

MEDIUM VOLTAGE SURGE ARRESTER TYPE PROXAR-IN AC IN SILICONE HOUSING

CATALOGUE CHART

APPLICATION

Surge arresters type **PROXAR-IN AC** in silicone housing are intended for protection AC power engineering networks against multiple lightning and switching overvoltage's in MV substations, cables and transformers. This surge arrester is destined to all special technical requirements as well.

OPERATING CONDITIONS

Surge arresters adapted for outdoor and indoor installation in temperate and tropical climate. The possibility to install in any working positions.

ADVANTAGES

- Low residual voltage
- High energy input capacity
- Stable U-I characteristics even after absorbing multiple surges
- Housing resistant to rough handling
- Explosion and shatter – resistant design
- Pollution resistant and UV
- Ability to install in any position (vertically or horizontally)
- Maintenance free
- Low weight, easy transportation and storage
- Ability to work in horizontal position

ADDITIONAL EQUIPMENT

Additional accessories include line and grounding accessories (see: accessories for surge arresters).

ELECTRICAL DETAILS

Arrester classification according to EN 60099-4: 2014	DH(Distribution High)
Line discharge class according to IEC 60099-4: 2009	1
System voltage (Us)	3.6 – 36 kV
Rated voltage (Ur)	1.2 – 48 kV
Nominal discharge current In 8/20 μs	10 kA
High current impulse I _{hc} 4/10 μs	100 kA
Rated repetitive charge transfer rating Qrs	0.4 C
Rated thermal Energy Q _{th}	1.1 C
Long duration current impulse resistance, 2000 μs	325 A
Short circuit rating	31.5 kA/0.2s
Maximal level of partial discharges	≤5 pC
Service conditions:	
- ambient temperature	-45 °C do +60 °C*
- altitude up to	1000 m*
- frequency	48 – 62 Hz
Mechanical strength:	
- SLL specified long-term load	210 Nm
- SSL specified short-term load	336 Nm
- torque	50 Nm

*) for higher parameters please contact with manufacturer

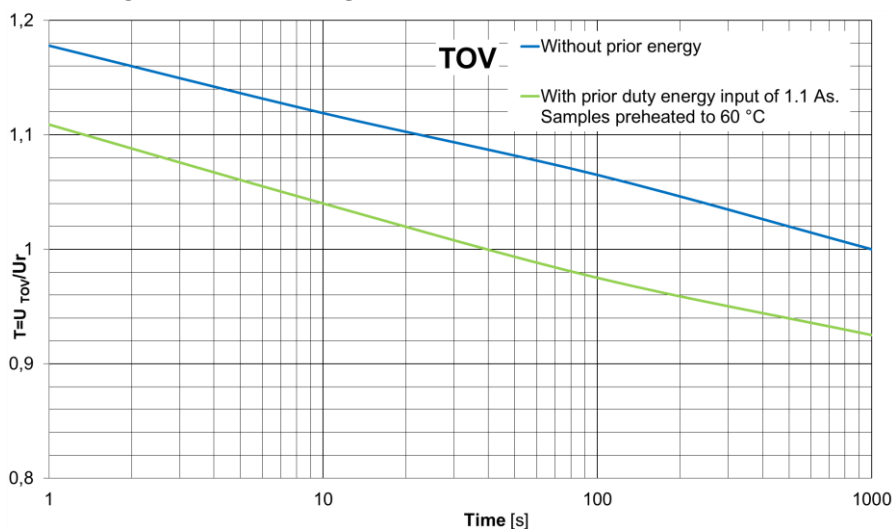
ELECTRICAL DATA

Type PROXAR IN AC	Rated voltage Ur	Maximum continuous operating voltage Uc	Residual voltage in [kV] pk at a specified impulse current							
			Wave 1/... μs	Wave 8/20 μs				Wave 30/60 μs		
	kV	kV	10kA	2.5kA	5kA	10kA	20kA	125A	250A	500A
1.2	1.2	1.0	3,55	2.8	2.9	3.2	3.5	2.3	2.3	2.4
2.2	2.2	1.8	6,49	5.0	5.4	5.9	6.5	4.2	4.3	4.5
2.5	2.5	2.0	7,38	5.7	6.1	6.8	7.4	4.7	4.9	5.1
3.0	3	2.4	8,85	6.9	7.4	8.1	8.8	5.7	5.9	6.1
4.0	4	3.2	11,68	9.2	9.8	10.8	11.8	7.6	7.8	8.2
5.0	5	4.0	14,60	11.5	12.3	13.5	14.7	9.5	9.8	10.2
6.0	6	4.8	17,52	13.8	14.7	16.2	17.7	11.4	11.7	12.2
7.0	7	5.6	20,44	16.1	17.2	18.9	20.6	13.3	13.7	14.3
8.0	8	6.4	23,29	18.4	19.7	21.6	23.5	15.2	15.7	16.3
9.0	9	7.2	26,20	20.7	22.1	24.3	26.5	17.1	17.6	18.3
10.0	10	8.0	29,11	23.0	24.6	27.0	29.4	19.0	19.6	20.4
11.0	11	8.8	32,02	25.2	27.0	29.7	32.4	20.8	21.5	22.4
12.0	12	9.6	34,93	27.5	29.5	32.4	35.3	22.7	23.5	24.5
13.0	13	10.4	37,84	29.8	31.9	35.1	38.3	24.6	25.4	26.5
14.0	14	11.2	40,75	32.1	34.4	37.8	41.2	26.5	27.4	28.5
15.0	15	12.0	43,67	34.4	36.9	40.5	44.1	28.4	29.4	30.6
16.0	16	12.8	46,58	36.7	39.3	43.2	47.1	30.3	31.3	32.6
17.0	17	13.6	49,49	39.0	41.8	45.9	50.0	32.2	33.3	34.7
18.0	18	14.4	52,40	41.3	44.2	48.6	53.0	34.1	35.2	36.7
19.0	19	15.2	55,31	43.6	46.7	51.3	55.9	36.0	37.2	38.7
20.0	20	16.0	58,22	45.9	49.1	54.0	58.9	37.9	39.2	40.8
21.0	21	16.8	61,13	48.2	51.6	56.7	61.8	39.8	41.1	42.8
22.0	22	17.6	64,04	50.5	54.1	59.4	64.7	41.7	43.1	44.8
23.0	23	18.4	66,95	52.8	56.5	62.1	67.7	43.6	45.0	46.9
24.0	24	19.2	69,86	55.1	59.0	64.8	70.6	45.5	47.0	48.9
25.0	25	20.0	72,78	57.4	61.4	67.5	73.6	47.4	48.9	51.0
26.0	26	20.8	75,69	59.7	63.9	70.2	76.5	49.3	50.9	53.0
27.0	27	21.6	78,60	62.0	66.3	72.9	79.5	51.2	52.9	55.0
28.0	28	22.4	81,51	64.3	68.8	75.6	82.4	53.1	54.8	57.1
29.0	29	23.2	84,42	66.6	71.3	78.3	85.3	55.0	56.8	59.1
30.0	30	24.0	87,33	68.9	73.7	81.0	88.3	56.9	58.7	61.2
33.0	33	26.4	96,06	75.7	81.1	89.1	97.1	62.5	64.6	67.3
36.0	36	28.8	104,80	82.6	88.5	97.2	105.9	68.2	70.5	73.4
39.0	39	31.2	113,53	89.5	95.8	105.3	114.8	73.9	76.3	79.5
42.0	42	33.6	122,26	96.4	103.2	113.4	123.6	79.6	82.2	85.6
44.0	44	35.2	128,10	101.0	108,1	118.8	129.4	83.4	86.1	89.7
45.0	45	36.0	131,00	103.3	110.6	121.5	132.4	85.3	88.1	91.7
48.0	48	38.4	139,73	110.2	117.9	129.6	141.2	91.0	94.0	97.8

There is a possibility of manufacturing surge arresters for different voltages that are not listed in the table.

Us – maximum system voltage

TOV CHARACTERISTIC



IEC power frequency voltage versus time (U-t) characteristic TOV without prior energy

U_{TOV} for $t=1$ s $1.178 U_r = 1.473 U_c$

U_{TOV} for $t=3$ s $1.150 U_r = 1.438 U_c$

U_{TOV} for $t=10$ s $1.119 U_r = 1.399 U_c$

IEC power frequency voltage versus time (U-t) characteristic TOV with prior duty energy input of 1.1 As (C)

U_{TOV} for $t=1$ s $1.109 U_r = 1.386 U_c$

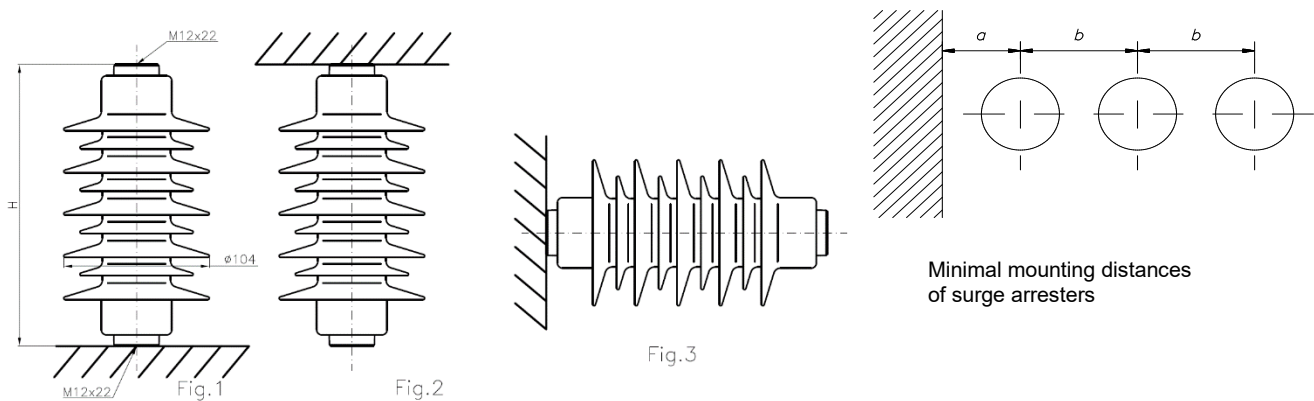
U_{TOV} for $t=3$ s $1.078 U_r = 1.348 U_c$

U_{TOV} for $t=10$ s $1.040 U_r = 1.300 U_c$

TECHNICAL DATA FOR HOUSING

Us	Type	External insulation		Minimal distances		H	Crepage distance	Flash-over distance	Housing number	Weight
		50 Hz wet (60s)	1.2/50 μ s dry	Distance between arresters „b”	Distance between arrester and the nearest grounded structure „a”					
kV	kV	kV	kV	mm	mm	mm	mm	mm	Nr	kg
	1.2	10	21	105	58	80	127	100	01	0.27
	2.2			105	58					0.29
	2.5			105	58					0.30
	3.0			105	58					0.31
	4.0	17	35	105	58	96	143	113	02	0.47
3.6	5.0			105	59					0.48
	6.0			105	68					0.49
	7.0	26	54	105	77	118	242	137	03	0.62
	8.0			105	85					0.63
	9.0			110	94					0.64
	10.0	34	70	119	103	137	338	157	04	0.72
	11.0			127	111					0.73
	12.0			136	120					0.74
	13.0	42	88	145	129	158	436	181	05	0.92
	14.0			153	137					0.93
12	15.0			162	146					0.94
	16.0	60	125	171	155	198	555	217	06	1.19
	17.0			179	163					1.20
	18.0			188	172					1.21
	19.0			197	181					1.22
	20.0			205	189					1.23
	21.0			214	198					1.24
17.5	22.0			223	207					1.25
	23.0	84	174	231	215	257	767	277	07	1.61
	24.0			240	224					1.62
	25.0			249	233					1.63
	26.0			257	241					1.64
	27.0			266	250					1.65
	28.0			275	259					1.66
	29.0			283	267					1.67
	30.0			292	276					1.68
	33.0	105	218	318	302	308	972	331	08	2.00
	36.0			344	328					2.04
	39.0	130	270	370	354	368	1187	391	09	2.47
	42.0			396	380					2.50
36	44.0			413	397					2.52
	45.0			422	406					2.53
	48.0			448	432					2.56

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



The drawings above show the PROXAR-IN AC surge arrester. Surge arrester can work in a vertical position fig.1, inverted position fig.2 and horizontal position fig.3. Below the figures are presenting different options line and earth accessories available for use in surge arrester type PROXAR-IN AC. For horizontal working configuration of surge arresters is this same option like for vertical working.

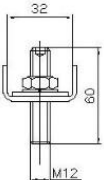
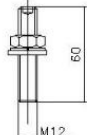
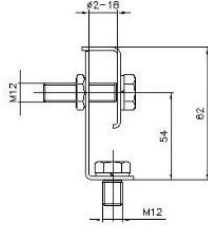
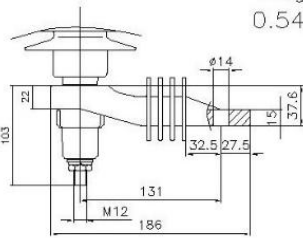
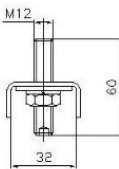
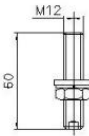
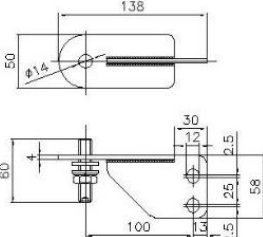
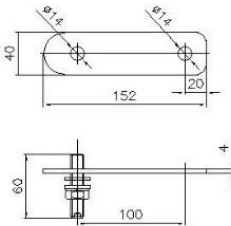
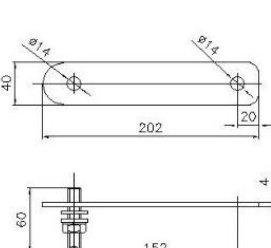
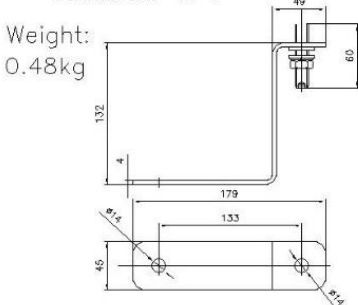
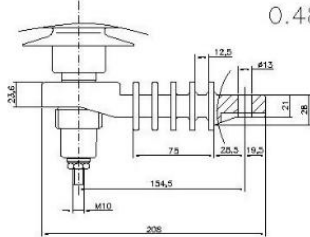
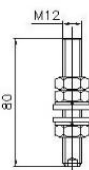
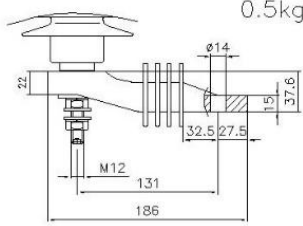
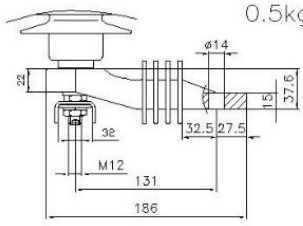
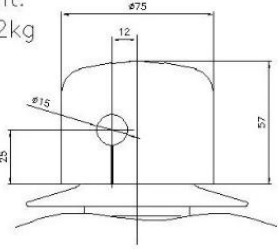
LINE ACCESSORIES LINE TERMINAL 1  Weight: 0.093kg Stainless steel	LINE TERMINAL 2  Weight: 0.063kg Stainless steel	LINE TERMINAL 3  Weight: 0.15kg Stainless steel
EARTH ACCESSORIES INSULATING BRACKET WITH DISCONNECTOR 1 ($U_r \leq 30kV$)  Weight: 0.54kg Stainless steel	EARTH TERMINAL 2  Weight: 0.093kg Stainless steel	EARTH TERMINAL 3  Weight: 0.063kg Stainless steel
EARTH ACCESSORIES VERTICAL SUPPORT 4  Weight: 0.51kg Hot-dip galvanized	HORIZONTAL SUPPORT 5  Weight: 0.21kg Hot-dip galvanized	HORIZONTAL SUPPORT 6  Weight: 0.27kg Hot-dip galvanized
EARTH ACCESSORIES BRACKET Z 7  Weight: 0.48kg Hot-dip galvanized	INSULATING BRACKET WITH DISCONNECTOR 8 ($U_r > 30kV$)  Weight: 0.48kg Stainless steel	EARTH TERMINAL 9  Weight: 0.1kg Stainless steel
INSULATING BRACKET A ($U_r \leq 30kV$)  Weight: 0.5kg Stainless steel	INSULATING BRACKET B ($U_r \leq 30kV$)  Weight: 0.5kg Stainless steel	ACCESSORIES ANTI-BIRD CAP 1  Weight: 0.032kg Stainless steel

Fig.4. Equipment for surge arrester type PROXAR-IN AC

Order configurator**:

***) Empty fields to be filled.

1. Type of product

PROXAR-IN

2. Rated voltage Ur

See table – ELECTRICAL DATA

Ur

3. Voltage type

Alternating voltage (48 – 62 Hz)

AC

4. Mounting (according Fig. 1; 2; 3)

– Vertical (fig. 1)

1

– Reversed (fig. 2)

2

– Horizontal (fig. 3)

3

5. Line accessories (according fig. 4)

– without line terminal

0

– line terminal 1

1

– line terminal 2

2

– line terminal 3

3

6. Earth accessories (according fig. 4)

– without earth terminal

0

– insulating bracket with disconnector 1 ($U_r \leq 30kV$)

1

– earth terminal 2

2

– earth terminal 3

3

– vertical bracket 4

4

– horizontal bracket 5

5

– horizontal bracket 6

6

– bracket Z 7

7

– insulating bracket with disconnector 8 ($U_r > 30kV$)

8

– earth terminal 9

9

– insulating bracket A

A

– insulating bracket B

B

7. Accessories (according fig. 4)

– without anti-bird cap

0

– With anti-bird cap 1

1

8. Housing number

See table – TECHNICAL DATA FOR HOUSING

Housing number

Order example:

1	2	3	4	5	6	7	8
PROXAR-IN	22	AC	1	1	0	1	06

PROXAR-IN 22 AC 110106 – 3 pcs.

Description: Surge arrester type **PROXAR-IN** of rated voltage $U_r=22kV$ for **AC** system in vertical mounting version -1; line terminal – 1; without earth terminal – 0; with bird cap 1; housing number – 06.

PROTEKTEL Sp. z o.o.

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Tel./Fax +48 029 7525784

E-mail: protektel@protektel.pl

www.protektel.pl

POLAND

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ATTENTION

Note: The manufacturer reserves the right to change technical data or designee without prior notice.

PROXAR® is a registered trademark of the latest family of surge arresters made by Protektel