

# TECSUN (PV) PV1-F

Cables for Photovoltaics





## Linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology.

Through two renowned commercial brands - Prysmian and Draka - based in almost 100 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

In our energy business, we design, produce, distribute and install cables and systems for the transmission and distribution of power at low, medium, high and extra-high voltage.

In telecoms, the Group is a leading manufacturer of all types of copper and fibre cables, system and accessories - covering voice, video and transmission.

Drawing on over 130 years' experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents, at the same time shaping the evolution of our industry.



# What links sustainable ideas to real-world results?

## Cable solutions to enable the production and supply of renewable energy

To meet an ever-growing need for power, the world is increasingly turning to renewable and sustainably sourced wind and solar energy. In response to this demand, Prysmian cables are helping businesses in the renewable industry around the globe convert these new opportunities into reality.

Our technologies - which cover cables used in wind turbine and tower operations, submarine inter-array, platform connection and export cables to link the various turbines and underground power transmission and distribution cable system for wind

power applications - are at work across the renewables sector, supporting the operations of turbine manufacturers, contractors and developers, grid operators, system integrators and panel makers.

Always aware of our responsibility to the planet, we're constantly driving innovation in our industry, aiming to help renewable industry partners deliver projects with benefits for the future of both our world and their businesses.



## Technical Data - TECSUN (PV) PV1-F

Trademark	TECSUN (PV)	
Type designation	PV1-F	
Approvals	Requirements for cables for PV systems, DKE/VDE AK 411.2.3 VDE-Reg.No. 7985 TÜV 2 PFG 1169/08.2007 Cert.-No. R 60013989	
Application	PRYSMIAN TECSUN (PV)PV1-F PV-Wire is intended for use in Photovoltaic Power Supply Systems: Indoor and/or outdoor, in industrial and agriculture fields. They are suitable for applications in/at equipment with protective insulation (Protecting Class II), in explosion hazard areas (PRYSMIAN Internal Testing) and may be installed as well as fixed or freely suspended or free movable. Installation in cable trays, conduits, on and in walls is available.	
PRYSMIAN	Internal Testing TECSUN (PV) PV1-F PV-Wire is permitted for direct burial.	
<b>Electrical Parameters</b>	Rated voltage	(U <sub>o</sub> /U) 600/1000 V AC
	Maximum PV-System voltage	DC up to 2000 V possible
	Maximum permissible operating voltage in AC systems	700/1200 V
	Maximum Permissible operating voltage in DC systems	900/1800 V
	Test voltage	6500 V AC / 15000 V / 5 min.
	Ampacity	Meets requirements for PV-Wire per TÜV 2 PFG 1169/08.2007
	Tests -TÜV 2PFG 1169/08.2007	Meets VDE 0282 Section 2, HD 22.2 and EN 50395 Conductor Resistance, Test Voltages AC and DC, Electric Strength, Surface Resistance, Spark Test on Insulation, EN 50305 Part 6 DC stability (10 days, 85° C, salt water, 1500 V DC), Insulation Resistance at 20° C and 90° C in Water.
	PRYSMIAN Internal Testing	Insulation Resistance at 120° C in Air.
<b>Thermal Parameters</b>	Ambient Temperature	From -40° C up to +90° C (-40° F up to +194° F) for fixed and flexible installation
	Maximum Permissible Conductor Operating Temperature	+120° C (+248° F) per IEC 60216 permanent temperature 120° C for 20.000 h (= 2.3 years), at max. 90° C permanent temperature (= 30 years)
	Short-circuit temperature -TÜV 2 PFG 1169/08.2007 -PRYSMIAN Internal Testing	+200° C (392° F) at the conductor max. 5 sec. +250° C (482° F) at the conductor max. 5 sec.
	Resistance to cold	Cold Bend Test at -40° C temperature per DIN EN 60811-1-4 Impact Test -40° C temperature similar to DIN EN 50305
	Damp-Heat Test	Meets TÜV 2 PFG 1169/08.2007 1.000 h at 90° C and 85% humidity and per EN 60068-2-78



## Technical Data

<b>Mechanical Parameters</b>	Tensile Rating	15 N/mm <sup>2</sup> in operation, 50 N/mm <sup>2</sup> during installation per HD 516 DIN VDE 0298 Section 3 § 7.1 and Section 300 § 5.4.1
	Minimum bending Radius	min. 4 x D (D=Overall Cable Diameter)
	Abrasion -PRYSMIAN Internal Testing	Meets DIN EN 53516: against abrasive paper, Sheath against sheath, Sheath against metal, Sheath against plastics
	Shrinkage Test	Meets TÜV 2PFG 1169/08.2007 <2% per EN 60811-1-3
	Pressure Test at High Temperature	Meets TÜV 2PFG 1169/08.2007 <50% per EN 60811-3-1
	Dynamic Penetration Test	Meets requirements for PV-Wire per TÜV 2 PFG 1169/08.2007
	Shore-Hardness A	85 per DIN EN 53505 (PRYSMIAN Internal Testing)
	Gnawer resistance	Safety can be optimized by utilizing protective hoses and cables with spinning or braid metallic coatings
<b>Chemical Parameters</b>	Mineral Oil Resistance	Meets VDE 0473-811-2-1, DIN EN 60811-2-1 24h, 100° C
	Acid and Alkaline Resistance	Meets TÜV 2 PFG 1169/08.2007 7 days, 23° C (N-Oxalic Acid, N-Sodium Hydroxide) per EN 60811-2-1
	Ammonia Resistance	30 days in Saturated Ammonia Atmosphere (PRYSMIAN Internal Testing)
	Weather resistance -TÜV 2PFG 1169/08.2007	Ozone resistance per DIN EN 50396 Test Type B, HD 22.2 Test Type B UV-Resistance per UL 1581 (Xeno-Test), ISO 4892-2 (Method A) and HD506/A1-2.4.20
	-PRYSMIAN Internal Testing	Absorption of Water (Gravimetric) per DIN EN 60811-1-3
	Fire Behaviour -TÜV 2 PFG 1169/08.2007	Flame propagation: Single Cable Flame Test per IEC 60332-1-2, DIN EN 60332-1-2 Halogen-free per IEC 60754-1 No Corrosivity per IEC 60754-2
	-PRYSMIAN Internal Testing	Multiple Cable Flame Test per DIN EN 50305-9 Low Smoke Emission per IEC 61034, EN 61034 (Light Transmittance > 70%) Low Toxicity per DIN EN 50305, ITC < 3
	Environmentally Friendly	TECSUN (PV) PV-Wire complies with RoHS directives 2002/95/EG, 2005/69/EG and 2006/122/EG of the European Union
<b>Direct Burial</b>	Installation Conditions	Installation Conditions per VDE 0800 Section 174 § 5.4.2 and VDE 0891 Section 6 § 4.2 ratings



## TECSUN (PV) PV1-F



### Design features

Type designation	TECSUN (PV) PV1-F
Conductor	Electrolytic tinned copper, Class 5 in accordance with IEC 60228 (VDE 0295)
Insulation	HEPR 120° C similar to IEC 60502-1 (compound type EI6 / EI8)
Core identification	Natural colour - White
Sheath	Cross-linked EVA rubber 120 ° C based on DIN EN 50563-2-1 (compound type EM4 / EM8) Insulation and sheath are connected solidly (Two-layer-insulation )
Sheath-colours	black, blue, red
Marking	(rhombus) PRYSMIAN TECSUN (PV) PV1-F (cross-section) 0.6/1 kV (VDE-REG. / TÜV )



## Selection and ordering data

Nominal cross-section and colour	Order No.	Conductor diameter	Overall diameter of cable		Approx. net weight	Minimum bending radius	Maximum permissible tensile load	Current carrying capacity at 60° C ambient temperature (free air)	Permissible short circuit current (1s)
			Min.value	Max.value					
		[mm]	[mm]	[mm]	[kg/km]	[mm]	[N]	[A]	[kA]
1.5 mm <sup>2</sup> black	5DH93011	1.6	4.4	4.8	29	14.4	23	29	0.19
1.5 mm <sup>2</sup> blue	5DH93012	1.6	4.4	4.8	29	14.4	23	29	0.19
1.5 mm <sup>2</sup> red	5DH93013	1.6	4.4	4.8	29	14.4	23	29	0.19
2.5 mm <sup>2</sup> black	5DH93012	1.9	4.7	5.1	43	15.3	38	41	0.32
2.5 mm <sup>2</sup> blue	5DH93022	1.9	4.7	5.1	43	15.3	38	41	0.32
2.5 mm <sup>2</sup> red	5DH93023	1.9	4.7	5.1	43	15.3	38	41	0.32
4.0 mm <sup>2</sup> black	5DH93031	2.4	5.2	5.6	58	16.8	60	55	0.50
4.0 mm <sup>2</sup> blue	5DH93032	2.4	5.2	5.6	58	16.8	60	55	0.50
4.0 mm <sup>2</sup> red	5DH93033	2.4	5.2	5.6	58	16.8	60	55	0.50
6.0 mm <sup>2</sup> black	5DH93041	2.9	5.7	6.1	76	18.3	90	70	0.76
6.0 mm <sup>2</sup> blue	5DH93042	2.9	5.7	6.1	76	18.3	90	70	0.76
6.0 mm <sup>2</sup> red	5DH93043	2.9	5.7	6.1	76	18.3	90	70	0.76
10 mm <sup>2</sup> black	5DH93051	4.0	6.8	7.2	120	21.6	150	98	1.26
16 mm <sup>2</sup> black	5DH93061	5.5	8.3	9.0	178	36	240	132	2.01
25 mm <sup>2</sup> black	5DH93071	6.4	10.0	10.7	273	43	375	176	3.15
35 mm <sup>2</sup> black	5DH93081	7.5	11.1	11.8	364	47	525	218	4.41
50 mm <sup>2</sup> black	5DH93091	9.0	12.6	13.3	500	53	750	276	6.30
70 mm <sup>2</sup> black	5DH93101	10.8	14.4	15.2	686	61	1050	347	8.82
95 mm <sup>2</sup> black	5DH93111	12.6	16.2	17.0	899	68	1425	416	12.0
120 mm <sup>2</sup> black	5DH93121	14.3	17.7	18.7	1131	75	1800	488	15.1
150 mm <sup>2</sup> black	5DH93131	15.9	19.7	20.7	1382	83	2250	566	18.9
185 mm <sup>2</sup> black	5DH93141	17.5	21.3	22.3	1669	89	2775	644	23.3
240 mm <sup>2</sup> black	5DH93151	20.5	24.2	25.5	2208	102	3600	775	30.4



# Linking sustainable ideas to real world results

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