INSTALLATION AND OPERATING INSTRUCTION FOR SURGE ARRESTERS TYPE PROXAR-IIW AC

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TABLE OF CONTENTS

1. GENERAL INFORMATION

Dear customer, thank you for choosing our product - the surge arrester type PROXAR-IIW AC. Please read the operating instructions before starting the installation. The manufacturer assumes no responsibility for incorrect installation of the product.

This manual does not cover all contingencies relating to the installation and operation instruction of arresters. If any problems that are not covered in this manual occurs, please contact with the manufacturer. The described type of surge arresters are designed to be installed by qualified personnel with the practice in the field of safety devices of high and medium voltage. This manual is prepared for such personnel and it is not a substitute for proper training and experience in installing this type of devices.

2. DESCRIPTION OF THE PRODUCT

Surge arresters type PROXAR-IIW AC are single-phase devices, designed to work in the indoor. The role of surge arresters is overvoltage protection by bringing it to the ground and reduction it. This allows other devices connected to the network are safely protected from the effects of each type of overvoltage.

The main part of a surge arrester is a stock of varistors made of metal oxides with an additive of other metal oxides which are characterized by high nonlinearity of voltage-current characteristic and stability of electric parameters during long standing operation at operating voltage.

The stock of varistors is placed in an insulating cage and closed in it from both sides with electrodes made of aluminium. The silicone housing is made with direct injection moulding and vulcanising on the surge arrester interior, which guarantees perfect tightness and mitigates the results of the short circuit current under emergency conditions – no chipping of the construction elements to the environment. Composite supporting construction of the surge arrester ensures appropriate mechanical strength.

Surge arrester PROXAR-IIW AC can be supplied with the following equipment:

- Line terminal (on demand)
- Earth terminal (on demand)

3. TECHNICAL DATA

Arrester classification according to EN 60099-4:2014	SL (Station Low)
Line discharge class according to IEC 60099-4:2009	2
System voltage (Us)	1 –52 kV
Rated voltage (Ur)	1.3 – 51 kV
Nominal discharge current In 8/20 μs	10 kA
High current impulse Ihc 4/10 μs	100 kA
Rated repetitive charge transfer rating Qrs	1,6 C
Rated thermal Energy Wth	7,0 kJ/kV Ur
Single impulse energy capability (impulse duration 2 ms – 4 ms)	3,5 kJ/kV Ur
Long duration current impulse withstand 2 ms (based on Qrs)	600 A
Short circuit rating	31.5 kA/0.2s
Service conditions:	
- ambient temperature	-45 °C do +60 °C*
- altitude up to	1000 m*
- frequency	48-62 Hz
Mechanical data:	
- specified long-term load (SLL)	350 Nm
- specified short-term load (SSL)	560 Nm
- torsional strength	100 Nm
- vertical load	1000 N

*) for higher parameters please contact with manufacturer

Table 1. **ELECTRICAL DATA**

Type PROXAR-IIW AC	Rated voltage (AC) Ur	Max. continuous operating voltage (AC) Uc	Residual voltage in [kV] peak at a specified impulse current								
			Wave 1/… µs		Wave 8/20 µs				Wave 30/60 µs		
			5kA	10kA	2.5kA	5kA	10kA	20kA	0.25kA	0.5kA	1kA
	kV	kV	kV	kV	kV	kV	kV	kV	kV	kV	kV
1.3	1.3	1.0	3.5	3.9	3.0	3.1	3.4	3.8	2.6	2.7	2.8
1.7	1.7	1.3	4.2	4.7	3.6	3.8	4.1	4.6	3.1	3.2	3.4
2.0	2.0	1.6	6.1	6.8	5.2	5.4	5.9	6.5	4.5	4.6	4.8
2.3	2.3	1.8	6.6	7.4	5.6	5.9	6.4	7.1	4.9	5.0	5.2
2.5	2.5	2.0	6.7	7.5	5.7	5.9	6.5	7.2	4.9	5.1	5.3
3.1	3.1	2.5	8.0	9.0	6.9	7.1	7.8	8.7	5.9	6.1	6.4
3.4	3.4	2.75	8.9	9.9	7.6	7.9	8.6	9.5	6.5	6.7	7.1
3.8	3.8	3.0	10.8	12.1	9.2	9.6	10.5	11.7	8.0	8.2	8.6
4.5	4.5	3.6	12.4	13.8	10.6	11.0	12.0	13.3	9.1	9.4	9.8
5.0	5.0	4.0	13.1	14.6	11.2	11.6	12.7	14.1	9.7	9.9	10.4
6.0	6.0	4.8	15.9	17.7	13.6	14.1	15.4	17.1	11.7	12.0	12.6
6.3	6.3	5.0	16.2	18.1	13.8	14.4	15.7	17.4	11.9	12.2	12.9
7.0	7.0	5.6	17.7	19.8	15.1	15.7	17.2	19.1	13.1	13.4	14.1
8.0	8.0	6.4	20.2	22.6	17.3	18.0	19.7	21.8	14.9	15.3	16.1
9.0	9.0	7.2	22.8	25.4	19.5	20.2	22.1	24.5	16.8	17.2	18.1
10.0	10.0	8.0	25.3	28.2	21.6	22.5	24.6	27.3	18.7	19.2	20.1
11.0	11.0	8.8	27.8	31.1	23.8	24.7	27.0	30.0	20.5	21.1	22.2
11.3	11.3	9.0	28.6	31.9	24.4	25.4	27.8	30.8	21.1	21.7	22.8
12.0	12.0	9.6	30.4	33.9	25.9	27.0	29.5	32.7	22.4	23.0	24.2
13.0	13.0	10.4	32.9	36.7	28.1	29.2	31.9	35.4	24.3	24.9	26.2
14.0	14.0	11.2	35.4	39.5	30.3	31.5	34.4	38.2	26.1	26.8	28.2
15.0	15.0	12.0	38.0	42.4	32.4	33.7	36.8	40.9	28.0	28.7	30.2
16.0	16.0	12.8	40.5	45.2	34.6	36.0	39.3	43.6	29.9	30.7	32.2
17.0	17.0	13.6	43.0	48.0	36.7	38.2	41.8	46.4	31.7	32.6	34.2
18.0	18.0	14.4	45.5	50.8	38.9	40.5	44.2	49.1	33.6	34.5	36.3
19.0	19.0	15.2	48.1	53.7	41.1	42.7	46.7	51.8	35.5	36.4	38.3
20.0	20.0	16.0	50.6	56.5	43.2	45.0	49.1	54.5	37.3	38.3	40.3
21.0	21.0	16.8	53.1	59.3	45.4	47.2	51.6	57.3	39.2	40.2	42.3
22.0	22.0	17.6	55.7	62.1	47.6	49.4	54.0	60.0	41.1	42.2	44.3
23.0	23.0	18.4	58.2	65.0	49.7	51.7	56.5	62.7	42.9	44.1	46.3
24.0	24.0	19.2	60.7	67.8	51.9	53.9	59.0	65.4	44.8	46.0	48.3
25.0	25.0	20.0	63.3	70.6	54.0	56.2	61.4	68.2	46.7	47.9	50.4
26.0	26.0	20.8	65.8	73.4	56.2	58.4	63.9	70.9	48.5	49.8	52.4
27.0	27.0	21.6	68.3	76.3	58.4	60.7	66.3	73.6	50.4	51.7	54.4
28.0	28.0	22.4	70.8	79.1	60.5	62.9	68.8	76.3	52.3	53.6	56.4
29.0	29.0	23.2	73.4	81.9	62.7	65.2	71.2	79.1	54.1	55.6	58.4
30.0	30.0	24.0	75.9	84.7	64.9	67.4	73.7	81.8	56.0	57.5	60.4
33.0	33.0	26.4	83.5	93.2	71.3	74.2	81.1	90.0	61.6	63.2	66.5
36.0	36.0	28.8	91.1	101.7	77.8	80.9	88.4	98.2	67.2	69.0	72.5
39.0	39.0	31.2	98.7	110.2	84.3	87.7	95.8	106.3	72.8	74.7	78.6
42.0	42.0	33.6	106.3	118.6	90.8	94.4	103.2	114.5	78.4	80.5	84.6
45.0	45.0	36.0	113.9	127.1	97.3	101.1	110.5	122.7	84.0	86.2	90.6
48.0	48.0	38.4	121.4	135.6	103.8	107.9	117.9	130.9	89.6	92.0	96.7
51.0	51.0	40.8	129.0	144.1	110.2	114.6	125.3	139.1	95.2	97.7	102.7

Attention: There is possibility to make surge arresters PROXAR-IIW AC in different nominal and continuous operating voltage.

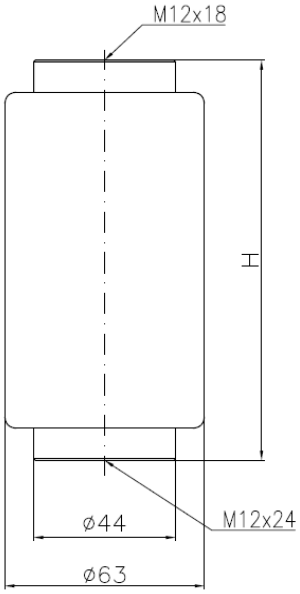

Fig. 1 Dimension drawing surge arresters type PROXAR-IIW AC

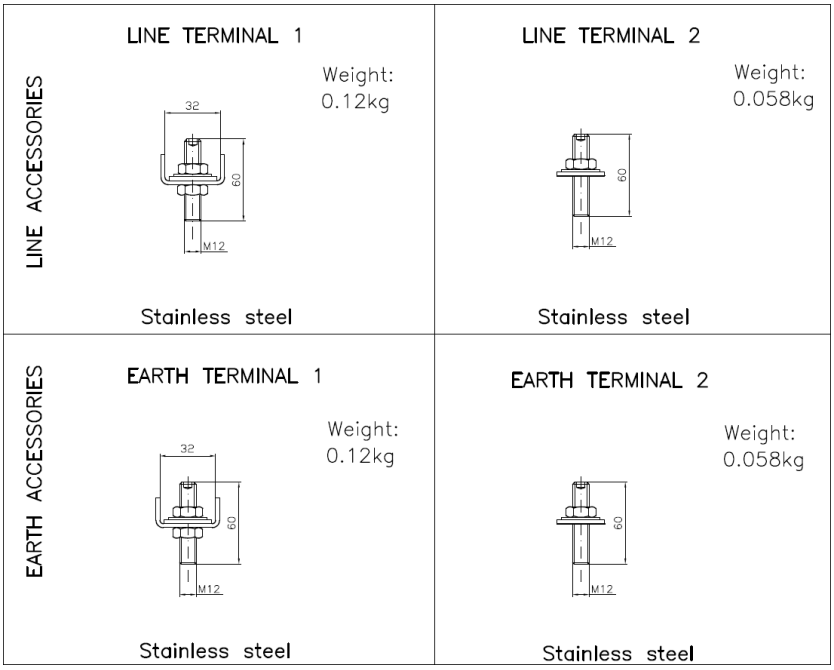

Fig. 2. Equipment for surge arrester type PROXAR-IIW AC

4. TRANSPORT, RECEIVING AND STORAGE

Surge arresters are supplied in a strong, cardboard packs, which are packed in carton boxes. Upon receipt, check number and completeness of arresters. Must be stored in a dry and ventilated place, free from corrosive agents. Please observe the instructions on the cartons. Cartons can be bunk on top of another to a maximum of 3 layers.

5. ASSEMBLY

If damage was found during unpacking please do not hesitate to contact with the manufacturer.
Before final installation, check that the product is correct (type designation, Ur - rated voltage, Uc - continuous operating voltage, type of voltage system AC – alternate current, In – nominal discharge current, etc.). If in doubt about the appropriate model, please consult with the manufacturer.
Mass of each type of arrester is listed in table 2.
Table 2 shows the recommended minimum distances that should be maintained by each arrester. These are the minimum distance between the axles of surge arrester and between the nearest grounded structure (see fig.3.).

Table 2. HOUSING DATA.

Type PROXAR-IIW AC	Insulation withstand voltage		Minimal distances		Height H	Creepage distance L	Housing number	Weight
	50 Hz (60s)	1.2/50 µs dry	Distance between arresters „b”	Distance between arrester and the nearest grounded structure „a”				
	kV	kV	mm	mm	mm	mm		kV
1.3	22	48	64	42	96	97	01	0.81
1.7			66	44				0.82
2.0			68	46				0.84
2.3			70	48				0.86
2.5			72	50				0,88
3.1			74	52				0.90
3.4			76	54				0.92
3.8			98	76				0.94
4.5			100	78				0.96
5.0			102	80				0.98
6.0			109	87				1.00
1.3	29	63	64	42	125	120	02	0.90
1.7			66	44				0.92
2.0			68	46				0.94
2.3			70	48				0.96
2.5			72	50				0.98
3.1			74	52				1.00
3.4			76	54				1.01
3.8			98	76				1.02
4.5			100	78				1.03
5.0			102	80				1.04
6.0			109	87				1.05
6.3			114	92				1.06
7.0	31	69	124	102	137	132	03	1.10
8.0			129	107				1,15
9.0			134	112				1.20
10.0			139	117				1.25
11.0			141	119				1.30
12.0			143	121				1.35
7.0	36	79	124	102	155	150	04	1.25
8.0			129	107				1.30
9.0			134	112				1.35
10.0			139	117				1.40
11.0	45	99	141	119	195	190	05	1.65
12.0			143	121				1.70
13.0			145	123				1.75
14.0			147	125				1.80
15.0			149	127				1.85
16.0	55	121	169	147	240	235	06	1.90
17.0			174	152				2.00
18.0			184	162				2.10
19.0			189	167				2.20
20.0			194	172				2.30
21.0			199	177				2.40
22.0			204	182				2.50
16.0	65	142	169	147	280	275	07	2.00
17.0			174	152				2.10
18.0			184	162				2.20
19.0			189	167				2.30
20.0			194	172				2.40
21.0			199	177				2.50
22.0			204	182				2.60
23.0	80	175	210	188	345	340	08	2.75
24.0			229	207				2.80
25.0			239	217				2.85
26.0			244	222				2.90
27.0			249	227				3.00
28.0			254	232				3.10
29.0			259	237				3.20
30.0			264	242				3.30
33.0	89	195	309	287	386	381	09	3.45
36.0			316	294				3.60
39.0	108	236	334	312	466	461	10	4.50
42.0			349	327				4.65
45.0			360	338				4.80
48.0	126	276	379	357	546	541	11	5.00
51.0			394	372				5.15

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

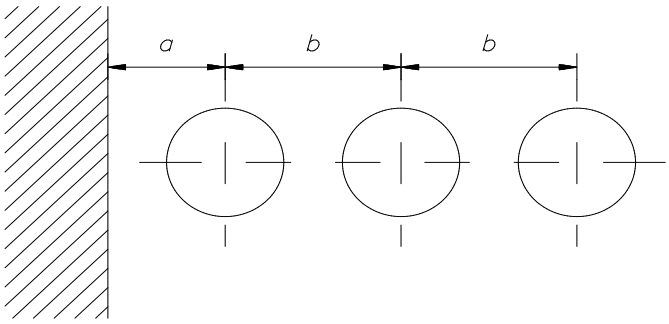

Fig.3 Minimal distances of surge arresters

6. ELECTRICAL CONNECTIONS

It is recommended to install the surge arresters as close as possible to the protected devices, in addition, the shortest possible connections with the working conductor and ground for the better work of the arrester.
First of all, it is necessary to ensure a reliable ground connection, and then connect the arrester to the line wire and turn on the line under voltage. The manufacturer recommends the possible shortest connecting wires line and ground terminal with min. of 50 mm^2 (Al) and 35 mm^2 (Cu).
Tighten the terminal screw to 25 Nm using a wrench with a 6 mm hex socket.
The terminal nut on the wire or rail should be tightened to a torque of 25 Nm using a "19" wrench. The line and earth terminals should be tightened with a "19" wrench with a torque of 25 Nm.
In the event that the limiter is installed under voltage, safety guidelines for this type of work must be strictly adhered to.

NOTE: Improper installation will void the warranty on the product.

7. DISASSEMBLY

When removing the arrester, the workers must be aware of the danger that the voltage on the bottom electrode can appear due to short circuit during damage of arrester. Due to this danger, the terminal from the line must be disconnected first. Same safety rules such as at the installation should be maintained.

8. SERVICE

Surge arresters type PROXAR-IIN AC does not require any particular maintenance. Periodic inspection, with the inspection of other devices operating in the installation of arresters is sufficient.

9. IDENTIFICATION OF NAMEPLATE

The nameplate is shown below in Figure 4 Description of the symbols:

A – nominal voltage for example 8.0

B – continuous operating voltage for example 6.4

C – intended for AC system AC

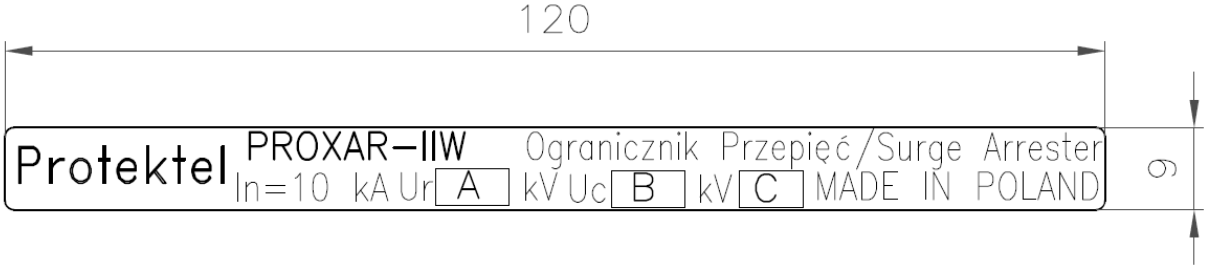

Fig.4. Nameplate for surge arrester type PROXAR-IIW AC

10. DISPOSAL OF WASTE PRODUCT

Surge arrester type PROXAR-IIW AC are environmentally friendly, but must be disposed of in accordance with local requirements in an environmentally friendly manner. Materials as far as possible should be recycled.

List of materials included in the arrester:

1. Silicone rubber
2. Aluminium
3. Ceramics - varistors based on zinc oxide
4. Glass fiber bonded with adhesive
5. Steel - supporting structure

The materials used for the production of the surge arresters does not pose a threat to human life and health.

11. AFTER-SALES SERVICE

In case the product is not delivered in good condition or would cause problems with the installation or during operation, please contact:

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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