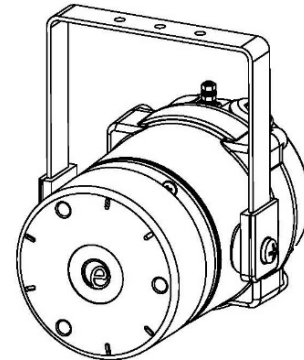


BExTS110D



BExTS110D-R

## 1) Warnings



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

## 2) Rating & Marking Information

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

**Model No.:** BExTS110D or BExTS110D-R

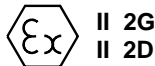
**Input Voltage:** AC Units 115V or 230V

### BExTS110D or BExTS110D-R Codes:

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

**Certificate No.** KEMA 99ATEX6312X  
 IECEx KEM 10.0003X

Epsilon x  
 Equipment Group and  
 Category:



CE Marking  
 Notified Body No.



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

### Area Classification Gas:

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

### Gas Groupings:

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

### Temperature Classification:

T1	450°C
T2	300°C
T3	200°C
T4	135°C

### Area Classification Dust:

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

### Dust Groupings:

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

### Maximum Surface Temperature for Dust Applications:

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

**IP Rating:** IP66/67 to EN/IEC60529 and IP6X to EN/IEC60079-0, EN/IEC60079-31

**Equipment Category:** 2G / 2D

**Equipment Protection Level:** Gb / Db

### Ambient Temperature Range:

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

### 3) Type Approval Standards

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

EN60079-0:2012+A11:2013 / IEC60079-0:2011 (Ed 6):  
Explosive Atmospheres - Equipment. General requirements

EN60079-1:2007 / IEC60079-1:2007 (Ed 6):  
Explosive Atmospheres - Equipment protection by flameproof enclosures "d"

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

### 4) Installation Requirements

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

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

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

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

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

### 5) Special Conditions of Use

Repair of the flamepath / flameproof joints is not permitted.

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

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

### 6) Location and Mounting

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

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

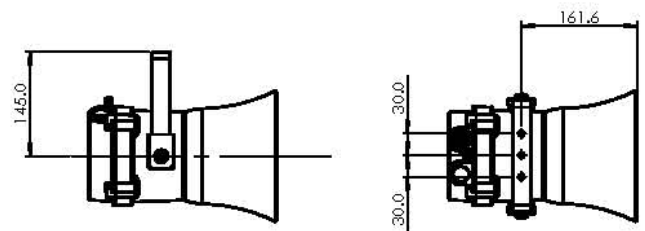


Fig. 1 Fixing Location for Sontel Flare

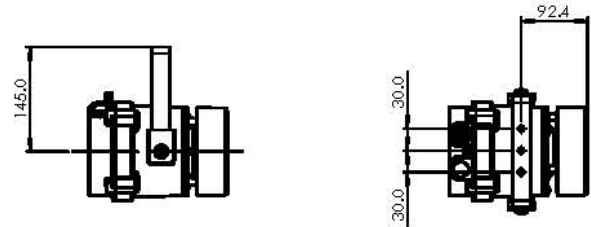


Fig. 1 Fixing Location for Sontel Radial

### 7) Access to the Flameproof Enclosure



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



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

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

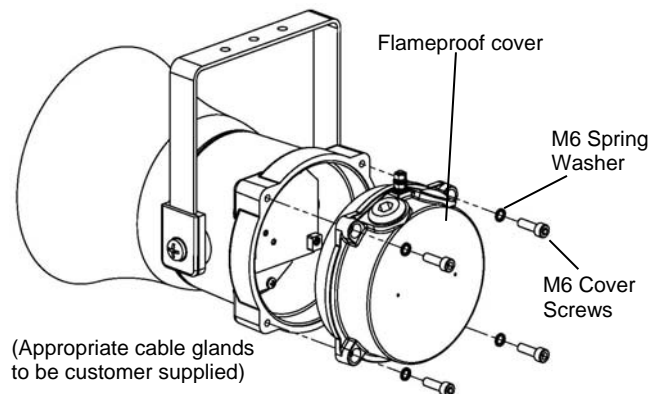


Fig. 2 Accessing the Explosion proof Enclosure.

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

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

## 8) Power Supply Selection

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

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

Model No.	Nominal I/P Voltage	Input Current	Max. I/P Volts
BExTS110DAC115	115Vac	110mA	126V
BExTS110DAC230	230Vac	56mA	253V

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 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.

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

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

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

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

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

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

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

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

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

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

## 10) Earthing

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

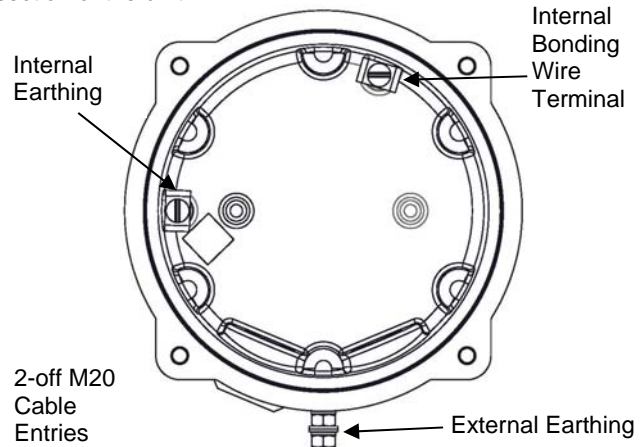


Fig. 3 Internal View of Cover

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

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

External earthing connections should be made to the M5 earth stud, using a ring crimp terminal to secure the earth conductor to the earth stud. The external earth conductor should be at least 4mm<sup>2</sup> in size.

## 11) Cable Connections

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

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

## 12) AC Wiring

A 2-way terminal block is provided on the AC Sontel for power. There are 1-off Live and 1-off Neutral terminals in total. A 2-way terminal is provided for Telephone Signal Input Terminals

### 12.1 Wiring Diagrams

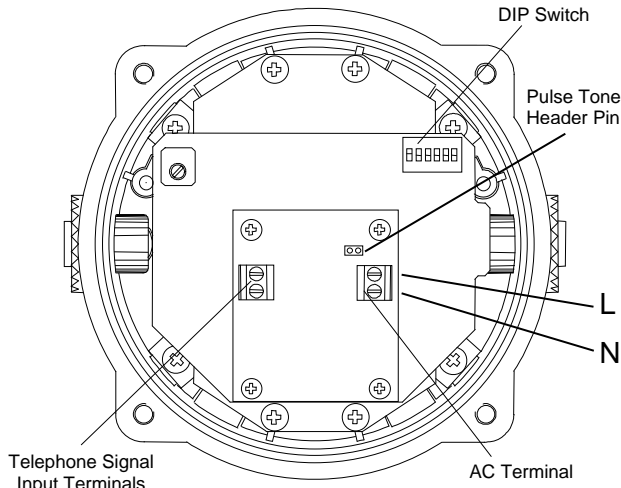


Fig. 4 AC Terminals

## 13) Settings

### 13.1 Tone Selection

The sontels have 32 different tones that can be selected by the DIP switches on the sounder pcb. The tone table on page five shows the switch positions for the 32 tones and which tones are available for the second and third stages. To operate the sontel 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).

### 13.2 Pulse Tone Operation

The BExTS110D Sontel has two modes of operation, continuous tone operation and pulsed tone operation.

To select continuous tone operation the pulse tone header pins should not be shorted. In this mode the output tone will be as per the tone table.

To select pulse tone operation, the pulse tone header pins should be shorted. In this mode of operation the selected tone pattern will pulse on and off following the telephone input signal.

Note if pulsed tone operation is selected it is advisable not to select any of the intermittent tones, such as tone 11.

### 13.3 Volume Control



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

The output level of the BEx sontel can be set by adjusting the volume control potentiometer (see Fig 9). For maximum output, set the potentiometer fully clockwise.

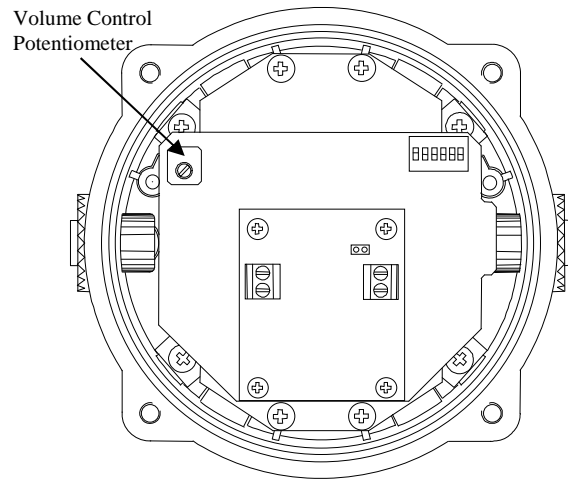


Fig. 9 Location of Volume Control Potentiometer ON BExTS110D AC

## 14) Maintenance, Overhaul & Repair

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

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

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

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

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

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

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