



XDSP

Signal processor board



A U D I O E X C E L L E N C E

System DSP “on demand” anywhere in the NEXUS network

With an XDSP board it is possible to use the most different signal processing functions directly within the audio matrix. This can be useful in many applications: Crossovers, delays and system EQs of public address systems, runtime adjustment of picture/sound in OB vehicles, EQ and compressor of an announcement microphone, but also more complex applications such as the fully reversible up/down mix ISOSTEM for 5.1 surround signals. Using NEXUS routing and parameter control from NEXUS Logic Control, even the craziest solutions can be achieved.

The XDSP board is the universal DSP board for the NEXUS system. A large number of different signal processing functions are available for the boards, which can be configured according to customer requirements. With these configured DSP resources, a wide variety of solutions can be implemented by the user and used alternately or automatically via NEXUS Logic Control. The processing modules include summing, matrix mixers with and without delays, simple faders and faders with delay, crossfaders, dynamic units, various EQs, intercom matrices, or even more specialized functions such as crossovers, de-esser, MS stereo decoders or the fully reversible ISOSTEM up/down mix. 40-bit floating point high resolution signal processing enables high-quality calculation of audio signals in the renowned Stage Tec quality of algorithms. The parameters of the configured modules can be controlled via the NEXUS user interface and can be automated with the NEXUS Logic Control. The resulting application possibilities are virtually infinite.

40-bit floating point processing

For an exact calculation of the audio signals, a 40-bit floating point resolution is used internally

Different signal processing modules available, e.g. ISOSTEM-Upmix

The XDSP card can operate up to two Isostem upmix algorithms to display stereo signals such as finished mixes in surround.

Level and delay adjustment

Level and delay controls are configurable.

parametric/graphic equalizer

The equalizer unit consists of both low/highpass and two shelving filters as well as four bell filters. All bands can be changed in frequency from 20Hz to 20kHz and with +/-24dB gain. The slope of the bandpass and cowtail filters can be selected in 6dB steps of 0dB-24dB, the quality of the bell filters can be between 0.5 and 9..

Blocking filter (high/low pass, bandpass, all-pass filter (90°))

For many applications, no complex equing is required, only blocking filters that are conveniently applied by the XDSP card.

Dynamic processing (compressor, limiter, expander, gate, de-esser)

Common dynamic modules can be set up and operated by the user.

diplexer

For e.g. extensive public address systems there is the possibility to set up crossovers on the XDSP board.

total matrices

The XDSP card can also be used for total matrices.

Level/Delay Matrix

A level/delay matrix can be created for sound reinforcement tasks requiring a large number of distributed loudspeakers.

N-1 matrix

The configurable N-1 matrix eliminates the need for a mixing console for conference calls.

Signal processing for static mixes without console

The versatile options offered by the XDSP board are freely configurable and enable signal processing chains similar to those of a mixing console. A wide range of requirements can thus be met for static audio processing, from frequency- to dynamically changing measures. In a situation in which the same speakers repeatedly work with a microphone, a sound can be set up with equalization, dynamic limit and limiting and statically round off the corresponding input signal or call it up again for the circumstances as a stored snapshot of the matrix operating program.

Crossover for controlling active loudspeaker systems

Active loudspeaker systems without their own signal processing can be supplied with tailor-made signals because the XDSP card can also take over the function of a crossover as standard. This way, the audio channels are output directly for the speaker. For this purpose, the high and low-pass modules with a range of 20Hz-20kHz can be inserted into the signal path.

Correction of delay differences between loudspeakers

The spatial conditions at concerts or performances in halls and venues often force the use of additional loudspeakers, supporting the main sound system.

Delay lines installed far apart from each other are common, especially when high demands are placed on good sound coverage of all seats. However, this leads to runtime differences with the signal of the mains, whose delayed arriving wavefronts cause phase problems and echoes. The additional speakers must therefore be tuned to the main rig so that the more distant delay lines do not output the signal until the sound of the mains has reached them. Such required delays in the signal path can be achieved using the XDSP board by adjusting the output signals of the NEXUS system with delays that can be set to tenths of a millisecond..

Technical specifications	
Data formats	
	NEXUS internal audio format (24 bits); in sync with the system clock
Inputs and outputs	
Inputs	256
Outputs	256
Accuracy	
Internal purposes	40-bit extended floating-point format, IEEE 754/854 compliant, 32-bit mantissa/8-bit exponent
Bus	32-Bit
Sample rates	
Sample rates	In sync with NEXUS system clock (up to 96 kHz)
Components	
Signal processors	ADSP 21469
Delay memory	128 MB DDR2-RAM per DSP (total delay time: approx. 1300 s)
Clock rate	
External	25 MHz
Internal	450 MHz
Operation conditions	
Temperature range	0 °C bis +50 °C
max humidity	max. 90 %, non-condensing
Lagerbedingungen	
Temperature range	-35 °C bis +70 °C
max humidity	max. 90 %, non-condensing
Power supply	
Voltage	+4,75...5,25 V
Current	560 mA
Mechanical data	
Weight	0,19 kg

Stage Tec NEXUS: A global reference!*



*The map shows selected reference locations. To date more than 1,000 Stage Tec NEXUS systems have been delivered and installed worldwide.

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