

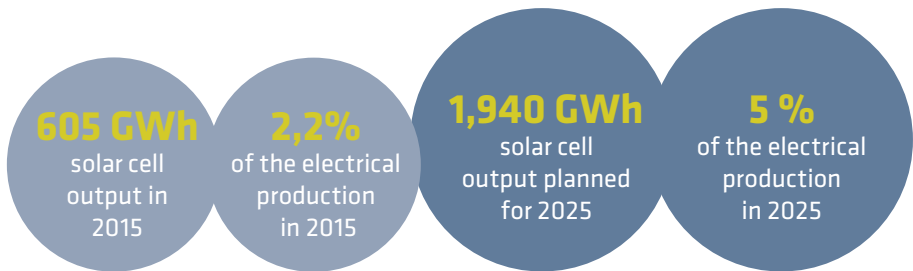
## **TECSUN (PV) H1Z2Z2-K**

Installation cable for solar energy acc. to EN 50618



# CHEAPEST ROAD TO A GREEN TRANSITION

## PREDICTED SOLAR ENERGY GROWTH IN DENMARK



Due to EU's plans to reduce the consumption of fossil fuels by 20% before 2020, renewable energy such as solar power has obtained added interest. This is because solar cells according to the Energy Ministry, now is the cheapest road to a green transition in Europe **1**. Especially because solar energy compared to for example offshore wind turbines, has a very low connection costs to the grid. **2**

In 2015 solar power systems in Denmark accounted for about 100,000 private and

200 medium-sized plants, with a total solar cell capacity of 783 MW and a solar cell output of 605 GWh, equivalent to 2.2% of the total Danish electricity production. **3**

By 2025 it's planned that the total solar capacity in Denmark will rise to 2,115 MW with a solar cell output of 1,940 GWh, equivalent to 5% of the total electricity generation. This means almost a tripling of the solar cell capacity over a 10-year period. **3**

***"Solar energy compared to offshore wind energy, has a very low connection costs to the grid"***

Figures for the above graphs are taken from below literary sources:

1. Energistyrelsen
2. Tekniq
3. Energinet.dk

# NEW STANDARD

## NEW EU STANDARD FOR SOLAR CABLES

In 2014 the EU adopted a new standard for electrical cables for solar (PV - photovoltaic) systems that is to regulate properties, specification requirements and user guidelines.

Standard EN 50618 replaces previous local requirements and will contribute to a common and uniform quality standard for photovoltaic cables on the European market.

The new standard is more stringent and in compliance with the expected application purposes for permanent and long-term outdoor installation under harsh climatic conditions.

The transition period for the new standard is from October 2015 to October 2017, after which it becomes mandatory.

TECSUN (PV) H1Z2Z2-K already fulfils standard EN 50618 and is certified according to both TÜV and VDE.

***“The new standard  
EN 50618 is more stringent  
than the old norm”***



# STANDARD EN 50618 IS MORE STRINGENT

*”TECSUN H1Z2Z2-K already fulfils standard EN 50618 and is certified according to both <VDE> and TÜV”*

## CHANGES FROM THE OLD TO THE NEW STANDARD

Below table summarizes the main characteristics introduced by the new standard EN 50618, affecting the production design and testing procedures.

SPECIFICATION	OLD NORM 1169/08.2007	NEW NORM EN 50618:2014
Name	PV1-F	H1Z2Z2-K
Rated voltage AC	0,6/1,0 kV	1,0/1,0 kV
Max. voltage DC	0,9/1,8 kV	1,8/1,8 kV
Short circuit temperature	200°C	250°C
Insulation material	Halogen-free	Halogen-free and cross-linked
Insulation thickness	Min. 0,5 mm	Starting from average 0,7 mm and higher acc. to IEC 60502-1 ( $\leq 16 \text{ mm}^2$ )
Outer sheath material	Halogen-free	Halogen-free and cross-linked
Outer sheath thickness	Min. 0,5 mm	Starting from average 0,8 mm and higher ( $\leq 10 \text{ mm}^2$ )
DC resistance in water 85°C *1	0,9 kV DC (3% salt water)	1,8 kV DC (fresh water)
Low smoke emission		Light transmittance min. 60%
Tensile strenght *2	6,5 N/mm <sup>2</sup>	8 N/mm <sup>2</sup>
Hot set test	At 200°C	At 250°C
Pressure test at high temperature	Acc. to EN 60811-508	Not requires but performed anyway
UV resistant sheath - 720 hours	No cracks allowed	No cracks allowed. Measurement of tensile strenght and elongation at break after ageing min. 70% of original value.

\*1 - Long-term

\*2 - before ageing insulation

# NEW DIMENSIONS



## INCREASED CABLE THICKNESS

Prysman TECSUN cable dimensions are changing slightly due to an increased thickness. See table below for the new cable dimensions from the old to the new type of cable.

Cross section mm <sup>2</sup>	TECSUN (PV) PV1-F		
	Outer Diameter Min.mm	Outer Diameter Max.mm	Weight (ca.) Kg/km
1,5	4,4	4,8	33
2,5	4,7	5,1	44
4	5,2	5,6	58
6	5,7	6,1	77
10	6,8	7,2	120
16	8,3	9,0	185
25	10,0	10,7	280
35	11,1	11,8	380
50	12,6	13,3	530
70	14,4	15,2	720
95	16,2	17,0	900
120	17,7	18,7	1150
150	19,7	20,7	1420
185	21,3	22,3	1670
240	24,2	25,5	2200

TECSUN (PV) H1Z2Z2-K		
Outer Diameter Min.mm	Outer Diameter Max.mm	Weight (ca.) Kg/km
4,4	5	35
4,8	5,4	45
5,3	5,9	60
5,8	6,4	80
7	7,6	125
9	9,8	200
10,4	11,2	290
11,7	12,5	400
13,5	14,5	550
15,5	16,5	750
17,7	18,7	970
19,2	20,4	1220
21,4	22,6	1510
23,7	25,1	1850
27,1	28,5	2400

## ALL TYPES OF INSTALLATION

### PHOTOVOLTAIC INSTALLATION CABLE HALOGEN-FREE

## TECSUN (PV) H1Z2Z2-K



### Application

TECSUN (PV) H1Z2Z2-K is intended for use in photovoltaic power supply systems. Applicable for fixed, flexible or freely suspended installation both indoor and outdoor in industrial and agriculture fields. Installation in cable trays, conduits, on and in walls is permissible. Also suitable for applications in equipment with protective insulation class II as well as in explosion hazard areas.

### Technical data

- > Rated voltage: 1,5 kV DC and 1,0 kV AC
- > Max. voltage: 1,8 kV DC and 1,2 kV AC
- > Test voltage: 15 kV DC and 6,5 kV AC
- > Current carrying cap: EN 50618, table A-3
- > Tensile load: Max. 15 N/mm<sup>2</sup> in operation
- > Bending radius: Acc. to EN 50565-1

### Temperature range

- > Max. conductor temperature: +90°C
- > Short circuit temperature: +250°C 5 sec.
- > Installation temperature: -25°C to +60°C
- > Operating temperature: -40°C to +90°C
- > Resistance to cold: EN 50618, table 2

### Standard & Directive & Approval

- > Standard: DIN EN 50618
- > Direktive: CE, RoHS, REACH
- > Approval: <VDE>, TÜV

### Construction

Conductor:

- > Electrolytic tinned copper, finely stranded
- > Class 5 acc. to IEC 60228

Insulation:

- > Halogen-free and cross-linked HEPR, white

Outer sheath:

- > Halogen-free cross-linked EVA rubber
- > Color: Black, blue or red

### Material characteristics

- > Flame retardant: EN 60332-1 -2, EN 50305-9
- > Halogen-free: EN 50525-1, Annex B
- > Low toxicity: EN 50305 (ITC<3)
- > Low smoke: EN 61034-2 (LT > 70%)
- > Oil resistance: VDE 0473-811-404  
EN 60811-404 (24 hours at 100°C)
- > Wather resistance: EN 50618, Annex E table 2
- > UV resistance: EN 50289-4-17, Method A
- > Ozone resistance: DIN EN 50396, Type B
- > Water absorption: DIN EN 60811-402
- > Acid & alkaline test: EN 50618, Annex B
- > Ammonia resistance: 30 day test
- > Damp heat test: EN 50618 table 2  
1000 hours at 90°C and 85% humidity
- > Abrasion resistance: DIN ISO 4649
- > Pressure test at high temperature:  
<50% acc. to EN 60811-508



Conductor Cross-section mm <sup>2</sup>	Outer diameter Min. mm	Outer diameter max.mm	Bending Radius Fixed mm	Weight Kg/km	EAN Nr.
1x1,5	4.4	5	15	40	
1x2,5	4.8	5.4	17	50	
1x4	5.3	5.9	18	70	
1x6	5.8	6.4	20	80	
1x10	7	7.6	23	130	
1x16	9	9.8	30	200	
1x25	10.4	11.2	34	290	
1x35	11.7	12.5	50	400	
1x50	13.5	14.5	58	550	
1x70	15.5	16.5	66	750	
1x95	17.7	18.7	75	970	
1x120	19.2	20.4	82	1220	
1x150	21.4	22.6	91	1510	
1x185	23.7	25.1	101	1850	
1x240	27.1	28.5	114	2400	

Conductor Cross-section mm <sup>2</sup>	Outer diameter max. mm	Max.conductor resistance at 20°C Ω /km	Current carrying capacity A In air at 60°C	Current carrying capacity A On surface 60°C	Short Circuit current kA 1sec. 90-250°C
1x1,5	1.6	13.7	30	29	0.21
1x2,5	1.9	8.21	41	39	0.36
1x4	2.4	5.09	55	52	0.57
1x6	2.9	3.39	70	67	0.86
1x10	4	1.95	98	93	1.43
1x16	5.6	1.24	132	125	2.29
1x25	6.4	0.795	176	167	3.58
1x35	7.5	0.565	218	207	5.01
1x50	9	0.393	276	262	7.15
1x70	10.8	0.277	347	330	10.01
1x95	12.6	0.21	416	395	13.59
1x120	14.2	0.164	488	464	17.16
1x150	15.8	0.132	566	538	21.45
1x185	17.4	0.108	644	612	26.46
1x240	20.4	0.082	775	736	34.32

Subject to change in connection with product development and or any changes to the standards.

# Linking the future

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