

1. DESCRIPTION:

The LPA-2 is a High-End headphone module for demanding application in the medium and high power range, available in various versions. It is universally applicable, so that practically all headphones with an impedance of 16 Ω ... 2 k Ω can be driven extremely distortion-free. The largest amount of power, over 2 x 1200 mW, is delivered by the LPA-2 module, with a headphone impedance between 22..100 Ω . The high current delivery ability of the fully DC voltage-coupled unit using the most modern components also allows the parallel connection of several sets of headphones, depending on their impedance.

The low resistance outputs provide an exact damping for the connected headphones.

With its compact construction, this module can be retroactively built into many devices. The extremely low, flat module unit height (only 16mm) means that it can easily be installed into just 1 section of an existing 19" rack.

The integrated stereo volume control is in each case a selected ALPS-version with a 60 dB control range. Available either in the flat version with a continuously variable volume control, or in a rest work variant with 21 incremental volume steps, as well as intermediate positions too. The excellent synchronisation between both channels is, during normal working conditions, from -40.. 0 dB less than typ. 1 dB, and -30.. 0 dB < 0.5 dB in the control range.

An additional basic amplification can be enabled by using jumpers in 3 stages in order to adapt the headphone sensitivity : +1 dB, +6 dB, +12 dB ranges (- 6... +18 dB with the SIA-5 board)

A special slot permits installation of an optional new miniature symmetric **SIA-5** ore the newest **SIA-5.V2** ultra low noise board to achive excellent

sound performance and a high impedance 2 M Ω stereo input. 10 M Ω impedance for the SIA-5.V2.

For the integration of the SIA-5 board in the LPA-2, jumpers are provided for module adaptation.

The unmatched low noise and the excellent frequency and phase response allow the LPA-2 to operate additionally as an asymmetrical stereo amplifier with level control for particularly low ohm loads or long cables. Distribution amplifiers (1 stereo signal via several channels) can be built up easily with cascades of several boards and flat ribbon cable connection technology.

Because of these features headphone distribution amplifiers with one stereo input and several outputs for different musicians with in each case individually adjustable volume controls are possible.

The LPA-2 resists short circuits to ground on both outputs without damaging the unit.

The LPA-2 is fastened using a 7mm drilled hole. The LPA-2a with incremental potentiometer needs a 9mm hole for mounting on the front panel. The shaft diameter of the respective potentiometers is 6 mm.

The input signals, output signals and the power supply are connected via a 14 pole plug on the board.

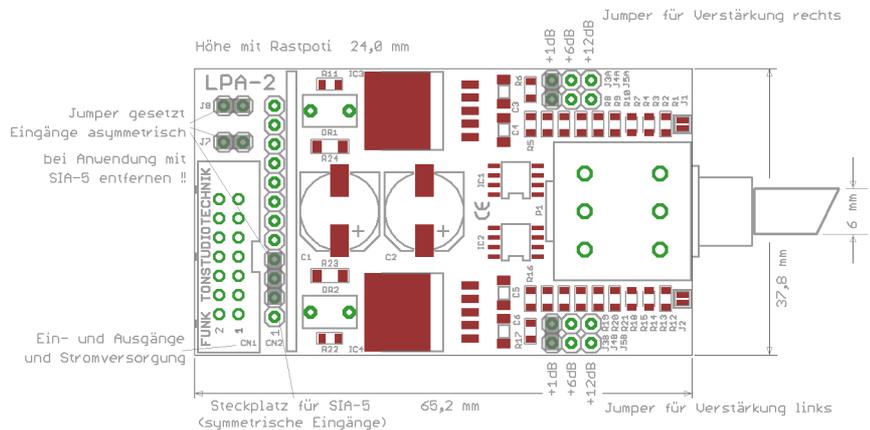
The symmetrical power supply is usually provided by the device to be reequipped, as supply voltages already often exist within it.

Iff an internal power supply is not at hand, suitable mains adapters (PWS-04a, SMPS-14T and SMPS-24T) are available.

0.5 m of flat ribbon cable and 14 pole plug connector are included in delivery.

2. PIN ASSIGNMENT CN1:

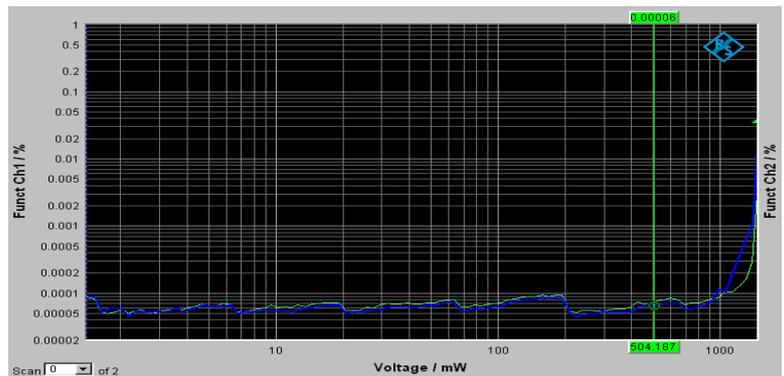
Pin 14	Power supply + 12..19 V
Pin 13	GND Power
Pin 12	Power supply - 12..19 V
Pin 11	Output channel 2, headphones right
Pin 10	Output channel 2, headphones right
Pin 9	Output channel 1, headphones left
Pin 8	Output channel 1, headphones left
Pin 7	GND Output, Headphones
Pin 6	GND Output, Headphones
Pin 5	Input channel 2 - (without SIA-5 → GND)
Pin 4	Input channel 2 +
Pin 3	GND Input
Pin 2	Input channel 1 - (without SIA-5 → GND)
Pin 1	Input channel 1 +



LPA-2 original dimensions

3.0 AUDIO QUALITY:

The extremely low distortion at 1 kHz load with both channels in simultaneous operation display similar measurement curves. The steps of the measuring curve result from the amplifier switch-over of the Audio-Analyzers only. The distortion performance (THD k2..k9) was registered at 1 mW to 1500 mW at 62 Ω load. The distortion levels for higher headphone impedances are even lower and hardly detectable! The left scale shows the distortion degree in %, the lower scale displays the corresponding output power in mW. The green marker shows the total distortion at 2 x 500 mW with distortion of 0.00006% (-123 dB).



3.1 TECHNICAL DATA:

measured with +/-19 volts of supply voltage, +6 dBu level and 0 dB gain, if not otherwise declared, without SIA-5 input board (without symmetrical inputs)	
Power supply :	+/- 12...+/- 19 V (max. 1 mV Noise)
Power consumption no-load :	32 mA, with additional SIA-5 : 52mA
Power consumption full power:	230 mA max. at 22 Ω, with additional SIA-5 : 250 mA max. at 22 Ω
Gain :	- 60...0 dB (Incremental poti with 21 steps ore stepes, typ. < 1dB matching from - 40..0 dB)
Input impedance :	10 kΩ unbalanced, 2 MΩ with balanced input (SIA-5 integriert)
Input voltage max. :	+23,5 dBu
Output impedance :	< 2 Ω
Output voltage max. :	+ 24,0 dBu (with gain > 1 dB)
Dynamic, volume fully clockwise:	139 dB at 300 Ω, 138 dB at 68 Ω, measured with A-weighting filter typ. > 140 dB !!
Distortion + Noise (THD + N) :	20 Hz...22 kHz < 0,0005 % at 2x 500 mW, 33 Ω
THD-Distortion 1 kHz (k ₂ ..k ₉):	< -115 dB at half power, typ < -120 dB
Intermodulation 250/8kHz :	typ. 0,0001 % at 2x 500 mW, 100 Ω load
Frequency response :	0 Hz...22 kHz less than ± 0,01 dB, 0 Hz..100 kHz <± 0,2 dB at 100 Ω
Large signal bandwidth:	0 Hz...> 180 kHz at 100 Ω
Slew Rate :	typ. 20 V/μsec
Crosstalk L < > R:	110 dB at 1 kHz 100 dB at 10 kHz
Max. power at THD (k ₂ -k ₉) < 0,1% :	

600 Ω	300 Ω	200 Ω	150 Ω	100 Ω	70 Ω	47 Ω	33 Ω	22 Ω
2x 260 mW	2x 500 mW	2x 730 mW	2x 1000 mW	2x 1300 mW	2x 1650 mW	2x 1500 mW	2x 1450 mW	2x 1200 mW

Output noise with following gain :	+ 0 dB	+ 1 dB	+ 6 dB	12 dB
Noise unweighted (20 Hz...22 kHz eff.) :	< - 116,0 dBu	< -116,0 dBu	< - 113,5 dBu	< - 109,0 dBu
Noise weighted (A-weighting eff.) :	< - 119,0 dBu	< -118,5 dBu	< - 116,0 dBu	< - 111,5 dBu
Noise weighted qp (CCIR 468-4) :	< - 110,0 dBu	< -109,5 dBu	< - 107,0 dBu	< - 102,5 dBu

Dimensions : 37,8 mm x 65,2 mm x 24 mm (width x depth x height) incl. incremental potentiometer