High Voltage Surge Arresters
Buyer´s Guide — Section PEXLIM P-X

Power and productivity
for a better world™

Zinc Oxide Surge Arrester PEXLIM P-X

Protection of switchgear, transformers and other equipment in high voltage systems against atmospheric and switching overvoltages.

- **in areas with very high lightning intensity**
- **where grounding or shielding conditions are poor or incomplete**
- **for important installations**
- **where energy requirements are very high (e.g. very long lines, capacitor protection).**

Superior where low weight, reduced clearances, flexible mounting, non-fragility and additional personnel safety is required.

Major component in PEXLINK™ concept for transmission line protection.

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

Brief performance data

System voltages (U_m)	52 - 420 kV
Rated voltages (U_r)	42 - 360 kV
Nominal discharge current (IEC)	20 kA_{peak}
Classifying current (ANSI/IEEE)	15 kA_{peak}
Discharge current withstand strength:	
High current 4/10 µs	100 kA_{peak}
Low current 2000 µs	1500 A_{peak}
Energy capability:	
Line discharge class (IEC)	Class 4
[2 impulses, (IEC Cl. 8.5.5)	12.0 kJ/kV (U_r)]
Fulfils/exceeds requirements of ANSI transmission-line discharge test for 362 kV systems.	
Short-circuit/Pressure relief capability	65 kA_{sym}
External insulation	Fulfils/exceeds standards
Mechanical strength:	
Specified long-term load (SLL)	2500 Nm
Specified short-term load (SSL)	4000 Nm
Service conditions:	
Ambient temperature	-50 °C to +45 °C
Design altitude	max. 1000 m
Frequency	15 - 62 Hz

PEXLIM P-X
Guaranteed protective data 24 - 145 kV

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			30/60 µs			8/20 µs			
U_m	U_r	U_c	MCOV	1 s	10 s	1 kA	2 kA	3 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}
24[3]	24	19.2	19.5	27.8	26.4	46.8	48.5	49.7	51.9	54.6	59.8	65.6
36[3]	30	24.0	24.4	34.8	33.0	58.5	60.7	62.2	64.9	68.3	74.8	81.9
	33	26.4	26.7	38.2	36.3	64.4	66.7	68.4	71.4	75.1	82.3	90.1
	36	28.8	29.0	41.7	39.6	70.2	72.8	74.6	77.9	81.9	89.7	98.3
	39	31.2	31.5	45.2	42.9	76.1	78.8	80.8	84.3	88.8	97.2	107
52	42	34	34.0	48.7	46.2	81.9	84.9	87.0	90.8	95.6	105	115
	48	38	39.0	55.6	52.8	93.6	97.0	99.4	104	110	120	132
	51	41	41.3	59.1	56.1	99.5	104	106	111	117	128	140
72	54	43	43.0	62.6	59.4	106	110	112	117	123	135	148
	60	48	48.0	69.6	66.0	117	122	125	130	137	150	164
	63	50	51.0	73.0	69.3	123	128	131	137	144	157	172
	72	58	58.0	83.5	79.2	141	146	150	156	164	180	197
100	66	53	53.4	76.5	72.6	129	134	137	143	151	165	181
	72	58	58.0	83.5	79.2	141	146	150	156	164	180	197
	75	60	60.7	87.0	82.5	147	152	156	163	171	187	205
	78	62	63.1	90.4	85.8	153	158	162	169	178	195	213
	81	65	65.6	93.9	89.1	158	164	168	176	185	202	222
	84	67	68.0	97.4	92.4	164	170	174	182	192	210	230
123	90	72	72.0	104	99.0	176	182	187	195	205	225	246
	96	77	77.0	111	105	188	194	199	208	219	240	263
	102	78	82.6	118	112	199	207	212	221	233	255	279
	108	78	84.0	125	118	211	219	224	234	246	270	295
	114	78	92.3	132	125	223	231	237	247	260	284	312
	120	78	98.0	139	132	234	243	249	260	273	299	328
	129	78	104	149	141	252	261	268	279	294	322	353
	132	78	106	153	145	258	267	274	286	301	329	361
	138	78	111	160	151	270	279	286	299	314	344	377
	144	78	115	167	158	281	291	299	312	328	359	394
	150	78	121	174	165	293	304	311	325	342	374	410
145	108	86	86.0	125	118	211	219	224	234	246	270	295
	120	92	98.0	139	132	234	243	249	260	273	299	328
	132	92	106	153	145	258	267	274	286	301	329	361
	138	92	111	160	151	270	279	286	299	314	344	377

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 √3 can be selected.

2) With prior duty equal to the maximum single-impulse energy stress (7.0 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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Guaranteed protective data 145 - 420 kV

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			30/60 µs			8/20 µs			
U_m	U_r	U_c	MCOV	1 s	10 s	1 kA	2 kA	3 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}
145	144	92	115	167	158	281	291	299	312	328	359	394
	150	92	121	174	165	293	304	311	325	342	374	410
	162	92	131	187	178	316	328	336	351	369	404	443
	168	92	131	194	184	328	340	348	364	383	419	459
170	132	106	106	153	145	258	267	274	286	301	329	361
	144	108	115	167	158	281	291	299	312	328	359	394
	150	108	121	174	165	293	304	311	325	342	374	410
	162	108	131	187	178	316	328	336	351	369	404	443
	168	108	131	194	184	328	340	348	364	383	419	459
	180	108	144	208	198	351	364	373	390	410	449	492
	192	108	152	222	211	375	388	398	415	437	479	525
245	180	144	144	208	198	351	364	373	390	410	449	492
	192	154	154	222	211	375	388	398	415	437	479	525
	198	156	160	229	217	387	400	410	428	451	494	541
	210	156	170	243	231	410	425	435	454	478	524	574
	214	156	173	248	235	419	434	445	464	488	535	586
	216	156	175	250	237	422	437	448	467	492	539	590
	219	156	177	254	240	427	443	454	474	499	546	598
	222	156	179	257	244	433	449	460	480	506	554	607
	228	156	180	264	250	445	461	473	493	519	568	623
300	216	173	175	250	237	422	437	448	467	492	539	590
	228	182	182	264	250	445	461	473	493	519	568	623
	240	191	191	278	264	468	485	497	519	546	598	656
	258	191	209	299	283	504	522	535	558	587	643	705
	264	191	212	306	290	515	534	547	571	601	658	721
	276	191	220	320	303	539	558	572	597	628	688	754
362	258	206	209	299	283	504	522	535	558	587	643	705
	264	211	212	306	290	515	534	547	571	601	658	721
	276	221	221	320	303	539	558	572	597	628	688	754
	288	230	230	334	316	562	582	597	623	656	718	787
420	330	264	267	382	363	644	667	684	714	751	823	901
	336	267	272	389	369	656	679	696	727	765	838	918
	342	267	277	396	376	667	691	709	740	779	852	934
	360	267	291	417	396	702	728	746	779	819	897	983

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 √3 can be selected.

2) With prior duty equal to the maximum single-impulse energy stress (7.0 kJ/kV (U_r)).

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

PEXLIM P-X
Technical data for housings

Max. system voltage	Rated voltage	Housing	Creepage distance	External insulation *)				Dimensions					
U_m	U_r			1.2/50 µs dry	50 Hz wet (60s)	60 Hz wet (10s)	250/2500 µs wet	Mass	A_{max}	B	C	D	Fig.
kV_{rms}	kV_{rms}		mm	kV_{peak}	kV_{rms}	kV_{rms}	kV_{peak}	kg	mm	mm	mm	mm	
24	24	XV024	1363	283	126	126	242	18	481	-	-	-	1
36	30-36	XV036	1363	283	126	126	242	18	481	-	-	-	1
	39	XV036	2270	400	187	187	330	29	736	-	-	-	1
52	42-51	XV052	2270	400	187	187	330	29	736	-	-	-	1
72	54-72	XV072	2270	400	187	187	330	28	736	-	-	-	1
	75-84	XV072	3625	578	293	293	462	43	1080	-	-	-	1
100	75-96	XV100	3625	578	293	293	462	43	1080	-	-	-	1
123	90-120	XH123	3625	578	293	293	462	42	1080	-	-	-	1
	90-144	XV123	4540	800	374	374	660	53	1397	-	-	-	2
	150	XV123	4988	861	419	419	704	54	1486	-	-	-	2
145	108-120	XH145	3625	578	293	293	462	41	1080	-	-	-	1
	108-144	XV145	4540	800	374	374	660	52	1397	-	-	-	2
	150	XV145	4988	861	419	419	704	54	1486	-	-	-	2
	162-168	XV145	5895	978	480	480	792	65	1741	-	-	-	2
170	132-144	XH170	4540	800	374	374	660	52	1417	400	-	160	3
	132-180	XV170	4988	861	419	419	704	56	1506	400	-	160	3
	192	XV170	5895	978	480	480	792	69	1761	400	-	160	3
245	180-192	XM245	5895	978	480	480	792	65	1761	400	-	160	3
	180-216	XH245	7250	1156	586	586	924	82	2105	400	-	160	3
	180-198	XV245	8613	1439	712	712	1166	100	2617	800	600	400	5
	210-228	XV245	8613	1439	712	712	1166	97	2617	600	-	300	4
300	216-240	XH300	8613	1439	712	712	1166	101	2617	900	600	500	5
	258-276	XH300	8613	1439	712	712	1166	97	2617	900	600	500	6
	216-276	XV300	9520	1556	773	773	1254	109	2872	900	600	500	5
362	258-288	XH362	9520	1556	773	773	1254	117	2872	1200	800	600	5
	258-288	XV362	11790	1956	960	960	1584	146	3533	1400	800	700	7
420	330-360	XH420	10875	1734	879	879	1386	130	3216	1400	800	700	5
Neutral-ground arresters													
52	30-36	XN052	1363	283	126	126	242	19	481	-	-	-	1
72	42-54	XN072	2270	400	187	187	330	29	736	-	-	-	1
100	60	XN100	2270	400	187	187	330	30	736	-	-	-	1
123	72	XN123	2270	400	187	187	330	28	736	-	-	-	1
	75-120	XN123	3625	578	293	293	462	43	1080	-	-	-	1
145	84-120	XN145	3625	578	293	293	462	42	1080	-	-	-	1
170	96-120	XN170	3625	578	293	293	462	42	1080	-	-	-	1
245	108	XN245	3625	578	293	293	462	41	1080	-	-	-	1
	132-144	XN245	4540	800	374	374	660	50	1397	-	-	-	2

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

PEXLIM P-X
Technical data for housings

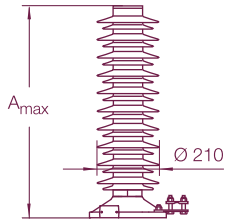


Figure 1

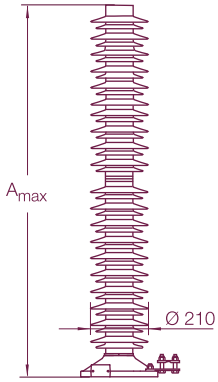


Figure 2

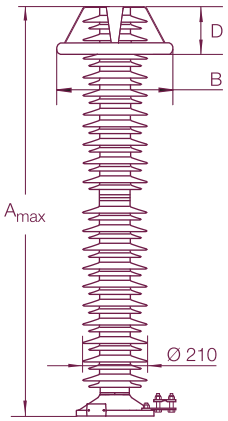


Figure 3

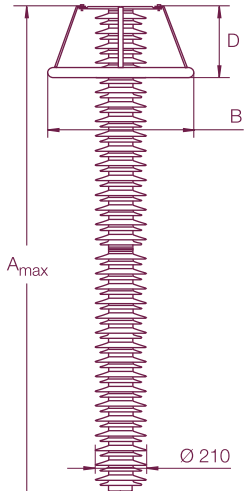


Figure 4

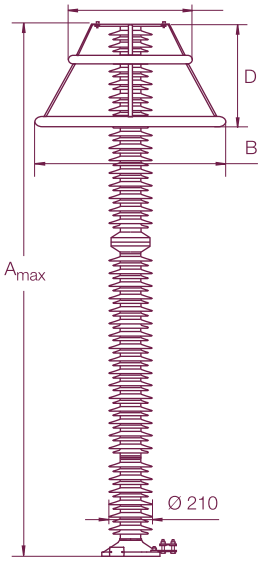


Figure 5

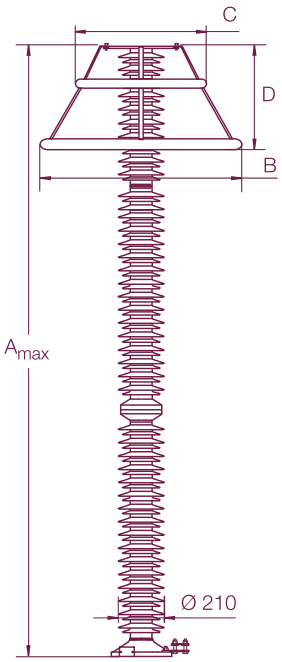


Figure 6

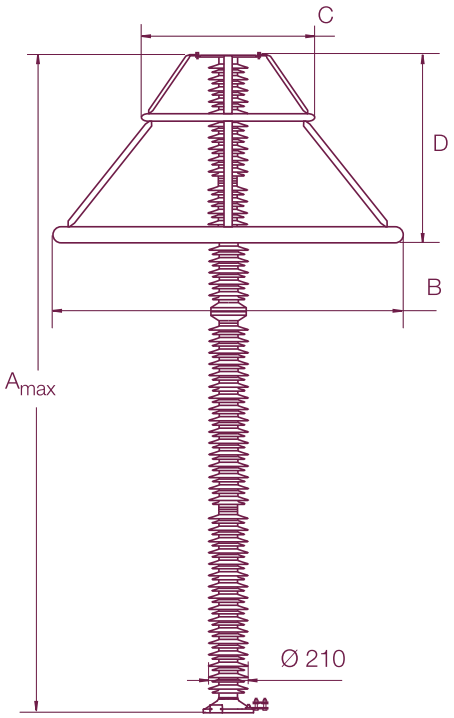
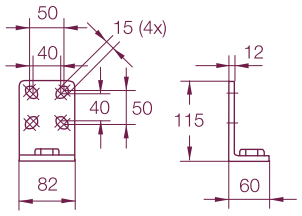


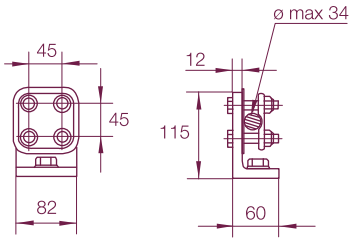
Figure 7

PEXLIM P-X
Accessories

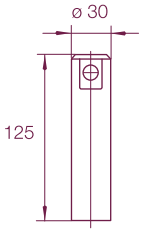
Line terminals



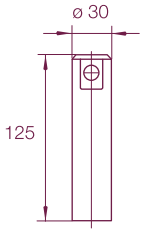
1HSA410 000-L
Aluminium



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

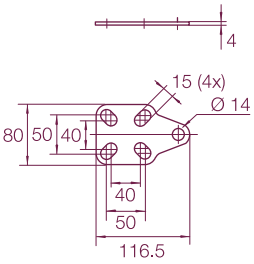


1HSA410 000-N
Aluminium

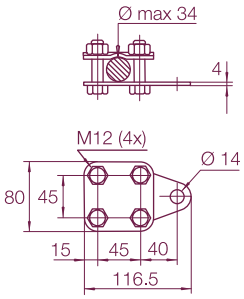


1HSA410 000-P
Stainless steel

Earth terminals

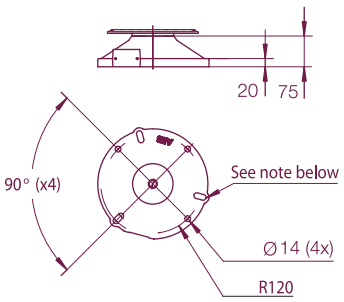


1HSA420 000-A
Stainless steel



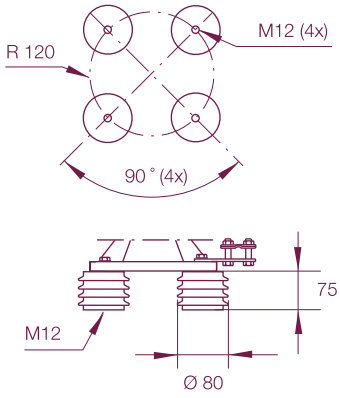
1HSA420 000-B
Stainless steel

Drilling plans



NOTE! Alternative drilling plan
3 slotted holes (120 °), n14 at R111-127

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.

PEXLIM P-X
Shipping data

Rated voltage	Housing	Number of arresters per crate					
		One		Three		Six	
U_r		Volume	Gross	Volume	Gross	Volume	Gross
kV_{rms}		m^3	kg	m^3	kg	m^3	kg
24	XV024	0.1	42	0.5	86	0.9	152
30-36	XV036	0.1	42	0.5	86	0.9	152
39	XV036	0.5	52	0.5	116	0.9	212
42-72	XV052	0.5	52	0.5	116	0.9	212
54-72	XV072	0.5	52	0.5	116	0.9	212
75-84	XV072	0.7	71	0.7	163	1.2	301
75-96	XV100	0.7	71	0.7	163	1.2	301
90-120	XH123	0.7	71	0.7	163	1.2	301
90-144	XV123	0.9	87	0.9	201	1.5	372
150	XV123	0.9	87	0.9	201	1.5	372
108-120	XH145	0.7	68	0.7	154	1.2	283
108-144	XV145	0.9	87	0.9	201	1.5	372
150	XV145	0.9	87	0.9	201	1.5	372
162-168	XV145	1.1	98	1.1	239	1.9	443
132-144	XH170	0.9	89	0.9	207	1.5	384
150	XH170	0.9	89	0.9	207	1.5	384
132-192	XV170	1.1	102	1.1	251	1.9	443
192	XM245	1.1	98	1.1	239	1.9	443
180-228	XH245	1.1	115	1.1	290	1.9	545
180-198	XV245	0.9	133	1.5	339	-	-
210-228	XV245	0.9	133	1.5	339	-	-
216-264	XH300	1.0	155	1.7	358	-	-
276	XH300	1.0	155	1.7	358	-	-
216-276	XV300	1.0	163	1.7	382	-	-
258-288	XH362	1.6	207	2.3	435	-	-
258	XV362	2.1	242	2.9	497	-	-
264-288	XV362	2.1	258	2.3	545	-	-
330-360	XH420	2.1	242	2.3	497	-	-
Neutral-ground arresters							
30-36	XN052	0.1	42	0.5	86	0.9	152
42-54	XN072	0.5	52	0.5	116	0.9	212
60	XN100	0.5	52	0.5	116	0.9	212
72	XN123	0.5	52	0.5	116	0.9	212
75-120	XN123	0.7	71	0.7	163	1.2	301
84-120	XN145	0.7	71	0.7	163	1.2	301
96-120	XN170	0.7	71	0.7	163	1.2	301
108-120	XN245	0.7	71	0.7	163	1.2	301
132-144	XN245	0.9	87	0.9	201	1.5	372

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 specification. 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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NOTE! ABB AB is working continuously to improve the products. We therefore reserve the right to change designs, dimensions and data without prior notice.

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Power and productivity
for a better world™