



CITEL

■■■ Reliability in Surge Protection ■■■

**Surge Protection
Obstruction lighting
for**

Wind Turbine installation



Windmill generators are equipment especially exposed to the risks of lightning and transitory overvoltages : due to their height and to their location on high or/and isolated spots, the probability of direct lightning strikes is much higher than for traditional installations. In case of lightning strike, windmill generators are usually designed to drain the lightning current in a safe way, but internal equipments (generator, management, control/commands, sensors....) will be submitted to transient surges induced by the phenomena: in order to ensure the necessary operation and to improve the windmill generator's global reliability, surge protectors are necessary and will have to be installed at the entrance of the various sensitive equipments.

Obstruction Lighting

7



LED OBSTA FLASH

obsta
opamps

Datalines

4



DLU / DLA
Datalines SPD

230V / 400V

8



DS230-48DC
Type 2 SPD
48DC

5



DS240-230/G
Single-phase
Type 2 SPD

6



DS43S-400
3-phase Type 2 SPD
for 400V

690V

2



DU33S-1000G/WD
3-phase Type 2 SPD - 690V

1



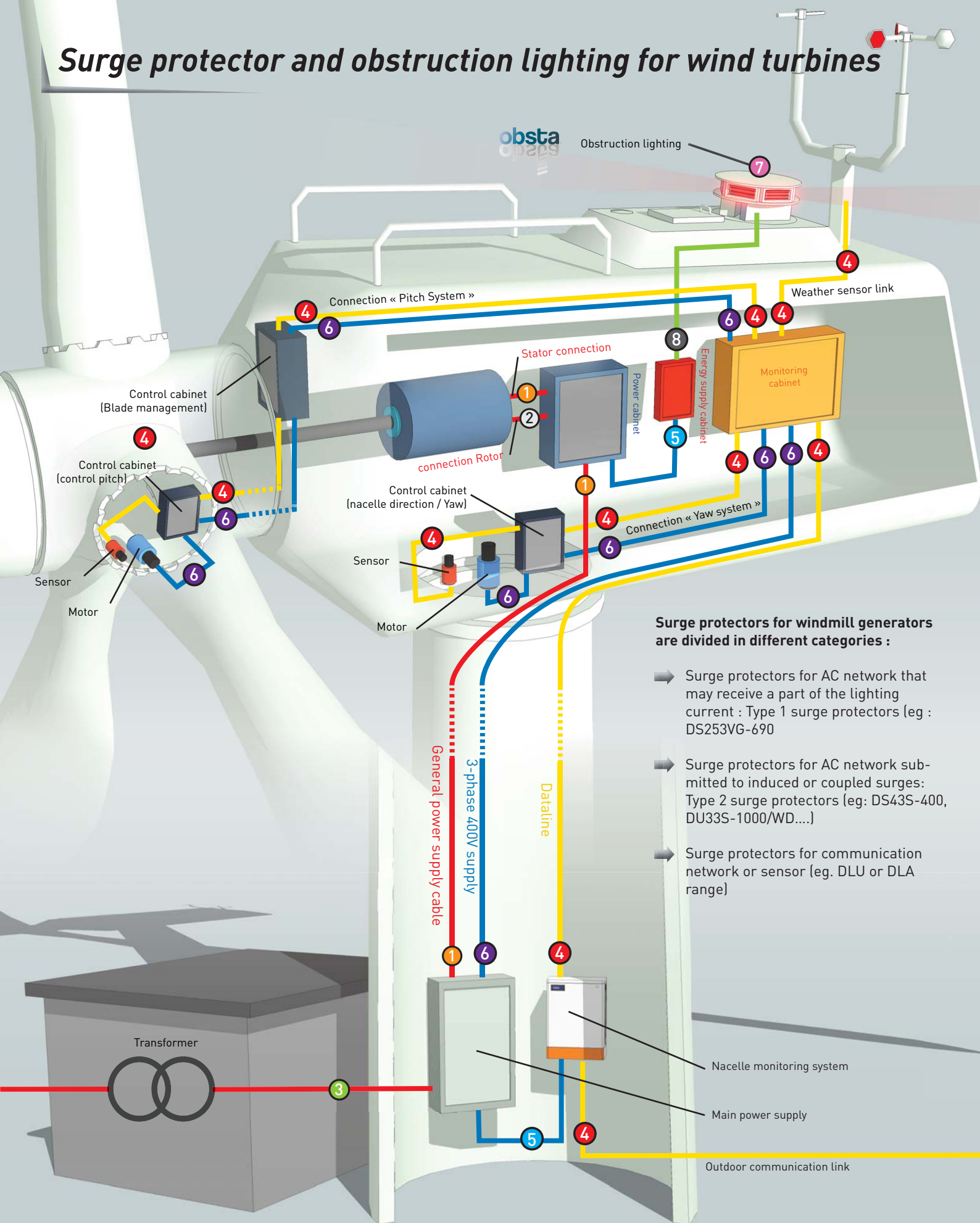
DS43S-690/WD
AC Type 2 SPD

3



DS253VG-690
3-phase Type 1 SPD 690V

Surge protector and obstruction lighting for wind turbines



Surge protectors for windmill generators are divided in different categories :

- ➔ Surge protectors for AC network that may receive a part of the lighting current : Type 1 surge protectors (eg : DS253VG-690)
- ➔ Surge protectors for AC network submitted to induced or coupled surges: Type 2 surge protectors (eg: DS43S-400, DU33S-1000/WD....)
- ➔ Surge protectors for communication network or sensor (eg. DLU or DLA range)

NB : Typical configuration that may vary according to the windturbine manufacturer and the type of installations.

3-phase surge protectors



DU33S-1000/WD/G



DS43S-690



DS43S-400



DS253VG-690

Citel range	DU33S-1000/WD/G	DS43S-690	DS43S-400
Network	3-phase + Neutral 400/690 V	3-phase 400/690 V	3-phase 400 V
SPD type	Type 2	Type 2	Type 2
Nominal discharge current	15 kA	20 kA	20 kA
Maximal discharge current	100 kA	40 kA	40 kA
Connection	Screw terminal 35 mm ² max	Screw terminal 35 mm ² max	Screw terminal 25 mm ² max
Mounting	DIN Rail	DIN Rail	DIN Rail
End of life	disconnection + Indicator	disconnection + Indicator	disconnection + Indicator
Remote signalling	Yes	Yes	Yes
Dimensions (width)	144 mm	54 mm	54 mm

Référence CITEL	DS253VG-690
Network	3-phase 400/690 V
SPD type	Type 1+2+3
Nominal discharge current	30 kA
Maximum lightning current 10/350µs	75 kA
Maximal discharge current	100 kA
Connection	Screw terminal 35 mm ² max
Mounting	DIN Rail
End of life	disconnection + Indicator
Remote signalling	Yes
Dimensions (width)	270 mm

Single-phase surge protector



DS240-230/G

Référence CITEL	DS240-230/G
Single-phase	230 V
SPD type	Type 2
Nominal discharge current	20 kA
Maximal discharge current	40 kA
Connection	Screw terminal 25 mm ² max
Mounting	DIN Rail
End of life	disconnection + Indicator
Remote signalling	Option (DS240S-230/G)
Dimensions (width)	18 mm

48V DC surge protector



DS230-48DC

CITEL range	DS230-48DC
DC power supply	48V DC
SPD type	Type 2
Nominal discharge current	15 kA
Maximal discharge current	30 kA
Connection	Screw terminal 10 mm ² max
Mounting	DIN Rail
End of life	SPD disconnection + Indicator On
Remote signalling	Option (DS230S-48DC)
Dimensions (width)	18 mm

Dataline SPD



DLA



DLU

CITEL range	DLA range	DLU range
Format	Pluggable SPD	Monoblock SPD
Typical application	Datalines	Datalines
Configuration	1 pair + shield	1 pair + shield
Nominal line voltage	12 V, 24 V, 150 V	12 V, 24 V, 150 V
Maximum line current	300 mA	300 mA
Nominal discharge current	5 kA	5 kA
Maximal discharge current	20 kA	20 kA
Mounting	DIN Rail	DIN rail

OBSTA Obstruction lighting



OBSTA P/N	Main characteristics	Power supply	Max. consumption
13720	White only	48 Vdc	< 75 W
13721	Red only	48 Vdc	< 25 W
13722	Bi color	48 Vdc	< 75 W
13723	White only	120/230 Vac	< 75 W
13724	Red only	120/230 Vac	< 25 W
13725	Bi color	120/230 Vac	< 75 W

Main characteristics	Luminous output		Color		Beam spread		Flashes per minute
	Day	Night	Day	Night	Vertical	Horizontal	
Red only		2000 Cd		Red	3°	360°	40
White only	20 000 Cd	2000 Cd	White	White			
Bi color	20 000 Cd	2000 Cd	White	Red			



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