XDSP

The universal DSP board for NEXUS

- New generation of XDSP signal processing for NEXUS
- ISOSTEM upmix algorithm optional
- Individually combinable signal processing modules

ISOSTEM
High end multichannel from stereo

The new NEXUS XDSP signal processing board supplies significantly increased processing power and reserves for resource intensive applications while being no larger than its predecessor and lower in weight. Load can be allocated across different processing modules, which can be combined in any manner to meet sophisticated requirements. The GUI provides a visual overview of the order in which modules' are placed and connected, and enables individual audio parameters to be adjusted.

Stage Tec optionally integrates the ISOSTEM method from DSPECIALISTS into the new board. It generates a proper multichannel mix from stereo input signals in real time, which is fully reversible.

STAGETEC

XDSP

NEW FEATURES

- Powerful signal processing: four times that of XDSP 04
- Higher crosspoint capacity in gain delay matrices
- New modules: Band filter, upmix algorithm (ISOSTEM)
- Finer resolution in frequency settings for EQ & filter
- Larger RAM storage for longer signal delays
- User-friendly GUI provides overview for fast access to audio parameters and the switching sequence of signal processing modules

THE MODULES IN DETAIL

Gain and delay

Adjustment of gain, delay time, phase reverse, mute as well as link and copy (grouping of multiple channels and copying the parameters set to other modules)

Maximum number of input channels	160
Level control 1-dB steps	Off, from -75 dB to +15dB
Delay adjustable in ms / s / frame / meter, with 0.1-ms steps	0 to 8000ms
Delay Bypass	on/off
Phase inversion	on/off
Mute	on/off
Copy and link audio parameters to other channels	on/off

Equalizer & Filter

The parametric equalizer can contain up to 30 filters. The following modules are available:

- Peak filter
- High and Low shelf filters
- Low-pass and High-pass filters
- Notch filter (Frequency in 1-Hz steps)
- New: Bandpass filter (Frequency in 1-Hz steps)
- New: 90° Filter

Graphical overview	yes
Bypass	off/off
Copy function	yes
Q, Bandwidth	from 0.5 to 9
Delay Bypass	on/off
Frequency range	240 steps in a scale from 20Hz to 20kHz
Gain	from -15dB to +15dB
Delay	from 0 ms to 200ms

Dynamic processing modules

- Various modules for adjusting audio signal dynamics.
- There are 320 modules available. Several modules can be assigned to one channel.

Configuration options

Compressor	Ratio	Threshold	Output Gain	Attack	Release	Hold
minimum / maximum	from 1:1 to 1:50 (Lim)	from -40 to 0dBFS	from 0 to 63.8dB	from 0.04 to 399ms	from 10 to 10000 ms	from 10 to 10000ms
Limiter	Ratio	Threshold	Output Gain	Attack	Release	Hold
minimum / maximum	1:50 fixed	from -40 to 0dB	from 0 to 63.8dB	from 20 to 399ms	from 10 to 10000ms	from 10 to 10000ms
Expander	Ratio	Threshold	Output Gain	Attack	Release	
minimum / maximum	from 1:1 to 5:1	from -65 to 5dBFS	from 0 to 63.8dB	from 20 to 399ms	from 10 to 10000ms	from 10 to 10000ms
Gate	Ratio	Threshold	Output Gain	Attack	Release	
minimum / maximum	50:1 fixed	from -65 to 5dBFS	from 0 to 63.8dB	from 20 to 399ms	from 10 to 10000ms	from 10 to 10000ms

Sample delay

- Delay of audio signal in samples to compensate delay times.

Maximum number of units	18
Sample delay	from 0 to 500 samples
Increment settings	1 sample

Crossover

- Crossover filters can be used to connect to active speaker systems.

Crossover frequencies	from 20 to 20kHz
Filter quality (Q) dB/Octave	6 / 12 / 18 / 24

Sum matrices

- Matrices for summing multiple inputs to one output.
- Flexible combination of the size of the matrices and number of each channel.

Examples

	at 48kHz	at 96kHz			
4-in-1mixers	63	63			
8-in-1 mixers	31	31			
16-in-1 mixers	15	15			

Gain	Phase reverse	Mute	Link function	Copy function	Bypass
Off to +15dB	on/off	on/off	on/off	on/off	on/off

Mono mixer

- Mixes two signals (mono or stereo) into one mono signal with 3dB gain reduction.
- 150 mono mixers are available for configuration.

Gain-delay matrix

- The gain-delay matrix enables the simultaneous distribution of input signals to multiple outputs. Gain and signal delay can be configured individually for each crosspoint. Among other things, this function is useful for controlling distributed speaker systems.

Gain	Delay	Phase reverse	Mute	Bypass	Link function
from -145dB to +15dB	from 0 to 200ms	on/off	on/off	on/off	on/off

Matrices	Cross Points	Frequency	Delay
2	max. 1000	48kHz	no
2	max. 160	48kHz	yes
2	500	48kHz	no
2	500	48kHz	no

De-Esser

- A module that automatically reduces voiceless sibilants in speech and singing using a notch filter
- Presets for male and female voices available
- User presets are storable
- Easy handling because of a dedicated catalogue of operations with only three parameters: frequency, quality and threshold -40 to 0db
- Up to 128 modules configurable

N-1-matrix, mix-minus one

- Conference call: Every participant can hear all others, but not his or her own signal

ISOSTEM Upmix-Tool

- Generate multichannel (5.1) from a stereo signal and vice-versa
- Lossless conversion in real time
- Stereo-compatible downmix
- Predefined presets available and accessible through control software or NEXUS logic
- Loading alternative presets possible
- Two units at 48kHz possible
- Licence optional

ISOSTEM
High end multichannel from stereo

XDSP 04 and XDSP 06

Overview

	XDSP 04 @48kHz	XDSP 04 @96kHz	XDSP 06 @48kHz	XDSP 06 @96kHz
Performance factor	1		4	
Fader	**64**	**48**	**255**	**255**
Delay RAM memory	20s	10s	20min	10min
Fader delay combination	24 units (800ms)	12 units (800ms)	160 units (8000ms)	80 units (8000ms)
Dynamics units	56	28	320*	160
12-band-EQ	36	18	200	100
12-band-EQ with Delay	24	12	96	48
30-band-EQ with Delay	14	7	66	32
Mono mixers	64	32	125	125
4-into-1 mixers	32	16	63	63
8-into-1 mixers	16	8	31	31
16-into-1 mixers	8	4	15	15
Crosspoint capacity for the gain-delay matrix	4 matrices with 64 crosspoints	2 matrices with 40 crosspoints	2 matrices with 1000 crosspoints	2 matrices with 500 crosspoints
Upmix-Tool (ISOSTEM)	–	–	2	–

* Several modules may be used in one channel. Supports a maximum of 255 channels.

		XDSP 04	XDSP 06
Data formats		24-Bit Audio Resolution (NEXUS System)	
Inputs and outputs		255 In / 64 Out	510 In* / 255 Out
Calculation accuracy	Internal	40-Bit-Floating Point Format (IEEE 754/854)	
	Bus	32Bit	
Sampling rates		44.1kHz / 48kHz / 88.2kHz / 96kHz	
Signal processors		4 x ADSP 21062L	2 x ADSP 21469
Clock rate	External	40MHz	25MHz
	Internal	160MHz	450MHz
Power supply	Voltage	+4.75 to 5.25V	
	Current	850mA	560mA
Operating conditions	Temperature range	0° C to +50°C	
	Humidity	90% (maximum), non-condensing	
Storage conditions	Temperature range	-35° C to +70°C	
	Humidity	90% (maximum), non-condensing	
Mechanical data	General	board for 19" module frame, 3 U, 340 mm long	
	Front panel	4HP (20.02 mm x 128.5mm)	
	Required slot space	1	
	Weight	0.280kg	0.187kg

* Maximum 256 channels at the same time.

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