

INSTRUCTION MANUAL (ATEX)

BExTS110D Flameproof Sontel

1) Introduction

The BExTS110D is a second generation flameproof Sontel telephone sounder which is certified to the European Standards EN 50014: 1992 and EN 50018: 1994 and meets the requirements of the ATEX directive 94/9/EC. 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.

2) Marking

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

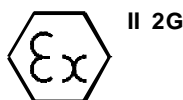
Unit Type No. BExTS110D

Input Voltage: 230V or 110V or 115V

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 / 1TS23000001

3) Type Approval Standards

The Sontels 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 Sontels 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 BExTS110D Sontels 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) 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.

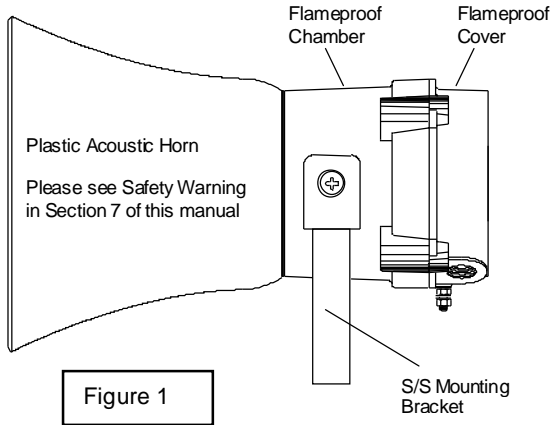


Figure 1

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.

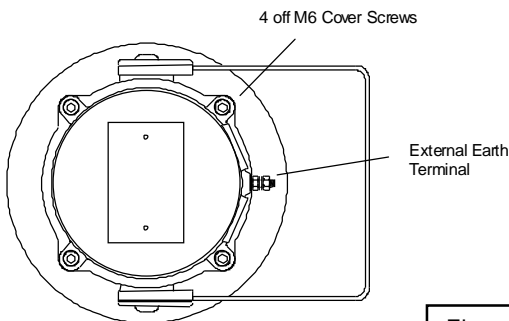


Figure 2

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 is 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.

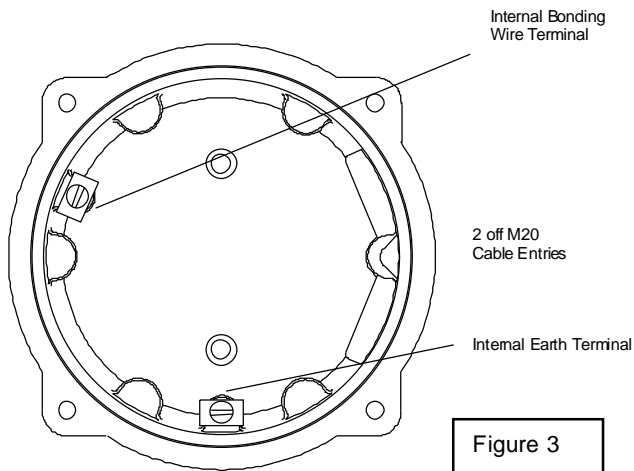
10) Cable Selection

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 95°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 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 BS EN 60079-14 : 1997.

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 95°C.

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

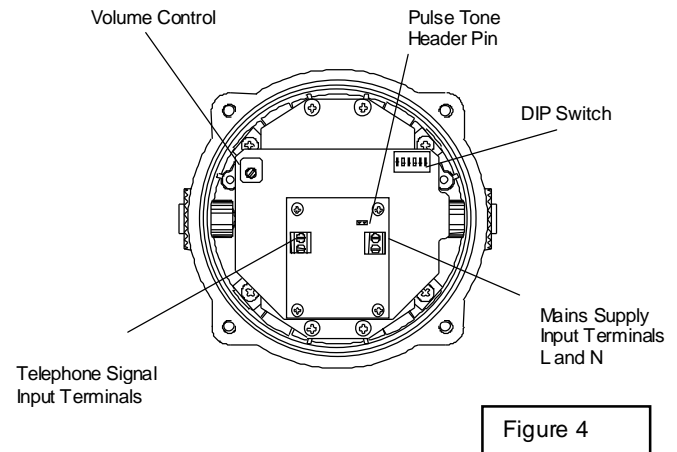
When only one cable entry is used the other one must be closed with an Ex 'd' flameproof blanking plug, which must be suitably approved for the installation requirements.

13) Cable Connections

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 4mm² 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.

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.

STONE SELECTION TABLE

Tone Selection		DIP Switch Settings
Stage 1	Frequency Description	1 2 3 4 5
1	Continuous 1000Hz <i>Toxic 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 1 Hz <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