



## BS 17 SINGLE CHANNEL BELTPACK



## USER MANUAL

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**This product is designed and manufactured by:**

ASL Intercom B.V.  
Zonnebaan 42  
3542 EG Utrecht  
The Netherlands  
Tel: +31 (0)30 2411901  
Fax: +31 (0)30 2667373  
Email: [info@asl-inter.com](mailto:info@asl-inter.com)

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## 1.0 GENERAL DESCRIPTION

The BS 17 beltpack is a portable single channel user station housed in a strong ABS/PC case with a nylon belt clip.

On the top panel are a Volume (listen level) control, a TALK and a CALL button with LED indicators. On the side panel are trimmers for side tone, buzzer volume and mic gain. A momentary push of the CALL button makes the red LED flash, whilst holding the button for two seconds activates the Call sound signal.

The volume of the sound signal (buzzer) is adjustable

Special attention has been paid to the intelligibility of speech. By applying low noise/high speed op-amps, a speech presence filter and a specially developed amplifier, communication is very comfortable even in environments with a very high background noise level.

## 2.0 INSTALLATION

To connect the BS 17 to the intercom system, use professional microphone cable with 2 wires and 1 shield. The for the BS 17 necessary DC voltages are derived from the intercom master station or power supply via the interconnecting cables.

The BS 17 is fully protected against mis-wiring (reverse power) or short-circuit in the interconnecting cables.

## 3.0 TOP PANEL CONTROLS



### 1 VOLUME control knob

This knob adjusts the listen level for the headset.

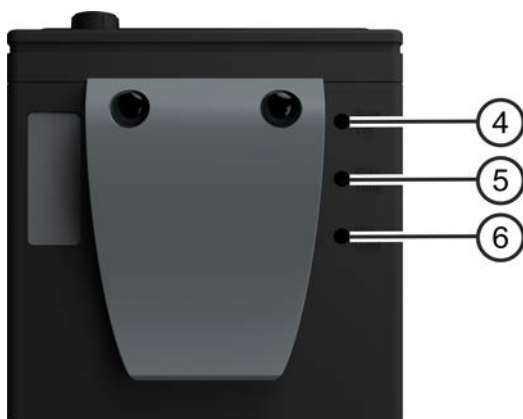
### 2 TALK button

This push button activates the headset mic. which is indicated by the large green LED.

### 3 CALL button

This push button activates the call system. By a momentary push a call signal is sent to all stations connected to the intercom channel and the call LEDs start flashing. Push and hold the CALL button for 2 seconds activates the call buzzer. After the CALL button is released the LEDs continue to flash for a further 2 seconds.

## 4.0 SIDE PANEL CONTROLS



### 4 BUZZER VOLUME trimmer

With this trimmer one adjusts the volume of the internal buzzer.

### 6 MIC GAIN trimmer

To increase mic gain, turn trimmer clockwise. To decrease mic gain, turn trimmer counterclockwise

## 5 SIDETONE trimmer

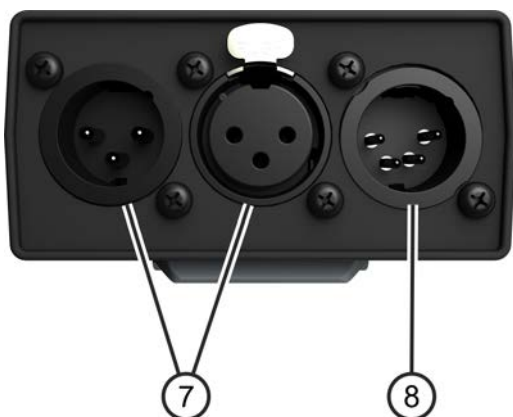
With this trimmer one adjusts the level of your voice as you hear it in your headset.

Side tone adjustment procedure :

- set trimmer in start position : fully clockwise
- switch off the microphones of all connected (speaker) stations
- switch on the microphone of the BS 17
- turn up the volume
- speak into the headset mic and adjust the listen level by turning the trimmer.

The trimmer operating area is between fully clockwise and minimum level. Adjusting the side tone does not affect the level of your voice as it is heard by other stations.

## 5.0 BOTTOM PANEL CONNECTORS



### 7 LINE connectors

These XLR-3 connectors are for connecting the BS 17 to the party line intercom system. The female XLR is the intercom line input and the male XLR is for extending the intercom line to other user stations ('daisy chaining').

### 8 HEADSET connector

An XLR-4 connector for the connection of a headset. The headset can(s) must have a can impedance of minimum 200  $\Omega$ . The headset mic may be of the dynamic or electret type.

## 6.0 TECHNICAL SPECIFICATIONS

### System

dynamic range: 80 dB (1 kHz, THD<1%)  
frequency response: 200 Hz – 15 kHz (-3 dB)  
call signal (send): 2.8 mA  
call signal threshold (receive): 2.4 V DC  
operating voltage: 24 - 32 V DC  
line impedance: 350  $\Omega$  (1kHz), 2.2 k $\Omega$  (DC)  
audio level: nom. -18 dBu, max. 0 dBu

### Mic. Pre-amp

gain: 40 - 60 dB  
presence filter: +6 dB at 5 kHz  
voltage to electret mic: 9 V DC

### Headphones Driver Amp

max. output level: 11.6 Vrms @ 200  $\Omega$   
max. output power: 0.7 Wrms @ 200  $\Omega$

### Side Tone

Rejection: 0 - 30dB adjustable

### Buzzer

max. SPL: 85 dBA at 0.1m

### Power Consumption BS 17

current (at 30 V DC) :  
18 mA quiescent / 35 mA signaling  
80 mA at max. output + signaling

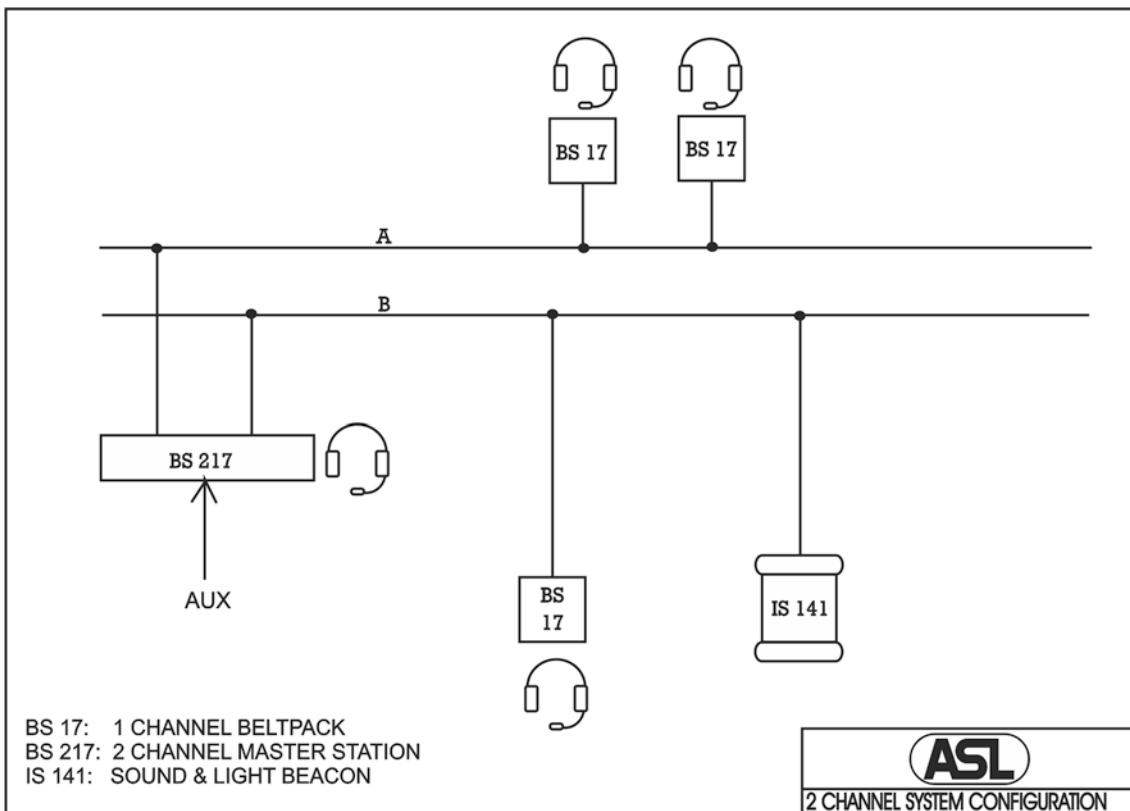
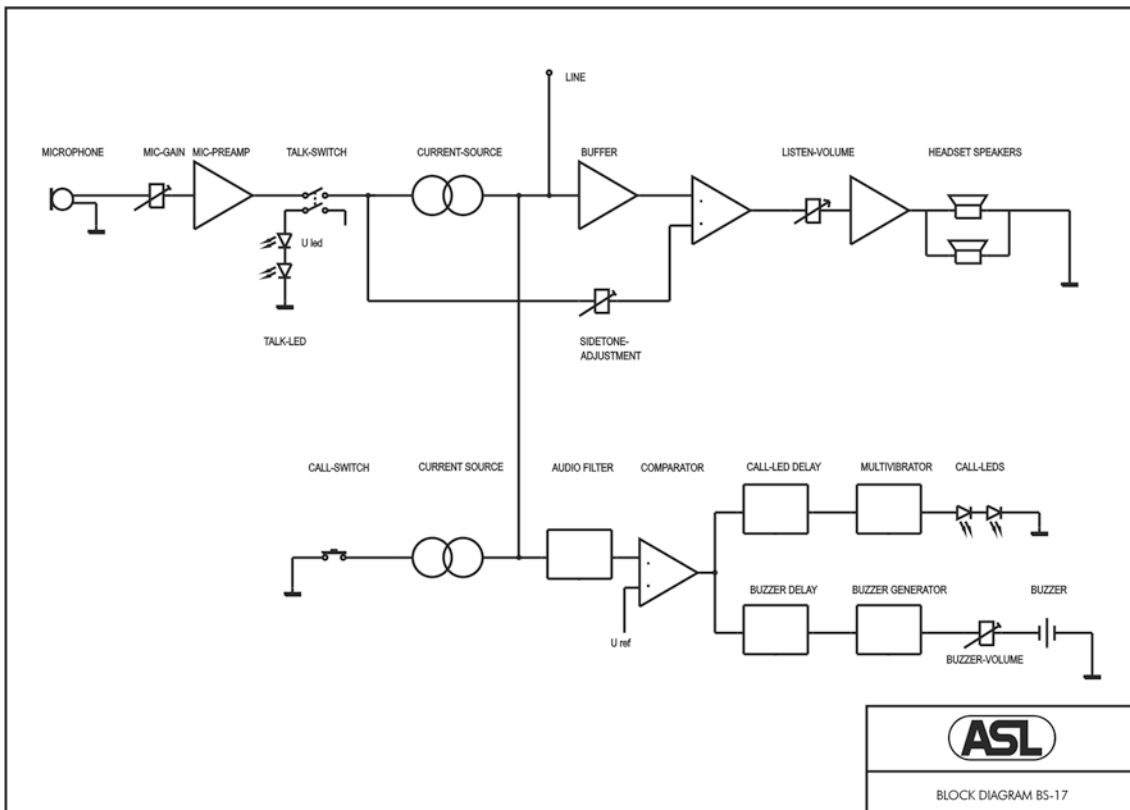
### BS 17 Dimensions & Weight

Width: 78 mm / Height: 46 mm  
Depth: 86 mm / Weight: 145 grams

*0dBu defined as 775 mV into open circuit.*

*ASL reserves the right to alter specifications without prior notice.*

## 7.0 BLOCK DIAGRAM & SYSTEM CONFIGURATION



## 8.0 PARTY LINE, TECHNICAL CONCEPT

User stations in an ASL intercom system are connected via one or several 'party lines'. A party line offers two way ('full duplex') communication and consists of standard microphone (multi-pair) cable. One wire is used as an audio line, one as a power line and the screen of the cable functions as earth/return.

Current drive is used for signal transfer. Each station utilizes a current amplifier to amplify the microphone signal and place it on the common audio line where, due to the constant line impedance (situated in the power supply between XLR pin 3 and 1), a signal voltage is developed which can be further amplified and sent to the headphones or loudspeakers.

This principle has three advantages:

1. the use of a single audio line allows several stations to talk and listen simultaneously
2. due to the high bridging impedance offered by each station, the number of stations on the party line has no influence on the level of the communications signal
3. power and audio to the intercom stations use the same cable

The Call signal is also sent as a current on the audio line. It develops a DC potential over the line impedance which will be sensed by each station and interpreted as a Call signal

## 9.0 CABLING

The intercom lines (the 'party lines') are of the shielded two-conductor microphone cable type. The intercom line connectors are of the XLR-3 type. Audio and Call signals are on pin 3, DC power is on pin 2 and pin 1 is connected to the shield of the cable which functions as the common return for audio and power.

To avoid earth loops (hum) and the possible effect of electromagnetic fields and to minimize power loss, certain rules have to be obeyed when installing the cabling of an intercom system :

### **Use high quality cable**

Use high quality microphone cable (shielded two conductor cable, minimum 2x 0.30 mm<sup>2</sup>). In case multi-pair microphone cable is used, each pair should consist of two conductors (minimum 2x 0.15 mm<sup>2</sup>) with separate shield and an overall shield.

### **Use flexible cable**

Use flexible single and multi-pair microphone cable instead of cable with solid cores, especially when the cable is subjected to bending during operation or installation.

### **Cable screens to XLR pin 1**

The screen of each separate microphone cable and/or the screen of each single pair in a multi-pair cable, should be connected to pin 1 of each XLR-3 connector. Do not connect these screens to the metal housing of ASL units or XLR-3 wall boxes. See 'Earthing Concept'.

### **Connect metal cable trunks, wall boxes and overall multi-pair cable screens to clean earth**

Metal cable trunks, metal wall boxes and overall multi-pair cable screens should be interconnected and, at the 'central earth point' in the intercom network only, be connected to a clean earth or a safety earth. See section 'Earthing Concept'.

### **Keep metal connection boxes and cable trunks isolated from other metal parts**

Metal trunks or pipes for intercom cables and metal

connection boxes should be mounted in such a way that they are isolated from any other metal housing or construction part.

### **Keep cables parallel as much as possible**

When two (multi channel) units in a network are connected by more than one cable, make sure that these cables are parallel to each other over the whole distance between those units. When using multi-pair cable, parallelism is ensured in the best possible way.

### **Avoid closed loops**

Always avoid that intercom cables are making a closed loop. So-called 'ring intercom' should not physically be cabled as a ring..

### **Keep cables away from electromagnetic sources**

Keep intercom cables away from high energy cables, e.g. 115/230/400V mains power or dimmer controlled feeds for spotlights. Intercom cables should cross high energy cables at an angle of 90° only. Intercom cables should never be in the same trunks as energy cables.

### **Place power supply in a central position**

In case of a system powered by a separate power supply: In order to diminish power losses, place the power supply as close as possible to where most power consumption occurs, in other words most user stations are placed.

### **ASL powered units to a 'clean' mains outlet**

Master stations or power supplies should be connected

to a mains outlet with a clean earth. Other audio equipment may be connected to this mains outlet, but avoid using an outlet which also powers dimmer controlled lighting systems.

## 10.0 EARTHING CONCEPT

