



Installation and Operating Instructions

Zevelution 3680/4000/5000 Solar Inverter

zeversolar

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1 Notes on this document

1.1 Validity

This document describes the mounting, installation, commissioning and maintenance of the following Zeversolar inverters:

- **Zevelution 3680**
- **Zevelution 4000**
- **Zevelution 5000**

Observe all documentation that accompanies the inverter. Keep them in a convenient place and available at all times.

1.2 Target group

This document is for qualified electricians only who must perform the tasks exactly as described.

All persons installing inverters must be trained and experienced in general safety which must be observed when working on electrical equipments. Installation personnel should also be familiar with local requirements, rules and regulations.

1.3 Symbols used in this document

The following safety precautions and general information are used in this document.

DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

WARNING indicates a hazardous situation which, if not avoided, can result in death or serious injury.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, can result in minor or moderate injury.

NOTICE

NOTICE indicates a situation which, if not avoided, can result in property damage.



INFORMATION provides tips which are valuable for the optimal installation and operation of the inverter.

2 Safety

2.1 Intended use

1. Zevelution converts the direct current from PV arrays into grid-compliant alternating current and feeds it into the utility grid.
2. Zevelution 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. Zevelution is suitable for indoor and outdoor use.
4. Zevelution must only be operated with PV arrays (PV modules and cabling) of protection class II, in accordance with IEC 61730, application class A.
Do not connect any sources of energy other than PV modules to the inverter.
5. PV modules with a high capacity to ground must only be used if their coupling capacity does not exceed 1.0 μ F.
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.

2.2 Safety standards

Zevelution complies with the EU Low-Voltage Directive 2006/95/EC and the EMC Directive 2004/108/EC.

Zevelution also complies with the requirements for safety and EMC in Australia and New Zealand markets.

The inverter is labeled with the CE mark and RCM mark.

For more information about certificates in other countries and regions, please visit website ([http:// www.zeversolar.com](http://www.zeversolar.com)).

2.3 Important safety information

DANGER

- All work on the inverter must only be carried out by qualified personnel who have read and fully understood all safety information contained in this document.
- Children must be supervised to ensure that they do not play with this device.

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 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 with the appropriate skills.
- If an error occurs, have it rectified by qualified persons only.
- Before assembling the DC connectors, please first cover the PV modules with opaque material.
- Prior to performing any work on the inverter, disconnect it from all voltage sources as described in this document (see Section 9).

WARNING

Risk of injury due to electric shock and fire caused by high leakage current

- The inverter must be reliably grounded in order to protect property and personal safety.

CAUTION

Risk of injury due to hot heat sink

- The heat sink may get hot during operation. Do not touch!

CAUTION

Possible damage to health as a result of the effects of electromagnetic radiation

- Please maintain a distance of at least 20cm from the inverter when it is in operation.

NOTICE

Grounding the PV array

- Comply with local regulations for grounding the PV array.
We suggest the frames of PV modules must be reliably grounded.
- Do not ground any of the terminals of the PV strings.

NOTICE

Damage to the seal of the cover in sub-zero conditions









- If you open the cover in sub-zero condition, the sealing of the cover can be damaged. This can lead moisture entering the inverter.
- Do not open the inverter at ambient temperatures lower than -5°C.
- If a layer of ice has formed on the seal of the cover in sub-zero conditions, remove it prior to opening the inverter (e.g. by melting the ice with warm air). Observe the applicable safety regulation.

NOTICE

Damage to the inverter due to electrostatic discharge

- Touching electronic components can cause damage to or destroy the inverter through electrostatic discharge.
- Ground yourself before touching any component.

2.4 Symbols on the type label

Icon	Explanation
	<p>Risk of danger, warning and caution</p> <p>Safety information important for human safety. Failure to observe the safety information in this document may result in injury or death.</p>
	<p>Danger to life due to electric shock</p> <p>The product operates at high voltages. Prior to performing any work on the product, disconnect the product from all voltage sources. All work on the product must be carried out by electrically qualified persons only.</p>
	<p>Risk of burns due to hot surfaces</p> <p>The product can get hot during operation. Avoid contact during operation. Allow the product to cool down sufficiently before carrying out any work.</p>
	<p>WEEE designation</p> <p>Do not dispose of the product together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.</p>
	<p>CE marking</p> <p>The product complies with the requirements of the applicable EU directives.</p>
	<p>Certified safety</p> <p>The product is TUV-tested and complies with the requirements of the EU Equipment and Product Safety Act.</p>
	<p>Capacitors discharge</p> <p>Danger to life due to high voltages in the inverter, observe the waiting time of five minutes. Prior to performing any work on the inverter, disconnect it from all voltage sources as described in Section 8.</p>
	<p>Observe the documentation</p> <p>Observe all documentation supplied with the product.</p>

2.5 Basic safety protection

We provide the following safety protection:

- 1) Overvoltage, undervoltage protection
- 2) Overfrequency, underfrequency protection
- 3) Overtemperature monitoring
- 4) Residual current monitoring
- 5) Isolation monitoring
- 6) Anti-islanding protection
- 7) DC feed-in monitoring

3 Unpacking

3.1 Scope of delivery

Object	Description	Quantity
A	Inverter	1
B	Wall bracket	1
C	Mounting accessory kit: Wall anchors and hexagon bolts (2×) M5×12 pan head screw (2×) *M5×14 pan head screw (1×) *Ground washer (2×)	1
D	Positive and negative DC plug connector	2
E	WiFi antenna	1 (optional)
F	Smart meter connector	1 (optional)
G	Sealing plug	2
H	Documentation	1

* One spare part for cover mounting



A



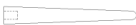
B



C



D



E



F



G



H

Please carefully check all of the components in the carton. If anything is missing, contact your dealer at once.

3.2 Checking for transport damage

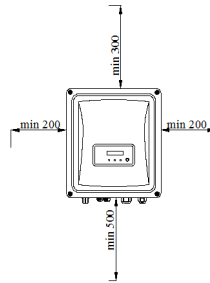
Thoroughly inspect the packaging upon delivery. If you detect any damage to the packaging which indicates the inverter may have been damaged, inform the responsible shipping company immediately.

4 Mounting

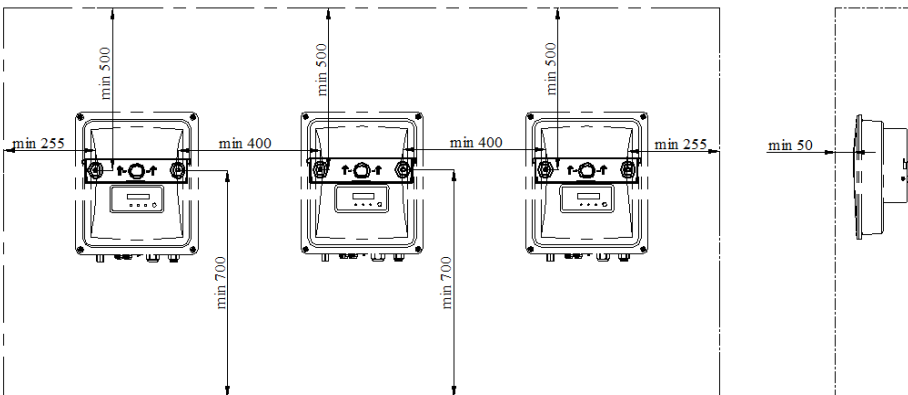
4.1 Ambient conditions

1. Be sure the inverter is mounted out of the reach of children.
2. Mount the inverter in areas where it cannot be touched inadvertently.
3. Ensure good access to the inverter for installation and possible service.
4. Ambient temperature should be below 40°C to ensure optimal operation.
5. Observe the recommended clearances to walls, other inverters, or objects as follows to ensure sufficient heat dissipation.

Direction	Recommended clearance(mm)
above	300
below	500
sides	200



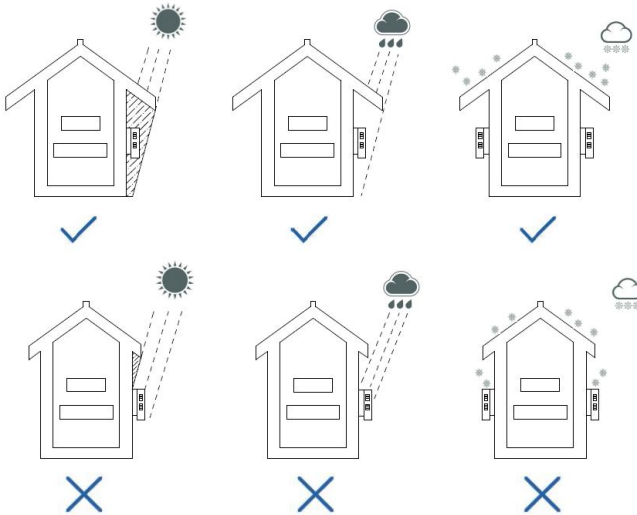
Clearances for one inverter



Clearances for multiple inverters

6. In order to avoid power reduction caused by overheating, do not mount the inverter in a location that allows long-term exposure to direct sunlight.

7. Ensure optimum operation and extend service life by avoiding exposing the inverter to direct sunlight, rain and snow.



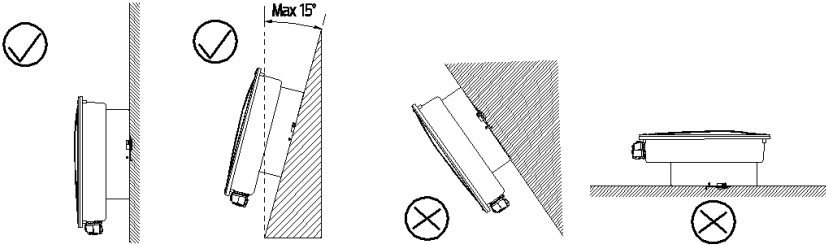
8. The mounting method, location and surface must be suitable for the inverter's weight and dimensions.
9. If mounted in a residential area, we recommend mounting the inverter on a solid support surface. Drywall and similar materials are not recommended due to audible vibrations during operation which could be perceived as annoying.
10. Do not put any objects on the inverter.
11. Do not cover the inverter.

4.2 Selecting the mounting location

! DANGER

Danger to life due to fire or explosion

- Do not mount the inverter in areas where flammable materials are stored.
- Do not mount the inverter in areas where there is a risk of explosion.



1. Never mount the inverter tilted forward.
2. Never mount the inverter tilted sideways.
3. Never mount the inverter horizontally.
4. Mount the inverter vertically or tilted backward by a max of 15°.
5. Mount the inverter at eye level to make it easy to operate and read the display.
6. The electrical connection area must point downwards.

4.3 Mounting the inverter with the wall bracket

CAUTION

Risk of injury when lifting the inverter, or if it is dropped

The inverter weighs approximately 11kg. There is risk of injury if the inverter is lifted incorrectly or dropped while being transported or when attaching it to or removing it from the wall bracket.

- Transport and lift the inverter carefully

CAUTION

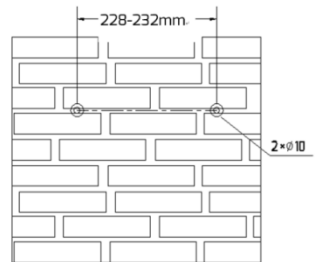
Risk of injury due to damaged cables

There may be power cables or other supply lines (e.g. gas or water) routed in the wall.

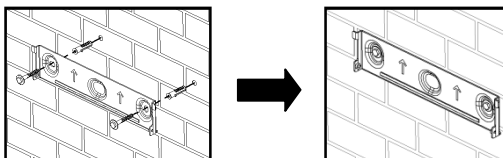
- Ensure that no lines are laid in the wall which could be damaged when drilling holes.

Mounting procedures:

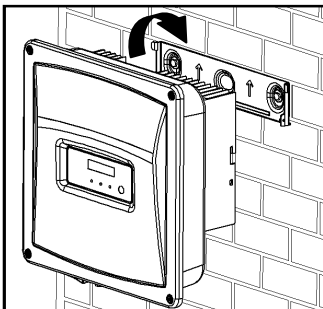
1. Use the wall bracket as a drilling template and mark the positions of the drill holes, then drill 2 holes ($\Phi 10$) to a depth about 70mm. During operation, keep the drill vertical to the wall, and hold the drill steady to avoid tilted holes.



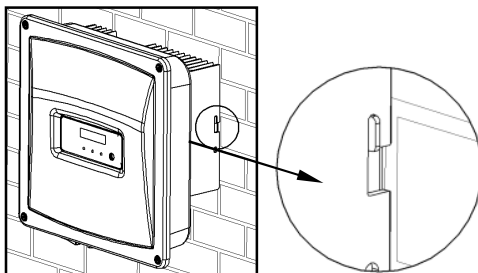
2. After cleaning the holes, place the 2 wall anchors into the holes, then attach the wall bracket to the wall using the hexagon head screw delivered with the inverter.



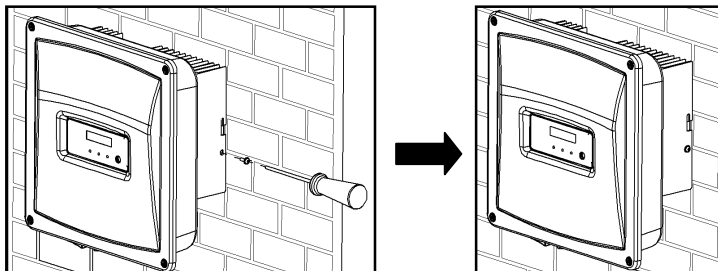
3. Hold the inverter using the housing side edges and attach it onto the wall bracket tilted slightly downwards.



4. Check both sides of the heat sink to ensure that it is securely in place.



5. Push the inverter inwards as far as possible and attach it to both sides of the wall bracket using the M5 screws (screwdriver type: T25, torque: 2.2Nm).



5 Electrical connection

5.1 Safety during Electrical 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 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 with the appropriate skills.
- If an error occurs, have it rectified by qualified persons only.
- Before assembling the DC connectors, please first cover the PV modules with opaque material.
- Prior to performing any work on the inverter, disconnect it from all voltage sources as described in Section 8.

WARNING

Risk of injury due to electric shock

The external protective grounding conductor is connected to the inverter's protective grounding terminal through the AC screw terminal block. Make sure the grounding connection is reliable.

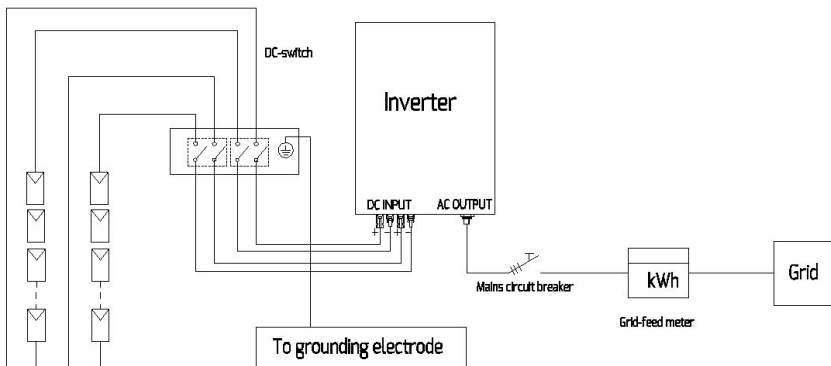
- When connecting, connect the AC connection first to ensure the inverter grounding reliably and then connect the DC inputs.
- When disconnecting, disconnect the DC inputs first and then disconnect the AC connection.
- Don't connect the DC inputs while the AC connection is disconnected under any circumstances.
- All electrical installations must be done in accordance with the National Wiring Rules Standards and Local Code.

5.2 System layout of units without integrated DC switch

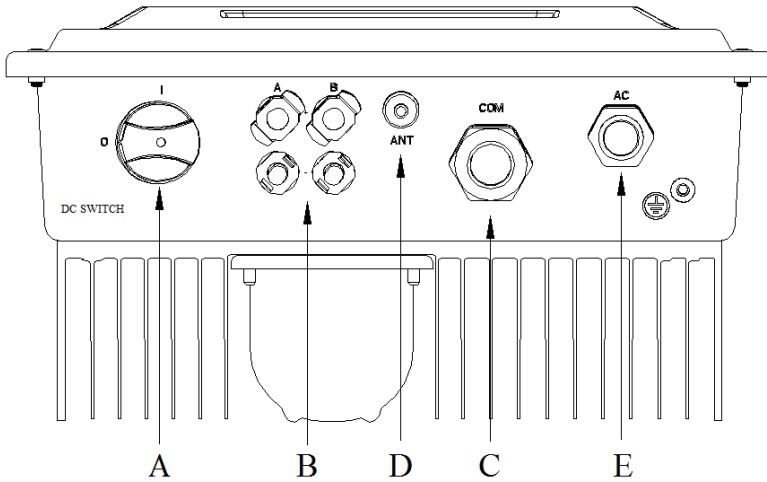
Local standards or codes may require that PV systems are fitted with an external DC switch on the DC side. The DC switch must be able to safely disconnect the open-circuit voltage of the PV array plus a safety reserve of 20%.

Install a DC switch to each PV string to isolate the DC side of the inverter.

We recommend the following electrical connection:



5.3 Overview of the connection area



Object	Description
A	DC-switch (optional): switch on or off for PV-load
B	DC input: plug-in connector to connect the PV string
C	COM: connect the monitoring device with communication cable
D	ANT (optional): antenna, transmit and receive WiFi signal
E	AC output: connect the grid

5.4 AC connection

⚠ DANGER

Danger to life due to high voltages in the inverter

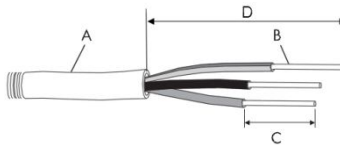
- Before performing the electrical connection, ensure that the AC circuit breaker is switched off and cannot be reactivated.

5.4.1 Conditions for the AC connection

Cable Requirements

The grid connection is established using three conductors (L, N, and PE).

We recommend the following requirements for AC cable.



Object	Description	Value
A	External diameter	9 to 14 mm
B	Copper conductor cross-section	4 to 6 mm ²
C	Stripping length of the insulated conductors	approx. 12 mm
D	Stripping length of the outer sheath of AC cable	approx. 70 mm

The PE insulated conductor must be 5 mm longer than the L and N conductors.

Cable design

The cable must be dimensioned in accordance with the local and national directives for the dimensioning of cables.

The conductor cross-section should be dimensioned to avoid power loss in cables exceeding 1% of rated output power.

The higher grid impedance of the AC cable makes the inverter easier to disconnect from the grid due to excessive voltage at the feed-in point.

The maximum cable length relative to the conductor cross-section as follows:

Conductor cross-section	Maximum cable length		
	Zevelution 3680	Zevelution 4000	Zevelution 5000
4 mm ²	25 m	20 m	16 m
6 mm ²	40 m	30 m	24 m

The required conductor cross-section depends on the inverter rating, ambient temperature, routing method, cable type, cable losses, applicable local installation requirements, etc.

5.4.2 Grid connection

WARNING

Risk of injury due to electric shock and fire caused by high leakage current

- The inverter must be reliably grounded in order to protect property and personal safety.

NOTICE

Damage to the seal of the cover in sub-zero conditions

- If you open the cover in sub-zero condition, the sealing of the cover can be damaged. This can lead moisture entering the inverter.
- Do not open the inverter at ambient temperatures lower than -5°C.
- If a layer of ice has formed on the seal of the cover in sub-zero conditions, remove it prior to opening the inverter (e.g. by melting the ice with warm air). Observe the applicable safety regulation.

Procedure:

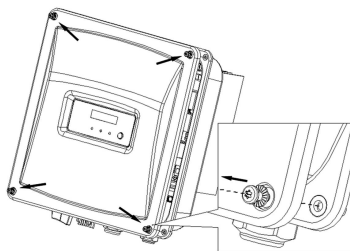
1. Switch off the AC circuit breaker and secure it against reconnection.



loosen the screws of the cover

During loosening the screws of the cover, it is not necessary to take off the screws and conical spring washers, which can remain on the cover and will not fall off.

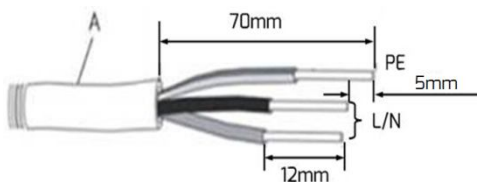
2. Loosen the 4 screws of the cover using a screwdriver (T25) and remove the cover.



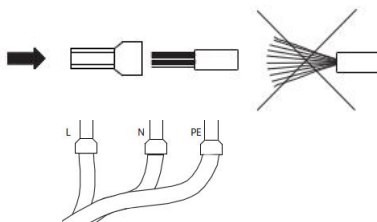
3. Strip the AC cable's outer sheath 70 mm.

Shorten L and N by 5 mm each.

Strip the insulation of L, N, and PE conductors by 12 mm.



4. Insert the conductor into the suitable ferrule acc. to DIN 46228 and crimp the contact.

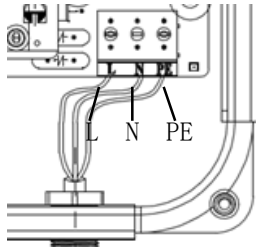


5. Route the AC cable into the inverter through the M20 cable gland.

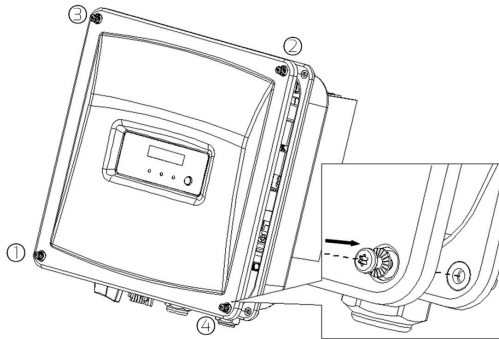
If necessary, slightly loosen the swivel nut of the M20 cable gland.

6. Insert the conductors to the screw terminal block and tighten them (screwdriver type: blade 1×5.5 acc. to DIN5264, torque: 1.2Nm).

- Insert the protective conductor (green-yellow) into the screw terminal with the grounding sign and tighten the screw.
- Insert the neutral conductor (blue) into the screw terminal with N sign and tighten the screw.
- Insert the L conductor (brown or black) into the screw terminal with L sign and tighten the screw.



7. Check to ensure that all conductors are securely in place by pulling lightly on all conductors.
8. Tighten the swivel nut of the cable gland.
9. Secure the cover in the sequence 1 to 4 (screwdriver type: T25, torque: 2.2Nm).

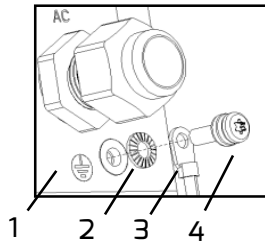


5.4.3 Second protective grounding connection

If additional grounding or equipotential bonding is required locally, you can connect additional grounding to the inverter. This prevents touch current if the grounding conductor at the terminal for the AC cable fails.

Procedure:

1. Insert the grounding conductor into the suitable terminal lug and crimp the contact.
2. Align the terminal lug with the grounding conductor and the ground washer on the screw. The teeth of the ground washer must be facing the housing.
3. Tighten it firmly into the housing (screwdriver type: T25, torque: 2.2Nm).



Grounding parts information:

Object	Description
1	housing
2	Ground washer
3	Terminal lug (M5) with protective conductor
4	M5 pan head screw

5.4.4 Residual current protection

The inverter is equipped with an all-pole sensitive residual current monitoring unit (RCMU) with an integrated differential current sensor which fulfills the requirements of DIN VDE 0100-712 (IEC60364-7-712:2002). Therefore an external residual current device (RCD) is not required. If an external RCD needs to be installed because of local regulations, a RCD type A or type B can be installed as an additional safety measure. The all-pole sensitive residual current monitoring unit (RCMU) detects alternating and direct differential current. The integrated differential current sensor detects the current difference between the neutral conductor and the line conductor. If the current difference increases suddenly, the inverter disconnects from the grid. The function of the all-pole sensitive residual current monitoring unit (RCMU) has been tested in accordance with IEC 62109-2.



Tip about the external residual current device (RCD)

Where an external residual current device (RCD) is required in a TT or TN-S system, install a residual current device which trips at a residual current of 100mA or higher.

For each connected inverter, a rated residual current of 100mA has to be provided. The rated residual current of the RCD must be equal to at least the sum of the rated residual currents of the connected inverters. That means that, if, for example, 2 transformerless inverters are connected, the rated residual current of the RCD must be at least 200mA.

5.4.5 Overvoltage category

The inverter can be deployed in grids of installation category III or lower, as defined under IEC 60664-1. This means that it can be permanently connected at the grid-connection point in a building. In installations involving long outdoor cable routing, additional overvoltage-reducing measures must be taken so that the overvoltage category is reduced from IV to III.

5.4.6 Rating of AC circuit breaker

DANGER

Danger to life due to fire

You must safeguard each inverter with an individual AC circuit breaker in order that the inverter can be disconnected safely.

No consumer load should be applied between AC circuit breaker and the inverter. Use dedicated AC circuit breaker with load switch functionality for load switching. The selection of the AC circuit breaker rating depends on the wiring design (wire cross-section area), cable type, wiring method, ambient temperature, inverter current rating etc. Derating of the circuit breaker rating may be necessary due to self-heating or if exposed to heat.

The maximum output current of the inverters and recommended AC circuit breaker can be found in the following table.

Type	Zeverlution 3680	Zeverlution 4000	Zeverlution 5000
Max. output current	16 A	20 A	23 A
Recommended AC circuit breaker rating	20 A, type B	25 A, type B	32 A, type B

5.5 DC connection

DANGER

Danger to life due to high voltages in the inverter

- Before connecting the PV array, ensure that the DC switch is switched off and that it cannot be reactivated.
- Do not disconnect the DC connectors under load.

5.5.1 Requirements for the DC connection



Use of Y adapters for parallel connection of PV strings

The Y adapters must not be used to interrupt the DC circuit.

- Do not use the Y adapters in the immediate vicinity of the inverter. The adapters must not be visible or freely accessible.
- In order to interrupt the DC circuit, always disconnect the inverter as described in this document in Section 8.

Requirements for the PV modules of a string:

- PV modules of the connected strings must be of: the same type, identical alignment and identical tilt.
- The thresholds for the input voltage and the input current of the inverter must be adhered to (see Section 10.1 "Technical DC input data").
- On the coldest day based on statistical records, the open-circuit voltage of the PV array must never exceed the maximum input voltage of the inverter.
- The connection cables of the PV modules must be equipped with the connectors included in the scope of delivery.
- The positive connection cables of the PV modules must be equipped with the positive DC connectors. The negative connection cables of the PV modules must be equipped with the negative DC connectors.

5.5.2 Assembling the DC connectors

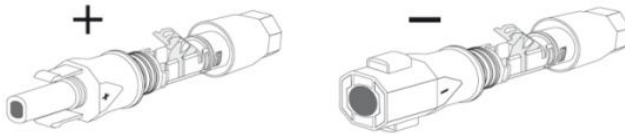
⚠ DANGER

Danger to life due to high voltages on DC conductors

When exposed to sunlight, the PV array generates dangerous DC voltage which is present in the DC conductors. Touching the DC conductors can lead to lethal electric shocks.

- Cover the PV modules with opaque material.
- Do not touch the DC conductors.

Assemble the DC connectors as described below. Be sure to observe the correct polarity. The DC connectors are marked with the symbols "+" and "-".



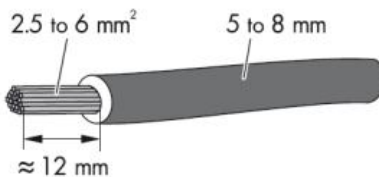
Cable requirements:

The cable must be of type PV1-F, UL-ZKLA or USE2 and comply with the following properties:

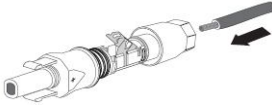
- ✧ External diameter: 5 mm to 8 mm
- ✧ Conductor cross-section: 2.5 mm² to 6 mm²
- ✧ Qty single wires: minimum 7
- ✧ Nominal voltage: minimum 600V

Proceed as follows to assemble each DC connector:

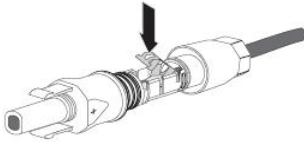
1. Strip 12 mm off the cable insulation.




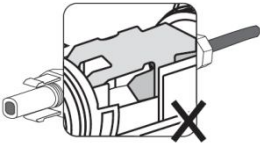
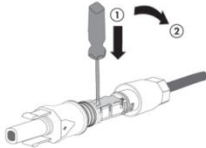
2. Route the stripped cable all the way into the DC connector. Ensure that the stripped cable and the DC connector have the same polarity.



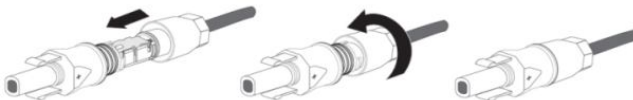
3. Press the clamping bracket down until it audibly snaps into place.



4. Ensure that the cable is correctly positioned:

Result	Measure
<p>If the stranded wires are visible in the chamber of the clamping bracket, the cable is correctly positioned.</p> 	<ul style="list-style-type: none"> • Proceed to step 5.
<p>If the stranded wires are not visible in the chamber, the cable is not correctly positioned.</p> 	<ul style="list-style-type: none"> • Release the clamping bracket. To do so, insert a flat-blade screwdriver (blade width: 3.5 mm) into the clamping bracket and lever it open.  <ul style="list-style-type: none"> • Remove the cable and go back to step 2.

5. Push the swivel nut up to the thread and tighten (torque: 2 Nm).



5.5.3 Disassembling the DC connectors

! DANGER

Danger to life due to high voltages on DC conductors

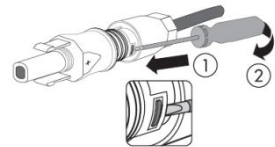
When exposed to sunlight, the PV array generates dangerous DC voltage which is present in the DC conductors. Touching the DC conductors can lead to lethal electric shocks.

- Cover the PV modules with opaque material.
- Do not touch the DC conductors.

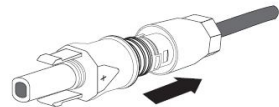
1. Unscrew the swivel nut.



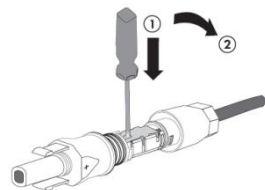
2. To release the DC connector, insert a flat-blade screwdriver (blade width: 3.5 mm) into the side catch mechanism and lever open.



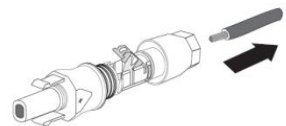
3. Carefully pull the DC connector apart.



4. Release the clamping bracket. To do so, insert a flat-blade screwdriver (blade width: 3.5 mm) into the clamping bracket and lever it open.



5. Remove the cable.



5.5.4 Connecting the PV array

NOTICE

Damage to the inverter due to overvoltage

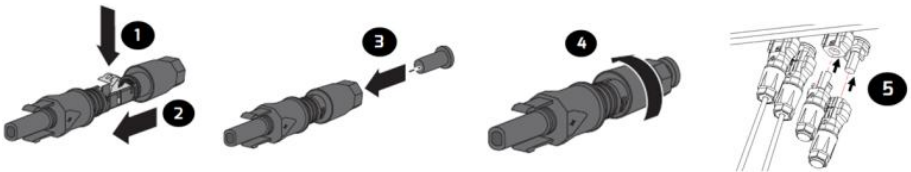
If the voltage of the strings exceeds the max. DC input voltage of the inverter, it can be destroyed due to overvoltage. All warranty claims become void.

- Do not connect strings with an open-circuit voltage greater than the maximum DC input voltage of the inverter.
- Check the design of the PV system.

1. Ensure that the individual AC circuit breaker is switched off and ensure it against reconnection.
2. Ensure that the DC switch is switched off and ensure it against reconnection.
3. Ensure that there is no ground fault in the PV strings.
4. Check whether the DC connector has the correct polarity.

If the DC connector is equipped with a DC cable having the wrong polarity, the DC connector must be reassembled. The DC cable must always have the same polarity as the DC connector.

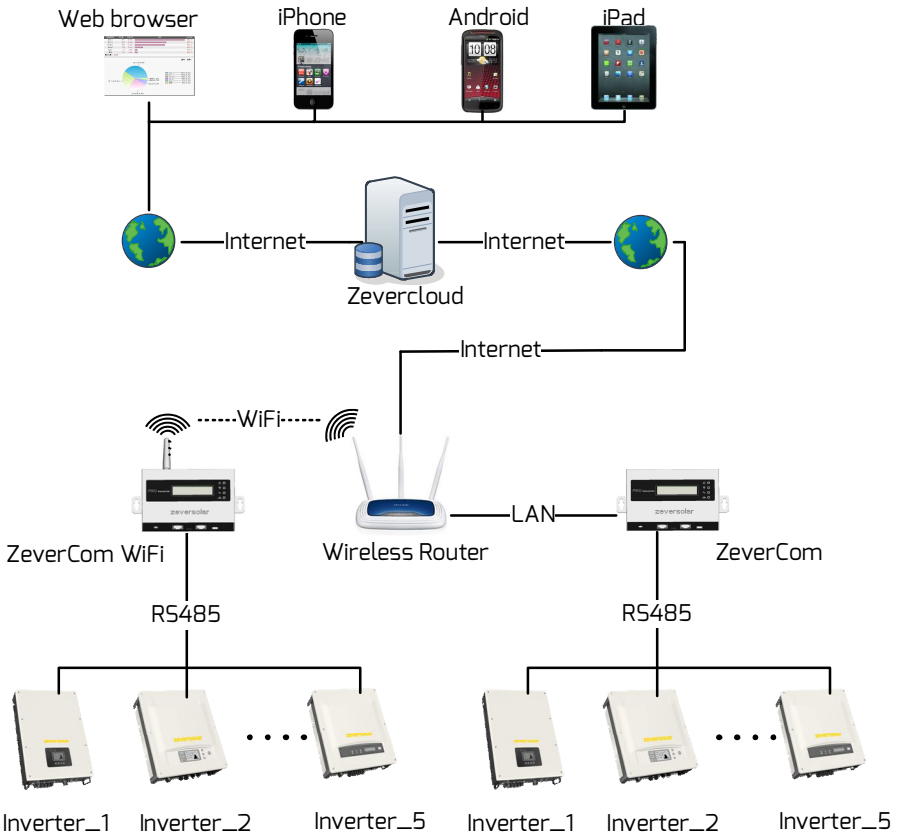
5. Ensure that the open-circuit voltage of the PV strings does not exceed the maximum DC input voltage of the inverter.
6. Connect the assembled DC connectors to the inverter until they audibly snap into place. Ensure that all DC connectors are securely in place.
7. For unused DC connectors, push down the clamping bracket and push the swivel nut up to the thread. Insert the sealing plug into the DC connector. Tighten the DC connector (torque: 2.0Nm). Finally insert the DC connectors with sealing plugs into the corresponding DC inputs on the inverter.



6 Communication

6.1 System monitoring via RS485

This inverter is equipped with two RJ45 interfaces for multipoint communication with ZeverCom via an RS485 bus. The overall length of the network cable should not exceed 1,000 m. The monitoring system layout for inverters is as follows.



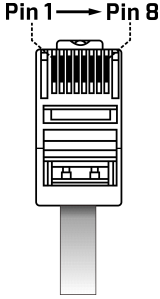
For how to create a new plant in ZeverCloud, please visit the relative website (www.zevercloud.com)

Network cable requirement:

- Comply with the standards for structured cabling according to EIA/TIA-568
- Shielded
- CAT-5E or higher
- UV-resistant for outdoor use
- Maximum cable length 1000m

Pinout assignment of the RJ45 connector as follows:

Pin No.	Pin definition	Color
Pin1	TX_RS485A	white-green
Pin2	TX_RS485B	green
Pin3	RX_RS485A	white-orange
Pin4	GND	blue
Pin5	GND	White-blue
Pin6	RX_RS485B	orange
Pin7	+7V	white-brown
Pin8	+7V	brown



The diagram shows a top-down view of an RJ45 connector. A horizontal arrow points from the left side, labeled 'Pin 1', to the right side, labeled 'Pin 8'. The connector has eight pins visible, with the top two pins being the most prominent.

For detailed information, please refer to ZeverCom user manual.

NOTICE

Damage to the inverter due to moisture and dust penetration

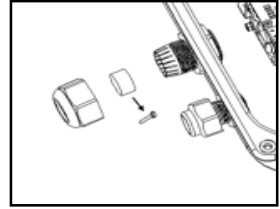
If the cable gland are not mounted properly, the inverter can be destroyed due to moisture and dust penetration. All the warranty claim will be invalid.

- Make sure the cable gland has been tightened firmly.

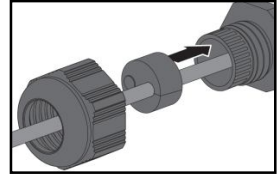
Connect the network cable:

1. Loosen the 4 screws of the cover using a screwdriver (T25) and remove the cover.
(see Section 5.4.2).

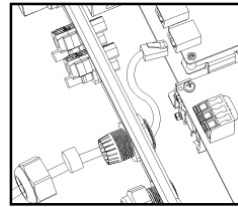
2. Loosen the swivel nut of the M25 cable gland, remove filler-plugs from the cable gland and keep it well. If there is only one network cable, please keep one filler-plug in the remaining hole of the seal insert against moisture and dust penetration.



3. Thread the swivel nut over the cable, push the network cable into the side slot in the seal insert, thread the cable through the cable gland.



4. Plug the network connector into the pin connector in the inverter until it snaps into place.
Ensure that the network connector is securely in place by pulling slightly on the cable.



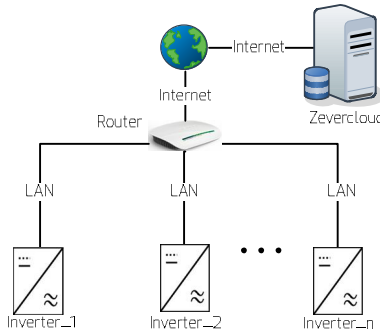
5. Push the seal insert back into the cable gland. Tighten the swivel nut slightly.

6. Connect the inverter to ZeverCom via the above mentioned network cable.

7. Secure the cover (screw driver type: T25, torque: 2.2Nm).

6.2 System monitoring via Ethernet

User can monitor the inverter with the integrated Ethernet module (optional). The communication connection diagram between the inverter and Internet with network cable is shown as follows.



Cable requirement:

- Comply with the standards for structured cabling according to EIA/TIA-568
- Shielded
- CAT-5E or higher
- UV-resistant for outdoor use
- Maximum network cable length 100m

Pinout assignment of the RJ45 connector as follows:

Pin No.	Pin definition	Color	
Pin1	TX_RS485A	white-green	
Pin2	TX_RS485B	green	
Pin3	RX_RS485A	white-orange	
Pin4	GND	blue	
Pin5	GND	White-blue	
Pin6	RX_RS485B	orange	
Pin7	+7V	white-brown	
Pin8	+7V	brown	



Possible reason of communication failure due to closed port

The Ethernet module uses port #6655 and #80 to communicate with the ZeverCloud. Both of these two ports must be opened, or else the Ethernet module can not communicate with the ZeverCloud and upload data.

For connecting the network cable between the router and the Ethernet port on the inverter, please refer to the relative instruction at section 6.1.



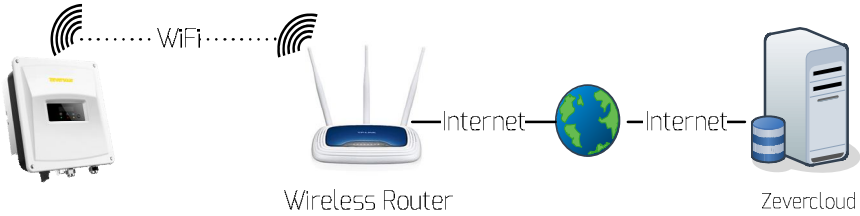
Possible reason of communication failure due to DHCP

The router needs to support DHCP services if the Ethernet module use the DHCP function.

The inverter obtains an IP address from the router via DHCP automatically and shows it on the display. It takes time to connect to the network depending on the network communication conditions.

6.3 System monitoring via WiFi

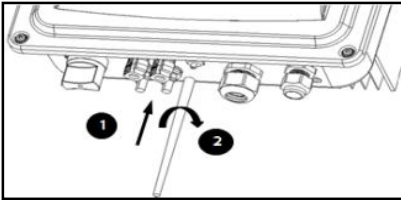
User can monitor the inverter with the integrated WiFi module (optional). The communication connection diagram between the inverter and Internet with a WiFi connection is shown as follows.



Mounting the antenna:

1. Take out the antenna included in the scope of delivery.
2. Remove the sealing plug on the WiFi connection port.
3. Tighten the antenna to the WiFi connection port by hand.

Make sure the antenna is securely connected.



WiFi Connection diagram

Please make sure that the inverter is power-on before executing following steps.



1. Open your mobile device or laptop's WLAN page.


The new access point called ZEVERSOLAR -XXXX is displayed.

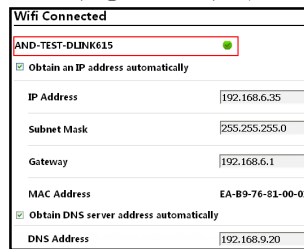
Note: "XXXX" stands for the last four digits in the Registry ID.



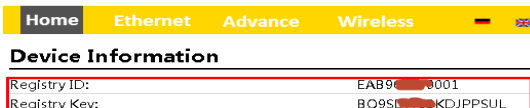
2. Connect to the access point using your mobile device or laptop, the password is 'zeversolar'.

3. Open the web browser and type in "http://160.190.0.1." The internal webpage will open.

4. Select a router in the [Wireless] area. Password/Security Key dialog box will pop up. Enter the password of the router. If the WiFi device is connected to the router successfully, the status indicator on the wireless page will display the  icon.



5. Note the "Registry ID" and "Registry Key", they will be used for creating a new plant in ZeverCloud, please visit website (www.zevercolud.com).



6.4 Communication with a third-party devices

This inverter supports communication with a third party monitoring device such as metecontrol, Solar-Log etc. For detailed wiring method please refer to operating manual of corresponding third party monitoring device.

6.5 Smart meter connection

The inverter can realize zero power output via connecting smart meter(AU).

Connect the smart meter connection cable:

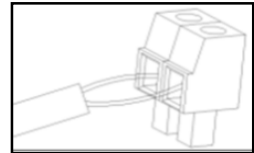
1. Cable Requirements:



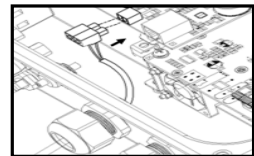
Object	Description	Value
A	External diameter	5 mm to 8 mm
B	Conductor cross-section	0.14 mm ² to 1.5 mm ²
C	Stripping length of the insulated conductors	approx. 9 mm
D	Stripping length of the outer sheath of the cable	approx. 30 mm

2. Route the cable into inverter through the cable gland, referring to the network cable connection (Section 6.1, page 32).

3. Connect the conductors to the supplied smart meter connector in accordance with the symbol. When doing so, ensure the conductors are plugged completely into the terminal up to the insulation.



4. Plug the assembled smart meter connector into the pin connector.



5. Push the seal insert back into the cable gland. Tighten the swivel nut slightly.

6. Place the cover on the housing, then tighten all 4 screws with a Torx screwdriver (screw driver type: T25, torque: 2.2Nm).

7 Commissioning

NOTICE

Risk of injury due to incorrect installation

We strongly recommend carrying out preliminary checks before commissioning to avoid possible damage to the device caused by incorrect installation.

7.1 Electrical checks

Carry out the main electrical checks as follows:

- ① Check the PE connection with a multimeter: check that the inverter's exposed metal surface has a ground connection.



DANGER

Danger to life due to the presence of DC voltage

- Only touch the insulation of the PV array cables.
- Do not touch parts of the sub-structure and frame of PV array which are not grounded.
- Wear personal protective equipment such as insulating gloves.

- ② Check the DC voltage values: check that the open-circuit voltage of the PV array on the coldest day based on statistical records does not exceed 600V.
- ③ Check the polarity of the DC voltage: make sure the DC connectors have the correct polarity.
- ④ Check the PV array's insulation to ground with a multimeter: make sure that the insulation resistance to ground is greater than 1 Mohm.
- ⑤ Check and make sure that the AC circuit breaker must be correctly rated and mounted.



DANGER

Danger to life due to the presence of AC voltage

- Only touch the insulation of the AC cables.
- Wear personal protective equipment such as insulating gloves.

- ⑥ Check the grid voltage: check that the grid voltage at the connection point of the inverter complies within the permitted range.

7.2 Mechanical checks

Carry out the main mechanical checks to ensure the inverter is waterproof:

- ① Make sure the inverter and wall bracket have been correctly mounted.
- ② 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.
- ③ Make sure the communication wires has correctly connected
Make sure the communication cable gland has been correctly mounted and tightened.
- ④ Make sure the AC conductors have correctly connected
Make sure the AC cable gland has been correctly mounted and tightened.
- ⑤ Make sure the cover has been correctly mounted.
- ⑥ Make sure that cables are routed in safe place or protected against mechanical damage.

7.3 Start-up

After finishing the electrical and mechanical 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 to operate automatically.

Usually, there are three states during operation:

Waiting: When the initial DC voltage of the PV strings is greater than the minimum DC input voltage but lower than the start-up DC input voltage, the inverter is waiting for sufficient DC input voltage and cannot feed power into the grid.

Checking: When the initial voltage of the PV strings exceeds the start-up DC input voltage, the inverter will check feeding conditions at once. If there is anything wrong during checking, the inverter will switch to the "Fault" mode.

Normal: After checking, the inverter will switch to "Normal" state and feed power into the grid.

During periods of low radiation, the inverter may continuously start up and shut down. This is due to insufficient power generated by the PV generator. If this fault occurs often, please call service.



Quick Troubleshooting

If the inverter is in "Fault" mode, refer to Section 11 "Troubleshooting".

8 Disconnecting the inverter from voltage sources

Prior to performing any work on the inverter, disconnect it from all voltage sources as described in this section. Always adhere strictly to the prescribed sequence.

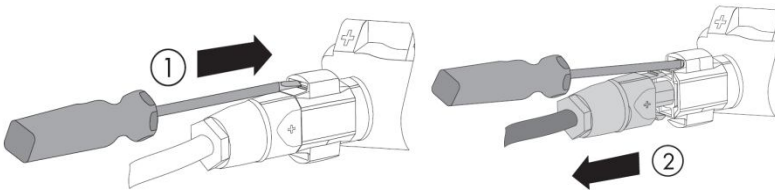
NOTICE

Destruction of the measuring device due to overvoltage

- Only use measuring devices with a DC input voltage range of 1000V or higher.

Procedure:

1. Disconnect the AC circuit breaker and secure it against reconnection.
2. Disconnect the DC switch and secure it against reconnection.
3. Use a current clamp to ensure that no current is present in the DC cables.
4. Release and remove all DC connectors. Insert a flat-blade screwdriver or an angled screwdriver (blade width: 3.5 mm) into one of the slide slots and pull the DC connectors out downwards. Do not pull on the cable.



5. Ensure that no voltage is present at the DC inputs on the inverter using a suitable measuring device.



DANGER

Danger to life due to high voltages

The capacitors in the inverter take 5 minutes to discharge.

- Wait 5 minutes before opening the cover.

6. Loosen the 4 screws of the cover using a screwdriver (T25) and remove the cover.

NOTICE

Damage to the inverter due to electrostatic discharge

·Touching electronic components can cause damage to or destroy the inverter through electrostatic discharge.

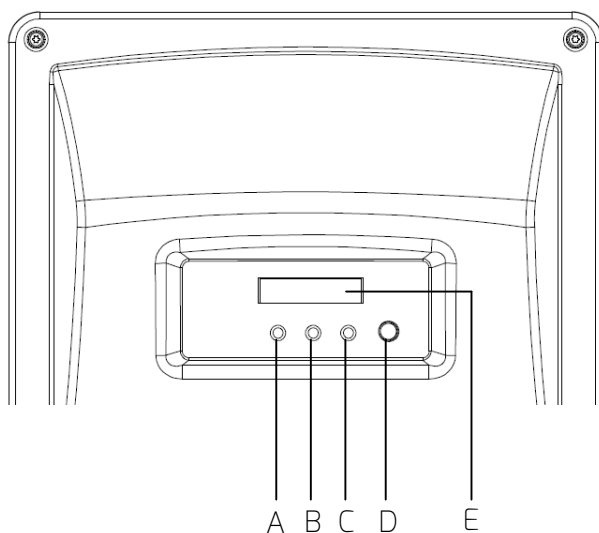
7. Use a suitable measuring device to check that no voltage is present at the AC screw terminal blocks between L and N and L and PE.
8. Loosen the screws of the screw terminal blocks and the swivel nut of the M20 cable gland, remove the AC cable.
9. Secure the cover (screw driver type: T25, torque: 2.2Nm).

9 Operation

The information provided this chapter covers the LED indicators, control button, display messages, and the language and safety regulation settings.

9.1 Overview of the control panel

The inverter is equipped with a text display, three LED indicators and one control button.



Object	Description
A	Normal (Green LED)
B	Fault (Red LED)
C	Communication (Yellow LED)
D	Control button
E	Display

9.1.1 Display

The display consists of 16 characters×2 lines. The bottom line shows the current output (Pac = xxxx.xW). The top line shows the current state by default, it will switch to different running information by pressing the control button.

Line 1	<p>Running information</p> <pre> graph TD Etoday[E-today] --> Etotal[E-total] Etotal --> Vpv[Vpv] Vpv --> Ipv[Ipv] Ipv --> Vac[Vac] Vac --> Iac[Iac] Iac --> Frequency[Frequency] Frequency --> Model[Model] Model --> SetLang[Set Language] SetLang --> Version[Version] Version --> SerialNo[Serial No.] SerialNo --> IPAddr[IP Addr] IPAddr --> Etoday </pre>	<p>Daily energy</p> <p>Energy generated since the inverter has been installed</p> <p>DC input voltage</p> <p>DC input current</p> <p>Grid voltage</p> <p>Present output current</p> <p>Grid frequency</p> <p>Type name</p> <p>Selected language</p> <p>Firmware version</p> <p>Serial number</p> <p>IP address</p>
Line 2	Pac = xxxx.xW ¹⁾	Current output power

1) If the item "IP Addr" on the top line is displayed, the communication connection state with ZeverCloud (Disconnected or Connected) will be displayed on bottom line. For how to create a new plant in ZeverCloud, please visit website (www.zevercloud.com) and follow the procedure as described in the relative manual (ZeverCloud User Manual).

The item "IP Addr" on the top line will show the relative IP address only when user monitor the inverter with the Ethernet module or WiFi module which is integrated inside the inverter, otherwise the item "IP Addr" on the top line will show "0.0.0.0". If the inverter is monitored with external communication devices (e.g. ZeverCom, Solar-Log, or other 3rd party devices), read the IP address on these devices.

9.1.2 Control button

The inverter has a control button which is necessary to switch between the various displays for measured values and device information, to enter next entry and to lock the expected item.

The display menus wrap around, which means that when you arrive at the last item, the first item will be displayed when you press the control button again.

You can freeze the display as follows:

Keep pressing the button for 5s when the display shows the desired item, and do not release the button until you see "LOCK". The display will always show the selected item until you press the button again or the operating state of the inverter changes.

To save power, the backlight of the display turns off automatically after 10s. Press the button again to activate it.

9.1.3 LED indicators

The inverter is equipped with three LED indicators "green", "red" and "yellow" which provide information about the various operating states.

Green LED:

The green LED is lit when the inverter is operating normally.

Yellow LED:

The yellow LED flashes during communication.

Also, the yellow LED is lit during updating firmware through RS485.

Red LED:

The red LED is lit when the inverter has stopped feeding power into the grid due to a fault. The corresponding error code will be shown on the display.

9.2 Display messages

Along with the various operating states, various messages may be shown on the display, as follows.

State	Error code	Description	Causes
Initializat-ion		Waiting	Initial PV voltage is between minimum DC input voltage and the start-up DC input voltage of the inverter.
		Checking	The inverter is checking the feed-in conditions after the initial PV voltage exceeds the start-up DC input voltage of the inverter.
		Reconnect	The inverter is checking feed-in conditions after the occurred fault has been solved.
Normal		Normal	The inverter is feeding power into grid normally.
Fault	1	SCI Fault	Communication between the master and slave CPU has failed.
	2	EEPROM R/W Fault	Reading or writing of EEPROM has failed.
	3	Rly-Check Fault	Output relay has failed.
	4	DC INJ. High	Output DC feed-in exceeds the permitted upper limit.
	6	High DC Bus	The voltage of DC bus exceeds the permitted upper limit.
	8	AC HCT Fault	Output current is abnormal
	9	GFCI Fault	Ground fault detection circuit is abnormal
	10	Device Fault	Unknown Error
	33	Fac Fault	The grid frequency is outside the permitted range.
	34	Vac Fault	The grid voltage is outside the permitted range.

Fault	35	No Utility Grid Available	The utility cannot be detected, which may be caused by no utility, grid disconnected, AC cables damaged, fuse broken or island mode.
	36	Residual current fault	The residual current exceeds the permitted upper limit.
	37	PV Overvoltage	The voltage of the PV strings exceeds the permitted upper limit.
	38	ISO Fault	The PV array's insulation resistance to ground is below the permitted value, or the electrical insulation inside the inverter has failed.
	40	Over Temp.	The internal temperature exceeds the permitted value.
	41	Vac differs for M-S	A different value of grid voltage has been detected by the master and slave MCU.
	42	Fac differs for M-S	A different value of grid frequency has been detected by the master and slave MCU.
	43	Residual current differs for M-S	A different value of residual current has been detected by the master and slave MCU.
	44	DC Inj. differs for M-S	A different value of DC feed-in has been detected by the master and slave MCU.
	45	Fac, Vac differs for M-S	Different values of grid frequency and voltage has been detected by the master and slave MCU.

The last five failure reports on the network and system protection device can be read. An interruption in the supply voltage of $\leq 3s$ does not result in any loss of failure reports (according to VDE-AR-N 4105).

9.3 Language and safety regulation settings

Before setting, switch on the DC switch, and ensure that the AC circuit breaker is switched off and cannot be reactivated, while the inverter should be reliably grounded.

9.3.1 Language setting

The inverter provides two languages: English and German.

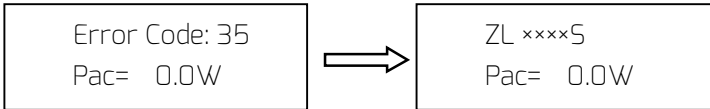
Keep pressing the button for approx. 5s at the item of "Set Language" to enter the language menu and select the language. The display will switch to current state information automatically and the language setting will be saved at the same time unless you press the button again within approx. 10s.

9.3.2 Safety regulation setting

You can choose desired safety regulation according to the local requirements, procedure as follows.

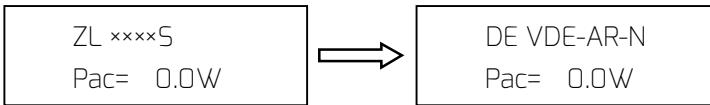
Step 1:

Press the button (see section 9.1.1) once per second until the type name of the inverter appears.



Step 2:

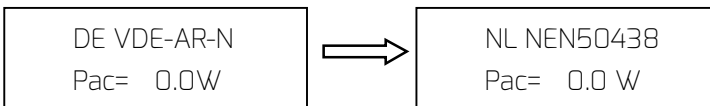
Keep pressing the button for 10 seconds to enter the safety regulation setting menu.



Step 3:

Press the button once per second to scroll the safety regulations.

If you want to choose the safety regulation for the Netherlands, press the button once per second until the display shows "NL NEN50438".



If the display shows "DEFAULT", keep on pressing the button until the display shows the desired safety regulation.

After waiting for 10 seconds, the safety regulation setting will be saved.

10 Technical Data

10.1 DC input data

Type	Zeverlution 3680	Zeverlution 4000	Zeverlution 5000
DC convertible power (@ $\cos\phi=1$)	3900W	4650W	5300W
Max. input voltage	600V		
MPP voltage range	100V-520V		
Rated input voltage	360V		
Min. start voltage	80V		
Min. feed-in power	30W		
Max. input current per MPP input	11A/11A		
Number of independent MPP inputs	2		
Strings per MPP input	1/1		

10.2 AC output data

Type	Zeverlution 3680	Zeverlution 4000	Zeverlution 5000
Rated active power	3680W	4000W	5000W
Max. apparent AC power	3680VA	4400VA	5000VA
Nominal AC voltage / range	220V, 230V, 240V / 180V-280V		
AC power frequency / range	50, 60 / ±5Hz		
Max. output current	16A	20A	23A
Power factor (@rated power)	1		
Adjustable displacement power factor	0.95 _{inductive} ...1... 0.95 _{capacitive} (only for VDE4105)		
	0.8 _{inductive} ...1... 0.8 _{capacitive} (for others)		
Feed-in phase / connection phase	1 / 1		
Harmonic distortion (THD) at rated output	< 3%		

10.3 General data

Type	Zevelution 3680	Zevelution 4000	Zevelution 5000
communication: RS485 / Ethernet / WiFi	● / ○ / ○		
Display	16 x 2 characters		
Earth Fault Alarm	cloud based, audible and visible(AU)		
Zero power output	Via connecting smart meter(AU)		
Dimensions (W x H x D)	341 x 395x172 mm		
Weight	11kg		
Cooling method	convection		
Noise emission (typical)	< 25 dB(A)@1m		
Installation	indoor & outdoor		
Mounting information	wall mounting bracket		
DC connection	SUNCLIX		
AC connection	screw terminal terminal		
Operating temperature range	-25°C...+60°C		
Relative humidity (non-condensing)	0% ... 100%		
Max. operating altitude	4000m(>3000m derating)		
Degree of protection (according to IEC 60529)	IP65		
Climatic category (according to IEC 60721-3-4)	4K4H		
Topology	H5		
Self-consumption (night)	< 1W		
Standby power	< 8.5W		

●—Standard ○—Optional —N/A

10.4 Safety regulations

Type	Zevelution 3680	Zevelution 4000	Zevelution 5000
DC switch		○	
PV ISO		●	
Grid monitoring		●	
DC reverse polarity protection		●	
AC overcurrent protection		●	
Residual current monitoring (GFCI)		●	
Protection class (according to IEC 62103)		I	
Overvoltage category (according to IEC 60664-1)		II (DC), III(AC)	
Internal overvoltage protection		Integrated	
DC feed-in monitoring		Integrated	
Islanding protection		Integrated	
EMC immunity		EN61000-6-1, EN61000-6-2	
EMC emission		EN61000-6-3, EN61000-6-4	
Utility interference		EN61000-3-2, EN61000-3-3	

●—Standard ○—Optional



Information for choosing the safety standard VDE-AR-N 4105

If a central network and system protection device is used for power generation systems, the value of the rise-in-voltage protection $U >$ of $1.1U_n$ presented in the integrated network and system protection can be changed, but a password is required.

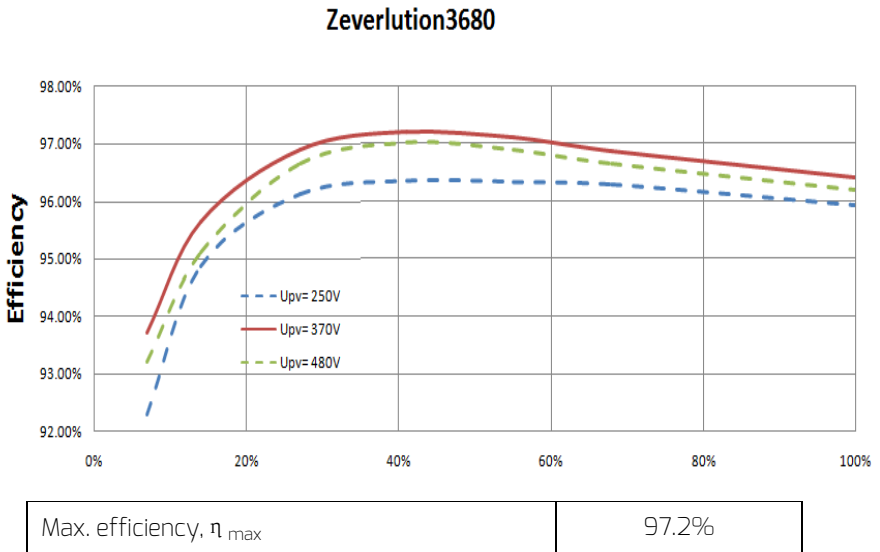
It is not necessary to adjust the value of the displacement power factor $\cos(\phi)$ if the power generation system is $\Sigma S_{A_{max}} \leq 3.68\text{KVA}$ and was set to 1 as default in the embedded inverter software. However, if the power generation system is $3.68\text{KVA} < \Sigma S_{A_{max}} \leq 13.8\text{KVA}$, the standard $\cos(\phi)$ characteristic curve defined in VDE-AR-N 4105 shall be applied through the ZeverCom.

10.5 Efficiency

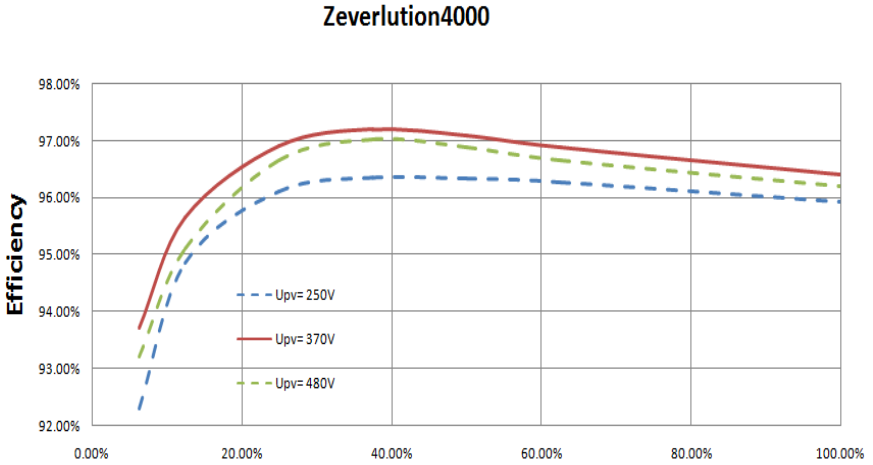
The operating efficiency is shown for the three input voltages (V_{mppmax} , $V_{dc,r}$ and V_{mppmin}) graphically. In all cases the efficiency refers to the standardized power output ($P_{ac}/P_{ac,r}$). (According to EN 50524 (VDE 0126-13): 2008-10, cl. 4.5.3).

Notes: Values are based on rated grid voltage, $\cos(\phi) = 1$ and an ambient temperature of 25°C.

Efficiency curve Zevelution3680

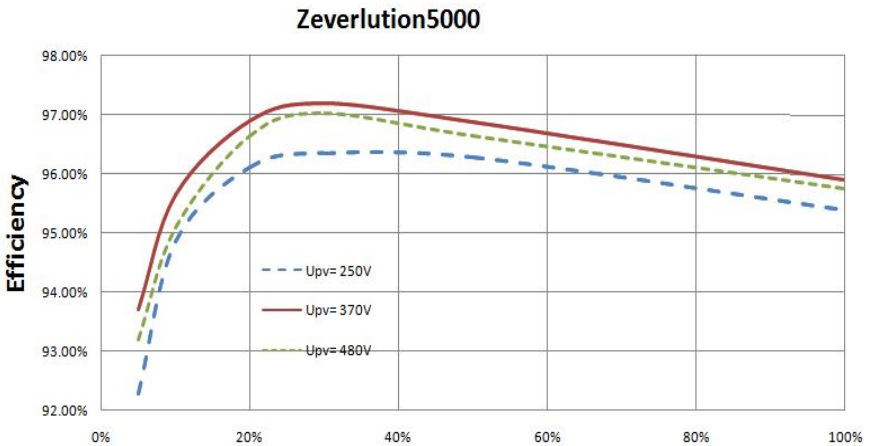


Efficiency curve Zevelution4000



Max. efficiency, η_{\max}	97.2%
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Efficiency curve Zevelution5000



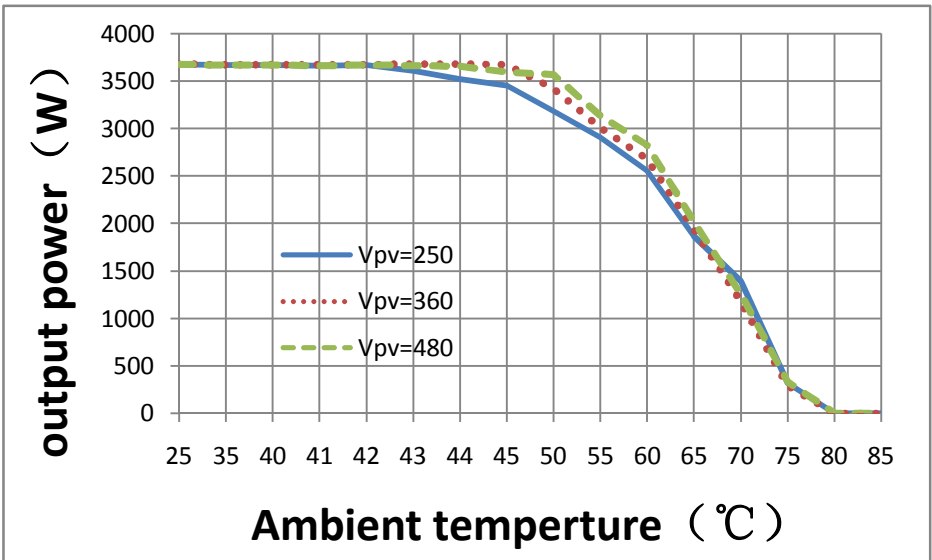
Max. efficiency, η_{\max}	97.2%
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10.6 Power reduction

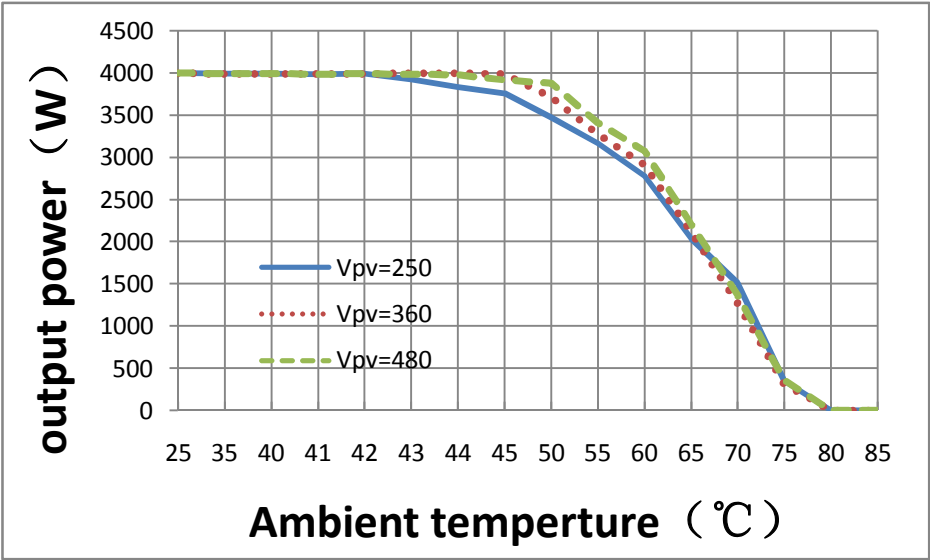
In order to ensure inverter operation under safe conditions, the device may automatically decrease power output.

Power reduction depends on many operating parameters including ambient temperature and input voltage, grid voltage, grid frequency and power available from the PV modules. This device can decrease power output during certain periods of the day according to these parameters.

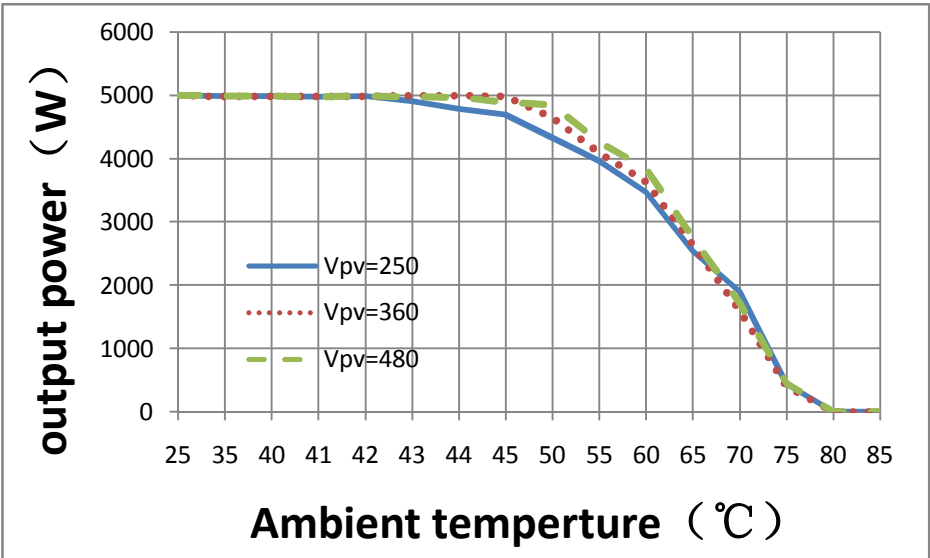
Notes: Values are based on rated grid voltage and $\cos(\phi) = 1$.



Power reduction with increased ambient temperature (Zeverlution3680)



Power reduction with increased ambient temperature (Zeverlution4000)



Power reduction with increased ambient temperature (Zeverlution5000)

10.7 Tools and torque

Tools and torque required for installation and electrical connections:

Tools, model		Object	Torque
Torque screwdriver, T25		Screws for the cover	2.2Nm
		Screw for second protective grounding connection	
		Screws for tightening the inverter and wall bracket	
Flat-head screwdriver, blade with 1×5.5mm		Screw terminal block for AC cable	1.2Nm
Flat-head screwdriver, blade width 3.5mm		Sunclix DC connector	/
/		Antenna	Hand-tight
Socket wrench	Open end of 30	Swivel nut of M25 cable gland	Hand-tight
	Open end of 24	Swivel nut of M20 cable gland	Hand-tight
	Open end of 15	Swivel nut of sunclix connector	2.0Nm
	Open end of 10	Hex bolts for wall bracket	/
Wire stripper		Peel cable jackets	/
Crimping tools		Crimp power cables	/
Hammer drill, drill bit of Ø10		Drill holes on the wall	/
Rubber mallet		Hammer wall plugs into holes	/
Cable cutter		Cut power cables	/
Multimeter		Check electrical connection	
Current clamp			
Marker		Mark the positions of drill holes	/
ESD glove		Wear ESD glove when opening the inverter	/
Safety goggle		Wear safety goggle during drilling holes	/
Anti-dust respirator		Wear anti-dust respirator during drilling holes	/

11 Troubleshooting

When the PV power plant does not operate normally, fault information will be shown up on the display and the red LED will be lit at the same time.

We recommend the following actions for quick troubleshooting.

The corresponding causes are described in section 9.2 “Display messages”.

Object	Error code	Corrective measures
Presumable Fault	6	<ul style="list-style-type: none">• Check the open-circuit voltages of the strings and make sure it is below the maximum DC input voltage of the inverter.• If the input voltage is within the permitted range and the fault still occurs, it might be that the internal circuit has broken. Contact the service.
	33	<ul style="list-style-type: none">• Check the grid frequency and observe how often major fluctuations occur. If this fault is caused by frequent fluctuations, try to change the operating parameters after informing the grid operator first.
	34	<ul style="list-style-type: none">• Check the grid voltage and grid connection of the inverter.• Check the grid voltage at the connection point of the inverter. If the grid voltage is outside the permissible range due to local grid conditions, try to change the values of the monitored operating limits after informing the grid operator first. If the grid voltage lies within the permitted range and this fault still occurs, please contact the service.
	35	<ul style="list-style-type: none">• Check the fuse and the triggering of the AC circuit breaker in the distribution box.• Check the grid voltage, grid usability.• Check the AC cable, grid connection on the inverter. If this fault is still being shown, contact the service.

Presumable Fault	36	<ul style="list-style-type: none"> • Make sure the grounding connection of the inverter is reliable. • Make a visual inspection of all PV cables and modules. If this fault is still shown, contact the service.
	37	<ul style="list-style-type: none"> • Check the open-circuit voltages of the strings and make sure it is below the maximum DC input voltage of the inverter. <p>If the input voltage lies within the permitted range and the fault still occurs, contact the service.</p>
	38	<ul style="list-style-type: none"> • Check the PV array's insulation to ground and make sure that the insulation resistance to ground is greater than 1 MOhm. Otherwise, make a visual inspection of all PV cables and modules. • Make sure the grounding connection of the inverter is reliable. <p>If this fault occurs often, contact the service.</p>
	40	<ul style="list-style-type: none"> • Check whether the airflow to the heat sink is obstructed. • Check whether the ambient temperature around the inverter is too high.
	41, 42 43, 44 45	<ul style="list-style-type: none"> • Disconnect the inverter from the grid and the PV arrays, reconnect them after 3 minutes. <p>If this fault is still being shown, contact the service.</p>
Permanent Fault	1, 2, 3, 4, 5, 6, 8, 9	<ul style="list-style-type: none"> • Disconnect the inverter from the grid and the PV arrays, reconnect them after 3 minutes. <p>If this fault is still being shown, contact the service.</p>

Contact the Zegersolar service if you meet other problems not in the above table.

12 Maintenance

Normally, the inverter needs no maintenance or calibration. Regularly inspect the inverter and the cables for visible damage. Disconnect the inverter from all power sources before cleaning. Clean the housing, cover and display with a soft cloth. Ensure the heat sink at the rear of the inverter is not covered.

12.1 Cleaning the contacts of the DC switch

Clean the contacts of the DC switch annually to extend its service life.

Perform cleaning by cycling the switch to "I" position and "O" position 10 times in a row. The DC switch is located at the lower left of the housing.

12.2 Cleaning the heat sink

CAUTION

Risk of injury due to hot heat sink

- The heat sink may exceed 70°C during operation. Do not touch the heat sink during operation.
- Wait approx. 30 minutes before cleaning until the heat sink has cooled down.
- Ground yourself before touching any component.

Clean the heat sink with compressed air or a soft brush. Do not use aggressive chemicals, cleaning solvents or strong detergents.

For proper function and long service life, ensure free air circulation around the heat sink.

13 Dismantling the Inverter

Below is the procedure for dismantling the inverter out of service:

- ① Disconnect the inverter from all voltage sources (see Section 8).
- ② Remove the AC cable from the inverter.
- ③ If a network cable is connected, remove the cable from the inverter.
- ④ If other cables (e.g. smart meter connection) are connected, remove them from the inverter.
- ⑤ If a WiFi antenna is connected, remove them from the inverter.
- ⑥ Reclose the cover and tighten the 4 fixing screws.

CAUTION

Risk of burns due to hot housing and heat sink

- Wear protective gloves before lifting the inverter.

- ⑦ Unscrew and remove the 2 blocking screws located on the sides of the inverter.
- ⑧ Raise the inverter to remove it from the wall bracket.
- ⑨ Remove the wall bracket.

If the inverter is disassembled due to a device replacement, it is not necessary to dismantle the wall bracket.

- ⑩ If the inverter is to be stored or shipped in packaging, pack the inverter. Use the original packaging or packaging that is suitable for the weight and dimensions of the inverter and then seal them by using adhesive tape.

14 Disposing the Inverter

If Zeperlution service life expires, dispose of the packaging and replaced parts according to the local rules about disposing electronic waste.

Do not dispose the inverter with normal domestic waste.



WEEE designation

Do not dispose of the inverter together with the household waste but in accordance with the disposal regulations for electronic waste applicable at the installation site.

15 Warranty

The factory warranty card is enclosed with the package, please keep well the factory warranty card. Warranty terms and conditions can be downloaded at www.zeversolar.com/service/warranty/ if required. When the customer needs warranty service during the warranty period, the customer must provide a copy of the invoice, factory warranty card, and ensure the type label of the inverter is legible. If these conditions are not met, Zeversolar has the right to refuse to provide with the relevant warranty service.

16 Contact

If you have any technical problems concerning our products, please contact zegersolar service. We require the following information in order to provide you with the necessary assistance:

- Inverter device type
- Inverter serial number
- Type and number of connected PV modules
- Error code
- Mounting location
- Warranty card

Zegersolar Factory Warranty

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

Zegersolar Service Contact

Our regional services contact information can be found at :

<https://www.zegersolar.com/service/customer-interaction-center/>

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