

AID-1

Analogue 4-Wire Desktop Intercom



AID-1 is an analogue one channel 4-wire Intercom unit with an additional program input.

Its smart configuration features make it easily adaptable to any analogue communication setup. It is also a perfect choice for voice-over applications.

AID-1 is designed for professional use in communication systems, audio and video studios, mobile broadcast and recording setups and related applications.

It provides a high quality phones amplifier, all other audio I/Os are transformer balanced with XLR connectors.

AID-1 is powered by 12V-24V DC. An external, universal input power supply is included with the unit.

Contents

1.	Important Notes and Safety Instructions.....	3
2.	Scope of Delivery	4
3.	Mounting of VESA 100 Adapter.....	4
4.	Front Panel & Rear Panel Overview.....	5
5.	Connection	6
5.1.	Power Supply.....	6
5.2.	Audio	6
5.3.	Lamp Supply/USB	6
6.	Basic Functions	7
6.1.	Configuration.....	7
6.2.	Talk	7
6.2.1.	Microphone Inputs and Setup.....	7
6.2.2.	Connecting a Remote Unit	8
6.2.3.	TALK function / TALK button	8
6.3.	Listen	9
6.3.1.	Connecting a Remote Unit	9
6.3.2.	Monitoring at Headphones Output	9
6.3.3.	Monitoring at internal Loudspeaker	9
6.3.4.	4-Wire Call Signalisation.....	10
7.	Enhanced Functions	10
7.1.	PROGRAM Input	10
7.1.1.	Monitoring	10
7.1.2.	PROGRAM feed to 4-WIRE OUT (IFB PROGRAM).....	10
7.2.	SIDETONE monitoring	10
8.	Block Diagram	11
9.	Connectors/Pinout.....	12
10.	Technical Data.....	13
11.	Measures and Weights.....	15

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 AID-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 the ventilation slots 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 mains cable or power supply there is the risk of a perilous electrical shock! Replace the mains cable immediately. Have the power supply checked or replace it. Regularly check mains cable and 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 89/336/EEC.



2. Scope of Delivery

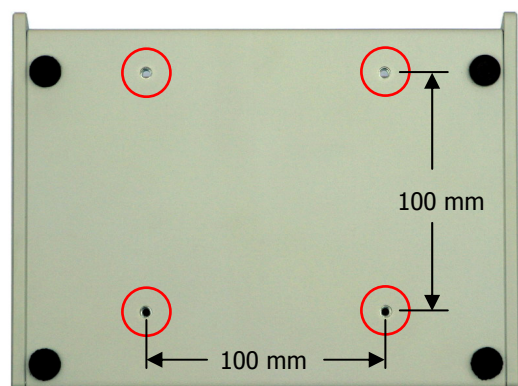
- 2.1. Unit AID-1
- 2.2. Power Supply
- 2.3. Mains Cable (not for all countries)
- 2.4. Manual

3. Mounting of VESA 100 Adapter

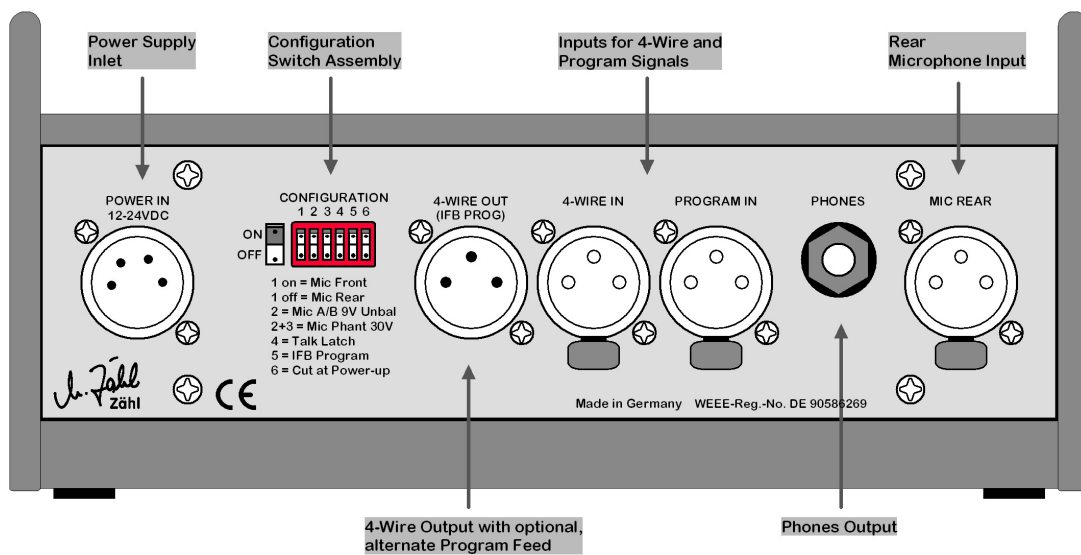
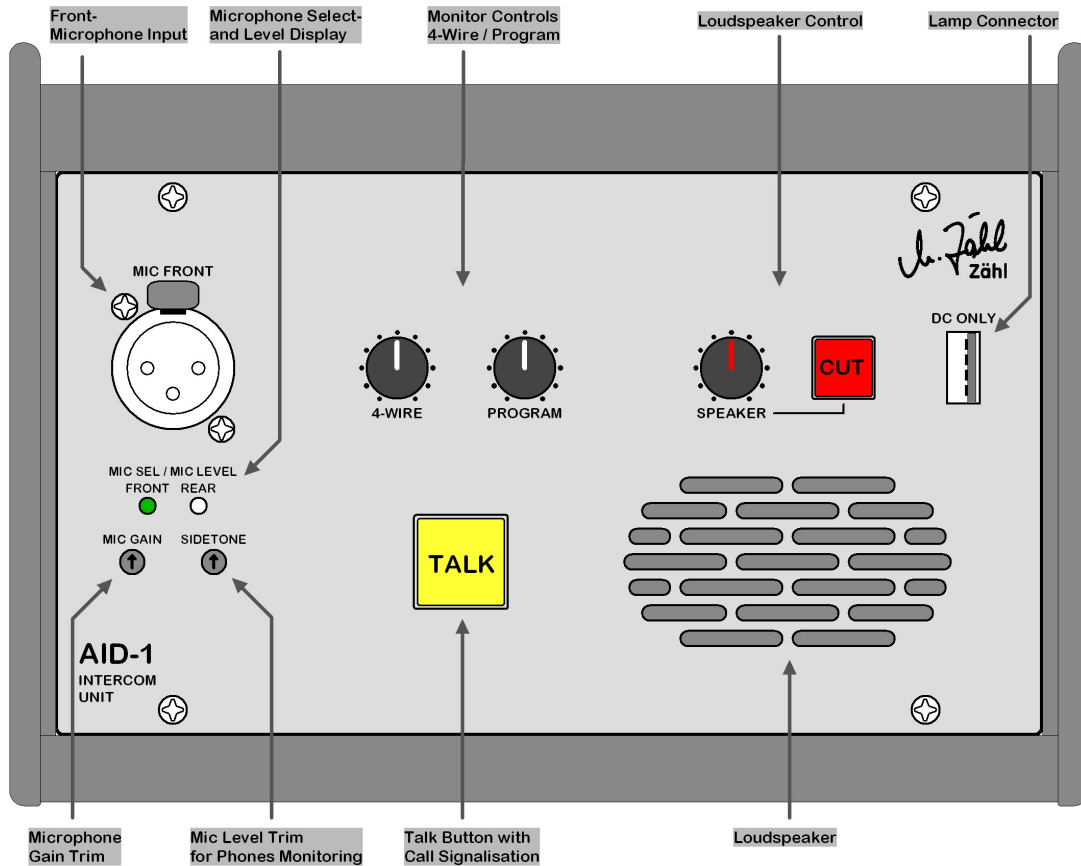
The AID-1 base-plate provides four screw threads which can be used for mounting a VESA 100 compatible adapter, thus allowing the operation of the unit on a support arm or a stand.

The screw threads are in the metric M4 format. Screw in depth should be 8 mm as a minimum and must be less than 16 mm, referenced to the base-plate.

Important note: Never insert a screw or any other object into the screw threads by more than 16 mm, referenced to the base-plate. Otherwise severe damage of the AID-1 unit can be the consequence!



4. Front Panel & Rear Panel Overview



5. Connection

5.1. Power Supply

- 5.1.1. Plug the 4pole XLR connector which is mounted to the cable fixed to the power supply into the 4pole XLR connector designated "POWER IN" on the rear panel of the AID-1 unit.
- 5.1.2. 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.

Important Note: Always connect the power supply in the order described above. Otherwise there is a risk of damaging the power supply and/or the unit.

- 5.1.3. 12V-24V regulated DC is allowed at the power input. As a standard we deliver power supplies with 19V, but differing values in the 12V to 24V range are possible.

5.2. Audio

5.2.1. Microphone Inputs

The microphone inputs are suitable for input levels from -65dBu to -20dBu. Depending on the input configuration they are transformer-balanced, transformer-balanced with 30V phantom power or unbalanced with 9V AB-powering.

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

5.2.2. Headphones Output

Only connect stereo-wired headphones with 3pole ¼" Jack with an impedance of 30 Ohm or more per system.

The headphones output delivers voltages up to 10Veff.

Important Note: Always set the monitor controls labelled 4-WIRE and PROGRAM as well as the SIDETONE trimmer 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.

5.2.3. Other Audio Inputs and Audio Outputs

All other audio inputs and audio outputs are transformer balanced and designed to a reference level of +6dBu and a maximum level of +20dBu.

Important Note: Connecting DC exceeding 1V is not allowed and can lead to damages inside the unit.

5.3. Lamp Supply/USB

Right hand on the front panel there is a USB Type A socket designated "DC ONLY". It serves exclusively for supplying a standard 5V LED Lamp with USB connector (commercially available with gooseneck).

Important Note: Never connect any other equipment. Especially never connect a PC or PC peripheral equipment. There is the danger of damage to your unit as well as the connected equipment.

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

6. Basic Functions

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

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

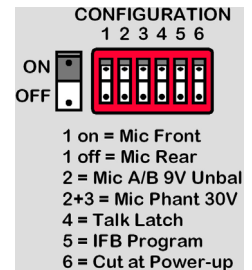
Enhanced functionality and comprehensive configuration are described in the following chapter.

6.1. Configuration

The configuration assembly consists of 6 miniature rocker switches on the rear panel. 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.

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



6.2. Talk

6.2.1. Microphone Inputs and Setup

Select between to microphone inputs:

- 3pole XLR female socket on the front panel, labelled MIC FRONT, suitable for connecting a gooseneck microphone
- 3pole XLR female socket on the rear panel, labelled MIC REAR, for any wired microphone or headset microphone

Mic Input Select

Configuration switch 1 is dedicated for microphone input selection. In the **on** position MIC FRONT is selected, in the **off** position MIC REAR. Your selection is indicated by the MIC SELECT/MIC LEVEL LEDs on the front panel.

MIC Input Setup

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

- 2 and 3 off: transformer-balanced input
- 2 on, 3 off: unbalanced input with 9V AB-powering
- 2 and 3 on: transformer-balanced input with 30V phantom power

(Switch position 2 off, 3 on is not defined, same evaluation as 2 and 3 off.)

Important Note: Operating configuration switches 1, 2 and 3 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 Mic Input Setup and microphone connection are completed.

Gain Setting

Microphone Gain Trimmer is provided on the front panel, labelled MIC GAIN.

MIC SELECT/MIC LEVEL LEDs indicate the selected input. Different colours on these LEDs provide level metering as well thus making gain setting comfortable.

Green: Input is selected, post microphone amplifier level is lower than -25dB

Yellow: Input is selected, post microphone amplifier level is higher than -25dB but lower than 0dB

Red: Input is selected, post microphone amplifier level is higher than 0dB

(All dB-values are related to the unit's reference level of +6dBu.)

Lo-Cut Filter

The microphone input stage provides a Lo-Cut filter in order to suppress "pop noises" or other low frequency interference. Its attenuation is 3dB at 60Hz and increases to approx. 20dB at 20Hz.

Limiter

If post microphone amplifier 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.). When the LED indicates red colour, there is a minimum internal headroom of 15dB left. Only if the signal exceeds the headroom, relevant distortion will be audible, though the output level of the limiter will remain nearly stable.

Please consider that a too high 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 a setting that will make the LED indicate yellow at normal speech level with short red indications at level peaks.

6.2.2. 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.

6.2.3. TALK function / TALK button

Push the TALK button on the front panel. When TALK function is active, the button will indicate red, TALK button switching action can be configured by configuration switch 4.

Configuration of TALK button switching action

4 off: Momentary

4 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.

6.3. Listen

6.3.1. 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.

6.3.2. 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 (PROGRAM and SIDETONE are described in the following chapter.).

Connect your headphones to the ¼" jack socket labelled HEADPHONES on the rear panel.

Set the monitoring level at the level control labelled 4-WIRE on the front panel.

Centre position can be seen as a default position if the remote unit delivers audio signals at a reference level of +4dBu...+6dBu. In case there are lower levels, the maximum clockwise position provides 15dB gain.

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

6.3.3. Monitoring at internal Loudspeaker

Loudspeaker monitoring is provided for 4-WIRE IN- and PROGRAM-signals. It follows the level settings for the headphones output, but provides an additional level control, labelled SPEAKER, and an illuminated mute button, labelled CUT, on the front panel.

As with the other level controls, SPEAKER control centre position can be seen as a default value.

The CUT button will light up red, when the speaker is switched off. Push the CUT button to activate the speaker, the illumination will extinguish. Push the button again, to switch the speaker off, etc.

Note: SPEAKER level control and CUT button can be seen as master controls for the loudspeaker, whereas there is no extra master control for the headphones output.

Please also refer to the AID-1 Block Diagram (chapter 7) which illustrates the signal flow in the monitoring section.

DIM Function

In order to avoid feedback and enhance speech comprehensibility loudspeaker level is automatically dimmed, when TALK function is active.

CUT function power-up configuration

Setting configuration switch 6 defines the power-up behaviour of the loudspeaker CUT function.

Set the switch to the **on** position, if you want the CUT function to be active, i.e. loudspeaker is switched off, when the unit is powered-up.

With configuration switch 6 in the **off** position the loudspeaker will be on when the AID-1 unit is powered up.

Example 1: *AID-1 is located backstage, headphones monitoring is used primarily. Using the loudspeaker could disturb a running performance. Set switch 6 to the on position to make sure, that the loudspeaker is switched off after a power off or a mains failure.*

Example 2: *Communication to the operator has to be established via the AID-1 loudspeaker. Choose switch 6 off position. This will ensure the loudspeaker to be switched on after a power off or a mains failure.*

6.3.4. 4-Wire Call Signalisation

Incoming audio signal at 4-WIRE IN is indicated at the TALK button: If signal level exceeds a threshold of approx. -20dBu, the button will light up yellow. The indication is held for about 8 sec. after the signal has been removed in order to clearly signalize short "calls".

As soon as you activate TALK, CALL signalisation will be cleared at once.

If TALK function and CALL indication are active at the same time, the TALK button will light up orange. While TALK function is active, CALL indication is not held. The indication then directly follows the incoming audio signal. It will change to red colour, as soon as modulation is removed.

7. Enhanced Functions

7.1. PROGRAM Input

The PROGRAM input is available on the rear panel at the XLR 3-pole female socket labelled PROGRAM IN.

7.1.1. Monitoring

The volume control labelled PROGRAM on the front-panel is dedicated for monitoring the PROGRAM input signal at the headphones output and the internal loudspeaker.

Centre position can be seen as a default position if the remote unit delivers audio signals at a reference level of +4dBu...+6dBu. In case there are lower levels, the maximum clockwise position provides 15dB gain.

Monitoring 4-WIRE input has priority over PROGRAM input. As soon as there an audio signal present at the 4-WIRE input (threshold approx. -20dBu), PROGRAM monitoring is dimmed by about 12dB. This helps the operator not to miss any announcement on 4-WIRE input.

7.1.2. PROGRAM feed to 4-WIRE OUT (IFB PROGRAM)

Set configuration switch 5 to the ON position to activate this function.

PROGRAM input signal is fed to 4-WIRE output, if TALK is not active.

7.2. SIDETONE monitoring

Especially for voice-over applications it is essential to monitor the microphone signal at the headphones output.

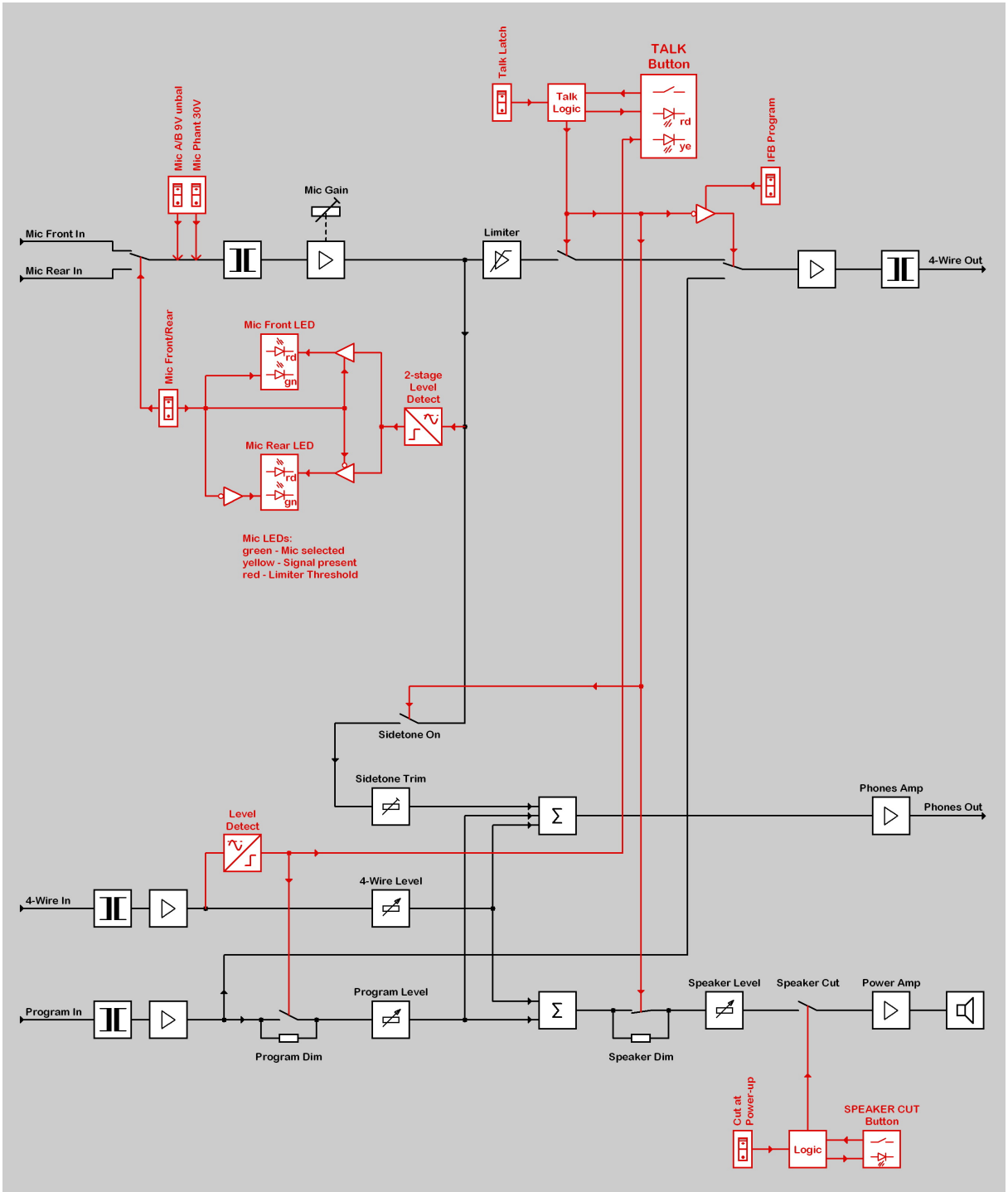
Operate the trimmer labelled SIDETONE on the front panel to set the desired monitoring ratio.

SIDETONE signal is fed to the headphones output, never to the loudspeaker.

SIDETONE is present only, when TALK function is activated, thus giving the operator a clear acoustic feedback, whether TALK is switched on or not.

Note: When TALK function is not active, the operator can check the operating state of his microphone by the MIC SELECT/MIC LEVEL LEDs on the front panel. They are functional independent of the TALK state.

8. Block Diagram



9. Connectors/Pinout

9.1.1. XLR connectors female 3-pole, line audio inputs

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

9.1.2. XLR connector male 3-pole, line audio output

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

9.1.3. Jack Socket 1/4" 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.

9.1.4. XLR connectors male 4-pole, power input

Pin 1	Ground / Protective Earth
Pin 2	Ground / Protective Earth
Pin 3	0 V DC
Pin 4	+12 V DC ... +24 V DC

10. Technical Data

10.1. Microphone Input

transformer balanced
input impedance approx. $1\text{k}\Omega$
input level range -20dBu ... -65dBu , maximum gain approx. 70dB
max. input level -3dBu (60Hz ... 20kHz)
lo-cut filter $60\text{Hz}/-3\text{dB}$ ($20\text{Hz}/-20\text{dB}$), frequency response 100Hz ... 20kHz $\pm 0.75\text{dB}$
input related noise at max. gain -125dBu (typ., RMS, 20Hz ... 20kHz , source 200Ω)
switchable - balanced
- unbalanced with 9V A/B powering
- balanced with $+30\text{V}$ phantom powering

10.2. Line Inputs

transformer balanced
input impedance approx. $10\text{k}\Omega$
reference level $+6\text{dBu}$
maximum input level $+20\text{dBu}$
frequency response 40Hz ... 20kHz $\pm 0.5\text{dB}$

10.3. Line Output

transformer balanced
output impedance $< 50\Omega$
reference level $+6\text{dBu}$
maximum output level $+20\text{dBu}$, Mic signal with Limiter $+6\text{dBu}$ ($-0/+1\text{dB}$)
frequency response 40Hz ... 20kHz $\pm 0.5\text{dB}$

10.4. Headphones Outputs

dedicated output stages for left and right
output impedance typ. 25Ω
maximum output level $+18.5\text{dBu}$ w/o load, $+16\text{dBu}$ with 100Ω load
frequency response 40Hz ... 20kHz -0.75dB

10.5. Power Input

AID-1 requires well regulated DC in a range of $12\text{-}24\text{V}$. A maximum of 27V DC must not be exceeded even by short voltage spikes.

A stable mains protective earth (PE) on the power supply mains inlet is mandatory.

Power consumption is typically less than 20W , but for short periods of time this value may be exceeded substantially. The power supply we deliver with AID-1 has been selected to be capable for such operation. Hence we assume that the unit is operated with this power supply. In case AID-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.

10.6. Lamp Supply/USB

Important: Follow all warnings and hints given in chapter 4.3

This output (designation "DC ONLY") delivers 5 Volt DC nominal. It may be exclusively used for supplying a standard 5V LED Lamp with USB connector (commercially available with gooseneck). It may be loaded to a maximum current of 250mA.

Never connect any active electronic components to this connector.

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.

11. Measures and Weights

11.1. AID-1 Unit

enclosure	plastic material desk console, EMC coated
front panel / rear panel	clear anodised aluminium
overall measure W x H x D	212 mm x 87 mm x 160 mm
height of front panel at front	37 mm
height of front panel at rear	70 mm
weight	approx. 1 kg

11.2. Power Supply

Measure L x W x H	120 mm x 43 mm x 32 mm
Weight	0.4 kg
Length of fixed cable (DC to unit)	approx. 1.7 m
Length of mains cable	1.5 m - 2.0 m

11.3. Delivery form

Cardboard box	approx. 430 mm x 280 mm x 190 mm
Gross weight	approx. 2.8 kg