Synergy Cables Ltd.
Sapirim Industrial Park, 1 Eshel Street
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PV DC ARRAY and PV DC MAIN CABLES

XLPE Insulated, PVC UV Sheathed Single Core Cables FR1,

1800/3000(3600) Volts for DC Systems

DESCRIPTION:
For indoor or outdoor installation in open air, trough conduit or for direct burial in wet or dry soil or inside duct where no mechanical damage is to be expected. These cables are suitable for use in:

- unearthed DC systems having continuous operating voltage between conductors of maximum 3.0 kV and maximum permissible voltage less than 3.6 kV.
- single-phase, earthed DC systems having an operating voltage between conductors of maximum 1.8 kV.

These cables have a temperature rating of 90°C and are UV resistant.
These cables are used to connect Combiner Boxes (CBs) to Inverters (INVs) and they are suitable, due to their flexibility, for use in floating photo-voltaic power stations.

STANDARDS:
1. Conforms to IEC 60502-1 Standard: *Power cables with extruded insulation and their accessories for rated voltages from 1 kV (U_m = 1,2 kV) up to 30 kV (U_m = 36 kV)" – "Part 1: Cables for rated voltages of 1 kV (U_m = 1,2 kV) and 3 kV (U_m = 3,6 kV)"*.
2. Conforms to Israeli Standard IS 1516: *"Extruded solid dielectric insulated power cables for rated voltages from 1 kV to 30 kV"*
3. IEC 60332-1 Standard*: "Tests on electric and optical fiber cables under fire conditions –Part 1: Test for vertical flame spread of vertically-mounted wires or cables"*
4. IEC 60038 Standard: "*IEC Standard Voltages*"
5. IEC 60364-7-712 Standard: "*Electrical Installations of buildings – part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems*".
6. Conforms to European Union Regulation (EC) No. 1907/2006, concerning the Registration, Evaluation, Authorization and Restriction of chemicals (*REACH Regulation*).
7. Conforms to EU Directive No. 2002/95/CE on Restriction on Hazardous Substances, (*RoHS Directive*).

CONSTRUCTION:
Flexible copper conductor - Class 5, has an extruded cross-linked polyethylene - XLPE red (suffix -2) or black (suffix -0) insulation applied around the conductor.
A Black flexible **PVC UV** and water-resistant outer sheath with printed marking is extruded overall.

TESTING:
The cables shall withstand when tested as per paragraph 15.3.2 from IEC-60502-1, at a DC voltage of 15.5 kV.
The cables shall pass the flame propagation test as per IEC-60332-1 ***(FR1)***

Typical Drawings

SDI (Flex)

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(Continued…**)**

Cable P/N	Nominal Cross-sectional Area of the conductor	Insulation thickness (Nominal)	Sheath thickness (Nominal)	Overall diameter (approx.)	Minimum bending radius, 10*D	Complete Cable Weight	Conductor DC resistance (20°C)	Short-Circuit rating (1 s) (1)	Current rating - direct buried (2),(3)	Current rating - In free air (2),(4)	Voltage drop for two-lead DC system
	mm²	mm	mm	mm	mm	kg/km	Ω/km	kA	A	A	V/A/km
COPPER CONDUCTOR (Designation SDI FLEX)											
181DCX7V0500	50	2.0	1.5	17	170	600	0.386	6.9	151	231	0.984
181DCX7V0502											
181DCX7V0950	95	2.0	1.5	20.5	205	1,005	0.206	13.1	246	369	0.492
181DCX7V0952											
181DCX7V1200	120	2.0	1.5	21.5	215	1,265	0.161	16.7	278	422	0.390
181DCX7V1202											

(1) Short circuit rating is based on an initial conductor temperature of 90 °C and a final temperature of 250 °C.

(2) Current ratings calculated by CYME/CYMCAP software, for a load factor of 1.0 (100%).

*(3) Cable directly buried, in touching-pair formation, at 0.8m depth in soil at, having a temperature of 30°and a thermal resistivity of 2.5 K*m/w.*

(4) Cable in free-air, in touching-pair formation, ambient temperature of 35°, protected against direct sun radiation (shaded).

TEMPERATURE RATING FACTORS										
Ambient Temperature °C	20	25	30	35	40	45	50	55	60	65
Correction factor air	1.13	1.09	1.04	1.00	0.95	0.90	0.85	0.80	0.74	0.67
Correction factor ground	1.08	1.04	1.00	0.96	0.91	0.87	0.82	0.76	0.71	0.65