

## INSTALLATION AND OPERATING INSTRUCTION FOR SURGE ARRESTERS TYPE PROXAR-V W DC



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## 1. GENERAL INFORMATION

Dear customer, thank you for choosing our product - the surge arrester type PROXAR-VW DC. 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 problems arise that are not covered in this manual, please contact with the manufacturer. The described type of surge arresters are designed to be installed by qualified personnel with the required practice in the field of safety devices of high and medium voltage. These guidelines are drafted for such personnel and are not a substitute for proper training and experience in the safe operation of this type of devices.

## 2. DESCRIPTION OF THE PRODUCT

Surge arresters type PROXAR-IVN DC are single-phase devices, designed to work in the outdoor as well as 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 zinc 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 composite supporting construction and closed in it from both sides with electrodes made of aluminium. Proper electric connection between varistors and electrodes is enabled by appropriate clamp. The housing is made of polymer silicone of very good electro-insulating properties (the housing is put on the inside of surge arrester during the process of direct vulcanisation of silicon).

At the top of surge arrester there is a line terminal (T), to which could be connect a ring tip with M12 bolt from the side of supply voltage. Outputs (A, B) of surge arrester are used to connect the surge arrester from the side of rails.

## 3. TECHNICAL DATA

Nominal discharge current $I_n$ 8/20 $\mu$ s	40 kA
High current impulse $I_{hc}$ 4/10 $\mu$ s	300 kA
Long duration impulse current strength , 2000 $\mu$ s	2700 A
Line discharge class according to IEC 60099-4: 2009	5
Line discharge class according to EN 50526-1: 2012	DC-C
Energy capability	21 kJ/kV $U_c$ dc
Service conditions:	
- temperature	-40 °C do +60 °C*
- altitude up to	1000 m

\*for higher parameters please contact with manufacturer

The nominal parameters are summarized in Table 1 below.

Table 1. **ELECTRICAL DATA**

TYPE PROXAR-VW DC	Continuous operating voltage $U_c$ (DC)	Residual voltage in kV pk at a specified impulse current								
		Wave 1/... $\mu$ s		Wave 8/20 $\mu$ s				Wave 30/60 $\mu$ s		
		20kA	40kA	10kA	20kA	40kA	80kA	1kA	2kA	4kA
4.5	4.5	12.10	12.80	10.60	11.20	<b>12.00</b>	13.00	9.00	9.50	10.00
4.7	4.7	12.60	13.25	11.10	11.70	<b>12.50</b>	13.60	9.70	10.00	10.50
5.0	5.0	13.20	13.80	11.60	12.20	<b>13.00</b>	14.10	10.10	10.50	11.00

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

Dimensions of surge arrester are given below.

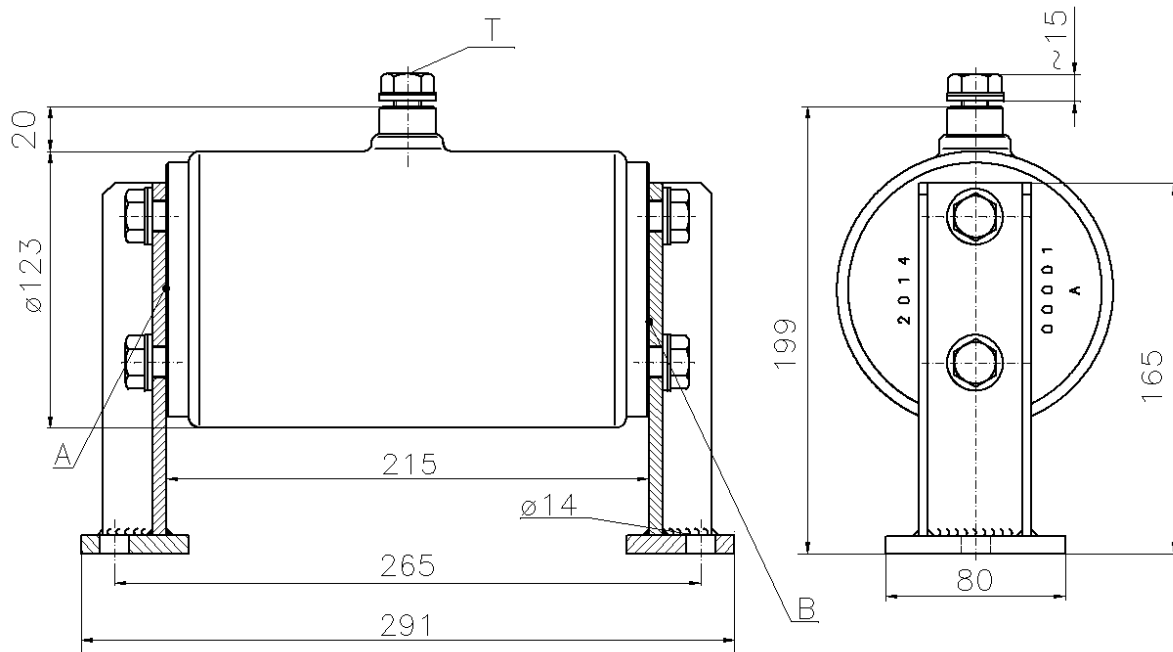


Fig.1. Draw with dimensions of surge arrester PROXAR-VW DC

#### 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 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,  $U_r$  - rated voltage,  $U_c$  - continuous operating voltage, type of voltage system DC – direct current,  $I_n$  – nominal discharge current, etc.). If in doubt about the appropriate model, please consult with the manufacturer's technical department.

The manufacturer supply a full equipment surge arrester. To tightening belt connections should use a typical assembly tools, in kind of keys and hex cap using a torque wrench. The line terminal in the form of a bolt M12 additionally equipped with washer, tighten with torque 25Nm.

Table 2 shows the recommended minimum distances that should be maintained during installation of arrester (please see fig.2.). These are the minimum distance between the axes of surge arrester and between the nearest grounded structure.

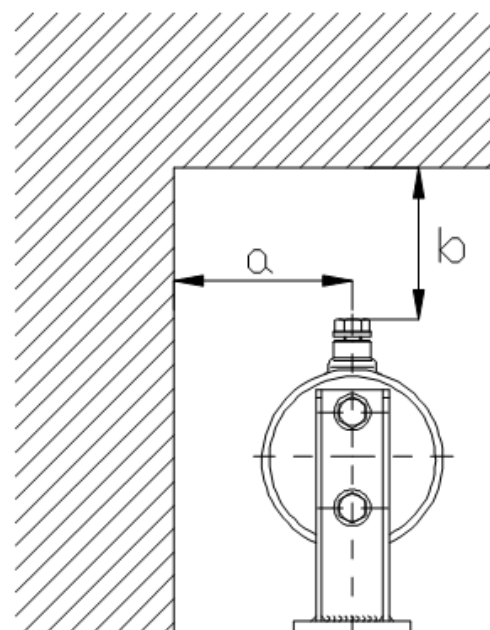


Fig.2. Minimal mounting distances of surge arrester.

Tabela 2

TYPE PROXAR-VW DC	Insulation withstand voltage of empty housing		Minimal distances	
	napięcie DC (60 s)	udar piorunowy normalny 1.2/50 $\mu$ s	Between the axis of surge arrester and grounded structure „a”	Between the highest place of line terminal and grounded structure „b”
	kV	kV	mm	mm
4.5	15	40	150	100
4.7	15	40	150	100
5.0	15	40	150	100
			Minimal creepage distance	92 mm
			Weight	ok. 9,0 kg

## 6. ELECTRICAL CONNECTIONS

It is recommended to install arresters as close as possible in relation to the protected equipment, moreover, observe the rules for the shortest possible cable connections and ground connectors for better protection of surge arresters. The manufacturer recommends the possible shortest connecting wires line and ground terminal with min. of 120 mm<sup>2</sup> (Al) and 70 mm<sup>2</sup> (Cu). Connections not need be insulated unless the infrastructure requires the use of insulation. See Table 2, where they are given the minimum distance surge arrester from the grounded structure and distance between surge arrester and rails.

**First of all, make sure to perform a reliable grounding connection to both outputs of surge arrester to common rail. (If one of outputs A or B will be free it will be worst technical parameters of surge arrester what can lead to accelerated damage of surge arrester) After that connect the surge arrester to line cable.**

Line terminal (T) should be tighten key „19” with torque 25Nm. It is required that all installation works were carried out in a non-voltage protected system.

In the case when the arrester is installed under tension, must be strictly followed safety guidelines for this type of work.

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

## 7. DISASSEMBLING

When removing the arrester, make be sure that it is disconnected in an effective voltage applied to the terminal of arrester. Must reckon with the danger of the emergence of voltage on the electrode (A, B) due to short circuit during damage of arrester. In view of this, the first must be disconnected terminal from the line. It is required that any disassembling work was done in a non-voltage protected system. When removing observe the same safety rules as the installation.

## 8. SERVICE

Surge arresters type PROXAR-V W DC does not require any particular maintenance. Sufficient periods of inspection, under the inspection of other devices operating of the place of installation of arresters.

## 9. IDENTIFICATION OF NAMEPLATE

The nameplate is shown below in Figure 3. Description made by the micropoint method

Description of the symbols:

A – nominal voltage for example 6.3

B – continuous operating voltage for example 4.5

C – intended for DC system



Protektel PROXAR-VW Ogranicznik Przepięć / Surge Arrester  
In=40kA Ur[A] kV Uc[B] kV[C] MADE IN POLAND

Fig.3. Nameplate for surge arrester type PROXAR-VW DC

## 10. DISPOSAL OF WASTE PRODUCT

Surge arrester type PROXAR-VW DC 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