

Surge Protection Devices Ex9UE1



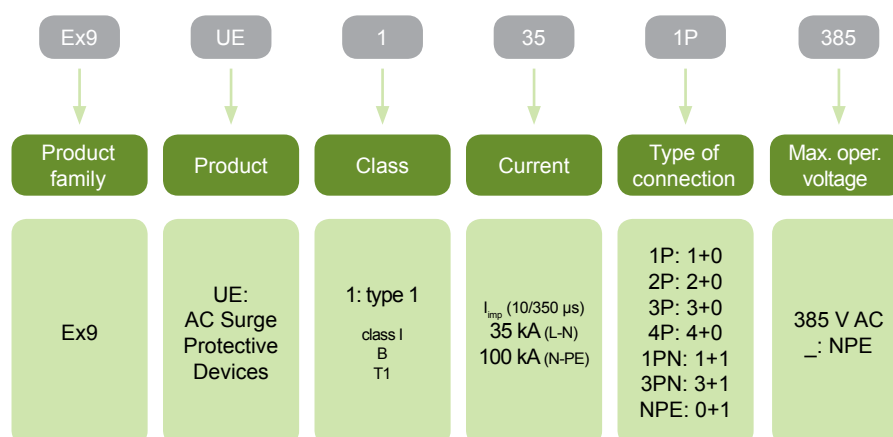
- Surge Protection Devices
- Type 1 (Class I, T1, B)
- Tested according to EN 61643-11
- Maximum impulse current I_{imp} 35 kA (10/350 μ s) per phase and 100 kA for NPE module
- Maximum continuous operating voltage U_c 385 V for phase device
- Versions with 1+0, 2+0, 3+0, 4+0, 1+1, 3+1 and 0+1 (N-PE) connection

The Ex9UE1 35 line is a group of Class I Surge Protective Devices. They are intended as a protection against direct hit of lightning strokes of high intensities or in installation with often occurrence of lightning strokes. In standard three phase TN-C grid, they provides protection over LPL I requirements given in EN 62305 with total lightning current introduced into electrical installation over 100 kA and total lightning stroke current 210 or 280 kA based on physical configuration and mutual position of grounding point of lightning rod, grounding point of the electrical installation and place of SPD installation.

The design of Ex9UE1 35 is fully based on Spark Gap solution. It brings very high capability and life time and full insulation in case of no overvoltage is present. Thus, these SPDs can be used also upstream to energy meters and can be intended for IT grids (with respective special tests).

The high value of I_{imp} makes these SPDs suitable also for single phase outlets which are wired out of LPZ 0-1 and thus can be hit with direct lightning stroke. Due to the single phase cable, the total lightning current is split to 3 conductors only and intensity per conductor is thus higher than in the case of ingoing three phase cable.

Type Key



Certification marks



Surge Protection Devices Ex9UE1

Type 1 SPDs (Class I, T1, B) complete devices

- Maximum impulse current I_{imp} 35 kA (10/350 μ s) per Ex9UE1 35 module and 100 kA (10/350 μ s) for Ex9UE1 100 NPE module
- Nominal discharge current I_n 35 kA (8/20 μ s) per Ex9UE1 35 module and 100 kA (8/20 μ s) for Ex9UE1 100 NPE module
- Maximum continuous operating voltage U_c 385 V AC per Ex9UE1 35 module and 260 V AC for Ex9UE1 100 NPE module
- Due to I_{imp} 35 kA per module suitable for LPL I - IV according to EN 62305 in standard 3-phase TN-C and TN-S installations
- Coordination with class II SPDs:
 - Ex9UE2 20 xx 440 – direct coordination
 - Ex9UE2 20 xx 275 – coordination with cable of minimum length of 10 m in between Ex9UE1 35 and Ex9UE2 20 xx 275



Operating voltage U_c	Connection	Article No.	Type	Packing
385 V AC	1+0	107115	Ex9UE1 35 1P 385	1/81
385 V AC	1+1	107972	Ex9UE1 35 1PN 385	1
385 V AC	2+0	107973	Ex9UE1 35 2P 385	1
385 V AC	3+0	107116	Ex9UE1 35 3P 385	1
385 V AC	3+1	107118	Ex9UE1 35 3PN 385	1
385 V AC	4+0	107117	Ex9UE1 35 4P 385	1
260 V AC	0+1	107119	Ex9UE1 100 NPE	1/45

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General parameters

Suitable for protection of electrical installation against the effects of atmospheric overvoltage when a direct lightning strike to the building equipped with a lightning rod or lightning to the outdoor power line

Due to I_{imp} 35 kA per module suitable for LPL I - IV according to EN 62305-1 in standard 3-phase TN-C and TN-S installations

Electrical parameters

	1+0, 1+1, 2+0, 3+0, 3+1, 4+0 (L-N/PE/PEN connection)	3+1, 1+1, 0+1 (+1 N-PE connection)
Tested according to	EN 61643-11	
Classified type (test class)	Type 1 (Class I, B, T1)	
Technology	GDT (Spark-gap)	GDT (Spark-gap)
Rated operational voltage U_n	230 / 400 V AC	
Reference test voltage U_{REF}	255 V AC	
Rated load current I_L	80 A	
Max. continuous operating voltage U_c	385 V AC	260 V AC
Nominal frequency f	50 / 60 Hz	
Nominal discharge current I_n (8/20 μ s)	35 kA	100 kA
Max. impulse current I_{imp} (10/350 μ s)	35 kA	100 kA
Impulse current charge Q	17.5 As	50 As
Impulse current specific energy W/R	306 kJ/ Ω	2500 kJ/ Ω
Max discharge current I_{max} (8/20 μ s)	-	-
Voltage protection level U_p at I_n	4 kV *	3 kV **
Follow current interrupting rating I_{fi}	3 kA _{eff} at 260 V / 1.5 kA _{eff} at 385 V AC	0.1 kA _{eff}
Temporary overvoltage U_T (withstand)	440 V AC	1200 V AC
Front of wave sparkover voltage at 6 kV (1.2/50 μ s)	\leq 4 kV	\leq 3 kV
100% lightning sparkover voltage at 6 kV (1.2/50 μ s)	\leq 1.5 kV	\leq 1.5 kV
Residual current I_{PE} at U_{REF}	\leq 0.50 mA	\leq 0.10 mA
Standby power consumption P_c	\leq 200 mVA	\leq 26 mVA
Response time	\leq 100 ns	\leq 100 ns
Max. back-up fuse F1, F2	400 A gG 80 A at serial wiring 16 mm ²	-
Short-circuit current rating I_{SCCR}	3 kA _{eff} at 260 V / 1.5 kA _{eff} at 385 V AC	-
CTI value of material	\geq 600	\geq 600
Current factor k	1.6	-
Number of ports	1	
Type of LV system	TN-C, TN-S, TN-C-S, TT (1+1, 3+1)	

*) 4 kV the first peak of length of a few nanoseconds thanks to extremely fine measurement (front of wave sparkover voltage).
1.5 kV from conventional measurement (lightning sparkover voltage).

**) 3 kV the first peak of length of a few nanoseconds thanks to extremely fine measurement (front of wave sparkover voltage).
1.5 kV from conventional measurement (lightning sparkover voltage).

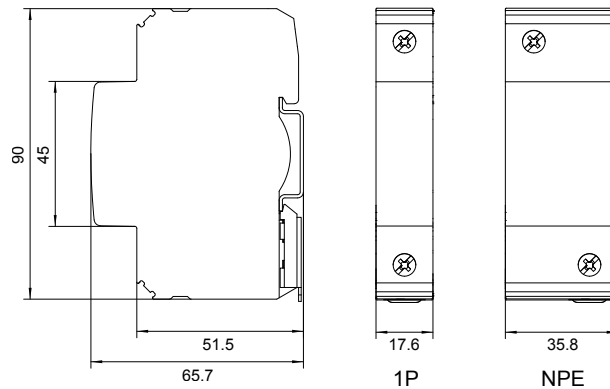
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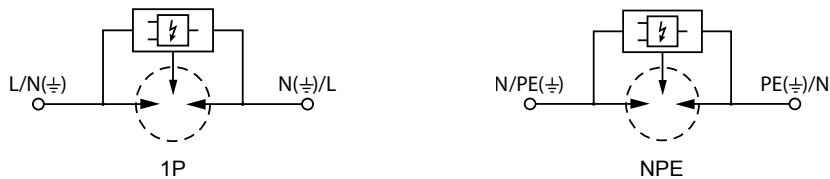
Mechanical parameters

	1+0	1+1	2+0	3+0	3+1	4+0	0+1
Device width	17.6 mm	53.4 mm	35.2 mm	52.8 mm	88,6 mm	70,4 mm	35.8 mm
Device height	90 mm (91 mm including rail clip) for single 1+0 or 0+1 device 95 mm including interconnecting busbar for multipole sets						
Frame size	45 mm						
Method of mounting	fixed						
Mounting	easy fastening onto 35 mm device rail (DIN)						
Mounting position	arbitrary						
Degree of protection	IP40 (IP20 terminals)						
Terminals	combined lift + open mouthed M5 screws (L-N) M6 screws (N-PE)						
Terminal capacity (solid wire)	10 — 35 mm ² (L-N) 10 — 50 mm ² (N-PE)						
Fastening torque of terminals	4.5 Nm (L-N) 8 Nm (N-PE)						
Pollution degree	2						
Surge voltage category	III						
Inflammability of used	V-0						
Location	indoor						
Ambient temperature	-40 — +85 °C						
Altitude	≤ 2000 m						
Relative humidity	5 — 95 %						
Weight (per pole)	0.17 kg	0.46 kg	0.34 kg	0.51 kg	0.8 kg	0.68 kg	0.29 kg

Dimensions



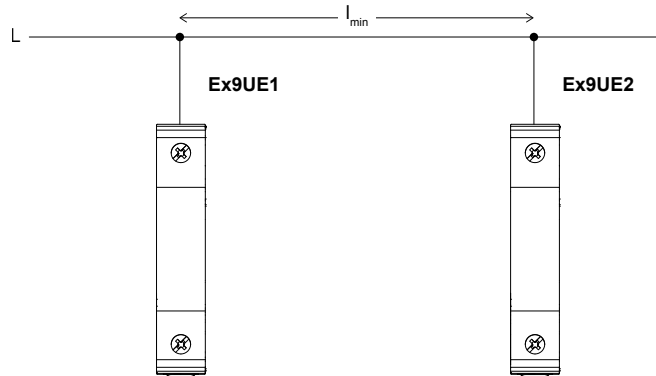
Schematic diagrams



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SPD coordination



Class I	Class II	Min. cable length I_{min}
Ex9UE1 35	Ex9UE2 x x 440	0
Ex9UE1 35	Ex9UE2 x x 275	≥ 10 m

Connection diagrams, protection mode

