

ZKANRUI	specification number ZKAR2021005	PV Connector PV-ZKC4 Specification Manual
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PV-ZKC4 Connector

The appearance of the product graph



Product overview

PV-ZKC4 is a photovoltaic connector independently developed by our company, which is composed of metal parts and insulating parts. It connects multiple solar cell modules into a system, which has the characteristics of high stability and high sealing. Meanwhile, it is resistant to various environmental and climate changes and has high electrical safety performance, thus ensuring the DC circuit connection of commercial, industrial and residential roof photovoltaic devices.

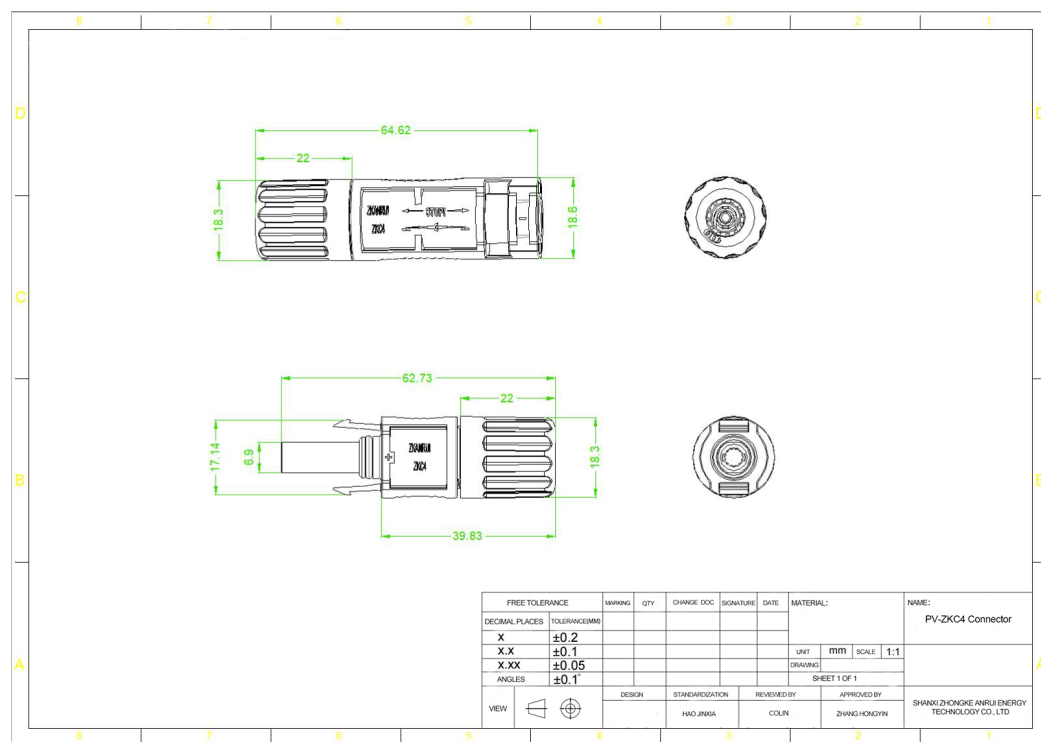
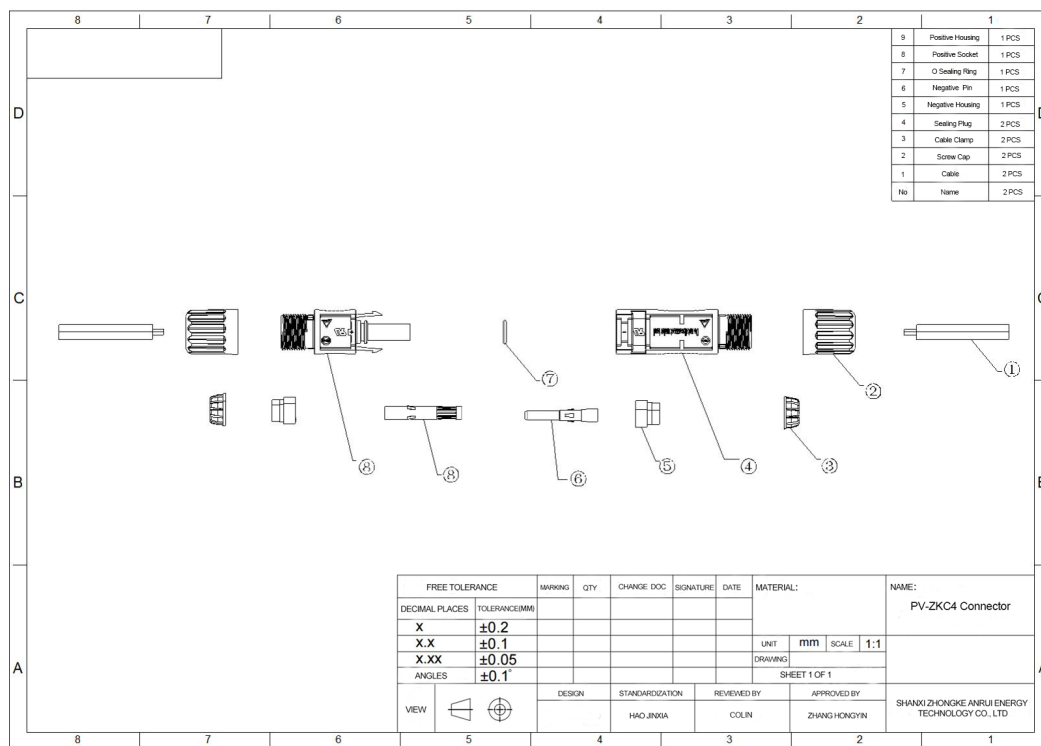
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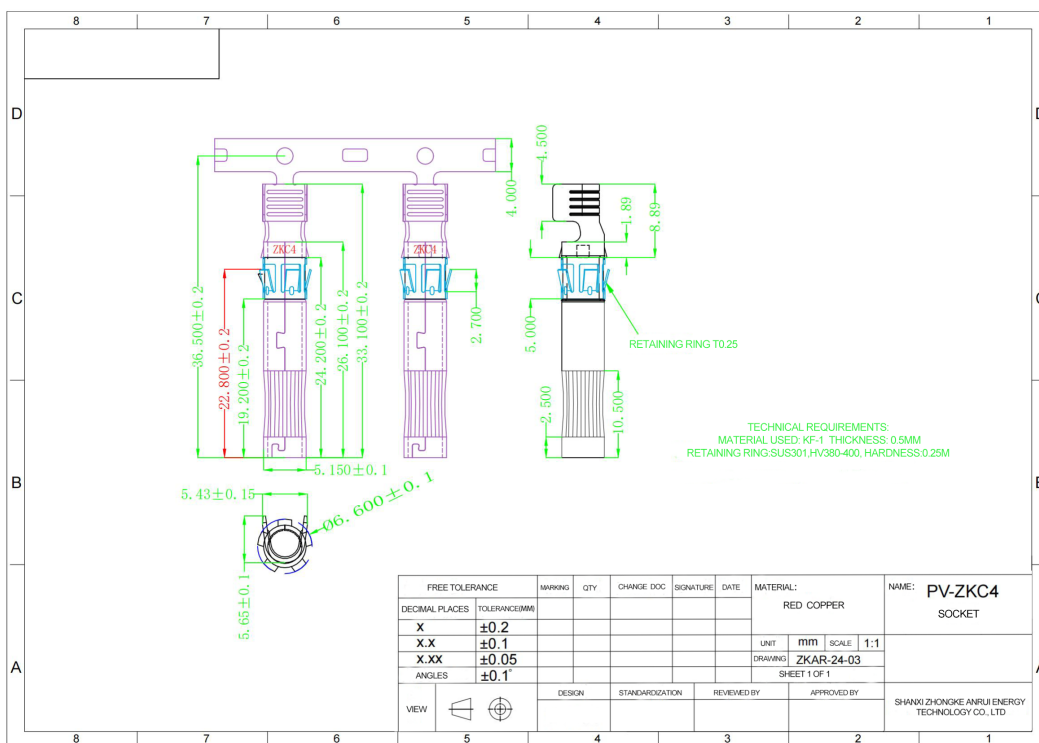
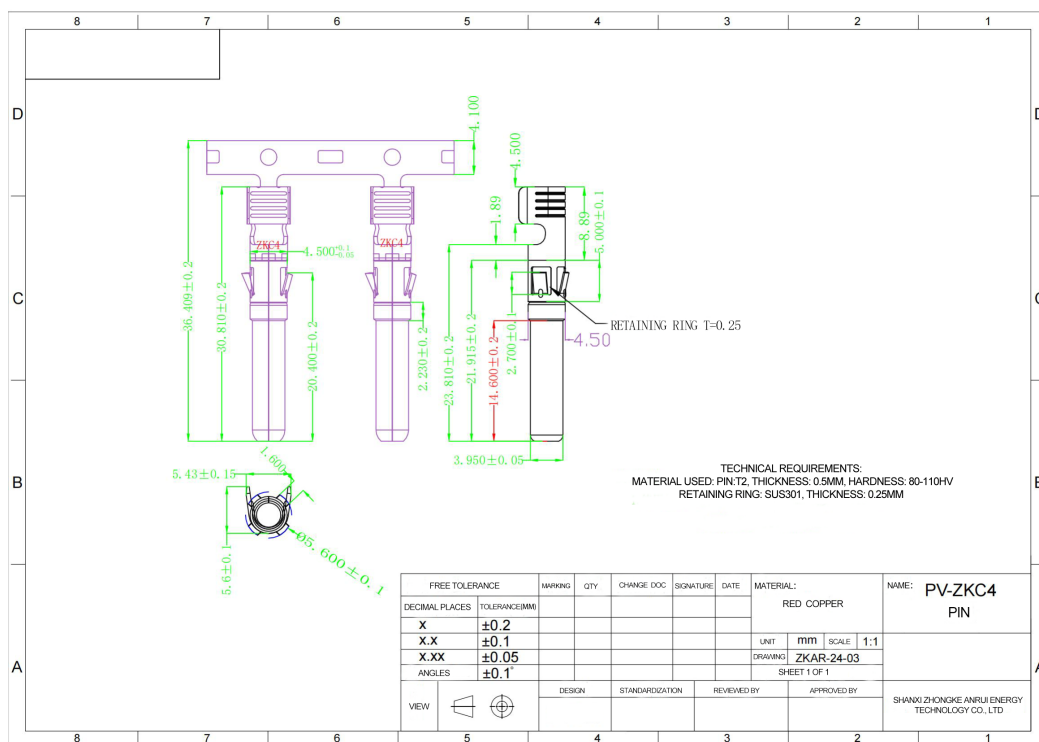
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Size of product graphs

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Main technical specifications

Project	Performance index		Notes
Type	PV-ZKC4		
Rated voltage (DC)	2000	V	IEC
Rated current	41	A	
Contact resistance	≤0.5	mΩ	
Temperature range	−40℃~+85	℃	
Breaking capacity	≥80	N	
Plug life test	50	times	
Protection level	IP65/IP68 (1m,1h)		
Safety Class	Class II		
Fire rating	UL94 V-0		

BOM List

NO.	Object	Type	Manufacturer	Quantity	Notes
1	Positive housing	PV40Z	Asahi Kasei Corp.	1 pcs	
2	Negative housing	PV40Z	Asahi Kasei Corp.	1 pcs	
3	Screw Cap	A3XZG5	BASF SE	2 pcs	
4	Cable Clamp	FR370	Asahi Kasei Corp.	2 pcs	
5	Sealing Plug	Silicone rubber	Ningbo Yucheng	2 pcs	
6	O Sealing Ring	Silicone rubber	Ningbo Yucheng	1 pcs	
7	Negative Pin	Copper, tinned	Ning Bo Hongxuan	1 pcs	
8	Positive Socket	Copper, tinned	Ning Bo Hongxuan	1 pcs	

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Installation Instructions

Please follow the following instructions and select the tools specified in these instructions, otherwise the technical specifications may not meet the requirements of the standard. In addition, these instructions can help avoid potential hazards that may lead to personal injury and product damage.

1. During self-installation, if not using the parts and tools that are specified by our company, or if the preparation and installation operations are ignored, we will not guarantee the product safety and the consistency of technical parameters.
2. To prevent electric shock, the connector must be disconnected from the power supply during assembly and disassembly.
3. The terminal product must provide anti-electric shock function.
4. PVC cables are not recommended.
5. The plug connector cannot be pulled out under load. Please turn off the DC/AC frequency converter or turn on the DC-AC circuit breaker to make the connector in unloaded state, then it can be plugged in and out with power within the allowable range.
6. It is recommended not to use tin-free cables, because the contact resistance of the crimping site may exceed the allowable value after the copper wire of the cable is oxidized.
7. Protective caps must be used for disconnected connectors to prevent dust and water from entering.
8. The waterproof grade of plug-in parts is IP68. They cannot be used underwater for a long time. Do not place the connector on the roof surface.
9. Products should not be used in environments containing hydrocarbons, phenols, ketones, ammonia, etc. that will corrode plastics. During installation, it is forbidden to add or apply any grease and lubricant to the connector. (See Schedule of chemical resistance)

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Machine Assembly Process

1. Strip



Strip size: $7 \pm 0.5\text{mm}$

2. Rivet

Cable specification	Riveting height	Riveting width	Compression ratio
4mm^2	$2.3 \pm 0.1\text{mm}$	$4.1 \pm 0.1\text{mm}$	$70\% \leq x \leq 90\%$

3. Harness Assembly



Insert the riveted plug into the socket or the insulating sleeve of the plug until it engages. Gently pull the wire to check whether the metal parts are firmly engaged.

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4. Nut Assembly

NO.	Wire diameter (mm)	Interstice in management(mm)	Reference torque(N*m)	Notes
1	$5 \leq OD < 6$	$0 < X \leq 1.0$	$3 \pm 0.5 \text{ N} \cdot \text{m}$	Please calibrate the torque of the equipment before production to Better Meet the Requirements of gap management and control.
2	$6 \leq OD < 6.6$			
3	$6.6 \leq OD < 7.2$			

Notes:Before production, please calibrate the torque of the equipment to better meet the gap control requirements.

Manual Assembly Process

1. Tool requirements

(1) Wire stripping pliers



Type	Strip Scope	
4.0/12	4.0mm ²	20AWG

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(2) Riveting pliers



Lettering	Rivet Scope	
4.0/12	4.0mm ²	12AWG



(3) Plastic wrench

1 Set=2 Pcs

2. Assembly step



(1) Strip wires

Strip off the cable insulation, $L=7\pm0.5\text{mm}$.

Be careful not to cut off the core under the insulation.



(2) Rivet



The concentricity of metal parts and cable wires shall be ensured.
The pull force between the cable and the metal part after riveting needs to be larger than or equal to 310N.

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(3) Insert

Insert the riveted plug into the socket or the insulating sleeve of the plug until it engages. Gently pull the wire to check whether the metal parts are firmly engaged.



(4) Install the nut

Pre-tighten by hand, and then tighten the cable nut with a plastic wrench (refer to chapter Nut Assembly). When screwing the nut, ensure that the cable is concentric with the nut. The connector nut is removable. The original plastic wrench can be used for on-site assembly, not for batch assembly in the factory.

Plug and unlock the connectors

1. Plug Connectors



Plug the positive and negative poles of the connector until they engage. Pull gently to check whether they are firmly engaged.

2. Unlock Connectors

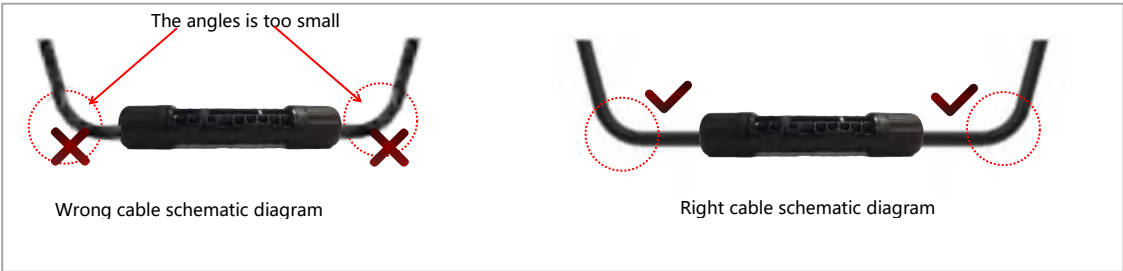


This plug connection can only be unlocked using a plastic wrench tool.

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Cable status

1. Cable wiring



Note: please refer to the cable manufacturer's detailed requirements for minimum bending radius.

2. Engaged state



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Annex

1.Schedule of chemical resistance

Category	Substance	Manufacturer	Critical Strain 23℃	Grade
Adhesive	KE45W/KE4828W	Shin-Etsu chemical	>1.0	A
	TSE382W/TSE392W	Momentive	>1.0	A
	PV804/PV8101	Dow Corning	>1.0	A
	APF125	Wacker Chemical	>1.0	B
	VHB/TAPE 4941	3M	>1.0	A
	Chemlok	LORD	0.2-0.5	C
Filler	PV7010	Dow Corning	>1.0	A
	KE200/CX200	Shin-Etsu Chemical	>1.0	A
	KE210F/CAT 210	Shin-Etsu Chemical	>1.0	A
	RAKUSIL A/B	Germany Rampf	>1.0	A
	VU4459/41 SVHF	Germany Petersth	0.2-0.5	C
Grease	Z260/A7002	/	>1.0	A
Surfactant	Charmy V quick	Kao	>1.0	A
Thermal Compound	SC102 compound	Dow Corning	>1.0	A
Release Agent	KF-96SP	Shin-Etsu Chemical	0.2-0.5	C
	PANDO 39D	Sanken Chemical	<0.2	D
	Telicoat S-6	Kyokuto Yuka	0.2-0.5	C
	Snowwhit EC	Netherlands	0.2-0.5	C
	Telicoat A	Kyokuto Yuka	>1.0	A
Rust Inhibitor	Antikor RS Aerosol	technik Gmbh	0.2-0.5	C
	D1 MIST	Yamaichi Chemical	0.2-0.5	C
	Barrier Guard	Yamaichi Chemical	<0.2	D
	TSP Spray	Sumikin	<0.2	D
	WD-40	WD-40	0.5-1.0	B
Tape Adhesive	CEMEDINE SuperX No.8008	Cemedine	0.5-1.0	B
	CEMEDINE SuperX No.8008Y6	Cemedine	>1.0	A
	cemedine superX SX720B	Cemedine	0.2-0.5	C
	Chemlok 487A/B	LORD	<0.2	D
	Chemlok 7701	LORD	<0.2	D

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Alkyd alkali	Methanol	/	>1.0	A
	Ethyl alcohol	/	>1.0	A
	Isopropyl alcohol	/	0.5-1.0	B
	Ethylene glycol	/	0.5-1.0	B
	25% Ammonium water	/	>1.0	A
	50% Sulfuric acid solution	/	0.5-1.0	B
	Sodium chloride solid	/	0.5-1.0	A
	60% Phosphoric acid solution	/	>1.0	A
Ketones	Acetone	/	<0.2	D
	Methylethyl ketone	/	<0.2	D
Hydrocarbon	Methyl	/	<0.2	D
	Dimethyl	/	<0.2	D
	Cresol	/	0.5-1.0	B
Oils	DiaCut	Oelheld	0.5-1.0	B
	Oily sealing agent	/	<0.2	D
	Engine oil	/	<0.2	D
	Base oil	/	<0.2	D
	Kerosene	/	<0.2	D
	Gasoline	/	<0.2	D
	Varnish	/	<0.2	D
	Punching oil	/	<0.2	D
	Cutting oil	/	<0.2	D
	Heat transfer oil	/	<0.2	A
	Machine oil	/	<0.2	D
	High-temperature grease	/	<0.2	A
	Dry film lubricant	/	<0.2	A
Other	Hand cream	/	0.5-1.0	B
	Vaseline	/	>1.0	A
	Olive oil	/	0.5-1.0	B
	Butter	/	0.2-0.5	C
	Margarine	/	0.2-0.5	C
	Soybean Oil	/	0.2-0.5	C

2. Description of the critical point

Critical Stress (%)	Description	Rating
> 1.0	A secondary factor in cracking	A
1.0-0.5	Basically, in stress-concentrated areas, there will be some cracking. Particular attention needs to be paid to the use of chemicals	B
0.5-0.2	There is a risk of cracking, whether static or dynamic stress is present. Particular attention should be paid to avoiding contact with chemicals	C
< 0.2	Exposure to chemicals has a high risk of cracking	D

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Disclaimer of Connectors

Our company will not be liable for any problems and losses caused by any of the following circumstances.

1. Product transportation and storage

1.1 During transportation and storage, products shall not be stored together with relevant chemicals in the "schedule of chemicals resistant", which can pollute these chemicals;

1.2 During the transportation and storage of products, do not put too much pressure on the products, and do not damage the products by impacting or other acts;

1.3 The products shall be stored at normal temperature during transportation and warehouse, and attention shall be paid to protection from light, water and dust to avoid reducing the performance of the products. Special attention shall be paid to the site of the power station.

1.4 The normal storage time of the product is 2 years.

2. Product installation and use environment

2.1 The normal working ambient temperature of the product is - 40 ~ + 85 °C;

2.2 The on-site installation of products shall be carried out in accordance with the "installation instructions" of "Zhongke Anrui";

2.3 The product must wear a dust cap before leaving the factory if the product is used in coastal, desert and other areas with a lot of dust;

2.4 When the product is used on the roof power station, the connector cannot be directly placed on the roof surface.

3. See "schedule of chemical resistance" for the compatibility between products and chemicals.

4. When the connector is not coupled, the product will not meet any IP protection level and cannot be used normally.

4.1 The product meets the requirements of IP68 protection grade after insertion, but it cannot be placed underwater or on the roof for a long time.

4.2 The connector shall not be placed outdoors for a long time without insertion, which may cause corrosion of metal parts and reduce the performance of the connector.

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4.3 If the connector cannot be inserted in time during outdoor installation and use, please protect the connector, and insert the "dust cap" on the connector port to prevent the connector from being polluted by water and dust, which will affect the product performance.

5. During the installation and use of the connector, the connector shall not be excessively collided or dragged on the grass and ground, etc. Prevent the connector from being polluted before use and reduce the product performance.

6. During the maintenance of the product, only professional maintenance personnel or trained personnel can enter the maintenance within 1.2m distance from the product space.

7. When repairing the product use tools to touch the product, and the minimum distance between the human body and the product must be at least 60mm.

8. Connector mating

8.1 The "Zhongke Anrui" brand connector must be plugged into the positive and negative poles of the "Zhongke Anrui" brand connector, and cannot be plugged into other brand connectors in the market.

8.2 If the customer wants to plug in the positive and negative terminals of connectors of other brands, please contact us in advance.

The final interpretation right of this exemption clause belongs to "Shanxi Zhongke Anrui Energy Technology Co., Ltd."

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