

# BExTS110 / BExDTS110 Telephone Sounders

The flameproof BExTS110 telephone initiated sounders are suitable for Zone 1 & Zone 2 applications and the BExDTS110 version also for Zone 21 & 22.

Sound level outputs are up to 117dB(A) at 1 metre with a choice of 32 alarm tones. The ring-tone circuit senses the ringing voltage on the telephone line and switches the supply onto signal until the telephone is answered. The sound can be continuous or it can follow the telephone ring (selectable option).

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 and an ingress protection of IP66/67.

## Features:

- Very large termination area.
- Ratchet adjustable stainless steel 'U' bracket.
- Telephone line ringing voltage switches power (115vac or 230vac) to enable sounder to operate.

## Approvals:

- ATEX certificate: KEMA 99ATEX6312, EN 60079-0 : 2006, EN 60079-1 : 2007, 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 61241-0 : 2004 (Ed1), IEC 61241-1 : 2004 (Ed1)
- GOST-R certificate: POCC GB.JB05.B02205
- Safety-integrity suitability: SIL1
- Inmetro certificate: 10-IEEx-0009

## Part codes:

Part Code:	Classification:
BExTS110D**	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
BExDTS110D**	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
Options:	115AC, 230AC

\*\* = Voltage reference:



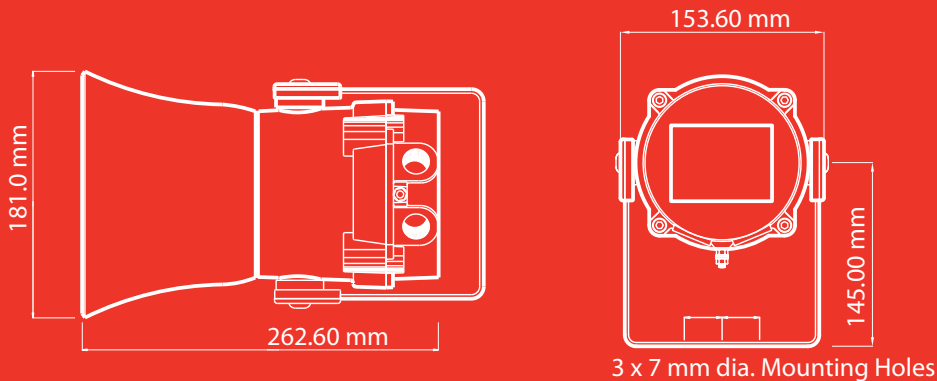
**COMSEC PROTECTION SYSTEMS LTD.**

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

PHONE: +353 (0)1 8853008 • FAX: +353 (0)1 8853007

EMAIL: [info@comsec.ie](mailto:info@comsec.ie) • WEB: <http://www.comsec.ie>



**Specification:**

Maximum output:	117dB(A) @ 1 metre
Nominal output:	110dB(A) @ 1m +/- 3dB - Tone 2
No. of tones:	32 (UKOOA / PFEER compliant)
Effective range:	100m @ 1KHz
Voltages AC:	115vac; 230vac
Ingress protection:	IP66/67
Housing material:	Marine grade copper free LM6 Aluminium
Housing finish:	Phosphated & powder coated finish - anti-corrosion.
Colour:	RAL3000 Red (others available on request)
BExTS110 flare:	High impact UL94 V0 & 5VA FR ABS (Red)
BExDTS110 flare:	Anti-Static High impact ABS (Black)
Cable entries:	Dual M20 ISO (one stopping plug included)
Terminals:	0.5 to 4.0mm <sup>2</sup> cables.
Weight :	3.20kg

\*SPL data +/-3dB(A). Measured at optimum voltage.

Stage 1	Frequency Description	dB @ 1m*
Tone 1	1000 Hz Continuous - PFEER Toxic Gas	110.0dB(A) @ 1m
Tone 2	800/1000Hz @ 0.25 sec Alternating	110.0dB(A) @ 1m
Tone 3	500/1200Hz @ 0.3Hz 0.5 sec Slow Whoop	110.5dB(A) @ 1m
Tone 4	800/1000Hz @ 1Hz Sweeping	110.0dB(A) @ 1m
Tone 5	2400Hz Continuous	109.0dB(A) @ 1m
Tone 6	2400/2900Hz @ 7Hz Sweeping	109.0dB(A) @ 1m
Tone 7	2400/2900Hz @ 1Hz Sweeping	110.0dB(A) @ 1m
Tone 8	500/1200/500Hz @ 0.3Hz Sweeping	110.5dB(A) @ 1m
Tone 9	1200/500Hz @ 1Hz - DIN / PFEER P.T.A.P.	110.5dB(A) @ 1m
Tone 10	2400/2900Hz @ 2Hz Alternating	109.0dB(A) @ 1m
Tone 11	1000Hz @ 0.5Hz Intermittent	110.0dB(A) @ 1m
Tone 12	800/1000Hz @ 0.875Hz Alternating	110.0dB(A) @ 1m
Tone 13	2400Hz @ 1Hz Intermittent	109.0dB(A) @ 1m
Tone 14	800Hz 0.25sec on, 1 sec off Intermittent	103.0dB(A) @ 1m
Tone 15	800Hz Continuous	103.0dB(A) @ 1m
Tone 16	660Hz 150mS on, 150mS off Intermittent	104.0dB(A) @ 1m
Tone 17	544Hz (100mS)/440Hz (400mS) - NF S 32-001	107.0dB(A) @ 1m
Tone 18	660Hz 1.8sec on, 1.8sec off Intermittent	105.0dB(A) @ 1m
Tone 19	1.4KHz-1.6KHz 1s, 1.6KHz-1.4KHz 0.5s -NFC48-265	117.0dB(A) @ 1m
Tone 20	660Hz Continuous	104.0dB(A) @ 1m
Tone 21	554Hz/440Hz @ 1Hz Alternating	107.0dB(A) @ 1m
Tone 22	544Hz @ 0.875 sec. Intermittent	107.0dB(A) @ 1m
Tone 23	800Hz @ 2Hz Intermittent	103.0dB(A) @ 1m
Tone 24	800/1000Hz @ 50Hz Sweeping	107.0dB(A) @ 1m
Tone 25	2400/2900Hz @ 50Hz Sweeping	109.0dB(A) @ 1m
Tone 26	Bell	117.0dB(A) @ 1m
Tone 27	554Hz Continuous	107.0dB(A) @ 1m
Tone 28	440Hz Continuous	104.0dB(A) @ 1m
Tone 29	800/1000Hz @ 7Hz Sweeping	106.0dB(A) @ 1m
Tone 30	AS2220: 420Hz repeating 0.625 sec on, 0.625 sec off.	104.0dB(A) @ 1m
Tone 31	660/1200Hz @ 1Hz Sweeping	110.5dB(A) @ 1m
Tone 32	AS2220: 500-1200Hz 3.75s on 0.25s off (15 cycles/min)	110.5dB(A) @ 1m

**Current consumption:**

Version:		Voltage range:	Current:
115V ac	50Hz/60Hz	+/-10%	110mA
230V ac	50Hz/60Hz	+/-10%	56mA

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](mailto:info@comsec.ie) • WEB: <http://www.comsec.ie>

### 1) Introduction

The BExTS110D is a flameproof Sontel telephone sounder which is certified to meet the requirements of the ATEX directive 94/9/EC and IECEx scheme. The Sontel produces a loud audible signal when triggered by a telephone ringing signal and can be used in hazardous areas where potentially flammable atmospheres may be present. Thirty-two different sounds can be selected by internal switches (see *tone table on Page 4*). The BExTS110D unit produces output levels in the 110dB(A) range. The unit 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

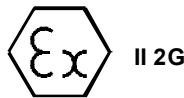
All units have a rating label, which carries the following important information:-

Unit Type No. BExTS110D

Input Voltage: 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



CE Marking  
Notified Body No. CE 0518

**“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 / 1TS23000001

### 3) Type Approval Standards

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

EN60079-14:2008 Electrical Installations in Hazardous Areas (other than mines)  
EN60079-10:2003 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 BExTS110D Sontels 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 Groups IIA and IIB

## 6) Sontel Location and Mounting

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

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

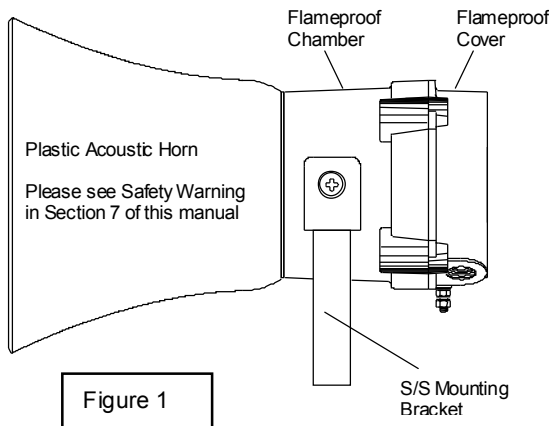


Figure 1

## 7) 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 cable and the telephone line cable to the Sontel 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 Sontels.** It is therefore important that these screws and their spring washers are kept in a safe place during installation.

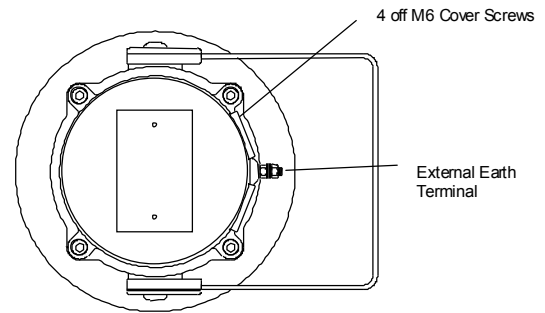


Figure 2

On completion of the 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 Sontels.

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

Unit Type	Input Voltage	Input Current	Max. I/P Volts
BExTS110D	230V AC	56mA	264V
BExTS110D	110V AC	93mA	121V
BExTS110D	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 units have a switching voltage regulator circuit and therefore the input current level will decrease slightly as the input voltage in increased and will increase slightly as the input voltage is reduced.

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

## 10) Cable Selection

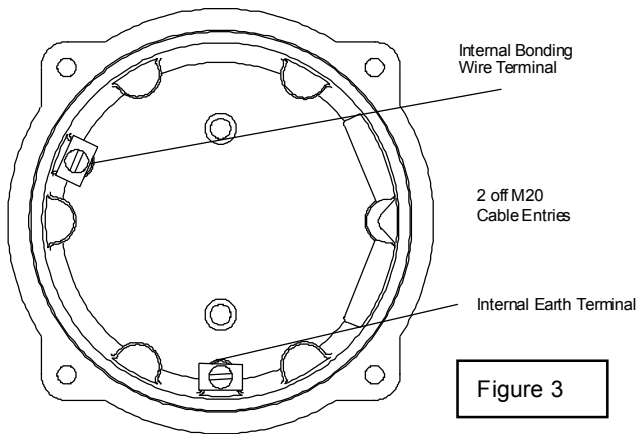
When selecting the cable size consideration must be given to the input current that each unit draws (see table above), and the length of the cable runs.

**SAFETY WARNING:** If the high output BExTS110D units 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

The Sontel 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 BExTS110D Sontels have dual cable gland entries which have an M20 x1.5. 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 BExTS110D Sontels 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.

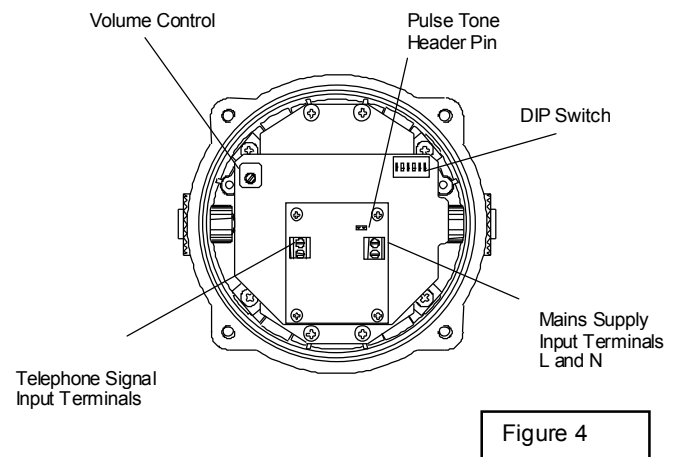
When only one cable entry is used the other one must be closed with an Ex 'd' flameproof blanking plug, which must be suitably approved for the installation requirements.

## 13) Cable Connections

The cable connections are made into the terminal blocks on the Sontel pcb assembly located in the flameproof enclosure. See section 8 of this manual for access to the flameproof enclosure. The printed circuit board has two terminal blocks, one for the mains supply input voltage and one for the telephone signal input cable (see figure 4). The mains input cable should enter the enclosure via one of the M20 cable entries and be connected to the supply terminals L and N and the telephone signal cable should enter the enclosure via the other M20 entry and be connected to the telephone terminal.

A single wire with a cross sectional area of up to 4mm<sup>2</sup> can be connected to each terminal way. When connecting wires to the terminals great care should be taken to dress the wire so that when the cover is inserted into the chamber the wires do not exert excess pressure on the terminal blocks. This is particularly important when using cables with large cross sectional areas such as 2.5mm<sup>2</sup> and above.

### BExTS110D Sontel



## 14) Tone Selection

The BExTS110D Sontels have 32 different tones that can be selected by the DIP switches on the sounder pcb (see figure 4). The tone table on page four shows the switch positions for the 32 tones.

## 15) 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 (see figure 4). 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 (see figure 4). 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.

## 16) Volume Control

The BExTS110D Sontel, has a volume control to adjust the output level. To set the required output level, adjust the potentiometer on the sounder pcb (see figure 4). For maximum output level the potentiometer should be set to the fully clockwise position.

## TONE SELECTION TABLE

Tone Selection		DIP Switch Settings				
Stage 1	Frequency Description	1	2	3	4	5
1	Continuous 1000Hz <i>Taxic gas alarm</i>	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 <i>General alarm</i>	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 <i>Australian alert signal</i>	1	0	1	1	1
31	1200/500Hz at 1Hz <i>Prepare to abandon platform</i>	0	1	1	1	1
32	Sweeping 500/1200Hz 3.75s on, 0.25s off 15Hz	1	1	1	1	1