Surge arresters

MWD

Technical data

- For system voltages up to	36 kV rms	- Long duration current impulse	550 A / 2000 µs
- Nominal discharge current I_n 8/20 µs	10 kA pk	- Energy capability, 2 impulses acc. IEC clause 7.5.5	5.5 kJ / kV of Uc
- High current impulse I_{hc} 4/10 µs	100 kA pk		
- Short circuit rating (1) I_s 50 Hz	20 kA rms for 0.2s	- Energy input with I_{hc}	3.4 kJ / kV of Uc
- Line discharge class according to IEC 60099-4	2	- Power frequency up to	62 Hz
		- Cantilever strength	350 Nm
- Service conditions: temperature (2)	- 60°C up to + 45°C	- Torsional strength	68 Nm
- Altitude (3)	up to1800 m	- Vertical load	1200 N

(1) Tested value acc. IEC 60099-4.
(2) These values exceed IEC requirements. For installations in higher ambient temperatures, please contact the manufacturer.
(3) This value exceeds IEC requirements. For installations in higher altitudes, please contact the manufacturer.

Application

Protection of medium voltage AC networks against both, multiple atmospheric and switching overvoltages as well as Very Fast Transients (VFT). Suitable for instance for the protection of transformers, cables, motors and other medium voltage equipment. For indoor installation only.

Advantages

- Low residual voltage
- Long protection distance
- High energy input capacity
- Stable U-I characteristics even after multiple strokes
- Proof against ageing
- Explosion and shatter-resistant design
- Pollution resistant and UV-stable
- Housing resistant to rough handling
- Maintenance free
- Stable against shock and vibration
- High mechanical resistance

Temporary overvoltage capability (TOV) - Power frequency versus time characteristic

- **During 1 second (a: 1.362 x Uc or b: 1.317 x Uc)**
- **During 3 seconds (a: 1.337 x Uc or b: 1.287 x Uc)**
- **During 10 seconds (a: 1.310 x Uc or b: 1.256 x Uc)**
- a: value tested with a sample that has not been prestressed by any energy input.
- b: value tetsted with a sample that has been prestressed with a prior energy input according to the operating duty test
- The values have been determined with a test sample preheated at 60 degrees Celsius according to IEC 60099-4 and refer to an ambient temperature up to 45 degrees Celsius.

Guaranteed data

Type	U_r	U_c	Residual voltage (U_{res}) in kV pk at a specified impulse current										
	Rated voltage	Continuous operating voltage	Wave 1/.. µs			Wave 8/20 µs				Wave 30/60 µs			
MWD	kV rms	kV rms	1 kA pk	5 kA pk	10 kA pk	1 kA pk	5 kA pk	10 kA pk	20 kA pk	125 A pk	250 A pk	500 A pk	1 kA pk
04	5.0	4	10.5	12.8	14.5	10.4	11.6	12.3	13.6	9.0	9.5	9.8	10.2
05	6.3	5	13.1	16.0	18.1	13.0	14.5	15.4	17.0	11.3	11.9	12.3	12.8
06	7.5	6	15.7	19.2	21.7	15.6	17.4	18.4	20.4	13.6	14.3	14.8	15.4
07	8.8	7	18.3	22.4	25.3	18.2	20.3	21.5	23.8	15.8	16.7	17.2	17.9
08	10.0	8	21.0	25.6	29.0	20.8	23.2	24.6	27.2	18.1	19.0	19.7	20.5
09	11.3	9	23.6	28.9	32.6	23.4	26.1	27.6	30.6	20.3	21.4	22.1	23.0
10	12.5	10	26.2	32.1	36.2	26.0	29.0	30.7	34.0	22.6	23.8	24.6	25.6
11	13.8	11	28.8	35.3	39.8	28.6	31.9	33.8	37.4	24.9	26.2	27.1	28.2
12	15.0	12	31.4	38.5	43.4	31.2	34.8	36.8	40.8	27.1	28.6	29.5	30.7
13	16.3	13	34.1	41.7	47.1	33.8	37.7	39.9	44.2	29.4	30.9	32.0	33.3
14	17.5	14	36.7	44.9	50.7	36.4	40.6	43.0	47.6	31.7	33.3	34.5	35.8
15	18.8	15	39.3	48.1	54.3	39.0	43.5	46.1	51.0	33.9	35.7	36.9	38.4
16	20.0	16	41.9	51.3	57.9	41.6	46.4	49.1	54.4	36.2	38.1	39.4	41.0
17	21.3	17	44.5	54.5	61.5	44.2	49.3	52.2	57.8	38.4	40.5	41.8	43.5
18	22.5	18	47.2	57.7	65.2	46.8	52.2	55.3	61.2	40.7	42.9	44.3	46.1
19	23.8	19	49.8	60.9	68.8	49.4	55.1	58.3	64.6	43.0	45.2	46.8	48.6
20	25.0	20	52.4	64.1	72.4	52.0	58.0	61.4	68.0	45.2	47.6	49.2	51.2
21	26.3	21	55.0	67.3	76.0	54.6	60.9	64.5	71.4	47.5	50.0	51.7	53.8
22	27.5	22	57.6	70.5	79.6	57.2	63.8	67.5	74.8	49.7	52.4	54.1	56.3
23	28.8	23	60.3	73.7	83.3	59.8	66.7	70.6	78.2	52.0	54.8	56.6	58.9
24	30.0	24	62.9	76.9	86.9	62.4	69.6	73.7	81.6	54.3	57.1	59.1	61.4
25	31.3	25	65.5	80.1	90.5	65.0	72.5	76.8	85.0	56.5	59.5	61.5	64.0
26	32.5	26	68.1	83.4	94.1	67.6	75.4	79.8	88.4	58.8	61.9	64.0	66.5
27	33.8	27	70.7	86.6	97.7	70.2	78.3	82.9	91.8	61.0	64.3	66.4	69.1
28	35.0	28	73.4	89.8	101.4	72.8	81.2	86.0	95.2	63.3	66.7	68.9	71.7
29	36.3	29	76.0	93.0	105.0	75.4	84.1	89.0	98.6	65.6	69.0	71.4	74.2
30	37.5	30	78.6	96.2	108.6	78.0	87.0	92.1	102.0	67.8	71.4	73.8	76.8
31	38.8	31	81.2	99.4	112.2	80.6	89.9	95.2	105.4	70.1	73.8	76.3	79.3
32	40.0	32	83.9	102.6	115.8	83.2	92.8	98.2	108.8	72.3	76.2	78.7	81.9
33	41.3	33	86.5	105.8	119.5	85.8	95.7	101.3	112.2	74.6	78.6	81.2	84.5
34	42.5	34	89.1	109.0	123.1	88.4	98.6	104.4	115.5	76.9	80.9	83.7	87.0
35	43.8	35	91.7	112.2	126.7	91.0	101.5	107.5	118.9	79.1	83.3	86.1	89.6
36	45.0	36	94.3	115.4	130.3	93.6	104.4	110.5	122.3	81.4	85.7	88.6	92.1
37	46.3	37	97.0	118.6	134.0	96.2	107.3	113.6	125.7	83.7	88.1	91.1	94.7
38	47.5	38	99.6	121.8	137.6	98.8	110.2	116.7	129.1	85.9	90.5	93.5	97.3
39	48.8	39	102.2	125.0	141.2	101.4	113.1	119.7	132.5	88.2	92.8	96.0	99.8
40	50.0	40	104.8	128.2	144.8	104.0	116.0	122.8	135.9	90.4	95.2	98.4	102.4
41	51.3	41	107.4	131.4	148.4	106.6	118.9	125.9	139.3	92.7	97.6	100.9	104.9
42	52.5	42	110.1	134.6	152.1	109.2	121.8	128.9	142.7	95.0	100.0	103.4	107.5
43	53.8	43	112.7	137.9	155.7	111.8	124.7	132.0	146.1	97.2	102.4	105.8	110.1
44	55.0	44	115.2	141.0	159.2	114.4	127.6	135.0	149.6	99.4	104.8	108.2	112.6

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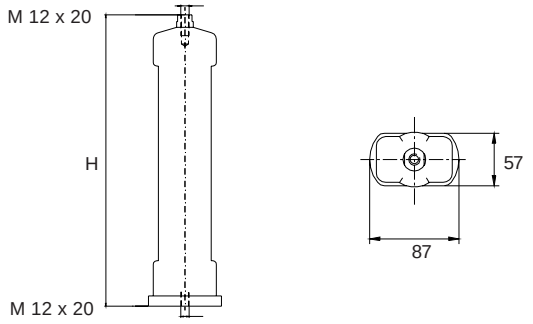
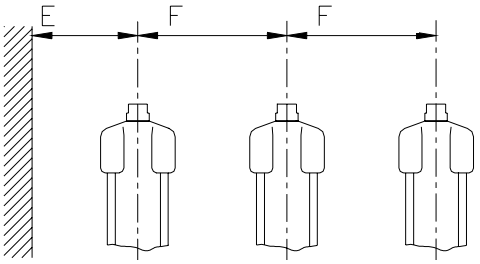
Dimensions (in mm)



Clearances



Insulation data, dimensions and weight

Type	Creepage distance	Flashover distance	Recommended clearances (4)		Height H	Weight	Insulation withstand voltage of empty housing			
							BIL 1.2/50 µs		50 Hz 60s dry	
			E min	F min			req.values acc. to IEC	tested values	req. values acc. to IEC	tested values
	mm	mm	mm	mm	mm	kg	kV pk	kV pk	kV rms	kV rms
04	190	176	51	60	187	1.3	16.0	90	7.4	38
05	190	176	61	71	187	1.3	20.0	90	9.3	38
06	190	176	71	81	187	1.4	24.0	90	11.1	38
07	190	176	81	91	187	1.4	28.0	90	13.0	38
08	190	176	91	101	187	1.5	32.0	90	14.8	38
09	230	216	101	111	227	1.8	36.0	112	16.7	49
10	230	216	112	121	227	1.8	40.0	112	18.5	49
11	270	256	122	131	267	2.1	44.0	132	20.3	59
12	270	256	132	141	267	2.1	47.9	132	22.2	59
13	270	256	142	152	267	2.2	51.9	132	24.0	59
14	270	256	152	162	267	2.2	55.9	132	25.9	59
15	270	256	162	172	267	2.3	59.9	132	27.7	59
16	310	296	172	182	307	2.5	63.9	152	29.6	68
17	310	296	183	192	307	2.5	67.9	152	31.4	68
18	310	296	193	202	307	2.6	71.9	152	33.3	68
19	310	296	203	212	307	2.6	75.9	152	35.1	68
20	310	296	213	222	307	2.7	79.9	152	36.9	68
21	350	336	223	233	347	3.0	83.9	172	38.8	77
22	350	336	233	243	347	3.0	87.9	172	40.6	77
23	350	336	244	253	347	3.1	91.8	172	42.5	77
24	350	336	254	263	347	3.1	95.8	172	44.3	77
25	390	376	264	273	387	3.4	99.8	192	46.2	86
26	390	376	274	283	387	3.4	103.8	192	48.0	86
27	390	376	284	293	387	3.5	107.8	192	49.9	86
28	390	376	294	303	387	3.5	111.8	192	51.7	86
29	390	376	304	313	387	3.6	115.8	192	53.5	86
30	390	376	315	324	387	3.6	119.8	192	55.4	86
31	510	496	325	334	507	4.4	123.8	252	57.2	114
32	510	496	335	344	507	4.4	127.8	252	59.1	114
33	510	496	345	354	507	4.5	131.8	252	60.9	114
34	510	496	355	364	507	4.5	135.7	252	62.8	114
35	510	496	365	374	507	4.6	139.7	252	64.6	114
36	510	496	376	384	507	4.6	143.7	252	66.5	114
37	510	496	385	394	507	4.7	148,0	252	69,0	114
38	510	496	396	404	507	4.7	152,0	252	71,0	114
39	510	496	406	414	507	4.8	156,0	252	73,0	114
40	510	496	416	424	507	4.8	160,0	252	74,0	114
41	510	496	426	435	507	4.9	164,0	252	76,0	114
42	546	537	437	444	547	5.5	168,0	252	78,0	114
43	546	537	446	454	547	5.6	172,0	252	79.4	114
44	546	537	457	465	547	5.7	175.7	252	81.2	114

(4) Clearances with reference to DIN EN 60071-1. National and local requirements have priority and may be used.