

Thank you for choosing the reliability of AEG grid-tied solar inverters! AEG grid-tied solar inverters are tested and approved by acknowledged independent certification authorities and can only be installed by qualified professional companies.

1. ICONS

Icon	Meaning	Icon	Meaning	Icon	Meaning
	Safety warning: electrical hazard		This side up		EU WEEE mark. Do not dispose of product as household waste
	Wait at least 5 minutes after disconnecting the inverter before touching internal parts		Max. 4 identical packages can be stacked		Only use the original AC / DC connectors provided
	Product surface may become hot, do not touch		Fragile		Warning - Risk of electric shock
	For proper use read the installation manual		Keep dry		Planning recommendations
	Physical injury or product damage may occur in case of noncompliance with the requirement.		Recyclable materials		CE marking. The product complies with the CE directives

2. SAFETY

All AEG PV grid-tied solar inverters are tested according to international safety regulations. AEG PV inverters should be installed, maintained, connected and operated by qualified technicians in compliance with all local and national applicable standards, codes and regulations issued by the relevant power suppliers, companies and authorities. Installers bear the risk of all injury that might occur during installation including, without limitation, the risk of electric shock. Check and follow all safety precautions specified even for the other components of the system. Keep children away from the inverter and from the installation site.

2.1 Handling safety

Look for any visible damage to the package or the product itself. Double-check the order information and the product nameplate to ensure the products are of the ordered type. Check that the package contents are not damaged and that all items listed are present (see 3. Package Content). Should you find any issues, contact the shipping company and / or your supplier as soon as possible before attempting product installation. Take note of the indications displayed on the product packaging.

Please make sure that the inverter and its components are properly packed and sealed to ensure that the IP65 protection degree is maintained. The inverter should be installed possibly latest one day after unboxing. Should this not be the case, please re-seal all unused terminals and ensure that the inverter is stored in a dry, clean place and not exposed to water or dust.

2.2 Installation and maintenance safety

Installing solar photovoltaic systems requires specialized skills and knowledge and can only be performed by qualified technicians. Handling or changing inverter components without following the instructions in this manual may cause personal injury, cause product damage, damage the built-in protections of the inverter and ultimately void the warranty.

Only use original parts and components. It is not allowed to open the inverter's front cover. Installers should not replace any components of the inverter except the DC/AC connectors. Any further repair work should be carried out by the AEG Technical Service. To avoid damaging the product and voiding the warranty, please ensure that the output voltage of the PV array to be connected is lower than the maximum rated input voltage of the inverter. The solar PV modules in the PV array are required to comply at least with IEC 61730 class A rating. When exposed to sunlight, the PV array generates dangerous high DC voltages. Installers and operators should carefully follow the instructions in this manual when handling the inverter and avoid hazardous

actions that might result in life-threatening situations. The PV system is by default not grounded. The inverter must be grounded before operation. A photovoltaic system needs to connect an Arc Fault Detector on DC side.

To avoid electric shock during installation or maintenance, the DC input and AC output ports of the inverters must be disconnected. Wait at least 5 minutes before carrying out with installation or maintenance

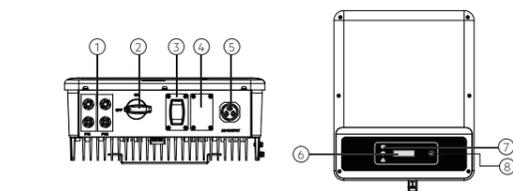
The electronic components of the inverters may be damaged by static electricity. Please take appropriate protective measures to prevent such damages from occurring and voiding the warranty.

Do not insert or pull the AC or DC terminals when the inverter is in operation.

To completely insulate the equipment, turn off the DC switch and AC breaker, and disconnect the DC and AC terminals. The inverter can exclude the possibility of DC residual currents to 6mA in the system, where an external RCD is required in addition to the built-in RCNU, type A RCD must be used to avoid tripping.

During operation, the temperature of some inverter components might exceed 60°C. Make sure that you do not touch the inverter while in operation so to avoid burns. Should you need to touch the inverter, allow it to cool down first.

3. PRODUCT OVERVIEW AND PACKAGE CONTENT



Nr.	Item
1	PV Input Terminals
2	DC Switch
3	WiFi/LAN Module Port (opt. RS485)
4	CT /DRED Function
5	AC Output Terminal
6	LCD Display
7	Indicator Lights
8	Button



*For RS485 communication only

4. INSTALLATION

4.1 Choosing the installation location

Select the installation place based on the following considerations:

1. Consider the weight and dimension of the inverter. **2.** The ambient temperature should be lower than 45°C to grant optimal inverter performance. **3.** The installation place should be well ventilated and sheltered from direct sunlight, rain and snow. **4.** Avoid installing the inverter close to flammable and explosive items, and close to sources of strong electromagnetic charges.

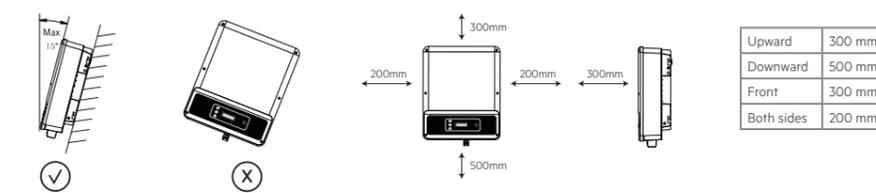


4.2 Installing the inverter

4.2.1 Installation details

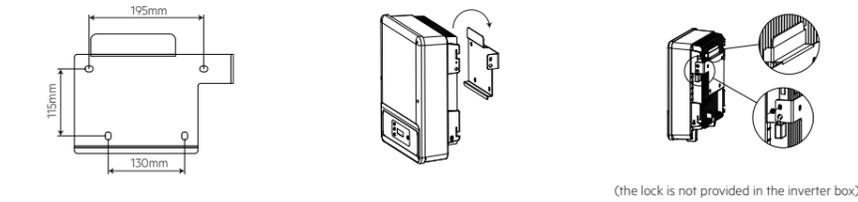
Take further into account the following aspects when installing the inverter: **1.** Choose the appropriate mounting method in terms of weight and dimension of the inverter. **2.** The inverter is best installed at eye level. This facilitates maintenance and allows the best visibility of product label, warnings, and LCD display. **3.** Install the inverter vertically or with a backward tilt within 15°. The inverter should not be tilted sideways. Do not install the inverter horizontally. The area of the connectors should point downwards.

4. Allow some clear spaces according to the below indications to grant heat dissipation and to facilitate dismantling:



4.2.2 Mounting procedure

1. Use the wall-mount bracket as guide and drill holes in the wall with Ø 10 mm and 80 mm depth. **2.** Fix the wall-mount bracket on the wall with the expansion bolts provided. **3.** Hold the inverter by the side groove; mount the inverter onto the wall-mount bracket.



4.3 Electrical connection

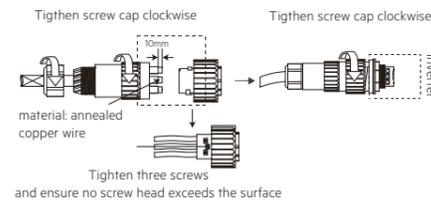
4.3.1 Grid connection (AC-side connection)

1. When connecting the inverter make sure to adjust the voltage and the frequency in compliance with the local grid regulations and product specifications. **2.** Add a breaker or fuse to the AC side. Please note that the maximum operation current should be more than 1.25 times of rated AC output current. **3.** The inverter's PE line should be connected to earth. Make sure the impedance of the neutral wire and of the earth wire is less than 10 Ω. **4.** Disconnect the breaker or fuse between the inverter and the utility. **5.** When laying the AC line make sure that the protective earthing conductor is not strained.

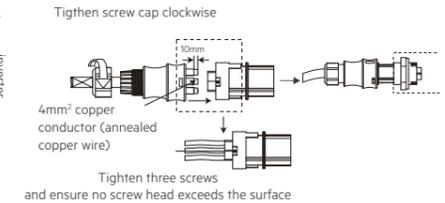
There are two AC connector brands compatible with the AEG inverters of this product series: VACONN and WIELAND. Choose one of these to connect the inverter to the grid.



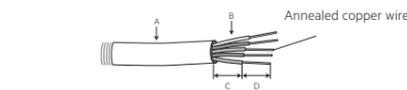
Installation of VACONN Series



Installation of VACONN Series



Cable specification of AC side



Label	Description	Value
A	Outer diameter.	10-12 mm
B	Conductor material sectional area	2.5-4 mm²
C	Bare wire length	approx. 10 mm

Neutral wire is blue, live wire is brown (preferred) or black and protective earth wire is yellow-green. Rotate (tightening torque: 0.6Nm) the connector of AC cable into the corresponding terminal.

4.3.2 AC circuit breaker and leakage current protection device

Please install an independent two-pole circuit breaker to protect the inverter and make sure it is safe to disconnect it from the grid. The inverter can exclude the possibility of DC residual currents to 6mA in the system; in addition to the built-in RCNU,

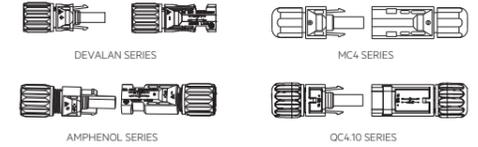
Inverter model	Recommended circuit breaker specifications
AS-IR02-3000-2 / AS-IR02-3600-2	25A
AS-IR02-4200-2 / AS-IR02-5000-2	32A
AS-IR02-6000-2	40A

an external RCD is required to ensure that the inverter system does not carry DC residual currents. To avoid tripping, RCD type A or type B must be used. It is not allowed that multiple inverters share a single circuit breaker. The integrated leakage current detection device of the inverter can detect external leakage current in real time. When the detected leakage current exceeds the limit, the inverter will promptly disconnect from the grid. If the leakage current protection device is installed externally, the leakage current value should be set to 300mA or higher.

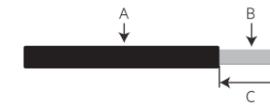
4.3.3 DC-side connection

1. Before connecting the PV strings, please ensure the connectors have the correct polarity. Incorrect polarity may cause permanent damage to the inverter. **2.** The open circuit voltage of the PV strings cannot exceed the maximum input voltage of the inverter. **3.** Only the DC connectors supplied in the package are suitable for use with the AEG inverter. **4.** The positive (=red) and negative (=black) pole of the PV string should not be connected to the PE wire (ground wire). Failing to comply with this instruction may cause damage to the inverter. **5.** For the AEG IR02-2 series, the minimum insulation resistance to the ground of the PV panels must exceed 19.3 kΩ (R=580/30mA). If this minimum resistance is not met you might incur in shock hazard.

There are four types of compatible DC connectors: DEVALAN, MC4, AMPHENOL H4 and QC4.10 series.



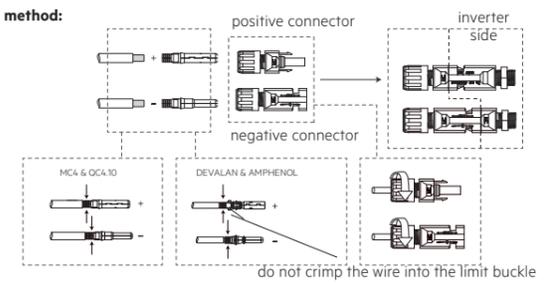
DC cable specification:



Label	Description	Value
A	Outer diameter of wire stock	4-5mm
B	Conductor material sectional area	2.5-4 mm²
C	Bare wire length	approx. 7 mm

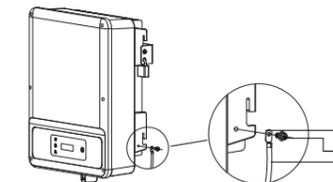
Dedicated PV cables should be used for DC connection.

DC connector installation method:



4.3.4 Earth Terminal Connection

The inverter is equipped with earth terminal. The earth cable has to be connected to ground. All conductive exposed metal parts of the equipment and other enclosures in the PV power system must be grounded.



Label	Description	Explanation
A	Cold-press terminal	
B	Screw	M5*14 (1-1.5Nm)
C	Yellow and green cable	max. 10 mm²

4.4 Communication connection

4.4.1 WiFi Communication

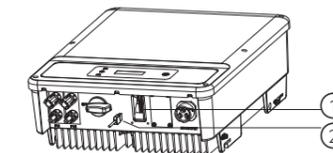
WiFi communication requires the installation and configuration of the WiFi communication module. The WiFi communication module is already pre-installed in your AEG inverter IR02-2 series. For the configuration of the WiFi communication module, please refer to the the „WiFi Configuration Guide“ provided.

4.4.1.1 WiFi Reset and WiFi Reload

The WiFi Reload function is used to change the WiFi configuration to the default value. After activating the function please configure the WiFi again. Short press the button until the LCD displays „WiFi Reset“, then long press (2s) the button until the LCD displays „WiFi Resetting“. Stop pressing and wait for the screen to display „WiFi Reset OK“ or „WiFi Reset Failed“. Short press the button until the LCD displays „WiFi Reload“, then long press (2s) the button until the LCD displays „Wi-Fi Reloading“. Stop pressing and wait for the screen to display „Wi-Fi Reload OK“ or „WiFi Reload Failed“.

4.4.2 USB Communication Connection

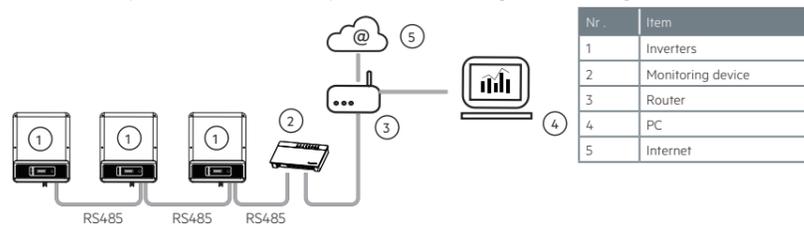
This function is for Service personnel use only for the purposes of firmware upgrade and parameter calibration.



Step 1: Remove RS485 waterproof assembly;
Step 2: Insert the USB data cable

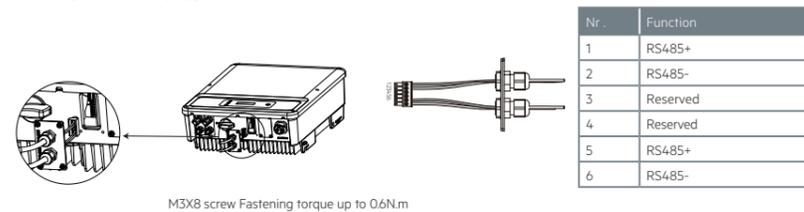
4.4.3 RS485 Communication

This function only applies to inverters with RS485 (the default Communication Mode of AEG inverters is WiFi). The RS485 port is used to connect several inverters into a system. This can be achieved with the dedicated monitoring device (not provided in this box. Please contact your AEG reseller for availability). The maximum total length of all connecting cables should not exceed 800 m.



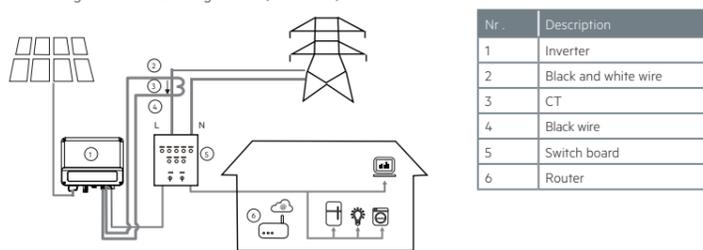
RS485 Communication cable assembly

The below procedure only applies to inverters with RS485.



4.4.4 Export Power Limit (CT device) / DRED / Remote Shutdown Connection scheme

The methods of connecting the Power Limiting device (CT device) are described in the below scheme



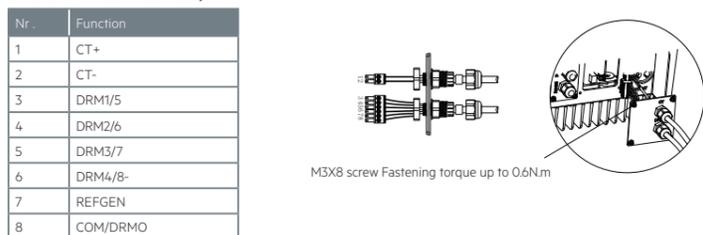
Notes:

The 2-pin terminal is used to make connection to CT device. You can find it in the accessory bag.
The 6-pin terminal is used to make connection to DRED / remote shutdown device. If DRED / remote shutdown device is not available, please keep it unconnected.

Connection Procedure:

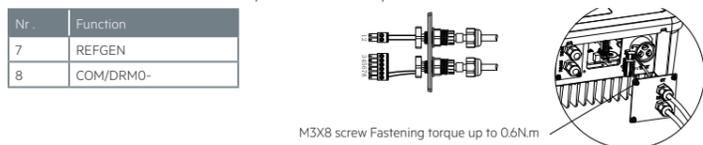
- Put the cable through the components in this order: screw cap, one-hole sealing ring, insulation body and sheet metal parts.
- Pull out the 6-pin terminal from the socket in the cabinet and take off the resistor which is fixed in it. Cable should be connected as in the following figure.
- Insert the green terminal into the corresponding interior terminal of the inverter. Try to pull out the cable softly to check the cable if it is tightend or not.
- Lock the sheet metal parts onto the box and tighten the screw cap.

Dred and CT cable assembly



Remote Shutdown and CT cable assembly:

The remote shutdown function is only available for Europe. I



- Compatible DRED commands are DRM0, DRM5, DRM6, DRM7, DRM8.
- Please set up the Power Limit function in the local setting page once all connection steps are done.
- CT is directional. The CT clip should be locked tightly. White / Black cable should be connected to Line 2, black cable should be connected to Line 1. Tighten them with a screwdriver. Make sure that CT cables are connected to the right output phase lines of inverter when in use.
- If CT is not well connected, the message „CT disconnected“ will show on the inverter display. In the case of reverse connection of the CT, the message „CT reverse“ will show on the inverter display when the inverter is connected to the grid.

4.4.5 Earth Fault Alarm

In compliance with section 139 of IEC62109-2, the AEG IRO2-2 inverter series is equipped with an earth fault alarm. When an earth fault occurs, the fault indicator on the LED panel on the front of the inverter will turn on.

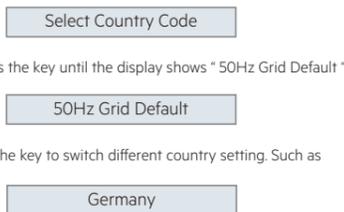
4.4.6 The AEG Monitoring Portal

To monitor your AEG inverter you can rely on the AEG Monitoring Portal. Go to www.aeg-industrialsolar.de/solar-inverters (section: AEG Inverter Monitoring) and follow the instructions there for the App download. Please note that the App itself is subject to update without notification.

5 SYSTEM OPERATION

5.1 Set the country-specific Safety parameters

Turn on the DC power. The first time the LCD screen shows the message „Configure Safety“.



If there is no exact country code available for the desired country, please choose „50Hz Grid Default“ or „60Hz Grid Default“ accordingly. If there is no further input, the system will save the country in the settings and the related parameters will be deployed.

5.2 Set the time

From the first level „Set Language“ menu, short press the button to enter the „Set Time“ menu. Long press (2s) the button to enter the second level menu. The initial display is „2000-00-00 00:00“. The first four digits represent the year (e.g. 2000-2099); the fifth and sixth digits represent the month (e.g. 01-12); the seventh and eighth digit represent the date (e.g. 01-31). The remaining digits represent the time. Short press the button to increase the number displayed in the current digit position. Long press to move the cursor to the next position. If there is no input for 20 seconds, the inverter will save the time, the LCD display will automatically return to the main menu and the backlight will switch off.

5.3 Auto-Test

This function is only available for Italy and is disabled by default. To activate it, short press the button until the LCD screen displays „Auto Test“, and long press (2s) the button to initiate the function. Before starting the test, choose one of the two Auto-Test type: „Remote“ and „Local“. The „Remote“ default setting is 1 and cannot be modified. The „Local“ default setting is 0, which can be set to 0 or 1 by calibrating the software. If „Local“ is set to 1, the testing order will be 59.S1, 59.S2, 27.S1, 81>S1, 81<S1. Otherwise, the testing order will be 59.S1, 59.S2, 27.S1, 81>S2, 81<S2. After AC connection, the auto-tests will begin when the relays have successfully closed. The output power will be zero and the LCD display will show the information about testing. If the sub test finishes and the LCD shows Test Pass, the inverter relay brakes off and the inverter reconnects to the grid automatically in compliance with CEI 0-21 requirements. Following, the next test will start. If the sub-test fails, the relay will break off and the inverter will enter the waiting mode. To try the test again, the inverter needs to be completely powered off and

restarted. All the test data will be stored in the internal memory of the inverter. For future reference: short press the key to access the Autotest Result menu, then long press the key (2s) to view the test reports.

5.4 Adjusting special setpoints

It is possible to adjust special setpoints such as trip points, trip times, reconnect times, active and inactive QU curves and PU curves. These are only adjustable through specific software. Should you need to adjust these setpoints, please contact the AEG Technical Support.

6 TECHNICAL PARAMETERS

	AS-IR02-3000-2	AS-IR02-3600-2	AS-IR02-4200-2
PV String Input Data			
Max. DC Input Power (W)	3900	4680	5460
Max. DC Input Voltage (V)	600	600	600
MPPT Range (V)	80-550	80-550	80-550
Start-up Voltage (V)	120	120	120
Nominal DC Input Voltage (V)	360	360	360
Max. Input Current (A)	11/11	11/11	11/11
Max. Short Current (A)	13.8/13.8	13.8/13.8	13.8/13.8
No. of MPP Trackers	2	2	2
No. of Input Strings per MPP Tracker	1	1	1
AC Output Data			
Nominal Output Power (W)	3000*	3680*	4200*
Max. Output Apparent Power (VA)	3000	3680	4200
Nominal Output Voltage (V)	220/230	220/230	220/230
Nominal Output Frequency (Hz)	50/60	50/60	50/60
Max. Output Current (A)	13.6	16	19
Output Power Factor	-1 (Adjustable from 0.8 leading to 0.8 lagging)		
Output THDI (@Nominal Output)	<3%	<3%	<3%
Efficiency			
Max. Efficiency	97.8%	97.8%	97.8%
European Efficiency	97.5%	97.5%	97.5%
Protection			
Anti-islanding Protection	Integrated		
Input Reverse Polarity Protection	Integrated		
Insulation Resistor Detection	Integrated		
Residual Current Monitoring Unit	Integrated		
Output Over Current Protection	Integrated		
Output Short Protection	Integrated		
Output Over Voltage Protection	Integrated		
General Data			
Operating Temperature Range (°C)	-25-60		

Relative Humidity	0-100%
Operating Altitude (m)	±4000
Cooling	Natural Convection
User Interface	LCD & LED
Communication	WiFi (optional: RS485)
Weight (kg)	13
Size (Width*Height*Depth mm)	354*433*147
Protection Degree	IP65
Night Self Consumption (W)	<1
Topology	Transformerless
Certifications & Standards	
Grid Regulation & Safety Regulation	Visit www.aeg-industrialsolar.de for more information

	AS-IR02-5000-2	AS-IR02-6000-2
PV String Input Data		
Max. DC Input Power (W)	6500	7200
Max. DC Input Voltage (V)	600	600
MPPT Range (V)	80-550	80-550
Start-up Voltage (V)	120	120
Nominal DC Input Voltage (V)	360	360
Max. Input Current (A)	11/11	11/11
Max. Short Current (A)	13.8/13.8	13.8/13.8
No. of MPP Trackers	2	2
No. of Input Strings per MPP Tracker	1	1
AC Output Data		
Nominal Output Power (W)	5000*	6000*
Max. Output Apparent Power (VA) [1]	5000	6000
Nominal Output Voltage (V)	220/230	220/230
Nominal Output Frequency (Hz)	50/60	50/60
Max. Output Current (A)	22.8	27.3
Output Power Factor	-1 (Adjustable from 0.8 leading to 0.8 lagging)	
Output THDI (@Nominal Output)	<3%	<3%
Efficiency		
Max. Efficiency	97.8%	97.8%
European Efficiency	97.5%	97.5%
Protection		
Anti-islanding Protection	Integrated	
Input Reverse Polarity Protection	Integrated	

Insulation Resistor Detection	Integrated
Residual Current Monitoring Unit	Integrated
Output Over Current Protection	Integrated
Output Short Protection	Integrated
Output Over Voltage Protection	Integrated
General Data	
Operating Temperature Range (°C)	-25-60
Relative Humidity	0-100%
Operating Altitude (m)	±4000
Cooling	Natural Convection
User Interface	LCD & LED
Communication	WiFi (optional: RS485)
Weight (kg)	13
Size (Width*Height*Depth mm)	354*433*147
Protection Degree	IP65
Night Self Consumption (W)	<1
Topology	Transformerless
Certifications & Standards	
Grid Regulation & Safety Regulation	Visit www.aeg-industrialsolar.de for more information

*For CEI 0-21 Nominal Output Power AS-IR02-3000-2 is 2700 , AS-IR02-4200-2 is 3800 , AS-IR02-5000-2 is 4540 , AS-IR02-6000-2 is 5450. Technical specifications are subject to change without notice. For the latest datasheet, visit www.aeg-industrialsolar.de

Overvoltage Category Definition

Category I: applies to equipment connected to a circuit where measures have been taken to reduce transient overvoltage to a low level.
Category II: applies to equipment not permanently connected to the installation. For example, appliances, portable tools and other plug-connected equipment.
Category III: applies to fixed downstream equipment, including the main distribution board. For example, switchgear and other equipment in an industrial installation.
Category IV: applies to equipment permanently connected at the origin of an installation (upstream of the main distribution board). For example, electricity meters, primary overcurrent protection equipment and other equipment connected directly to outdoor open lines.

Moisture Category Definition

Moisture parameters	Level		
	3K3	4K2	4K4H
Temperature Range	0-+40°C	-33-+40°C	-20-+55°C
Humidity Range	5%- 85%	15%-100%	4%-100%

Environment Category Definition

Outdoor : the ambient air temperature is -20-50°C. Relative humidity range is from 4% to 100%, applied to PD3.
Indoor unconditioned: the ambient air temperature is -20-50°C. Relative humidity range is from 5% to 95%, applied to PD3.
Indoor conditioned: the ambient air temperature is 0-40°C. Relative humidity range is from 5% to 85%, applied to PD2.

Pollution Degree Definition

Pollution degree 1: No pollution or only dry, non-conductive pollution occurs. The pollution has no influence. Pollution degree 2: Normally only non-conductive pollution occurs. However, a temporary conductivity occasionally caused by condensation must be expected. Pollution degree 3: Conductive pollution occurs. Or dry, non conductive pollution becomes conductive due to condensation, which is expected. Pollution degree 4: Persistent conductive pollution occurs. For example, the pollution cause by conductive dust, rain and snow.

7. CONTACTS

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