

9.0 End of Line Monitoring

An End of Line monitoring Diode or an End of Line monitoring Resistor can be connected across the 24V+ and 0 terminals. Resistor values for the End of Line will be determined by the customer with a minimum value of 1.2kΩ

10.0 Maintenance

Little or no maintenance is required during the normal working life of the product. The Moflash Exd enclosures are resistant to most acids, alkalis and chemicals and have been designed to withstand severe weather conditions. However it is suggested that to avoid the possibility of a potential electrostatic charge build up, the exterior of the product is periodically wiped down with a clean damp cloth. At this point a visual inspection is recommended to ensure that the product is in good working order and no damage has been sustained during its normal operation.

11.0 Conditions for Safe Usage

- i) This apparatus is suitable to be used only in ambient temperature as stated below:

Type	Ambient Temp
SB150 series	-40°C to +70°C

- ii) Do not paint or change the surface finish of the unit. The coating applied by the manufacturer is Anti-Static & UV Stable.

Specific Condition of Use

Repairs of the flameproof joints must be made in compliance with the structural specifications provided by the manufacturer. Repairs must not be made on the basis of values specified in tables 1 and 2 of EN/IEC 60079-1.

Contact Moflash Signalling Ltd for further information.



INSTALLATION & TECHNICAL INFORMATION

PLEASE READ PRIOR TO INSTALLATION



Please note wiring instructions on page 3

SB150-2,3,4 Ex d (Explosion Proof Sounder/Beacon)

Glass Reinforced Polyester

VISUAL & AUDIBLE COMBINATION SIGNALLING DEVICES



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Moflash part code SB150-2,3,4-S00532-Issue 3

1.0 Introduction

The SB150 combination range is certified for use and installation in Zone 1 and Zone 2 areas with gas groups IIA, IIB, IIC, also Zones 21 and 22 for Dust. The unit carries a temperature classification of T4~T6. It especially applies to Oil & Gas, Offshore Platform, Chemical, Petrochemical, Refinery and Marine Industries etc. Enclosure material is Glass Reinforced Polyester. The combinations offer four stages of alarm light and sound.

The range is available with Beacons having an LED or Xenon type output. The LED offers three primary modes of operation: Flashing, Rotating or Steady. The Xenon offers Flashing mode only. The Sounder offers 60 tones (3 are selectable at installation). The Push Button or Junction Boxes are optional additions. In whatever configuration supplied, all internal connecting glands are fitted. Note: Any external glands are not. The multiple construction is mounted on a Stainless Steel SS316 mounting plate ready for installation.

2.0 Explosion Proof Labelling

All products have a rating label with the following important information: Product order no: eg SB1502JARL05DCNNAR (Refer to the datasheet for product order selection)

Input voltage: 12-48v DC or 100-240v AC (50/60 Hz)
Beacon: ≤25W
Sounder: ≤20W

Code: Ex d IIC T4~ T6 Gb, Ex tb IIIC T135°C~T85°C IP66

Nemko ATEX Certificate No: Nemko 14ATEX 1010X

ATEX Mark: 

IECEX Certificate: IECEX-NEM 14.0006X

Gas Group and Category: II 2GD

CE Mark: Mark No: 0891

Warning: **DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT**

Finished product serial no:(includes date of construction) ie.08-0001, Year - 08, product serial no: - 0001.

7.2 Sounder

Tones are set using the 3 x 6 way DIP switches on the sounder pcb mounted in the lowest status light top cover beneath the light pcb.

Tone selection sheet S00533 lists the available tones and volume control details.

Stage	Apply Power To	Termination Connection	Tone	*Pre-set
1	L & N	-	No sound	
2	L & N	S0 to S1 *	Set by DIP SW1	
3	L & N	S0 to S2	Set by DIP SW2	
4	L & N	S0 to S1 & S2	Set by DIP SW3	

Sound Pause Option

Briefly close the loop between 'S0 – D' for 1 second minimum each time to give the required pause interval. The sound automatically restarts at the end of the interval

No of times	Pause Interval
1	1 minute
2	5 minute
3	10 minutes - Closing the loop again for 1 second during this interval automatically restores the sound.

8.0 Cable Gland

Only cable glands approved for Exd applications can be used with Moflash Explosion Proof Products, these must be suitable for the type of cable being used and also meet the requirements of the Exd flameproof installation standard EN 60079-14.

SAFETY WARNING

If units are used at high ambient temperatures, i.e. over +40°C then the cable entry temperature may exceed +70°C and therefore suitable heat resisting cable glands must be used, with a rated service temperature of at least 95°C.

If a high IP (Ingress Protection) rating is required, a suitable sealing washer must be fitted under the cable gland. Any unused cable entry holes must be closed with an Exd flameproof blanking plug, which must be suitably approved for the installation requirements.

The gland accessories below offer a wide selection to cover most Ex environments

Gland and Plug Options			
50200:	M20 E1EX Nickel Plated Brass Gland	50210:	M20 E1EX Stainless Steel Gland
50201:	M20 A2EX Nickel Plated Brass Gland	50211:	M20 A2EX Stainless Steel Gland
50202:	M20 E1EX-QS Nickel Plated Brass Gland	50212:	M20 E1EX-QS Stainless Steel Gland
50203:	M20 A2EX Quick Stop Nickel	50213:	M20 A2EX Quick Stop
50204:	M20 Nickel Plated Brass Stopping Plug	50214:	M20 Stainless Steel Stopping Plug

7.0 Alarm Stages

7.1 Status Lights

Flash Pattern/Frequency are set using the DIP switch (SW1) mounted on the pcb in the top cover of each Beacon flameproof enclosure (picture 1).

LED - 3 pole, **Xenon** - 2 pole. Refer to tables 1 & 2 (Binary code 0 = Off, 1 = On).



Picture 1
Typical PCB

Alarm Stages are set **On** by linking **S0** to **S1** and/or **S2** at the pcb terminals in the lowest Beacon, Junction box or Push Button in the combination.

Table 1 -LED Beacon Frequency and Status Selection

Values in () rate when 3rd DIP (1) On

DIP Switch			S1/S2	S1=OFF S2=OFF	S1=ON S2=OFF	S1=OFF S2=ON	S1=ON S2=ON
1st DIP	2nd DIP	3rd DIP	Alarm Stage 1	Alarm Stage 2	Alarm Stage 3	Alarm Stage 4	
0	0	0(1)	OFF	Flash 60 (75) times/min •	Flash 75 (90) times/min	Steady light	
1	0	0(1)	OFF	Rotary 60 (75) times/min	Rotary 75 (90) times/min	Steady light	
0	1	0(1)	OFF	Triple Flash 60 (75) times/min	Triple Flash 75 (90) times/min	Triple Flash 100 (120) times/min	
1	1	0(1)	OFF	Flash & Rotary 60 (75) times/min	Flash & Rotary 75 (90) times/min	Flash & Rotary 100 (120) times/min	

*Factory Pre-set

Table 2 - Xenon Beacon Frequency and Status Selection

All values in () are the numbers of flashes per time

DIP Switch			S1/S2	S1=OFF S2=OFF	S1=ON S2=OFF	S1=OFF S2=ON	S1=ON S2=ON
1st DIP	2nd DIP	Alarm Stage 1	Alarm Stage 2	Alarm Stage 3	Alarm Stage 4		
0	0	OFF	60 times/min (1) •	90 times/min (1)	120 times/min (1)		
1	0	OFF	60 times/min (2)	60 times/min (3)	60 times/min (4)		
0	1	OFF	60 times/min (3)	60 times/min (4)	60 times/min (5)		
1	1	OFF	60 times/min (4)	60 times/min (5)	60 times/min (6)		

*Factory Pre-set

3.0 Type Approval Standard

The Moflash Explosion Proof product range all have an EC Type Examination Certificate issued by Nemko and have been approved to the following standards:

EN 60079-0:2012 (IEC 60079-0:2011), EN-60079-1:2007 (IEC 60079-1:2007)
EN 60079-31:2009 (IEC 60079-31:2008)

4.0 Zones, Gas Group, Category and Temperature Classification

The SB150-2,3,4 series products have been certified Ex d IIC T4~T6. This means that the units can be installed in locations with the following conditions:

Area Classification:

Zone 1: Explosive gas air mixture likely to occur in normal operation.

Zone 2: Explosive gas air mixture not likely to occur, and if it does, it will only exist for a short time.

Gas Groupings:

Group IIA Propane

Group IIB Ethylene

Group IIC Hydrogen and Acetylene

Zone 21: Explosive dust air mixture likely to occur in normal operation.

Zone 22: Explosive dust air mixture not likely to occur, and if it does, it will only exist for a short time.

Equipment Category: 2GD

Temperature Range:

T4 (Tamb = -40°C to +70°C)

T5 (Tamb = -40°C to +60°C)

T6 (Tamb = -40°C to +55°C)

NOTE : The wiring diagram supplied with this product takes precedence over this Installation Sheet and should be followed for all wiring connections. This Installation Sheet may not fully reflect the latest wiring details due to ongoing certification requirements. Always refer to the provided wiring diagram to ensure compliance and accuracy during installation.

5.0 Installation

General Requirement

The product must be installed in accordance with the latest EN60079-0 and EN60079-1 specification or the equivalent IEC specification. Product installation must be carried out in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer.

Location

The location of the unit should be chosen with due regard to the area over which the warning signal must be visible/audible. The unit should only be fixed to services that can support the weight of the unit.

Mounting

The SB150 should be mounted on a vertical flat surface via the stainless steel mounting plate (see diagram 1). The mounting holes are designed to accept M8 Allen screws only. The use of stainless steel fasteners is recommended.

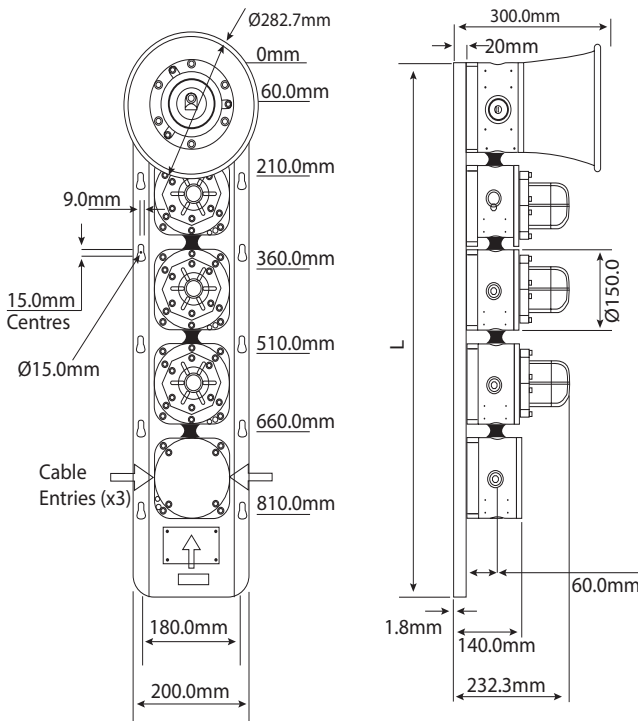


Diagram 1

Combination	Key Slots	'L'
SB150-2	6	450
SB150-3 (2J or P)	8	619
SB150-4 (3J or P)	10	788
SB150-5 (4J or P)	12	957

6.0 Wiring

General Requirement

Moflash recommends that all cables and cores should be fully identified (suggest using cable from 2.0 to 2.5 mm²). Ensure that all nuts, bolts and screws are secured. Ensure that only the right and certified cable glands are used and earthed correctly. Ensure that only the right and certified stopping plugs are used to blank off unused gland entry points. In order to maintain the IP rating of the product, we recommend SS316 for this application.

Cable Connection

Cable connections are made to terminals located in the lowest flameproof enclosure on the mounting plate, see diagram 1. Refer to wiring diagram for specific unit combinations. Cable connections should be carried out in accordance with relevant technical requirements.

Removal of Top Cover

Caution

Before removing the cover ensure the power to the signal is isolated.

Unscrew the six (6) M5 retained hex socket head screws (see diagram 2). Twist the cover gently clockwise and anti-clockwise, whilst pulling away from the body, keeping the cover parallel to the body until it comes free. This will allow the cover to hang on its retaining strap. Before replacing the cover, check that the flameproof joints are clean and not damaged, the gasket is still retained in its groove.

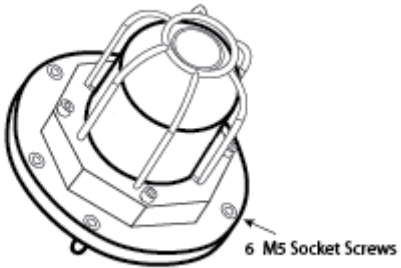


Diagram 2

For AC units – connect **Supply** to terminals marked 'L & N'.
For DC units – connect **Supply +** to 'L' and '-' (0v) to 'N'.

Do **not** connect AC or DC to terminals S0,S1,S2 or Dly.