

BExS110 / BExDS110 Alarm Sounders

The flameproof BExS110 alarm sounders are suitable for Zone 1 & Zone 2 applications and the BExDS110 sounders also for Zone 21 & 22.

Sound level outputs are up to 117dB(A) at 1 metre with a choice of 32 alarm tones and 3 remotely selectable stages. The BEx range features enclosures manufactured from corrosion proof, marine grade copper free LM6 aluminium which is phosphated and powder coated.

The re-entrant flare horns are high impact, fire retardant ABS. All models have two M20 cable entries, large termination areas containing in & out terminals (Ex de version only) and an ingress protection of IP66/67 (Ex d) and IP66 (Ex de).

For fire applications the BExS110D 24V dc siren is CPD EN89/106/EEC compliant (EN54-3 tested).

Approvals:

- ATEX certificate: KEMA 99ATEX6312,
EN 60079-0 : 2006, EN 60079-1 : 2007,
EN 60079-7 : 2003, EN 61241-0 : 2006,
EN 61241-1 : 2004
- IECEx certificate: IECEx KEM 10.0003,
IEC 60079-0 : 2004 (Ed4), IEC 60079-1 : 2007 (Ed6),
IEC 60079-7 : 2001 (Ed3), IEC 61241-0 : 2004 (Ed1),
IEC 61241-1 : 2004 (Ed1)
- GOST-R certificate: POCC GB.JB05.B02205
- VdS certificate: G206011
- CPD certificate: 0786-CPD-20225
- Safety-integrity suitability: SIL1
- Inmetro certificate: 10-IEEx-0009
- Marine Equipment Directive (MED)
Certificate: 19 702 - 11 HH

Features:

- Automatic synchronisation on multi-sounder system.
- Very large termination area.
- Ratchet adjustable stainless steel 'U' bracket.
- IN & OUT terminals (Ex de version only).
- 'Programmable' version available:
 - 45 alarm tones
 - 4 remotely selectable stages
 - Any tone can be assigned to any stage
 - User configurable continuous frequency tone



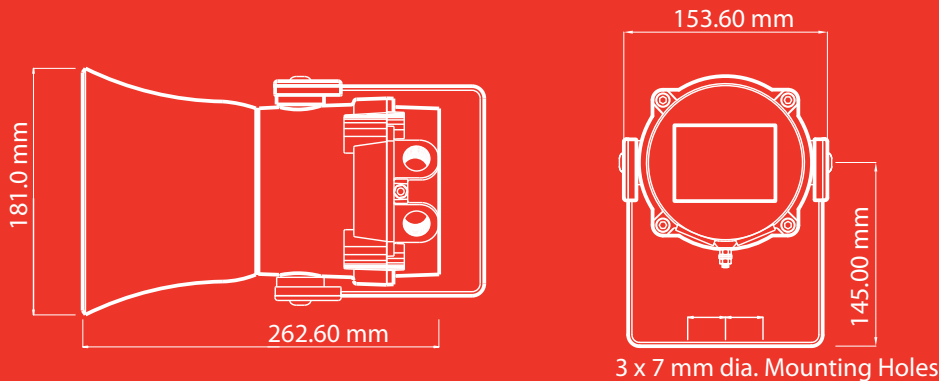
COMSEC PROTECTION SYSTEMS LTD.

UNIT 26, STADIUM BUSINESS PARK, • BALLYCOOLIN ROAD, • DUBLIN 11, • IRELAND

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BExS110D & BExDS110D version

**Part codes:**

Part Code:	Classification:
BExS110D**	ATEX / IECEx: II 2G Ex d IIB T4 Ta. -50° to +70°C II 2G Ex d IIC T4 Ta. -50° to +55°C GOST-R: 1ExdIICT4 Ta. -50° to +55°C
BExS110E**	ATEX / IECEx: II 2G Ex de IIB T4 Ta. -50° to +70°C II 2G Ex de IIC T4 Ta. -50° to +55°C GOST-R: 2ExdellCT4 Ta. -50° to +55°C
BExDS110D**	ATEX / IECEx: II 2G Ex d IIB T4 Ta. -50° to +70°C II 2G Ex d IIC T4 Ta. -50° to +55°C II 2D Ex tD A21 IP67 T115 based on a max. Ta. of 70°C GOST-R: 1ExdIICT4 Ta. -50° to +55°C T100°C DIP A21 Ta T4
BExDS110E**	ATEX / IECEx: II 2G Ex de IIB T4 Ta. -50° to +70°C II 2G Ex de IIC T4 Ta. -50° to +55°C II 2D Ex tD A21 IP66 T115 based on a max. Ta. of 70°C GOST-R: 2ExdellCT4 Ta. -50° to +55°C DIP A21 Ta T4

** = Voltage reference:

Options: 12DC, 24DC, 48DC, 115AC, 230AC

Add 'P' to part number for Programmable version

Add 'M' to part number for MED approved version (24V dc only)

Specification:

Maximum output:	117dB(A) @ 1 metre
Nominal output:	110dB(A) @ 1m +/- 3dB - Tone 2
No. of tones:	32 (UKOOA / PFEER compliant)
No. of stages:	3
Volume control:	Max. 110dB(A); Min. 72dB(A) - Tone 2
Effective range:	100m @ 1KHz
Voltages DC:	12vdc; 24vdc; 48vdc
Voltages AC:	115vac; 230vac
Stage switching:	Negative or positive
Ingress protection:	S110D : IP66/67 S110E : IP66
Housing material:	Marine grade copper free LM6 Aluminium
Housing finish:	Phosphated & powder coated finish - anti-corrosion.
Colour:	RAL3000 Red (others available on request)
BExS110 flare:	High impact UL94 V0 & 5VA FR ABS (Red)
BExDS110 flare:	Anti-Static High impact ABS (Black)
Cable entries:	Dual M20 ISO (one stopping plug included)
Terminals:	0.5 to 4.0mm ² cables.
Line monitoring :	Min. 500 Ohm 2w, or 3k3 Ohm 0.5w res. or diode within Exd enclosure (dc versions).
Weight :	DC: 3.00kg AC: 3.20kg

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No liability is accepted for any consequence of the use of this document. The technical specification of this unit is subject to change without notice due to our policy of continual product development. All dimensions are approximate. This unit is sold subject to our standard conditions of sale, a copy of which is available on request.

1) Introduction

The BExS120D and BExS110D 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 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 BExS120D unit produces output levels in the 117dB(A) range and the BExS110D 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.

2) Marking

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

Unit Type No. BExS120D or BExS110D

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

Certificate No's KEMA 99ATEX6312
IECEx KEM 10.0003

Epsilon x:  II 2G
Equipment Group and Category:

CE Marking:  0518
Notified Body No.

“Warnings” DO NOT OPEN WHEN AN EXPLOSIVE
GAS 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 / 1S21000001

3) Type Approval Standards

The sounders have an 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'

4) Installation Requirements

The sounders must be installed in accordance with the latest issues of the relevant parts of the EN 60079 and IEC60079 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
IEC60079-14:2007 (Ed4) Areas (other than mines)

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 and Temperature Classification

The BExS120D and BExS110D sounders have been certified Ex d IIC T4 for Ta -50°C to +55°C and Ex d IIB T4 for Ta -50°C to +70°C. 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 (Up to +55°C only)	Hydrogen and Acetylene

Equipment Category: 2G

Temperature Classification:

T1	400° C
T2	300° C
T3	200° C
T4	135° C

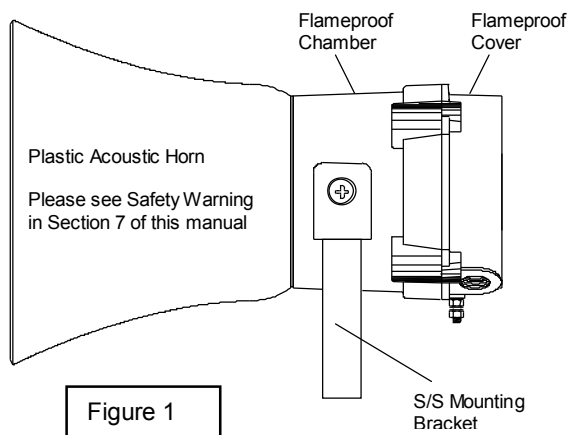
Ambient Temperature Range:

-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.



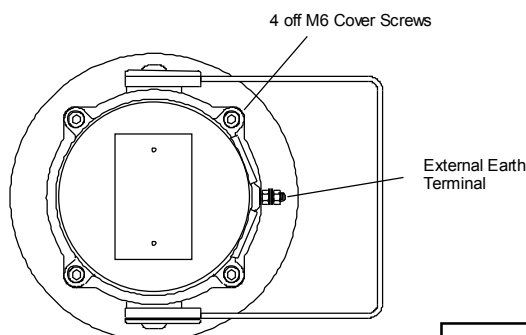
7) Safety Warning (Electrostatic Hazard)

The acoustic horn section is made of ABS Plastic, therefore to avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

8) 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. 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.

9) 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
BExS120D	24V DC	800mA	30V
BExS120D	12V DC	850mA	15V
BExS120D	48V DC	420mA	58V
BExS120D	230V AC	90mA	264V
BExS120D	110V AC	200mA	121V
BExS120D	115V AC	180mA	126V
BExS110D	24V DC	265mA	30V
BExS110D	12V DC	195mA	15V
BExS110D	48V DC	130mA	58V
BExS110D	230V AC	56mA	264V
BExS110D	110V AC	93mA	121V
BExS110D	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.

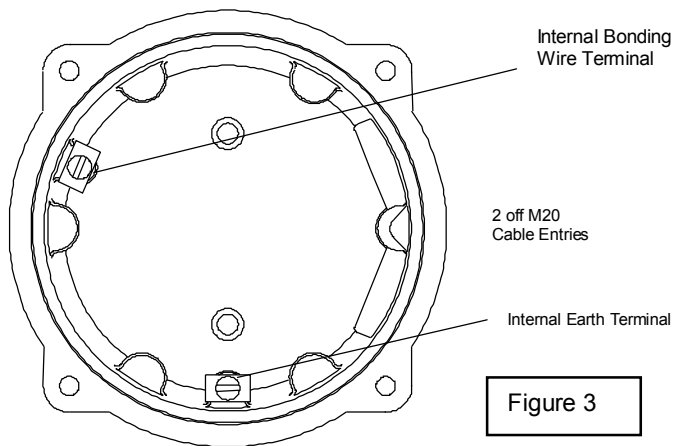
10) Cable Selection

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 BExS120D 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.

11) 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.

12) Cable Glands

The BExS120D and BExS110D sounders have dual cable gland entries which have an M20 x1.5 entry thread as standard or a PG13.5 thread as a special. 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 standards EN 60079-14:2008 / IEC60079-14:2007.

SAFETY WARNING: If the high output BExS120D 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.

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

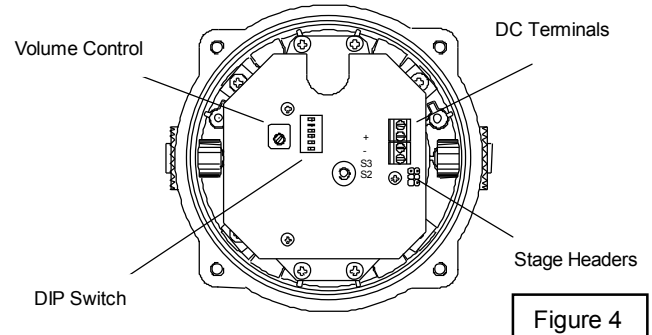
When only one cable entry is used the other one must be closed with an Ex 'd' flameproof blanking plug, which must be suitably approved for the installation requirements.

13) Cable Connections

The cable connections are made into the terminal blocks on the electronic pcb assembly located in the flameproof enclosure. See section 8 of this manual for access to the

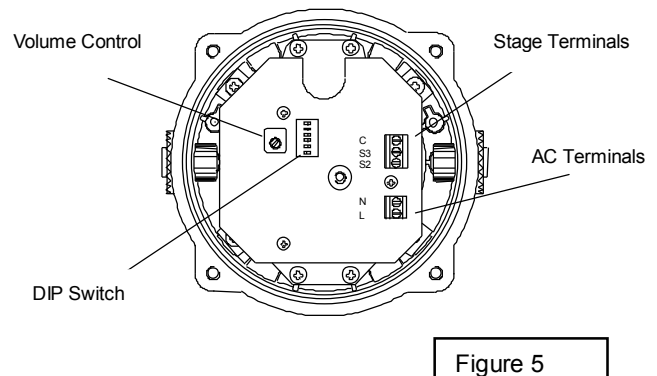
flameproof enclosure. On the AC units a two-way terminal block is provided for the live and neutral mains supply wires and a three way terminal block is provided for linking the second and third stages, (see figures 5 and 7). On the DC units a four way terminal block is provided for +ve and -ve supply input and second and third stage modes of operation, (see figures 4 and 6).

BExS120D DC Sounder

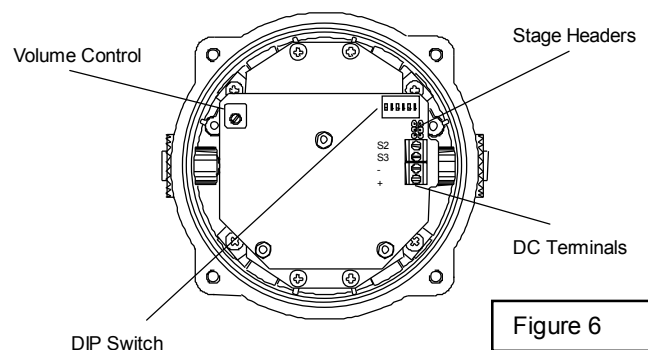


A single wire with a cross sectional area of up to 4mm² can be connected to each terminal way or if an input and output wire is required two 2.5mm² wires can be connected to each terminal way. When connecting wires to the terminals great care should be taken to dress the wire so that when the cover is 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 2.5mm² and above.

BExS120D AC Sounder



BExS110D DC Sounder



BExS110D AC Sounder

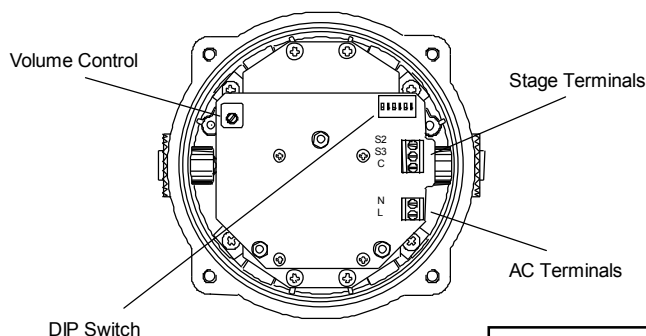


Figure 7

14) Tone Selection and 2nd and 3rd Stage Alarms

The BExS120D and BExS110D 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 BExS120D and BExS110D 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 BExS120D and BExS110D 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.

15) Volume Control

All BExS120D and BExS110D 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.

16) End of Line Monitoring (DC Units)

On BExS120D and BExS110D 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.

TONE 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 1 Hz <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:-

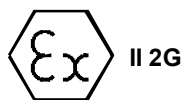
Unit Type No. BExS120D or BExS110D

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

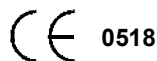
Codes: Ex d IIC T4 for Ta -50°C to +55°C
Ex d IIB T4 for Ta -50°C to +70°C

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 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:

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

Equipment Category: 2G

Temperature Classification:

T1	400° C
T2	300° C
T3	200° C
T4	135° C

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) Safety Warning (Electrostatic Hazard)

The acoustic horn section is made of ABS Plastic; therefore to avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

8) 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.

9) 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
BExS120D	24V DC	800mA	30V
BExS120D	12V DC	850mA	15V
BExS120D	48V DC	420mA	58V
BExS120D	230V AC	90mA	264V
BExS120D	110V AC	200mA	121V
BExS120D	115V AC	180mA	126V

BExS110D	24V DC	265mA	30V
BExS110D	12V DC	195mA	15V
BExS110D	48V DC	130mA	58V
BExS110D	230V AC	56mA	264V
BExS110D	110V AC	93mA	121V
BExS110D	115V AC	110mA	126V

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

10) 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 BExS120D 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.

11) 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.

12) Cable Glands

The 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.

SAFETY WARNING: If the high output BExS120D 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.

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

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.

13) Cable Connections

See drawing C and D

14) Tone Selection and 2nd and 3rd Stage Alarms

See wiring diagram E

15) Volume Control

See drawing F

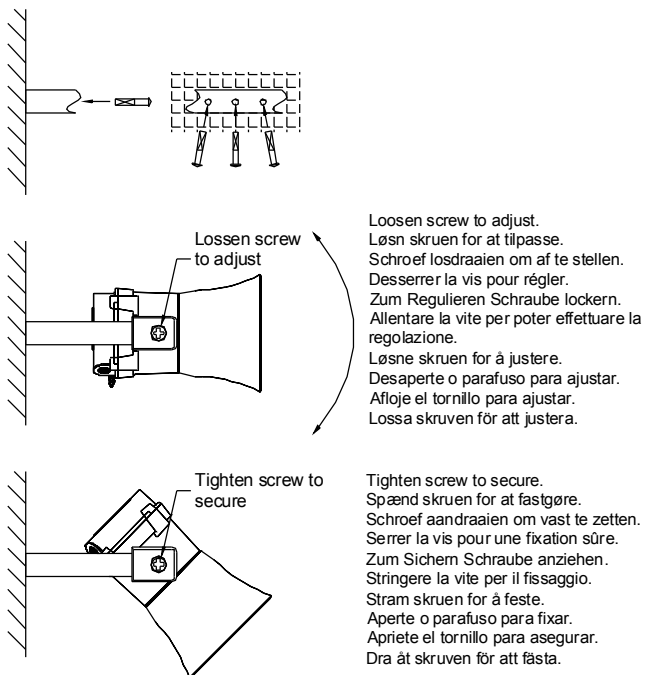
16) End of Line Monitoring (DC Units)

On BExS120D and BExS110D 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.

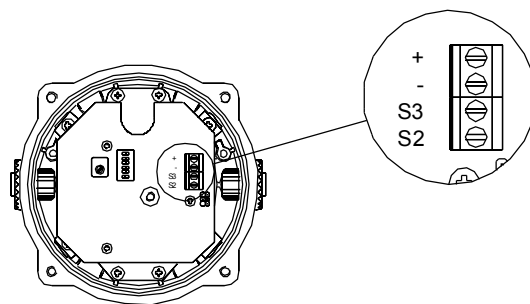
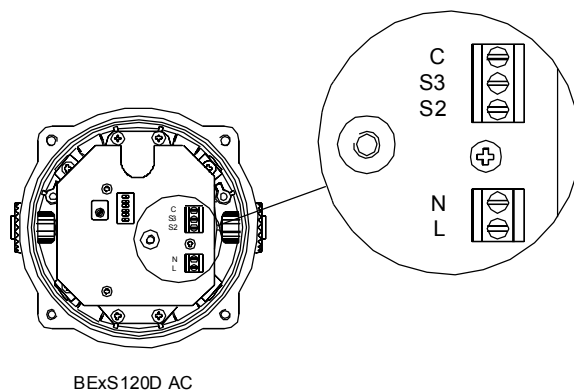
tone selection table

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 1 Hz <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

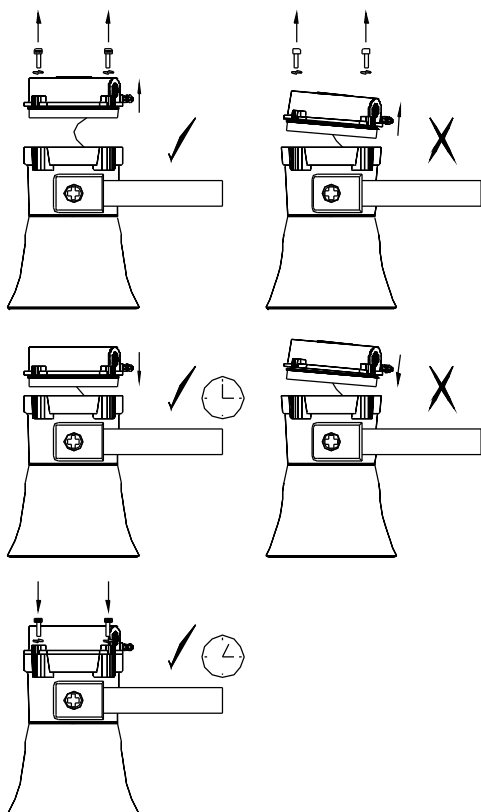
Drawing A



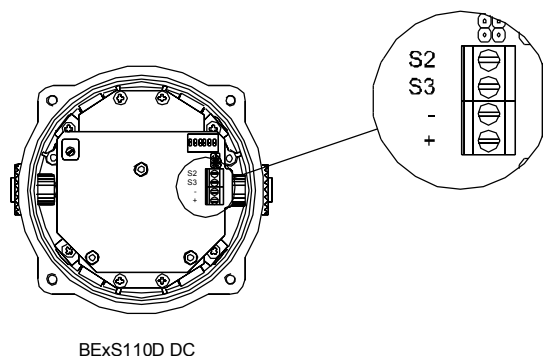
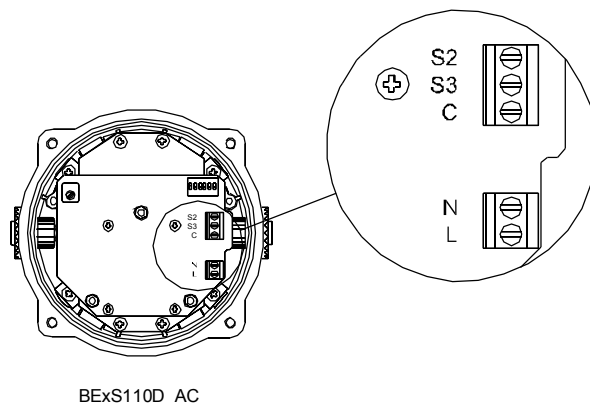
Drawing C



Drawing B

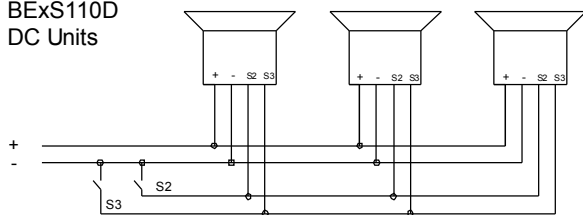


Drawing D

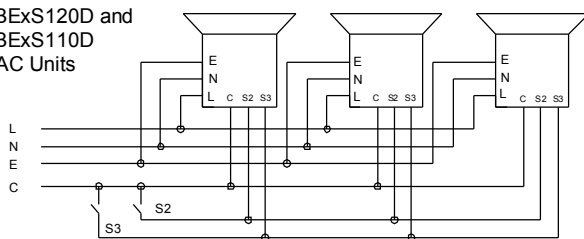


Wiring Diagram E

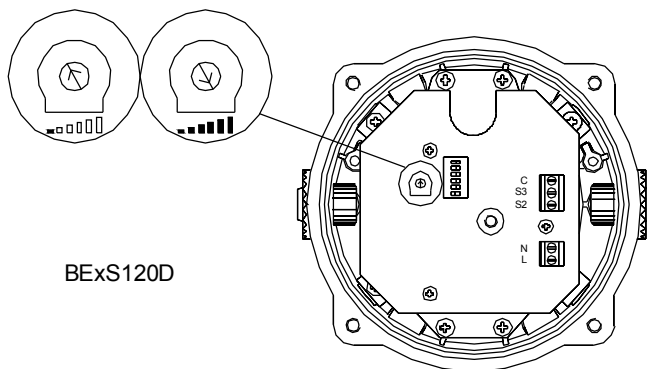
BExS120D and
BExS110D
DC Units



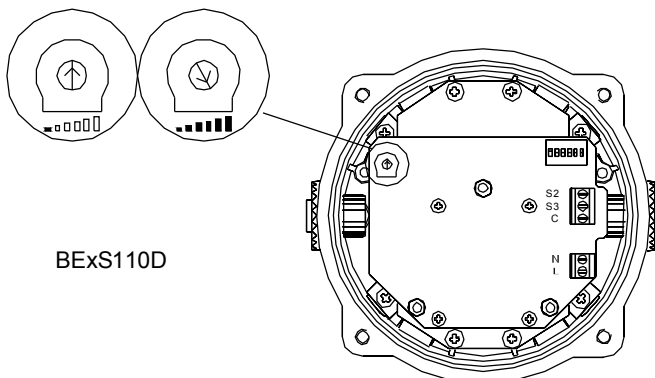
BExS120D and
BExS110D
AC Units



Drawing F



BExS120D



BExS110D

2) Mærkater

Alle enheder har en klassificeringsmærkat, der bærer følgende vigtige oplysninger:

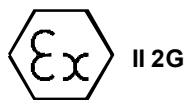
Enhedstypenr. BExS120D eller BExS110D

Indgangsspænding: DC-enheder 12V eller 24V eller 48V
AC-enheder 230V eller 110V eller 115V

Kodes: Ex d IIC T4 for Ta -50°C to +55°C
Ex d IIB T4 for Ta -50°C to +70°C

Certifikatnr. KEMA 99ATEX6312
IECEx KEM 10.0003

Epsilon x:
Udstyrets gruppe
og kategori:



CE-mærke:
Noteret
myndighedsnr.



"Advarsler"

MÅ IKKE ÅBNES
I EKSPLOSIV
GASATMOSFÆRE

DÆKBOLTE KLASSE A4-80

BRUG VARMEBESTANDIGE KABLER OG PAKDÅSER
(Mærket 110°C) VED OMGIVENDE TEMP. OVER 40°C

4) Installationskrav

Soundere skal installeres i overensstemmelse med følgende eller tilsvarende standarder.

EN60079-14:2008 Elektriske installationer i sundheds
IEC60079-14:2007 (Ed4) farlige områder (undtagen miner)

EN60079-10:2003 Klassifikation af sundhedsfarlige om
IEC60079-10:2008 (Ed1) råder

Installation bør kun udføres af kompetent personale og under
iagttagelse af lokale regler.

5) Zone-, gasgruppe-, kategori- og temperatur-klassifikation

Enhederne kan installeres på områder med følgende forhold:

Områdeklassifikation:

Zone 1	Eksplisv gas- og luftblanding kan forekomme ved normal drift.
Zone 2	Eksplisv gas- og luftblanding forekommer sandsynligvis ikke, og hvis det sker, vil det kun være for en kort tidsperiode.

Gasgrupperinger:

Gruppe IIA	Propan
Gruppe IIB	Ethylen
GruppellC < +55°C	Hydrogen og acetylen

Udstyrskategori: 2G

Temperaturklassifikation:

T1	400° C
T2	300° C
T3	200° C
T4	135° C

Omgivende temperatur:

-50°C til +55°C Gasgrupperinger IIA, IIB og IIC
-50°C til +70°C Gasgrupperinger IIA og IIB

6) Sounderplacering og -montering

Se illustration A

7) Sikkerhedsadvarsel (Elektrostatisk sundhedsfare)

Delen med det akustiske horn er fremstillet af ABS-plast, og for at undgå en mulig ELEKTROSTATISK LADNING må enheden kun rengøres med en fugtig klud.

8) Adgang til flammesikker indkapsling

Se illustration B

Bemærk, at de fire **M6 skruer** er klasse **A4-80**, rustfri stål, og der må kun anvendes skruer af denne kategori på sounderne. Det er derfor vigtigt, at skruerne og deres fjederskiver opbevares på et sikkert sted under installation.

9) Strømforsyningsudvalg

Systemets strømforsyning skal have den nødvendige kapacitet for at kunne yde indgangsstrøm til alle soundere forbundet til systemet.

Nedenstående tabel viser indgangsstrømbehovet for forskellige sounderenheder:

Enhedstype	Indgangs-spænding	Indgangs-strøm	Maks. I/P Volt
BExS120D	24V DC	800mA	30V
BExS120D	12V DC	850mA	15V
BExS120D	48V DC	420mA	58V
BExS120D	230V AC	90mA	264V
BExS120D	110V AC	200mA	121V
BExS120D	115V AC	180mA	126V

1) Introduction

The BExS120E and BExS110E are flameproof / increased safety sounders which are certified to 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 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 BExS120E unit produces output levels in the 117dB(A) range and the BExS110E 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.

2) Marking

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

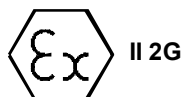
Unit Type No. BExS120E or BExS110E

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

Codes: Ex de IIC T4 for Ta -50°C to +55°C
Ex de IIB T4 for Ta -50°C to +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 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 / 1S32000001

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'
EN60079-7:2003	IEC60079-7:2001 (Ed3)	Increased Safety 'e'
EN61241-0:2006	IEC61241-0:2004 (Ed1)	Dust General Requirements
EN61241-1:2004	IEC61241-1:2004 (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
IEC60079-14:2007 (Ed4) Areas (other than mines)

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 and Temperature Classification

The BExS120E and BExS110E 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. 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 (Up to +55°C only)	Hydrogen and Acetylene

Equipment Category: 2G

Temperature Classification:

T1	400° C
T2	300° C
T3	200° C
T4	135° C

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 sounder cannot move in service.

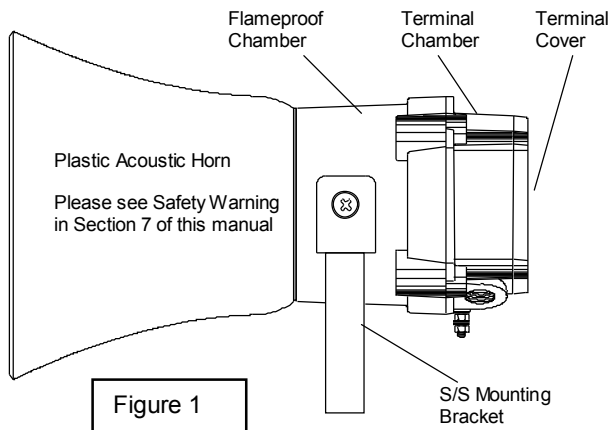


Figure 1

7) Safety Warning (Electrostatic Hazard)

The acoustic horn section is made of ABS Plastic, therefore to avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

8) Access to the Flameproof Enclosure

In order to change the tone or adjust the output level of the sounder it is necessary to remove the terminal chamber section to gain access to the flameproof chamber. To achieve this remove the four M6 hexagon socket head screws (see figure 2) and withdraw the terminal chamber 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.

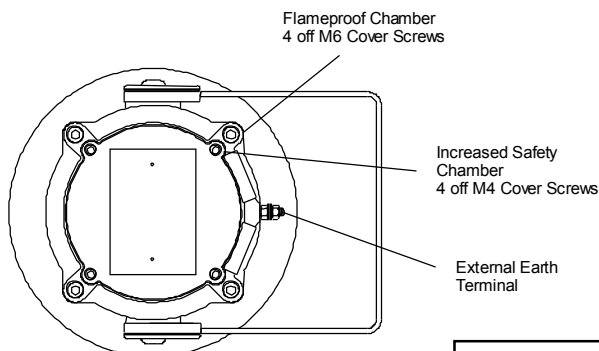


Figure 2

On completion of the tone selection and adjustment 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 that the 'O' ring seal is in place. When replacing the terminal chamber section casting, ensure that it is square with the flameproof chamber casting before inserting. Carefully push the section in place allowing time for the air to be expelled. Only after the section is fully in place should the four M6 Stainless Steel A4-80 cover bolts and their spring washers be inserted and tightened down. If the section jams while it is being inserted, carefully remove it and try again. Never use the M6 cover bolts to force the cover into position.

9) Access to the Increased Safety Terminal Chamber

To connect the cables to the sounder it is necessary to remove the terminal cover to gain access to the termination chamber. To achieve this remove the four M4 hexagon socket head screws (see figure 2). The four M4 screws and their spring washers are grade A4 stainless steel and they should be kept in a safe place during installation. Before

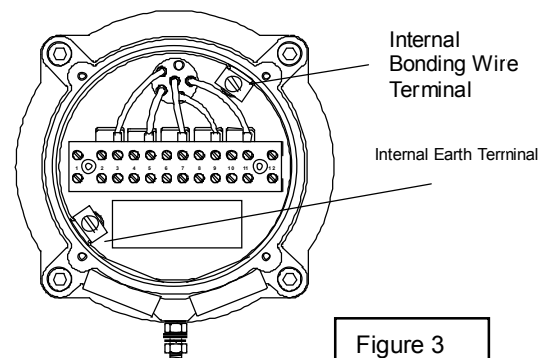


Figure 3

replacing the terminal cover ensure that the earth bonding wire between the two castings is secure and that the 'O' ring seal is in place. Insert the four M4 hexagon screws and their spring washers and tighten them down.

10) 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
BEs120E	24V DC	800mA	30V
BEs120E	12V DC	850mA	15V
BEs120E	48V DC	420mA	58V
BEs120E	230V AC	90mA	264V
BEs120E	110V AC	200mA	121V
BEs120E	115V AC	180mA	126V

BExS110E	24V DC	265mA	30V
BExS110E	12V DC	195mA	15V
BExS110E	48V DC	130mA	58V
BExS110E	230V AC	56mA	264V
BExS110E	110V AC	93mA	121V
BExS110E	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.

11) 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 BExS120E 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.

12) 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 wires ensure that a good quality earth is maintained between the flameproof chamber casting, the terminal section casting and the terminal cover casting.

13) Cable Glands

The BExS120E and BExS110E sounders have dual cable gland entries which have an M20 x1.5 entry thread as standard or a PG13.5 thread as a special. Only cable glands approved for Ex 'e' applications or better (i.e. Ex 'd' applications) can be used. They must be suitable for the type of cable to be used and also meet the requirements of the Ex equipment installation standard EN60079-14:2008 / IEC60079-14:2007.

SAFETY WARNING: If the high output BExS120E 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.

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

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

14) Cable Connections

The cable connections are made into an EEx e II approved twelve way terminal block which is located in the Increased Safety Area terminal chamber (see figure 3). See section 9 of this manual for access to the terminal chamber. When wiring into Increased Safety Area terminal enclosures, you are only permitted to connect one wire into each way on the terminal block. Therefore in order that sounders can be connected in a parallel line, the terminal block is fitted with approved connecting combs so that each electrical connection has two terminals in parallel. Terminal No's. 1 and 12 must not be used on either AC or DC sounders. Cables with a cross-sectional area of up to 4mm² can be connected to the terminal block. Cables that have a small cross-sectional area should be fitted with crimp ferules.

The wiring connections to the sounders are the same for both the BExS110E units and BExS120E units and are as follows:-

Terminal No's	DC Units	AC Units
2 and 3	Not Used	S3
4 and 5	+ve	S2
6 and 7	-ve	C
8 and 9	S2	N
10 and 11	S3	L

15) Tone Selection and 2nd & 3rd Stage Alarms

The BExS120E and BExS110E 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 in the flameproof enclosure for both DC and AC units (see figures 4 and 5). For access to the flameproof enclosure see section 8 of this instruction manual. 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), see connection detail in section 12 of this instruction manual.

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

DC Units Second and Third Stage Tone Selection

The BExS120E and BExS110E 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 in the terminal chamber, 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 BExS120E and BExS110E AC sounders the Common (C) terminal on the terminal block in the terminal chamber is connected to the S2 terminal for the second stage tone and the S3 terminal for the third stage tone.

16) Volume Control

All BExS120E and BExS110E 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 in the flameproof enclosure. See section 8 of this instruction manual for access to the flameproof enclosure. For maximum output level the potentiometer should be set to the fully clockwise position.

17) End of Line Monitoring (DC Units)

On BExS120E and BExS110E DC sounders, 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 terminals provided in the flameproof enclosure. **Note monitoring components must not be connected to the terminal block in the Increased Safety terminal chamber.** See section 8 of this instruction manual for access to the flameproof enclosure.

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 minimum wattage of 2 watts.

BExS120E Sounder

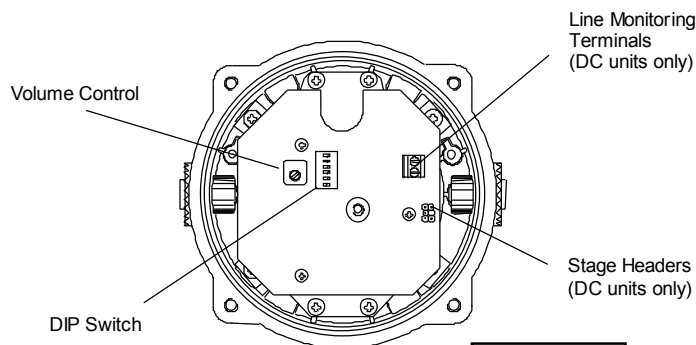


Figure 5

TO NE 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

BExS110E Sounder

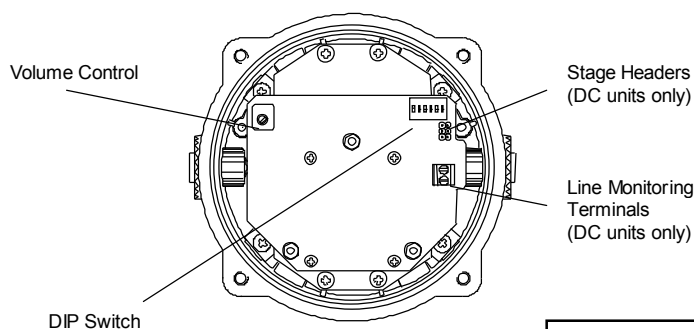


Figure 4

2) Marking

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

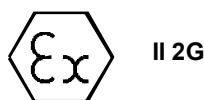
Unit Type No. BExS120E or BExS110E

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

Code: Ex de IIC T4 for Ta -50°C to +55°C
Ex de IIB T4 for Ta -50°C to +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 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:

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

Equipment Category: 2G

Temperature Classification:

T1	400° C
T2	300° C
T3	200° C
T4	135° C

Ambient Temperature Range:

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

6) Sounder Location and Mounting

See drawing A

7) Safety Warning (Electrostatic Hazard)

The acoustic horn section is made of ABS Plastic; therefore to avoid a possible ELECTROSTATIC CHARGE the unit must only be cleaned with a damp cloth.

8) 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.

9) Access to the Increased Safety Terminal Chamber

See Drawing C

10) 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
BExS120E	24V DC	800mA	30V
BExS120E	12V DC	850mA	15V
BExS120E	48V DC	420mA	58V
BExS120E	230V AC	90mA	264V

BExS120E	110V AC	200mA	121V
BExS120E	115V AC	180mA	126V
BExS110E	24V DC	265mA	30V
BExS110E	12V DC	195mA	15V
BExS110E	48V DC	130mA	58V
BExS110E	230V AC	56mA	264V
BExS110E	110V AC	93mA	121V
BExS110E	115V AC	110mA	126V

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

11) 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 BExS120E 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.

12) 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.

13) Cable Glands

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

SAFETY WARNING: If the high output BExS120E 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.

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

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

14) Cable Connections

Terminal No's	DC Units	AC Units
2 and 3	Not Used	S3
4 and 5	+ve	S2

6 and 7	-ve	C
8 and 9	S2	N
10 and 11	S3	L

See drawing D

15) Tone Selection and 2nd and 3rd Stage Alarms

See wiring diagram E

16) Volume Control

See drawing F

17) End of Line Monitoring (DC Units)

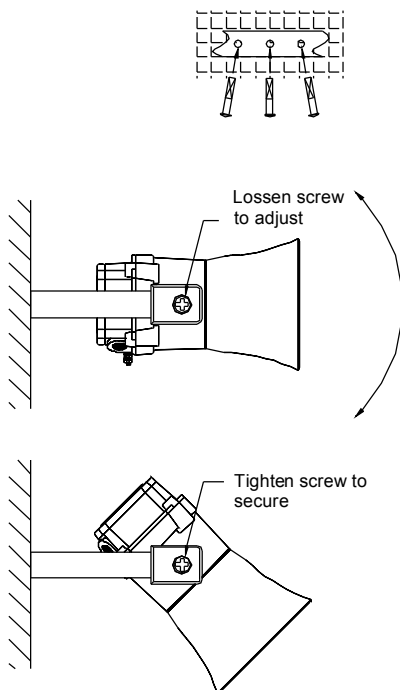
On BExS120E and BExS110E DC sounders, dc reverse line monitoring can be used if required. All DC sounders have a blocking diode fitted in their supply input lines. An end of line monitoring diode or an end of line monitoring resistor can be connected across the terminals provided in the flameproof enclosure. **Note monitoring components must not be connected to the terminal block in the Increased Safety terminal chamber.** See section 8 of this instruction manual for access to the flameproof enclosure.

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 minimum wattage of 2 watts.

18) TONE SELECTION TABLE

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

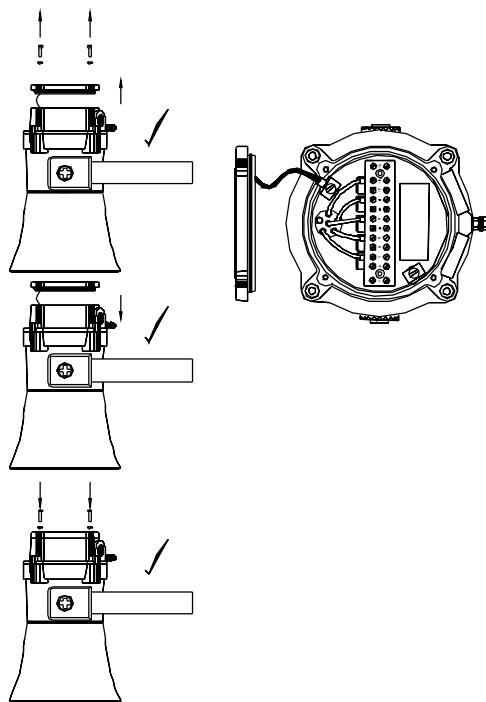
Drawing A



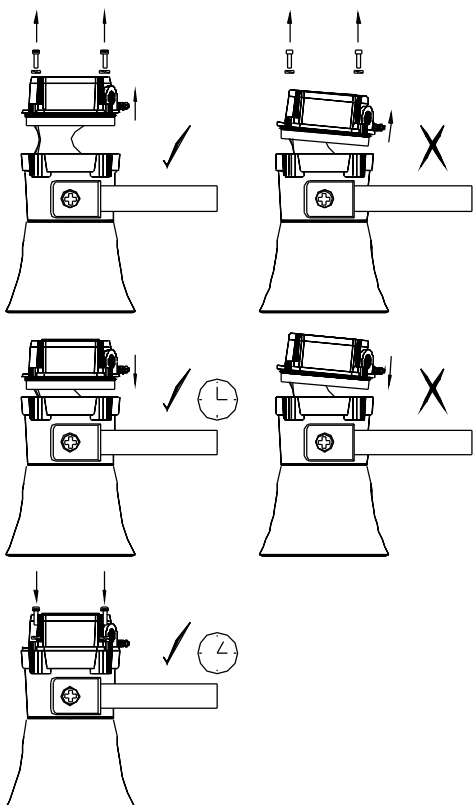
Loosen screw to adjust.
 Løsn skruen for at tilpasse.
 Schroef losdraaien om af te stell
 Desserrer la vis pour régler.
 Zum Regulieren Schraube locke
 Allentare la vite per poter effetto
 regolazione.
 Løsne skruen for å justere.
 Desaperte o parafuso para ajust
 Afloje el tornillo para ajustar.
 Lossa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

Tighten screw to secure.
 Spænd skruen for at fastgøre.
 Schroef aandraaien om vast te z
 Serrer la vis pour une fixation sûr
 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.

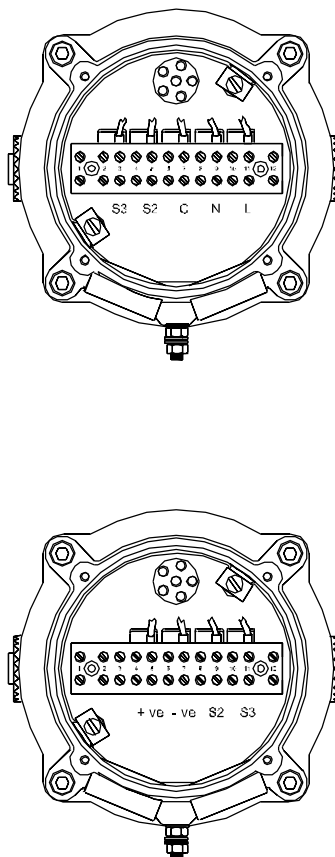
Drawing C



Drawing B



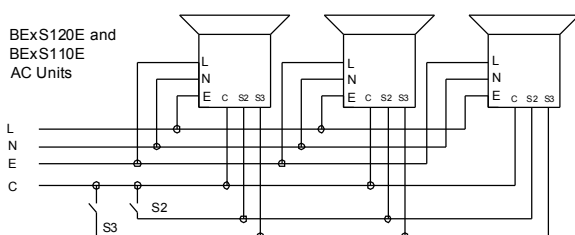
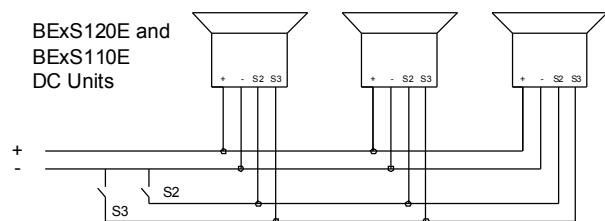
Drawing D



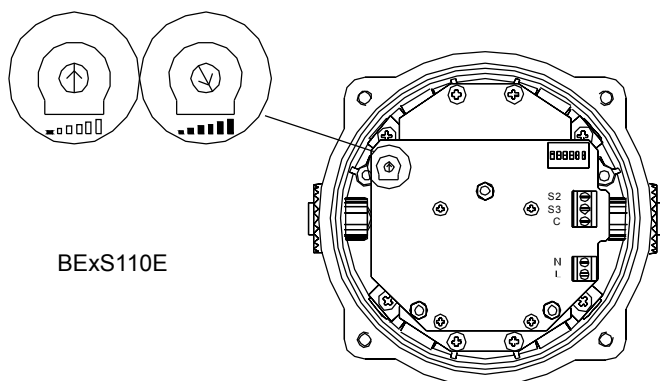
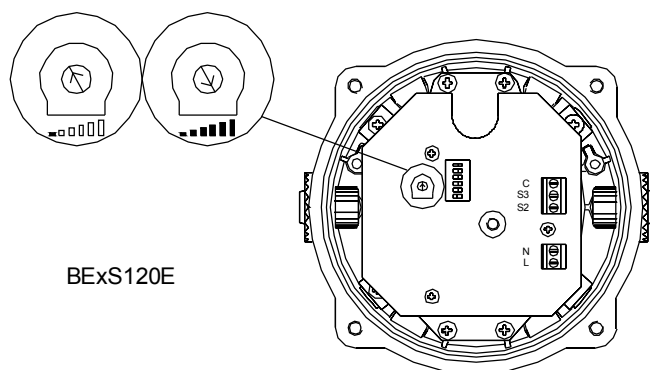
BExS120E and
 BEx110E AC

BExS120E and
 BEx110E DC

Wiring Diagram E

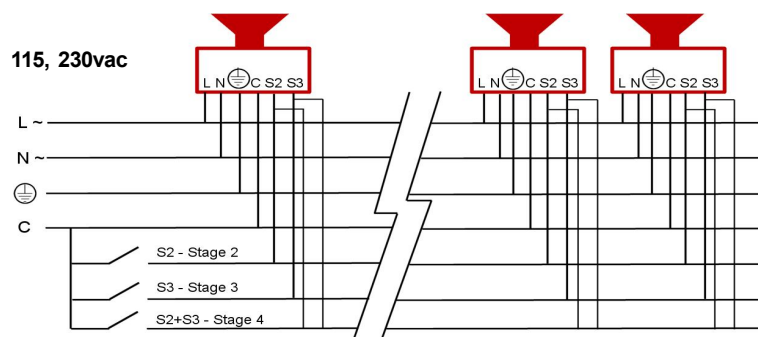
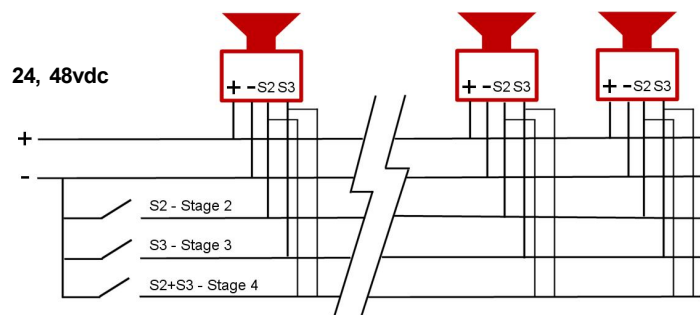


Drawing F





PROGRAMMABLE VERSION - 45 Tone 'AlertAlarm'



A112N



A121



A140



MA112



MA121



BExS110



BExS120

Stage 1 Frequency Description

Binary Code

Tone	Frequency Description	Binary Code
Tone 1	340 Hz Continuous	0 0 0 0 0 0
Tone 2	800/1000Hz @ 0.25 sec Alternating	1 0 0 0 0 0
Tone 3	500/1200Hz @ 0.3Hz 0.5 sec Slow Whoop	0 1 0 0 0 0
Tone 4	800/1000Hz @ 1Hz Sweeping	1 1 0 0 0 0
Tone 5	2400Hz Continuous	0 0 1 0 0 0
Tone 6	2400/2900Hz @ 7Hz Sweeping	1 0 1 0 0 0
Tone 7	2400/2900Hz @ 1Hz Sweeping	0 1 1 0 0 0
Tone 8	500/1200/500Hz @ 0.3Hz Sweeping	1 1 1 0 0 0
Tone 9	1200/500Hz @ 1Hz - DIN / PFEER P.T.A.P.	0 0 0 1 0 0
Tone 10	2400/2900Hz @ 2Hz Alternating	1 0 0 1 0 0
Tone 11	1000Hz @ 1Hz Intermittent	0 1 0 1 0 0
Tone 12	800/1000Hz @ 0.875Hz Alternating	1 1 0 1 0 0
Tone 13	2400Hz @ 1Hz Intermittent	0 0 1 1 0 0
Tone 14	800Hz 0.25sec on, 1 sec off Intermittent	1 0 1 1 0 0
Tone 15	800Hz Continuous	0 1 1 1 0 0
Tone 16	660Hz 150mS on, 150mS off Intermittent	1 1 1 1 0 0
Tone 17	544Hz (100mS)/440Hz (400mS) - NF S 32-001	0 0 0 0 1 0
Tone 18	660Hz 1.8sec on, 1.8sec off Intermittent	1 0 0 0 1 0
Tone 19	1.4KHz-1.6KHz 1s, 1.6KHz-1.4KHz 0.5s - NFC48-265	0 1 0 0 1 0
Tone 20	660Hz Continuous	1 1 0 0 1 0
Tone 21	554Hz/440Hz @ 1Hz Alternating	0 0 1 0 1 0
Tone 22	544Hz @ 0.875 sec. Intermittent	1 0 1 0 1 0
Tone 23	800Hz @ 2Hz Intermittent	0 1 1 0 1 0
Tone 24	800/1000Hz @ 50Hz Sweeping	1 1 1 0 1 0
Tone 25	2400/2900Hz @ 50Hz Sweeping	0 0 0 1 1 0
Tone 26	Bell	1 0 0 1 1 0
Tone 27	554Hz Continuous	0 1 0 1 1 0
Tone 28	440Hz Continuous	1 1 0 1 1 0
Tone 29	800/1000Hz @ 7Hz Sweeping	0 0 1 1 1 0
Tone 30	300Hz Continuous	1 0 1 1 1 0
Tone 31	660/1200Hz @ 1Hz Sweeping	0 1 1 1 1 0
Tone 32	Two tone chime.	1 1 1 1 1 0
Tone 33	745Hz @ 1Hz Intermittent	0 0 0 0 0 1
Tone 34	1000 & 2000Hz @ 0.5 sec Alternating - Singapore	1 0 0 0 0 1
Tone 35	420Hz @ 0.625 sec Australian Alert	0 1 0 0 0 1
Tone 36	500-1200Hz 3.75sec / 0.25sec. Australian Evac.	1 1 0 0 0 1
Tone 37	1000Hz Continuous - PFEER Toxic Gas	0 0 1 0 0 1
Tone 38	2000Hz Continuous	1 0 1 0 0 1
Tone 39	Silence	0 1 1 0 0 1
Tone 40	Custom continuous tone - Contact E2S	1 1 1 0 0 1
Tone 41	Motor Siren - slow rise to 1200 Hz	0 0 0 1 0 1
Tone 42	Motor Siren - slow rise to 800 Hz	1 0 0 1 0 1
Tone 43	1200 Hz Continuous	0 1 0 1 0 1
Tone 44	Motor Siren - slow rise to 2400 Hz	1 1 0 1 0 1
Tone 45	1KHz 1s on, 1s off Intermittent - PFEER Gen. Alarm	0 0 1 1 0 1

ISN2802-A

No liability is accepted for any consequence of the use of this document. The technical specification of this unit is subject to change without notice due to our policy of continual product development. All dimensions are approximate. This unit is sold subject to our standard conditions of sale, a copy of which is available on request.

Tel : 0044(0)2087438880

mail : sales@e2s.com

Fax : 0044(0)2087404200 web : www.e2s.com

COMSEC PROTECTION SYSTEMS LTD.
UNIT 26, STADIUM BUSINESS PARK, • BALLYCOOLIN ROAD, • DUBLIN 11, • IRELAND
PHONE: +353 (0)1 8853008 • FAX: +353 (0)1 8853007
EMAIL: info@comsec.ie • WEB: <http://www.comsec.ie>

PROGRAMMABLE SOUNDER.

- 1) Connect the E2S programmer unit to the sounder to be programmed, on AC units the black wire is connected to terminal '-/C', on DC units the black wire is connected to a negative '-' terminal on the sounder PCB. On AC & DC units the Orange wire is connected to terminal S2 and the Yellow wire is connected to terminal S3.
- 2) Connect the sounder to be programmed to the appropriate supply voltage i.e. 24VDC, 115V or 230VAC depending on the voltage of the unit that is being programmed.

SAFETY NOTE :

Extreme care must be taken when programming AC units.



- 3) Switch on the power supply to the unit and after a period of 3-4 seconds of silence a low level single beep will be heard. This indicates that the unit is ready to be programmed for the stage 1 tone.
- 4) Consult the tone table to find the "Tone Code" for the required stage 1 tone. This will be a six digit binary number i.e. 110010 for tone number 20, "Continuous at 660Hz"
- 5) Enter the six digit tone code by pressing the '0' and '1' buttons accordingly. Short high or low beeps will be heard each time a button is pressed, high for '1' and low for '0'. When the stage 1 code has been entered a double beep will be heard to indicate that the unit is ready to be programmed for stage 2.
- 6) Enter the tone code for the required stage 2 tone. On completion a triple beep will be heard to indicate that the unit is ready to be programmed for stage 3.
- 7) Enter the tone code for the required stage 3 tone. On completion four beeps will be heard to indicate that the unit is ready to be programmed for stage 4.
- 8) Enter the tone code for the required stage 4 tone. On completion the unit will be returned to stage 1 in case a mistake has been made in which case the above procedure is repeated.
- 9) The programming mode can then be exited by switching off the supply and removing the programming connections.

NOTES.

- a) If the programming mode is exited before all four stages are programmed, only the tones entered will be changed, the others will remain on their previous tones.
- b) When stage 3 is programmed, the tone is also copied to stage 4, so stages 3 and 4 will be the same unless stage 4 is programmed to be a different tone.
- c) If an invalid tone code is entered, the unit will sound a double high-low beep, and then sound the number of beeps for the stage being programmed, so the correct tone code can be re-entered.

A121 24vdc units are CPD Compliant.

EN54-3 Type B IP55

Stage 1
tone **Frequency**
tone **Description**

Tone 2	800/1000Hz @ 0.25 sec Alternating
Tone 3	500/1200Hz @ 0.3Hz 0.5 sec Slow Whoop
Tone 9	1200/500Hz @ 1Hz - DIN / PFEER P.T.A.P.
Tone 15	800Hz Continuous
Tone 16	660Hz 150ms ON 150ms OFF
Tone 17	544Hz (100ms)/440Hz (400ms) - NF S 32-001

The tones listed have been tested to EN54-3 and are compliant with the Construction Product Directive 89/106/EEC. EN54-3 test data: document D3573

NOTE - To be
EN54-3 compliant
the volume control
must be set as
shown.



SIRENE PROGRAMMABLE

- 1) Relier le programmeur E2S (E2S programmer unit) à la sirène à programmer ; sur les appareils c.a., le fil noir est relié à la borne « -/C » ; sur les appareils c.c., le fil noir est relié à une borne négative « - » sur la carte de circuits imprimés de la sirène. Dans le cas des appareils c.a. etc.c., le fil orange est relié à la borne S2 et le fil jaune à la borne S3.
- 2) Relier la sirène à programmer à la tension d'alimentation appropriée, c.-à-d. 24 V c.c., 115 V ou 230 V c.a. en fonction de la tension de l'appareil en cours de programmation.



CONSIGNE DE SECURITE :

Rester très vigilant lors de la programmation des appareils c.a.

- 3) Mettre l'appareil sous tension et après un silence de 3-4 secondes, on entendra un seul bip BF. Ceci indique que l'appareil est prêt à être programmé pour la tonalité de l'étage 1.
- 4) Consulter le tableau de tonalités pour trouver le « Code de tonalité » pour la tonalité de l'étage 1 requise. Il doit s'agir d'un nombre binaire à six chiffres, c.-à-d. 110010 pour le numéro de tonalité 20, « Continu à 660 Hz ».
- 5) Appuyer sur les boutons « 0 » et « 1 » en conséquence pour saisir le code de tonalité à 6 chiffres. On entendra des bips HF ou BF chaque fois qu'on appuie sur un bouton, à savoir HF pour « 1 » et BF pour « 0 ». Après saisie du code de l'étage 1, on entendra deux bips pour indiquer que l'appareil est prêt à être programmé pour l'étage 2.
- 6) Saisir le code de tonalité pour la tonalité de l'étage 2 requise. A l'issue de cette opération, on entendra trois bips pour indiquer que l'appareil est prêt à être programmé pour l'étage 3.
- 7) Saisir le code de tonalité pour la tonalité de l'étage 3 requise. A l'issue de cette opération, on entendra quatre bips pour indiquer que l'appareil est prêt à être programmé pour l'étage 4.
- 8) Saisir le code de tonalité pour la tonalité de l'étage 4 requise. A l'issue de cette opération, l'appareil retournera à l'étage 1, au cas où une erreur aurait été commise ; si c'est le cas, il faudra recommencer la procédure ci-dessus.
- 9) Il suffit alors de couper l'alimentation et de retirer les connexions de programmation pour quitter le mode de programmation.

REMARQUES

- a) Si on quitte le mode de programmation avant de terminer la programmation des tous les 4 étages, seules les tonalités saisies seront changées ; les autres resteront à leurs tonalités précédentes.
- b) Lorsque l'étage 3 est programmé, la tonalité est également copiée à l'étage 4, de sorte que les étages 3 et 4 seront les mêmes, à moins que l'étage 4 ne soit programmé à une tonalité différente.
- c) En cas de saisie de code de tonalité invalide, l'appareil fera retentir deux bips HF-BF suivi du nombre de bips pour l'étage en cours de programmation, ce qui permettra de ressaisir le code de tonalité correct.

PROGRAMMIERBARER SCHALLGEBER (PROGRAMMABLE SOUNDER)

- 1) Die Programmiereinheit E2S an den Schallgeber anschließen, der programmiert werden soll. Bei Wechselspannungsausführungen wird der schwarze Draht an Klemme „-/C“ und bei Gleichspannungsausführungen an eine negative Klemme „-“ an der Leiterplatte des Schallgebers angeschlossen. Bei Wechsel- und Gleichspannungsausführungen wird der orange Draht an Klemme S2 und der gelbe Draht an Klemme S3 angeschlossen.
- 2) Den Schallgeber, der programmiert werden soll, an die entsprechende Spannungsversorgung anschließen, d. h. abhängig vom Gerät an 24 V Gleichspannung bzw. 115 V oder 230 V Wechselspannung.



SICHERHEITSHINWEIS:

Beim Programmieren von Wechselspannungsausführungen ist äußerste Sorgfalt zu beachten.

- 3) Die Spannungsversorgung des Geräts einschalten. Nach 3 bis 4 Sekunden ertönt ein leiser, einzelner Signalton. Dieser Ton weist darauf hin, dass das Gerät für die Programmierung des Tons der Stufe 1 bereit ist.
- 4) Aus der Tabelle der Töne den „Ton-Code“ für den gewünschten Ton der Stufe 1 entnehmen. Dies ist eine 6-stellige Binärzahl, z. B. 110010 für Ton Nr. 20 „Continuous at 660Hz“.
- 5) Den 6-stelligen Ton-Code durch entsprechendes Drücken der Tasten „0“ und „1“ eingeben. Bei jedem Drücken einer Taste wird ein kurzer Signalton erzeugt, ein hoher Ton für „1“ und ein tiefer Ton für „0“. Nach der Eingabe des Codes für Stufe 1 werden zwei Signaltöne erzeugt, die darauf hinweisen, dass das Gerät bereit ist für die Programmierung der Stufe 2.
- 6) Den Ton-Code für den gewünschten Ton der Stufe 2 eingeben. Nach der Eingabe werden drei Signaltöne erzeugt, die darauf hinweisen, dass das Gerät bereit ist für die Programmierung der Stufe 3.
- 7) Den Ton-Code für den gewünschten Ton der Stufe 3 eingeben. Nach der Eingabe werden vier Signaltöne erzeugt, die darauf hinweisen, dass das Gerät bereit ist für die Programmierung der Stufe 4.
- 8) Den Ton-Code für den gewünschten Ton der Stufe 4 eingeben. Nach dieser Eingabe kehrt das Gerät zur Stufe 1 zurück, sodass, falls ein Eingabefehler unterlaufen ist, die obige Bedienung wiederholt werden kann.
- 9) Zum Beenden des Programmmodus werden die Spannungsversorgung ausgeschaltet und die Programmierverbindungen gelöst.

HINWEISE

- a) Wenn der Programmmodus beendet wird, bevor alle vier Stufen programmiert wurden, werden nur die eingegebenen Töne geändert, während die anderen unverändert beibehalten werden.
- b) Bei Programmierung der Stufe 3 wird der Ton auch zu Stufe 4 kopiert, sodass die Stufen 3 und 4 gleich sind, außer wenn für die Stufe 4 ein anderer Ton programmiert wird.
- c) Wenn ein ungültiger Ton-Code eingegeben wird, erzeugt das Gerät einen doppelten hohen und tiefen Signalton und dann die Anzahl Töne für die Stufe, die programmiert wird, sodass der richtige Ton-Code eingegeben werden kann.

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PPROGRAMMERBAR HÖGTALARE.

- 1) Anslut E2S-programmeringsenhet till den högtalare som skall programmeras. På AC-enheter skall den svarta tråden anslutas till '-/C', på DC-enheter skall den svarta tråden anslutas till en minuspol '-' på högtalarens kretskort. På AC[-] & DC-enheter skall orange tråd anslutas till S2 och den gula tråden till S3.
- 2) Anslut högtalaren som skall programmeras till lämplig spänning, d.v.s. 24V DC, 115V eller 230V AC beroende på spänningen på enheten som skall programmeras.



OBS! :
Vår ytterst försiktig vid programmering av AC-enheter.

- 3) Slå till strömmen. Efter 3-4 sekunders tystnad kommer en ton höras. Detta indikerar att enheten är redo att programmera in ljudsignalen för steg 1.
- 4) Läs signaltabellen för att hitta koden för önskad ljudsignal. Detta är ett sexsiffrigt binärt tal, t.ex. 110010 för ljudsignal nummer 20, "oavbruten vid 660Hz"
- 5) Programmera in den sexsiffriga koden genom att trycka på 0 och 1. Korta höga och låga signaler hörs varje gång en knapp trycks ned, hög för 1 och låg för 0. En dubbel signal hörs efter steg 1 koden har programmerats in som indikerar att enheten är redo att programmeras för steg 2.
- 6) Programmera in koden för önskad ljudsignal i steg 2. Vid slutförande hörs en tredubbel ton som indikerar att enheten är redo att programmeras för steg 3.
- 7) Programmera in koden för önskad ljudsignal i steg 3. Vid slutförande hörs 4 toner som indikerar att enheten är redo att programmeras för steg 4.
- 8) Programmera in koden för önskad ljudsignal i steg 4. Vid slutförande återgår enheten till steg 1 om ett miss tag har gjorts i programmeringen. I så fall upprepas proceduren ovan.
- 9) Gå ur programmeringsläget genom att bryta strömmen och ta bort programmeringsanslutningarna.

OBS!

- a) Om programmeringsläget avslutas innan alla 4 steg är programmerade ändras endast de ljudsignaler som programmerats in. De andra har kvar sina gamla signaler.
- b) När steg 3 programmerats kopieras denna ljudsignal till steg 4. Så steg 3 och 4 har samma signal om inte steg 4 omprogrammeras.
- c) Om en felaktig ljudsignal programmeras in hörs en dubbel hög-låg ton och därefter det antal toner som motsvarar det steg som programmeras, så att rätt kod kan programmeras in på nytt.