**Deutsches Handbuch folgt in Kürze, bitte benutzen Sie bis dahin diese englische Version.**

# AIB-1 Analogue 4-Wire Beltpack

Mainly designed for use with 4-wire intercom systems, AIB-1 is also perfectly suitable as a mobile mic amp/monitoring unit in any application and – by its high quality mic amp and high power stereo phones amp – in any environment.

Actually AIB-1 can replace a desktop unit in lots of applications.

AIB-1 is powered by batteries or by an external power supply – batteries taking over in case of external power failure.

Inspite of its small form factor and power saving design it is thoroughly equipped with professional circuitry aiming at studio standards.


- carefully designed, rugged, yet lightweight plastic housing with beltclip
- operational elements and connectors easily accessible yet well protected
- plug-in switching power supply included with the unit

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# Contents

# 1. Important Notes and Safety Instructions

Before unpacking and operating the equipment read these Notes and Safety Instructions carefully.

More notes and instructions can be found in the following chapters of this manual. Follow all notes and instructions.

The term „equipment" stands for the AIB-1 unit as well as the provided power supply.

1.1. The equipment must only be used for the purpose described in this manual.

1.2. Keep the manual for further reference. When passing the equipment on, enclose the manual.

1.3. Do not operate the equipment at

- very high air humidity (>85% relative humidity)
- high ambient temperature (>40°C) or in the vicinity of heat radiating equipment or objects
- places which are exposed to solar radiation
- at very low temperatures (<5°C)

1.4. Ensure appropriate air ventilation.

1.5. Do not block ventilation of the equipment. Keep free a minimum of 20mm around the equipment.

1.6. Do not store the equipment at temperatures below -20°C or above +50°C.

1.7. Do never expose the equipment to environmental conditions which can lead to the incidence of condensation water.

1.8. Do not expose the equipment to mechanical stress or shock.

1.9. Ensure that liquids cannot get into the equipment.

1.10. Ensure that foreign objects cannot get into the equipment.

1.11. Only clean the equipment with smooth cleaning tissues and soft detergents.

1.12. Never open the equipment.

1.13. Only operate the unit with the provided power supply. When operating with other power supplies, warranty will be void.

1.14. In case the equipment has been dropped or there is any external or functional damage, do not continue to operate the equipment. Have the equipment checked at your dealer's workshop or a person who is qualified to do such checks.

1.15. Only connect the equipment to a legally approved, earthed, mains power supply.

1.16. In case of any damage of the power supply there is the risk of a perilous electrical shock! Have the power supply checked or replace it. Regularly check power supply for any damage.

1.17. When shipping, use a package which protects the equipment from environmental impact such as mechanical shock or humidity.

1.18. The equipment applies to EU directives RoHS and WEEE. Disposal has to be carried out according to WEEE. As this equipment is classified as professional equipment for industrial use (B2B), manufacturer and purchaser conclude the following agreement: According to ElektroG §10 Abs. 2 Satz 3 (ref. to German/EU law) the manufacturer takes over the disposal if the purchaser sends back the equipment at his own expense. Alternatively the purchaser disposes of the equipment according to WEEE at his own expense. In case the purchaser passes on or sells the equipment, this agreement has to be passed on. Manufacturer WEEE register number: DE 90586269

1.19. Manufacturer's warranty covers the equipment to be free from defects of quality at the time of delivery for a period of 24 month presumed that

- the equipment was treated properly according to its intended use
- all information and safety instructions given in this manual have been followed
- the equipment shows no external damage
- the equipment is shipped to the manufacturer or to an authorised repair-shop free of charge
- a proof of purchase is supplied
- a detailed failure description is supplied

The manufacturer takes over cost of parts and labour incurred by repair.

Any other costs including shipping and packaging will be charged.

1.20. We expressly exclude any liability for incidental or consequential damages which might arise from operating the equipment, including failure of the equipment.

1.21. All information in this manual has been carefully reviewed. It has been updated at the time of passing for press. Nevertheless we do not take over any liability for sufficiency or errors.

1.22. EEC Declaration of Conformity: The equipment applies to applicable EMC rules 2004/108/EEC.

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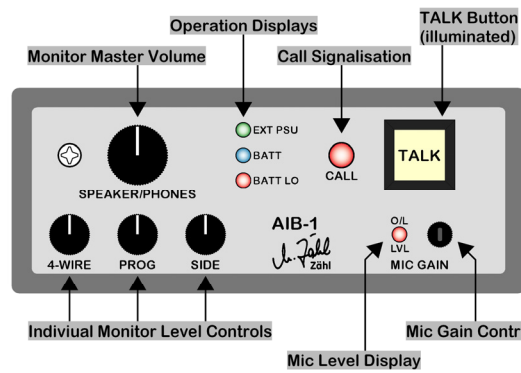
# 2. Scope of Delivery

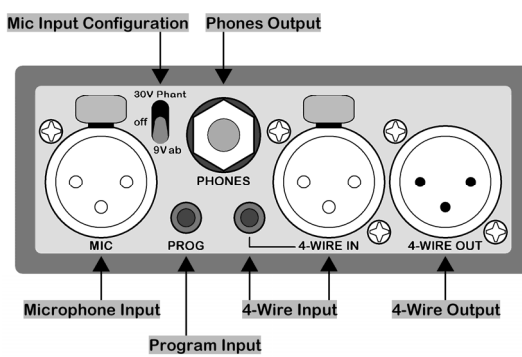
2.1. Unit AIB-1

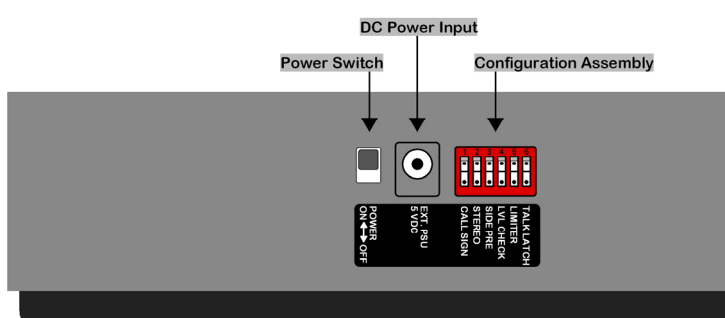
2.2. Power Supply

2.3. Manual

# 3. Drawings / Images




SPEAKER/PHONES
EXT PSU
BATT
BATT LO
CAL
TALK
4-WIRE
PROG
SIDE
AIB-1
MIC GAIN
POWER ON ⟷ OFF
EXT PSU 5 VDC
CALL SIGN
SIDE-TONE
LVL CHECK
LIMITER
TALK LATCH


30V Phant
off
9V alk
PUSH
PUSH
PHONES
MIC
PROG
4-WIRE IN
4-WIRE OUT


TALK
CALL
EXT PSU
BATT
BATT LO
AIB-1
SPEAKER/PHONES
VOL
WARNING

# 4. Connections

## 4.1. Power Supply

### 4.1.1. Battery Operation

Open the battery compartment at the top side of the unit (no tool needed). Insert two batteries size AA/LR6 (rechargeable or non-rechargeable) with nominal voltage 1,2V to 1,5V.

**Always follow the labelling inside the battery compartment for correct polarity!**

### 4.1.2. Power Supply operation (5V DC)


Plug the DC Connector of the power supply into the AIB-1 socket designated EXT PSU 5VDC at the side of unit.

Then connect the power supply to a correctly earthed mains power socket. You may connect the power supply to 100-240VAC at 47-63Hz mains voltage without the need of selecting a voltage range.

### 4.1.3. Batteries and External power

AIB-1 can be externally powered when batteries are inserted. In case external power fails, batteries will take over without interruption. However, when the DC plug is inserted, there is a protection device in series with the batteries, which may cause a decrease of battery running time up to 20%. If, in such application, you do not expect external power to be re-established, unplug the DC connector from the unit.

### 4.1.4. Switching On & Power LEDs

To switch on the unit, set the recessed slide switch - labelled POWER – at the side of the unit to the on position.

If externally powered, the LED labelled EXT PSU on the front panel will light up green. If battery powered, the LED labelled BATT will light up blue. If battery voltage runs low, the LED labelled BATT LO will light up red. For most battery types, there is approx. 4-8% battery life left when LO BATT lights up.

**For battery operation time please refer to chapter 8.2**

## 4.2. Audio

### 4.2.1. Microphone Input

The electronically balanced microphone input is suitable for input levels from -60dBu to -15dBu. It can be configured for 30V phantom power, unbalanced 9V AB-power or without microphone powering.

***Important Note:*** *Before connecting a microphone always check if the input configuration on your AIB-1 complies with the microphone data. In case of incompatibility there is a risk of damaging your microphone.*

### 4.2.2. Headphones Output

Only connect stereo-wired headphones with 3pole 6,3 mm jack with an impedance of 30 Ohm or more per system.

The headphones output delivers voltages up to 5Veff.

***Important Note:*** *Always set the monitor control labelled SPEAKER/PHONES to minimum (fully counter-clockwise) before you connect your headphones. Otherwise there is a risk of damaging your ears by high sound pressure level. Furthermore there is a risk of damaging your headphones.*

Please consider that the headphones output stages provide high gain margin in order to drive high impedance as well as low impedance headphones. Using low impedance headphones it is most unlikely that you need to set the PHONES volume controller to maximum position.

### 4.2.3. Other Audio Inputs and Audio Outputs

All other audio inputs and audio outputs are electronically balanced and designed to a reference level of +6dBu and a maximum level of +19dBu on the inputs and +18dBu at the output.

***Note:*** *The 3,5 mm jack input sockets are designed to match locking jack connectors like Switchcraft 35HDL... series, thus permitting the use of 3,5mm jack connectors in a professional application.*


**A complete register of technical data, connector-pinout and -functions can be found in the following chapters of this manual.**

# 5. Basic Functions

This chapter is dedicated to basic functions. When you work with AIB-1 for the first time, we recommend that you work through this chapter step by step.

Before you start, please set all controls to minimum (counter-clockwise position).

Enhanced functionality is described in the following chapter.

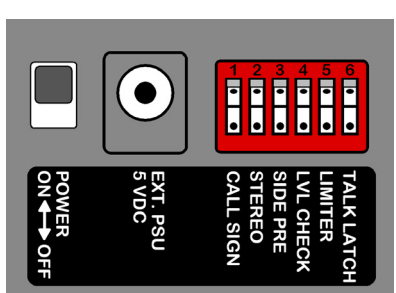
## 5.1. Configuration

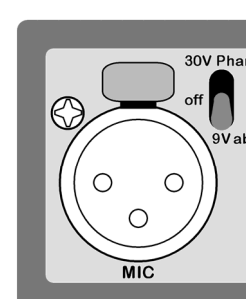
The configuration assembly consists of 6 miniature rocker switches at the side of the unit. They are numbered and their function is labelled in brief.

The rocker switches are off, when they are actuated to the lower position; they are on, when they are actuated to the upper position.

Configuration of the microphone input is performed by a recessed toggle switch next to the microphone input connector.

When you get started with AIB-1 and this manual, we assume that all configuration switches are in the off position.



# 5.2. Talk

## 5.2.1. Microphone Input Setup

Before connecting your microphone, perform the configuration in accordance to the microphone data.

| | |
|---|---|
| off: | balanced input without mic powering |
| 30V Phant: | balanced input with 30V phantom power |
| 9V ab: | unbalanced input with 9V AB-powering |

***Important Note:*** *Operating the configuration switch can produce high level switching noise at the outputs and the monitoring section. Always follow the setup order described in this manual: Keep all level controls at minimum and do not connect remote equipment until Microphone Input Setup and microphone connection are completed.*

**Microphone Gain** control is provided on the front panel, labelled MIC GAIN. Turn the gain control knob clockwise to set the desired output level.

A multi-colour LED - labelled **LEVEL-O/L** - on the front panel provides level metering. To activate, set configuration assembly switch 4 - designated LVL CHECK - to the on position.

Level/colour relations:

| | |
|---|---|
| green: | Output Level* is higher than -18dBu (but lower than ref. level) |
| orange: | Output level* is +6dBu (ref. level) or higher |
| red: | Output level* is 1-2 dB below signal clip/overload (+16…+17dBu) or higher |

*Level Metering is arranged **pre Limiter** and **pre TALK button**, thus providing level information at any operational state.

***Note:*** *In order to save power consumption in case AIB-1 is operated by batteries, LVL CHECK configuration should be switched off after gain setting is completed.*

**Lo-Cut Filter**

The microphone input stage provides a fixed Lo-Cut filter in order to suppress "pop noises" or other low frequency interference. Its attenuation is approx. 3dB at 33Hz and increases to more than 20dB at 10Hz.

**Limiter**

The limiter is activated by configuration assembly switch 5 designated LIMITER.

It prevents output level from exceeding reference level by more than 1,5dB.

If output level exceeds reference level, the signal is controlled by the integrated limiter circuit. As the limiter provides a soft-knee technique, in fact signals somewhat below reference level are controlled as well.

Please consider that a too high microphone gain setting in combination with a limiter can lead to a loss of speech comprehensibility. E.g. background noise may be audible in speech intervals. We recommend to set microphone gain when Limiter is off.

***Important Note:*** *Limiter has no impact on sidechain listening. Thus the operator stays "in touch" with the level he actually produces at the microphone.*

### 5.2.2. Connecting a Remote Unit

Connect a remote unit, which you want to talk to, at the XLR 3pole male socket on the rear panel, labelled 4-WIRE OUT.

### 5.2.3. TALK function / TALK button

Press down the TALK button on the front panel. TALK function is active, the button will indicate yellow.

TALK button switching action can be configured by configuration assembly switch 6.

**Configuration of TALK button switching action**

6 off: Momentary

6 on: Latching

- Momentary: TALK is active as long as you hold the TALK button in the depressed position.
- Latching: Push once to activate TALK, push again to deactivate TALK.

**Application:** For most intercom setups momentary action is the best choice. Select the latching action for all voice-over applications, area monitoring, etc.Listen

### 5.2.4. Connecting a Remote Unit

Connect the remote unit, which you want to listen to, to the XLR 3pole female socket labelled 4-WIRE IN on the rear panel. Alternatively use the 3,5mm jack input next to the XLR input.

### 5.2.5. Monitoring at Headphones Output

Headphones monitoring is provided for 4-WIRE IN-, PROGRAM- and SIDETONE-signals.

Monitoring levels are set individually at the respective controls on the front panel. The PHONES/SPEAKER knob acts as master volume.

*- This chapter decribes 4-WIRE monitoring only, PROGRAM and SIDETONE are covered by the following chapter -*

***Note:*** *The individual controls are mounted recessed and are meant to be operated by fingertip. The large master volume knob is designed to be easily operated without accidently changing the setting of the individual controls.*

Connect your headphones to the 6,3 mm jack socket labelled PHONES on the rear panel.

Set 4-WIRE and PHONES/SPEAKER controls to the desired values.

Please consider that the setting primarily depends on the efficiency and the impedance of your headphones.

### 5.2.6. Monitoring at internal Loudspeakers

Loudspeaker monitoring follows the level settings for the headphones output.

The internal loudspeakers are active when there is no connector inserted in the PHONES 6,3 mm jack socket.

**Dim Function**

In order to minimize feedback and enhance speech comprehensibility, loudspeaker level is automatically dimmed by approx. 6dB when TALK function is active.

### 5.2.7. 4-Wire Call Signalisation

Incoming audio signal at 4-WIRE IN can be indicated at the CALL LED on the front panel.

To activated this function, set configuration assembly switch 1 - labelled CALL SIGN - to the on position.

If 4-Wire Input signal level exceeds -18 dBu approx., the LED will light up red. The indication is held for about 10 seconds after the signal has been removed in order to clearly signalize short "calls".

As soon as you push the TALK button, CALL signalisation will be cleared at once.

# 6. Enhanced Functions

## 6.1. Program Input

PROGRAM input is available on the rear panel at the 3,5 mm jack socket labelled PROG.

The volume control labelled PROG on the front panel is dedicated for monitoring the PROGRAM input signal.

## 6.2. Sidetone monitoring

SIDETONE monitors the microphone signal, an essential function for voice-over applications.

Operate the level control labelled SIDE on the front panel to set the desired monitoring level.

With default configuration, sidetone signal is present only if TALK function is activated, thus giving the operator a clear acoustic feedback, whether TALK is switched on or not.

In case the operator needs to listen to sidetone all the time, set configuration assembly switch 3 - labelled SIDE PRE - to the on position. Sidetone signal now is present independent of TALK status.

***Note:*** *Consider the danger of acoustic feedback when operating AIB-1 with the internal loudspeakers. As sidetone monitoring in combination with the internal loudspeakers does not make sense anyway, keep sidetone level control to minimum in this case.*

## 6.3. Stereo monitoring

Stereo mode is activated by configuration assembly switch 2, labelled STEREO.

In stereo mode 4-Wire input signal is monitored at the left headphones output and program input signal at the right.

In case of loudspeaker monitoring the same applies for left and right loudspeaker.

***Note:*** *Sidetone is always monitored as a mono signal at both headphones outputs.*

# 7. Connectors/Pinout

## 7.1.1. XLR connectors female 3-pole, audio inputs

| | |
|---|---|
| Pin 1 | ground / shield |
| Pin 2 | + / hot |
| Pin 3 | - / cold |

## 7.1.2. XLR connector male 3-pole, audio output

| | |
|---|---|
| Pin 1 | ground / shield |
| Pin 2 | + / hot |
| Pin 3 | - / cold |

## 7.1.3. Jack Socket 3,5 mm 3-pole, audio inputs

(match locking jack connectors like Switchcraft 35HDL... series, thread M6x0,5mm)

| | |
|---|---|
| Tip | + / hot |
| Ring | - / cold |
| Case | ground / shield |

## 7.1.4. Jack Socket 6,3 mm 3-pole, headphones output

| | |
|---|---|
| Tip | Headphones left |
| Ring | Headphones right |
| Case | Common / Ground |

**Important note:** Exclusively connect stereo-wired headphones. Tip- and Ring-contacts must not be interconnected. Never use headphones with a 2-pole (mono) Jack.

## 7.1.5. DC connector 2,1/5,5 mm, power input

| | |
|---|---|
| Outer contact | 0 V DC, unit ground |
| Inner contact | +5 V DC |

# 8. Technical Data

## 8.1. I/Os

### 8.1.1. Microphone Input

electronically balanced, input impedance > 5kΩ

input gain 20dB…60dB, max. input level -3dBu

lo-cut filter (fixed) 33Hz/-3dB (10Hz/-20dB)

frequency response 70Hz…20kHz +/-0.5dB

input related noise at max. gain -127dBu (typ., RMS 20Hz…20kHz flat, source 200Ω)

switchable - balanced
- balanced with +30V phantom powering
- unbalanced with 9V A/B powering

### 8.1.2. Line Inputs

electronically balanced, input impedance approx. 10kΩ

reference level +6dBu, maximum input level +19dBu

frequency response 20Hz…20kHz +/-0.5dB

### 8.1.3. Line Output

electronically balanced, output impedance typ. 50Ω

reference level +6dBu, maximum output level +18dBu

max. load 600Ω

Mic signal with Limiter +6dBu (-0/+1,5dB)

frequency response ref. to Microphone input

### 8.1.4. Headphones output

dedicated output stages for left and right, output impedance typ. 24Ω

maximum output level +16dBu w/o load, +12dBu with 100Ω load

frequency response 20Hz…20kHz -0.5dB

**Note:** All data are typical values under normal operating conditions. Different values may apply, especially when equipment is exposed to extreme temperature, shocks/vibrations, high electro-magnetic fields etc.

### 8.1.5. Power input

AIB-1 requires well regulated DC at 5V. A maximum of 6V must not be exceeded even by short voltage spikes.

Maximum power consumption is typically less than 5W, but for short periods of time this value may be exceeded substantially. The power supply we deliver with AIB-1 has been selected to be capable for such operation. Hence we assume that the unit is operated with this power supply. In case AIB-1 is operated with other power supplies we do not guarantee for correct function of the unit or any damage. Furthermore warranty will be void.

## 8.2. Battery operation time

AIB-1 may be operated with non-rechargeable batteries at nominal voltage of 1.5V as well as recharcheable batteries at nominal voltage of 1.2V.

As there is a multitude of batteries on the market and the actual capacity depends on age, condition, temperature etc., it is not possible to make a reliable statement on battery lifetime.

In addition, for the most part it depends on the power used for driving the phones output resp. the loudspeakers. Less power consuming, but also relevant are the use of Mic Phantom/AB supply, the "on"-time of LEDs and TALK button and high audio levels at mic and line circuits.

As the battery voltage is converted to a much higher value inside the unit, battery current increases in the same relationship. Driving the phones output to the clip point with 30Ω headphones can cause battery current to rise up to 1A or more. This is, of course, no realistic operation condition (mind bleeding ears), but should remind you to turn down volume during a break, to switch off LVL-O/L display after gain setting etc.

**In our tests**, which we estimate as normal operating conditions for inside use (room temperature), we observe operation times of **4:30 to 6:00 hours**, depending on battery type. This is just to give you a clue. Please perform your own tests with your batteries under your operating conditions.

With most batteries the **LO BATT** display will light up when 4-8% battery life is left. But this cannot be guaranteed for all available types.
In case your battery type does not match, please contact us. We will try to find a solution.

# 9. Measures and Weights

## 9.1. AIB-1 Unit

| | |
|---|---|
| enclosure | plastic material , EMC coated |
| front panel / rear panel | clear anodised aluminium |
| overall measure L x W x H | 152 mm x 102 mm x 49 mm |
| height without beltclip and stands | 41 mm |
| weight with / without batteries | approx. 525 / 475 g |

## 9.2. Power Supply

| | |
|---|---|
| (Plug-In Switching Power Adapter) | |
| Measure | 65 mm x 28 mm x 84 mm |
| Weight | 90 g |
| Length of fixed cable (DC to unit) | approx. 1.5 m |

## 9.3. Delivery form

| | |
|---|---|
| Cardboard box | approx. 275 mm x 168 mm x 80 mm |
| Gross weight | approx. 750 g |