



Intrinsically Safe Audible Signal - 105 dB (A)

Series YO5IS

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1 General Information

1.1 Manufacturer

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1.2 Information regarding the operating instructions

ID-No.: 252157 / YO560300010

Publication Code: 2016-05-17-BA00-III-en-00

The original instructions are the English edition.
They are legally binding in all legal affairs.

1.3 Further documents

- Data sheet

For documents in further languages, see www.moflash.com.





1.4 Conformity with standards and regulations

See certificates and EU Declaration of Conformity: www.moflash.com.

The device has IECEx approval. See IECEx homepage: <http://iecex.iec.ch/>

2 Explanation of the symbols




2.1 Symbols in these operating instructions

| Symbol | Meaning |
|---|---|
|  | Tips and recommendations on the use of the device |
|  | General danger |
|  | Danger due to explosive atmosphere |
|  | Danger due to energised parts |






2.2 Warning notes

Warnings must be observed under all circumstances, in order to minimize the risk due to construction and operation. The warning notes have the following structure:

- Signalling word: DANGER, WARNING, CAUTION, NOTICE
- Type and source of danger/damage
- Consequences of danger
- Taking countermeasures to avoid the danger or damage

| | |
|--|---|
|  | DANGER Danger to persons Non-compliance with the instruction results in severe or fatal injuries to persons. |
|  | WARNING Danger to persons Non-compliance with the instruction can result in severe or fatal injuries to persons. |
|  | CAUTION Danger to persons Non-compliance with the instruction can result in light injuries to persons. |
| NOTICE Avoiding material damage Non-compliance with the instruction can result in material damage to the device and / or its environment. | |

2.3 Symbols on the device

| Symbol | Significance |
|---|---|
|  05594E00 | CE marking according to the current applicable directive. |
|  02198E00 | According to its marking, the device is certified for hazardous areas. |
|  15649E00 | Input |
|  15648E00 | Output |
|  11048E00 | Safety instructions that must always be followed: The respective data must be noted and/or the safety-related instructions contained in the operating instructions must be followed for devices with this symbol! |

3 Safety notes



3.1 Operating instructions storage

- Read the operating instructions carefully.
- Store the operating instructions at the mounting location of the device.
- Observe applicable documents and operating instructions of the devices to be connected.


3.2 Safe use

- Read and observe the safety notes in these operating instructions!
- Observe characteristic values and rated operating conditions on the rating and data plates!
- Observe additional information plates on the device!
- Use the device in accordance with its intended and approved purpose only!
- We cannot be held liable for damage caused by incorrect or unauthorized use or by non-compliance with these operating instructions.
- Before installation and commissioning, make sure that the device is not damaged!
- Work on the device (installation, maintenance, overhaul, repair) may only be carried out by appropriately authorized and trained personnel.
- During installation and operation, observe the information (characteristic values and rated operating conditions) on the rating, data and information plates located on the device.
- Only connect the power supply if certified safety barriers are in place (refer also to the "Technical data" chapter).
- The safety characteristic values of the connected field devices must match the specifications of the corresponding device.
- When interconnecting intrinsically safe circuits, the safety-related maximum values of field devices and corresponding equipment as well as cable parameters must be observed. This "verification of intrinsic safety" must be performed and documented according to IEC/EN 60079-14 or IEC/EN 60079-25.

3.3 Modifications and alterations

| | |
|---|---|
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to modifications and alterations to the device! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Do not modify or alter the device. |
|  | <p>No liability or warranty for damage resulting from modifications and alterations.</p> |

4 Function and device design



DANGER

Explosion hazard due to improper use!
Non-compliance results in severe or fatal injuries.





- Use the device only in accordance with the operating conditions described in these operating instructions.
- Use the device only for the intended purpose specified in these operating instructions.

4.1 Function

Application range

Product Series YO5IS is designed to provide an audible alarm which can be used to alert, warn or draw attention to machine malfunction/start up or any number of safety related issues. In hazardous areas the devices have explosion protection for ATEX Zones 0, 1 and 2 for gas and 20, 21 and 22 for dust.

5 Technical data

| Explosion Protection | | | | |
|---------------------------------|---|---|---------------------|---------------------------|
| Europe (ATEX) | | | | |
| Gas and dust | BAS02ATEX1190X | | | |
| | YO*/IS*/T4  II 1 G Ex ia IIC T4 Ga | | | |
| |  II 1 D Ex ia IIIC T190°C Da | | | |
| | YO*/IS*/T6  II 1 G Ex ia IIC T6 Ga | | | |
| |  II 1 D Ex ia IIIC T75°C Da | | | |
| Certifications and certificates | | | | |
| Certificates | ATEX, India (PESO) | | | |
| Technical Data | | | | |
| Electrical data | | | | |
| Rated operational voltage | 16.2 ... 26.4 V | | | |
| Current consumption | Power supply | Certified barrier / isolator parameters | Current consumption | Sound output dB (A) / 1 m |
| | 24 V DC | 28 V / 300 Ω | 28 mA | 103 dB (A) / 1 m |
| | 18 V DC | 28 V / 300 Ω | 21 mA | 99 dB (A) / 1 m |
| Certified input parameters | U _i = 30 V | | | |
| | I _i = 133 mA | | | |
| | P _i = 0.7 W | | | |
| | C _i = 0 | | | |
| | L _i = 0 | | | |
| Line monitoring | yes | | | |

Technical Data**Acoustic data**

| | |
|-----------------|---|
| Volume | max. 105 dB(A) / 1 m |
| Volume control | 15 dB(A) adjustment (T4 Models only) |
| Sound stages | 2 |
| Sound selection | via DIL-switch |

Ambient conditions

| | |
|-----------------------------|---------------|
| Operating temperature range | -25 to +40°C |
| Storage temperature | -40 to +70°C |
| Max. relative humidity | 95 % at 40 °C |

Mechanical data

| | |
|----------------------|--------------------------|
| Cable entries | 1 x M20 |
| Material | |
| Enclosure | ABS, flame retardant |
| Assembly parts | stainless steel fixings |
| Labels | polyester foil, adhesive |
| Degree of protection | IP56 acc. to IEC 60529 |

Mounting / Installation

| | |
|------------|--|
| Mounting | Should be mounted to a reasonably flat wall or bulkhead of suitable material using the lugs projecting from the side of the enclosure. The minimum recommended length of fixing screws is 25 mm. To maintain the integrity of the weather seal the cable entry must be fitted using a suitable sealed gland. |
| Connection | Each sounder should be wired independently. 2.5 mm ² terminals |




For further technical data, see www.moflash.com.

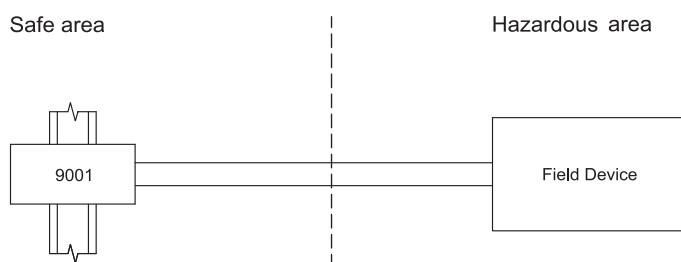
6 Transport and storage

- Transport and store the device only in the original packaging.
- Store the device in a dry place (no condensation) and vibration-free.
- Do not drop the device.

7 Mounting and installation

The device is approved for use in gas explosion hazardous areas of Zones 1 and 2 and dust explosion hazardous area of Zones 21 and 22 and in safe areas.

| | |
|---|--|
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to installation without approved field enclosure! Non-compliance results in severe or fatal injuries!</p> <ul style="list-style-type: none"> • When used in Zone 1, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-11. • When used in Zone 2, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-15. • When used in Zones 21 and 22, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-31. |
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to incorrect installation of the device! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Carry out installation strictly according to the instructions and national safety and accident prevention regulations to maintain the explosion protection. • Select and install the electrical device so that explosion protection is not affected due to external influences, i.e. pressure conditions, chemical, mechanical, thermal and electric impact such as vibration, humidity and corrosion (see IEC/EN 60079-14). • The device must only be installed by trained qualified personnel who is familiar with the relevant standards. |
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to improper mains power connection! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Under no circumstances is the device to be supplied using a regular power supply. It is only to be connected using certified barriers/isolators (see "Technical data") |



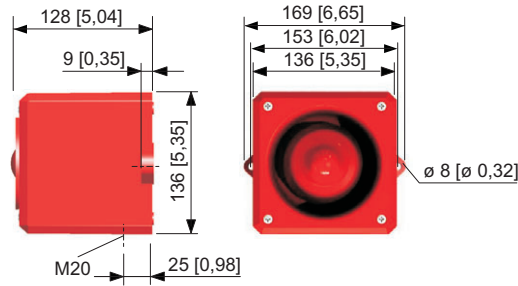
17769E00

Example of a standard installation using an intrinsically safe field device.

Product series 9001 is a safety barrier manufactured by STAHL. Certified components from other manufactures are acceptable.

7.1 Dimensions / fastening dimensions

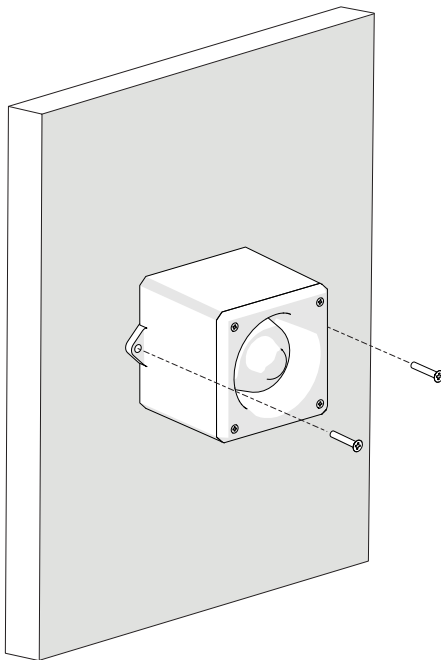
Dimensional Drawings (All Dimensions in mm [inches]) - Subject to Alterations



14011E00

7.2 Mounting / dismounting, operating position


7.2.1 Assembly



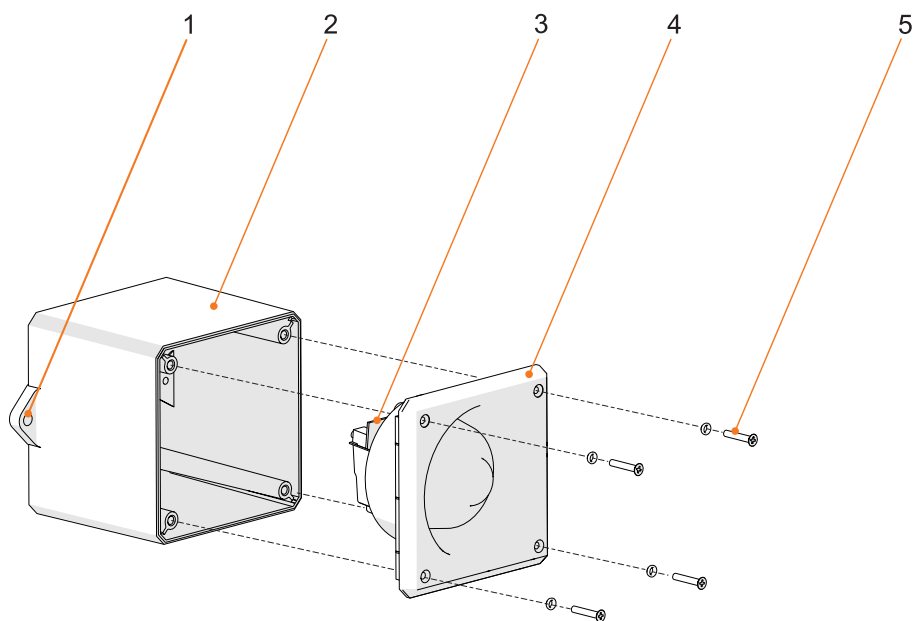
18075E00

- Mount the device to the surface, as depicted.

7.3 Installation

| | DANGER |
|---|---|
|  | <p>Explosion hazard due to incorrect installation! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • During installation and operation observe the information (characteristic values and rated operating conditions) on the rating, data and information plates located on the device. • The safety characteristic values of the connected field devices must match specifications of the associated apparatus. |

7.3.1 Key components



18076E00

- 1 Mounting brackets
- 2 Lower enclosure part
- 3 Sounder PCB
- 4 Sounder front cover
- 5 Button head screws


7.3.2 Electrical Connection PCB

- Remove the sounder cover.
- Connect the leads according to the circuit diagram.
- Position the enclosure cover and fasten it using the screws.

7.3.3 Circuit diagrams

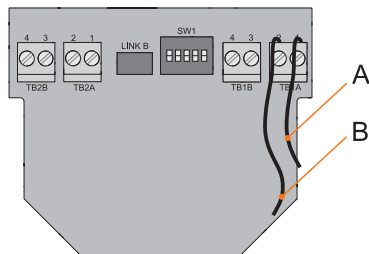
Single stage alarm

- Connect the leads according to the circuit diagram.
- Supply the active device with power.

| | |
|---|--|
|  | DANGER |
| | <p>Explosion hazard due to selecting the wrong cables! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • If using separate safety barriers for the sounder and beacon, observe the cable specifications stated on the selected Zener barrier or on the isolator certificate. |

- A single-channel safety barrier or single intrinsically safe connection is required

Sounder PCB




A 0v
B +v

17775E00

Two stage alarm

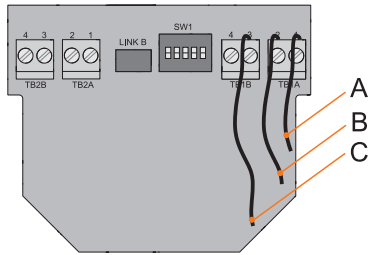
Tone selection of the sound stages

| | |
|---|---|
|  | <p>The device has a first and second sound stage.</p> <p>First sound stage</p> <ul style="list-style-type: none"> • Users can select a tone frequency from 32 different variations using the DIL switch (see diagrams above). Each tone is described in the tone table. <p>Second sound stage</p> <ul style="list-style-type: none"> • Each first sound stage has a pre-programmed second stage which is listed in the tone table. • Users are able to switch between the first and second sound stages by wiring the unit in one of two ways. |
|---|---|

7.3.4 Sound tone switching

Sound tone switching by using a third cable

Connect the leads according to the figure.



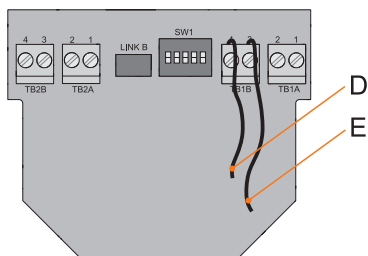
A 0v
B +v
C +v

17778E00

- Supply "B" with power to activate the first sound tone frequency.
- Supply "B" and "C" with power according to the circuit diagram for the second tone frequency.
- A dual-channel barrier or double intrinsically safe connection is required.

Tone switching using reverse polarity

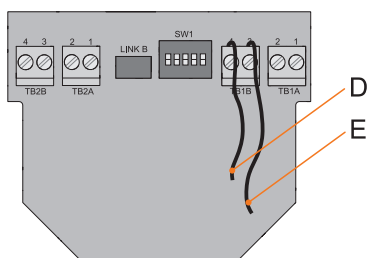
- Connect the leads according to the figure.
- Supply with power to activate the first sound tone frequency.



D 0v
E +v

17779E00

- Reverse the polarity to activate the second sound tone frequency. The sounder PCB and beacon PCB must be wired independently if using reverse polarity to switch between sound tone frequencies.



D +v
E 0v

17779E00

7.3.5 Line monitoring

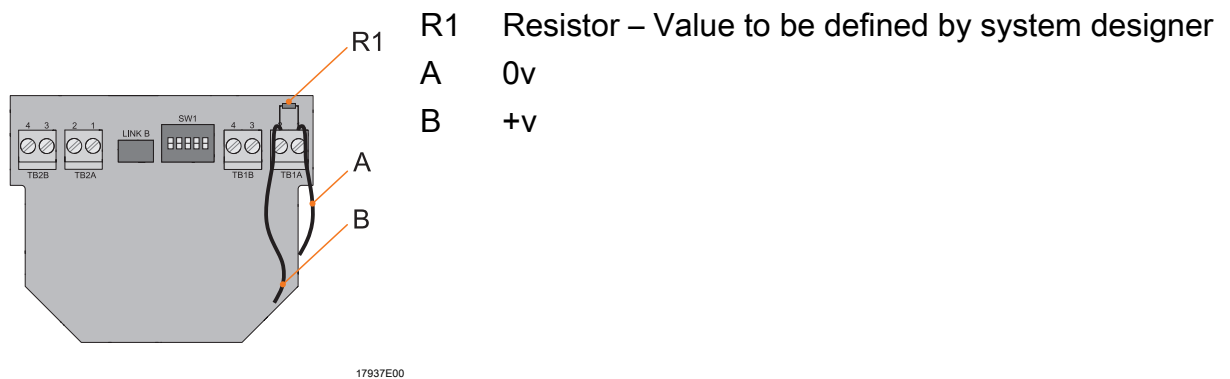


If line monitoring is required, this can be achieved by using an end-of-line resistor. For this purpose, use a wire-wound or metal layer resistor with a resistance value of at least 750 Ohm and a rated power of at least 2 W or at least 4700 Ohm and a rated power of at least 0.4 W!

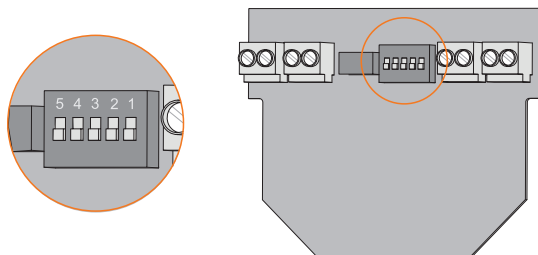
The line monitoring facility allows the integrity of the line to the sounder to be monitored through the barrier to the control system fault detection and indication circuits. Two sounders of the same type can be connected in parallel. The resistor can be fitted as per the diagram below.

Line monitoring is optional. The system designer should inform users if this is necessary or not.

Standard termination with monitoring resistor fitted.



7.3.6 Sound tone selection



17784E00

- Arrange the settings of the DIP switch using a suitable tool:
 - DIP switch "up" corresponds to "1"
 - DIP switch "down" corresponds to "0"

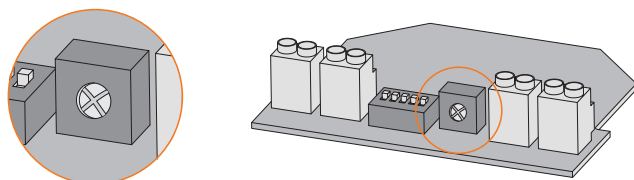
Refer to the following tone table for the tone selection.

Tone table

| First sound level signal. | Tone description | Frequency [Hz] | Repetition frequency [sec] | Second sound level signal. | Tone changes 1 2 3 4 5 | Output [db(A)] | Input current [mA] |
|---------------------------|-----------------------|----------------|----------------------------|----------------------------|------------------------|----------------|--------------------|
| 1 | Two alternating tones | 800-1000 | 0.5 | 3 | 1 1 1 1 1 | 100 | 26 |
| 2 | Two alternating tones | 2500-3100 | 0.5 | 4 | 0 1 1 1 1 | 102 | 34 |
| 3 | Two alternating tones | 800-1000 | 0.25 | 7 | 1 0 1 1 1 | 100 | 25 |
| 4 | Two alternating tones | 2500-3100 | 0.25 | 8 | 0 0 1 1 1 | 103 | 34 |
| 5 | Two alternating tones | 440-554 | 0.4/0.1 | 14 | 1 1 0 1 1 | 98 | 24 |
| 6 | Two alternating tones | 430-470 | 1.0 | 14 | 0 1 0 1 1 | 98 | 24 |
| 7 | Two alternating tones | 800-1000 | 0.13 | 12 | 1 0 0 1 1 | 100 | 25 |
| 8 | Two alternating tones | 2500-3200 | 0.07 | 13 | 0 0 0 1 1 | 102 | 34 |
| 9 | Two alternating tones | 440-554 | 2.0 | 10 | 1 1 1 0 1 | 98 | 24 |
| 10 | Continuous tone | 700 | – | 1 | 0 1 1 0 1 | 99 | 25 |
| 11 | Continuous tone | 1000 | – | 31 | 1 0 1 0 1 | 98 | 24 |
| 12 | Continuous tone | 1000 | – | 7 | 0 0 1 0 1 | 101 | 25 |
| 13 | Continuous tone | 2300 | – | 2 | 1 1 0 0 1 | 101 | 30 |
| 14 | Continuous tone | 440 | – | 9 | 0 1 0 0 1 | 98 | 24 |
| 15 | Interrupted tone | 1000 | 2.0 | 31 | 1 0 0 0 1 | 97 | 24 |
| 16 | Interrupted tone | 420 | 1.25 | 30 | 0 0 0 0 1 | 97 | 24 |
| 17 | Interrupted tone | 1000 | 0.5 | 1 | 1 1 1 1 0 | 98 | 24 |
| 18 | Interrupted tone | 2500 | 0.25 | 4 | 0 1 1 1 0 | 101 | 30 |
| 19 | Interrupted tone | 2500 | 0.5 | 2 | 1 0 1 1 0 | 101 | 29 |

| | | | | | | | |
|----|----------------------------------|----------|-------------|----|-----------|-----|----|
| 20 | Interrupted tone | 700 | 6/12 | 10 | 0 0 1 1 0 | 100 | 24 |
| 21 | Interrupted tone | 1000 | 1.0 | 32 | 1 1 0 1 0 | 99 | 24 |
| 22 | Interrupted tone | 700 | 4.0 | 10 | 0 1 0 1 0 | 99 | 24 |
| 23 | Interrupted tone | 700 | 0.25 | 10 | 1 0 0 1 0 | 97 | 23 |
| 24 | Interrupted tone | 720 | 0.7/0.3 | 10 | 0 0 0 1 0 | 99 | 24 |
| 25 | Interrupted, fast, rising volume | 1400 | 0.25 | 26 | 1 1 1 0 0 | 101 | 28 |
| 26 | Fast siren | 250-1200 | 0.085 | 11 | 0 1 1 0 0 | 99 | 24 |
| 27 | Rising, falling constantly | 1000 | 10/40/10 | 17 | 1 0 1 0 0 | 100 | 25 |
| 28 | ISO 8201 Evacuation | 800-1000 | As standard | 11 | 0 0 1 0 0 | 97 | 23 |
| 29 | Fast wailing noise | 500-1000 | 0.15 | 32 | 1 1 0 0 0 | 99 | 25 |
| 30 | Slow wailing noise | 500-1200 | 4.5 | 12 | 0 1 0 0 0 | 100 | 25 |
| 31 | Reverse sweep | 1200-500 | 1.0 | 11 | 1 0 0 0 0 | 98 | 24 |
| 32 | Siren | 500-1200 | 3.0 | 26 | 0 0 0 0 0 | 98 | 24 |

7.3.7 Volume control




17785E00



The product is supplied with the volume set to full.

- Upon request, the volume can be reduced by turning the potentiometer anticlockwise.

8 Commissioning


| | |
|---|---|
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to incorrect installation! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Check the device for proper installation before commissioning. • Comply with national regulations. |
|---|---|

Before commissioning, ensure the following:


- Check the mounting and installation.
- Enclosure must not be damaged.
- If necessary, remove foreign bodies.
- If necessary, clean the connection chamber.
- Check if the conductors have been inserted correctly.
- Check if all screws and nuts have been tightened firmly.
- Check if all conductors have been clamped firmly.
- Check if all prescribed tightening torques have been observed.
- Check whether the bayonet lock is tightened firmly.
- Make sure that the plug pin surface is not damaged.
- Use only in completely mounted state.

9 Maintenance and repair

The provisions of IEC/EN 60079-17 or the national rules and regulations apply to maintenance work to be regularly performed on explosion-protected and associated operating equipment.

| | |
|---|---|
|  | <p style="text-align: center;">CAUTION</p> <p>Risk of electric shock or malfunction of the device due to unauthorized work! Non-compliance can result in light injuries!</p> <ul style="list-style-type: none"> • Before carrying out work on the device, switch off voltage supply. • Work performed on the device must only be carried out by authorized and appropriately trained qualified electricians. |
|---|---|

9.1 Maintenance

| | |
|---|---|
|  | <p>Observe the relevant national regulations in the country of use.</p> |
|---|---|

9.2 Repair

| | |
|---|---|
|  | <p style="text-align: center;">DANGER</p> <p>Explosion hazard due to improper repair! Non-compliance results in severe or fatal injuries.</p> <ul style="list-style-type: none"> • Repair work on the devices must be performed only by Moflash Signalling Limited. |
|---|---|


10 Cleaning

- To avoid electrostatic charging, the devices located in potentially explosive areas may only be cleaned using a damp cloth.
- When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
- Do not use aggressive detergents or solvents.

11 Disposal

- Observe national and local regulations and statutory regulation regarding disposal.
- Separate materials when sending it for recycling.
- Ensure environmentally friendly disposal of all components according to the statutory regulations.

12 Accessories and Spare parts

| <i>NOTE</i> | |
|--|--|
| <p>Malfunction or damage to the device due to the use of non-original components. Non-compliance can result in material damage.</p> <ul style="list-style-type: none"> • Use only original accessories and spare parts from Moflash Signalling Ltd. | |
|  | www.moflash.com . |