
	25%≤SOC＜50%	ON	ON	OFF	OFF		Flashing 3
	0%＜SOC＜25%	ON	OFF	OFF	OFF		Flashing 3
	SOC=0	OFF	OFF	OFF	OFF		Flashing 3
Remark : Flashing 1：on 0.25s, off 3.75s Flashing 2：on 0.5s, off 0.5s Flashing 3：on 0.5s, off 1.5s							

Table 2-5 definition indicator light

3 Product Installation

3.1 Unpacking inspection

Before unpacking, check whether the outer packaging is intact and undamaged. If the outer packaging is damaged, please contact your dealer or our company.

After unpacking, please check whether the product is intact and undamaged. If the product is damaged, please contact your dealer or our company.

Please check whether the accessories are complete according to the packing list. If the accessories are not complete, please contact your dealer or our company.

Packing List			
Parts	**Spec.**	**Q'ty**	**Pictures**
Zeliox ECO	Zeliox ECO	1	
User manual	Zeliox ECO user manual	1	
Accessories	SA50 connector(gray plastic)	1	
	SA50 connector (blue plastic)	1	
	SA50 connector (red plastic)	1	
	SA50 connector pin	6	

Parts	Spec.		Q'ty	Pictures
	Zeliox ECO I Zeliox ECO II	SA120 connector (grey plastic)	1	
	Zeliox ECO II+ Zeliox ECO III	SA175 connector (grey plastic)	1	
	Zeliox ECO I Zeliox ECO II	SA120 connector pin	2	
	Zeliox ECO II+ Zeliox ECO III	SA175 connector pin	2	
	M8*20 bolt		4	
	AC output plug		1	
	AC input power cable		1	

Table 3-1 packing list

3.2 Precautions before installation

Please use in strict accordance with the technical parameters of the product.

Do not install this product at an angle, upside down, or on its side.

3.3 Positioning and perforation requirements

Please select a plane and drill holes according to the installation positioning requirements in figure 3-1. Before use, the product must be effectively fixed and cannot be fixed upside down. The fixing bolt is M8, and the fixing torque is 22Nm.

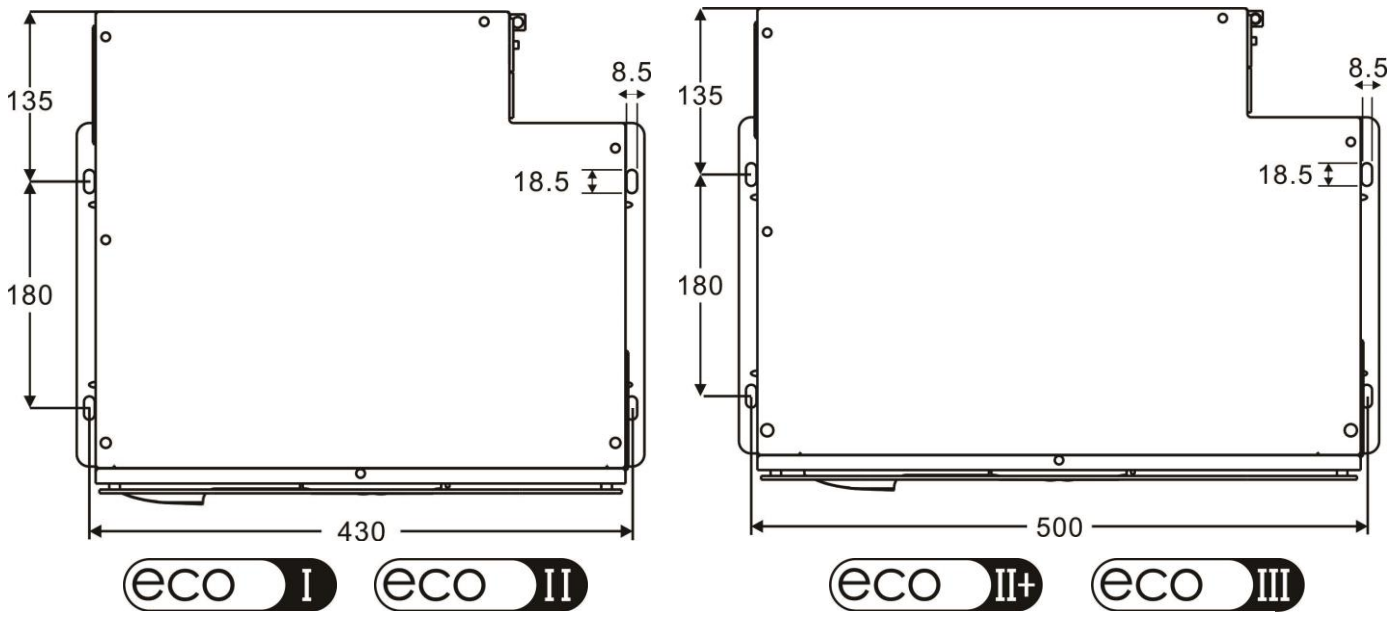


Figure 3-1 Installation positioning and perforation requirement

3.4 Harness preparation

Connection port silkscreen	Connector name	Pictures	Recommended cable specifications			
			Polarity	Wire diameter	Length	Color
230V Output	Ac output plug		--	--	≤3m	Black
230V Input	Ac input power cable		--	--	≤3m	Black

Connection port silkscreen	Connector name	Pictures	Recommended cable specifications			
			Polarity	Wire diameter	Length	Color
12V Input	SA50（Red）		Positive	6~10 mm^2 (6~9 AWG)	≤3m	Red
			Negative	6~10 mm^2 (6~9 AWG)	≤3m	Black
12V Output	SA50（Grey）		Positive	6~10 mm^2 (6~9 AWG)	≤3m	Red
			Negative	6~10 mm^2 (6~9 AWG)	≤3m	Black
MPPT Charger	SA50（Blue）		Positive	6~10 mm^2 (6~9 AWG)	≤3m	Red
			Negative	6~10 mm^2 (6~9 AWG)	≤3m	Black
*M12-100/P	SA120（Grey）		Positive	25~35 mm^2 (2~3 AWG)	≤1m	Red
*M12-200/H	SA175（Grey）		Negative	35~50 mm^2 (0~2 AWG)	≤1m	Black

Connection port silkscreen	Connector name	Pictures	Recommended cable specifications			
			Polarity	Wire diameter	Length	Color
*M12-100/PCOM	Standard network cable		--	--	≤9m	Black
*M12-200/HCOM						
MPPT COM	Standard network cable		--	--	≤9m	Black
Data Logger	Standard network cable		--	--	≤9m	Black
Dry contact 1	PLTB1.5-07-BF-3.81,Green		NO/C/NC	0.3~1.5mm^2 (16~22 AWG)	≤9m	--
Dry contact 2	PLTB1.5-07-BF-3.81,Green		NO/C/NC	0.3~1.5mm^2 (16~22 AWG)	≤9m	--
Dry contact 3			NO/C/NC	0.3~1.5mm^2 (16~22 AWG)	≤9m	--

Table 3-2 Harness preparation

* : If there is an expanded battery, you need to prepare the corresponding cable

3.5 Wiring

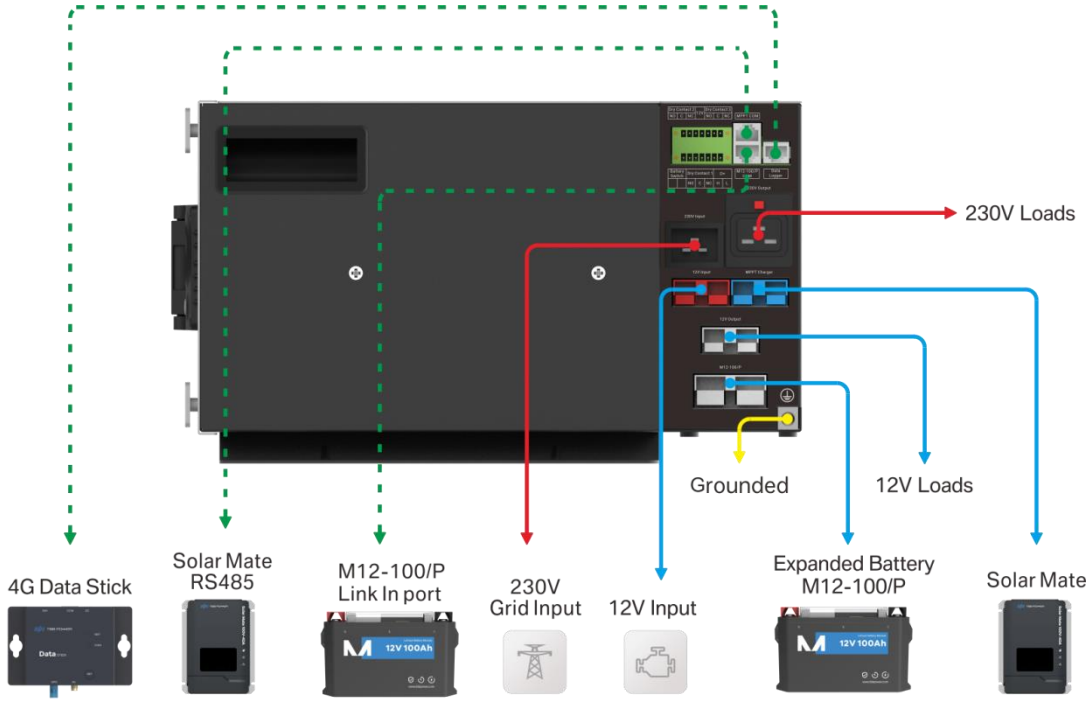


Figure 3-2 Wiring

(Take 1600VA/1.28kWh as an example)

3.5.1 Wiring steps

Step 1. Please use the prepared wire (Red Anderson terminal SA50) to connect the 12V Input interface on the ECO and the starter battery. Use a fuse 100A.

Step 2. Please use the prepared wire (Grey Anderson terminal SA50) to connect the 12V Output interface on the ECO and the DC load.

Step 3. Please use the prepared wire (Blue Anderson terminal SA50) to connect the MPPT Charger interface on the ECO and the Solar Mate.

Step 4. Please use the prepared wire to connect the 230V Output interface on the ECO and the AC load.

Step 5. Please use the prepared wire to connect the 230V Input interface on the ECO and the AC mains.

Step 6. Please use the prepared wire to connect the Data Logger interface on the ECO and Kinergy data collector.

Step 7. Please use the prepared wire to connect the MPPT COM interface on the ECO and Solar Mate RS485.

When an external expansion battery is needed, please follow Step 8 and Step 9:

Step 8. Please use the prepared wire to connect the M12-100/P(M12-200/H) interface on the ECO and M12-100/P(M12-200/H) lithium battery;

Step 9. Please use the prepared wire to connect the M12-100/P(M12-200/H) COM port on the ECO and the Link In port on the M12-100/P(M12-200/H) lithium battery.

3.6 Operation

3.6.1 Turn on/off the system

Figure 3-3 Turn on/off the system

Use the rocker switch on the MEZ to turn the system on and off. Press to turn on, press to turn off.

Note: After the switch is turned on, the Run, ALARM, and SOC lights will flash in turn. After about 8s, the system will have DC output and MEZ will start to work. When the inverter starts, there will be AC output.

3.6.2 The Zeliox ECO APP

Figure 3-4 Zeliox ECO App

By Zeliox ECO APP, you can view the working status and other information of ECO, and you can also do some settings to the ECO. For specific operation instructions, please read the Zeliox ECO APP operation guide.

- Learning working status of the Zeliox ECO system devices in real time.
- Records the last 12 hours of battery SOC%, real-time battery voltage and current data, giving you full information about the battery's operation.
- Appropriate charging according to inverter, generator type and other necessary settings.

3.6.3 Dry contact output function

Dry contact 1

The default setting of SOC ≤5% (5%~50% can be set) will activate the output relay dry contact for starting the engine.

SOC＝100% (10%~100% can be set) will break the relay output dry contact.

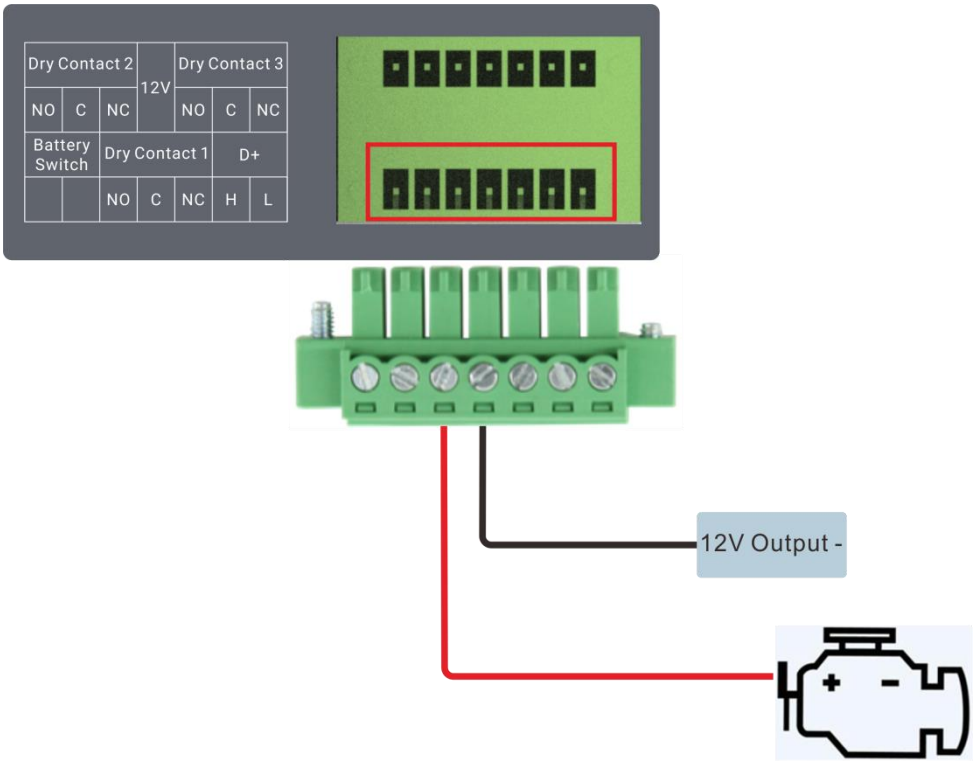


Figure 3-5 Dry contact 1

Wiring instructions:

1. The output dry contact C interface is connected to the negative terminal of the DC load.
2. Output dry contact NO interface is connected to Engine Start controller.

Dry contact 2

When the built-in Booster Charger starts charging it will activate the output relay dry contact for simulates the engine start signal.

When the built-in Booster Charger stops charging, it will break the relay output dry contact.

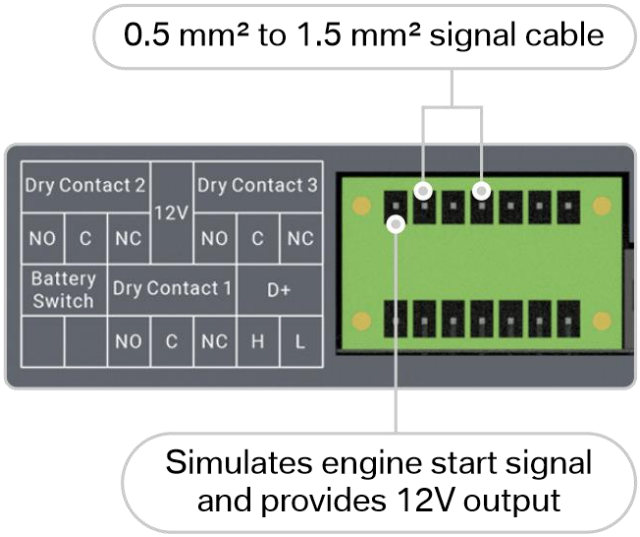


Figure 3-6 Dry contact 2

Dry contact 3

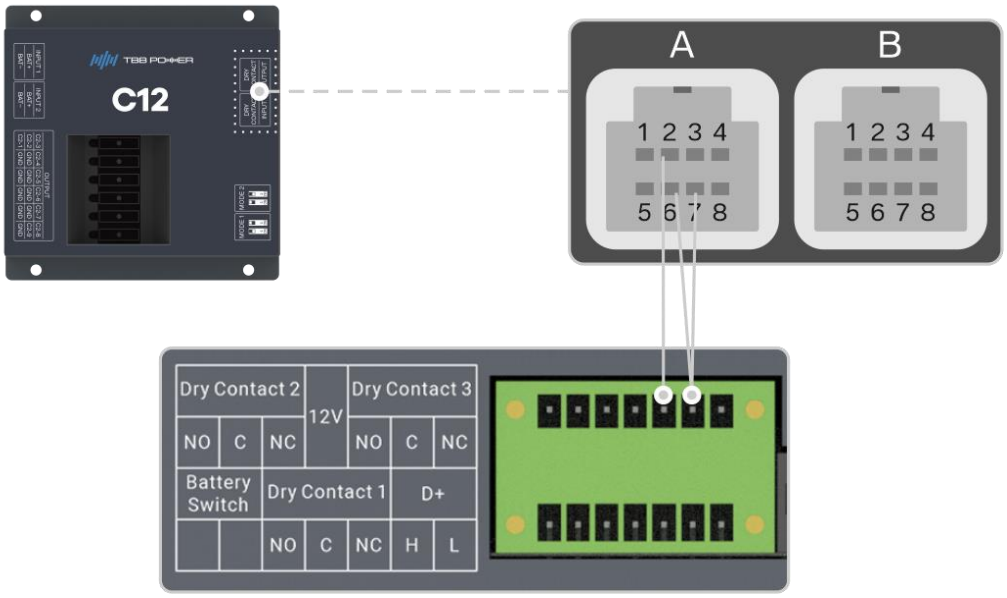


Figure 3-7 Dry contact 3

The default setting of SOC

≥5% (5%~50% can be set) will activate the output relay dry contact for starting the power distribution module.

≤0% (0%~45% can be set) will break the relay output dry contact.

D+ H/L

Connects to D+ signal at smart alternator.

If ACC or D+ signal is in high level, please connect to D+ H.

If D+ signal is in low level, please connect to D+ L.

When both alternator and auxiliary battery are well connected, the built in booster charger will automatically judge if engine is turning on by detecting D+ signal or sensing alternator output voltage, to decide to charge the battery or not.

ACC/D+	**Term**	**Configuration**			
		Starter battery voltage		**Time delay**	
		Default	**Range**	**Default**	**Range**
With ACC/D+ connected	ACC/D+ **AND** voltage meets the threshold	≥13.2V	12~14.5V	20s	5~60s
Without ACC/D+ connected	voltage meets the threshold	≥13.2V	12~14.5V	20s	5~60s

Table 3-2 Charging logic for 12V system

ACC+/D+	**Term**	**Configuration**			
		Starter battery voltage		**Time delay**	
		Default	**Range**	**Default**	**Range**
With ACC/D+ connected	no ACC/D+ **OR** voltage meets the threshold	＜12.8V	11.6~13.5V	Immediately	/
Without ACC/D+ connected	voltage meets the threshold	＜12.8V	11.6~13.5V	60s	5~120s

Table 3-3 Charging logic for 12V system

3.6.4 Charge Only function

Switch on MEZ to O, when the system is turned off, the lithium battery can be charged by the Alternator / Grid. The system only allows charging and prohibits discharging. The system switches off the DC load via Dry Contact 3. Features as below:

- When the Alternator input voltage meets the operating conditions of the internal booster charger, the internal booster charger turns on the charging output, charging activates the wake-up system and charges the Zeliox ECO.
- When the Grid meets the inverter operating conditions, the inverter will turn on the charge output after 30s of power-up self-test, charge activation wakes up the system and charges the Zeliox ECO.

Use the ECO in a low temperature environment

- When the cell temperature is ≤2℃, the built-in lithium battery will report a low temperature fault alarm, and the user cannot directly charge the ECO. In the low temperature environment, when the internal charger is turned on, the ECO will automatically turn on the heating function. After the automatic heating of the built-in lithium battery is completed, the ECO can be charged normally and the battery low temperature alarm will be released.
- When the ambient temperature is lower than -20°C, the ECO cannot be discharged and a low temperature fault alarm will be reported. The user can via the internal charger to heat the built-in battery before starting to discharge it.

4 Storage

Please follow the storage instructions in this manual to increase the service life of the product during storage. If you do not follow the storage instructions in this chapter for storage, the lithium battery may be over-discharged and damaged. If the inspection reveals that the product is damaged, please do not try to charge or use it.

The environmental conditions of storage are detailed in Chapter 6

The storage self-discharge rate of lithium battery is less than 3%/month.

When storing the product, please turn the rocker switch to the OFF position.

- Before storing the product, please charge the battery to 80% SOC.
- Please disconnect all loads and chargers connected to the product.
- Please turn the rocker switch to the OFF position.
- Every 3 months, please charge the battery to 80% SOC; after charging is completed, please turn the rocker switch to the OFF position.

5 Transportation

This product has a built-in lithium battery. Lithium battery transportation belongs to the ninth category of dangerous goods in the UN3841 standard.

Before transporting the product, please check all local, national and international applicable laws and regulations.

6 Compatible Products

6.1 4G data stick

Figure 6-1 4G data stick

Available with 4G version, wireless data logger is on external communication device which can connect Zeliox ECO to cloud. It offers a convenient way to monitor the system performance remotely.

6.2 Solar Mate

Figure 6-2 Solar Mate

Solar Mate is a solar charge controller with built in Maximum Power Point Tracking (MPPT) technology, which can optimize the PV's output eliminate the fluctuation due to shading or temperatures variables. It tracked the maximum power point of a PV array to deliver the maximum charging current for battery, enabling PV array to increase the output by as much as 30% compared with PWM design.

- Maximum MPPT efficiency up to 99.9%.
- Maximum efficiency up to 98.2%.
- Excellent performance at sunrise and low solar insulation levels.
- High reliability with electronic protections.
- Wide MPPT operating voltage range.
- Easy installation and commissioning.
- Self cooling design for high reliability.

6.3 C12 Load Module

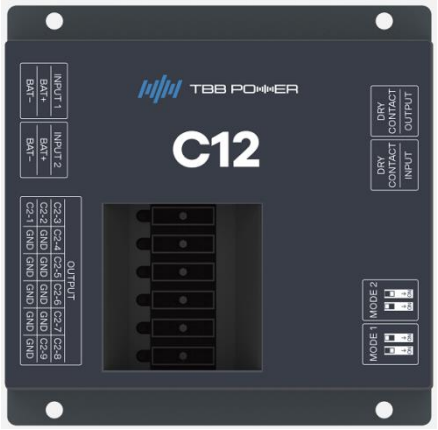


Figure 6-3 C12 Load Module

C12 Load Module is a power distribution module. Features as below:

- Rated current is 80A.
- Support 12-18 outputs, via four relays.
- Dry contact input control to cut off loads at different voltage or SOC.

6.4 Expanded battery

M12-100/P **M12-200/H**

Figure 6-4 Expanded Battery M12-100/P and M12/200H

The M12 series is a 12V lithium-ion battery module. The positive electrode of the battery is made of lithium iron phosphate (LiFePO4) material. It configures high-performance and high-reliability BMS to effectively manage the cells, including cell over-voltage, under-voltage, charge over-current, discharge over-current, over-temperature, low temperature, short circuit and other protection functions. It also has built-in cell voltage balance, capacity calculation, SOC calculation, cycle life accumulation and low temperature heating functions. It is suitable for energy storage systems of vehicles, ships etc.

- Long cycle life, over 3000 cycles at 100% DoD @25°C.
- Supports max discharge current 200A for M12-100/P and 300A for M12-200/H.
- Built-in BMS with automatic balancing and complete protection.
- Built-in high precision (±0.1A) shunt for SOC calculation.
- Built-in heater element to support battery being charged at temperature -20°C.
- Predebugged BMS software compatible with TBB power system to assure designed lifespan of lithium battery.

7 FAQ

Type	Times of ALM light flashes	Name	Processing suggestions
Fault protection	1	Output short circuit protection	➢ Please check that the 12V Output or M12-100/P(M12-200/H) positive and negative connections are not reversed or short-circuited. ➢ If there is no wiring error, please contact your dealer.
	2	Discharge over current protection	➢ Check that the discharge current of the ECO does not exceed the rated discharge current, if it does, switch off part of the load. ➢ If the discharge current does not exceed the rated discharge current, please contact your dealer.
	3	Charging over current protection	➢ Please contact your dealer.
	4	General low voltage protection	➢ The battery capacity is already low, please recharge the ECO immediately.
	5	Cell low voltage protection	➢ The battery capacity is already low, please recharge the ECO immediately.
	6	General high voltage protection	➢ Please contact your dealer after switching off the charger.
	7	Cell high voltage protection	➢ Please contact your dealer after switching off the charger.

Type	Times of ALM light flashes	Name	Processing suggestions
Fault protection	8	Discharge high temperature protection	• Please check that the ambient temperature at the ECO installation location is not too high. • Please check that the wire diameter of the ECO cable meets the requirements of the manual. • Please check that the discharge current and discharge time of the ECO do not exceed the specified requirements. • If these are normal, please contact your dealer.
	9	Discharge low temperature protection	• Please check if the ambient temperature at the ECO installation location is below -20°C. If so, please connect the alternator (grid) to 12V Input (230V Input) to raise the temperature of the lithium battery inside the ECO by heating the heating film inside the ECO. • If this still does not solve the problem, please contact your dealer.
	10	Charging high temperature protection	• Please check that the ambient temperature at the ECO installation location is not too high. • If this is correct, please contact your dealer.
	11	Charging low temperature protection	• Please check if the ambient temperature at the ECO installation location is below 2°C. If so, please connect the alternator(grid) to 12V Input(230V Input) to raise the temperature of the lithium battery inside the ECO by heating the heating film inside the ECO; • If this still does not solve the problem, please contact your dealer.
	12	BMS circuit high temperature protection	• Check that the ambient temperature at the ECO installation location is not too high. • Please check that the discharge current and discharge time of the ECO do not exceed the specified requirements. • If the above is correct, please contact your dealer.

Type	Times of ALM light flashes	Name	Processing suggestions
Fault protection	13	Low temperature protection for BMS circuits	• Please check that the ambient temperature at the location where the ECO is to be installed is below -40°C. If so, the ECO is not suitable for operation at such a low ambient temperature and the best ambient temperature for the ECO installation is above -20°C. • If the above is normal, please contact your dealer.
	14	External input overvoltage protection	• Please contact your dealer after switching off the charger.
	15	BMS internal faults	• Please contact your dealer.

Table 7-1 FAQ

8 Specification

Zeliox ECO						
Model			ECO I	ECO II	ECO II+	ECO III
Battery type			LiFePO4			
Battery capacity			12.8V 100Ah (1.28kWh)		12.8V 200Ah (2.56kWh)	
Booster charger	Input voltage range		12-16 VDC			
	Charge voltage		14.2V			
	Maximum charging current		30ADC		60ADC	
	Terminal		Anderson SA50 Red			
Battery inverter	AC input	Voltage range	175~265VAC			
		Frequency range	45~65Hz			
		Current (transfer switch)	16A			
		Terminal	IEC			
	AC output	Voltage(VAC)	230 ± 2%			
		Frequency(Hz)	50/60 ± 0.1%			
		Harmonic distortion	<2%			
		Load Power factor	1.0			
		Max. output power at 25°C	1600VA	2000VA	2000VA	3000VA
		Cont. output power at 25°C	1600VA	1600VA	2000VA	2000VA
		Terminal	Westacc C-Link socket 4100130 Black& IEC			
		RCCB	32A / 30mA			
	Charger	Charge voltage	14.2V			
		Cont. AC charge current	60A	60A	100A	120A
	Transfer time		4ms			
MPPT Charger	Continuous input current		40ADC			
	Terminal		Anderson SA50 Blue			
12V Output	Output voltage range		11.6~14.2VDC		11.2~14.2VDC	
	Continuous current		30ADC			
	Terminal		Anderson SA50 Grey			

Zeliox ECO						
Battery Expansion	Output voltage range		11.6~14.2VDC		11.2~14.2VDC	
	Battery Model		M12-100/P, (12.8V100Ah)		M12-200/H, (12.8V200Ah)	
	Discharging current		120A		175A	
	Terminal		Anderson SA120（Grey）		Anderson SA175（Grey）	
Isolation guard			YES			
Display			LED+3-bit digital tube+2 button			
Data logging - Bluetooth			YES			
Remote ON/OFF			YES			
Dry contact output	Dry contact 1	Engine start	30VDC/2A			
	Dry contact 2	D+ Simulation	30VDC/2A			
	Dry contact 3	Distribution	30VDC/2A			
Self-discharge rate per month			< 3%			
Operating mode self consumption			15W			
Sleep mode consumption			<0.1mA			
Operating cell temperature		Charge	2℃~60℃			
		Discharge	-20℃~60℃			
Storage Temperature Range			-20℃~45℃（Less than 1 month），<70% RH 0℃~35℃（Less than 1 year），<70% RH			
Cooling			Forced fan			
IP rating			IP20			
Product dimensions in mm			450*391.5*225		520*391.5*303	
Product weight			32.6kg	34.8kg	50.6 kg	53.8 kg
Package dimensions in mm			525*485*305		595*485*385	
Package weight			36kg	38.2kg	54.6 kg	57.8 kg

Table 8-1 Specifications Zeliox ECO

Zeliox BV
Spaarpot 13, 5667 KV, Geldrop
The Netherlands
www.zeliox.com

zeliox®
EXCESSIVEPOWER