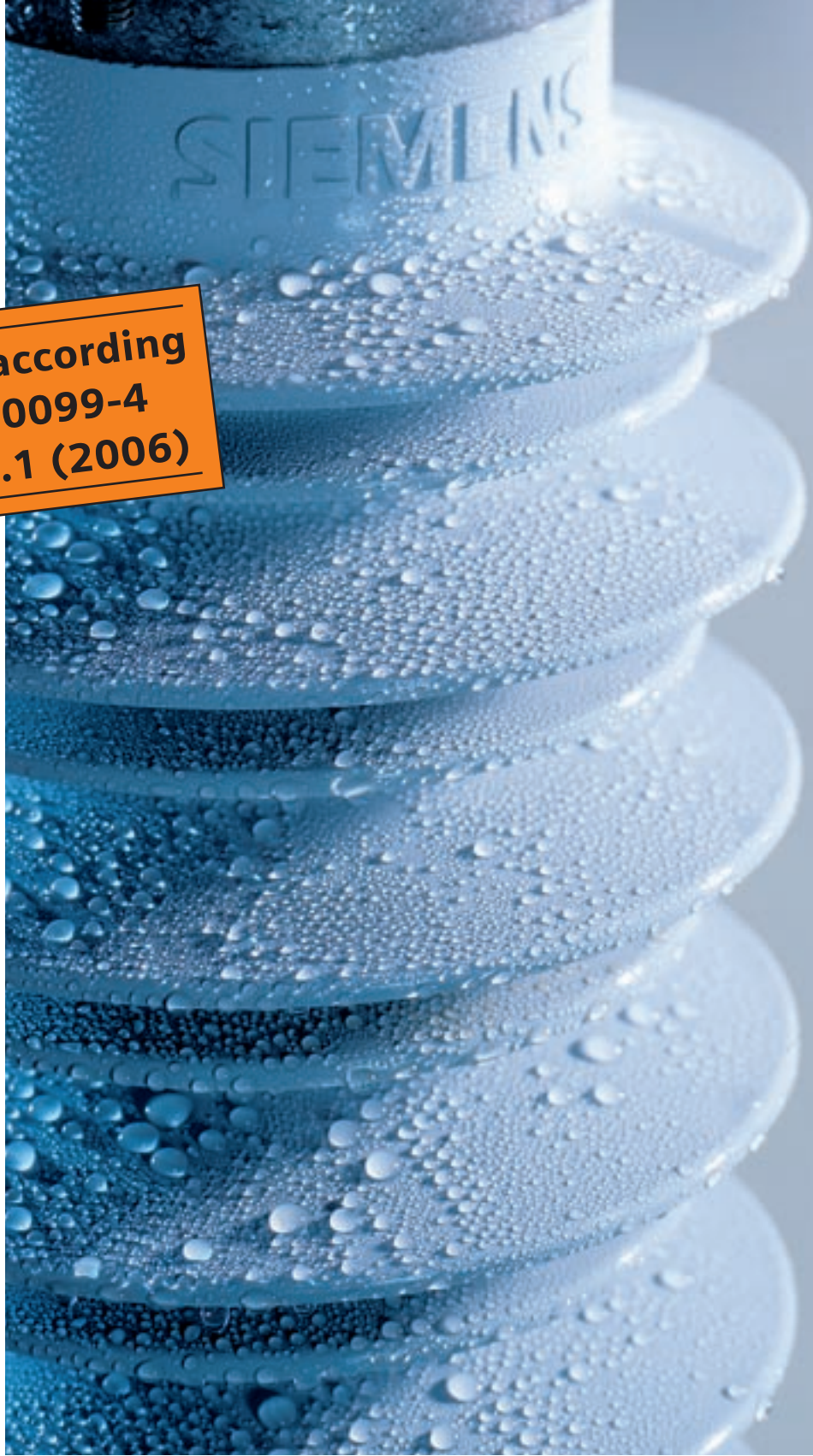




**Certified according
to IEC 60099-4
Edition 2.1 (2006)**

Surge Arrester 3EL2 – superior protection up to 550 kV

Light weight. Strong performance.

Answers for energy.

SIEMENS



Simply irresistible.

By resisting wear in any environment.



Our new surge arrester is leading the way with its superior design and construction. Built with silicone directly molded onto the metal oxide (MO) blocks, it simply resists discharge and moisture ingress under nearly all physical or environmental conditions.

The surge arrester provides superior protection for system voltages from 7.2 up to 550 kV. Combine these advantages with a lightweight cage design and high robustness, and you have an outstandingly cost-effective solution for station arresters or transmission line arresters. What do we call this irresistible surge arrester? Simply 3EL. Another outstanding product from Siemens.



Good reasons for the 3EL

Our 3EL arresters use the same MO blocks as our 3EP and 3EQ arrester product lines resulting in the same excellent electrical performance. The innovative cage design using silicone and fibreglass-reinforced plastic (FRP) rods as housing material leads to a lot of additional advantages.

the arrester – an extremely rare event – it is impossible that any high pressure is built up because the MO blocks are not enclosed in a sealed mechanical shell or wrapped by any hard material. This permits the arc to escape directly through the soft silicone housing and makes it hardly possible that any internal parts could be ejected damaging other equipment even if it is installed very close.

Cage design: high mechanical strength and safe overload performance

The MO blocks of the 3EL are enclosed by a cage of prestressed fibreglass-reinforced plastic (FRP) rods. The high tensile strength of the FRP rods is used to hold together tightly the arrester's MO blocks. The result is the 3EL2 having one of the highest mechanical strengths of polymer arresters available on the market. In case of an overload or a short circuit of

Long service life

Silicone is the only polymeric material that maintains its hydrophobicity during its lifetime. Other polymeric materials may be hydrophobic too, but lose their hydrophobicity after a short period. Additionally, the silicone used for our 3EL arresters is highly fire-retardant and self-extinguishing and is not subject to erosion or UV radiation, which guarantees long-term stability of the housing material (unlike other

About IEC 60099-4 Ed. 2.1

The new IEC 60099-4 Ed. 2.1 standard became mandatory in July 2006, defining new rules for short-circuit tests of arresters. Whether an arrester complies with "Design A" or "Design B" depends on the existence and size of the gas volume inside. While Design A arresters are typically hollow (e.g. with porcelain or composite housings), Design B arresters contain just a small gas volume or none at all, so typically they are not designed with

pressure relief (e.g. „cage design" or „wrapped design"). Design B arresters are no longer allowed to be tested with an internal fuse wire. Instead, the so-called "pre-failing method" must be used before the application of the high short-circuit current.

Our innovative "cage design" arresters – such as the 3EL2 – are considered "Design B" according to the new standard. Siemens is the only complete-range manufacturer already fully in compliance with the new rules.



Superior material and design leading to an outstanding price-performance ratio ...

... during transport and installation

- light weight, easy and flexible installation at all mounting angles
- resistance to damage arising from transport, installation or vandalism

... during operation

- safe overload performance and high mechanical strength due to cage design
- excellent electrical performance
- long-term stable hydrophobicity of silicone housing ensures best performance even under extreme environmental conditions (industrial/polluted, coastal, desert)
- extended creepage distance
- highly fire-retardant and self-extinguishing

... throughout the entire life cycle

- long service life, no moisture ingress due to direct molding of silicone onto MO blocks

polymeric materials like e.g. EPDM). The aging resistance of our 3EL arresters has been proven by accelerated aging tests (1000/500 h salt fog test). A long service life of the 3EL is also ensured by its cage design: silicone is directly molded onto the MO blocks ensuring total enclosure of all components free of bubbles and gaps and thus making impossible any partial discharges or moisture ingress.

Light weight – flexible and easy installation

The use of FRP and silicone as housing materials leads to a low weight of our 3EL arresters, allowing easy transport and flexible installation at all mounting angles (e.g. horizontal, vertical, hung from the transmission line as transmission line arrester). The strength and weight of arrester supports can be reduced as well as the need of heavy installation equipment. The sheds of the 3EL are resistant to damage arising from transport, installation, storms, earthquakes or vandalism.

Silicone: best performance under pollution conditions

The silicone material used for our 3EL arresters is highly hydrophobic – water and pollution do not form a continuous conductive film on the surface. Thus surface currents and the risk of flashover are reduced, especially in polluted or coastal environments. The long creepage distance of the 3EL (≥ 31 mm/kV) further improves its pollution performance.

Applications:

- As a station arrester or transmission line arrester for protection of switchgear, transformers and other equipment in high-voltage systems up to $U_m = 550$ kV against lightning and switching overvoltages
- For all arrester applications with high mechanical requirements (up to 4 kNm, dynamic)
- For erection at all mounting angles, e.g. hung from the station structures, vertical installation, hung from the transmission line (as transmission line arrester)
- For all applications where low weight and nonfragility of the arrester are required

LD class	Long duration current impulse Max. value / A	Fixed-mounted or suspended												Only suspended		
		U_m	7.2	12	24	36	52	72	123	145	170	245	300	362	420	550
2	850	[														
3																
3	1200	[														
4																

3EL2 range

Meeting any of your needs.

Electrical data.

Maximum values		3EL2			
Nominal system voltage U_n	kV	270	270	380	500
Highest voltage for equipment U_m	kV	300	300	420	550
Maximum rated voltage U_r	kV	264	252	360 ¹⁾	420 ²⁾
Maximum nominal discharge current I_n	kA	10	10	10	20
Maximum line discharge class		2	3	3	4
Maximum energy absorption capability	kJ/kVr	8	8	10	10
Maximum long-duration current impulse	A	850	850	1200	1200
Rated short-circuit current	kA	65	65	65	65
Maximum permissible service load ³⁾	kNm	4	4	4	4

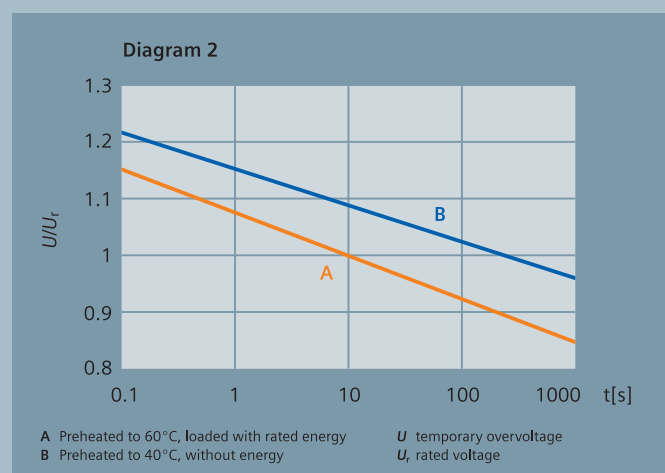
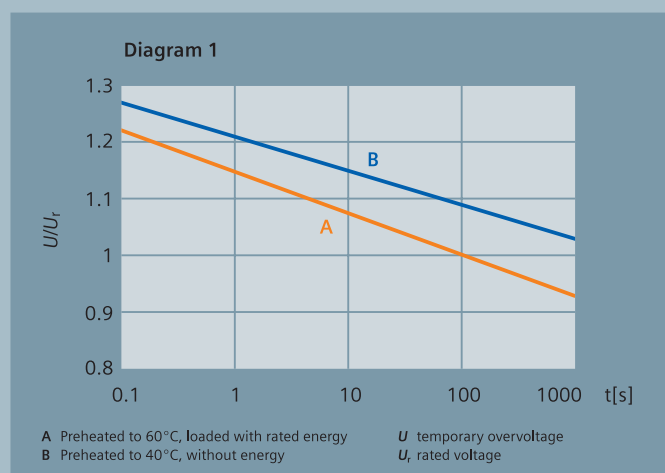
¹⁾ From $U_r = 325$ kV, only suspended mounting

²⁾ From $U_r = 301$ kV, only suspended mounting

³⁾ MPSL according to IEL 60999-4

Highest voltage for equipment	Standard lightning impulse withstand voltage	Rated voltage	Continuous operating voltage	Line discharge class	Long-duration current 2 ms	Maximum values of the residual voltages at discharge currents of the following impulses						
U_m kV	BIL min kV	U_r kV	U_c kV	LD-CI	A	8/20 μ s 5 kA kV	8/20 μ s 10 kA kV	8/20 μ s 20 kA kV	30/60 μ s 0,5 kA kV	30/60 μ s 1 kA kV	30/60 μ s 2 kA kV	
7,2	40	9	7,2	2	850	19,5	20,7	23,0	16,6	17,0	17,8	
	40	9	7,2	3	850	20,3	21,6	24,0	17,3	17,7	18,6	
	40	9	7,2	3	1200	19,1	20,3	22,3	16,4	16,8	17,7	
12	60	9	7,2	2	850	19,5	20,7	23,0	16,6	17,0	17,8	
	60	9	7,2	3	850	20,3	21,6	24,0	17,3	17,7	18,6	
	60	9	7,2	3	1200	19,1	20,3	22,3	16,4	16,8	17,7	
	60	15	12,0	2	850	32,4	34,5	38,3	27,6	28,3	29,7	
	60	15	12,0	3	850	33,8	36,0	40,0	28,8	29,5	31,0	
	60	15	12,0	3	1200	31,8	33,8	37,2	27,4	28,1	29,4	
	60	15	12,0	4	1200	32,4	34,5	38,0	27,9	28,6	30,0	
17,5	75	15	12,0	2	850	32,4	34,5	38,3	27,6	28,3	29,7	
	75	15	12,0	3	850	33,8	36,0	40,0	28,8	29,5	31,0	
	75	15	12,0	3	1200	31,8	33,8	37,2	27,4	28,1	29,4	
	75	15	12,0	4	1200	32,4	34,5	38,0	27,9	28,6	30,0	
	75	18	14,4	2	850	38,9	41,4	46,0	33,1	33,9	35,6	
	75	18	14,4	3	850	40,6	43,2	48,0	34,6	35,4	37,2	
	75	18	14,4	3	1200	38,1	40,5	44,6	32,8	33,6	35,2	
	75	18	14,4	4	1200	38,9	41,4	45,5	33,5	34,4	36,0	
	95	24	19,2	2	850	51,9	55,2	61,3	44,2	45,3	47,5	
	95	24	19,2	3	850	54,1	57,6	63,9	46,1	47,2	49,5	
	75	24	19,2	3	1200	50,8	54,0	59,4	43,7	44,8	47,0	
	95	24	19,2	4	1200	51,9	55,2	60,7	44,7	45,8	48,0	

Power frequency voltage versus time characteristic (TOV)



Arrester type	Height [H]	Number of units	Housing insulation		Creepage distance	Top load dynamic	Grading ring diameter [D]	Weight	TOV diagram	Figure
	mm		Lightning impulse withstand voltage 1.2/50 μs kV	Power frequency withstand voltage 1 min, wet kV	mm	N	mm	kg		
3EL2 009 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	11,8	2	21
3EL2 009 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	11,8	1	21
3EL2 009 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	11,9	2	21
3EL2 009 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	11,8	2	21
3EL2 009 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	11,8	1	21
3EL2 009 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	11,9	2	21
3EL2 015 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	12,1	2	21
3EL2 015 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,2	1	21
3EL2 015 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,3	2	21
3EL2 015 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	12,4	1	21
3EL2 015 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	12,1	2	21
3EL2 015 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,2	1	21
3EL2 015 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,3	2	21
3EL2 015 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	12,4	1	21
3EL2 018 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	12,4	2	21
3EL2 018 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,4	1	21
3EL2 018 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,5	2	21
3EL2 018 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	12,6	1	21
3EL2 024 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	12,7	2	21
3EL2 024 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,7	1	21
3EL2 024 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,9	2	21
3EL2 024 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	13,1	1	21

Highest voltage for equipment	Standard lightning impulse withstand voltage	Rated voltage	Continuous operating voltage	Line discharge class	Long-duration current 2 ms	Maximum values of the residual voltages at discharge currents of the following impulses						
U_m kV	BIL min kV	U_r kV	U_c kV	LD-CI	A	8/20 μ s 5 kA kV	8/20 μ s 10 kA kV	8/20 μ s 20 kA kV	30/60 μ s 0,5 kA kV	30/60 μ s 1 kA kV	30/60 μ s 2 kA kV	
24	95	21	16,8	2	850	45,4	48,3	53,6	38,6	39,6	41,5	
	95	21	16,8	3	850	47,4	50,4	55,9	40,3	41,3	43,3	
	95	21	16,8	3	1200	44,5	47,3	52,0	38,3	39,3	41,2	
	95	21	16,8	4	1200	47,4	50,4	55,4	40,8	41,8	43,8	
	125	30	24,0	2	850	64,9	69,0	76,6	55,2	56,6	59,3	
	125	30	24,0	3	850	67,7	72,0	79,9	57,6	59,0	61,9	
	125	30	24,0	3	1200	63,5	67,5	74,3	54,7	56,0	58,7	
	125	30	24,0	4	1200	67,7	72,0	79,2	58,3	59,8	62,6	
36	145	30	24,0	2	850	64,9	69,0	76,6	55,2	56,6	59,3	
	145	30	24,0	3	850	67,7	72,0	79,9	57,6	59,0	61,9	
	145	30	24,0	3	1200	63,5	67,5	74,3	54,7	56,0	58,7	
	145	30	24,0	4	1200	67,7	72,0	79,2	58,3	59,8	62,6	
	170	45	36,0	2	850	97,3	104	115	82,8	84,9	89,0	
	170	45	36,0	3	850	102	108	120	86,4	88,6	92,9	
	170	45	36,0	3	1200	95,2	101	111	82,1	84,1	88,1	
	170	45	36,0	4	1200	102	108	119	87,5	89,6	94,0	
52	250	42	33,6	2	850	90,8	96,6	107	77,3	79,2	83,1	
	250	42	33,6	3	850	94,8	101	112	80,6	82,7	86,7	
	250	42	33,6	3	1200	88,8	94,5	104	76,5	78,4	82,2	
	250	42	33,6	4	1200	94,8	101	111	81,6	83,7	87,7	
72,5	325	54	43,2	2	850	117	124	138	99,4	102	107	
	325	54	43,2	3	850	122	130	144	104	106	112	
	325	54	43,2	3	1200	114	122	134	98,4	101	106	
	325	54	43,2	4	1200	122	130	143	105	108	113	
	325	60	48	2	850	130	138	153	110	113	119	
	325	60	48	3	850	135	144	160	115	118	124	
	325	60	48	3	1200	127	135	149	109	112	118	
	325	60	48	4	1200	135	144	158	117	120	125	
	325	66	53	2	850	143	152	169	121	125	131	
	325	66	53	3	850	149	158	176	127	130	136	
	325	66	53	3	1200	140	149	163	120	123	129	
	325	66	53	4	1200	149	158	174	128	132	138	
	325	72	58	2	850	156	166	184	133	136	142	
	325	72	58	3	850	162	173	192	138	142	149	
	325	72	58	3	1200	152	162	178	131	135	141	
	325	72	58	4	1200	162	173	190	140	143	150	
123	450	96	77	2	850	208	221	245	177	181	190	
	450	96	77	3	850	217	230	256	184	189	198	
	450	96	77	3	1200	203	216	238	175	179	188	
	450	96	77	4	1200	217	230	253	187	191	200	
	450	102	81	2	850	221	235	260	188	192	202	
	450	102	81	3	850	230	245	272	196	201	211	
	450	102	81	3	1200	216	230	253	186	191	200	
	450	102	81	4	1200	230	245	269	198	203	213	
	450	108	86	2	850	234	248	276	199	204	214	
	450	108	86	3	850	244	259	288	207	213	223	
	450	108	86	3	1200	228	243	267	197	202	211	
	450	108	86	4	1200	244	259	285	210	215	226	

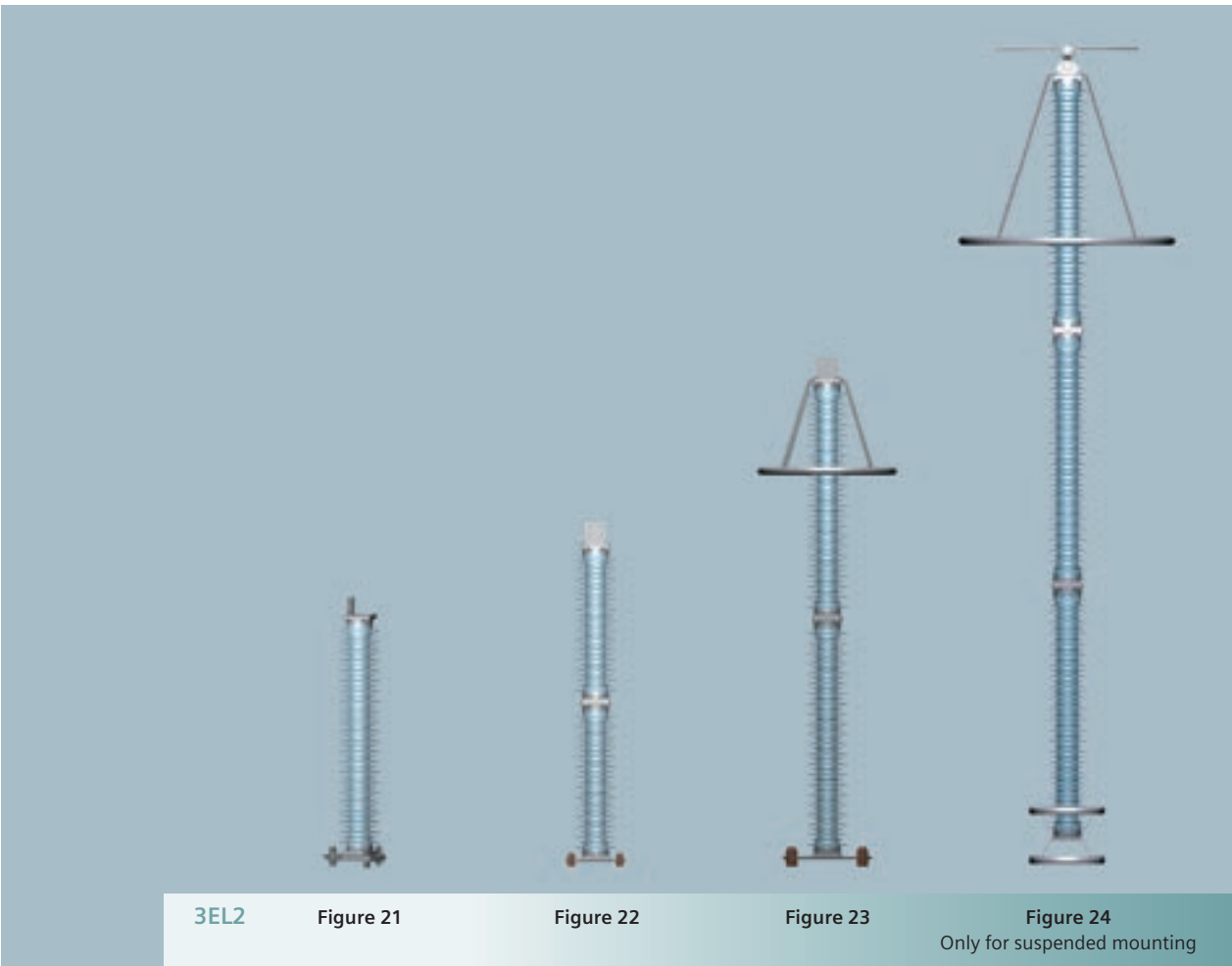
Arrester type	Height [H]	Number of units	Housing insulation		Creepage distance	Top load dynamic	Grading ring diameter [D]	Weight	TOV diagram	Figure
	mm		Lightning impulse withstand voltage 1.2/50 μs kV	Power frequency withstand voltage 1 min, wet kV	mm	N	mm	kg		
3EL2 021 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	12,5	2	21
3EL2 021 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,6	1	21
3EL2 021 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	12,7	2	21
3EL2 021 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	12,8	1	21
3EL2 030 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	13,1	2	21
3EL2 030 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	13,1	1	21
3EL2 030 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	13,3	2	21
3EL2 030 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	13,5	1	21
3EL2 030 - 2 P C 2 1 - 4 xxx	482	1	235	109	1500	8300	-	13,1	2	21
3EL2 030 - 2 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	13,1	1	21
3EL2 030 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	13,3	2	21
3EL2 030 - 3 P C 4 1 - 4 xxx	482	1	235	109	1500	8300	-	13,5	1	21
3EL2 045 - 2 P F 2 1 - 4 xxx	705	1	365	170	2390	5700	-	17,8	2	21
3EL2 045 - 2 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	17,8	1	21
3EL2 045 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	13,3	2	21
3EL2 045 - 3 P F 4 1 - 4 xxx	705	1	365	170	2390	5700	-	18,0	1	21
3EL2 042 - 2 P F 2 1 - 4 xxx	705	1	365	170	2390	5700	-	17,5	2	21
3EL2 042 - 2 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	17,7	1	21
3EL2 042 - 3 P C 3 1 - 4 xxx	482	1	235	109	1500	8300	-	14,2	2	21
3EL2 042 - 3 P F 4 1 - 4 xxx	705	1	365	170	2390	5700	-	17,8	1	21
3EL2 054 - 2 P F 2 1 - 4 xxx	705	1	365	170	2390	5700	-	18,2	2	21
3EL2 054 - 2 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	18,4	1	21
3EL2 054 - 3 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	18,7	2	21
3EL2 054 - 3 P F 4 1 - 4 xxx	705	1	365	170	2390	5700	-	18,6	1	21
3EL2 060 - 2 P F 2 1 - 4 xxx	705	1	365	170	2390	5700	-	18,5	2	21
3EL2 060 - 2 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	18,7	1	21
3EL2 060 - 3 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	19,0	2	21
3EL2 060 - 3 P F 4 1 - 4 xxx	705	1	365	170	2390	5700	-	19,0	1	21
3EL2 066 - 2 P J 2 1 - 4 xxx	1062	1	571	266	3820	3800	-	25,1	2	21
3EL2 066 - 2 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	25,1	1	21
3EL2 066 - 3 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	19,2	2	21
3EL2 066 - 3 P F 4 1 - 4 xxx	705	1	365	170	2390	5700	-	19,4	1	21
3EL2 072 - 2 P J 2 1 - 4 xxx	1062	1	571	266	3820	3800	-	25,4	2	21
3EL2 072 - 2 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	25,4	1	21
3EL2 072 - 3 P F 3 1 - 4 xxx	705	1	365	170	2390	5700	-	19,6	2	21
3EL2 072 - 3 P J 4 1 - 4 xxx	1062	1	571	266	3820	3800	-	25,8	1	21
3EL2 096 - 2 P J 2 1 - 4 xxx	1062	1	571	266	3820	3800	-	26,8	2	21
3EL2 096 - 2 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,1	1	21
3EL2 096 - 3 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,3	2	21
3EL2 096 - 3 P J 4 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,5	1	21
3EL2 102 - 2 P J 2 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,1	2	21
3EL2 102 - 2 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,4	1	21
3EL2 102 - 3 P J 3 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,7	2	21
3EL2 102 - 3 P J 4 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,9	1	21
3EL2 108 - 2 P J 2 1 - 4 xxx	1062	1	571	266	3820	3800	-	27,5	2	21
3EL2 108 - 2 P M 3 1 - 4 xxx	1240	1	676	355	4540	3800	-	30,8	1	21
3EL2 108 - 3 P J 3 1 - 4 xxx	1062	1	571	266	3820	3200	-	28,0	2	21
3EL2 108 - 3 P J 4 1 - 4 xxx	1062	1	571	266	3820	3800	-	28,3	1	21

Highest voltage for equipment	Standard lightning impulse withstand voltage	Rated voltage	Continuous operating voltage	Line discharge class	Long-duration current 2 ms	Maximum values of the residual voltages at discharge currents of the following impulses						
U_m kV	BIL min kV	U_r kV	U_c kV	LD-CI	A	8/20 μ s 5 kA kV	8/20 μ s 10 kA kV	8/20 μ s 20 kA kV	30/60 μ s 0,5 kA kV	30/60 μ s 1 kA kV	30/60 μ s 2 kA kV	
145	550	120	96	2	850	259	276	306	221	226	237	
	550	120	96	3	850	271	288	320	230	236	248	
	550	120	96	3	1200	254	270	297	219	224	235	
	550	120	96	4	1200	271	288	317	233	239	251	
	550	132	106	2	850	285	304	337	243	249	261	
	550	132	106	3	850	298	317	352	253	260	272	
	550	132	106	3	1200	279	297	327	241	247	258	
	550	132	106	4	1200	298	317	349	257	263	276	
	550	144	115	2	850	311	331	368	265	272	285	
	550	144	115	3	850	325	346	384	277	283	297	
	550	144	115	3	1200	305	324	356	262	269	282	
	550	144	115	4	1200	325	346	380	280	287	301	
170	650	138	110	2	850	298	317	352	254	260	273	
	650	138	110	3	850	311	331	368	265	272	285	
	650	138	110	3	1200	292	311	342	252	258	270	
	650	138	110	4	1200	311	331	364	268	275	288	
	650	144	115	2	850	311	331	368	265	272	285	
	650	144	115	3	850	325	346	384	277	283	297	
	650	144	115	3	1200	305	324	356	262	269	282	
	650	144	115	4	1200	325	346	380	280	287	301	
	650	150	120	2	850	324	345	383	276	283	297	
	650	156	125	3	850	352	374	416	300	307	322	
	650	156	125	3	1200	330	351	386	284	291	305	
	650	156	125	4	1200	352	374	412	303	311	326	
245	850	192	154	2	850	415	442	490	353	362	380	
	850	192	154	3	850	433	461	512	369	378	396	
	850	192	154	3	1200	406	432	475	350	359	376	
	850	192	154	4	1200	433	461	507	373	383	401	
	850	198	158	2	850	428	455	506	364	373	392	
	850	198	158	3	850	447	475	528	380	390	409	
	850	198	158	3	1200	419	446	490	361	370	388	
	850	198	158	4	1200	447	475	523	385	394	413	
	850	228	182	2	850	493	524	582	420	430	451	
	850	228	182	3	850	514	547	607	438	449	471	
	850	228	182	3	1200	482	513	564	416	426	446	
	850	228	182	4	1200	514	547	602	443	454	476	
300	850	228	182	2	850	493	524	582	420	430	451	
	850	228	182	3	850	514	547	607	438	449	471	
	850	228	182	3	1200	482	513	564	416	426	446	
	850	228	182	4	1200	514	547	602	443	454	476	
	850	240	192	2	850	519	552	613	442	453	475	
	850	240	192	3	850	541	576	639	461	472	495	
	850	240	192	3	1200	508	540	594	437	448	470	
	850	240	192	4	1200	541	576	634	467	478	501	
362	950	276	221	3	1200	584	621	683	503	515	540	
	950	276	221	4	1200	623	662	729	537	550	576	
	950	288	230	3	1200	609	648	713	525	538	564	
	1050	288	230	4	1200	650	691	760	560	574	601	
420	1175	336	269	3	850	766	806	887	653	669	702	
	1175	336	269	3	1200	711	756	832	612	628	658	
	1175	336	269	4	1200	758	806	887	653	669	702	
	1300	360	288	3	850	812	864	950	700	717	752	
	1175	360	288	3	1200	761	810	891	656	672	705	
	1300	360	288	4	1200	812	864	950	700	717	752	
550	1425	420	336	4	1200	948	1008	1109	817	837	877	

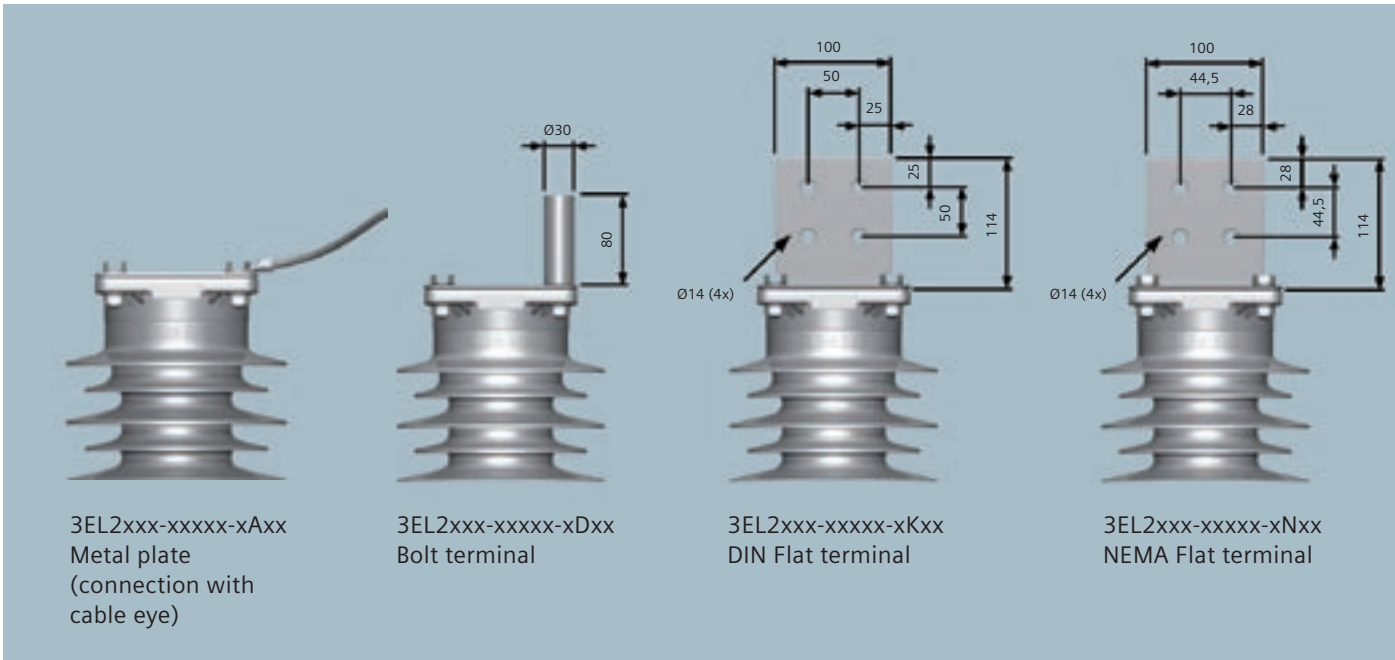
Arrester type	Height [H]	Number of units	Housing insulation		Creepage distance	Top load dynamic	Grading ring diameter [D]	Weight	TOV diagram	Figure
	mm		Lightning impulse with-stand voltage ¹⁾ 1.2/50 µs kV	Power fre-quency with-stand voltage ¹⁾ 1 min, wet kV	mm	N	mm	kg		
3EL2 120 - 2 P M 2 1 - 4 xxx	1240	1	676	315	4540	2300	-	31,1	2	21
3EL2 120 - 2 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	31,5	1	21
3EL2 120 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	28,8	2	21
3EL2 120 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	29,0	1	21
3EL2 132 - 2 P M 2 1 - 4 xxx	1240	1	676	315	4540	3200	-	31,8	2	21
3EL2 132 - 2 P P 3 2 - 4 xxx	1544	2	806	375	5320	1800	-	40,5	1	22
3EL2 132 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	29,6	2	21
3EL2 132 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,1	1	21
3EL2 144 - 2 P P 2 2 - 4 xxx	1544	2	806	375	5320	1800	-	40,8	2	22
3EL2 144 - 2 P Q 3 2 - 4 xxx	1767	2	936	436	6210	1600	-	44,9	1	22
3EL2 144 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,2	2	21
3EL2 144 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,9	1	21
3EL2 138 - 2 P P 2 1 - 4 xxx	1544	1	806	375	5320	1800	-	40,5	2	21
3EL2 138 - 2 P Q 3 1 - 4 xxx	1767	1	936	486	6210	1600	-	44,6	1	21
3EL2 138 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	32,8	2	21
3EL2 138 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,5	1	21
3EL2 144 - 2 P P 2 2 - 4 xxx	1544	2	806	375	5320	1800	-	40,8	2	22
3EL2 144 - 2 P Q 3 2 - 4 xxx	1767	2	936	486	6210	1600	-	44,9	1	22
3EL2 144 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,2	2	21
3EL2 144 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,9	1	21
3EL2 150 - 2 P Q 2 2 - 4 xxx	1767	2	936	486	6210	1600	-	45,0	2	22
3EL2 156 - 2 P Q 3 2 - 4 xxx	1767	2	936	486	6210	1600	-	45,8	1	22
3EL2 156 - 3 P M 3 1 - 4 xxx	1240	1	676	315	4540	2300	-	33,6	2	21
3EL2 156 - 3 P M 4 1 - 4 xxx	1240	1	676	315	4540	2300	-	34,3	1	21
3EL2 192 - 2 P J 2 2 - 4 xxx	2124	2	1142	532	7640	1300	800	56,9	2	23
3EL2 192 - 2 P J 3 2 - 4 xxx	2124	2	1142	532	7640	1300	800	57,5	1	23
3EL2 192 - 3 P Q 3 2 - 4 xxx	1767	2	936	436	6210	1600	-	49,0	2	22
3EL2 192 - 3 P Q 4 2 - 4 xxx	1767	2	936	436	6210	1600	-	48,8	1	22
3EL2 198 - 2 P J 2 2 - 4 xxx	2124	2	1142	532	7640	1300	800	57,3	2	23
3EL2 198 - 2 P J 3 2 - 4 xxx	2124	2	1142	532	7640	1300	800	57,9	1	23
3EL2 198 - 3 P Q 3 2 - 4 xxx	1767	2	936	436	6210	1600	-	49,4	2	22
3EL2 198 - 3 P J 4 2 - 4 xxx	2124	2	1142	532	7640	1300	800	58,7	1	23
3EL2 228 - 2 P W 2 2 - 4 xxx	2302	2	1247	581	8360	1200	800	61,9	2	23
3EL2 228 - 2 P W 3 2 - 4 xxx	2302	2	1247	581	8360	1200	800	62,5	1	23
3EL2 228 - 3 P J 3 2 - 4 xxx	2124	2	1142	532	7640	1300	800	60,2	2	23
3EL2 228 - 3 P J 4 2 - 4 xxx	2124	2	1142	532	7640	1300	800	60,6	1	23
3EL2 228 - 2 P W 2 2 - 4 xxx	2302	2	1247	581	8360	1200	800	61,9	2	23
3EL2 228 - 2 P W 3 2 - 4 xxx	2302	2	1247	581	8360	1200	800	62,5	1	23
3EL2 228 - 3 P J 3 2 - 4 xxx	2124	2	1142	848	7640	1300	800	60,2	2	23
3EL2 228 - 3 P J 4 2 - 4 xxx	2124	2	1142	848	7640	1300	800	60,6	1	23
3EL2 240 - 2 P W 2 2 - 4 xxx	2302	2	1247	581	8360	1200	800	62,6	2	23
3EL2 240 - 2 P M 3 2 - 4 xxx	2480	2	1352	629	9080	1100	800	66,2	1	23
3EL2 240 - 3 P J 3 2 - 4 xxx	2124	2	1142	848	7640	1300	800	60,9	2	23
3EL2 240 - 3 P J 4 2 - 4 xxx	2124	2	1142	848	7640	1300	800	61,4	1	23
3EL2 276 - 3 P W 3 2 - 4 xxx	2302	2	1247	581	8360	1200	800	66,1	2	23
3EL2 276 - 3 P W 4 2 - 4 xxx	2302	2	1247	581	8360	1200	800	67,0	1	23
3EL2 288 - 3 P W 3 2 - 4 xxx	2302	2	1247	581	8360	1200	800	66,9	2	23
3EL2 288 - 3 P M 4 2 - 4 xxx	2480	2	1352	629	9080	1100	800	71,1	1	23
3EL2 336 - 2 L M 3 3 - 4 xxx	3720	3	2028	945	13620	1070	800	96,8	1	24
3EL2 336 - 3 L X 3 3 - 4 xxx	2829	3	1507	702	10030	1410	800	88,0	2	24
3EL2 336 - 3 L J 4 3 - 4 xxx	3186	3	1713	798	11460	1250	800	88,9	1	24
3EL2 360 - 2 L M 3 3 - 4 xxx	3720	3	2028	945	13620	1070	800	96,8	1	24
3EL2 360 - 3 L J 3 3 - 4 xxx	3186	3	1713	798	11460	1250	800	89,7	2	24
3EL2 360 - 3 L J 4 3 - 4 xxx	3186	3	1713	798	11460	1250	800	90,4	1	24
3EL2 420 - 3 L M 4 3 - 4 xxx	3720	3	2028	945	13620	1070	800	104,2	1	24

¹⁾ According to IEC 60099-4 these values are measured on individual housing unit

Always the right type housings.



Line terminals



Control devices for surge arresters

These control devices can be connected to all shown surge arresters in this catalogue.



Arrester condition indicator

The arrester condition indicator (ACI) shows the arrester status at a glance. Its easy-to-understand "traffic light" visualisation is based on a 3rd-harmonic-evaluation of the leakage current.
Order Number: 3EX5070



Control spark gap

To estimate the current that flows through the surge arrester in case of an overvoltage and to count the surges.
Order Number: 3EX6040



1. Surge counter



2. Surge counter with leakage current meter



3. Surge counter with leakage current meter remote indication

Sensor

Display

Up to 200 m

Surge counter

1. Surge counter
Order Number: 3EX5030
2. Surge counter with leakage current meter
Order Number: 3EX5050
3. Surge counter with leakage current meter remote indication
Sensor
Order Number: 3EX5060
Display
Order Number: 3EX5062



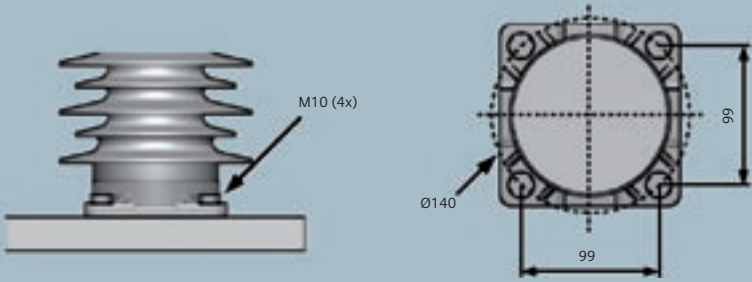
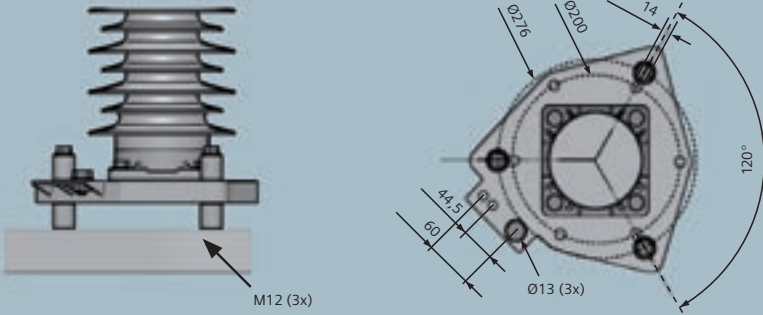
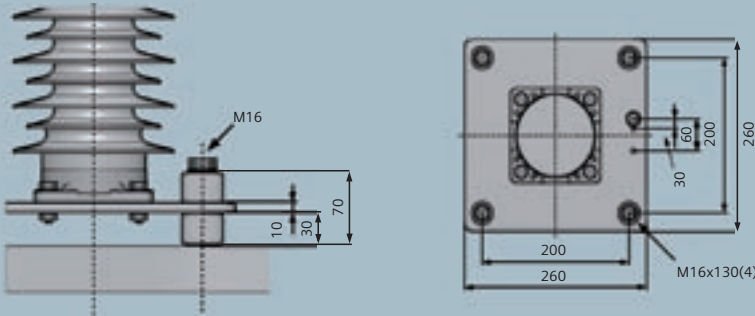
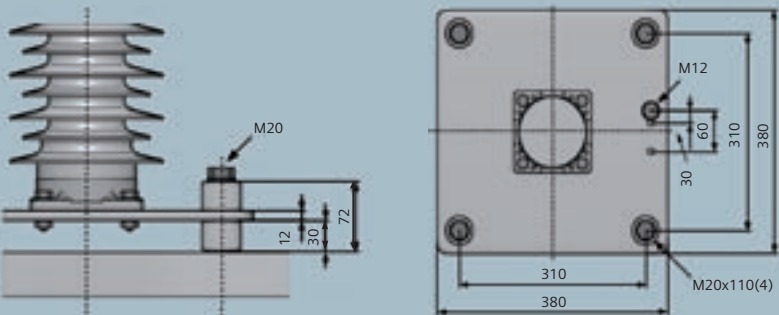
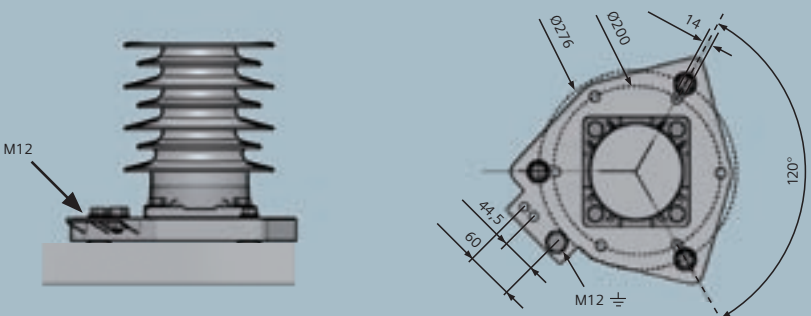
LCM II

LCM II, system for live condition check of metal oxide surge arresters

Order Number (example)	3	E	L	2	120	2	P	M	3	2	-	4	D	A	1
Silicone rubber-housed surge arrester cage design	3	E	L												
Surge arrester model															
Bending moment 4 kNm				2											
Rated voltage in kV					120										
Long-duration current															
850 A						2									
1200 A						3									
Application															
Phase surge arrester							P								
Neutral point surge arrester							S								
Transmission line surge arrester							L								
Housing size of single unit							M								
Line discharge class															
LD 2								2							
LD 3								3							
LD 4								4							
Number of units															
1 unit									1						
2 units									2						
3 units									3						
Form of sheds															
Alternating sheds										4					
High-voltage terminal															
Metal plate (connection with cable eye)													A		
Bolt 30 mm diameter, 80 mm long; stainless steel													D		
NEMA Flat 100 mm x 100 mm hot-dip galvanized steel													N		
DIN Flat 100 mm x 100 mm hot-dip galvanized steel													K		
Name plate															
German / English (IEC)													A		
English (ANSI)													H		
Other languages													Z		
Mounting															
Not insulated														0	
3-hole, insulated, Ø 200 – 276 mm / Ø 8,75" – 10,85", M12														1	
4-hole, insulated, 200 mm x 200 mm, M16														2	
4-hole, insulated, 310 x 310 mm, M20														3	
3-hole, grounded, Ø 200 mm – 276 mm / Ø 8,75" – 10,85", M12														5	

The top row in table 3 shows an example of the build-up of our order numbers. Not all combinations are possible.

Installation and grounding

	3EL2xxx-xxxxx-xxx0 4 mounting holes (Ø 12 mm), for 4 x M10 bolts, hole distance 99 mm x 99 mm for directly grounded installation
	3EL2xxx-xxxxx-xxx1 3 mounting holes (Ø 14 mm), for 3 x M12 bolts, hole distance 200 mm – 276 mm circle for insulated installation
	3EL2xxx-xxxxx-xxx2 4 mounting holes (Ø 18 mm), for 4 x M16 bolts, hole distance 200 mm x 200 mm for insulated installation
	3EL2xxx-xxxxx-xxx3 4 mounting holes (Ø 22 mm), for 4 x M20 bolts, hole distance 310 mm x 310 mm for insulated installation
	3EL2xxx-xxxxx-xxx5 3 mounting holes (Ø 14 mm), for 3 x M12 bolts, hole distance 200 mm – 276 mm circle for grounded installation

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The required technical options should therefore
be specified in the contract.