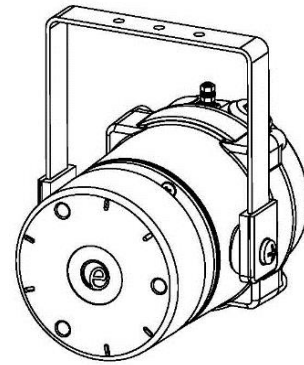


BExH120D



BExH120D-R

1) Warnings



- DO NOT OPEN WHEN AN EXPLOSIVE ATMOSPHERE IS PRESENT
- DO NOT OPEN WHEN ENERGIZED
- POTENTIAL ELECTROSTATIC CHARGING HAZARD – CLEAN ONLY WITH A DAMP CLOTH
- COVER BOLTS CLASS A4-80
- USE HEAT RESISTING CABLES AND CABLE GLANDS (RATED 110°C) AT AMB. TEMPERATURES OVER 40°C

2) Rating & Marking Information

All units have a rating label, which carries the following important information:-

Model No.: BExH120D or BExH120D-R

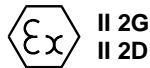
Input Voltage: DC Units 24V
AC Units 115V or 230V

BExH120D or BExH120D-R Codes:

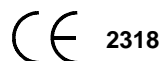
Ex db IIC T4 Gb Ta. -50°C to +55°C
 Ex db IIB T4 Gb Ta. -50°C to +70°C
 Ex tb IIIC T100°C Db Ta. -50°C to +55°C
 Ex tb IIIC T115°C Db Ta. -50°C to +70°C

Certificate No. KEMA 99ATEX6312X
IECEx KEM 10.0003X

Epsilon x
Equipment Group and
Category:



CE Marking
Notified Body No.



The units can be installed in locations with the following conditions:

Area Classification Gas:

| | |
|--------|--|
| Zone 1 | Explosive gas air mixture likely to occur in normal operation. |
| Zone 2 | Explosive gas atmosphere not likely to occur in normal operation but may be present for short periods. |

Gas Groupings:

| | |
|-----------|---|
| Group IIA | Propane |
| Group IIB | Ethylene |
| Group IIC | Hydrogen and Acetylene (up to 55°C ambient) |

Temperature Classification:

| | |
|----|-------|
| T1 | 450°C |
| T2 | 300°C |
| T3 | 200°C |
| T4 | 135°C |

Area Classification Dust:

| | |
|---------|--|
| Zone 21 | Explosive dust air mixture likely to occur in normal operation. |
| Zone 22 | Explosive dust air mixture not likely to occur in normal operation, and if it does, it will only exist for a short time. |

Dust Groupings:

| | |
|------------|---------------------|
| Group IIIA | Combustible Dusts |
| Group IIIB | Non-Conductive Dust |
| Group IIIC | Conductive Dust |

Maximum Surface Temperature for Dust Applications:

100°C at +55 °C ambient
 115 °C at +70 °C ambient

IP Rating: IP66/67 and IP6X to EN/IEC60079-0, EN/IEC60079-31

Equipment Category: 2G / 2D

Equipment Protection Level: Gb / Db

Ambient Temperature Range:

-50°C to +55°C Gas Groups IIA, IIB and IIC
 -50°C to +70°C Gas Groups IIA and IIB
 -50°C to +70°C Dust Groups IIIA, IIIB and IIIC

3) Type Approval Standards

The hootronic sounder carries an EC Type Examination Certificate and IECEx Certificate of Conformity, and have been certified to comply with the following standards:

EN60079-0 :2012 + A11 and EN IEC 60079-0 :2018 / IEC60079-0:2017 (Ed 7): Explosive Atmospheres - Equipment. General requirements

EN60079-1:2014 / IEC60079-1:2014 (Ed 7): Explosive Atmospheres - Equipment protection by flameproof enclosures "d"

EN 60079-31:2014 / IEC60079-31:2013 (Ed 2): Explosive Atmospheres - Equipment dust ignition protection by enclosure "t"

4) Installation Requirements

The hootronic sounder must only be installed by suitably qualified personnel in accordance with the latest issues of the relevant standards:

EN60079-14 / IEC60079-14: Explosive atmospheres - Electrical installations design, selection and erection

EN60079-10-1 / IEC60079-10-1: Explosive atmospheres - Classification of areas. Explosive gas atmospheres

EN60079-10-2 / IEC60079-10-2: Explosive atmospheres – Classification of areas. Explosive dust atmospheres

The installation of the hootronic sounder must also be in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer who has the necessary training.

5) Special Conditions of Use

Repair of the flamepath / flameproof joints is not permitted.

The enclosure is non-conducting and may generate an ignition-capable level of electrostatic charges under certain extreme conditions (such as high-pressure steam). The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions that might cause a build-up of electrostatic charges on non-conducting surfaces.

Additionally, cleaning of the equipment should be done only with a damp cloth.

6) Location and Mounting

The location of the hootronic sounder should be made with due regard to the area over which the warning signal must be visible. They should only be fixed to services that can carry the weight of the unit.

The BEx combined sounder beacon should be secured to any flat surface using at least two of the three 7mm fixing holes on the stainless steel U shaped mounting bracket. See Figure 1. The required angle can be achieved by loosening the two large bracket screws in the side of the unit, which allow adjustment of the hootronic sounder in steps of 18°. On completion of the installation then two large bracket adjustment screws on the side of the unit must be fully tightened to ensure that the unit cannot move in service.

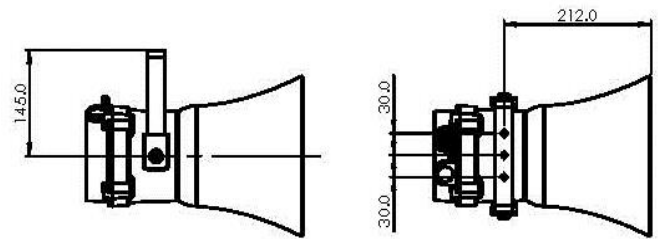


Fig. 1 Fixing Location for Hootronic sounder Flare

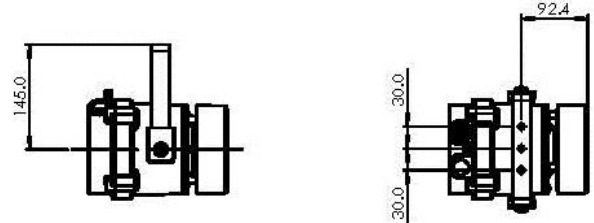


Fig. 1 Fixing Location for Hootronic sounder Radial

7) Access to the Flameproof Enclosure



Warning – High voltage may be present, risk of electric shock. DO NOT open when energised, disconnect power before opening.



Warning – Hot surfaces. External surfaces and internal components may be hot after operation, take care when handling the equipment.

To access the Ex d chamber, remove the four M6 hexagon socket head screws and withdraw the flameproof cover taking extreme care not to damage the flameproof joints in the process. M6 cover screws are Class A4-80 stainless steel and only screws of this category can be used for the enclosure.

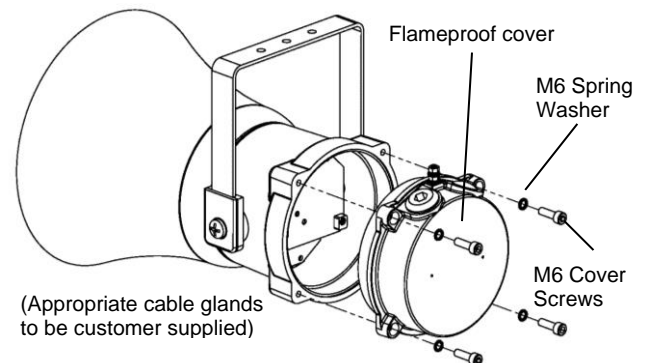


Fig. 2 Accessing the Explosion proof Enclosure.

On completion of the installation, the flameproof joints should be inspected to ensure that they are clean and that they have not been damaged during installation.

Check that the earth bonding wire between the two castings is secure and the 'O' ring seal is in place. When replacing the flameproof cover casting ensure that it is square with the flameproof chamber casting before inserting. Carefully push the cover in place allowing time for the air to be expelled. Only after the cover is fully in place should the four M6 Stainless Steel A4-80 cover bolts and their spring washer be inserted and tightened down. If the cover jams while it is being inserted, carefully remove it and try again. Never use the cover bolts to force the cover into position.

8) Power Supply Selection

It is important that a suitable power supply is used to run the equipment. The power supply selected must have the necessary capacity to provide the input current to all of the units.

The following table shows the input current taken by the various hootronic sounders and shows the maximum voltage at which the hootronic sounders can be operated:

| Model No. | Nominal I/P Voltage | Input Current | Max. I/P Volts |
|---------------|---------------------|---------------|----------------|
| BExH120DDC024 | 24Vdc | 400mA | 30V |
| BExH120DAC115 | 115Vac | 130mA | 126.5V |
| BExH120DAC230 | 230Vac | 65mA | 253V |

9) Selection of Cable, Cable Glands, Blanking Elements & Adapters

When selecting the cable size, consideration must be given to the input current that each unit draws (see table above), the number of hootronic sounders on the line and the length of the cable runs. The cable size selected must have the necessary capacity to provide the input current to all of the hootronic sounders connected to the line.

For ambient temperatures over +40°C the cable entry temperature may exceed +70°C and therefore suitable heat resisting cables and cable glands must be used, with a rated service temperature of at least 110°C

The dual cable gland entries have an M20 x 1.5 entry thread. To maintain the ingress protection rating and mode of protection, the cable entries must be fitted with suitably rated ATEX / IECEx certified cable glands and/or suitably rated ATEX / IECEx certified blanking devices during installation according to EN / IEC60079-14.

If a high IP (Ingress Protection) rating is required then a suitable sealing washer must be fitted under the cable glands or blanking plugs.

For use in explosive dust atmospheres, a minimum ingress protection rating of IP6X must be maintained.

The BEx hootronic sounder range can be supplied with the following types of adapters:

M20 to ½" NPT
M20 to ¾" NPT
M20 to M25

It is important to note that stopping plugs cannot be fitted onto adapters, only directly onto the M20 entries.

Any other adapters used must be suitably rated and ATEX / IECEx certified adapters.

10) Earthing

Both AC and DC hootronic sounder units must be connected to an earth. The units are provided with internal and external earth terminals which are both located on the terminal chamber section of the unit.

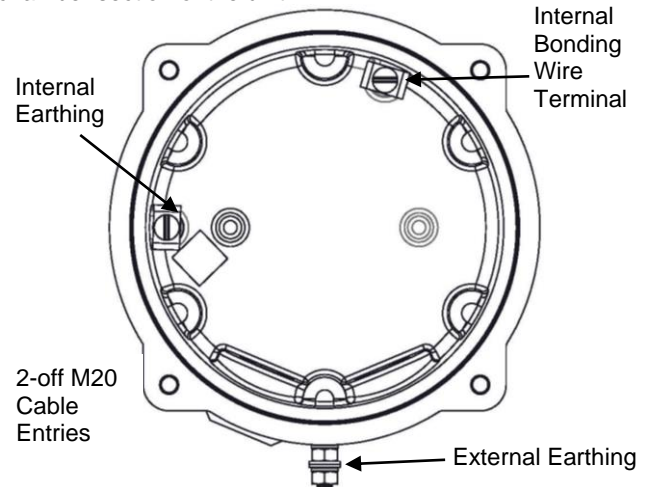


Fig. 3 Internal View of Cover

When using the internal earth terminal ensure that the stainless steel M4 flat washer is between the incoming earth wire and the enclosure.

Internal earthing connections should be made to the Internal Earth terminal in the base of the housing using a ring crimp terminal to secure the earth conductor under the earth clamp. The earth conductor should be at least equal in size and rating to the incoming power conductors.

External earthing connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm² in size.

11) Cable Connections

Electrical connections are to be made into the terminal blocks on the PCBA located in the flameproof enclosure. See section 7 of this manual for access to the flameproof enclosure.

Wires having a cross sectional area between 0.5 mm² to 2.5mm² can be connected to each terminal way. If an input and output wire is required the 2-off Live/Neutral or +/- terminals can be used. If fitting 2-off wires to one terminal way the sum of the 2-off wires must be a maximum cross sectional area of 2.5mm². Strip wires to 8mm. Wires may also be fitted using ferrules. Terminal screws need to be tightened down with a tightening torque of 0.45 Nm / 5 Lb-in. When connecting wires to the terminals great care should be taken to dress the wires so that when the cover is inserted into the chamber the wires do not exert excess pressure on the terminal blocks. This is particularly important when using cables with large cross sectional areas such as 2.5mm².

12) AC Wiring

A 2-way terminal block is provided on the AC Hootronic sounder for power. There are 1-off Live and 1-off Neutral terminals in total. A 4-way terminal is provided for linking the stop and the second and third stages. There are 1-off C/-ve, 1-off stage 2, 1-off stage 3 and 1-off stop terminals in total.

12.1 Wiring Diagrams

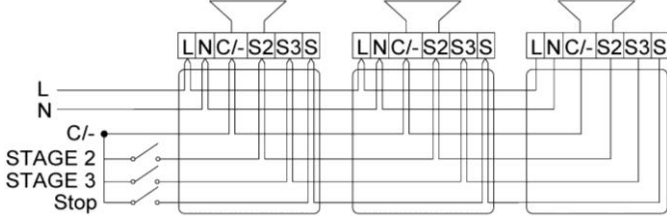
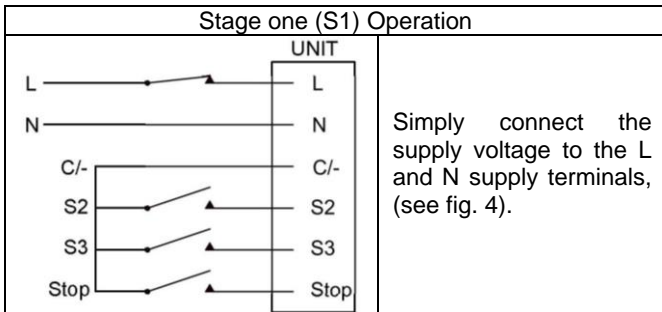


Fig. 4 BExH120 AC Simplified Block Diagram

12.2 Stage Switching

12.2.1 Units First Stage Tones



12.2.2 AC Units Second and Third Stage Tone Selection

To select the second and third stage tones on the BExH120 AC hootronic sounder.

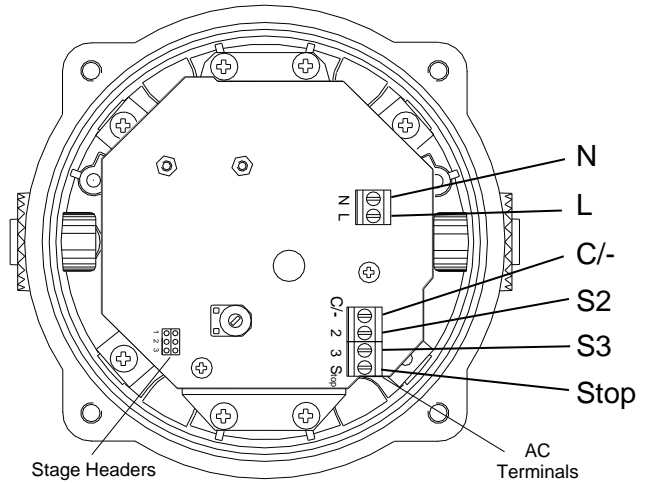
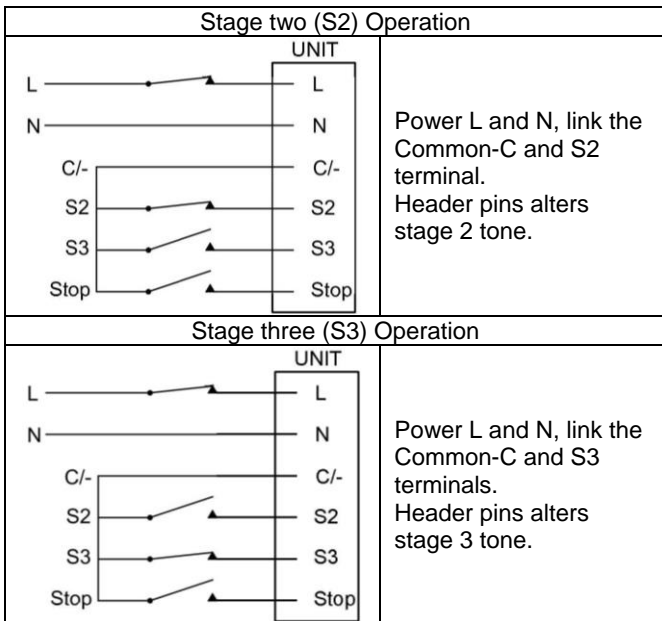
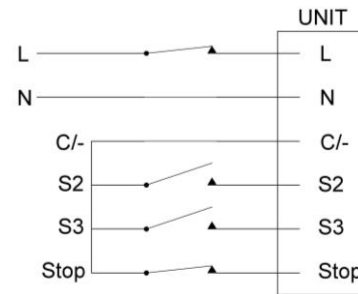


Fig. 5 AC Terminals

12.3 Stop Terminal

The user can remotely activate and deactivate the BExH120D Hootronic AC sounder by switching a connection between the "Stop" terminal to the "C/-" terminal whilst the unit is powered. To achieve the "tail off" sound at switch off the unit must remain powered.



13) DC Wiring

A 5-way terminal block is provided on the DC Hootronic sounder. There are 1-off +ve, 1-off C/-ve, 1-off stage 2, 1-off stage 3 and 1-off stop terminals in total.

13.1 Wiring Diagrams

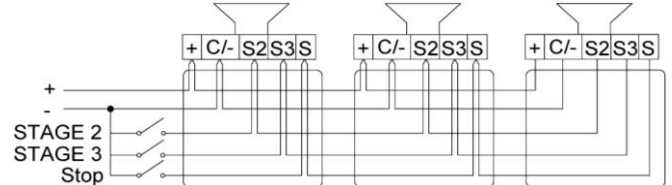


Fig. 6a DC Simplified Block Diagram (negative switching)

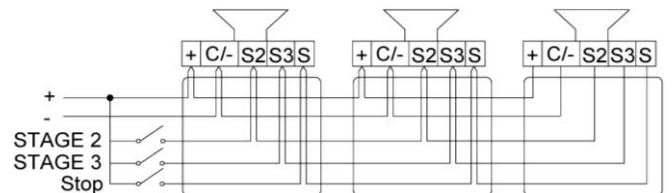
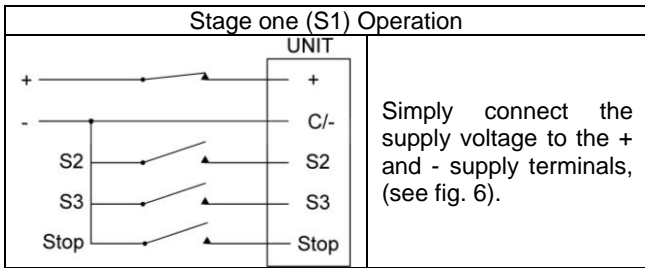


Fig. 6b DC Simplified Block Diagram (positive switching)

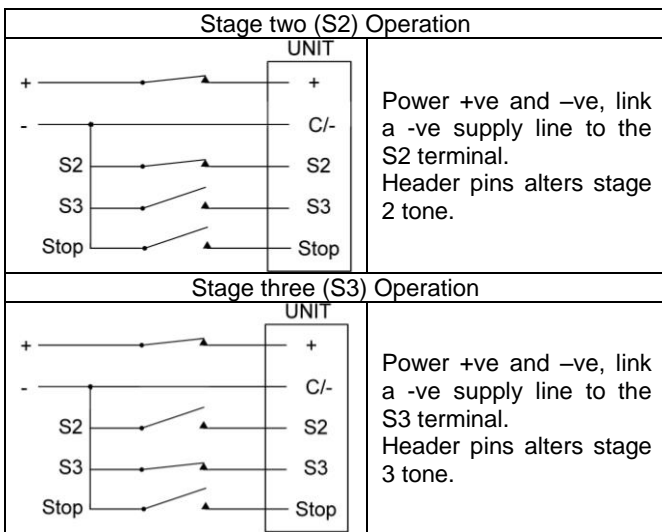
13.2 Stage Switching

13.2.1 Units First Stage Tones



13.2.2 DC Units Second and Third Stage Tone Selection

For units set up for -ve switching (default setting):



For units set up for +ve switching (refer to 13.3):

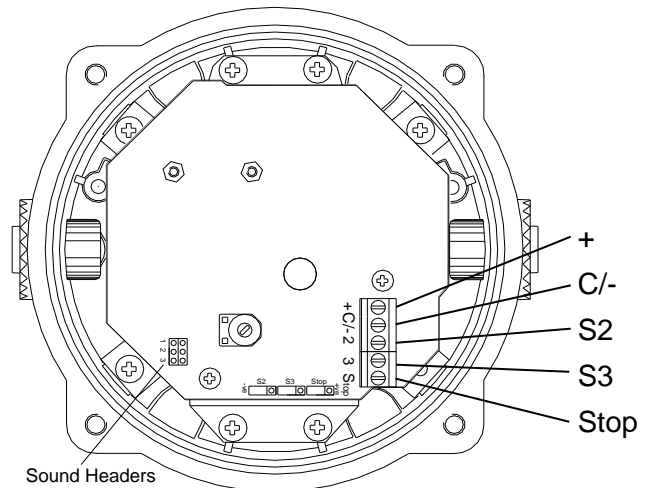
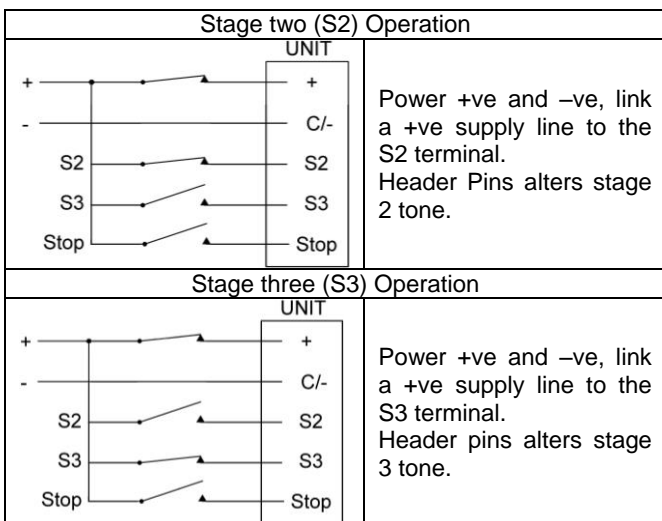


Fig. 7 DC Terminals

13.3 Stage Switching Polarity (DC Units Only)

The BExH120D DC hootronic sounders have the facility to use either +ve or -ve switching to change the tone to the second and third stages. Negative switching is the default setting. For -ve switching connect the two headers on the pcb to the left-hand (marked -ve) and centre pins. For +ve switching connect the headers to the right hand (marked +ve) and the centre pins. (Refer to Fig. 8)

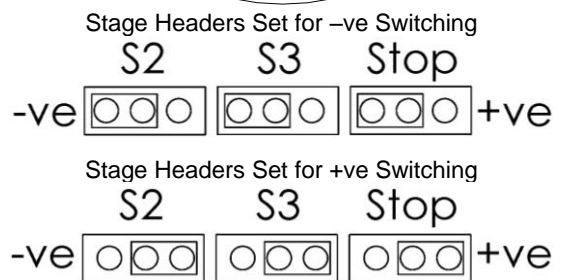
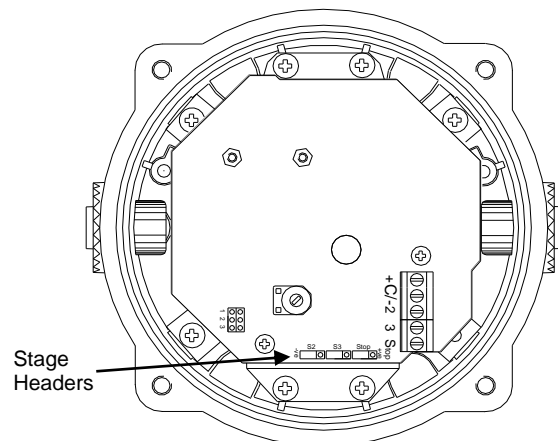
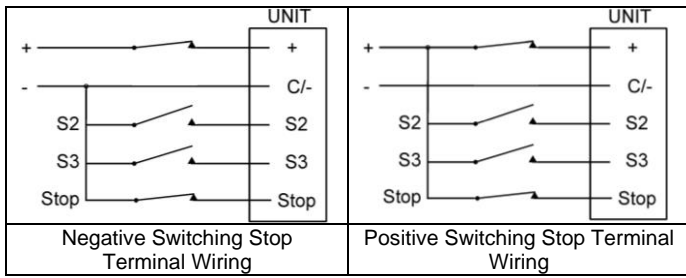


Fig. 8 Stage Switching Polarity

13.3 Stop Terminal

The user can remotely activate and deactivate the BExH120D Hootronic DC sounder by switching a connection from the "Stop" terminal to the -ve or +ve supply lines, depending on which switching mode is being used +ve or -ve (see above) whilst the unit is powered. To achieve the "tail off" sound at switch off the unit must remain powered.



13.4 Line Monitoring

On BExH120D Hootronic DC units, dc reverse line monitoring can be used if required. The DC unit has a blocking diode fitted in their supply input lines. An end of line monitoring diode or an end of line monitoring resistor can be connected across the +ve and -ve terminals. If an end of line resistor is used it must have a minimum resistance value of 3k3 ohms and a minimum wattage of 0.5 watts or a minimum resistance value of 500 ohms and a min. wattage of 2 watts.

The resistor must be connected directly across the +ve and -ve terminals as shown in the following drawing. The resistor leads should be kept as short as possible.

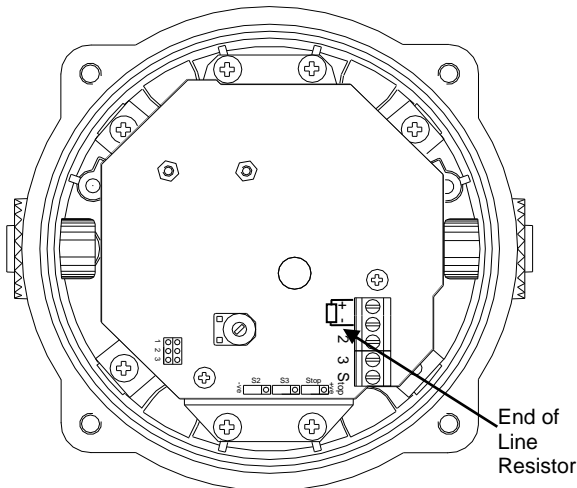


Fig. 9 End of Line Resistor Placement

14) Settings

14.1 Sound Selection

The BExH120D Hootronic sounder has 5 different traditional sounds that can be selected for the first stage alarm. The sounders can then be switched to sound second and third stage alarm sounds. The sounds are selected by pin headers on the pcb for both DC and AC units. The sound table below shows the pin header positions for the 5 sounds and which sounds are available for the second and third stages.

The BExH120D Hootronic sounder has the facility to replicate the "tail off" traditionally associated with these sounds when generated by electro-mechanical devices. The switching is achieved using the "Stop" terminal (see section 12 & 13).

See figure 5 for header location on AC units and Figure 7 for header location on DC units.

Sound Selection Table

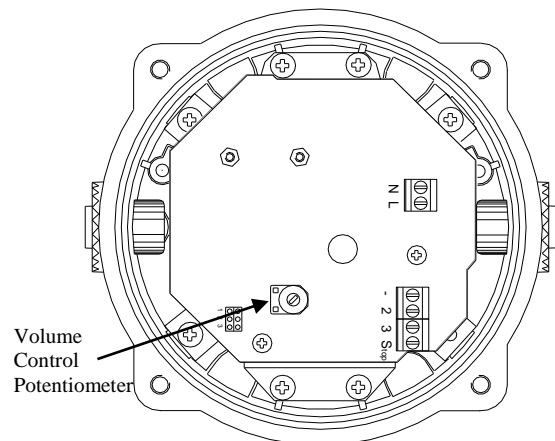
| Stage 1 | Description | Stage 2 | Stage 3 | Header |
|---------|-----------------------------------|---------|---------|--------|
| Sound 1 | Industrial Hooter | Sound 3 | Sound 5 | |
| Sound 2 | High Frequency Mechanical Siren | Sound 1 | Sound 5 | |
| Sound 3 | Medium Frequency Mechanical Siren | Sound 1 | Sound 5 | |
| Sound 4 | Electro Mechanical Buzzer | Sound 2 | Sound 5 | |
| Sound 5 | Mechanical Bell | Sound 1 | Sound 2 | |

14.2 Volume Control

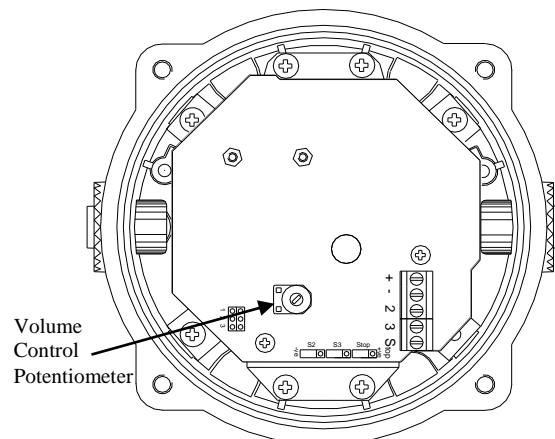


Warning - High noise levels above 85dB(A) during operation. High levels of noise may cause hearing loss, wear suitable ear protection when equipment is in operation.

The output level of the BEx hootronic sounder can be set by adjusting the volume control potentiometer (see Fig 10). For maximum output, set the potentiometer fully clockwise.



BExH120D AC



BExH120D DC

Fig. 10 Location of Volume Control Potentiometer

15) Maintenance, Overhaul & Repair

Maintenance, repair and overhaul of the equipment should only be carried out by suitably qualified personnel in accordance with the current relevant standards:

EN60079-19 Explosive atmospheres - Equipment repair,
IEC60079-19 overhaul and reclamation
EN 60079-17 Explosive atmospheres - Electrical
IEC60079-17 installations inspection and maintenance

To avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

Units must not be opened while an explosive atmosphere is present.

If opening the unit during maintenance operations a clean environment must be maintained and any dust layer removed prior to opening the unit.

Flameproof threaded joints and cemented joints are not intended to be repaired.