

# 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

Arrester classification as per IEC 60099-4 Ed 3.0	Station; SL
Arrester classification as per IEEE Std C62.11-2012	Station
<b>System voltages (<math>U_s</math>)</b>	52 - 170 kV
<b>Rated voltages (<math>U_r</math>)</b>	42 - 168 kV
<b>Nominal discharge current (IEC)</b>	10 kA <sub>peak</sub>
<b>Lightning impulse classifying current (ANSI/IEEE)</b>	10 kA <sub>peak</sub>
<b>Charge, energy and current withstand:</b>	
Repetitive charge transfer rating, $Q_{rs}$ (IEC)	1.2 C
Thermal energy rating, $W_{th}$ (IEC)	5 kJ/kV ( $U_r$ )
Single impulse energy capability (2 ms to 4 ms impulse)	2.5 kJ/kV ( $U_r$ )
Discharge current withstand strength:	
High current 4/10 $\mu$ s	100 kA <sub>peak</sub>
Low current 2000 $\mu$ s, (based on $Q_{rs}$ )	600 A <sub>peak</sub>
Energy class as per IEEE standard (switching surge energy rating)	-
Single-impulse withstand rating as per IEEE standard	1.2 C
Repetitive charge transfer test value - sample tests on all manufactured block batches	1.5 C
<b>Short-circuit/Pressure relief capability</b>	50 kA <sub>rms(sym)</sub>
<b>Mechanical strength:</b>	
Specified long-term load (SLL)	3000 Nm
Specified short-term load (SSL)	7500 Nm
<b>Service conditions:</b>	
Ambient temperature	-50 °C to +45 °C
Design altitude	max. 1000 m
Frequency	15 - 62 Hz
<b>Line discharge class (as per IEC60099-4, Ed. 2.2)</b>	Class 2

Further data according to the IEEE standard can be supplied on request



# EXLIM R

## Guaranteed protective data

Max. system voltage  $U_s$  kV <sub>rms</sub>	Rated voltage  $U_r$  kV <sub>rms</sub>	Max. continuous operating voltage <sup>1)</sup>		TOV capability <sup>2)</sup>		Max. residual voltage with current wave						
		as per IEC	as per ANSI/IEEE	1 s	10 s	30/60 μs			8/20 μs			
		$U_c$	MCOV			0.5 kA	1 kA	2 kA	5 kA	10 kA	20 kA	40 kA
		kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>rms</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>	kV <sub>peak</sub>
<b>36<sup>3)</sup></b>	24	19.2	19.5	26.3	24.7	49.4	51.3	53.8	58.7	62.2	69.7	79.6
	30	24.0	24.4	32.9	30.9	61.7	64.2	67.2	73.3	77.7	87.1	99.5
	33	26.4	26.7	36.2	34.0	67.9	70.6	73.9	80.6	85.5	95.8	110
	36	28.8	29.0	39.5	37.1	74.1	77.0	80.6	88.0	93.3	105	120
	39	31.2	31.5	42.8	40.2	80.3	83.4	87.3	95.3	102	114	130
<b>52</b>	42	34	34.0	46.1	43.3	86.4	89.8	94.0	103	109	122	140
	45	36	36.5	49.4	46.4	92.6	96.2	101	110	117	131	150
	48	38	39.0	52.7	49.5	98.8	103	108	118	125	140	160
	51	41	41.3	56.0	52.6	105	109	115	125	133	148	170
	54	43	43.0	59.3	55.7	112	116	121	132	140	157	180
<b>72</b>	60	48	48.0	65.9	61.9	124	129	135	147	156	175	199
	54	43	43.0	59.3	55.7	112	116	121	132	140	157	180
	60	48	48.0	65.9	61.9	124	129	135	147	156	175	199
	66	53	53.4	72.5	68.1	136	142	148	162	171	192	219
	72	58	58.0	79.1	74.3	149	154	162	176	187	209	239
<b>100</b>	75	60	60.7	82.4	77.4	155	161	168	184	195	218	249
	84	67	68.0	92.3	86.7	173	180	188	206	218	244	279
	90	72	72.0	98.9	92.9	186	193	202	220	234	262	299
	96	77	77.0	105	99.1	198	206	215	235	249	279	319
	<b>123</b>	90	72	72.0	98.9	92.9	186	193	202	220	234	262
96		77	77.0	105	99.1	198	206	215	235	249	279	319
108		78	84.0	118	111	223	231	242	264	280	314	359
120		78	98.0	131	123	247	257	269	294	311	349	398
132		78	106	145	136	272	283	296	323	342	383	438
<b>145</b>	138	78	111	151	142	284	295	309	338	358	401	458
	108	86	86.0	118	111	223	231	242	264	280	314	359
	120	92	98.0	131	123	247	257	269	294	311	349	398
	132	92	106	145	136	272	283	296	323	342	383	438
	138	92	111	151	142	284	295	309	338	358	401	458
<b>170</b>	144	92	115	158	148	297	308	323	352	373	418	478
	106	106	145	136	272	283	296	323	342	383	438	438
	108	115	158	148	297	308	323	352	373	418	478	478
	108	131	178	167	334	347	363	396	420	470	538	538
	108	131	184	173	346	359	376	411	436	488	557	557

1) The continuous operating voltages  $U_c$  (as per IEC) and MCOV (as per IEEE) 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 thermal energy rating of 5 kJ/kV ( $U_r$ ).

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 $U_s$	Rated voltage $U_r$	Housing	Creepage distance	External insulation *)			Dimensions				
				1.2/50 $\mu$ s dry $kV_{peak}$	50 Hz wet (60s) $kV_{rms}$	250/2500 $\mu$ s wet $kV_{peak}$	Mass kg	$A_{max}$ mm	B mm	C mm	Fig.
$kV_{rms}$	$kV_{rms}$		mm	$kV_{peak}$	$kV_{rms}$	$kV_{peak}$	kg	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	537	287	433	78	1268	-	-	1
123	90-108	CM123	2651	394	221	320	64	997	-	-	1
	90-138	CH123	3685	537	287	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	537	287	433	82	1268	-	-	1
	108-144	CV145	5302	788	442	640	119	1969	600	300	3
170	132-144	CM170	3685	537	287	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
	132-168	CV170	5302	788	442	640	120	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	537	287	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	537	287	433	79	1268	-	-	1
170	96-108	CN170	2651	394	221	320	64	997	-	-	1
	120	CN170	3685	537	287	433	79	1268	-	-	1

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

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## Technical data for housings

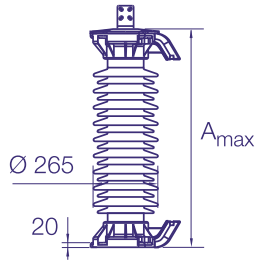


Figure 1

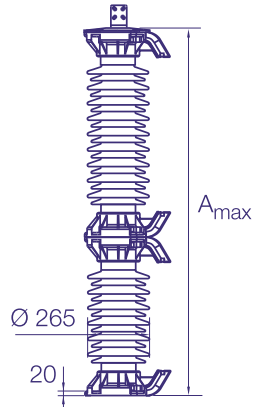


Figure 2

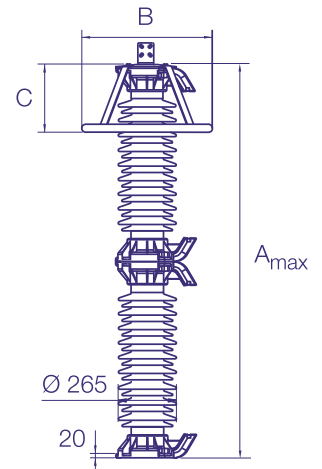
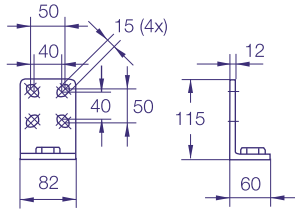


Figure 3

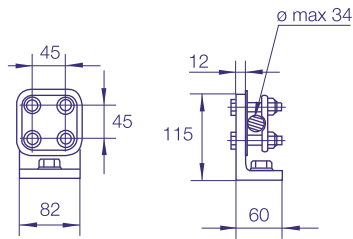
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## Accessories

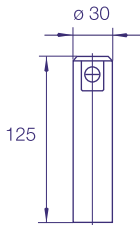
### Line terminals



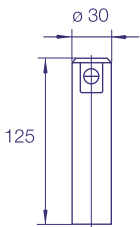
**1HSA410 000-A**  
Aluminium



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

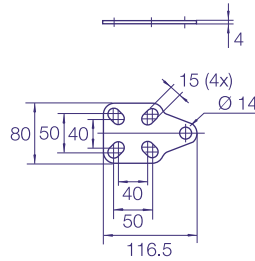


**1HSA410 000-C**  
Aluminium

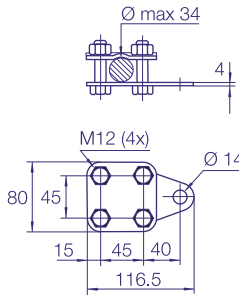


**1HSA410 000-D**  
Stainless steel

### Earth terminals

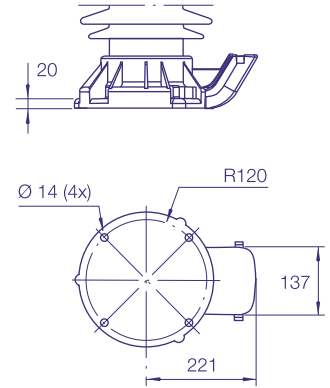


**1HSA420 000-A**  
Stainless steel

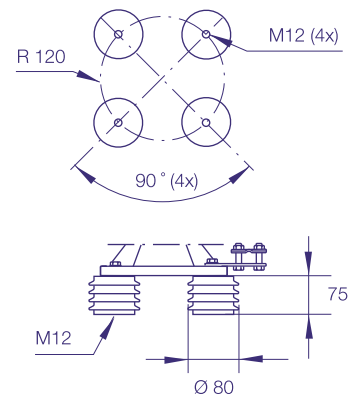


**1HSA420 000-B**  
Stainless steel

### 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.

# EXLIM R

## Shipping data

Rated voltage $U_r$  kV <sub>rms</sub>	Housing	Number of arresters per crate					
		One Volume	Gross	Three Volume	Gross	Six Volume	Gross
		m <sup>3</sup>	kg	m <sup>3</sup>	kg	m <sup>3</sup>	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.