

Surge Protection for Off-grid PV installations



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Description

The off-grid PV installation are especially exposed to lightning effects, because :

- their locations are usually isolated
- the local lightning density parameter (N_g) is often high grade (mountains or rural locations)

Consequences

All the lines going out of the building (or shelter), as PV modules, lightning system, pumps....will be stressed by surge voltages and the systems connected and regulators/chargers will face disturbances or damages.

Need of Surge Protectors

In case of damages on the PV regulator/charge, the off-grid installation will face a total loss of service : Installation of surge protectors is highly recommended.

Standardization

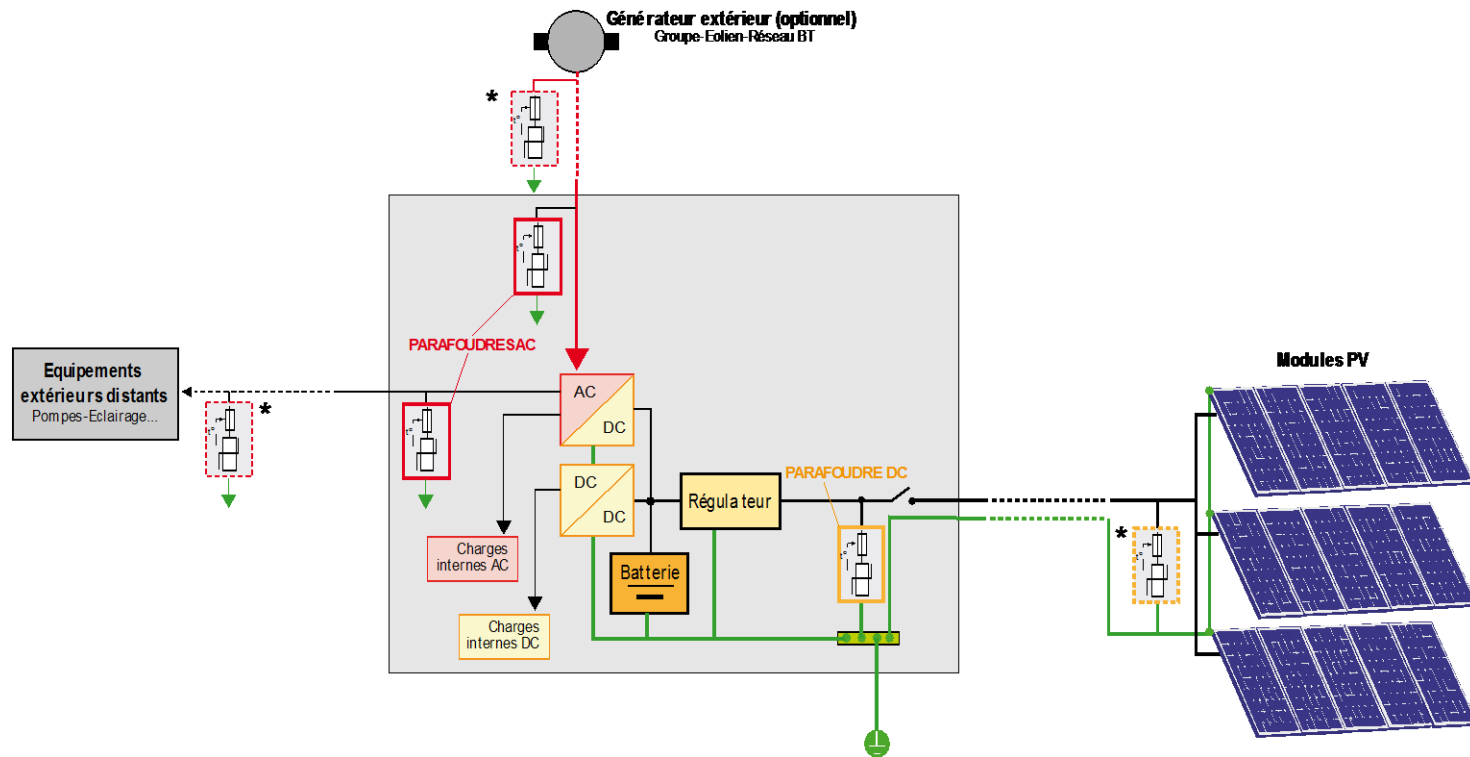
No official standard addresses surge protection for off-grid PV installation



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Surge protection Approach

- **DC surge protectors** (DS2x0-xxDC) on the input of the PV lines coming from the outside.
- **AC surge protectors** (DS40, DS240..) on the input of the possible additional external AC power supplies (wind turbine, power generator, AC grid)
- **AC surge protectors** (type DS40, DS240..) on the AC lines for outdoor loads (pumps, lighting...)
- **Additional surge protector** on outdoor systems are recommended if they are remote from the main building (> 10 m).



Surge Protection for Off-grid PV installations

DS2x0-DC range : SPD for Off-grid PV installations

- Type 2 pluggable Surge protectors
- Compact size (118 mm width)
- DIN rail mounting
- I_{max} from 20 to 40 kA
- Nominal voltages : from 12 to 350 Vdc
- Remote signalling for disconnection (option)



Part Number	DS22 0- 12DC	DS220- 24DC	DS230- 48DC	DS240- 75DC	DS240- 95DC	DS240- 110DC	DS240- 130DC	DS240- 220DC	DS240- 280DC	DS240- 350DC	
Nominal DC voltage	U_n	12 Vdc	24 Vdc	48Vdc	75 Vdc	95 Vdc	110 Vdc	130 Vdc	220 Vdc	280 Vdc	350 Vdc
Max operating DC voltage	U_c	24 Vdc	38 Vdc	65 Vdc	100 Vdc	125 Vdc	150 Vdc	180 Vdc	275 Vdc	350 Vdc	460 Vdc
Nominal discharge current	I_n	10kA	10 kA	15 kA	20 kA	20kA	20 kA	20 kA	20 kA	20 kA	20 kA
Maximum discharge current	I_{max}	20 kA	20 kA	30 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA	40 kA
Protection Level @ In	U_p	250 V	250 V	300 V	390 V	450 V	500 V	620 V	900 V	1200 V	1400 V
Protection Level @ 3kA		195 V	195 V	230 V	280 V	310 V	370 V	510 V	690 V	920 V	1000 V
Dimension (width)		18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm	18 mm



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