

# INSTRUCTION MANUAL (ATEX / IECEx)

## BExDS120D and BExDS110D

### Flameproof Sounders

#### For use in Flammable Gas and Dust Atmospheres

### 1) Introduction

The BExDS120D and BExDS110D are flameproof sounders which are certified to meet the requirements of the ATEX directive 94/9/EC and the IECEx scheme. The sounders produce loud warning signals and can be used in hazardous areas where potentially flammable gas and dust atmospheres may be present. Thirty-two different first stage alarm sounds can be selected by internal switches, and each one can be externally changed to a second or third stage alarm sound (see *tone table on Page 4*). The BExDS120D unit produces output levels in the 117dB(A) range and the BExDS110D unit produces output levels in the 110dB(A) range. Both sounders can be used in Zone 1 and Zone 2 areas with gases in groups IIA, IIB and IIC and temperature Classifications of T1, T2, T3 and T4. For ambient temperatures over +55°C the gas groups are limited to IIA and IIB. They can also be used in Zone 21 and Zone 22 areas for combustible dusts and have an IP rating of IP 67 and a surface temperature rating of T100°C up to +55°C and T115°C over +55°C.

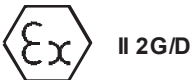
### 2) Marking

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

Input Voltage: DC Units 12V or 24V or 48V  
AC Units 230V or 110V or 115V

Codes: Ex d IIC T4 for Ta -50°C to +55°C  
Ex d IIB T4 for Ta -50°C to +70°C  
Ex tD A21 IP67 T115°C based on max Ta of +70°C

Certificate No's KEMA 99ATEX6312  
IECEX KEM 10.0003

Epsilon x:  II 2G/D  
Equipment Group and Category:

CE Marking:  0518  
Notified Body No.

**“Warnings”** DO NOT OPEN WHEN AN EXPLOSIVE GAS OR DUST ATMOSPHERE IS PRESENT

COVER BOLTS CLASS A4-80

USE HEAT RESISTING CABLES AND CABLE GLANDS (Rated 110°C) AT AMB. TEMPERATURES OVER 40°C

Year of Construction / Serial No. i.e. 10 / 1DS22000001

### 3) Type Approval Standards

The sounders have EC Type Examination and IECEx certificates issued by KEMA and have been approved to the following standards:-

EN60079-0:2006	IEC60079-0:2004 (Ed4)	General Requirements
EN60079-1:2007	IEC60079-1:2007 (Ed6)	Flameproof Enclosure 'd'
EN61241-0:2006	IEC61241-0:2004 (Ed1)	Dust General Requirements
EN61241-1:2004	IEC60079-1:2004 (Ed1)	Dust Enclosures tD

### 4) Installation Requirements

The sounders must be installed in accordance with the latest issues of the relevant parts of the EN60079 standards or the equivalent IEC standards – Selection, Installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or explosive processing and manufacture):-

EN60079-14:2008	Electrical Installations in Hazardous Areas (other than mines)
IEC60079-14:2007 (Ed4)	
EN60079-10:2003	Classification of Hazardous Areas
IEC60079-10:2008 (Ed1)	

The installation of the units 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) Zones, Gas Group, Category, IP Rating and Temperature Classification

The BExDS120D and BExDS110D sounders have been certified Ex de IIC T4 for Ta -50°C to +55°C and Ex de IIB T4 for Ta -50°C to +70°C for gas and Ex tD A21 IP67 T115°C based on max. Ta of +70°C for dust. This means that 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 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 (Up to +55°C only)	Hydrogen and Acetylene

#### Temperature Classification:

T1	400°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, and if it does, it will only exist for a short time.

**IP Rating:** IP67      T100°C Ta ≤ +55°C  
 T115°C Ta ≤ +70°C

**Equipment Category:** 2G/D

## Ambient Temperature Range:

-50°C to +55°C Gas Groups IIA, IIB and IIC  
 -50°C to +70°C Gas Group IIA and IIB

## 6) Sounder Location and Mounting

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

The sounder should be securely bolted to a suitable surface using the 7mm diameter boltholes in the stainless steel U shaped mounting bracket (see figure 1). The angle can then be adjusted in the direction that the sound is primarily required to cover. This can be achieved by loosening the two large bracket screws in the side of the unit, which allow adjustment in steps of 18°. On completion of the installation the two large bracket adjustment screws on the side of the unit must be fully tightened to ensure that the unit cannot move in service.

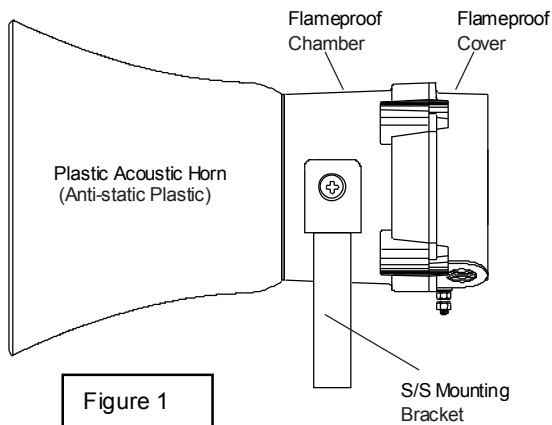


Figure 1

## 7) Access to the Flameproof Enclosure

In order to connect the electrical supply cables to the sounder it is necessary to remove the flameproof cover to gain access to the flameproof chamber. To achieve this remove the four M6 hexagon socket head screws (see figure 2) and withdraw the flameproof cover taking extreme care not to damage the flameproof joints in the process.

Note the four **M6 screws are Class A4-80 stainless steel and only screws of this category can be used on these sounders.** It is therefore important that these screws and their spring washers are kept in a safe place during installation.

On completion of the cable wiring installation the flameproof joints should be inspected to ensure that they are clean and that they have not been damaged during installation. Also check that the earth bonding wire between the two casting sections is secure and the 'O' ring seal is in place.

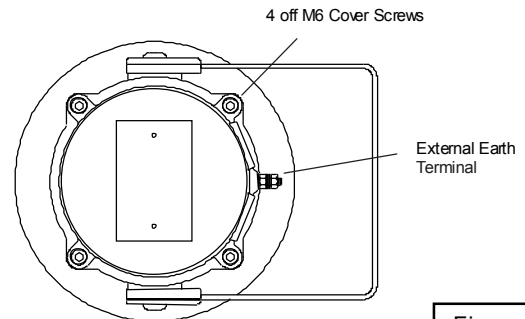


Figure 2

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 sounders. The power supply selected must have the necessary capacity to provide the input current to all of the sounders connected to the system.

The following table shows the input current taken by the various sounder units:-

Unit Type	Input Voltage	Input Current	Max. I/P Volts
BExDS120D	24V DC	800mA	30V
BExDS120D	12V DC	850mA	15V
BExDS120D	48V DC	420mA	58V
BExDS120D	230V AC	90mA	264V
BExDS120D	110V AC	200mA	121V
BExDS120D	115V AC	180mA	126V
BExDS110D	24V DC	265mA	30V
BExDS110D	12V DC	195mA	15V
BExDS110D	48V DC	130mA	58V
BExDS110D	230V AC	56mA	264V
BExDS110D	110V AC	93mA	121V
BExDS110D	115V AC	110mA	126V

The input current will vary according to the voltage input level and the frequency of the tone selected. The current levels shown above are for the 440Hz Continuous tone @ nominal input voltage. The 24V and 48V DC units and the 230V AC, 115V AC and 110V AC units have a switching voltage regulator circuit and therefore the input current level will decrease slightly as the input voltage is increased and will increase slightly as the input voltage is reduced. The 12V units do not have a voltage regulator and therefore their input current will increase when the input voltage is increased.

The above table also shows the maximum voltages at which the sounders can be operated.

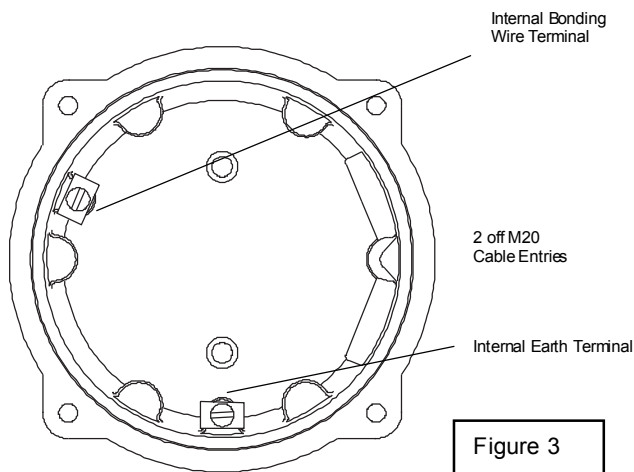
## 9) Cable Selection

When selecting the cable size consideration must be given to the input current that each unit draws (see table above), the number of 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 sounders connected to the line.

**SAFETY WARNING:** If the high output BExDS120D sounders 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 cables must be used, with a rated service temperature of at least 110°C.

## 10) Earthing

Both AC and DC sounder units must be connected to a good quality earth. The units are provided with internal and external earthing terminals which are both located on the terminal chamber section of the unit (see figures 2 and 3).



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

When using the external earth terminal a cable crimp lug must be used. The cable lug should be located between the two M5 stainless steel flat washers. The M5 stainless steel spring washer must be fixed between the outer flat washer and the M5 stainless steel nut to ensure that the cable lug is secured against loosening and twisting.

The internal earth bonding wire ensures that a good quality earth is maintained between the flameproof chamber casting and the flameproof cover casting.

## 11) Cable Glands

The BExDS120D and BExDS110D sounders have dual cable gland entries which have an M20 x 1.5 entry thread as standard. Only cable glands approved for Ex 'd' applications can be used, which must be suitable for the type of cable being

used and also meet the requirements of the Ex 'd' flameproof installation standard EN60079-14:2008 / IEC60079-14:2007.

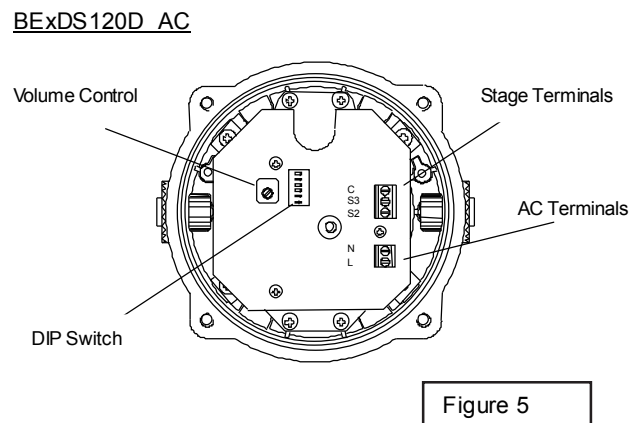
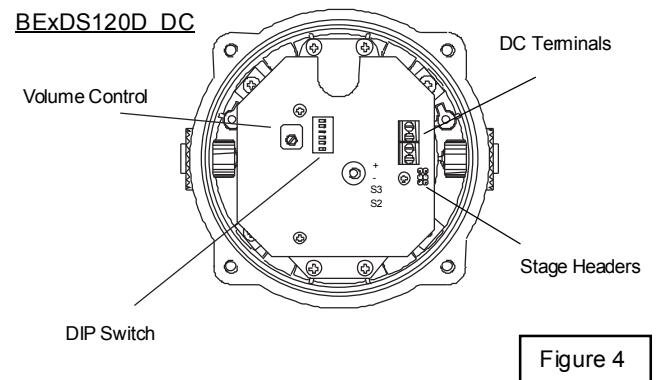
When only one cable entry is used the other one must be closed with an Ex 'd' flameproof blanking plug, which must be suitably approved for the installation requirements.

For combustible dust applications, the cable entry device and blanking elements shall be in type of explosion protection increased safety "e" or flameproof enclosure "d" and shall have an IP 6X rating according to EN60529:1992.

**SAFETY WARNING:** If the high output BExDS120D sounders 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 110°C.

## 12) Cable Connections

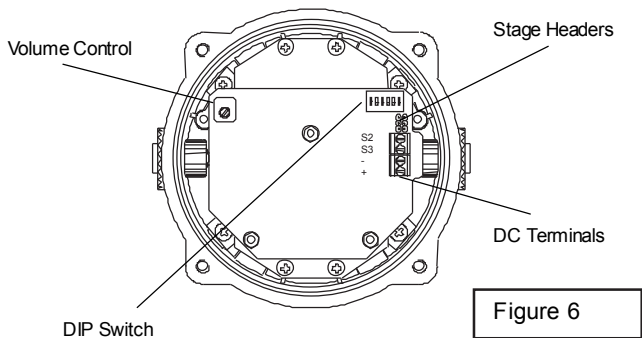
The cable connections are made into the terminal blocks on the electronic pcb assembly located in the flameproof enclosure. See section 7 of this manual for access to the flameproof enclosure. On the AC units a two-way terminal block is provided for the live and neutral mains supply wires and a three way terminal block is provided for linking the second and third stages, (see figures 5 and 7). On the DC units a four way terminal block is provided for +ve and -ve supply input and second and third stage modes of operation, (see figures 4 and 6).



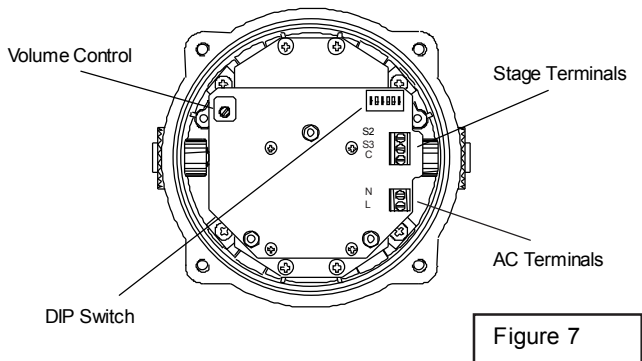
A single wire with a cross sectional area of up to 4mm<sup>2</sup> can be connected to each terminal way or if an input and output wire is required two 2.5mm<sup>2</sup> wires can be connected to each terminal way. When connecting wires to the terminals great

care should be taken to dress the wire 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 2.5mm<sup>2</sup> and above.

### BExDS110D DC Sounder



### BExDS110D AC



### 13) Tone Selection and 2nd and 3rd Stage Alarms

The BExDS120D and BExDS110D sounders have 32 different tones that can be selected for the first stage alarm. The sounders can then be switched to sound second and third stage alarm tones. The tones are selected by operation of a DIP switch on the pcb for both DC and AC units. The tone table on page four shows the switch positions for the 32 tones and which tones are available for the second and third stages. To operate the sounder on stage one simply connect the supply voltage to the normal supply terminals (+ve and -ve for DC units, L and N for AC units).

The operation of the second and third stages is different for DC and AC units.

#### DC Units Second and Third Stage Tone Selection

The BExDS120D and BExDS110D DC sounders have the facility to use either +ve or -ve switching to change the tone to the second and third stages. 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. To change to the second stage tone, connect either a -ve or +ve supply line to terminal S2, depending on which switching mode is being used while maintaining the dc supply to the +ve and -ve terminals. Similarly for the third stage tone, connect a -ve or +ve supply line to terminal S3. The supply to the S3 terminal will automatically override a supply to the S2 terminal.

#### AC Units Second and Third Stage Tone Selection

To select the second and third stage tones on the BExDS120D and BExDS110D AC sounders the Common (C) terminal on the three way terminal block on the pcb is connected to the S2 terminal for the second stage tone and the S3 terminal for the third stage tone.

### 14) Volume Control

All BExDS120D and BExDS110D sounders, with the exception of 12V DC units, have a volume control to adjust the output level. To set the required output level, adjust the potentiometer on the pcb. For maximum output level the potentiometer should be set to the fully clockwise position.

### 15) End of Line Monitoring (DC Units)

On BExDS120D and BExDS110D DC units, dc reverse line monitoring can be used if required. All DC sounders have 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.

#### TABLE TONE SELECTION TABLE *Note Switch No. 6 is not used*

Tone Selection		DIP Switch Settings					Stage Selection	
Stage 1	Frequency Description	1	2	3	4	5	Stage 2	Stage 3
1	Continuous 1000Hz <i>Toxic gas alarm</i>	0	0	0	0	0	Tone 31	Tone 11
2	Alternating 800/1000Hz at 0.25s intervals	1	0	0	0	0	Tone 17	Tone 5
3	Slow Whoop 500/1200Hz at 0.3Hz with 0.5s gap repeated	0	1	0	0	0	Tone 2	Tone 5
4	Sweeping 800/1000 at 1Hz	1	1	0	0	0	Tone 6	Tone 5
5	Continuous at 2400Hz	0	0	1	0	0	Tone 3	Tone 27
6	Sweeping 2400/2900Hz at 7Hz	1	0	1	0	0	Tone 7	Tone 5
7	Sweeping 2400/2900Hz at 1Hz	0	1	1	0	0	Tone 10	Tone 5
8	Siren 500/1200/500Hz at 0.3Hz	1	1	1	0	0	Tone 2	Tone 5
9	Sawtooth 1200/500Hz at 1Hz	0	0	0	1	0	Tone 15	Tone 2
10	Alternating 2400/2900Hz at 2Hz	1	0	0	1	0	Tone 7	Tone 5
11	Intermittent 1000Hz at 0.5Hz <i>General alarm</i>	0	1	0	1	0	Tone 31	Tone 1
12	Alternating 800/1000Hz at 0.875Hz	1	1	0	1	0	Tone 4	Tone 5
13	Intermittent 2400Hz at 1Hz	0	0	1	1	0	Tone 15	Tone 5
14	Intermittent 800Hz 0.25s on 1s off	1	0	1	1	0	Tone 4	Tone 5
15	Continuous at 800Hz	0	1	1	1	0	Tone 2	Tone 5
16	Intermittent 660Hz 150ms on, 150ms off	1	1	1	1	0	Tone 18	Tone 5
17	Alternating 544Hz (100ms)/440Hz(400ms)	0	0	0	0	1	Tone 2	Tone 27
18	Intermittent 660Hz 1.8s on, 1.8s off	1	0	0	0	1	Tone 2	Tone 5
19	1400Hz to 1600Hz sweep up over 1s - 1600Hz to 1400Hz sweep down over 0.5s	0	1	0	0	1	Tone 2	Tone 5
20	Continuous 660Hz	1	1	0	0	1	Tone 2	Tone 5
21	Alternating 554/440Hz at 1Hz	0	0	1	0	1	Tone 2	Tone 5
22	Intermittent 554Hz at 0.875Hz	1	0	1	0	1	Tone 2	Tone 5
23	800Hz pulsing at 2Hz	0	1	1	0	1	Tone 6	Tone 5
24	Sweeping 800/1000Hz at 50Hz	1	1	1	0	1	Tone 29	Tone 5
25	Sweeping 2400/2900Hz at 50Hz	0	0	0	1	1	Tone 29	Tone 5
26	Simulated bell sound	1	0	0	1	1	Tone 2	Tone 1
27	Continuous 554Hz	0	1	0	1	1	Tone 26	Tone 5
28	Continuous 440Hz	1	1	0	1	1	Tone 2	Tone 5
29	Sweeping 800/1000Hz at 7Hz	0	0	1	1	1	Tone 7	Tone 5
30	420Hz repeating 0.625s on, 0.625s off <i>Australian alert signal</i>	1	0	1	1	1	Tone 32	Tone 5
31	1200/500Hz at 1Hz <i>Prepare to abandon platform</i>	0	1	1	1	1	Tone 11	Tone 1
32	Sweeping 500/1200Hz 3.75s on, 0.25s off 15Hz	1	1	1	1	1	Tone 26	Tone 1

## 2) Marking

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

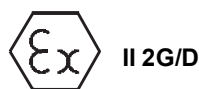
Unit Type No. BExDS120D or BExDS110D

Input Voltage: DC Units 12V or 24V or 48V  
AC Units 230V or 110V or 115V

Codes: Ex d IIC T4 for Ta -50°C to +55°C  
Ex d IIB T4 for Ta -50°C to +70°C  
Ex tD A21 IP67 T1 15°C based on max Ta of +70°C

Certificate No's KEMA 99ATEX6312  
IECEX KEM 10.0003

Epsilon x:  
Equipment Group and  
Category:



CE Marking:  
Notified Body No.



**“Warnings”** DO NOT OPEN WHEN AN EXPLOSIVE  
GAS OR DUST ATMOSPHERE IS PRESENT

COVER BOLTS CLASS A4-80

USE HEAT RESISTING CABLES AND CABLE GLANDS  
(Rated 110°C) AT AMB. TEMPERATURES OVER 40°C

## 4) Installation Requirements

Sounders must be installed in accordance with the following or equivalent standards.

EN60079-14:2008 Electrical Installations in Hazardous  
IEC60079-14:2007 (Ed4) Areas (other than mines)  
EN60079-10:2003 Classification of Hazardous Areas  
IEC60079-10:2008 (Ed1)

Installation should only be carried by competent personnel and any local codes of practice applied.

## 5) Zones, Gas Group, Category and Temperature Classification

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 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 < +55°C	Hydrogen and Acetylene

### Temperature Classification:

T1	400°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, and if it does, it will only exist for a short time.

**IP Rating:** IP67 T100°C Ta ≤ +55°C  
T115°C Ta ≤ +70°C

**Equipment Category:** 2G/D

### Ambient Temperature Range:

-50°C to +55°C Gas Groups IIA, IIB and IIC  
-50°C to +70°C Gas Group IIA and IIB

## 6) Sounder Location and Mounting

See drawing A

## 7) Access to the Flameproof Enclosure

See drawing B

Note the four **M6 screws** are **Class A4-80 stainless steel** and **only screws of this category can be used on these sounders**. It is therefore important that these screws and their spring washers are kept in a safe place during installation.

## 8) Power Supply Selection

The system power supply must have the necessary capacity to provide the input current to all of the sounders connected to the system.

The following table shows the input current taken by the various sounder units:-

Unit Type	Input Voltage	Input Current	Max. I/P Volts
BExDS120D	24V DC	800mA	30V
BExDS120D	12V DC	850mA	15V
BExDS120D	48V DC	420mA	58V
BExDS120D	230V AC	90mA	264V

BExDS120D	110V AC	200mA	121V
BExDS120D	115V AC	180mA	126V
BExDS110D	24V DC	265mA	30V
BExDS110D	12V DC	195mA	15V
BExDS110D	48V DC	130mA	58V
BExDS110D	230V AC	56mA	264V
BExDS110D	110V AC	93mA	121V
BExDS110D	115V AC	110mA	126V

The above table also shows the maximum voltages at which the sounders can be operated.

### 9) Cable Selection

Cables must be capable of handling the current drawn from all of the units on the line.

**SAFETY WARNING:** If the high output BExDS120D sounders 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 cables must be used, with a rated service temperature of at least 110°C.

### 10) Earthing

Both AC and DC sounder units must be connected to a good quality earth. The units are provided with internal and external-earthing terminals, which are, both located on the terminal chamber section of the unit (see figures 2 and 3).

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

When using the external earth terminal a cable crimp lug must be used. The cable lug should be located between the two M5 stainless steel flat washers. The M5 stainless steel spring washer must be fixed between the outer flat washer and the M5 stainless steel nut to ensure that the cable lug is secured against loosening and twisting.

### 11) Cable Glands

The BExDS120D and BExDS110D sounders have dual cable gland entries with M20 x1.5 entry threads. Only cable glands approved for Ex 'd' applications can be used, which must be suitable for the type of cable being used and also meet the requirements of the Ex 'd' flameproof installation standard EN60079-14:2008 / IEC60079-14:2007.

When only one cable entry is used the other one must be closed with an Ex 'd' flameproof blanking plug, which must be suitably approved for the installation requirements.

For combustible dust applications, the cable entry device and blanking elements shall be in type of explosion protection increased safety "e" or flameproof enclosure "d" and shall have an IP 6X rating according to EN60529:1992.

**SAFETY WARNING:** If the high output BExDS120D sounders 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 110°C.

### 12) Cable Connections

See drawing C and D

### 13) Tone Selection and 2nd and 3rd Stage Alarms

See wiring diagram E

### 14) Volume Control

See drawing F

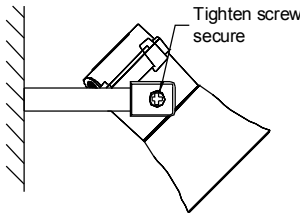
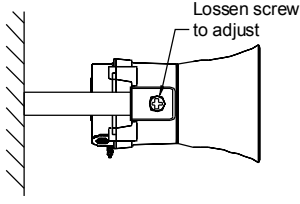
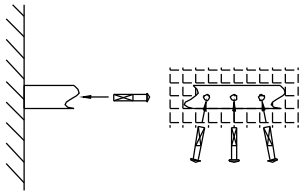
### 15) End of Line Monitoring (DC Units)

On BExDS120D and BExDS110D DC units, dc reverse line monitoring can be used if required. All DC sounders have 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.

### STONE SELECTION TABLE

Tone Selection		DIP Switch Settings	Stage Selection	
Stage 1	Frequency Description	1 2 3 4 5	Stage 2	Stage 3
1	Continuous 1000Hz <i>Toxic Gas Alarm</i>	0 0 0 0 0	Tone 31	Tone 11
2	Alternating 800/1000Hz at 0.25s intervals	1 0 0 0 0	Tone 17	Tone 5
3	Slow Whoop 500/1200Hz at 0.3Hz with 0.5s gap repeated	0 1 0 0 0	Tone 2	Tone 5
4	Sweeping 800/1000 at 1Hz	1 1 0 0 0	Tone 6	Tone 5
5	Continuous at 2400Hz	0 0 1 0 0	Tone 3	Tone 27
6	Sweeping 2400/2900Hz at 7Hz	1 0 1 0 0	Tone 7	Tone 5
7	Sweeping 2400/2900Hz at 1Hz	0 1 1 0 0	Tone 10	Tone 5
8	Siren 500/1200/500Hz at 0.3Hz	1 1 1 0 0	Tone 2	Tone 5
9	Sawtooth 1200/500Hz at 1Hz	0 0 0 1 0	Tone 15	Tone 2
10	Alternating 2400/2900Hz at 2Hz	1 0 0 1 0	Tone 7	Tone 5
11	Intermittent 1000Hz at 0.5Hz <i>General alarm</i>	0 1 0 1 0	Tone 31	Tone 1
12	Alternating 800/1000Hz at 0.875Hz	1 1 0 1 0	Tone 4	Tone 5
13	Intermittent 2400Hz at 1Hz	0 0 1 1 0	Tone 15	Tone 5
14	Intermittent 800Hz 0.25s on 1s off	1 0 1 1 0	Tone 4	Tone 5
15	Continuous at 800Hz	0 1 1 1 0	Tone 2	Tone 5
16	Intermittent 660Hz 150mS on, 150mS off	1 1 1 1 0	Tone 18	Tone 5
17	Alternating 544Hz (100mS)/440Hz(400mS)	0 0 0 0 1	Tone 2	Tone 27
18	Intermittent 660Hz 1.8s on, 1.8s off	1 0 0 0 1	Tone 2	Tone 5
19	1400Hz to 1600Hz sweep up over 1s - 1600Hz to 1400Hz sweep down over 0.5s	0 1 0 0 1	Tone 2	Tone 5
20	Continuous 660Hz	1 1 0 0 1	Tone 2	Tone 5
21	Alternating 554/440Hz at 1Hz	0 0 1 0 1	Tone 2	Tone 5
22	Intermittent 554Hz at 0.875Hz	1 0 1 0 1	Tone 2	Tone 5
23	800Hz pulsing at 2Hz	0 1 1 0 1	Tone 6	Tone 5
24	Sweeping 800/1000Hz at 50Hz	1 1 1 0 1	Tone 29	Tone 5
25	Sweeping 2400/2900Hz at 50Hz	0 0 0 1 1	Tone 29	Tone 5
26	Simulated bell sound	1 0 0 1 1	Tone 2	Tone 1
27	Continuous 554Hz	0 1 0 1 1	Tone 26	Tone 5
28	Continuous 440Hz	1 1 0 1 1	Tone 2	Tone 5
29	Sweeping 800/1000Hz at 7Hz	0 0 1 1 1	Tone 7	Tone 5
30	420Hz repeating 0.625s on, 0.625s off <i>Australian alert signal</i>	1 0 1 1 1	Tone 32	Tone 5
31	1200/500Hz at 1Hz <i>Prepare to Abandon Platform</i>	0 1 1 1 1	Tone 11	Tone 1
32	Sweeping 500/1200Hz 3.75s on, 0.25s off 15Hz	1 1 1 1 1	Tone 26	Tone 1

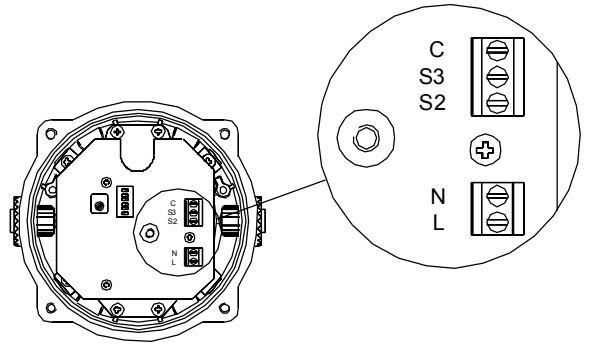
## Drawing A



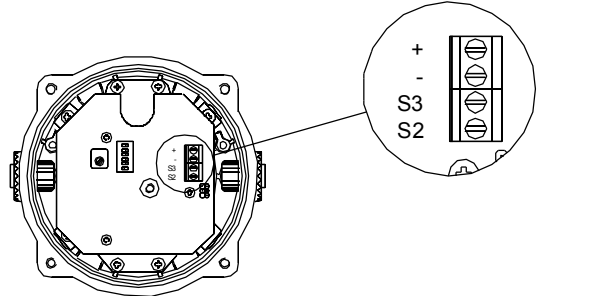
Loosen screw to adjust.  
 Løsn skruen for at tilpasse.  
 Schroef losdraaien om af te stellen.  
 Desserrer la vis pour régler.  
 Zum Regulieren Schraube lockern.  
 Allentare la vite per poter effettuare la regolazione.  
 Løsne skruen for å justere.  
 Desaperte o parafuso para ajustar.  
 Afloje el tornillo para ajustar.  
 Lossa skruven för att justera.

Tighten screw to secure.  
 Spænd skruen for at fastgøre.  
 Schroef aandraaien om vast te zetten.  
 Serrer la vis pour une fixation sûre.  
 Zum Sichern Schraube anziehen.  
 Stringere la vite per il fissaggio.  
 Stram skruen for å feste.  
 Aperte o parafuso para fixar.  
 Apriete el tornillo para asegurar.  
 Dra åt skruven för att fästa.

## Drawing C

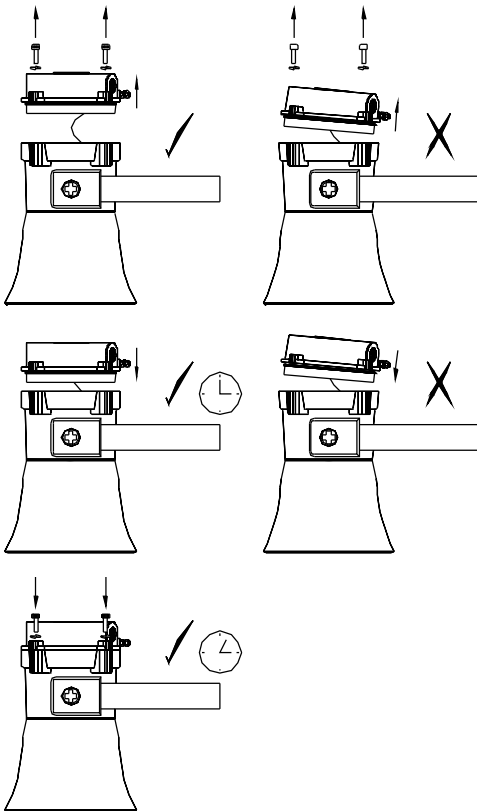


BExS120D AC

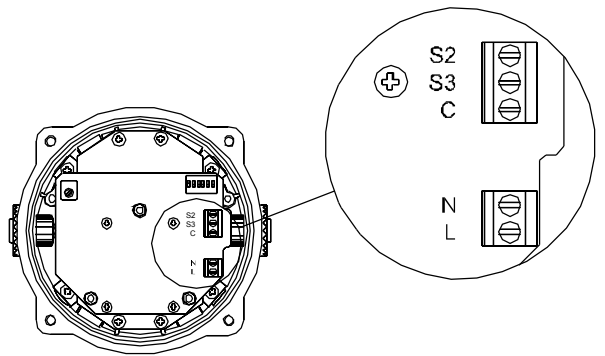


BExS120D DC

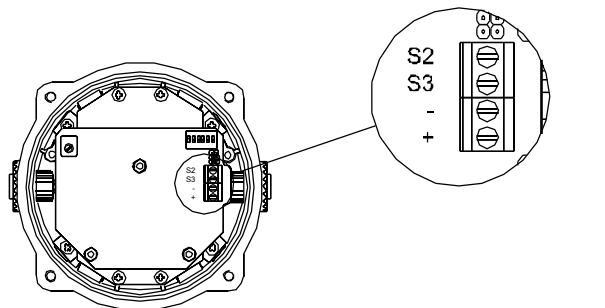
## Drawing B



## Drawing D



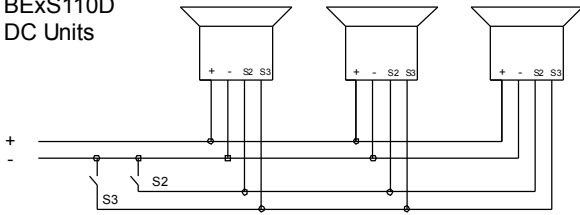
BExS110D AC



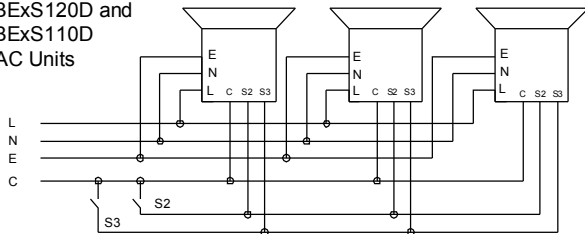
BExS110D DC

### Wiring Diagram E

BExS120D and  
BExS110D  
DC Units



BExS120D and  
BExS110D  
AC Units



### Drawing F

