TECHNICAL DATA SHEET

Specific systems protection

ESP Photovoltaic (PV) DC Series

furse

Type 2 tested surge protective device SPD (to BS EN 61643-31) for DC applications such as Photovoltaic PV solar panel systems. Typically for use at the DC side of the DC-AC inverter located within lightning protection zone 1 LPZ 1 to protect the PV system from surge damage due to lightning and electrical switching events.

LPZ 1→2 | COMMON MODE Equipotential Bonding | MAINS TEST TYPE 2 | ENHANCED Low let-through voltage | STATUS INDICATION + VOLT-FREE CONTACT | REPLACEABLE PROTECTION MODULE

Features & benefits

- Enhanced protection (to IEC/BS EN 62305) offering low let-through voltage further minimizing the risk of flashover creating dangerous sparking or electric shock
- Repeated protection in lightning intense environments
- The varistor based design eliminates the high follow current (I_f) associated with spark gap based surge protection
- Pluggable module design (with anti-vibration locking clip) allows for simple replacement at end-of-life
- Compact, space saving design
- Indicator shows when the protector requires replacement
- Remote signal contact, with fast fit screw-less push terminals, can indicate the SPDs status through interfacing with a building management system

Application

Use on the DC side of the DC-AC inverter for protection against partial direct or indirect lightning strikes. ESP Type 1 AC mains protectors (e.g. ESP 415T1/25/TNS) are further required at the AC side of the DC-AC inverter.

Installation

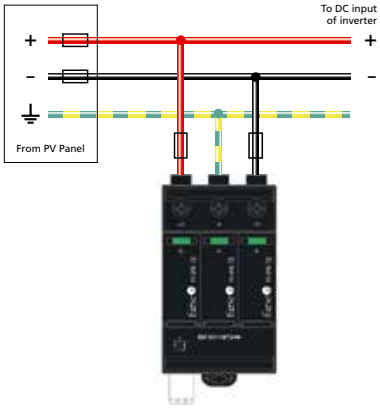
The SPD should be installed in the main distribution board with connecting leads of minimal length. The SPD should be installed in parallel to the DC supply of the DC-AC inverter via a suitable overcurrent protection device (e.g. gPV fuse) and is suitable for attachment to a 35 mm top hat DIN rail.

Accessories

Metallic enclosure:
MBX D4
ABB order code:
7TCA085400R0649

Weatherproof enclosure:
WBX D4
ABB order code:
7TCA085410R0032

SPD replacement modules:
ESP DC550T2/40/M
(module for 1100V SPD)
7TCA085460R0410
ESP DC750T2/30/M
(module for 1500V SPD)
7TCA085460R0412



IMPORTANT: In order to protect sensitive electronic equipment, particularly from electrical switching transients, plus ensure the continual operation of systems, full mode SPDs, with both common and differential mode protection, are required. ESP M1 Series or ESP D1 Series SPDs should be installed at AC sub-distribution boards feeding sensitive equipment. For further information, please refer to the Furse Guide to BS EN 62305 Protection against lightning.

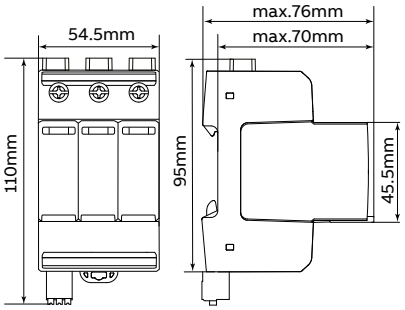
ESP DC Series - Technical specification

Electrical specification	ESP DC1100T2/40	ESP DC1500T2/30
ABB order code	7TCA085460R0415	7TCA085460R0411
Maximum DC voltage (RMS/DC), U_{CPV}	1100 V	1500 V
Short circuit current rating, I_{SCPV}	11 kA	
Leakage current (to earth)	< 1 mA	
Volt free contact:(3)	Push terminal	
– current rating	1 A	
– nominal voltage (RMS)	250 V	
Back up fuse	If the I_{SCMAX} rating delivered by the PV array is greater than I_{SCPV} rating of the SPD then external fusing must be fitted. ABB Furse always recommends the use of external PV fusing in all installations as it is good electrical practice. The following fuse guidance from IEC 60364-7-712 applies: - Use gPV fuses in accordance with IEC 60269-6 - The rated operating voltage *Ue* shall be greater or equal to U_{OCMAX} of the PV array. To determine a suitable value for the gPV fuse, the following guidance is offered: - Determine I_{SCMAX} that can be delivered by the PV array at that point in the installation - Divide this value by 10 (equivalent to low irradiation value), divide this by 1.25 - Install gPV fuse value closest to this calculated value. - Example: if I_{SCMAX} = 3000A, then a suitable fuse would be 240A gPV	

Transient specification	ESP DC1100T2/40	ESP DC1500T2/30
Type 2 (BS EN/EN), Class II (IEC)		
Nominal discharge current 8/20 µs (per mode) I_n	20 kA	
Let-through voltage *U*p at I_n(1)	< 3.8 kV	< 5.0 kV
Maximum discharge current I_{max} (per mode)(2)	40 kA	30 kA

Mechanical specification	ESP DC1100T2/40	ESP DC1500T2/30
Temperature range	-40 to +80 °C	
Connection type	Screw terminal - maximum torque 4.5 Nm	
Conductor size (stranded)	35 mm²	
Earth connection	Screw terminal	
Volt free contact	Push-fit connection with conductor up to 1.5 mm² (solid)	
Degree of protection (IEC 60529)	IP20	
Case Material	Thermoplastic UL-94 V-0	
Mounting	Indoor, 35 mm top hat DIN rail	
Weight – Unit	0.41 kg	0.46 kg
– Packaged	0.42 kg	0.47 kg
Dimensions to DIN 43880 - H x D x W:(3)	95 mm x 76 mm x 54.5 mm (3TE)	

(1) The maximum transient voltage let-through of the protector throughout the test, per mode
(2) The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation
(3) The remote signal contact (removable) adds 15 mm to height



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