

PEQ IV (Code 2482)

Programmable Equalizer

Programmable Equalizer for playback equalization



Overview

PEQ IV is a programmable equalizer using 24 bit technology.

PEQ IV is used for playback equalization of artificial head recordings. As a general purpose equalizer, PEQ IV can also be used in the professional audio sector, for example, in loudspeaker or room equalization.

PEQ IV is a system component of the digital HEAD Playback System HPS IV for aurally-accurate reproduction of artificial head recordings.

Programmable Equalizer PEQ IV

The Programmable Equalizer PEQ IV can be used as a general purpose equalizer (programmable via an RS232 interface) with 24 bit data processing. It is optimized for Artificial Head recordings of the HMS III generation. Through the signal equalization in PEQ IV, digital audio data are adjusted and appropriately equalized to the Artificial Head settings used when recording. In completing this task, the system evaluates the HMS data transported in the 16th bit of the audio data stream and automatically adjusts

to the equalization mode (LIN, FF, DF, ID or USER) and level ranges set when recording took place. This automatic process can be deactivated if required. A special equalization, taking account of the subjectivity of auditory impression, can be activated. The user also has the option of individually equalizing a particular set of headphones. A limiter can be activated to protect the user's hearing from very loud sound events at playback by producing a gentle reduction in level. For a playback with loudspeakers self-contained loudspeakers, e.g. the monitor loudspeakers

HML of HEAD acoustics, can be connected directly to a PEQ IV.

An additional important feature is the analog output for dynamical headphones.

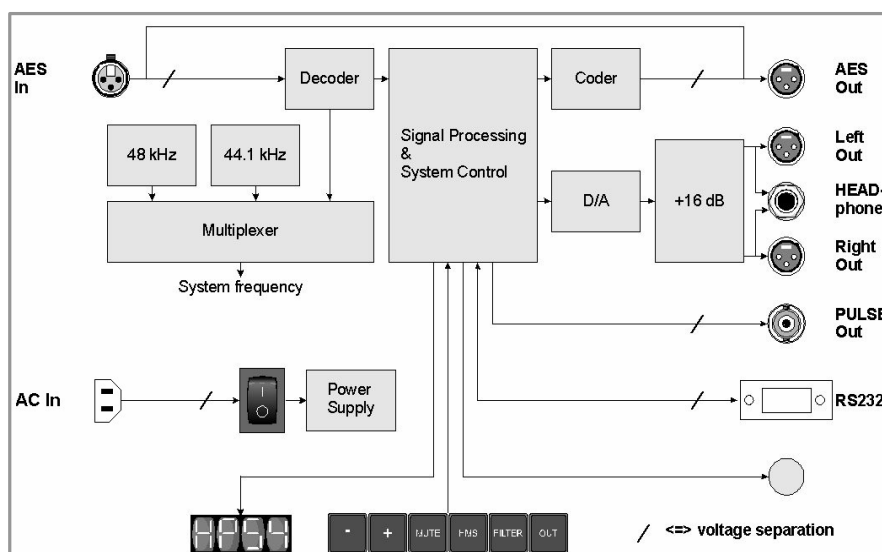
The delay function allows playback of acoustic signals with delay for both channels individually, enabling, for example, compensation of phase delay during simultaneous loudspeaker and headphone playback.

Playback using more than two headphones is possible by cascading several PEQ IV units with no loss in quality. The equalization for each pair of headphones can be selected individually. Furthermore PEQ IV can drive simultaneously several power amplifiers via the analog audio output.

On the one hand the PEQ IV can be operated using the operating keys on the front panel, on the other hand all settings of the PEQ IV can be made using the remote control software PRC I.1 or the Remote Control RC V.

PEQ IV is a D/A converter including signal conditioning also usable in the professional audio sector as a programmable equalizer, for example, in loudspeaker or room equalization.

PEQ IV is compatible with power amplifiers of the HPS III generation.



Block diagram - PEQ IV

FEATURES

- 24 bit data processing
- Minimal inherent noise
- Update possible via software
- Extensive modulation range
- Low distortion factor, also at low frequencies and levels
- Extensive transmission range
- Digital audio input in AES/EBU format (XLR)
- Digital output in AES/EBU format (XLR), switchable to the filtered audio data or the original signal from the input with the option of driving further PEQ IV equalizers
- Analog output for headphones
- Voltage separation of inputs and digital outputs
- User-friendly control via PC or Remote Control RC V via a RS232 interface (9-pin D-SUB)
- Equalization modes: linear (LIN), free-field (FF), diffuse-field (DF), independent-of-direction (ID) or user-defined (USER)
- Simplified operation via automatic transfer of parameters from HMS data
- Switching between objective and subjective equalization
- Individual equalization of headphones with averaged filters for Headphones HA I and HA II
- Independent filters for both channels
- Level setting in steps of 1 dB
- Connectable level limiter
- Delay function for both channels
- Modulation display and sound level meter (PRC I.1 and RC V)
- Symmetrical analog audio output (XLR) for driving the HPS IV power amplifier PVA IV.2 or speakers HML
- Pulse output
- Cascading option
- Service-friendly through filter updates and functional test via software
- Automatic self-test when unit is switched on
- Stackable housing

Technical Data	
General data	
Signal processor DSP56309:	66 Mips (MegaInstructionsPerSecond)
Data processing:	24 bit
Memory	
SRAM	128 k * 24 bit
FLASH	512 k * 8 bit
D/A converter	
Resolution:	24 bit
Oversampling:	128-fold
Analog outputs;	
All inputs and outputs include short-term protection against overvoltage. All outputs are permanently protected against shorting.	
Connection:	2 x XLR 3-pin
Transmission range:	0 kHz - 20 kHz $\leq \pm 0.15$ dB
Distortion factor:	$\leq 0.03\%$ at 1 V _{rms} , $\leq 0.2\%$ at 10 mV _{rms}
Dynamic range (at +0.2 dB to -0.5 dB	
Linearity accuracy):	≥ 93 dB
Intermodulation attenuation at 10 kHz, 11 kHz:	≥ 90 dB
Signal-to-noise ratio at levels up to 94 dB:	≥ 100 dB/103 dB(A)
Signal-to-noise ratio at levels over 94 dB:	≥ 97 dB/100 dB(A)
Cross-talk attenuation:	≥ 105 dB
Max. output level:	12.6 V _{rms} , corresponds to 116 dB
Max. load:	625 Ω / 12 nF
Interfaces	
AES / EBU input:	AES standard, voltage separation, XLR 3-pin
AES / EBU output:	AES standard, voltage separation, XLR 3-pin
Pulse output:	TTL level at 100 Ω , voltage separation, BNC socket
RS232 interface:	5V pow. supply f. terminal, DSUB sock. 9-pin
Power supply:	
Fuse:	85 V - 264 V AC / 47 Hz - 63 Hz
Power consumption:	T 500 mA @ 230 V, T 630 mA @ 115 V typ. 10 W, max. 15 W
Environmental Conditions	
Operating temperature range:	-10°C - 60°C
In-store temperature range:	-20°C - 75°C
Housing	
Overall dimensions (WxHxD):	327 mm x 44 mm x 230 mm
Weight:	2100 g

APPLICATIONS

- Aurally-accurate reproduction of Artificial Head recordings
- Playback of conventional recordings
- Subjective A/B comparisons in acoustic measurement technology
- Application in sound studios and the professional audio sector
- Programmable room equalization for sound exposure of speakers (in preparation)

STANDARD DELIVERY ITEMS

- **PEQ IV (Code 2482)**
HPS IV Equalizer, incl. fitting bracket for installation in 19" rack and rubber feet for worktop-mounted unit
- **PRC I.1 (Code 2403)**
HPS IV remote control software for Windows® NT, 2000 and XP
- **CXX II.1 (Code 5177)**
Cable AES/EBU, XLR male \leftrightarrow XLR female 3-pin, 2.95 m
- **CAB I.1 (Code 5475)**
Cable D-SUB 9-pin, 2.95 m
- **PCC I.9x (Code 997x)**
Mains cable to local specification
- **PSD IV.1 (Code 2401)**
User's manual HPS IV

ACCESSORIES

- **PVA IV.2 (Code 2485)**
HPS IV Power amplifier for connecting 2 Headphones HA II.1
- **RC V (Code 1312)**
Remote Control for HPS IV
- **HA II.1 (Code 2369)**
Electrostatic Headphones
- **HML (Code 2960)**
Monitor Loudspeaker (2 pieces)
- **CXX II.4 (Code 5181)**
Cable XLR male \leftrightarrow XLR female 3-pin, 0.3 m
- **CXL I.1 (Code 9808)**
Cable XLR female \leftrightarrow LEMO 3-pin, 1 m (connection PEQ IV \leftrightarrow HPS III.0 amplifier)
- **CBB I.2 (Code 3171)**
Cable BNC \leftrightarrow BNC, 2 m

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