TECSUN(UL) PV1-F 0,6/1kV AC (600V UL)
PV cables, rubber insulated, UL and TÜV certified

Application

PRYSMIAN TECSUN (UL) PV1-F PV-Wire, acc. to UL 4703 and TÜV 2PfG 1169/08.2007, is intended for use in Photovoltaic Power Supply Systems. They are suitable for applications indoor and/or outdoor, in industrial and agriculture fields, in/at equipment with protective insulation (Protecting Class II) and in explosion hazard areas (PRYSMIAN Internal Testing). They may be installed fixed, freely suspended or free movable, in cable trays, conduits, on and in walls.
TECSUN (UL) PV1-F PV-Wire is permitted for direct burial (UL 4703-4).

Global data

Brand	TECSUN(UL)
Type designation	PV1-F, UL Categorie: ZKLA
Standard	Acc. to UL 4703 (PV-Wire), NEC NFPA 70 690.31A and TÜV 2 PfG 1169/08.2007
Certifications / Approvals	UL Cert-No. 011011-E312049; TÜV Cert.-No. R 60039360

Notes on installation

Notes on installation	Service Entrance Cable per UL 854: •Section 23 Impact Test •Section 24 Crushing Test TECSUN (UL) PV1-F PV-Wire is permitted for direct burial (UL 4703-4). The corresponding installation guidelines shall be taken in consideration.

Design features

Conductor	Electrolytic tinned copper, Class 5 in accordance with IEC 60228 (VDE 0295)
Insulation	HEPR complying with UL 1581 Table 50.245, IEC 60502-1
Outer sheath	Cross-linked EVA rubber complying with UL 1581 Table 50.245, DIN VDE 0282 part 1, HD 22.1. Insulation and Jacket are solidly bonded (Two-Layer-Insulation)
Outer sheath colour	Black

Electrical parameters

Rated voltage	(Uo/U) 600/1000 V AC per TÜV 2PfG 1169/08.2007 rating. (U) 600 V AC per UL 4703 rating
Max. permissible operating voltage AC	0.7/1.2 kV
Max. permissible operating voltage DC	0.9/1.8 kV
Test voltage	AC: 6,5 kV / DC: 15 kV (5 Min.)
Current Carrying Capacity description	Meets requirements for PV-Wire as per TÜV 2 PfG 1169/08.2007
Electrical Tests	TÜV 2PfG 1169/08.2007: meets HD 22.2 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, 900 V DC), Insulation Resistance at 20° C and 90° C in Water. PRYSMIAN Internal Testing: Insulation Resistance at 120° C in Air.
Relative Permittivity and Stability Factor	• Meets UL 2556 Section 6.5: εr ≤ 6 • Meets UL 2556 Section 6.6: after 14 days < 1; Difference day 1 and day 14 < 0.5;
Long Term Insulation Resistance	• In Water: 90° C 600 V (AC) per UL 2556 Section 6.4.4.2.1 ≥3GΩ after 12 weeks • In Air: 113° C 600 V (AC) per UL 2556 Section 6.4.4.2.2 ≥3GΩ after 12 weeks
Dielectric Withstand	Per UL 2556 Section 6.2 Method 1 and UL 44 Table 42 and 43: 1.5 - 6 mm² 3.0 kV; 10 - 35 mm² 3.5 kV; 50 - 95 mm² 4.0 kV

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Chemical parameters

Reaction to fire	UL 4703 : • Vertical Flame Test per UL 2556-9.5 • Horizontal Flame Test per UL 2556-9.1 • VW-1 per UL 1581 1061 TÜV 2 PfG 1169/08.2007 • Flame propagation acc. to IEC 60332-1-2, DIN EN 60332-1-2 (Single Cable Flame Test) • Halogen-free acc. to IEC 60754-1 • No Corrosivity acc. to IEC 60754-2 PRYSMIAN Internal Testing: • Multiple Cable Flame Test acc. to DIN EN 50305-9 • Low Smoke Emission acc. to IEC 61034, EN 61034 (Light Transmittance > 70%) • Low Toxicity acc. to DIN EN 50305, ITC < 3
Resistance to oil	Meets UL 1581 Section 400.1, Requirements per UL 44 Table 20
Weather resistance	UL 4703: • Meets UL 2556 Section 4.2.8.5: 300 hours • Meets UL 44 Section 5.15.2: 720 hours TÜV 2PfG 1169/08.2007: • Ozone resistance: acc. to DIN EN 50396 Test Type B, HD 22.2 Test Type B • UV-Resistance: acc. to 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
Acid and alkaline resistance	Meets TÜV 2 PfG 1169/08.2007 7 days, 23° C: (N-Oxalic Acid, N-Sodium Hydroxide) per EN 60811-404
Ammonia Resistance	30 days in Saturated Ammonia Atmosphere (PRYSMIAN Internal Testing)
Conductor Corrosion	7 days 121° C per UL 2556 Section 8.1
Enviromentally Friendly	TECSUN (PV) PV-Wire complies with RoHS directives 2011/65/EU of the European Union

Thermal parameters

Max. operating temperature of the conductor	UL 4703 rating: +105° C (+221° F) Dry Operation TÜV 2 PfG 1169/08.2007: +120° C (+248° F) per IEC 60216 permanent temperature for 20.000 h (= 2.3 years); at max. 90° C permanent temperature (= 30 years)
Max. short circuit temperature of the conductor	TÜV 2PfG 1169/08.2007: +200° C (392° F) at the conductor max. 5 sec. PRYSMIAN Internal Testing: +250° C (482° F) at the conductor max. 5 sec.
Ambient temperature for fixed installation	min -40 °C ; max +90 °C
Ambient temperature in fully flexible operation	min -40 °C ; max +90 °C
Resistance to cold	UL 4703: Cold Bend Test at -40° C temperature (per UL 2556 Section 7.5). Flexibility at -40° C temperature per UL 1581 Section 583 TÜV 2 PfG 1169/08.2007: 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 and EN 60068-2-78: 1.000 h at 90° C and 85% humidity

Mechanical parameters

Max. tensile load	15 N/mm² in operation, 50 N/mm² during installation
Min. bending radius	4 x D
Abrasion resistance	PRYSMIAN Internal Testing: • Acc. to DIN EN 53516 against abrasive paper • Sheath against sheath • Sheath against metal • Sheath against plastics
Shrinkage Test	Meets TÜV 2PfG 1169/08.2007 <2% acc. to EN 60811-1-3
Pressure Test at High Temperature	Meets TÜV 2PfG 1169/08.2007 <50% acc. to EN 60811-3-1
Dynamic Penetration Test	Meets requirements for PV-Wire as per TÜV 2 PfG 1169/08.2007
Shore-Hardness	Type A: 85 acc. to DIN EN 53505 (PRYSMIAN Internal Testing)
Deformation Test	Pressure Head 9.5 mm Ø, 60 minutes, 131° C, 2000 g load per UL 2556 Section 7.7
Insulation Fall-In	Meets UL 2556 Section 7.1
Durability of Print	Test per UL 2556 Section 7.16 and UL 44 Section 5.2
Rodent resistance	Safety can be optimized by utilizing protective hoses and cables with spinning or braid metallic coatings

Number of cores x cross section	Part number	Conductor diameter max. mm	Outer diameter min. mm	Outer diameter max. mm	Bending radius fixec min. mm	Weight (approx.) kg/km	Conductor resistance at 20°Cmax Ω/km	Current carrying capacity for single cable free in air (60°C ambient temp.) A	Short Circuit Current (1s.from 90°C to 250°C) kA
1,5 mm2 / 16 AWG	20025133	1.6	5.3	5.7	21.2	45	13.7	30	0.19
2,5 mm2 / 14 AWG	20025135	1.9	5.6	6	22.4	57	21	41	0.32
4 mm2 / 12 AWG	20025134	2.4	6.1	6.5	24.4	74	5.09	55	0.5
6 mm2 / 10 AWG	20025136	2.9	6.6	7	29.6	94	3.39	70	1.76
10 mm2 / 8 AWG	20025137	4	8.3	9	33.6	152	1.95	98	1.26
16 mm2 / 6 AWG	20025458	5.5	10	10.7	39.6	230	1.24	132	2.01
25 mm2 / 4 AWG	20025459	6.4	11.3	12	44.8	320	0.795	176	3.15
35 mm2 / 2 AWG	20025460	7.5	12.3	13	48.4	420	0.565	218	4.41
50 mm2 / 1 AWG	20025461	9	14.8	15.5	59.2	600	0.393	276	6.3
70 mm2 / 2 / 0 AWG	20025462	10.8	16.6	17.3	66.4	800	0.277	347	8.82
95 mm2 / 3 / 0 AWG	20025463	12.6	18.4	19.1	73.6	1010	0.21	416	12