



AC SURGE ARRESTER TYPE PROXAR-IVN AC IN SILICONE HOUSING FOR PROTECTION OF AC OUTDOOR POWER SUPPLY LINES AND POWER INSTALLATIONS

CATALOGUE CARD

APPLICATION

Surge arresters type **PROXAR-IVN AC** in silicone housing are intended for protection AC outdoor power engineering networks against multiple lightning and switching over voltages in HV and MV substations, rolling stock, cables and transformers. This surge arrester is destined to all special technical requirements as well.

OPERATING CONDITIONS

The surge arresters are adapted for outdoor and indoor installations in temperate and tropical climate up to 1000 m above sea level. The dimensions of surge arresters enable their installation in MV switchgears in the minimum cubicle width 150 mm.

ADVANTAGES

- Efficient protection characteristics
- High energy input capacity
- Stable U-I characteristics even after multiple strokes
- Housing resistant to rough handling
- High resistance to damage under atmospheric conditions
- Very high short circuit capability
- High durability and operating reliability under various environmental conditions
- Highly stable against shock and vibrations
- Suitable for mounting on high-speed traction vehicles
- Easy mounting and maintenance free

ADDITIONAL EQUIPMENT

For request of customer, manufacturer can deliver accessories according customer requirements.

ELECTRICAL DATA

Line discharge class according to IEC 60099-4: 2014	SH (Station High)
Line discharge class according to IEC 60099-4: 2009	Class 4
System voltage (Um)	3 – 145 kV
Rated voltage (Ur)	1 – 144 kV
Rated discharge current In 8/20 μ s	20 kA
High current impulse Ihc 4/10 μ s	100 kA
Rated repetitive charge transfer rating Qrs	2.4 C
Rated thermal Energy Wth	12.0 kJ/kV Ur
Single impulse energy capability (impulse duration 2 ms – 4 ms)	6.0 kJ/kV Ur
Long duration current impulse, 2000 μ s (based on Qrs)	1100 A
Short circuit rating	65 kA/0.2s
Working conditions:	
- ambient temperature	-50 °C to +60* °C
- altitude up to	1000* m
Mechanical data:	
- specified short-term load (SSL)	6000 Nm
- specified long-term load (SLL)	2400 Nm
- torsional moment	200 Nm
- tensile strength	5 kN
Mechanical data: ¹	
- specified short-term load (SSL)	1800 Nm
- specified long-term load (SLL)	1200 Nm
- torsional moment	200 Nm
- tensile strength	5 kN

*) for other values please contact with the manufacturer;

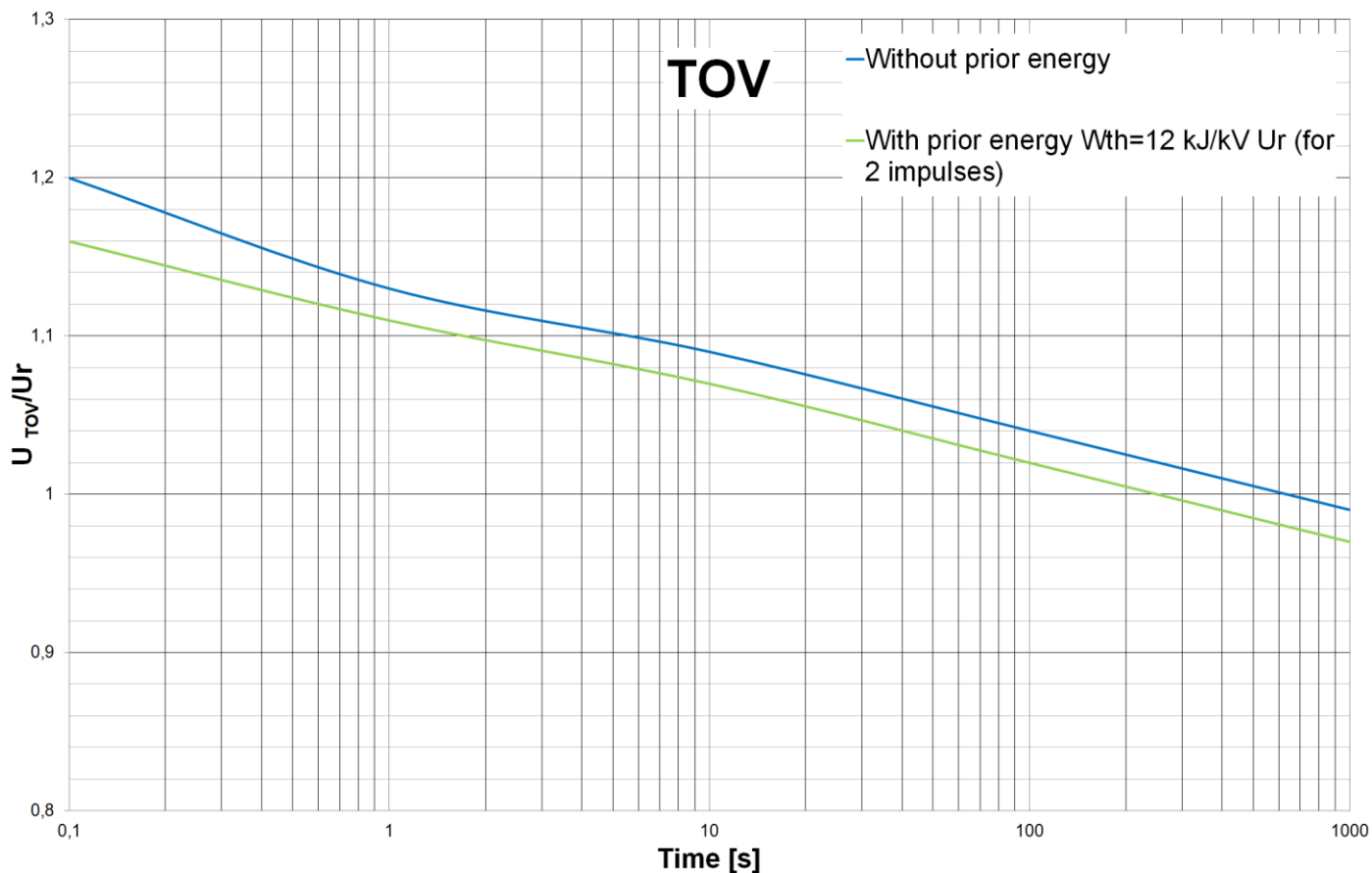
¹) Only applies to drawing and cover No.1

ELECTRICAL DATA

TYPE PROXAR-IVN AC	Rated voltage Ur kV	Maximum continous operating voltage Uc kV	TOV ²⁾		Residual voltage in [kV] pk at a specified impulse current							
					Wave 1/... μs	Wave 8/20 μs				Wave 30/60 μs		
			1s	10s	20kA	5kA	10kA	20kA	40kA	500A	1kA	2kA
			kV	kV	kV	kV	kV	kV	kV	kV	kV	kV
1.0	1.0	0.8	1.1	1.1	4.3	2.3	2.4	2.6	2.8	2.0	2.1	2.2
1.2	1.2	1.0	1.3	1.3	4.8	2.7	2.9	3.1	3.4	2.4	2.5	2.6
1.5	1.5	1.2	1.7	1.6	5.6	3.4	3.6	3.9	4.2	3.0	3.1	3.2
1.7	1.7	1.4	1.9	1.8	6.2	3.9	4.1	4.4	4.8	3.5	3.5	3.7
2.0	2.0	1.6	2.2	2.1	7.0	4.6	4.8	5.2	5.6	4.1	4.2	4.3
2.2	2.2	1.8	2.4	2.4	7.5	5.0	5.3	5.7	6.2	4.5	4.6	4.7
2.5	2.5	2.0	2.8	2.7	8.3	5.7	6.0	6.5	7.0	5.1	5.2	5.4
2.7	2.7	2.2	3.0	2.9	8.8	6.2	6.5	7.0	7.6	5.5	5.6	5.8
3.0	3.0	2.4	3.3	3.2	9.6	6.8	7.2	7.8	8.4	6.1	6.2	6.5
3.2	3.2	2.6	3.6	3.4	10.2	7.3	7.7	8.3	9.0	6.5	6.7	6.9
3.5	3.5	2.8	3.9	3.7	11.0	8.0	8.4	9.1	9.8	7.1	7.3	7.5
3.7	3.7	3.0	4.1	4.0	11.5	8.4	8.9	9.6	10.4	7.5	7.7	8.0
4.0	4.0	3.2	4.4	4.3	12.3	9.1	9.6	10.4	11.2	8.1	8.3	8.6
4.5	4.5	3.6	5.0	4.8	13.6	10.3	10.8	11.7	12.6	9.1	9.4	9.7
5.0	5.0	4.0	5.6	5.4	15.0	11.4	12.0	13.0	14.0	10.2	10.4	10.8
6.0	6.0	4.8	6.7	6.4	17.6	13.7	14.4	15.5	16.8	12.2	12.5	12.9
7.0	7.0	5.6	7.8	7.5	20.3	16.0	16.8	18.1	19.6	14.2	14.6	15.1
8.0	8.0	6.4	8.9	8.6	22.9	18.2	19.2	20.7	22.4	16.2	16.6	17.2
9.0	9.0	7.2	10.0	9.6	25.6	20.5	21.6	23.3	25.2	18.3	18.7	19.4
10	10	8.0	11.1	10.7	28.3	22.8	24.0	25.9	28.0	20.3	20.8	21.5
11	11	8.8	12.2	11.8	31.6	25.1	26.4	28.5	30.8	22.3	22.9	23.7
12	12	9.6	13.3	12.8	34.3	27.4	28.8	31.1	33.6	24.4	25.0	25.8
13	13	10.4	14.4	13.9	36.9	29.6	31.2	33.7	36.4	26.4	27.0	28.0
14	14	11.2	15.5	15.0	39.6	31.9	33.6	36.3	39.2	28.4	29.1	30.1
15	15	12.0	16.7	16.1	42.3	34.2	36.0	38.9	42.0	30.5	31.2	32.3
16	16	12.8	17.8	17.1	45.5	36.5	38.4	41.4	44.8	32.5	33.3	34.4
17	17	13.6	18.9	18.2	48.1	38.8	40.8	44.0	47.6	34.5	35.4	36.6
18	18	14.4	20.0	19.3	50.8	41.0	43.2	46.6	50.4	36.5	37.4	38.7
19	19	15.2	21.1	20.3	53.5	43.3	45.6	49.2	53.2	38.6	39.5	40.9
20	20	16.0	22.2	21.4	56.1	45.6	48.0	51.8	56.0	40.6	41.6	43.0
21	21	16.8	23.3	22.5	58.8	47.9	50.4	54.4	58.8	42.6	43.7	45.2
22	22	17.6	24.4	23.5	61.4	50.2	52.8	57.0	61.6	44.7	45.8	47.3
23	23	18.4	25.5	24.6	64.7	52.4	55.2	59.6	64.4	46.7	47.8	49.5
24	24	19.2	26.6	25.7	67.3	54.7	57.6	62.2	67.2	48.7	49.9	51.6
25	25	20.0	27.8	26.8	70.0	57.0	60.0	64.8	70.0	50.8	52.0	53.8
26	26	20.8	28.9	27.8	72.6	59.3	62.4	67.3	72.8	52.8	54.1	55.9
27	27	21.6	30.0	28.9	75.3	61.6	64.8	69.9	75.6	54.8	56.2	58.1
28	28	22.4	31.1	30.0	78.0	63.8	67.2	72.5	78.4	56.8	58.2	60.2
29	29	23.2	32.2	31.0	80.6	66.1	69.6	75.1	81.2	58.9	60.3	62.4
30	30	24.0	33.3	32.1	83.3	68.4	72.0	77.7	84.0	60.9	62.4	64.5
33	33	26.4	36.6	35.3	91.8	75.2	79.2	85.5	92.4	67.0	68.6	71.0
36	36	28.8	40.0	38.5	99.8	82.1	86.4	93.2	100.8	73.1	74.9	77.4
39	39	31.2	43.3	41.7	108.3	88.9	93.6	101.0	109.2	79.2	81.1	83.9
42	42	33.6	46.6	44.9	116.3	95.8	100.8	108.8	117.6	85.3	87.4	90.3
45	45	36.0	50.0	48.2	124.3	102.6	108.0	116.6	126.0	91.4	93.6	96.8
48	48	38.4	53.3	51.4	132.8	109.4	115.2	124.3	134.4	97.4	99.8	103.2
51	51	40.8	56.6	54.6	140.8	116.3	122.4	132.1	142.8	103.5	106.1	109.7
54	54	43	59.9	57.8	149	123	130	140	151.2	110	112	116
60	60	48	66.6	64.2	165	137	144	155	168.0	122	125	129
66	66	53	73.3	70.6	182	150	158	171	184.8	134	137	142
72	72	58	79.9	77.0	198	164	173	186	201.6	146	150	155
84	84	67	93.2	89.9	232	192	202	218	235.2	171	175	181
96	96	77	106.6	102.7	265	219	230	249	268.8	195	200	206
102	102	82	113.2	109.1	281	233	245	264	285.6	207	212	219
108	108	86	119.9	115.6	297	246	259	280	302.4	219	225	232
120	120	96	133.2	128.4	332	274	288	311	342	244	250	258
132	132	106	146.5	141.2	364	301	317	342	376	268	275	284
138	138	110	153.2	147.7	380	315	331	357	393	280	287	297
144	144	115	159.8	154.1	395	328	346	373	410	292	300	310

Note: It is possible to make PROXAR-IVN AC surge arrester with a different range of rated voltage and continuous operating voltage.

²⁾With prior energy 12 kJ/kV Ur



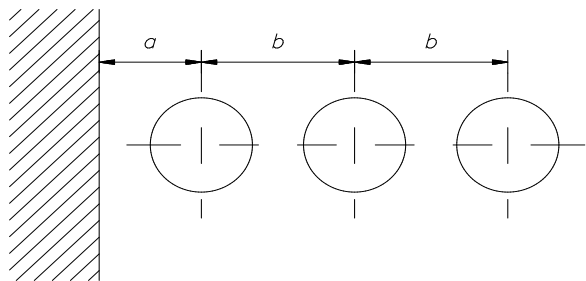
TOV characteristic for PROXAR-IVN AC

Power frequency voltage versus time characteristic TOV without prior energy

U_{TOV} for $t=1 \text{ s}$ $1.130 U_r = 1.413 U_c$
 U_{TOV} for $t=3 \text{ s}$ $1.110 U_r = 1.388 U_c$
 U_{TOV} for $t=10 \text{ s}$ $1.090 U_r = 1.363 U_c$

Power frequency voltage versus time characteristic TOV with prior energy $12 \text{ kJ/kV } U_r$; $15 \text{ kJ/kV } U_c$

U_{TOV} for $t=1 \text{ s}$ $1.11 U_r = 1.388 U_c$
 U_{TOV} for $t=3 \text{ s}$ $1.09 U_r = 1.363 U_c$
 U_{TOV} for $t=10 \text{ s}$ $1.07 U_r = 1.338 U_c$



Minimal mounting distances of surge arresters.

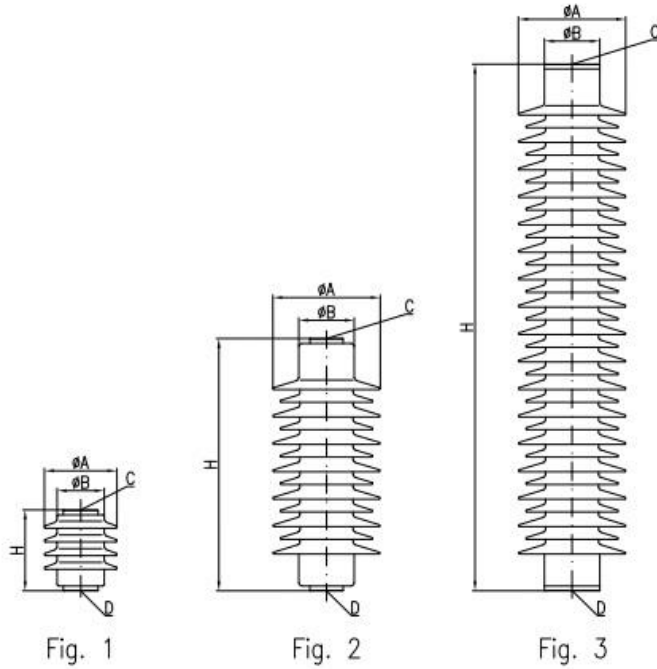


Fig. 1

Fig. 2

Fig. 3

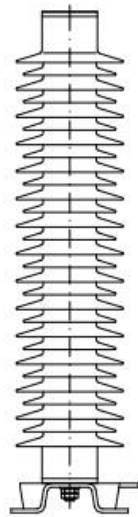


Fig. 4

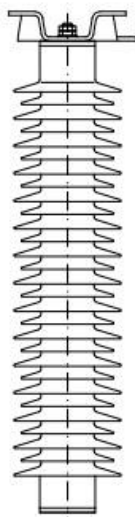


Fig. 5

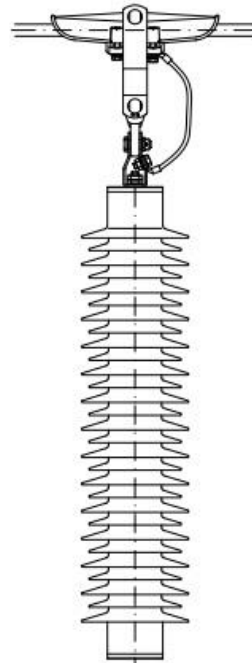


Fig. 6

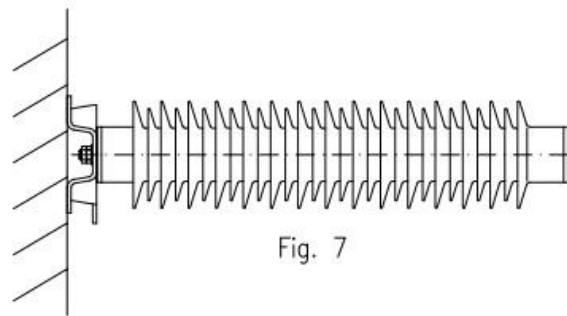


Fig. 7

In the above figures show the configuration of the surge arresters housing (fig. 1; 2, 3). The drawings No 4 – 7 presents different system of assembling surge arresters. Drawings No 4 presents vertical system of assembling. Drawings No 5 presents reverse system of assembling surge arrester. Drawing No 6 presents suspension system of assembly line surge arrester. Drawings No 7 presents horizontal system of assembling. Below the figures are presenting different options line and earth accessories available for use in surge arrester type PROXAR-IVN AC. For horizontal working configuration of surge arresters is this same option like for vertical working.

TECHNICAL DATA FOR HOUSING

Typ PROXAR IVN AC	Insulation withstand voltage of housing		Minimal distances		Dimensions						Variant of drawing	Operating position	No of housing	Weight
	50 Hz wet (60s)	1.2/50µs dry	Distance between Arresters „b“	Distance between arrester and the nearest grounded structure „a“	Creepage distance	Strike distance	H	A	B	C, D				
1.0	28	75	150	75	318	165	165	148	96	M12	1	4, 5, 7	01	2.4
1.2			150	75										2.5
1.5			150	75										2.6
1.7			150	75										2.6
2.0			150	75										2.7
2.2			150	75										2.7
2.5			150	75										2.8
2.7			150	75										2.8
3.0			150	75										2.9
3.2			150	75										2.9
3.5			150	75										3.0
3.7			150	75										3.1
4.0			150	75										3.2
4.5			150	75										3.3
5.0			150	85										3.5
6.0			150	95										3.7
7.0			150	95										3.9
8.0			150	100										4.1
9.0			150	110										4.3
10.0			150	115										4.5
11	83	154	220	160	528	247	235	219	113	M12	2	4, 5, 7	02	12.6
12			220	165										12.7
13			230	175										12.8
14			240	180										12.9
15	250	190	13.0											
16	100	187	260	205	760	303	291	219	113	M20	2	4, 5, 7	03	13.9
17			270	210										14.0
18			280	220										14.1
19			280	225										14.2
20			290	235										14.3
21			300	240										14.4
22			310	250										14.5
23	118	219	320	265	992	359	347	219	113	M20	2	4, 5, 7	04	15.3
24			330	275										15.4
25			340	280										15.5
26			350	290										15.6
27			350	295										15.7
28			360	300										15.8
29			370	310										15.9
30			380	315										16.0
33	135	252	420	360	1225	415	403	219	113	M20	2	4, 5, 7	05	16.7
36			440	380										17.0
39	152	284	460	400	1457	471	459	219	113	M20	2	4, 5, 7	06	17.4
42			480	425										17.7
45			500	445										18.0
48	170	317	530	475	1689	527	515	219	113	M20	2	4, 5, 7	07	18.5
51			560	495										19.0
54	187	349	600	535	1741	583	571	219	113	M20	3	4, 5, 6, 7	08	20.5
60			640	580										21.0
66	222	414	720	655	2208	695	683	219	113	M20	3	4, 5, 6, 7	09	22.0
72			760	700										22.5
84	266	497	890	835	2905	837	851	219	113	M20	3	4, 5, 6, 7	10	24.0
96	309	577	1020	960	3369	975	963	219	113	M20	3	4, 5, 6, 7	11	26.0
102			1060	1005										26.5
108			1110	1045										27.0
96	344	642	1020	960	3834	1087	1075	219	113	M20	3	4, 5, 6, 7	12	30.0
102			1060	1005										30.5
108			1110	1045										31.0
120			1230	1170										32.0
132			1320	1255										33.0
138	1360	1300	34.0											
120	396	739	1230	1170	4530	1255	1243	219	113	M20	3	4, 5, 6, 7	13	36.0
132			1320	1255										37.0
138			1360	1300										37.5
144			1400	1345										38.0

Note: It is possible to make a surge arrester in a different housing than the catalog version.

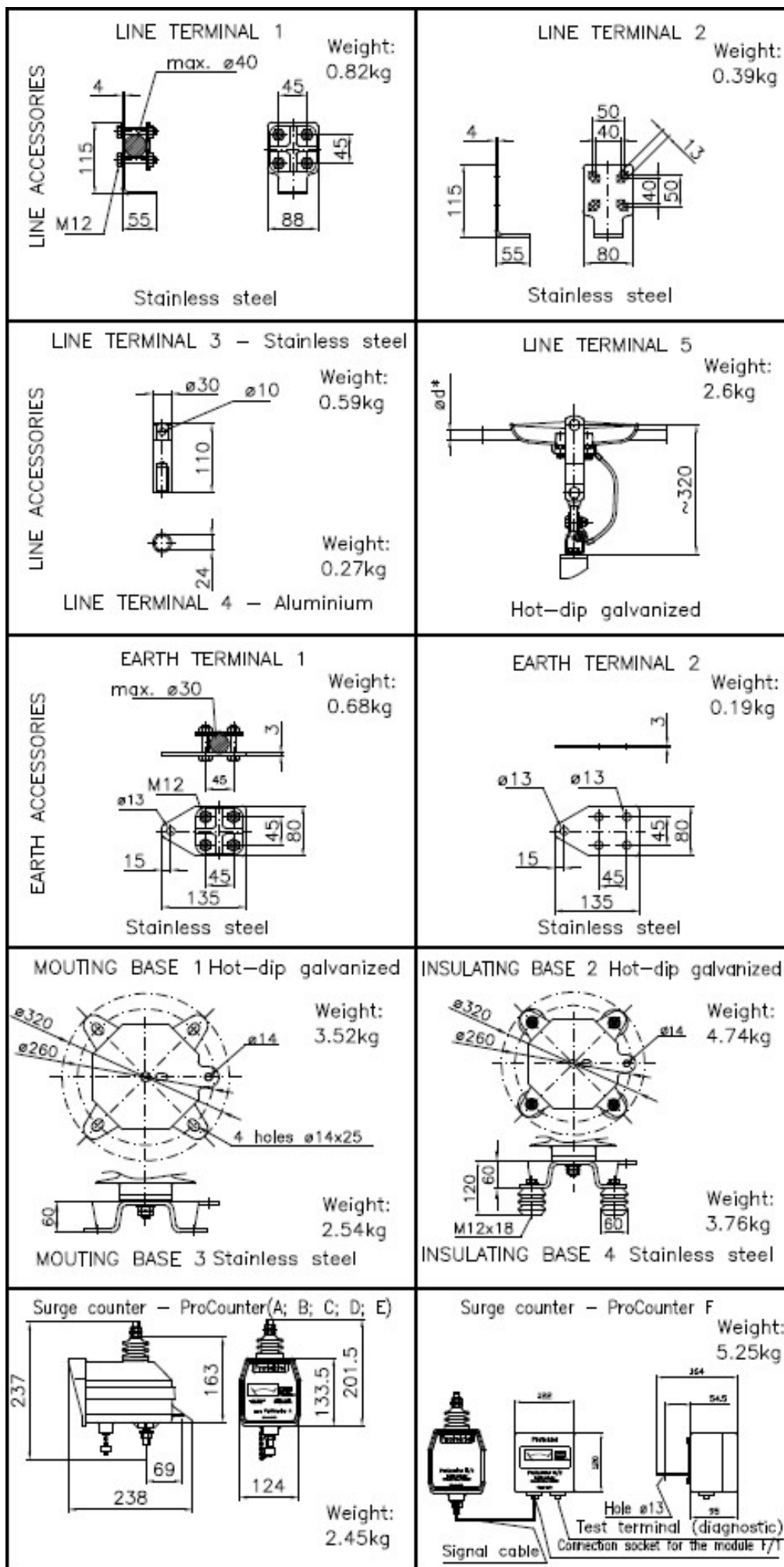


Fig. 8. Equipment for surge arrester type PROXAR-IVN AC

Order configurator **::

I	II	III	IV	V	VI	VII	VIII	IX
PROXAR-IVN		AC						

**) Empty fields to fill.

I. Type of produkt
PROXAR-IVN

II. Rated voltage U_r
 See table – ELECTRICAL DATA
 U_r

III. Voltage type
 Alternating voltage (48 – 62 Hz)
AC

IV. Assembly (according fig. 4, 5, 6, 7)
 – Vertical (Fig. 4) **1**
 – Reverse (Fig. 5) **2**
 – Suspension (Fig. 6) **3**
 – Horizontal (Fig. 7) **4**

V. Base (according fig. 8)
 – Without base **0**
 – Mounting base 1 (Hot-dip galvanized) **1**
 – Insulating base 2 (Hot-dip galvanized) **2**
 – Mounting base 3 (Stainless steel) **3**
 – Insulating base 4 (Stainless steel) **4**

VI. Line terminal (according fig. 8)
 – Without line terminal **0**
 – Line terminal 1 **1**
 – Line terminal 2 **2**
 – Line terminal 3 **3**
 – Line terminal 4 **4**
 – Line terminal 5 **5**

VII. Earth terminal (according fig. 8)
 – Without earth terminal **0**
 – Earth terminal 1 **1**
 – Earth terminal 2 **2**

VIII. Housing number
 See table – TECHNICAL DATA FOR HOUSING

IX. Surge counter (please see catalog of surge counter type ProCounter)
 – without surge counter **0**
 – surge counter with electromagnetic counter, indicator of the leakage current and with the measuring socket **A**
 – surge counter with electromagnetic counter and with the measuring socket **B**
 – surge counter with electromagnetic counter **C**
 – surge counter with electromagnetic counter, indicator of the leakage current **D**
 – surge counter with electromagnetic counter, indicator of the leakage current, socket for transmission via signal line amounts of surges **E**
 – surge counter with two modules F/1 and F/2 connected to each shielded cable to signal transmission for distance 30 m., by hermetic sockets/plugs (IP67). F/1 – transmitter module, F/2 – receiver module with electromagnetic counter, indicator of the leakage current and with the measuring socket, relay output **F**

Order example:

I	II	III	IV	V	VI	VII	VIII	IX
PROXAR-IVN	96	AC	1	2	3	1	12	A

PROXAR-IVN 96 AC 123112A – 3 pcs.

Description: Surge arrester type PROXAR-IVN of rated voltage $U_r=96kV$ for AC system in vertical mounting version -1 with insulating base 2 (hot-dip galvanized) - 2, line terminal - 3, earth terminal - 1, housing number - 12, surge counter type ProCounter A.

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ATTENTION

The manufacturer reserves the right to change technical data or designee without prior notice.
PROXAR® is a registered trademark newest family of surge arresters produced by Protektel