

INSTRUCTION MANUAL (ATEX)

BExA120D and BExA110D

Flameproof Appello Speech Sounders

1) Introduction

The BExA120D and BExA110D are second generation flameproof Appello Speech Sounders which are certified to the European Standards EN 50014: 1992 and EN 50018: 1994 and meet the requirements of the ATEX directive 94/9/EC. The units, which have a facility to record a message of up to 16 seconds in duration, can be used in hazardous areas where potentially flammable atmospheres may be present. The speech message can be preceded by one of nine different alarm tones (see *tone table on Page 4*). The BExA120D unit produces output levels in the 112dB(A) range and the BExA110D 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.

2) Marking

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

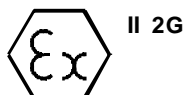
Unit Type No. BExA120D or BExA110D

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

Code: EEx d IIC T4 (Tamb. -50 to +55°C)

Certificate No. KEMA 99ATEX6312

Epsilon x:
Gas 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 95°C) AT AMB. TEMPERATURES OVER 40°C

Year of Construction /
Serial No. i.e. 02 / 1A22000001

3) Type Approval Standards

The Appello's have an EC Type examination certificate issued by KEMA and have been approved to the following standards:-

EN 50014 : 1992 + prA1 General Requirements
EN 50018 : 1994 + prA1 Flameproof Enclosure 'd'

4) Installation Requirements

The units must be installed in accordance with the latest issues of the relevant parts of the BS EN 60079 specifications or the equivalent IEC specifications – Selection, Installation and maintenance of electrical apparatus for use in potentially explosive atmospheres (other than mining applications or explosive processing and manufacture):-

BS EN 60079-14 : 1997 Electrical Installations in Hazardous Areas (other than mines)

BS EN 60079-10 : 1996 Classification of Hazardous Areas

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 BExA120D and BExA110D Appello's have been certified EEx d IIC T4 (Tamb. -50 to +55°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	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

6) Location and Mounting

The location of the Appello Speech Sounders should be made with due regard to the area over which the recorded messages must be audible. The Appello's should only be fixed to services that can carry the weight of the unit.

The units 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 message 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.

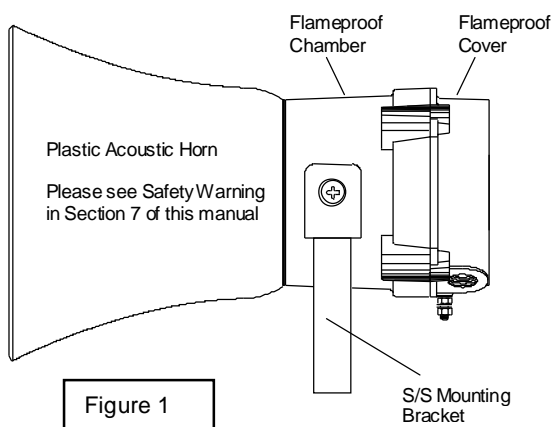


Figure 1

7) 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 and to record a message onto the units, 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 units.** 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 washers 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.

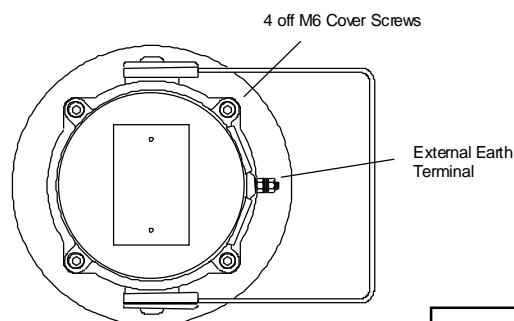


Figure 2

9) Power Supply Selection

It is important that a suitable power supply is used to run the Appello's and that the cables used to connect the units to the power supply are selected to ensure that they have the necessary capacity.

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

Unit Type	Input Voltage	Input Current	Max. I/P Volts
BExA120D	24V DC	480mA	30V
BExA120D	230V AC	45mA	253V
BExA120D	115V AC	90mA	126V
BExA110D	24V DC	480mA	30V
BExA110D	230V AC	45mA	253V
BExA110D	115V AC	90mA	126V

The input current will vary according to the voltage input level and the frequency of the tone selected. The current values shown above are for the 554/440Hz tone @ nominal input voltage. The above table also shows the maximum voltages at which the units can be operated.

10) Cable Selection

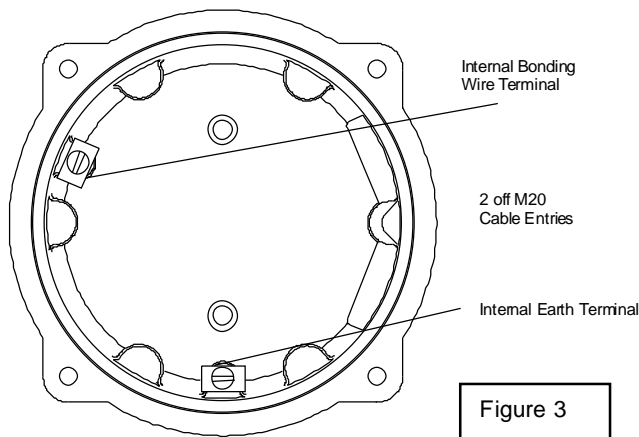
When selecting the cable size consideration must be given to the input current that each unit draws (see table above), the number of units on the line and the length of the cable runs. The cable size selected must have the necessary capacity to provide the input current to all of the Appello's connected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

SAFETY WARNING: If the Appello's 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 95°C.

11) Earthing

Both AC and DC Appello 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 flameproof cover section of the unit (see figures 2 and 3).



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 BExA120D and BExA110D Appello units 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 standard BS EN 60079-14 : 1997.

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

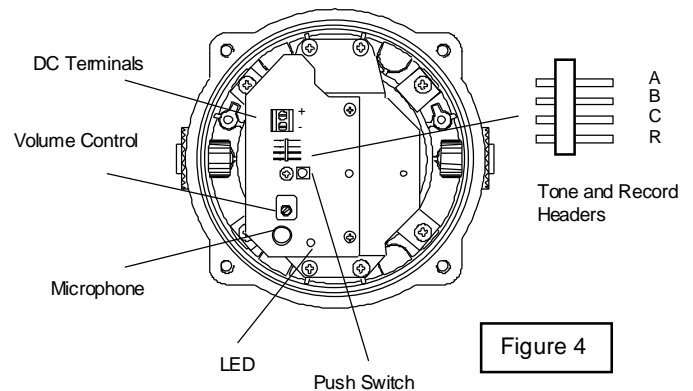
If a high IP (Ingress Protection) rating is required then a suitable sealing washer must be fitted under the cable gland.

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

Before the Appello is installed in a hazardous area, the required message to be broadcast should be recorded on the units, see section 14 of this instruction manual.

BExA120D and BExA110D DC Appello

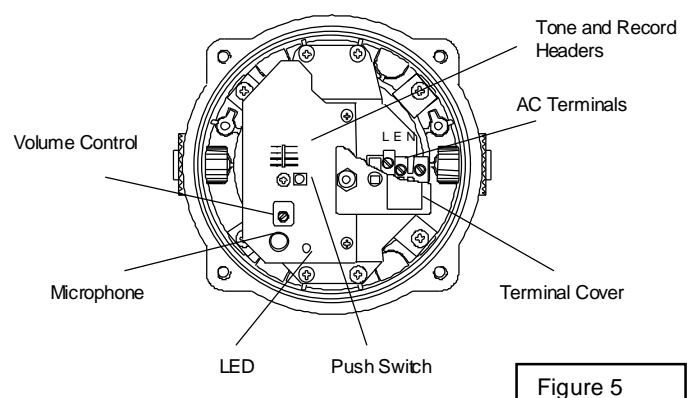


The cable connections are made into the terminal blocks on the electronic pcb assembly located in the flameproof enclosure. See section 8 of this manual for access to the flameproof enclosure. On the AC units a three-way fused terminal block is provided for the live and neutral mains supply lines (see figure 5). To gain access to the terminal block, remove the terminal cover by unscrewing the nylon nut. The earth terminal in the center of the three-way terminal block is provided for use when a message is being recorded, see section 14 of this instruction manual. The internal earth terminal in the cover should be used when installing the unit.

On the DC units a two-way terminal block is provided for +ve and -ve supply lines (see figure 4).

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 on DC units and two 1.5mm² wires can be connected to each terminal way on AC units. 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.

BExA120D and BExA110D AC Appello



14) Recording a Message

Before installing the Appello units in a hazardous area the message required to be broadcast must be recorded onto the unit. A single message of up to 16 seconds can be recorded on each Appello unit. The message must be recorded while the unit is still in a safe area.

To record a message the Appello must be connected to an input supply voltage appropriate to the unit being used, i.e. 24V for DC units and either 230V or 115 V for AC units depending on the unit voltage.

SAFETY NOTE

To maintain safety when recording a message on AC Appello units, an earth wire must be connected to the earth terminal on the three-way terminal block and the Terminal Cover must be replaced before the supply to the unit is switched on (see figure 5).

- 1) Set the unit to the record mode by shorting out the record header pins marked R, (see figure 4).
- 2) Switch on the power supply to the unit.
- 3) Press and hold the Push Switch while speaking into the microphone to record a message of up to 16 seconds in duration. NOTE IF THE LED INDICATOR GOES OUT BEFORE THE END OF THE RECORDING, THE MESSAGE LENGTH HAS BEEN EXCEEDED AND WILL NEED TO BE RECORDED AGAIN.
- 4) Release the push switch at the end of the message.
- 5) Switch off the power supply.
- 6) Remove the pin header from the record pins R.
- 7) Check that the message has recorded correctly by switching on the power supply and the message should play back.

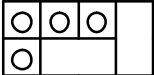

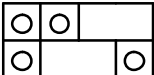
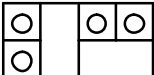
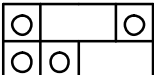
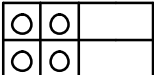
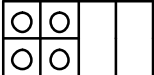
15) Tone Selection

The message can be preceded by one of nine selectable tones or by a silence period of 0.5 seconds.

To select the required tone or the silence period the header pins A B and C (see figure 4) should be patched as per the tone table on this page.

tone selection table

Tone No.	Tone Description
1	Alternating 800/1000Hz @ 2Hz. 4 cycles
2	Slow Whoop 500/1200Hz @ 0.3Hz with 0.5 gap. 2 cycles
3	Sawtooth 1200/500Hz @ 1Hz 4 cycles

4		Alternating 544/440Hz @ 100/400mS intervals. 4 cycles
5		Continuous @ 1000Hz 2 seconds
6		Simulated Bell sound 2 seconds
7		Intermittent 1000Hz @ 0.5Hz 3 cycles
8		Australian Alert 420Hz with 0.625 sec intervals. 4 cycles
9		Australian Evacuate 500/1200Hz 3.75 sec. ON - 0.25 sec OFF 2 cycles
10		Silence 0.5sec gap

16) End of Line Monitoring (DC Units)

On BExA120D and BExA110D DC Appello units, dc reverse line monitoring can be used if required. All DC units 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 minimum wattage of 2 watts.

17) Volume Control

All BExA120D and BExA110D Appello 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.