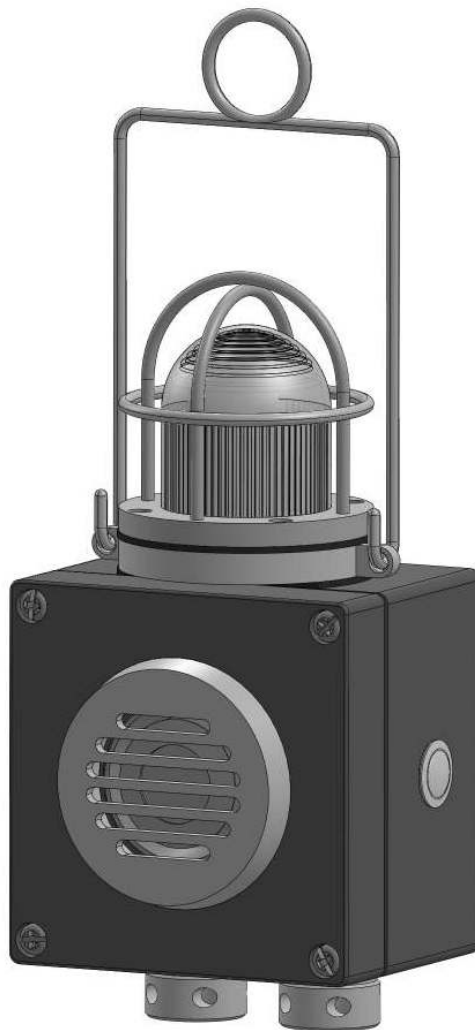


Audio-visual signal device SBH-X-Exia

(DIRECTIONS FOR USE)



May; 2012



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1. TECHNICAL DESCRIPTION

1.1 General description

Audio-visual signal devices type SB-X-Exia, SH-1-Exia and SBH-X-Exia are intended for visual and/or acoustic signalization of danger or some other special events. They are designed for use in applications in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust (I).

1.2 Types description

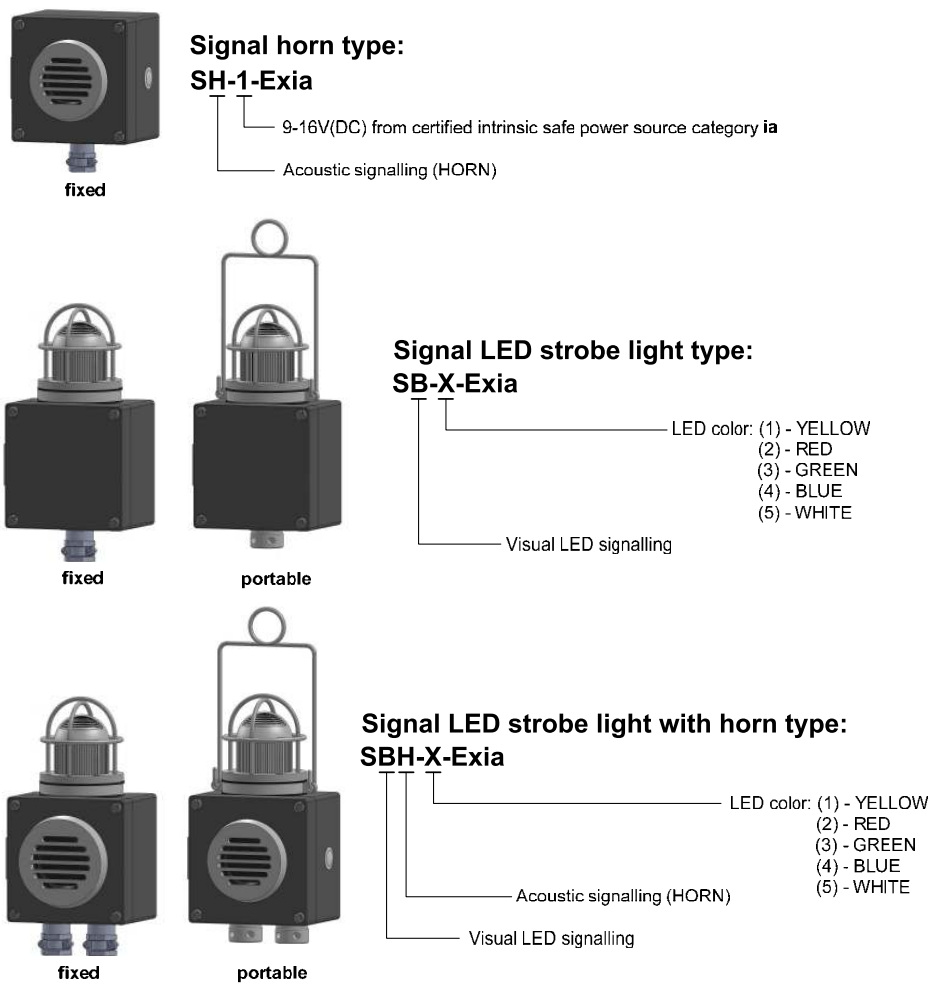


Figure 1: Audio-visual signal types description

All variants are powered from certified intrinsic safe power source category **ia**.

Basic variants (fixed mounting) are equipped with trumpet cable glands M20x1,5 type 54543 or type 54342 (Gothe&Co.) or cable gland M20x1,5 type SKINDICHT SHZ-M-XL (LAPPUSA).

For portable variants an extra hanger and/or fast plug connectors type PROMOS PLUS BN41**AT are mounted for fast device connection and fitting.

Signal horn SH-1-Exia is designed only for fixed mounting.

2. TECHNICAL DATA

2.1 Technical data for signal LED strobe light SB-X-Exia

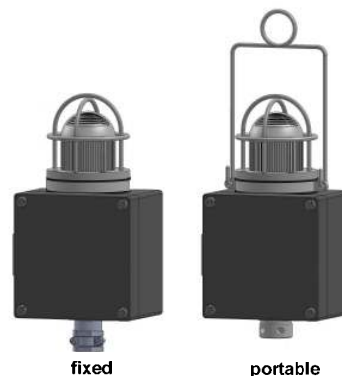
- **Certificate number:** FTZU 11 ATEX 0187
- **Voltage supply:** Intrinsic safe 9 - 16V (DC) category ia
- **Current consumption:** max. 60,0mA
- **Working temperature environment:** from -20C° to +50C°
- **Mechanical protection:** IP66 (IP55 with cable glands type SKINDICHT SHZ-M-XL)
- **LED color options:**
 - Yellow (SB-1-Exia)
 - Red (SB-2-Exia)
 - Green (SB-3-Exia)
 - Blue (SB-4-Exia)
 - White (SB-5-Exia)
- **Weight:** 1,75kg (fixed)
1,80kg (portable)
- **External dimensions:** 260,0 x 130,0 x 90,0mm (fixed mounting)
240,0 x 130,0 x 90,0mm (portable without hanger)
- **Connection capacity:** 1x trumpet cable gland M20x1,5 type **54342** (Gothe& Co.)
or 1x trumpet cable gland M20x1,5 type **54543** (Gothe& Co.)
or 1x cable gland M20x1,5 type **SHZ-M-XL** (LAPPUSA)
or 1x connector PROMOS PLUS BN41**AT (Becker mining)
- **Ex protection mark:**

 I M1 Ex ia I Ma

- **Special measurements :**

Maximal input parameters:

U_i=16V
I_i=2,4A
L_i=0
C_i=0



WARNING

All repairs must be carried out only by manufacturer or workshop authorized by the manufacturer!

2.2 Technical data for signal horn SH-1-Exia



- **Certificate number:** FTZU 11 ATEX 0187
- **Voltage supply:** Intrinsic safe 9 - 16V (DC) category **ia**
- **Current consumption:** 15 - 25,0mA
- **Working temperature environment:** from -20C° to +50C°
- **Mechanical protection:** IP66 (IP55 with cable glands type SKINDICHT SHZ-M-XL)
- **Sound intensity:** 92 - 100dB (1m)
- **Operation features:**
 - Alert degree (Alarm_1, Alarm_2, Alarm_3 **or specified by customer**)
 - 60s self-check alert (**optional**)
 - TEST key / MUTE key (**optional**)
- **Weight:** 1,65kg
- **External dimensions:** 170,0 x 130,0 x 103,0mm (fixed mounting)
- **Connection capacity:** 1x trumpet cable gland M20x1,5 type **54342** (Gothe& Co.)
or 1x trumpet cable gland M20x1,5 type **54543** (Gothe& Co.)
or 1x cable gland M20x1,5 type **SHZ-M-XL** (LAPPUSA)
- **Ex protection mark:**

 **I M1 Ex ia I Ma**

- **Special measurements :**

Maximal input parameters:

Ui=16V
Ii=2,4A
Li=0
Ci=0

WARNING

Signal horn SH-1-Exia is designed only for fixed mounting!

WARNING

All repairs must be carried out only by manufacturer or workshop authorized by the manufacturer!

2.3 Technical data for signal LED strobe light with horn SHB-X-Exia

- **Certificate number:** FTZU 11 ATEX 0187
- **Voltage supply:** Intrinsic safe 9 - 16V (DC) category ia
- **Current consumption:** max. 85,0mA
- **Working temperature environment:** from -20C° to +50C°
- **Mechanical protection:** IP66 (IP55 with cable glands type SKINDICHT SHZ-M-XL)
- **Sound intensity:** 92 - 100dB (1m)
- **Operation features:**
 - Alert degree (Alarm_1, Alarm_2, Alarm_3 or specified by customer)
 - 60s self-check alert (optional)
 - TEST key / MUTE key (optional)
- **LED color options:**
 - Yellow (SB-1-Exia)
 - Red (SB-2-Exia)
 - Green (SB-3-Exia)
 - Blue (SB-4-Exia)
 - White (SB-5-Exia)
- **Weight:** 2,00kg (basic)
2,25kg (portable)
- **External dimensions:** 260,0 x 130,0 x 103,0mm (fixed mounting)
240,0 x 130,0 x 103,0mm (portable without hanger)
- **Connection capacity:** 2x trumpet cable gland M20x1,5 type **54342** (Gothe& Co.)
or 2x trumpet cable gland M20x1,5 type **54543** (Gothe& Co.)
or 2x cable gland M20x1,5 type **SHZ-M-XL** (LAPPUSA)
or 2x connector PROMOS PLUS BN41**AT (Becker mining)

- **Ex protection mark:**

 I M1 Ex ia I Ma

- **Special measurements :**

Maximal input parameters:

Ui=16V
Ii=2,4A
Li=0
Ci=0

WARNING

All repairs must be carried out only by manufacturer or workshop authorized by the manufacturer!

3 DEVICE CONNECTION DESCRIPTION

3.1 Connection description for signal LED strobe light SB-X-Exia

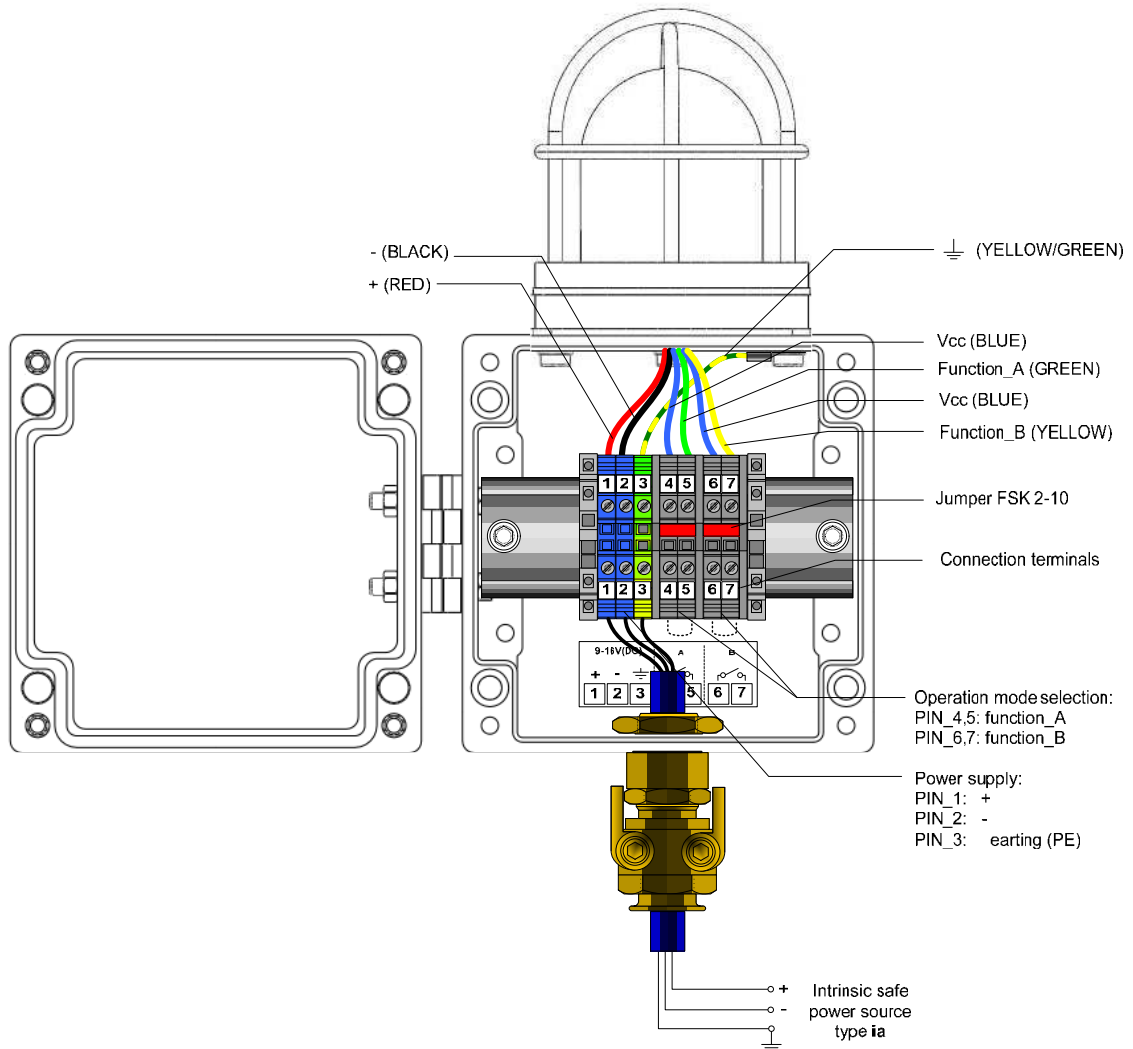


Figure 2: Connection description for SB-X-Exia

Intrinsic safe power supply is connected on terminals number 1 (+) and 2 (-). The grounding wire is connected on terminal number 3 (PE). Terminals 4, 5, 6 and 7 are intended for setting the desire mode of visual signaling. The operation mode selection can be selected with two jumpers FSK 2-10 for connection or disconnection terminal pair 4,5 (function A) and terminal pair 6,7 (function B).

A (4,5)	B(6,7)	Signaling mode
0	0	Program 1
0	1	Program 2
1	0	Program 3
1	1	Program 4

Table 1: Selection of signalling modes of operation for SB-X-Exia

3.2 Connection description for signal horn SH-1-Exia

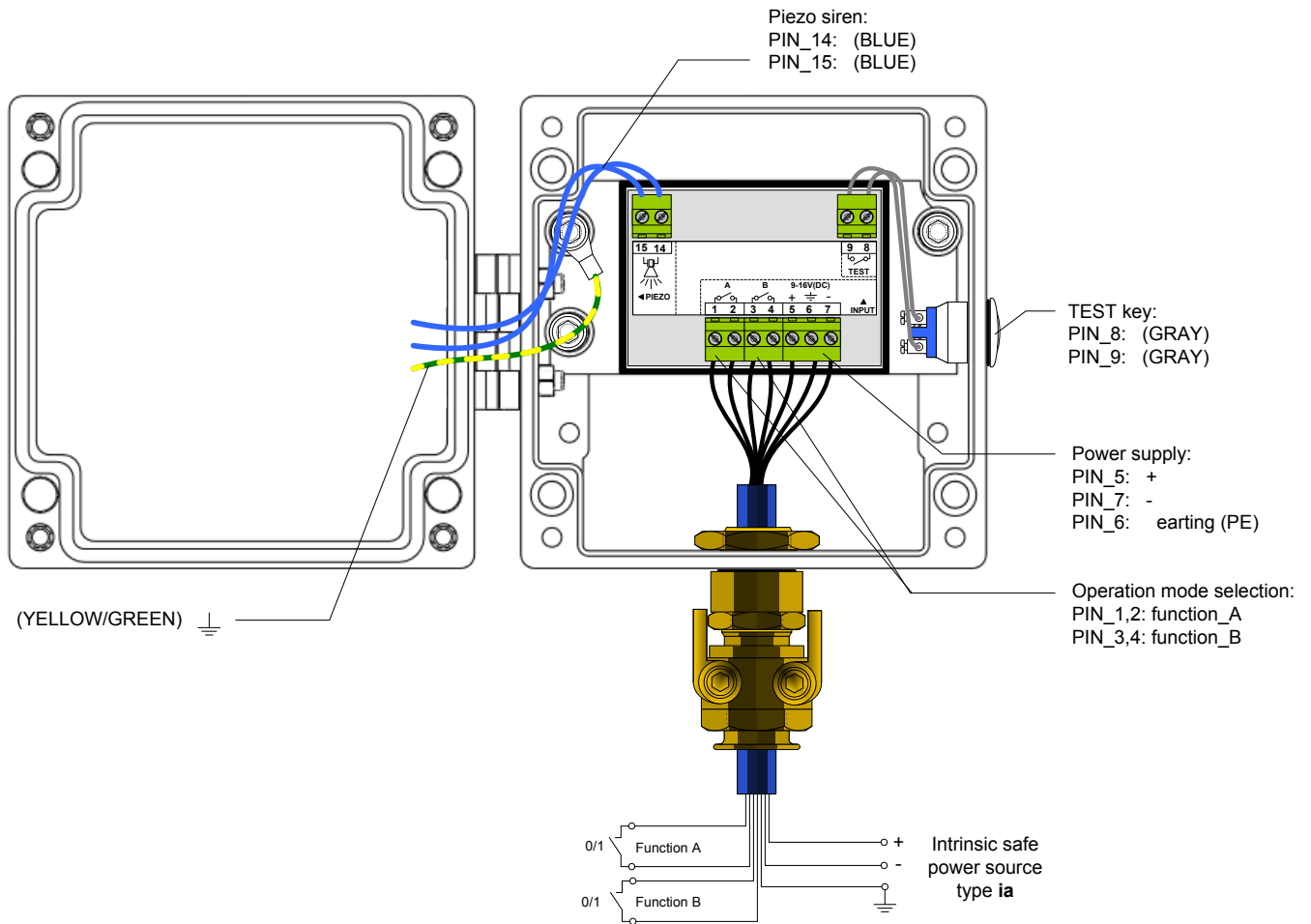


Figure 3: Connection description for SH-X-Exia

Intrinsic safe power supply is connected on terminals number 5 (+) and 7 (-). The grounding wire is connected on terminal number 6 (PE). Terminals 1, 2, 3 and 4 are intended for setting the desire mode of device operation. The operation mode selection can be selected with connection or disconnection terminals 1,2 (function A) and terminals 3,4 (function B).

A (1,2)	B(3,4)	Signaling mode
0	0	Program_1
0	1	Program_2
1	0	Program_3
1	1	Program_4

Table 2: Selection of signalling modes of operation for SH-X-Exia

Test key (OPTION) is connected on terminals number 8 and 9 with two isolated wires (gray color). The polarization of test key wires is not significant.

The piezo siren (mounted on cover of polyester enclosure) is connected on terminals number 14 and 15 with two isolated wires (blue color). The polarization of piezo siren connection wires is not significant.

Front protection shield (made of stainless steel) is grounded over grounding wire on grounded base mounting plate with SH-Exia electronic.

3.3 Connection description for signal LED strobe light with horn SHB-X-Exia

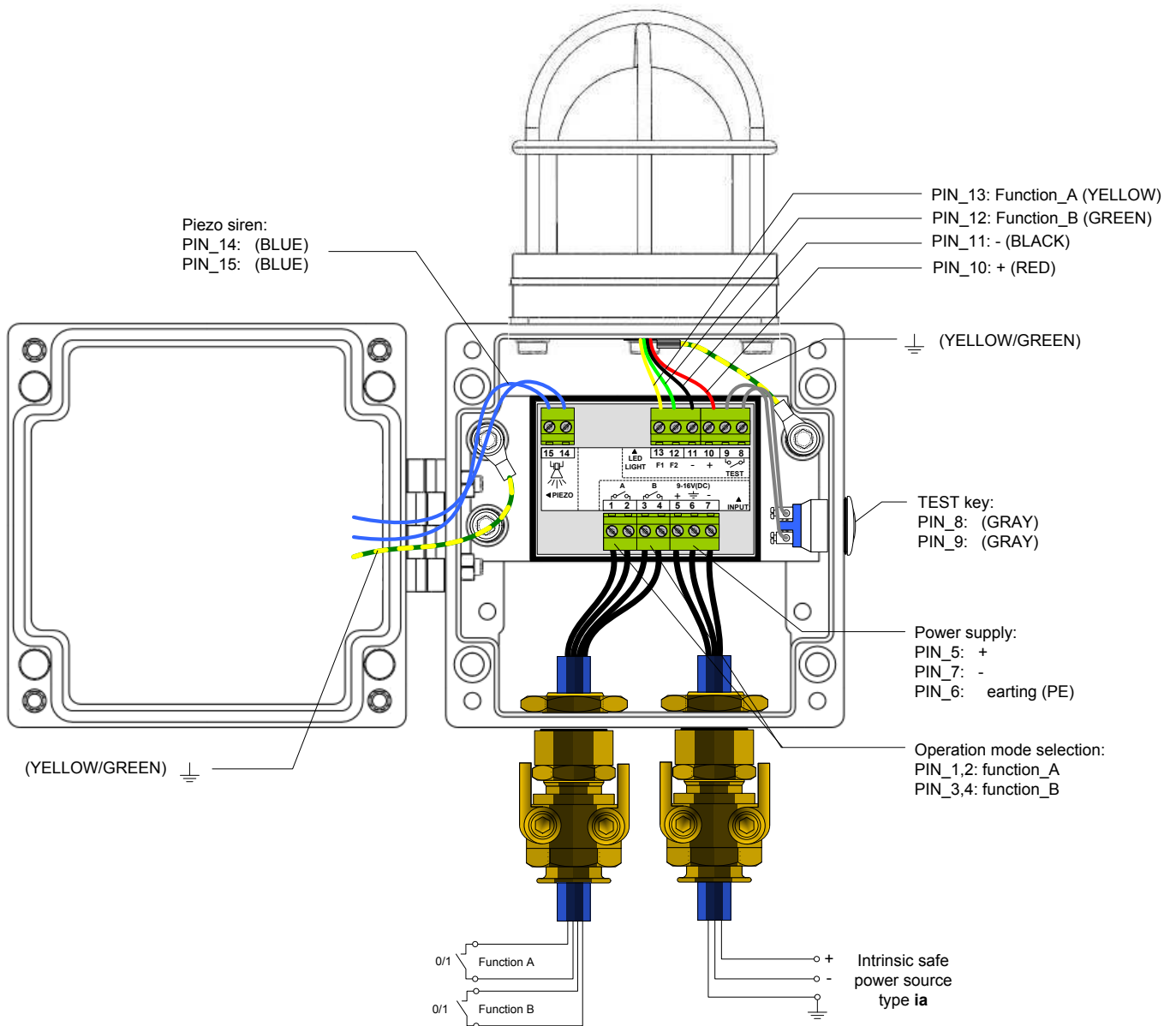


Figure 4: Connection description for SBH-X-Exia (fully equipped)

Intrinsic safe power supply is connected on terminals number 5 (+) and 7 (-). The grounding wire is connected on terminal number 6 (PE). Terminals 1, 2, 3 and 4 are intended for setting the desire mode of device operation. The operation mode selection can be selected with connection or disconnection terminals 1,2 (function A) and terminals 3,4 (function B).

A (1,2)	B(3,4)	Signaling mode
0	0	Program_1
0	1	Program_2
1	0	Program_3
1	1	Program_4

Test key (OPTION) is connected on terminals number **8** and **9** with two isolated wires (gray color).
 The polarization of test key wires is not significant.
 The piezo siren (mounted on cover of polyester enclosure) is connected on terminals number **14** and **15** with two isolated wires (blue color). The polarization of piezo siren connection wires is not significant.

Front protection shield (made of stainless steel) is grounded over first grounding wire on grounded base mounting plate with SH-Exia electronic.

Signal LED light (SB-Exia electronic) build in transparent protection dome is powered from two isolated wires connected on terminals **10** (+ red wire) and **11** (- black wire).
 Terminals **12** (green wire) and **13** (yellow wire) are intended for transmission the mode of signal operation from SH-Exia electronic to SB-Exia electronic.

Complete stainless steel part of signal LED light grounded over second grounding wire on grounded base mounting plate with SH-Exia electronic.

Connection description for signal LED strobe light with horn SHB-X-Exia equipped without test key, with only one cable gland is presented in figure 5

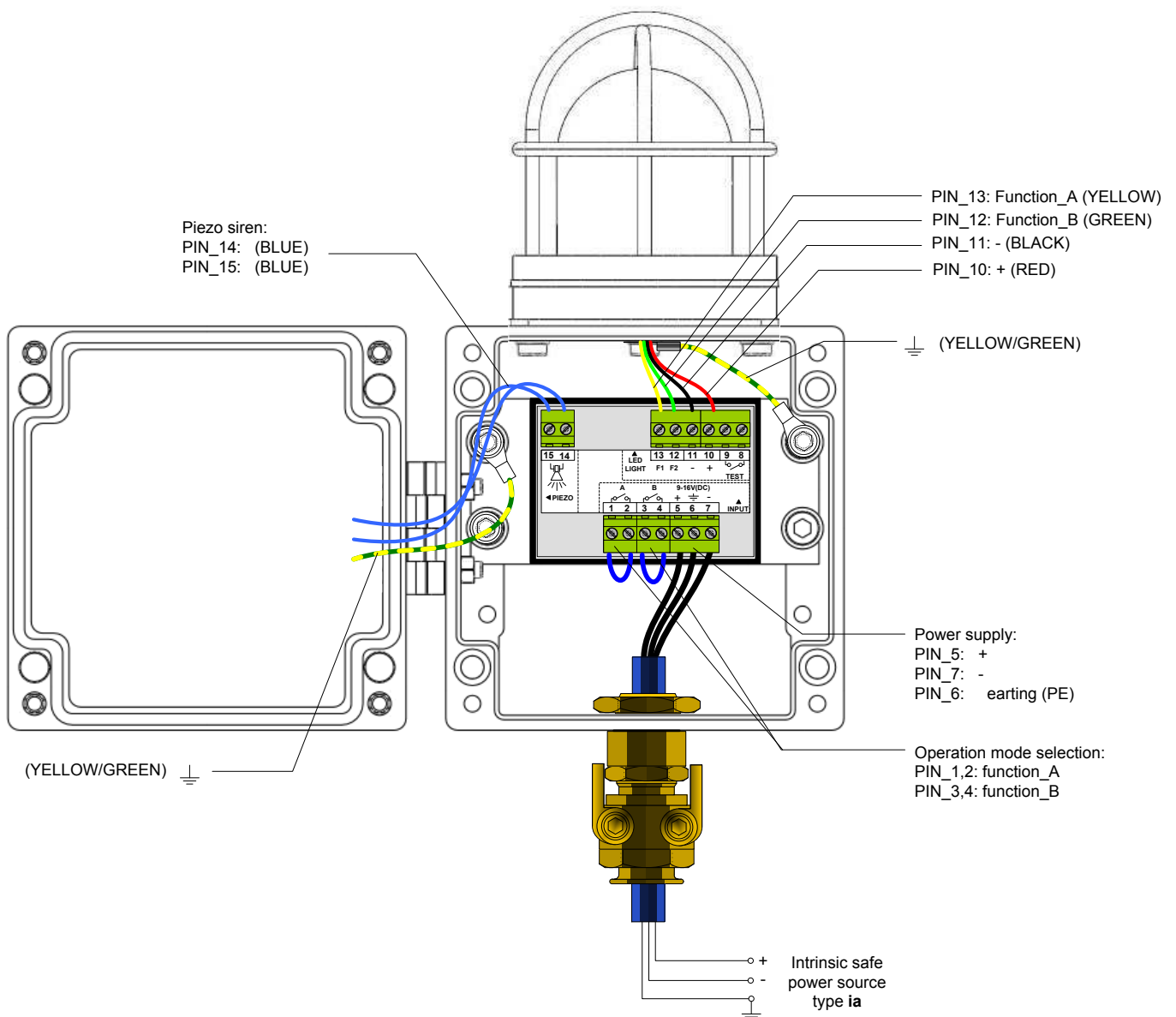


Figure 5: Connection description for SBH-X-Exia (limited equipped)

4. TECHNICAL STANDARDS

Audio-visual signal devices SB-X-Exia, SH-1-Exia and SBH-X-Exia are designed according with the next European standards:

- **EN 60079-0:2009**
Explosive atmospheres – Part 0: Equipment - General requirements
- **EN60079-11:2007**
Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
- **EN 50303:2000**
Group I, Category M1 equipment intended to remain functional in atmospheres endangered by firedamp and/or coal dust