

TOPSOLAR PV H1Z2Z2-K

1. Object

This document defines the design and manufacturing characteristics of the cables type TOP SOLAR PV H1Z2Z2-K manufactured by Top Cable.

2. Design

This type of cables are designed, manufactured and tested according to the latest revision of EN 50618 standard.

Approvals available:

EN 50618

3. Applications

Low smoke halogen-free, flexible, single-core power cables with cross-linked insulation and sheath. In particular for use at direct current (d.c.) side of photovoltaic systems, with a nominal d.c. voltage of 1,5 kV between conductors and between conductor and earth.

The cables are suitable to be used with Class II equipment.

The cables are designed to operate at a normal maximum conductor temperature of 90 °C, but for a maximum of 20 000 hours a max. conductor temperature of 120 °C at a max. ambient temperature of 90 °C is permitted. The expected period of use under normal usage conditions as specified in the standard EN 50618 is at least 25 years.

Suitable for submerged installations (AD8).

4. Characteristics

Rated voltage DC: nominal 1,5 kV, both between conductors as well between conductors and earth. The maximum permitted operating d.c. voltage of the systems shall not exceed 1,8 kV.

Rated voltage AC: voltage rating is 1,0/1,0 kV (U_0/U). U_0 is the r.m.s. value between any insulated conductor and earth. U is the r.m.s. value between any two phases.

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

Maximum conductor temperature: 120 °C

Maximum short-circuit temperature: 250 °C (maximum 5 s)

Minimum bending radius (fixed): 5 x cable Ø

No flame propagation: according to EN 60332-1/ IEC 60332-1

No fire propagation: according to EN 50399

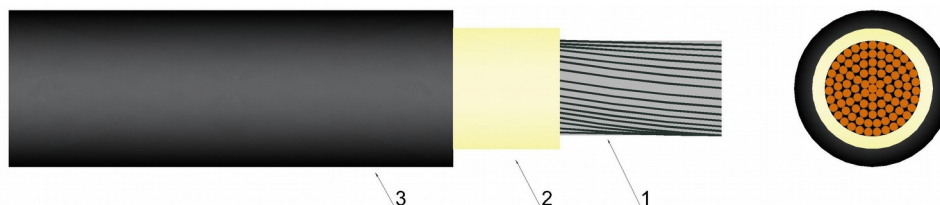
Halogen free: according to EN 50525-1 (Annex B)

HCl content < 0,5%; pH > 4,3; conductivity < 10 µS/mm

Reaction to fire CPR: Dca-s2,d2,a2 according to EN 50575

TOPSOLAR PV H1Z2Z2-K

5. General make-up of the cable



5.1 Conductor (1)

Electrolytic annealed tinned copper conductor, class 5 according to EN 60228.

5.2 Insulation (2)

Halogen free cross-linked rubber insulation. Requirements of insulation of table B.1 in Annex B of EN 50618.

5.3 Outer sheath (3)

Halogen free cross-linked rubber outer sheath. Requirements of sheath of table B.1 in Annex B of EN 50618. Black or red colour.

6. Current-carrying capacities

6.1 Nominal current-carrying capacities

Table 1 show the current-carrying capacities and electric parameters detailed for every cable.

Current-carrying capacities, in amperes, are according to EN 50618, and for the following conditions:

- Single cables free in air installation: one single-core cable and ambient temperature of 60 °C; with adequate ventilation (supported by cleats and hangers or on perforated tray).
- Single cable on surfaces installation: one single-core cable directly on a wall with low thermal conductivity, ambient temperature of 60 °C.
- To cables adjacent on surfaces installation: ambient temperature of 60 °C.
- In all cases it is supposed a direct current circuit.

Voltage drop is calculated with conductor temperature of 120 °C.

For conditions other than this apply the adequate correction factors (point 6.2).

TOPSOLAR PV H1Z2Z2-K

Cross-section mm ²	Single cable free in air A	Single cable on surfaces A	To cables adjacent on surface A	Voltage drop V/A·km
1 x 1,5	30	29	24	38,2
1 x 2,5	41	39	33	23,0
1 x 4	55	52	44	14,3
1 x 6	70	67	57	9,49
1 x 10	98	93	79	5,46
1 x 16	132	125	107	3,47
1 x 25	176	167	142	2,23
1 x 35	218	207	176	1,58
1 x 50	276	262	221	1,10
1 x 70	347	330	278	0,772
1 x 95	416	395	333	0,585
1 x 120	488	464	390	0,457
1 x 150	566	538	453	0,368
1 x 185	644	612	515	0,301
1 x 240	775	736	620	0,228

Table 1

6.2 Correction factors

The current-carrying capacities must be multiplied with the adequate correction factor when the installation conditions differs from point 6.1

Correction factors for air temperatures other than 60°C.

Air Temp. (°C)	Up to 60	70	80	90
Factor	1	0,92	0,84	0,75

Table 2

6.3 Groups

For groups reduction factors according to IEC 60364-5-52, Table A.52-17 shall apply.

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7. Dimensions

Table 3 show diameters and weight detailed for every cable.

Cross-section mm ²	Outer Ø ⁽¹⁾ mm	Weight kg/km
1 x 1,5	4,6	35
1 x 2,5	5,0	45
1 x 4	5,4	60
1 x 6	6,0	80
1 x 10	7,0	120
1 x 16	8,2	180
1 x 25	10,2	280
1 x 35	11,5	375
1 x 50	13,3	525
1 x 70	15,0	720
1 x 95	17,0	930
1 x 120	18,7	1.175
1 x 150	21,0	1.475
1 x 185	23,5	1.805
1 x 240	26,3	2.345

Table 3

(1) The tolerances on the nominal outer diameters are:

Cables with outer diameter $d \leq 7$ mm. → -0,1 +0,2 mm

Cables with outer diameter $7 < d < 10$ mm. → -0,1 +0,3 mm

Cables with outer diameter $d \geq 10$ mm. → -0,2 +0,4 mm

DECLARATION OF PERFORMANCE *DECLARACIÓN DE PRESTACIONES*

DoP Nr/ n°: **TC026** Rev. 1



Code of the product-type / Código de producto tipo:
TOPSOLAR PV H1Z2Z2-K

Identification of the product / Identificación del producto de construcción:
H1Z2Z2-K full range according to EN 50618

Intended use/s: / Uso/s previsto/s:

Supply of electricity in buildings and other civil engineering works with the objective of limiting the generation and spread of fire and smoke. Power Cables.

Suministro de electricidad en edificios y otras obras de ingeniería civil con el objetivo de limitar la generación y propagación de fuego y humo. Cables de potencia.

Authorized representative: / Representante autorizado:

N/A

System/s of AVCP: / Sistema/s de EVCP:

System 3 / Sistema 3

Harmonized standard: / Norma armonizada:

EN 50575:2014 and EN 50575:2014/A1: 2016

Notified body/ies: / Organismo/s notificado/s:

CEIS – 1722

Notified testing laboratory carrying out the determination of the product type for characteristics of reaction to fire.

Laboratorio notificado que ha realizado los ensayos de determinación del producto tipo para las características de reacción al fuego.

Test Report Reference / Informe de ensayo n°: CEL-0593_17-1

Date of test report / Fecha del informe de ensayos: 13/06/2017

Declared performances: / Prestaciones declaradas:

Essential characteristics / Características esenciales

Performance / Prestaciones

Reaction to fire / Reacción al fuego

D_{ca} - s2, d2, a2

Dangerous substances / sustancias peligrosas

NPD (Non Performance declaration / Prestación no determinada)

The performance of the product identified above is in conformity with the set of declared performances. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above.

Las prestaciones del producto identificado anteriormente son conformes con el conjunto de prestaciones declaradas. La presente declaración de prestaciones se emite, de conformidad con el Reglamento (UE) n° 305/2011, bajo la responsabilidad exclusiva del fabricante arriba identificado.

Signed for and on behalf of the manufacturer by / Firmado por y en nombre del fabricante por:

Felipe DIAZ RUBIO,
Technical Manager



Rubí (Barcelona) Spain, 03/12/2018

Zertifikat

Certificate



Zertifikat Nr. Certificate No.
R 60113828

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Ihr Zeichen Client Reference

Unser Zeichen Our Reference

Ausstellungsdatum

Date of Issue

0010--21243325 001

13.10.2016

(day/mo/yr)

Genehmigungsinhaber License Holder

TOP CABLE S.A.
P.A.E. Can Sant Joan
Leonardo da Vinci 1
08191 Rubi - Barcelona
Spain

Fertigungsstätte Manufacturing Plant

AKAN Cables S.L.
P.L. Plans de la Sala, Parcela 11
08650 Barcelona
Spain

Prüfzeichen Test Mark

Geprüft nach Tested acc. to

EN 50618:2014



Zertifiziertes Produkt (Geräteidentifikation)

Certified Product (Product Identification)

Lizenzentgelte - Einheit

License Fee - Unit

PV-Cables

Identification: TOPSOLAR PV H1Z2Z2-K
Code designation: H1Z2Z2-K
Rated diameter: 2,5 mm²; 4,0 mm²; 6,0 mm²;
10,0 mm²; 16,0 mm²; 25,0 mm²
Rated voltage: AC U0/U 1,0/1,0 kV
Rated voltage: DC 1500 V (conductor-conductor and
conductor-earth)
Max. permitted voltage: DC 1,8 kV
Light transmission: 82,1 %
Ambient temperature: -40 °C to +90 °C
max. Core temperature: +120 °C @ 20.000 h
Material of Insulation: Halogene Free thermosetting rubber
Material of Sheath: Halogene Free thermosetting rubber
Colour of Sheath: black

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Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
This certificate is based on our Testing and Certification Regulation and states the conformity of the product with the standards and testing requirements as indicated above. Any additional requirements in countries where the product is going to be marketed have to be considered additionally. The manufacturing of the certified product is subject to surveillance.

TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg

Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com
Fax: +49 221 806-3935 http://www.tuv.com/safety



Zertifikat

Certificate



Zertifikat Nr. *Certificate No.*
R 60113828

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0002

Ihr Zeichen *Client Reference*

Unser Zeichen *Our Reference*

Ausstellungsdatum

Date of Issue

0010--21243325 002

29.11.2016

(day/mo/yr)

Genehmigungsinhaber *License Holder*

TOP CABLE S.A.
P.A.E. Can Sant Joan
Leonardo da Vinci 1
08191 Rubi - Barcelona
Spain

Fertigungsstätte *Manufacturing Plant*

AKAN Cables S.L.
P.L. Plans de la Sala, Parcela 11
08650 Barcelona
Spain

Prüfzeichen *Test Mark*



Geprüft nach *Tested acc. to*
EN 50618:2014

Zertifiziertes Produkt (Geräteidentifikation)
Certified Product (Product Identification)

Lizenzentgelte - Einheit
License Fee - Unit

PV-Cables

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Amendment

additional Colour of sheath: RED

Dem Zertifikat liegt unsere Prüf- und Zertifizierungsordnung zugrunde und es bestätigt die Konformität des Produktes mit den oben genannten Standards und Prüfgrundlagen. Zusätzliche Anforderungen in Ländern, in denen das Produkt in Verkehr gebracht werden soll, müssen zusätzlich betrachtet werden. Die Herstellung des zertifizierten Produktes wird überwacht.
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Tel.: +49 221 806-1371 e-mail: cert-validity@de.tuv.com
Fax: +49 221 806-3935 http://www.tuv.com/safety

Zertifizierungsstelle



Guido Volberg