

High Voltage Surge Arresters Buyer's Guide — Section EXLIM R

Zinc Oxide Surge Arrester EXLIM R

Protection of switchgear, transformers and other equipment in high voltage systems against atmospheric and switching overvoltages. For use when requirements of lightning intensity, energy capability and pollution are moderate.



Other data can be ordered on request. Please contact your local sales representative.



Brief performance data

System voltages (U_m)	52 - 170 kV
Rated voltages (U_r)	42 - 168 kV
Nominal discharge current (IEC)	10 kA _{peak}
Classifying current (ANSI/IEEE)	10 kA _{peak}
Discharge current withstand strength:	
High current 4/10 μ s	100 kA _{peak}
Low current 2000 μ s	600 A _{peak}
Energy capability:	
Line discharge class (IEC)	Class 2
[2 impulses, (IEC Cl. 8.5.5)]	5.0 kJ/kV (U_r)
Fulfils/exceeds requirements of ANSI transmission-line discharge test for 170 kV systems.	
Short-circuit/Pressure relief capability	50 kA _{sym}
External insulation	Fulfils/exceeds standards
Mechanical strength:	
Specified long-term load (SLL)	3000 Nm
Specified short-term load (SSL)	7500 Nm
Service conditions:	
Ambient temperature	-50 °C to +45 °C
Design altitude	max. 1000 m
Frequency	15 - 62 Hz

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Guaranteed protective data

Max. system voltage	Rated voltage	Max. continuous operating voltage ¹⁾		TOV capability ²⁾		Max. residual voltage with current wave						
		as per IEC	as per ANSI/IEEE	1 s	10 s	30/60 μ s			8/20 μ s			
						U _c	MCOV	0.5 kA	1 kA	2 kA	5 kA	10 kA
U _m	U _r	U _c	MCOV	1 s	10 s	0.5 kA	1 kA	2 kA	5 kA	10 kA	20 kA	40 kA
kV _{rms}	kV _{rms}	kV _{rms}	kV _{rms}	kV _{rms}	kV _{rms}	kV _{peak}	kV _{peak}	kV _{peak}	kV _{peak}	kV _{peak}	kV _{peak}	kV _{peak}
36³⁾	24	19.2	19.5	27.8	26.4	49.4	51.3	53.8	58.7	62.2	69.7	79.6
	30	24.0	24.4	34.8	33.0	61.7	64.2	67.2	73.3	77.7	87.1	99.5
	33	26.4	26.7	38.2	36.3	67.9	70.6	73.9	80.6	85.5	95.8	110
	36	28.8	29.0	41.7	39.6	74.1	77.0	80.6	88.0	93.3	105	120
	39	31.2	31.5	45.2	42.9	80.3	83.4	87.3	95.3	102	114	130
52	42	34	34.0	48.7	46.2	86.4	89.8	94.0	103	109	122	140
	45	36	36.5	52.2	49.5	92.6	96.2	101	110	117	131	150
	48	38	39.0	55.6	52.8	98.8	103	108	118	125	140	160
	51	41	41.3	59.1	56.1	105	109	115	125	133	148	170
	54	43	43.0	62.6	59.4	112	116	121	132	140	157	180
	60	48	48.0	69.6	66.0	124	129	135	147	156	175	199
72	54	43	43.0	62.6	59.4	112	116	121	132	140	157	180
	60	48	48.0	69.6	66.0	124	129	135	147	156	175	199
	66	53	53.4	76.5	72.6	136	142	148	162	171	192	219
	72	58	58.0	83.5	79.2	149	154	162	176	187	209	239
	75	60	60.7	87.0	82.5	155	161	168	184	195	218	249
	84	67	68.0	97.4	92.4	173	180	188	206	218	244	279
100	75	60	60.7	87.0	82.5	155	161	168	184	195	218	249
	84	67	68.0	97.4	92.4	173	180	188	206	218	244	279
	90	72	72.0	104	99.0	186	193	202	220	234	262	299
	96	77	77.0	111	105	198	206	215	235	249	279	319
123	90	72	72.0	104	99.0	186	193	202	220	234	262	299
	96	77	77.0	111	105	198	206	215	235	249	279	319
	108	78	84.0	125	118	223	231	242	264	280	314	359
	120	78	98.0	139	132	247	257	269	294	311	349	398
	132	78	106	153	145	272	283	296	323	342	383	438
	138	78	111	160	151	284	295	309	338	358	401	458
145	108	86	86.0	125	118	223	231	242	264	280	314	359
	120	92	98.0	139	132	247	257	269	294	311	349	398
	132	92	106	153	145	272	283	296	323	342	383	438
	138	92	111	160	151	284	295	309	338	358	401	458
	144	92	115	167	158	297	308	323	352	373	418	478
170	132	106	106	153	145	272	283	296	323	342	383	438
	144	108	115	167	158	297	308	323	352	373	418	478
	162	108	131	187	178	334	347	363	396	420	470	538
	168	108	131	194	184	346	359	376	411	436	488	557

More detailed information on the TOV capability and the protective characteristics are given in Publ. 1HSM 9543 13-01en.

1) The continuous operating voltages U_c (as per IEC) and MCOV (as per ANSI) differ only due to deviations in type test procedures. U_c has to be considered only when the actual system voltage is higher than the tabulated. Any arrester with U_c higher than or equal to the actual system voltage divided by $\sqrt{3}$ can be selected.

2) With prior duty equal to the maximum single-impulse energy stress (2.5 kJ/kV (U_p)).

3) Arresters for system voltages 36 kV or below can be supplied, on request, when the order also includes arresters for higher system voltages.

Arresters with lower or higher rated voltages may be available on request for special applications.

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Technical data for housings

Max. system voltage	Rated voltage	Housing	Creepage distance	External insulation *)			Dimensions					
				1.2/50 μ s dry	50 Hz wet (60s)	250/2500 μ s wet	Mass	A _{max}	B	C	D	Fig.
U _m	U _r											
kV _{rms}	kV _{rms}		mm	kV _{peak}	kV _{rms}	kV _{peak}	kg	mm	mm	mm	mm	
52	42-60	CV052	1615	275	129	212	45	725	-	-	-	1
72	54-75	CM072	1615	275	129	212	46	725	-	-	-	1
	54-84	CV072	2651	394	221	320	62	997	-	-	-	1
100	75-96	CH100	2651	394	221	320	63	997	-	-	-	1
	84-96	CV100	3685	568	288	433	78	1268	-	-	-	1
123	90-108	CM123	2651	394	221	320	64	997	-	-	-	1
	90-138	CH123	3685	568	288	433	81	1268	-	-	-	1
	90-96	CV123	4266	669	350	532	103	1697	600	-	300	3
	108-138	CV123	4266	669	350	532	103	1697	-	-	-	2
145	108-144	CH145	3685	568	288	433	82	1268	-	-	-	1
	108-144	CV145	5302	788	442	640	119	1969	600	-	300	3
170	132-144	CM170	3685	568	288	433	82	1268	-	-	-	1
	132-144	CH170	4266	669	350	532	105	1697	600	-	300	3
	162-168	CH170	4266	669	350	532	105	1697	-	-	-	2
	132	CV170	5302	788	442	640	120	1969	600	800	400	4
	144-168	CV170	5302	788	442	640	122	1969	600	-	300	3

Neutral-ground arresters

52	30-36	CN052	1615	275	129	212	43	725	-	-	-	1
72	42-54	CN072	1615	275	129	212	45	725	-	-	-	1
100	60	CN100	1615	275	129	212	45	725	-	-	-	1
123	72	CN123	1615	275	129	212	62	725	-	-	-	1
	84-108	CN123	2651	394	221	320	64	997	-	-	-	1
	120	CN123	3685	568	288	433	79	1268	-	-	-	1
145	84	CN145	2651	394	221	320	62	997	-	-	-	1
	90-108	CN145	2651	394	221	320	64	997	-	-	-	1
	120	CN145	3685	568	288	433	79	1268	-	-	-	1
170	96-108	CN170	2651	394	221	320	64	997	-	-	-	1
	120	CN170	3685	568	288	433	79	1268	-	-	-	1

*) Sum of withstand voltages for empty units of arrester.

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Technical data for housings

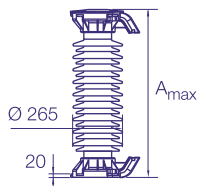


Figure 1

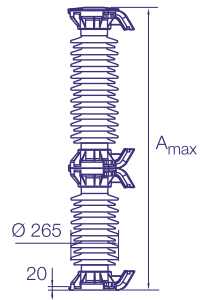


Figure 2

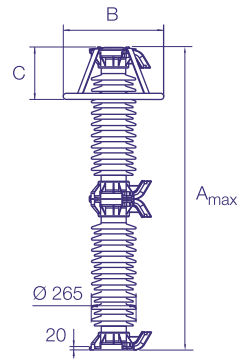


Figure 3

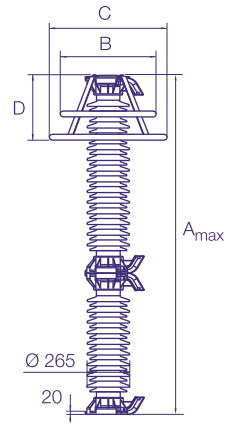
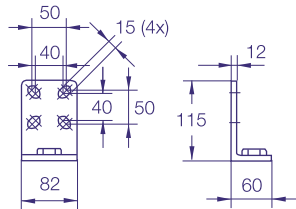


Figure 4

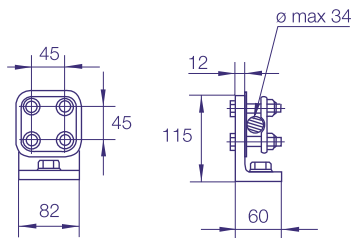
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Accessories

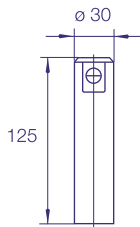
Line terminals



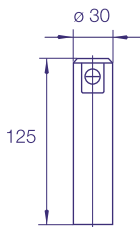
1HSA410 000-A
Aluminium



1HSA410 000-B
Aluminium flag with other
items in stainless steel

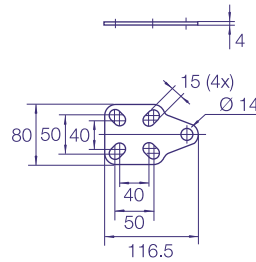


1HSA410 000-C
Aluminium

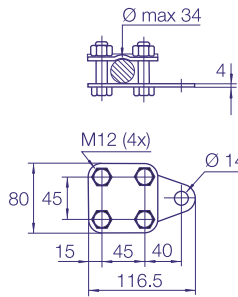


1HSA410 000-D
Stainless steel

Earth terminals

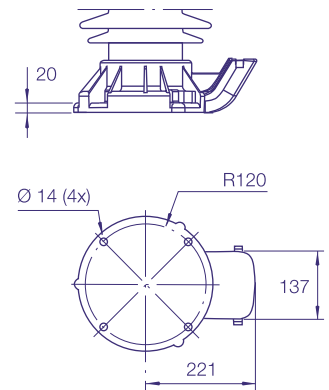


1HSA420 000-A
Stainless steel

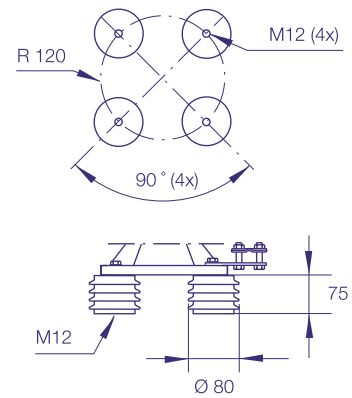


1HSA420 000-B
Stainless steel

Drilling plans



Without insulating base
Aluminium



Insulating base
1HSA430 000-A
Epoxy resin

M12 bolts for connection to structure are not supplied by ABB. Required threaded grip length is 15-20 mm.

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Shipping data

Rated voltage U_r kV_{rms}	Housing	Number of arresters per crate					
		One Volume		Three Volume		Six Volume	
			Gross		Gross		Gross
		m^3	kg	m^3	kg	m^3	kg
24-39	CV036	0.3	74	0.5	171	1.0	337
42-60	CV052	0.3	76	0.5	177	1.0	349
54-75	CM072	0.3	77	0.5	180	1.0	355
54-84	CV072	0.3	93	0.7	228	1.4	451
75-96	CH100	0.3	94	0.7	231	1.4	457
84-96	CV100	0.4	115	0.8	276	1.7	547
90-108	CM123	0.3	92	0.7	234	1.4	463
90-138	CH123	0.4	116	0.8	279	1.7	553
90-138	CV123	0.7	131	1.4	367	-	-
108-144	CH145	0.4	119	0.9	288	1.7	571
108-144	CV145	0.7	147	1.4	415	-	-
132-144	CM170	0.4	119	0.9	288	1.7	571
132-168	CH170	0.7	133	1.4	373	-	-
132-168	CV170	0.7	148	1.4	418	-	-

Neutral-ground arresters

30-36	CN052	0.3	75	0.5	175	1.0	340
42-54	CN072	0.3	80	0.5	180	1.0	350
60	CN100	0.3	80	0.5	180	1.0	350
72	CN123	0.3	80	0.5	180	1.0	355
84-108	CN123	0.3	95	0.7	235	1.4	465
120	CN123	0.4	115	0.8	280	1.7	555
84	CN145	0.3	95	0.7	230	1.4	455
90-108	CN145	0.3	95	0.7	235	1.4	465
120	CN145	0.4	115	0.8	280	1.7	555
96-108	CN170	0.3	95	0.7	235	1.4	465
120	CN170	0.4	115	0.8	280	1.7	555

Each crate contains a certain number of arrester units and accessories for assembly and erection. A packing list is attached externally on each crate.

Each separate crate is numbered and the numbers of all crates and their contents are listed in the shipping specifica-

tion. ABB reserves the right to pack arresters in the most effective/economic combination. Alternate or non-standard crates may involve additional charges.



The table above is to be seen as an approximation and specific data for deliveries may differ from the values given.

For more information please contact:

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