



CHUNG KWANG

ELECTRIC WIRE & CABLE CO., LTD.

PV Connectors and Cables Series





CHUNG KWANG ELECTRIC WIRE AND CABLE CO., LTD.

WE ARE 45 YEARS EXPERIENCE PROFESSIONAL MANUFACTURERS.

Chung Kwang Electric Wire & Cable was founded in 1979 with more than 40 years of experience in the wire & cable industry. OEM/ODM Customers design their cables based on industry and appliance requirements.

WE HAVE ESG CERTIFICATION AND MULTI-INTERNATIONAL CERTIFICATES.





PROFESSIONAL PRODUCTION LINE

Manufacturing Capabilities.

1. AC Charging Connector and Cables for EV
 - (1) One Connector / Two Connectors EV assembly
 - (2) Portable EV Charge Set
 - (3) EVJE, EVJT, EVE, EVT (4) EV Inlet
2. PV Connectors and Cables
 - (1) PV Connectors (2) PV Cables
3. Power Supply Cords
 - (1) Europe Standard (2) USA Standard
 - (3) Japan Standard
4. Underground Low-Energy Circuit Cables
 - Low Voltage Landscape Lighting Cable
5. Submersible Pump Lines
 - (1) Submersible Pump Cables
 - (2) Winding Wire for Submersible Pump
6. Industrial Cables
 - TC, TC-ER, DG





PV Connectors and Cables Series

Cables for solar power applications.



Advantages

- Made in Taiwan.
- LSZH environment friendly products for IEC/EN standard.
- Cross-linked insulation compound.
- High temperature resistant, the materials do not melt or flow.
- Good cold flexibility.
- Very long life cycle.
- Compatible to all popular connectors.
- The package and length can be modified according to the requirements of customers.



PV Wire (UL Specification)

Model No. : UL 4703

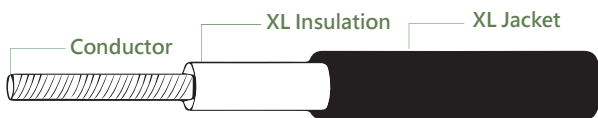
Construction

Conductor : Tinned annealed copper strand, Soft Bare Copper strand

Insulation : 90 °C XL (XLPE)

Jacket : 90 °C XL (XLPE)

Size : 18 AWG ~ 4/0 AWG



Approval and Technical specification

Approvals : UL 4703 PV Wire

Certificate No. : E326079

Rated voltage : 600 V, 1000 V, 2000V

Temperature Range : -40 °C up to + 90 °C

Rated temperature : 90 °C wet or dry

Material properties

Flame performance : UL VW-1

Sunlight Resistance : 720 hrs

Long-term insulation resistance in water : UL 44

RoHS and REACH compliant

Advantages

Cross-Linked material, Weatherproof, Great Endurance for humid Environment, Ozone Resistance, UV Resistance, Acid and Alkaline Resistance, Flexibility.

Applications

- A solar PV cable is the interconnection cable used in photovoltaic power generation system, to interconnect solar panels and other electrical components like junction boxes, inverters and batteries of a photovoltaic system and is designed to be UV resistant and weather resistant.
- Power wiring of grounded or ungrounded photovoltaic power systems.



PV Wire (UL Specification)

Model No. : UL 4703

Constructions and dimensions of UL 4703 1000V, 2000V

Size(AWG/NO. of conductors)	Nos and Dia. of wire (No. / mm)	Core No.	Insulation Thickness(mm)	Jacket Thickness(mm)	Cable Overall Diameter(mm)
18	16 / 0.254	1 C	1.14	0.76	4.98 ± 0.15
16	26 / 0.254	1 C	1.14	0.76	5.30 ± 0.15
14	41 / 0.254	1 C	1.14	0.76	5.68 ± 0.15
12	65 / 0.254	1 C	1.14	0.76	6.17 ± 0.15
10	105 / 0.254	1 C	1.14	0.76	7.18 ± 0.15
8	168 / 0.254	1 C	1.39	0.76	8.62 ± 0.15
6	63 / 0.511	1 C	1.39	1.14	10.37 ± 0.15
4	105 / 0.511	1 C	1.39	1.14	11.93 ± 0.15
3	133 / 0.511	1 C	1.39	1.14	12.74 ± 0.15
2	161 / 0.511	1 C	1.39	1.14	13.55 ± 0.15
1	210 / 0.511	1 C	1.65	1.52	16.03 ± 0.15
1/0	266 / 0.511	1 C	1.65	1.52	17.39 ± 0.15
2/0	342 / 0.511	1 C	1.65	1.52	18.89 ± 0.15
3/0	418 / 0.511	1 C	1.65	1.52	20.19 ± 0.15
4/0	532 / 0.511	1 C	1.65	1.52	21.99 ± 0.15

Note

The number of wires of conductor, wire diameter and cable diameter are nominal.



PV Wire (UL Specification)

Allowable ampacities of UL PV wires

Table 1 : Allowable ampacities for operation under standard conditions, I_n

Size	AWG	18	16	14**	12**	10	8	6	4
Metric size used instead of AWG size	mm ²	1.5	1.5	2.5	4	6	10	16	25
Single wire in free air at 30 °C	A	18	24	35	40	55	80	105	140

Size	AWG	3	2	1	1/0	2/0	3/0	4/0
Metric size used instead of AWG size	mm ²	35	35	50	70	70	95	120
Single wire in free air at 30 °C	A	165	190	220	260	300	350	405

**** Refer to NEC' s 240.4(D) for conductor overcurrent protection limitations.**

Unless specifically permitted in 240.4(E) or (G), the overcurrent protection shall not exceed that required by NEC' s (D) (3) through (D) (7) after any correction factors for ambient temperature and number of conductors have been applied.

Table 2 : Correction factors for ambient temperatures, f_1

Ambient temperature °C	10 or less	11~15	16~20	21~25	26~30	31~35	36~40	41~45
Conversion factors	1.15	1.12	1.08	1.04	1.00	0.96	0.91	0.87

Ambient temperature °C	46~50	51~55	56~60	61~65	66~70	71~75	76~80	81~85
Conversion factors	0.82	0.76	0.71	0.65	0.58	0.50	0.41	0.29



PV Wire (UL Specification)

Allowable ampacities of UL PV wires

Table 3 : Correction factors for conductor temperature, f_2

Temperature of the cable conductor °C	90	80	70	60	50	40
Conversion factor	1.00	0.93	0.84	0.74	0.62	0.44

Table 4 : Adjustment factors for more than one wire, f_3

Number of wires	2~3	4~6	7~9	10~20	21~30	31~40	41 and above
Adjustment factors	0.7	0.56	0.49	0.35	0.32	0.28	0.25

$$I = I_n \times f_1 \times f_2 \times f_3$$

I : Allowable ampacities for operation under service conditions (A)

I_n : Allowable ampacities for operation under standard conditions (A)
(see Table 1)

f_1 : Correction factors for ambient temperatures (see Table 2)

f_2 : Correction factors for conductor temperature (see Table 3)

f_3 : Adjustment factors for more than one wire (see Table 4)



PV Cables (IEC Specification)

Model No. : IEC 131 1x2.5~16mm²

Construction

Conductor : Tinned soft copper wire, IEC 60228 class 5

Insulation : White XLPO

Sheath : Black XLPO

Sheath color : Black ,Red or Blue



Approval and Technical specification

Approvals : IEC 62930:2017

Certificate No. : B0787670002

Rated voltage : AC 1.0/1.0 kV ; DC 1.5kV

Rated temperature : 90 °C (Max. temperature at conductor : + 120 °C)

Ambient temperature : -40 °C up to + 90 °C

Material properties

Flame performance : IEC 60332-1-2

Halogen free : IEC 62821-1

Smoke emission : IEC 61034-2

Advantages

Low Smoke Free Halogen, Weatherproof, Great Endurance for humid Environment, Ozone Resistance, UV Resistance, Acid and Alkaline Resistance, Flexibility.

Applications

- A solar PV cable is the interconnection cable used in photovoltaic power generation system, to interconnect solar panels and other electrical components like junction boxes, inverters and batteries of a photovoltaic system and is designed to be UV resistant and weather resistant.
- Power wiring of grounded or ungrounded photovoltaic power systems.



PV Cables (EN Specification)

Model No. : H1Z2Z2-K 1x2.5~16mm²

Construction

Conductor : Tinned soft copper wire, EN 60228 class 5

Insulation : White XLPO

Sheath : Black XLPO

Sheath color : Black ,Red or Blue



Approval and Technical specification

Approvals : EN 50618: 2014

Certificate No. : B0787670003

Rated voltage : AC 1.0/1.0 kV ; DC 1.5kV

Rated temperature : 90 °C (Max. temperature at conductor : + 120 °C)

Ambient temperature : -40 °C up to + 90 °C

Material properties

Flame performance : EN 60332-1-2

Halogen free : EN 50525-1

Smoke emission : EN 61034-2

Advantages

Low Smoke Free Halogen, Weatherproof, Great Endurance for humid Environment, Ozone Resistance, UV Resistance, Acid and Alkaline Resistance, Flexibility.

Applications

- A solar PV cable is the interconnection cable used in photovoltaic power generation system, to interconnect solar panels and other electrical components like junction boxes, inverters and batteries of a photovoltaic system and is designed to be UV resistant and weather resistant.
- Power wiring of grounded or ungrounded photovoltaic power systems.



PV Cables (IEC/EN Specification)

Model No. : IEC 131 1x2.5~16mm²

Constructions and dimensions of IEC 62930:2017 1500V

Size(mm ²)	Nos and Dia. of wire (No. / mm)	Core No.	Insulation Thickness(mm)	Jacket Thickness(mm)	Cable Overall Diameter(mm)
2.5	48 / 0.25 TC	1 C	0.8	0.85	5.30 ± 0.30
4	52 / 0.30 TC	1 C	0.8	0.85	5.85 ± 0.30
6	78 / 0.30 TC	1 C	0.8	0.85	6.65 ± 0.30
10	75 / 0.40 TC	1 C	0.8	0.85	8.05 ± 0.30
16	120 / 0.40 TC	1 C	0.8	0.95	9.50 ± 0.30
25	200 / 0.40 TC	1 C	0.8	0.95	11.40 ± 0.30

Note

The number of wires of conductor, wire diameter and cable diameter are nominal.

Model No. : H1Z2Z2-K 1x2.5~16mm²

Constructions and dimensions of EN 50618: 2014 1500V

Size(mm ²)	Nos and Dia. of wire (No. / mm)	Core No.	Insulation Thickness(mm)	Jacket Thickness(mm)	Cable Overall Diameter(mm)
2.5	48 / 0.25 TC	1 C	0.8	0.85	5.30 ± 0.30
4	52 / 0.30 TC	1 C	0.8	0.85	5.85 ± 0.30
6	78 / 0.30 TC	1 C	0.8	0.85	6.65 ± 0.30
10	75 / 0.40 TC	1 C	0.8	0.85	8.05 ± 0.30
16	120 / 0.40 TC	1 C	0.8	0.95	9.50 ± 0.30
25	200 / 0.40 TC	1 C	0.8	0.95	11.40 ± 0.30

Note

The number of wires of conductor, wire diameter and cable diameter are nominal.



PV Wire (IEC/EN Specification)

Current carrying capacity of EN/IEC PV Cables

Table 1 : Current carrying capacity for operation under standard conditions, I_n

Nominal Cross Sectional Area	Method Of Installaion		
	Single Cable Free In Air	Single Cable On Surfaces	Two Loaded Cables Touching, On Surfaces
mm ²	A	A	A
1.5	30	29	24
2.5	41	39	33
4	55	52	44
6	70	67	57
10	98	93	79
16	132	125	107
25	176	167	142
35	218	207	176
50	276	262	221
70	347	330	278
95	416	395	333
120	488	464	390
150	566	538	453
185	644	612	515
240	775	736	620

Ambient temperature : 60 °C (see Table 2 for other ambient temperatures) max. conductor temperature : 120 °C

Note : The expected period of use at a max. conductor temperature of 120 °C and at a max. ambient temperature of 90 °C is limited to 20 000 h.

Table 2 : Conversion factor for different ambient temperature, f_1

Ambient temperature °C	≤ 60	70	80	90
Conbrtdion factor	1.00	0.91	0.82	0.71

Note : The maximum ambient temperature shall be not more than 90 °C according to IEC 62930:2017/ EN 50618:2014.



PV Wire (IEC/EN Specification)

Current carrying capacity of EN/IEC PV Cables

Table 3 : Conversion factor for conductor temperature, f_2

Temperature of the cable conductor °C	120	110	100	90	80	70
Conversion factor	1.00	0.92	0.84	0.73	0.61	0.44

Note : The expected period of use at a max. conductor temperature of 120 °C and at a max. ambient temperature of 90 °C is limited to 20 000 h.

Table 4 : Conversion factor for multi-cable, f_3

The number of cable side by side	1	2	3	4	5	6	7	8	9
Conversion factor	1.00	0.80	0.70	0.65	0.60	0.57	0.54	0.52	0.50

Note : For installation in groups the reduction factors for current rating according to HD 60364-5-52:2011, Table B.52.17 shall apply.

$$I = I_n \times f_1 \times f_2 \times f_3$$

I : Current carrying capacity for operation under service conditions (A)

I_n : Current carrying capacity for operation under standard conditions (A)
(see Table 1)

f_1 : Conversion factor for different ambient temperature (see Table 2)

f_2 : Conversion factor for conductor temperature (see Table 3)

f_3 : Conversion factor for multi-cable (see Table 4)



LISTED

PHOTOVOLTAIC WIRE

PV Connectors

Model No. : CKW-MC4

Specification Material

Connector : TPCB-2 & TPCB-4

Main body : PPO

Gland nuts : PA

Gland sealing : TPE

Contact terminal : Tin plated copper alloy



Approval and Technical specification

Approvals : UL 、 IEC 62852 、 EN

Certificate No. : R 50372878

GAP Test : IEC 62852

Gland nuts packing to bottom distance : 1.5 mm~2.0 mm

Test Form : 1.5 Newton (1 KG = 9.8 Newton)

Electrical Specification

Connector : TPCB-2 & TPCB-4

Rated Voltage : 1500V VDC

Rated Current : Up to 25A @2.5 & 4.0mm² ; Up to 35A @6.0mm²

Application class : Class A

Overvoltage category : III

Certification : UL 、 IEC 、 EN

Environmental/Reliability

Operating temp. range : -40 °C up to + 85 °C

Upper limit temp. : + 125 °C

Pollution degree : 3

Degree of protection : IP67 for TPCB-2 ; IP68 for TPCB-4

Advantages

Weather-resistant, Easy installation, High conductivity, Very long life cycle, Compatible to all popular connectors.

Applications

Interconnecting PV cables, or assembled with PV cable to link with the modules and inverters.

Certificates

CERTIFICATE OF COMPLIANCE

Certificate Number E326079
Report Reference E326079-2023-02-21
Date 2023-March-01

Issued to: CHUNG KWANG ELECTRIC WIRE & CABLE CO LTD
33 Suey Tien Rd
San Ho Village
Wu Jih District
Taichung 414 TW

This is to certify that
representative samples of PHOTOVOLTAIC WIRE
See Addendum Page for Product Designation(s).

Have been evaluated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: UL 4703 - Photovoltaic Wire

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.


Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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Certificates

CERTIFICATE OF COMPLIANCE

Certificate Number	E326079
Report Reference	E326079-2023-02-21
Date	2023-March-01

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements

USL: Photovoltaic Wire, Type PV Wire.


Deborah Jennings-Conner, VP Regulatory Services

UL LLC

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Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFICAT



Product Service

CERTIFICATE

No. B 078767 0003 Rev. 00

Holder of Certificate: CHUNG KWANG ELECTRIC WIRE & CABLE CO., LTD.

No. 33, Suey Tien Road, San Ho Li
Wuri Dist.,
414 Taichung City,
TAIWAN

Certification Mark:



Product:

Electric Cables

Electric cables for photovoltaic systems

Model(s):

H1Z2Z2-K 1×2.5 mm², 1×4 mm², 1×6mm²
1×10 mm², 1×16 mm²

Parameters:

Rated Voltage: DC 1500V(between conductors and
between conductor and earth)
AC U0/U: 1.0/1.0 kV
Class (IEC 61140): II
Ambient Temperature: -40°C ~+90°C
Max. Temperature
at conductor: 120°C

Tested according to: EN 50618:2014

The product was tested on a voluntary basis and complies with the essential requirements.
The certification mark shown above can be affixed on the product. It is not permitted to alter the
certification mark in any way. In addition, the certification holder must not transfer the certificate
to third parties. This certificate is valid until the listed date, unless it is cancelled earlier.
All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to
be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 704071715001-01

Valid until: 2027-11-08

Date, 2022-11-09

(Yaqu Alex Liu)

Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ CERTIFICADO ◆ CERTIFIKAT ◆ CERTIFICATE



Product Service

CERTIFICATE

No. B 078767 0002 Rev. 01

Holder of Certificate: CHUNG KWANG ELECTRIC WIRE & CABLE CO., LTD.

No. 33, Suey Tien Road, San Ho Li
Wuri Dist.,
414 Taichung City,
TAIWAN

Certification Mark:



Product:

Electric Cables

Electric cables for photovoltaic systems with
a voltage rating of 1.5kV DC

Model(s):

62930 IEC 131 1×2.5 mm², 1×4 mm², 1×6 mm²
1×10 mm², 1×16 mm²

Parameters:

Rated Voltage:	DC 1500V (between conductors and between conductor and earth)
	AC U ₀ /U: 1.0/1.0 kV
Class (IEC 61140):	II
Ambient Temperature:	-40°C ~+90°C
Max. Temperature at conductor:	120°C

Tested according to: IEC 62930(ed.1.0)

The product was tested on a voluntary basis and complies with the essential requirements.
The certification mark shown above can be affixed on the product. It is not permitted to alter the
certification mark in any way. In addition, the certification holder must not transfer the certificate
to third parties. This certificate is valid until the listed date, unless it is cancelled earlier.
All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to
be complied. For details see: www.tuvsud.com/ps-cert

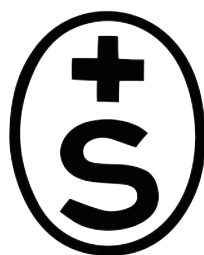
Test report no.: 704071834201-01

Valid until: 2027-11-08

Date, 2022-11-09

(Yaqun Alex Liu)

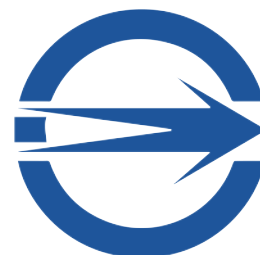
Certificates



SAA




RoHS
compliant





CHUNG KWANG ELECTRIC WIRE AND CABLE CO., LTD.

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