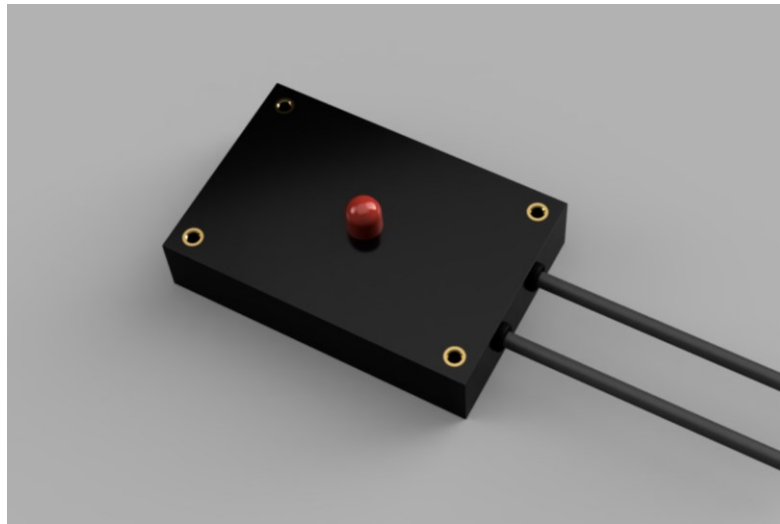




BZ 927

Voltage Indicator 48 ... 4300VAC/DC



* Device may look differently.

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1 Overview

The BZ927 Voltage Indicator features a single bright LED on the front side, which will indicate the presence of dangerous voltages on the connected leads by flashing. It can be connected directly to a vehicle's primary voltage line or the train busbar and is designed to be mounted behind panels or cabinet doors with only the indicator visible to the outside. Power is drawn directly from the high voltage input – no additional power supply required. The frequency of the indicator-flashes is proportional to the voltage applied to the leads. Flashing starts at voltages above 48V. The maximum allowed permanent voltage is 4300V. This makes the device suitable for use with all DC voltage levels defined in EN 50163:2004. Both AC and DC voltages can be monitored in this way.

2 Functional Description

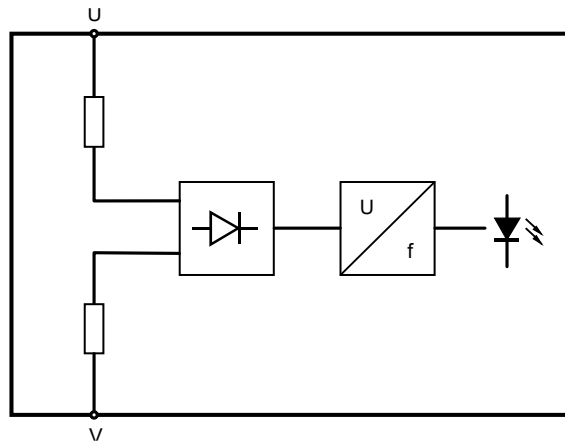


Figure 1: Simplified block diagram

The presence of any AC or DC voltage above 48V between the two leads denominated U and V will prompt the indicator LED to start flashing. The flashing frequency is proportional to the input voltage up to 1 kV. Above that value the frequency is limited to 2Hz. The typical output behavior differs between AC and DC inputs, see Figure 2.

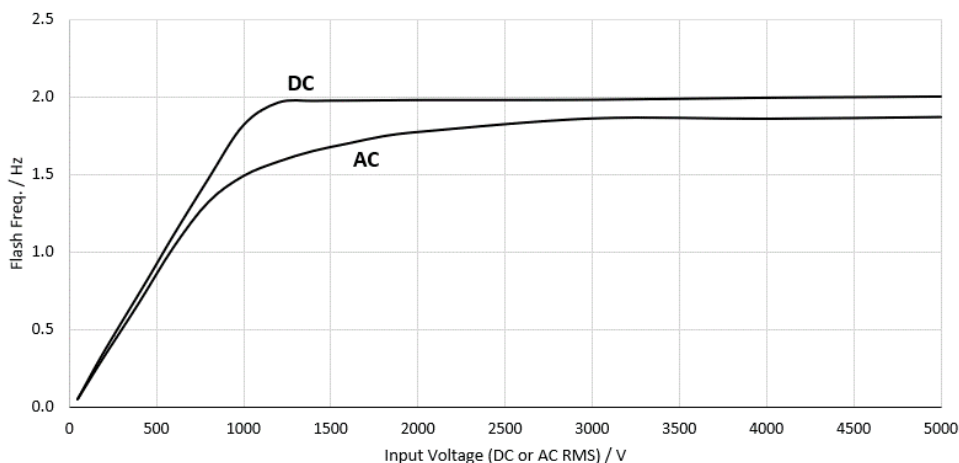


Figure 2: Typical output behavior for AC and DC input voltages



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3 Device Variants

Device designation	Cable length / m	Art. No.
BZ927	2.5	868
BZ927 Renfe	12.5	458

Table 1: Existing order options for BZ927 with respective cable lengths and article numbers

4 Device Specification

4.1 Environment

The device has been constructed and tested to work within the following conditions. Operation outside those specifications can lead to unexpected behavior and/or damage to the device.

4.1.1 General Environmental Conditions

Height above sea level	AX (up to 3000m)	(EN 50125-1:2014 Tab. 1)
Ambient temperature during operation	OT3 (-25°C bis +70°C)	(EN 50155:2017 Tab. 1)
Overtemperature on power-on	ST1	(EN 50155:2017 Tab. 2)
Fast changes of temperature	H2	(EN 50155:2017 Tab. 3)
Vibration and shock	Kat. 1, Class B	(EN 61373:2010)
Pollution and condensation	PD4 (occasionally conductive)	(EN 50124-1:2017 Tab. A.4)

4.1.2 Electrical Conditions

Max. permanent supply voltage / V	4300
Max. temporary overvoltage (< 1s) / V	6000
Interruption-class	S3 (20 ms)
Electromagnetic compatibility	EN 50121-3-2:2016



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4.2 Fire Protection

According to EN 45545-2:2020.

Outer surface (without cables): **0.016 m²**

	Mounted Indoors			Mounted Outdoors		
	HL1	HL2	HL3	HL1	HL2	HL3
Combustible mass	14 g	14 g	141 g	14 g	14 g	14 g
Thereof R24 compliant	0 g	0 g	127 g	0 g	0 g	0 g

The term 'Combustible Mass' is used to describe the total weight of components left after applying the rules of paragraphs 4.2 and 4.3.1 and after removing all components rated according to R22 respectively R23. Part or all of the combustible mass can fulfill the requirements of R24.

A detailed list of components and materials as well as the respective test certificates are available upon request.

4.3 High-Voltage Input

The high-voltage input is realized using two permanently attached high-voltage cables (test voltage 11 kV) with a cross section of 1.5 mm². Cable length depends on the device variant (see Table 1). The input resistance R_{in} between U and V is greater than 6.8MΩ. Short-term overvoltage as described by EN 50163:2004 Appendix A for nominal voltages of up to 3000 VDC is always tolerated.

4.4 Mechanical Specifications

Weight	160 g + 68g per meter of cabling
Mounting	see paragraph 5
Orientation	any
Min. Clearances	5mm on any non-mounting surface



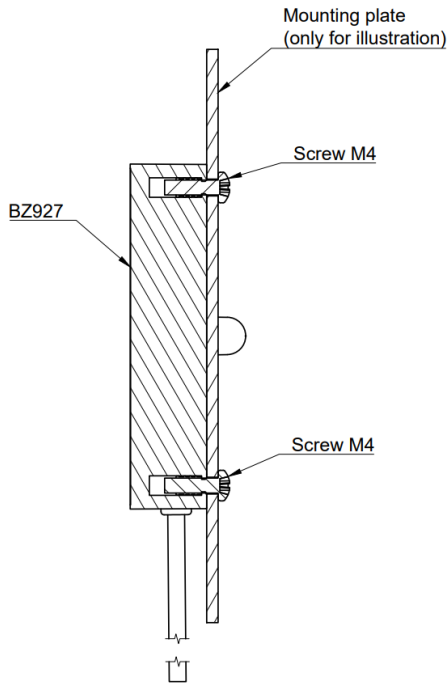
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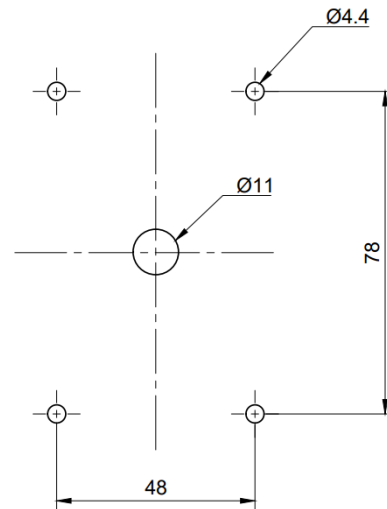
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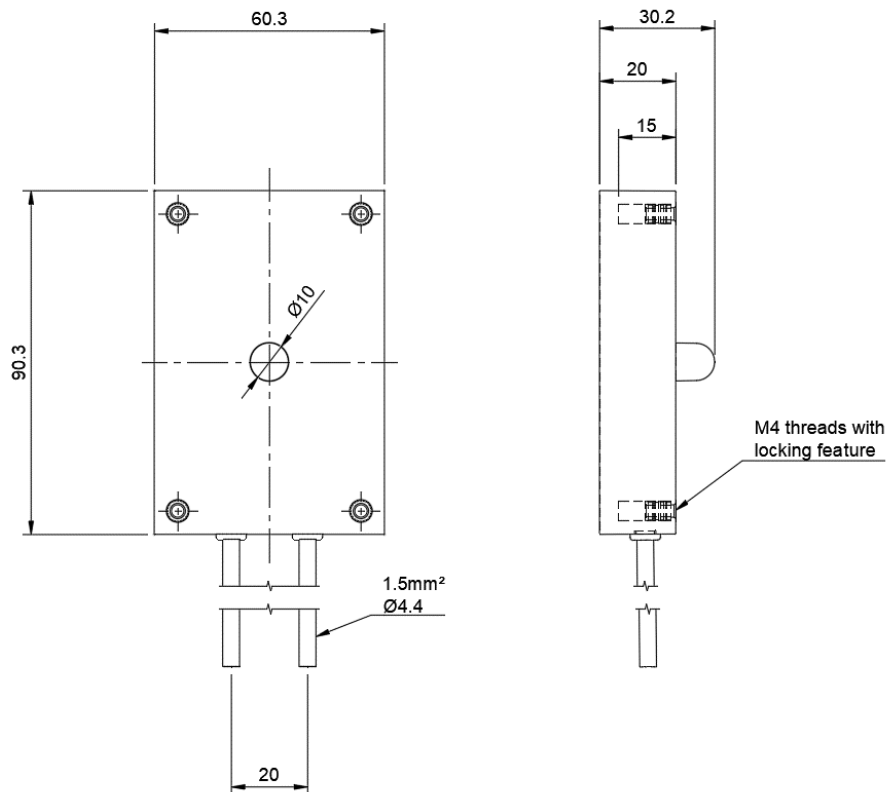
5 Mounting Recommendation



Mounting pattern



6 Dimensions



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7 Changes to this document

Date	Paragraph	Change
28.06.2022	Entire document	Adjusted document structure and layout to current template. Updated dimensional- and mounting drawings. Added fire-protection information. Clarified device specifications and environmental conditions. Added device variant "BZ927 Renfe". Added graph of typical output behavior.
12.07.2022	Device Variants	Changed cable length for Renfe variant to 12.5 m
12.07.2022	Fire Protection	Fixed typo
20.11.2023	Fire Protection	Refined combustible mass values and added details regarding components which comply with the requirements of R24.
20.11.2023	Title Sheet	Changed ISO9001 seal



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