



SOLEN CABLE H1Z2Z2-K

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**SOLAR CABLES
FOR PHOTOVOLTAIC
(PV) SYSTEMS**



Your Reliable Partner For Solar Energy

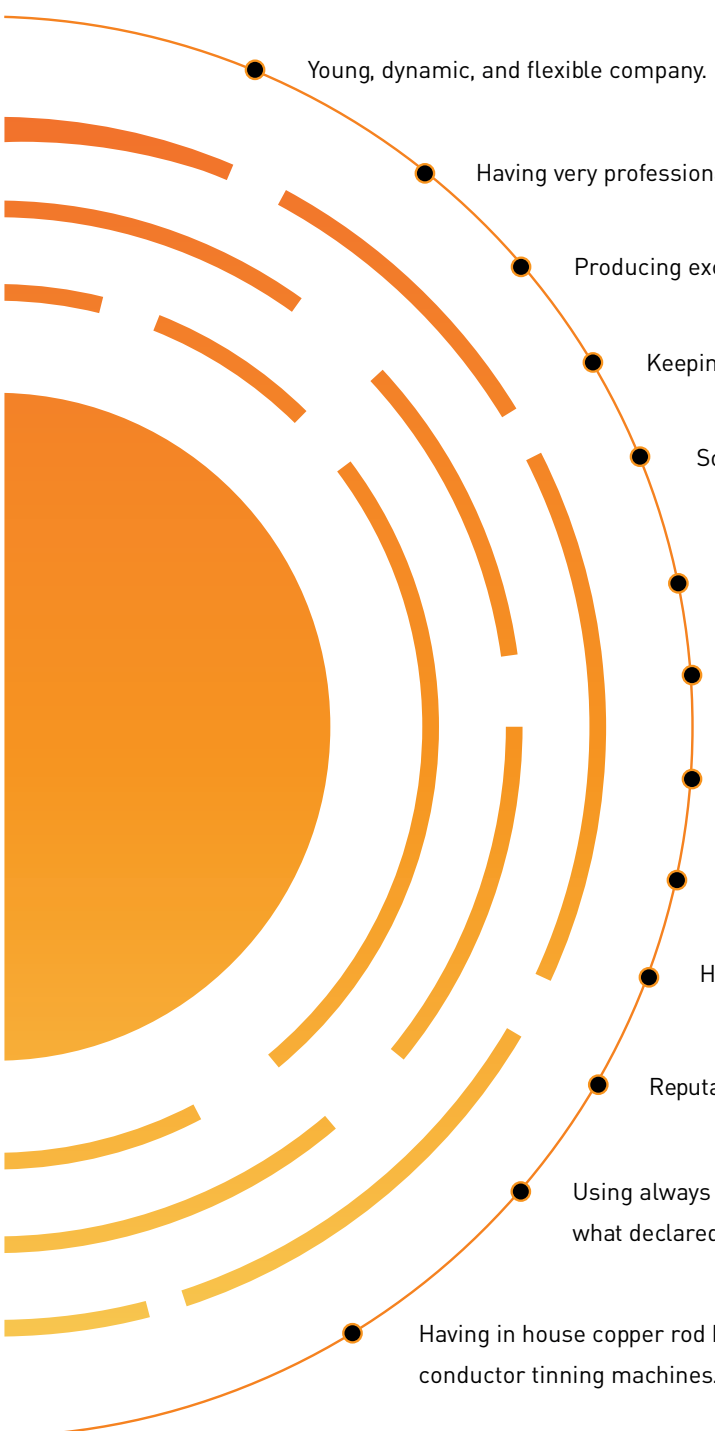
“ Solen Kablo, world’s leading manufacturer of DC Solar Cables with comprehensive know-how, is young and dynamic company founded in 2021 by very professional team with years of experience aiming to produce exclusively Solar Cables. Solen Kablo is the first cable factory who has electron-beam facility in Türkiye.

Our factory is based in Çerkezköy, Tekirdağ located 100 km away from İstanbul and head office is in heart of İstanbul. Solen Kablo is aware of the importance of renewable and sustainable energy for the future of our world. We are proud of using nature-friendly, renewable energy in all processes of the production.

Solen Kablo continues its operations on 10.000 m² land space with 5.000 m² closed area by having 3.000 tons copper drawing processing and 60.000 km of cable production capacity per year. All our production is carried out in our high-tech factory 100% integrated with fast and modern state-of-the-art machinery for aiming absolute customer satisfaction.

Solen high quality has been approved by both customers and international certification bodies. We are committed to philosophy being true partner with reputable references and always to be reliable partner.

Why Choose Solen?



Young, dynamic, and flexible company.

Having very professional team with years of experience.

Producing exclusively Solar Cables

Keeping huge stock for 4-6-10 mm² DC cables

Solenbeam™ EBXL Cables Electron Beam Cables

AD8 compatibility and direct burial features.

CPR rating for both CE & UKCA

Laser marking on sheath

Providing 5 years guarantee

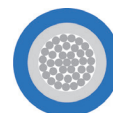
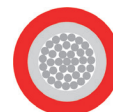
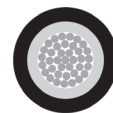
Having product liability insurance

Reputable references

Using always same raw materials in production
what declared for TUV certification.

Having in house copper rod break down, wire drawing and
conductor tinning machines.

H1Z2Z2-K & 62930 IEC 131



DESIGN STANDARDS

EN 50618
IEC 62930



APPLICATION

Solen H1Z2Z2-K Solar cables conforming to European standard 'EN 50618' and international standard 'IEC 62930' are designed for installations in photovoltaic systems, solar parks, solar farms, rooftop solar systems and in interconnection of solar panels and inverter. They are intended for permanent use outdoor and indoor, for free movable, free hanging and fixed installation. Installation also in conduits and trunkings on, in or under plaster as well as in appliances. Suitable for the application in/at equipment with protective insulation (protection class II).

CONSTRUCTION

Conductor	Tinned annealed flexible copper-Class 5 according to IEC 60228
Insulation	Halogen free Cross-linked compound according to EN 50618 Table B.1
Outer Sheath	Halogen free Cross-linked compound according to EN 50618 Table B.1
Sheath Colour	Black or Red (Blue and Green-yellow available upon request)

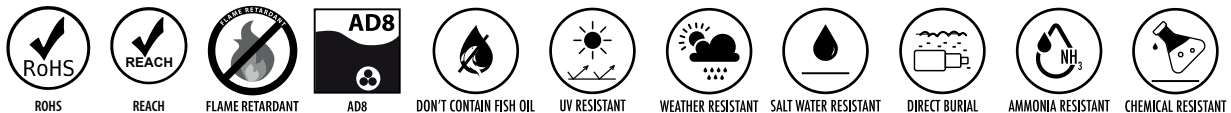
Insulation and sheath are firmly bonded to enhance insulation resistance

KEY FEATURES

- TÜV NORD approval certified
- REACH and RoHS Compliant
- CE-CPR rating Dca acc. to EN 50575 (Cca upon request)
- UKCA-CPR rating Dca to BS EN 50575
- Expected service lifetime (Min. 25 years acc. to EN 50618)
- Higher insulation resistance
- High current carrying capacity
- Compatible for all major connectors
- AD8 water submersion compatible
- AG2 Medium severity impact resistance
- Direct Burial
- Ammonia Resistance
- Salt Water Resistance
- Suitable for wet, damp and humid locations
- Excellent flexibility
- Good stripping performance from conductor
- Abrasion resistant
- UV, Oil, Grease and Ozone resistant
- Acid and Alkaline resistant
- Anti rodent and Anti termite versions are available.
- Do not Contain Fish Oil
- Weather Resistant

DIRECT BURIAL CONDITIONS

Allowed to be direct burial to earth that does not contain any damaging chemicals, solvents, rodents, termites etc. Proper and correct installation methods based on VDE 0800-174 and VDE 0891-6 should be applied. Necessary cautions should be taken to avoid physical damage of cables during installation. It is better that installation to be in pipes/conduits/concrete channels.



TECHNICAL CHARACTERISTICS

Rated Voltage (U0/U)	AC 1000 / 1000 V - DC 1500 V
Max Voltage	AC 1200 / 1200 V - DC 1800 V
Test Voltage	6,5 kV AC, 15 kV DC (5 min.)
Operating Temperature	-40°C / +90°C
Max. Temperature at Conductor	+120°C based on EN 60216-1 (20.000 h, 50% residual elongation)
Installations Temperature	-25°C / +60°C
Short Circuit Temperature	+250°C (Max. 5 sec.)
Min. Bending Radius	> 4 x D as per EN 50565-1
Insulation Resistance	EN 50395 Clause 8.1, IEC 60227-2 Clause 2.4
Surface Resistance of Sheath	EN 50395 Clause 11, IEC 62821 Clause 5.1
Cold Bend Test	EN 60811-504 (-40°C)
Cold Elongation Test	EN 60811-505 (-40°C)
Cold Impact Test	EN 60811-506 & EN 50618 (-40°C)
Damp Heat Test	EN 50618 (Table 2), EN 60068-2-78 (1000 hours, 90°C & %85 humidity)
Halogen Free Properties	EN 50525-1 (Annex B), IEC 60754-1, IEC 60754-2
Low Smoke Emission	EN 61034-2 (Light transmittance > 60%)
Flame Retardancy	EN 60332-1-2
Ozone Resistance	IEC 60811-403, EN 50396 Clause 8.1.2
Weather / UV Resistance	EN 50618 (Annex E), IEC 62930
Dynamic Penetration Test	IEC 62930, EN 50618 (Annex E)
Impact Condition	AG2 acc.to EN 50618 and HD 60364-5-52
Vibration Condition	AH3 acc.to EN 50618 and HD 60364-5-52
Acid and Alkaline Resistance	EN 50618 (Annex B)
Shrinkage Test	EN 60811-503, IEC 60811-503, EN 50618 (Table 2)
Durability of Print	EN 50618
Long Term Resistance of Insulation to DC	EN 50395 Clause 9, IEC 62821-2
Water Submersion	AD8 as per EN 50525-2-21 Appendix E (internal tested)
Ammonia Resistance	7 days at 23 °C in saturated ammonia atmosphere (internal tested)
Salt Water Resistance	7 days at 23 °C in saturated salt solution (internal tested)
Underground use	UL 854 Section 23 Impact-resistance test (internal tested) UL 854 Section 24 Crushing-resistance test (internal tested)

DIMENSIONAL PARAMETERS

Part No.	Number Of Cores	Cross Sections mm ²	Conductor Diameter mm	Overall Diameter mm	Bending Radius (min.) mm	Weight kg/km
SPV50015CL000	1	1,5	1,6	4,50 -0,2 /+0,3	22	31
SPV50025CL000	1	2,5	2,0	4,90 -0,2 /+0,3	24	40
SPV50040CL000	1	4	2,5	5,50 -0,2 /+0,3	26	56
SPV50060CL000	1	6	3,0	5,90 -0,2 /+0,3	30	73
SPV50100CL000	1	10	4,0	6,90 -0,2 /+0,3	35	115
SPV50160CL000	1	16	5,0	8,30 -0,2 /+0,5	42	176
SPV50250CL000	1	25	6,1	10,00 -0,3 /+0,5	50	261
SPV50350CL000	1	35	7,4	11,40 -0,3 /+0,5	57	368
SPV50500CL000	1	50	8,8	13,20 -0,3 /+0,5	65	513
SPV50700CL000	1	70	10,5	15,10-0,3 /+0,8	76	700
SPV50950CL000	1	95	11,9	16,90-0,3 /+0,8	85	912
SPV50120CL000	1	120	13,4	19,20 -0,5 /+0,8	115	1153
SPV50150CL000	1	150	14,8	21,70 -0,3 /+0,8	130	1425
SPV50185CL000	1	185	16,5	23,90 -0,5 /+0,8	143	1776
SPV50240CL000	1	240	18,9	27,00-0,5 /+0,8	162	2303

CL refers to colour for :

Red replace RD
Green/Yellow replace GY
Black replace BK
Blue replace BL

CABLE MARKING

SOLEN CABLE TUV NORD EN 50618 H1Z2Z2-K 1xN mm² 1,5 kV DC / 62930 IEC 131 AD8

HALOGEN FREE LOW SMOKE SCXXXX <CE> Dca (yyyy) XX MT

*N: Cross Section *SCXXXX: Traceability Code *(yyyy): Year marking *XX MT: Meter Marking

ELECTRICAL PARAMETERS

Part No.	Number Of Cores	Cross Sections mm ²	Conductor Resistance 20°C ohm / km	Current Carrying Capacity (*) at 60°C Ambient Temperature			Short Circuit Current (5s. From 90°C To 250°C) kA
				Single Cable In Free Air A	Single Cable On Surface A	Two Loaded Cables Touching On Surface A	
SPV50015CL000	1	1,5	13,7	30	29	24	0,09
SPV50025CL000	1	2,5	8,21	41	39	33	0,15
SPV50040CL000	1	4	5,09	55	52	44	0,25
SPV50060CL000	1	6	3,39	70	67	57	0,37
SPV50100CL000	1	10	1,95	98	93	79	0,63
SPV50160CL000	1	16	1,24	132	125	107	1
SPV50250CL000	1	25	0,795	176	167	142	1,6
SPV50350CL000	1	35	0,565	218	207	176	2,2
SPV50500CL000	1	50	0,393	276	262	221	3,2
SPV50700CL000	1	70	0,277	347	330	278	4,40
SPV50950CL000	1	95	0,21	416	395	333	6,00
SPV50120CL000	1	120	0,164	488	464	390	7,67
SPV50150CL000	1	150	0,132	566	538	453	9,59
SPV50185CL000	1	185	0,108	644	612	515	82,7
SPV50240CL000	1	240	0,08	775	436	620	15,34

(*) Max. conductor temperature: 120 °C. Based on EN50618 Table A.2 and A.3

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.

CURRENT RATING CONVERSION FACTORS FOR DIFFERENT AMBIENT TEMPERATURES

Ambient temperature	< 60	70	80	90
Conversion factor	1	0,92	0,84	0,75

PRODUCT CERTIFICATES



SYSTEM CERTIFICATES



USER GUIDE AND INSTALLATION METHODS

SOLEN H1Z2Z2-K Solar cables conforming to European standard 'EN 50618' and international standard 'IEC 62930' are designed for installations in photovoltaic systems, solar parks, solar farms, rooftop solar systems and in interconnection of solar panels and inverter. They are intended for permanent use outdoor and indoor, for free movable, free hanging, and fixed installation. Installation also in conduits and trunkings on, in or under plaster as well as in appliances. Suitable for the application in/at equipment with protective insulation (protection class II).

Although DC cables nearly have 3-4% of a solar project cost, however it can have a significant impact on the solar power plant output. Improper design or poor cable selection can lead to safety hazards, reduced power output, and other performance issues that may affect the overall lifetime of a PV system.

To maximize performance and reliability of the DC cables and PV systems:

- Our DC cables for PV systems are designed for continuous use in free running, free hanging, or fixed installations in indoor and outdoor environments, such as installation in pipes, ducts on, in or under plaster. They are also conditionally suitable for direct burial.

Necessary cautions should be taken to avoid physical damage of cables during installation.

- Generally, follow given installation rules and methods in EN 50565-1 (User Manual for Low Voltage Harmonized Cables) and HD 60364-7-712 on low-voltage electrical installations – Part 7-712 (requirements for special installations or locations – photovoltaic (PV) systems) as common installation standards. Cable protection should comply with requirements of IEC 60364.
- The voltage value of the cables is nominally 1.5 kV DC both between conductors and between conductors and earth.
The maximum allowable operating voltage for the systems to which the cables are applied shall not exceed 1.8 kV.
The voltage value of the specified cables is $1/1(U_0/U)$ kV. The rated voltage in the DC system is expressed by the combination of two values of U_0/U expressed in (k)volts, where:
 - U_0 , r.m.s. the value between any insulated conductor and earth.
 - U , r.m.s. Value between any two phases.
- Our solar cables can operate period of 20.000 hours at a maximum conductor temperature of 120 °C and a maximum ambient temperature of 90 °C. Their expected service life is minimum 25 years if the advised installation, use, and handling conditions are respected.
- PV cables operating temperature is between -40°C and +90°C. In the event of a short circuit (maximum time 5 s), the maximum conductor temperature is +250°C.

USER GUIDE AND INSTALLATION METHODS

- For detailed technical characteristics, dimensions, current ratings, and short circuit currents refer to our technical data sheet.
- The minimum recommended installation and laying temperature for PV cables is -25°C .
Installation should be delayed if the ambient temperature is below -25°C . If installation is required, the cables should be kept in an environment with a temperature higher than 10°C for 24 hours.
- Determine the ideal DC cable length and routing to minimize cable lengths to reduce power loss, voltage drop, and installation costs.
- You require the choose right cross sectioned string cable and connectors to make your solar system is functioning properly and not allowing interruptions in the current. Use high-quality, compatible connectors to ensure secure and reliable connections between cables and other system components. Check cable clips, conduits, and trays to ensure they are securely fastened and provide adequate support.
- Allowable bending radii of cables are minimum 4 times the outer diameter for fixed installations. For mobile systems and during installation, the bending radius should be a minimum of 12 times the outer diameter. Avoid cable curves, sharp bends and make sure cables run in straight lines rather than ovals.
- Never tie the cables near a metal edge without using a suitable product. There is a high risk of damaging the cable sheath, which can cause short circuits and, in the worst case, a fire. Avoid exposed, sharp or pointed edges. Sharp or pointed edges can break the cables and subsequently cause short circuits.
- Unwinding from the reel should be done within 2 hours at a slow and regular speed (approximately 20 m/min) without vibration.
- Maximum pulling forces applied during installation as follows,
Maximum of 1.000 Newtons force should be applied, whatever the traction method used.
If the pulling force is applied on conductors : $F = 50 \times S \quad \text{N (Newtons)}$
If the pulling force is applied on over sheath : $F = 5 \times D^2 \quad \text{N (Newtons)}$
where F : Force in Newtons, S : cross sectional area of conductor in mm^2 , D : overall diameter in mm.
- Periodically examine solar DC cables for damages or corrosions, paying attention to connections, insulation, and other key parameters. Keep cables free of dust, dirt, and debris to maintain optimal electrical conductivity and prevent potential damage. Implement a comprehensive monitoring system to track the performance of solar cables including main parameters like voltage, current, and temperature.

We Carry
Nature's Energy
to the Future



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