# zeversolar

# Quick Installation Guide

Zeverlution Pro 30K / Pro 33K











www.zeversolar.com

Manual

# **3.Checking scope of delivery**

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	Inverter Wall bracket Mounting accessory kit		DC plug connectors	Sealing plug	Documentation	
	1X	1X	1X	8×	6×	1×

# 4.Mounting

- 1. Position the wall bracket and use it as a drilling template, use a  $\Phi$ 10mm bit to drill 6 holes at a depth of about 70mm, insert wall plugs and attach the wall bracket to the wall by tightening 6 hexagon head screws, using a socket wrench SW10.
- 2. Lift the inverter using the apposite handles or other adequate lifting tools. If the inverter is transported and lifted with a crane, screw two eye bolts M10 (provided by installer) into the threads which are located on the top of the inverter. Hook the inverter onto the wall bracket. Check that the upper edge of the housing enter the slots of wall bracket correctly.
- 3. Secure the inverter to the wall bracket using four M5 screws on both sides to prevent the inverter from being lifted off the wall inadvertently. crewdriver type: T25, torque: 2.5Nm.



# 1.Safety

- 1. Zeverlution is a transformerless photovoltaic (PV) inverter with two MPP trackers which converts the direct current of the PV array to grid-compliant three-phase current and feeds it into the utility grid.
- 2. Zeverlution must only be operated by qualified persons with the appropriate skills who have already read and understood all documentation relating to its installation, commissioning, operation and maintenance.
- 3. Zeverlution is suitable for indoor and outdoor use.
- 4. Zeverlution must only be operated with PV arrays of protection class II in accordance with IEC 61730, application class A.
- 5. PV modules with a high capacity to ground must only be used if their coupling capacity does not exceed 2 N 🛛 🖉
- 6. When exposed to sunlight, the PV array generates dangerous DC voltage which is present in the DC conductors and the live components of the inverter. Touching the DC conductors or the live components can lead to lethal electric shocks.
- 7. All components must remain within their permitted operating ranges at all times.

lcon	Explanation	lcon	Explanation
	Danger		Time need to discharge stored
		27 15 mins	energy in the capacitors
	Hazardous voltage	X	WEEE designation
	Hot surfaces	( <b>·i</b>	Observe the documentation

# 2. Ambient conditions and mounting location

- Mount the inverter in areas where it cannot be touched inadvertently.
- Ensure good access to the inverter for installation and possible service.
- Ambient temperature should be below 40°C to ensure optimal operation. - Ensure optimum operation and extend service life by avoiding exposing
- the inverter to direct sunlight, rain and snow.
- The mounting method, location and surface must be suitable for the inverter's weight and dimensions.
- If mounted in a residential area, we recommend mounting the inverter on a solid surface. Plasterboard and similar materials are not
- recommended due to audible vibrations when in use.
- Do not put any objects on the inverter.
- Do not cover the inverter.
- Mount the inverter vertically, horizontal or tilted backward. -The electrical connection area is recommended to point downwards
- or tilted downwards.
- Observe the recommended clearances to walls, other inverters, or objects to ensure sufficient heat dissipation.

Direction	above	below	sides
Recommended clearance	200mm	500mm	800mm

- 4. Insert the conductor into the suitable M6 OT terminal and crimp the contact.
- 5. Remove the transparent cover on the AC terminals, wrap the conductor crimping area with heat shrink tubing or pvc insulation tape. Insert the crimped conductors L1, L2, L3,N and PE into the corresponding AC terminals through the cable gland and tighten the screws on the terminals, using a screwdriver or socket wrench (size: PH3/SW10, torque: 4.0Nm), cover the transparent cover on the AC terminals.



6.Tighten the swivel nut of AC cable gland by hand. Position the lower cover on the housing and tighten 6 screws in the sequence(1-2-3-4-5-6). Screwdriver type: T25, torque: 2.5Nm.

# **6.DC Connection**

### **DANGER**

#### Danger to life due to high voltages of the PV array

When exposed to sunlight, the PV array generates dangerous DC voltage which is present in the DC conductors and the live components of the inverter. Touching the DC conductors or the live components can lead to lethal electric shocks. If you disconnect the DC connectors from the inverter under load, an electric arc may occur leading to electric shock and burns. •Do not disconnect the DC connectors under load. Do not touch non-insulated cable ends.

- ·Do not touch the DC conductors.
- •Do not touch any live components of the inverter.
- ·Have the inverter mounted, installed and commissioned only by qualified persons.
- ·If an error occurs, have it rectified by qualified persons only.
- •Before assembling the DC connectors, please first cover the PV modules

·Before connecting the PV array, ensure that the DC switch is switched off and it cannot be reactivated.



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# 5. Earthing protection and AC connection

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#### Danger to life due to high voltages in the inverter

Before performing the electrical connection, ensure the DC switch & AC circuit breaker are switched off and cannot be reactivated.

1.Please connect an additional grounding.The grounding terminal at the right bottom of the inverter can be used to connect a second protective conductor as equipotential bonding. Screwdriver type: T25, torque: 2.5Nm.

PE copper conducto

Object

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Object	Descriptio
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- 1 M5 screw
- 2 M5 OT terminal (Provided by installer)
- Yellow/green grounding cable З

135mm (Max)

2. Loosen the screws of the lower cover. Screwdriver type:



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er type: T25.	
Description	Value
External diameter	16 mm to 28 mm
Copper or aluminum conductor cross-section	10 mm² to 25 mm²
Stripping length of the insulated conductors	C=(L+3) mm
Stripping length of the outer sheath of the AC cable	Max. 135 mm
r conductor cross-section; 16 mm <sup>2</sup> or more	

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#### Damage to fuse due to high input current

• The maximum input current per string is 12A. If the input overcurrent occurs, the fuse will burn out. • Only use the fuse permitted by our company. If required, please contact our service.

#### 1. DC cable requirements are as per the right figure:



- 2. Lead the stripped cable all the way into the DC plug connector. Press the clamping bracket down until it audibly snaps into place. Push the swivel nut up to the thread and tighten the connector(SW15, torque: 2.0Nm).
- 3. Connect the assembled DC plug connectors to the inverter. Ensure that all DC plug connectors are securely in place.
- 4. For unused DC plug connectors, push down the clamping bracket and push the swivel nut up to the thread. Insert the sealing plug into the DC plug connector, tighten the DC plug connector. Finally insert the DC plug connectors with sealing plugs into the corresponding DC inputs on the inverter.





### 7.Communication setup

1. The inverter has two communication modes: RS485-HD and RS422. We offer two connection types: terminal blocks and RJ45 ports, as shown in figure ① and ②. The terminal blocks only support RS485-HD mode, while RJ45 ports support both RS485-HD and RS422, you can select the mode using the slide switch CN901 shown in figure ③.

2. RS485-HD and RS422 connection and configuration

- 2.1 Communication cable requirements:
  - Shielding
  - CAT-5E or higher
- UV-resistant for outdoor use
- Maximum cable length 1000m

#### 2.2 RS485-HD connection





terminal blocks

RS422

RS485-H

RJ45 ports

2.2.1 Move the slide switch CN901 in figure ③ to the position "RS485-HD".

2.2.2 When connecting a single inverter, you need to connect the terminal resistance by switching CN909 to the "ON" position(CN909 to "ON", CN910 to "OFF").

2.2.3 When connecting multiple inverters, please move the terminal resistance slide switch (CN909) of the inverter at the end of the bus to "ON" position. For other inverters in the daisy chain, their terminal resistance slide switches remain "OFF" position as below:



Other inverters in the bus

#### 2.3 RS422 connection

2.3.1 Move the slide switch CN901 in figure ③ to the position "RS422". 2.3.2 When connecting a single inverter, you shall move the terminal

- resistance slide switches (both CN909 and CN910) to "ON" position.
- 2.3.3 When connecting multiple inverters, please move the terminal resistance slide switches (both CN909 and CN910) of the inverter at the end of the bus to "ON" position. For other inverters in the daisy chain, their terminal resistance slide switches remain "OFF" position as below: 4

#### 9. Technical Data

	Zeverlution Pro 30K*	Zeverlution Pro 33K	
DC Input			
DC convertible power (@cosφ=1)	31000W	34000W	
Max. DC input voltage		1000V	
MPP voltage range	27	70-950V	
Max. DC input current, MPPT input 1/2	3.	4A / 34A	
Max. input current per string		12A	
String fuse (inside) rating	gPV/	1000V <sub>dc</sub> 15A	
Number of independent MPP inputs		2	
Strings per MPP input		4	
AC Output			
Rated AC output active power	30000W	33000W**	
Max. AC output apparent power	30000VA	33000VA	
Rated grid voltage	3/N/PE, 220V/380	DV,230V/400, 240V/415	
Rated grid frequency	50Hz	50/60Hz	
Max. AC output current	48A		
Adjustable displacement power factor 0.8 <sub>ind</sub> 0.8 <sub>cap</sub>		lind0.8 <sub>cap</sub>	
Harmonic distortion (THD) at P <sub>ac.r</sub>	< 3%		
Recommended current rating of AC circuit breaker		63A	
General Data			
Dimensions (Wx H x D)	510 x710x 260mm		
Weight	58kg		
Noise emission (typical)	< 60 dB(A)@1m		
DC connection SUNCLIX		SUNCLIX	
AC connection	M40 cable gland + M6 OT teminal		
Earth fault alarm Cloud based, audi		udible and visible (AU)	
Cooling concept	Fa	in cooling	
Operating temperature range	-25	-25°C +60°C	
Relative humidity (non-condensing)	0%	0% 100%	
Max. operating altitude	2000 m		
Ingress protection (acc. to IEC 60529)		IP65	
Communication interfaces	RS4	R5485 / R5422	
Climatic category (acc. to IEC 60721-3-4)		4K4H	
Тороlogy	Trans	Transformerless	
Self-consumption (night)		<1W	
Standby power		< 12 W	





#### Other inverters in the bus

3.1 Loosen the swivel nut of M25 cable gland, take out the filler plug in the sealing insert (If only connect one communication cable , please keep a filler plug).



3.2 Guide the cable through the cable gland and connect it to the RJ45 socket or terminal block on the communication board. A cable tie should be used to prevent the cable from loosening.



#### 8.Commissioning

#### Check

-Make sure that the inverter and wall bracket have been correctly mounted.

-Check that the inverter has been reliably grounded. -Make sure that the open-circuit voltage of the PV array on the coldest day based on statistical records does not

exceed 1000V.

-Check that the DC connectors have the correct polarity. -Check that the input current per string does not exceed 12A.

-Check that the insulation resistance between PV arrays and ground is greater than 1Mohm.

-Make sure that all used DC connectors are securely in place.

-Make sure that unused DC inputs on the inverter have been inserted by DC plug connectors with sealing plugs. -Make sure that the cable communication connectors have been correctly wired and connected.

-Make sure that the AC circuit breaker has been corrected rated and installed.

-Check that the grid voltage at the connection point of the inverter is within the permitted range. -Make sure that the AC cable has been correctly rated and tightened.

-Make sure that communication and AC cable glands have been correctly mounted and tightened.

-Make sure that the lower cover has been correctly mounted.

-Make sure that cables are routed in safe place or protected against mechanical damage.

#### Start-up

After finishing the above checks, switch on the DC switch, then check various settings in the display and make changes if necessary.

Ensure the correct safety setting has been selected for the region, then switch on the AC circuit breaker. When there is sufficient DC voltage applied and the grid connection conditions are met, the inverter will start operating automatically.

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# 10. EU Declaration of Conformity

within the scope of the EU directives

- Electromagnetic compatibility 2014/30/EU(L 96/79-106, March 29,2014) (EMC)
- Low Voltage Directive 2014/35/EU(L 96/357-374, March 29, 2014)(LVD)

SMA New Energy Technology (Jiangsu) Co., Ltd. confirms herewith that the inverters described in this document are in compliance with the fundamental requirements and other relevant provisions of the abovementioned directives. The entire EU Declaration of Conformity can be found at www.zeversolar.com

# 11. Contact

If you have technical problems with our products, please contact our service.

We require the following information in order to provide you with the necessary assistance: - Inverter device type

- Inverter serial number

- Type and quantity of PV modules connected
- Error code
- Mounting location
- Warranty card

#### Factory Warranty

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Warranty card will be shipped with inverter. You can download the current warranty conditions at www.zeversolar.com/service/warranty.

Regional services are available by contacting the following numbers during working hours:



\*\* Pac rated=33kW at Vac rated(L-N)=230V

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For more information, please download the user manual and other technical documents at www.zeversolar.com.

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