PRYSMIAN
CABLES & SYSTEMS

TECSUN(PV) PV1-F
Cables for Photovoltaics

ENERGY

Technical Data

	Manufacturer	Prysmian Kabel und Systeme GmbH Kabelwerk Neustadt bei Coburg / DE
	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 Solar cables TECSUN (PV) are intented for use in photovoltaic power supply systems and similar applications as free movable, free hanging, fixed installation and buried in ground in constructional covered systems. The cables can be used indoor, outdoor, in explosion hazard areas, in industry and agriculture. They are suitable for applications in/at equipment with protective insulation (protecting class II). In other respects IEC 61215 and 61646, IEC 60364-7-712:2002 and DIN VDE 0100 part 520 applies.
Electrical parameters	Rated voltage	AC 0.6/1.0 kV
	Maximum PV-System voltage	DC up to 2.0 kV possible
	Maximum permissible operating voltage in AC systems	0.7/1.2 kV
	Maximum permissible operating voltage in DC systems	0.9/1.8 kV
	Test voltage	AC 6 kV / DC 10 kV (15 min.)
	Ampacity	According to Requirements for cables for PV systems, DKE/VDE AK 411.2.3
	Tests	According to HD 22.2 - conductor resistance, test voltages AC and DC, electric strength, surface resistance, spark test on insulation, insulation resistance at 20°C and 90°C in water and at 120°C in air. EN 50305 Part 6 - DC-stability (10 days, 85°C, salt water, 1.5 kV DC)
Thermal parameters	Maximum permissible ambient temperature	+90°C (stationary and in motion)
	Minimum permissible temperature	-40°C (stationary and in motion)
	Maximum permissible operating temperature of the conductor	+120°C; Interpretation according to IEC 60216: permanent temperature 120°C for 20.000 h (= 2.3 years), at max. 90°C permanent temperature (= 30 years)
	Short-circuit temperature	+250°C (at the conductor max. 5 sec.)
	Resistance to cold	Bending test at low temperature according to DIN EN 60811-1-4 Impact test similar to DIN EN 50305
	Damp-Heat Test	According to EN 60068-2-78 1.000h at 90°C and 85% humidity

Technical Data

Mechanical parameters	Tensile load	15 N/mm² in operation, 50 N/mm² during installation
	Minimum bending radii	see selection and ordering data
	Abrasion	According to DIN EN 53516: against abrasive paper Sheath against sheath (internal testing) Sheath against metal (internal testing) Sheath against plastics (internal testing)
	Shrinkage test	According to EN 60811-1-3
	Pressure test at high temperature	According to EN 60811-3-1
	Dynamic penetration test	According to Requirements for cables for PV systems, DKE/VDE 411.2.3
	Shore-hardness	85 according to DIN EN 53505
	Gnawer resistance	An optimum safety can be reached with protective hoses and by use of special cable types with metallic coating such as spinning or braid.
Chemical parameters	Mineral oil resistance	24h, 100°C according to DIN VDE 0473-811-2-1, DIN EN 60811-2-1
	Acid and alkaline resistance	According to EN 60811-2-1 7 days, 23°C (N-Oxalic acid, N-Sodium hydroxide)
	Ammonia resistance	30 days in saturated ammonia atmosphere (internal testing)
	Weather resistance	Ozone resistance according to DIN EN 50396 test type B, HD 22.2 test type B UV-resistance according to UL 1581 (Xeno-Test), ISO 4892-2 (Method A) and HD506/A1-2.4.20 Absorption of water (gravimetric) according to DIN VDE 0473-811-1-3, DIN EN 60811-1-3
	Behaviour in case of fire	Flame propagation Single cable according to DIN VDE 0482 Part 332-1-2, DIN EN 60332-1-2 Multiple cable according to DIN VDE 0482 Part 266-2-5, DIN EN 50305-9 Low smoke emission according to DIN VDE 0482 Part 268-2, DIN EN 50268-2 (light transmittance > 70%) Corrosivity according to DIN EN 50267-2-2 Toxicity according to DIN EN 50305, ITC-index < 3
	Ecological innocuousness	TECSUN (PV) cables are in accordance with the codes 2000/53/EG, 2002/96/EG, 2003/11/EG and exempt from metallic lead-, mercury-, hexavalent chromium- und bromine containing compounds. RoHS conform.

Design features

Type designation	TECSUN (PV) PV1-F
Conductor	Electrolytic copper, tinned, Class 5 according to IEC 60228 (DIN VDE 0295)
Insulation	HEPR 120°C similar to IEC 60502-1 (compound type EI6 / EI8)
Core identification	Natural colour - bright
Sheath	EVA 120 °C based on DIN VDE 0282 part 1, HD 22.1 (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 [mm]	Overall diameter of cable Min. value [mm]	Overall diameter of cable Max. value [mm]	Approx. net weight [kg/km]	Minimum bending radius [mm]	Maximum permissible tensile load [N]	Current carrying capacity at 60°C ambient temperature (free in air) [A]	Permissible short circuit current (1s) [kA]
TECSUN (PV) PV1-F									
1,5mm² black	5DH93011	1,6	4,4	4,8	29	14,4	23	29	0,19
1,5mm² blue	5DH93012	1,6	4,4	4,8	29	14,4	23	29	0,19
1,5mm² red	5DH93013	1,6	4,4	4,8	29	14,4	23	29	0,19
2,5mm² black	5DH93012	1,9	4,7	5,1	43	15,3	38	41	0,32
2,5mm² blue	5DH93022	1,9	4,7	5,1	43	15,3	38	41	0,32
2,5mm² red	5DH93023	1,9	4,7	5,1	43	15,3	38	41	0,32
4,0mm² black	5DH93031	2,4	5,2	5,6	58	16,8	60	55	0,50
4,0mm² blue	5DH93032	2,4	5,2	5,6	58	16,8	60	55	0,50
4,0mm² red	5DH93033	2,4	5,2	5,6	58	16,8	60	55	0,50
6,0mm² black	5DH93041	2,9	5,7	6,1	76	18,3	90	70	0,76
6,0mm² blue	5DH93042	2,9	5,7	6,1	76	18,3	90	70	0,76
6,0mm² red	5DH93043	2,9	5,7	6,1	76	18,3	90	70	0,76
10mm² black	5DH93051	4,0	6,8	7,2	120	21,6	150	98	1,26
16mm² black	5DH93061	5,5	8,3	9,0	178	36	240	132	2,01
25mm² black	5DH93071	6,4	10,0	10,7	273	43	375	176	3,15
35mm² black	5DH93081	7,5	11,1	11,8	364	47	525	218	4,41
50mm² black	5DH93091	9,0	12,6	13,3	500	53	750	276	6,30
70mm² black	5DH93101	10,8	14,4	15,2	686	61	1.050	347	8,82
95mm² black	5DH93111	12,6	16,2	17,0	899	68	1.425	416	12,0
120mm² black	5DH93121	14,3	17,7	18,7	1.131	75	1.800	488	15,1
150mm² black	5DH93131	15,9	19,7	20,7	1.382	83	2.250	566	18,9
185mm² black	5DH93141	17,5	21,3	22,3	1.669	89	2.775	644	23,3
240mm² black	5DH93151	20,5	24,2	25,5	2.208	102	3.600	775	30,4