Instructions according to IEC 60079-0

IECEx IBE 26.0027X

Safety Barrier type SB 3 V2

I Range of application

The safety barrier type SB 3 V2 is used to connect intrinsically safe sensors (four-wire) to non-intrinsically safe circuits.

II Standards

The safety barrier is designed according to the following IEC standards

IEC 60079-0:2017, Ed. 7.0	Equipment – General requirements
IEC 60079-11:2023, Ed. 7.0	Equipment protection by intrinsic safety "i"

III Instructions for safety

III.a Use

The safety barrier type SB 3 V2 serves as associated equipment and is not suitable for use in potential explosive atmospheres. The intrinsically safe sensor circuits may be routed into Zone 0 or Zone 20 and can be used for all gas groups or dust groups.

The approval applies to the following device versions

SB 3 V2	Three-channel safety barrier in a wall enclosure

III.b Assembling and dismantling

The assembly or disassembly may only be carried out without voltage!

Only the dismantling of the wall enclosure is intended so that the safety barrier type SB 3 V2 can be installed. After installation, the enclosure must be closed again.

III.c Installation

The wiring may only be done de-energized. Special regulations i. a. IEC 60079-14 or the local installation regulations must be observed.

When wiring from intrinsically safe equipment to a safety barrier (preferably blue cable), the inductance and capacitance permitted under section V must not be exceeded.

The safety barrier is suitable for wall mounting and must be installed outside the potential explosive area.

The safety barrier must be integrated into the equipotential bonding system. A terminal is provided on the outside of the housing for this purpose.

III.d Adjustment

For the operation of the safety barrier, no Ex-relevant adjustments are necessary.

III.e Putting into service

Before putting into service, all devices must be checked for correct connection and installation. The electrical supply, including the connected devices, must be checked.

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III.f Maintenance, overhaul and repair

The safety barrier is generally maintenance-free. In the case of a defect, this must be returned to the manufacturer FAFNIR or one of its representatives.

There is non-compliance with the dielectric strength requirements according to IEC 60079-11, Clause 6.9 of the safety barrier.

If a fuse is defective, it may be replaced. It must be ensured that the following fuse values are adhered to (design: 5×20 mm; values are also on the nameplate):

Nominal current	I_n	≤	32 mA
Breaking Capacity	I_{BC}	≥	35 A @ 250 V
Melting Integral	I^2t	≤	0,004 A^2s

IV Equipment marking

1	Manufacturer:	FAFNIR GmbH, 22525 Hamburg
2	Type designation:	SB 3 V2
3	Certificate number:	IECEx IBE 26.0027X
4	Ex Marking:	[Ex ia Ga] IIC [Ex ia Da] IIIC
5	Technical data:	See instructions for technical data Fuses (5×20 mm): I_n ≤ 32 mA I_{BC} ≥ 35 A @ 250 V I^2t ≤ 0.004 A^2s

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V Technical data

The nominal voltage for channel 1 (supply) is:

U = 24 V_{DC}

The nominal voltage for channel 2 (A) and channel 3 (B) is:

U = 5 V_{DC}

The maximum safety voltage is:

U_m = 253 V

The sensor circuit is designed in the ignition protection type "intrinsic safety" (ia) with a linear output characteristic. The output values are as follows

Output voltage	U_o	≤	28.4 V
Output current	I_o	≤	95.5 mA
Output power	P_o	≤	507 mW
Inner inductance	L_i		negligible small
Inner capacitance	C_i		negligible small

The permissible external inductance and capacitance are as follows:

		IIC		***IIB/IIIC***
L_o	≤	150 µH	500 µH	5 mH
C_o	≤	79 nF	50 nF	200 nF
		The maximum values of the value pairs may be used simultaneously as concentrated capacitance and concentrated inductance.		
L_o/R_o	≤	79.01 $^{\mu H}/_{\Omega}$		316.04 $^{\mu H}/_{\Omega}$

The safety barriers may be used in the following ambient temperature range:

T_a = -25 °C ... +70 °C

The safety barrier achieves a degree of protection of the enclosure of:

degree of protection: IP67

VI Specific conditions of use

1. The equipotential bonding connection must be connected to the equipotential bonding of the potentially explosive area (an equipotential bonding must exist for the entire intrinsically safe area). Therefore, the safety barriers do not meet the dielectric strength requirements. When carrying out an insulation test on the intrinsically safe circuit, the device must therefore be disconnected from equipotential bonding.

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