



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

CATALOGUE CARD

APPLICATION

Surge arresters type **PROXAR-IN AC** in silicone housing are intended for protection AC power engineering networks against multiple lightning and switching overvoltages 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, temperate and tropical climate up to 1000 m over the sea level. The possibility for install in any working positions. Working temperature -45 °C to +60 °C.

ADVANTAGES

- Low residual voltage
- High energy input capacity
- Stable U-I characteristics even after multiple strokes
- 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

ADDITIONAL EQUIPMENT

The surge arrester can be equipped with additional line and ground accessories. At the customer's request and after agreeing with the manufacturer, any type of accessories can be supplied.

ELECTRICAL DATA

Arrester classification according to EN 60099-4: 2014

Line discharge class according to IEC 60099-4: 2009

System voltage (U_m)

Rated voltage (U_r)

Nominal discharge current I_n 8/20 μs

High current impulse I_{hc} 4/10 μs

Rated repetitive charge transfer rating Q_{rs}

Rated thermal Energy Q_{th}

Long duration current impulse, 2000 μs

Short circuit rating

Maximal level of partial discharges

DH(Distribution High)

1

3.6 – 36 kV

1.2 – 48 kV

10 kA

100 kA

0.4 C

1.1 C

325 A

31.5 kA/0.2s

≤5 pC

Service conditions:

- ambient temperature
- altitude up to
- frequency

-45 °C do +60 °C*

1000 m*

48 – 62 Hz

Mechanical data:

- specified long-term load (SLL)
- specified short-term load (SSL)
- torsional strength

210 Nm

336 Nm

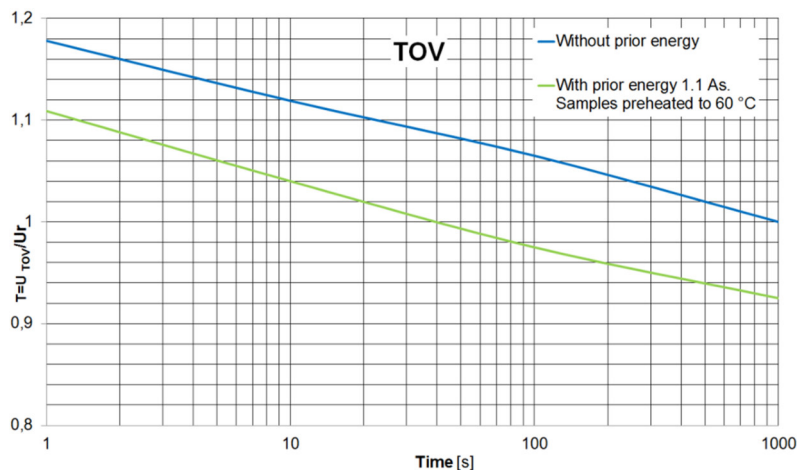
50 Nm

*) for higher parameters please contact with manufacturer

TYPE PROXAR-IN AC	Rated voltage Ur kV	Maximum operating voltage Uc kV	Residual voltage in [kV] pk at a specified impulse current							
			Wave 1/... μs	Wave 8/20 μs				Wave 30/60 μs		
			10kA kV	2.5kA kV	5kA kV	10kA kV	20kA kV	125A kV	250A kV	500A kV
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	3	2.4	8,85	6.9	7.4	8.1	8.8	5.7	5.9	6.1
4	4	3.2	11,68	9.2	9.8	10.8	11.8	7.6	7.8	8.2
5	5	4.0	14,60	11.5	12.3	13.5	14.7	9.5	9.8	10.2
6	6	4.8	17,52	13.8	14.7	16.2	17.7	11.4	11.7	12.2
7	7	5.6	20,44	16.1	17.2	18.9	20.6	13.3	13.7	14.3
8	8	6.4	23,29	18.4	19.7	21.6	23.5	15.2	15.7	16.3
9	9	7.2	26,20	20.7	22.1	24.3	26.5	17.1	17.6	18.3
10	10	8.0	29,11	23.0	24.6	27.0	29.4	19.0	19.6	20.4
11	11	8.8	32,02	25.2	27.0	29.7	32.4	20.8	21.5	22.4
12	12	9.6	34,93	27.5	29.5	32.4	35.3	22.7	23.5	24.5
13	13	10.4	37,84	29.8	31.9	35.1	38.3	24.6	25.4	26.5
14	14	11.2	40,75	32.1	34.4	37.8	41.2	26.5	27.4	28.5
15	15	12.0	43,67	34.4	36.9	40.5	44.1	28.4	29.4	30.6
16	16	12.8	46,58	36.7	39.3	43.2	47.1	30.3	31.3	32.6
17	17	13.6	49,49	39.0	41.8	45.9	50.0	32.2	33.3	34.7
18	18	14.4	52,40	41.3	44.2	48.6	53.0	34.1	35.2	36.7
19	19	15.2	55,31	43.6	46.7	51.3	55.9	36.0	37.2	38.7
20	20	16.0	58,22	45.9	49.1	54.0	58.9	37.9	39.2	40.8
21	21	17.0	61,99	48.9	52.3	57.5	62.7	40.4	41.7	43.4
22	22	17.6	64,04	50.5	54.1	59.4	64.7	41.7	43.1	44.8
23	23	18.4	66,95	52.8	56.5	62.1	67.7	43.6	45.0	46.9
24	24	19.2	69,86	55.1	59.0	64.8	70.6	45.5	47.0	48.9
25	25	20.0	72,78	57.4	61.4	67.5	73.6	47.4	48.9	51.0
26	26	20.8	75,69	59.7	63.9	70.2	76.5	49.3	50.9	53.0
27	27	21.6	78,60	62.0	66.3	72.9	79.5	51.2	52.9	55.0
28	28	22.4	81,51	64.3	68.8	75.6	82.4	53.1	54.8	57.1
29	29	23.2	84,42	66.6	71.3	78.3	85.3	55.0	56.8	59.1
30	30	24.0	87,33	68.9	73.7	81.0	88.3	56.9	58.7	61.2
33	33	26.4	96,06	75.7	81.1	89.1	97.1	62.5	64.6	67.3
36	36	28.8	104,80	82.6	88.5	97.2	105.9	68.2	70.5	73.4
39	39	31.2	113,53	89.5	95.8	105.3	114.8	73.9	76.3	79.5
42	42	33.6	122,26	96.4	103.2	113.4	123.6	79.6	82.2	85.6
44	44	35.2	128,10	101.0	108.1	118.8	129.4	83.4	86.1	89.7
45	45	36.0	131,00	103.3	110.6	121.5	132.4	85.3	88.1	91.7
48	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.

TOV CHARACTERISTIC



Power frequency voltage versus time characteristic TOV without prior duty

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	$1.119 U_r = 1.399 U_c$

Power frequency voltage versus time characteristic TOV with prior energy 1.1 As.

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	$1.040 U_r = 1.300 U_c$

TOV characteristic for PROXAR-IN AC

TECHNICAL DATA FOR HOUSING

Type PROXAR-IN AC	Insulation withstand voltage of housing		Minimal distances		Height H	Creepage 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	mm	mm					
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			105	58					0.31
4	17	35	105	58	96	143	113	02	0.47
5			105	59					0.48
6			105	68					0.49
7	26	54	105	77	118	242	137	03	0.62
8			105	85					0.63
9			110	94					0.64
10	34	70	119	103	137	338	157	04	0.72
11			127	111					0.73
12			136	120					0.74
13	42	88	145	129	158	436	181	05	0.92
14			153	137					0.93
15			162	146					0.94
16	60	125	171	155	198	555	217	06	1.19
17			179	163					1.20
18			188	172					1.21
19			197	181					1.22
20			205	189					1.23
21			214	198					1.24
22			223	207					1.25
23	84	174	231	215	257	767	277	07	1.61
24			240	224					1.62
25			249	233					1.63
26			257	241					1.64
27			266	250					1.65
28			275	259					1.66
29			283	267					1.67
30			292	276					1.68
33	105	218	318	302	308	972	331	08	2.00
36			344	328					2.04
39	130	270	370	354	368	1187	391	09	2.47
42			396	380					2.50
44			413	397					2.52
45			422	406					2.53
48			448	432					2.57

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

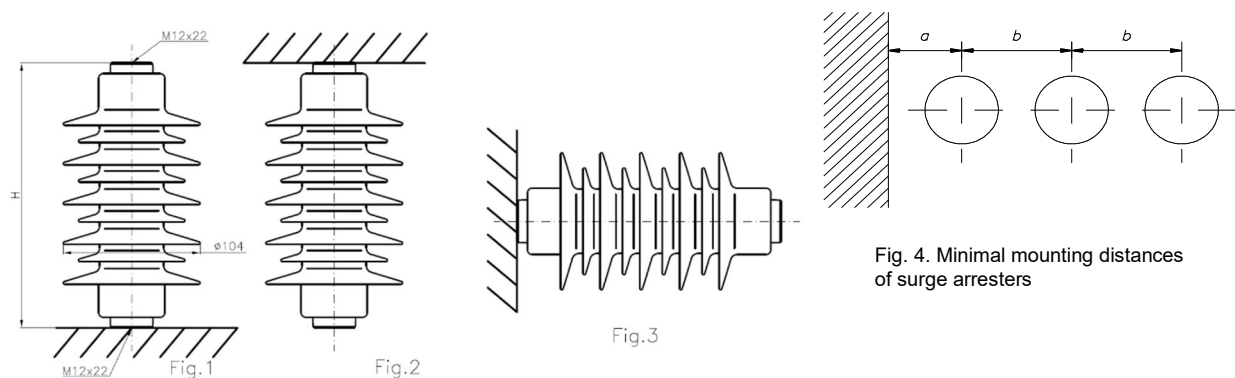


Fig. 4. Minimal mounting distances of surge arresters

Fig. Surge arrester PROXAR-IN AC

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.

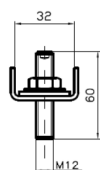
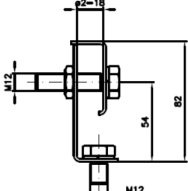
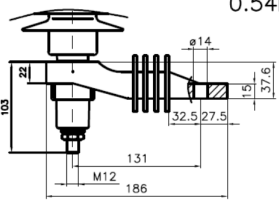
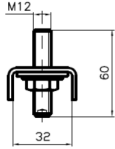
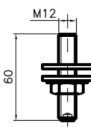
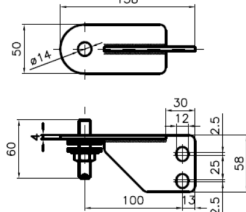
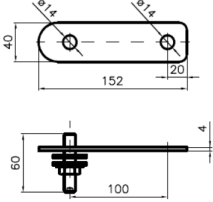
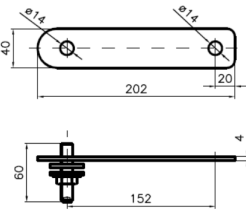
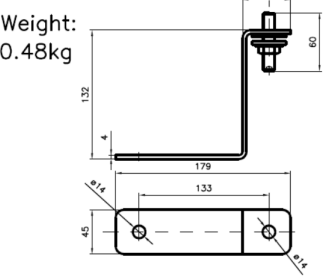
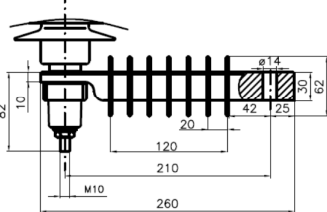
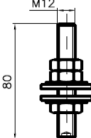
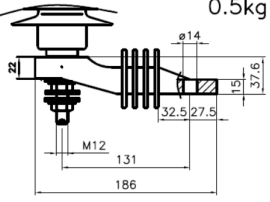
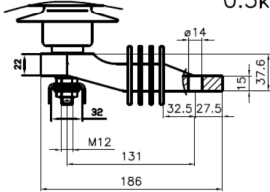
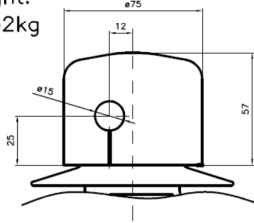
LINE ACCESSORIES LINE TERMINAL 1  Weight: 0.093kg Stainless steel	LINE TERMINAL 2  Weight: 0.063kg Stainless steel	LINE TERMINAL 3  Weight: 0.15kg Stainless steel
EARTH ACCESSORIES INSULATING BRACKET WITH DISCONNECTOR 1 ($U_r \leq 30kV$)  Weight: 0.54kg Stainless steel	EARTH TERMINAL 2  Weight: 0.093kg 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 Hot-dip galvanized	EARTH TERMINAL 9  Weight: 0.1kg Hot-dip galvanized
INSULATING BRACKET A ($U_r \leq 30kV$)  Weight: 0.5kg Hot-dip galvanized	INSULATING BRACKET B ($U_r \leq 30kV$)  Weight: 0.5kg Hot-dip galvanized	ACCESSORIES ANTI-BIRD CAP 1  Weight: 0.032kg Hot-dip galvanized

Fig.5. Equipment for surge arrester type PROXAR-IN AC

Order configurator**:

** Empty fields to fill

I. Type of product

PROXAR-IN

II. Rated voltage Ur

See table – TECHNICAL DATA

Ur

III. Voltage type

Alternating voltage (48 – 62 Hz)

AC

IV. Assembly (according Fig. 1; 2; 3)

– Vertical

1

– Reversed

2

– Horizontal

3

V. Line accessories (according fig. 5)

– without line terminal

0

– line terminal 1

1

– line terminal 2

2

– line terminal 3

3

VI. Earth accessories (according fig. 5)

– 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

VII. Accessories (according fig. 5)

– without anti-bird cap

0

– With anti-bird cap 1

1

VIII. Housing number

See table – TECHNICAL DATA FOR HOUSING

Housing number

Order example:

I	II	III	IV	V	VI	VII	VIII
PROXAR-IN	22	AC	1	1	0	1	0 6

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.

Piłsudskiego 92 str.;

PL 06-300 Przasnysz

Poland

Tel./Fax +48 029 7525784

E-mail: protektel@protektel.pl

www.protektel.pl

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