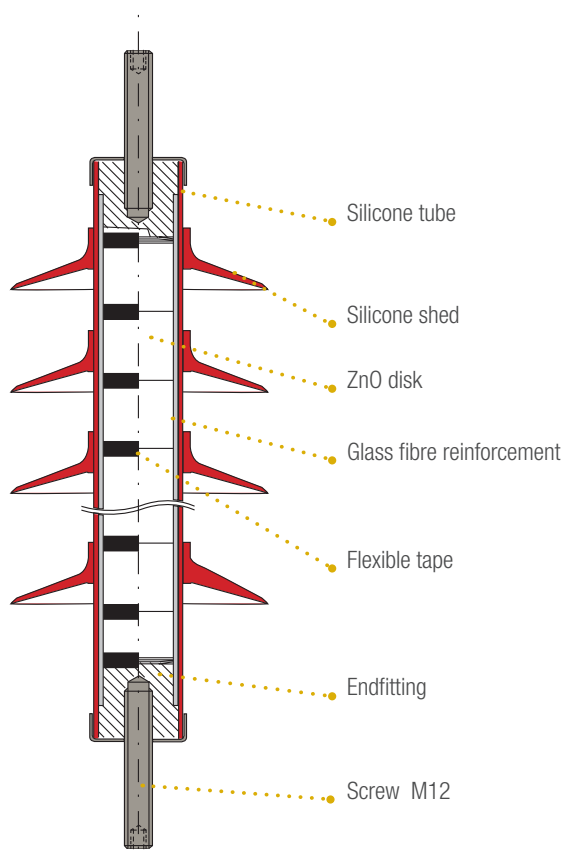




Surge arresters: for high voltage



ZU MV



ZU MV is a MV surge arrester for the protection of transformers, switchgear and transmission lines from atmospheric and switching overvoltages, ideal for indoor or outdoor applications and where high levels of pollution is expected, with the following features and benefits:

- Installation of these surge arresters on the MV -side simplifies the selection of the surge protective devices on the low voltage side (in TN or TT systems) which are intended to protect against transient phenomena coming from the line;
- Compliant with IEC/EN 60099-4;
- State of the art metal oxide surge arresters without a spark gap and with silicon rubber housing;
- Size and volume of the surge arresters based on the practical minimum for each nominal voltage;
- The insulator of the surge arrester is characterized by the absence of junction lines;
- The construction and manufacturing process prevent partial discharges;
- Sealed with aluminium fittings and terminate with stainless steel clamps, screws and washers.

Model ZU MV

Line discharge class (IEC 60099-4 Ed. 2.2; 2009)		2
Max. thermal energy absorption capability (IEC 60099-4 Ed. 3.0; 2014)		4 (4,5 kJ/kV at U_r)
Nominal discharge current	I_n	10 kA
Rated voltage	U_r	from 3 kV to 60 kV
Rated frequency		from 16 Hz to 62 Hz
High current impulse		100 kA 4/10 μ s
Long duration impulse current		500 A / 2000 μ s
Short circuit current performance		design B (20 kA / 0,2 s)
Ambient temperature range		- 40 ... + 55 °C
Altitude		up to 1000 m above sea level
Torsional strength		78 Nm
Bending strength		230 Nm
Tensile strength		1400 N
Insulator		silicon rubber HTV
Insulator colour		red-brown RAL 3013

TECHNICAL DATA



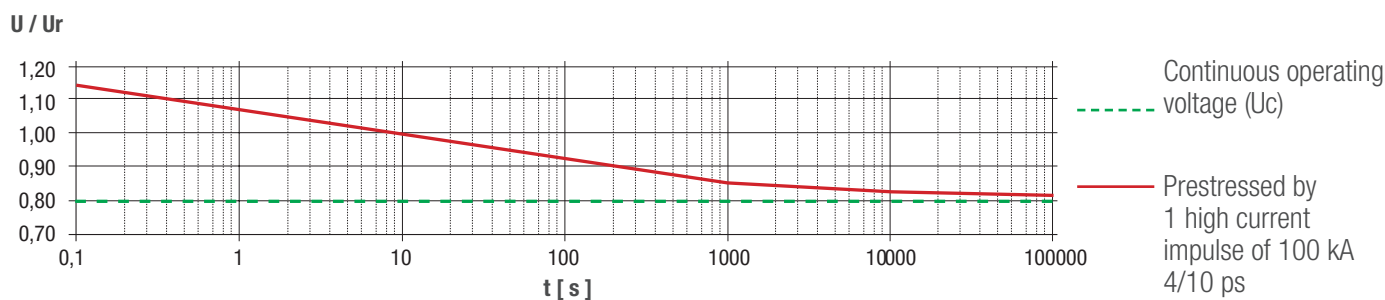
Surge arresters: for high voltage



Rated voltage	Continuous operating voltage	Temporary overvoltage TOV		Max. residual voltage / Protection level						Switching impulse residual voltage	
		1 sec. U _{1s} kV	10 sec. U _{10s} kV	10 kA (1/2 μs) STILP kV	20 kA (1/2 μs) STILP kV	5 kA (8/20 μs) LIPL (U _{pl}) kV	10 kA (8/20 μs) LIPL (U _{pl}) kV	20 kA (8/20 μs) LIPL (U _{pl}) kV	40 kA (8/20 μs) LIPL (U _{pl}) kV	125 A (30/75 μs) SIPL (U _{ps}) kV	500 A (30/75 μs) SIPL (U _{ps}) kV
3	2,4	3,5	3,3	10,7	11,9	9,3	10,0	11,1	12,5	7,3	7,8
6	4,8	6,9	6,5	19,3	21,4	16,7	18,0	20,0	22,5	13,1	14,0
9	7,2	10,4	9,8	28,9	32,1	25,1	27,0	30,0	33,8	19,7	21,1
12	9,6	13,8	13,1	37,5	41,6	32,6	35,0	38,9	43,8	25,6	27,3
15	12,0	17,3	16,4	42,8	47,5	37,2	40,0	44,4	50,0	29,2	31,2
18	14,4	20,7	19,6	52,4	58,2	45,6	49,0	54,4	61,3	35,8	38,2
21	16,8	24,2	22,9	62,1	68,9	53,9	58,0	64,4	72,5	42,3	45,2
24	19,2	27,6	26,2	70,6	78,4	61,4	66,0	73,3	82,5	48,2	51,5
27	21,6	31,1	29,4	80,3	89,1	69,8	75,0	83,3	93,8	54,8	58,5
30	24,0	34,5	32,7	85,6	95,0	74,4	80,0	88,8	100,0	58,4	62,4
33	26,4	38,0	36,0	94,2	104,6	81,8	88,0	97,7	110,0	64,2	68,6
36	28,8	41,4	39,2	104,9	116,4	91,1	98,0	108,8	122,5	71,5	76,4
39	31,2	44,9	42,5	114,5	128,0	99,5	107,0	118,8	133,8	78,7	83,5
42	33,6	48,3	45,8	124,1	137,8	107,9	116,0	128,8	145,0	84,7	90,5
45	36,0	51,8	49,1	128,4	142,5	111,6	120,0	133,2	150,0	87,6	93,6
48	38,4	55,2	52,3	141,2	156,7	122,8	132,0	146,5	165,0	96,4	103,0
51	40,8	58,7	55,6	147,7	164,0	128,3	138,0	153,2	172,5	100,7	107,6
54	43,2	62,1	58,9	156,2	173,4	135,8	146,0	162,1	182,5	106,6	113,9
60	48,0	69,0	65,4	171,2	190,0	148,8	160,0	177,6	200,0	116,8	124,8

TECHNICAL DATA

Power frequency voltage versus time characteristics (TOV) (pre-heating to 60 °C)



Definition of models

Selection of surge arresters must be carried out in accordance with IEC/EN 60099-5

ZU MV

- Silicone rubber housing surge arrester.
- For voltages between 3-12 kV shed distance 45 mm.
- For voltages between 15-60 kV shed distance 30 mm.

3...60

- Rated surge arrester voltage.

.2

- Line discharge class.

NOTE:

All surge arresters ZU MV have an increased creepage distance.



Surge arresters: for high voltage



Rated voltage	Height	Weight	Creepage distance total	Surge arrester insulation			Surge arrester distance		Model	CODE
Ur kV	h mm	kg	mm	Withstand voltage (dry) Unstw kV	Withsatnd voltage (wet) Unstw kV	Lightning impulse with-stand Unsts kV	Phase/Phase LL mm	Phase/Ground LE mm	ZU MV	
3	92	0,7	143	34	22	50	125	105	3.2	120 403
6	112	0,9	163	42	26	60	150	125	6.2	120 406
9	132	1,0	183	48	32	70	175	145	9.2	120 409
12	152	1,2	278	56	39	82	195	165	12.2	120 412
15	162	1,3	363	60	40	86	215	180	15.2	120 415
18	182	1,5	383	64	42	92	240	200	18.2	120 418
21	204	1,7	480	70	46	104	260	220	21.2	120 421
24	224	1,8	575	78	52	114	285	240	24.2	120 424
27	244	2,0	595	82	54	120	305	255	27.2	120 427
30	254	2,1	680	94	62	136	325	275	30.2	120 430
33	274	2,4	775	100	66	146	350	295	33.2	120 433
36	362	3,0	1013	126	84	184	375	315	36.2	120 436
39	384	3,2	1110	134	88	194	390	330	39.2	120 439
42	406	3,4	1132	142	94	206	415	350	42.2	120 442
45	414	3,6	1215	152	100	222	440	370	45.2	120 445
48	446	3,8	1322	156	104	226	465	390	48.2	120 448
51	456	4,0	1407	168	112	246	480	405	51.2	120 451
54	648	4,9	1836	266	176	386	505	425	54.2	120 454
60	648	5,0	1836	266	176	386	555	465	60.2	120 460

TECHNICAL DATA

In order to simplify selection and ordering, the most common configurations and system voltages on the European grid (impedance earthed neutral and protection relays for the elimination of the earth faults) are indicated below. This recommended dimensioning is also suitable for system configurations as indicated in Italian CEI 0-16.

For systems with operating voltage 10 kV	(ZU MV 12.2) (ZU 7) (ZU 4)	N.3 N.3 N.3	COD. 120 412 COD. 107 000 COD 104 000
For systems with operating voltage 15 kV	(ZU MV 18.2) (ZU 7) (ZU 4)	N.3 N.3 N.3	COD. 120 418 COD. 107 000 COD 104 000
For systems with operating voltage 20 kV	(ZU MV 24.2) (ZU 7) (ZU 4)	N.3 N.3 N.3	COD. 120 424 COD. 107 000 COD 104 000
For systems with operating voltage 24 kV	(ZU MV 30.2) (ZU 7) (ZU 4)	N.3 N.3 N.3	COD. 120 430 COD. 107 000 COD 104 000
For systems with operating voltage 30 kV	(ZU MV 36.2) (ZU 7) (ZU 4)	N.3 N.3 N.3	COD. 120 436 COD. 107 000 COD 104 000

