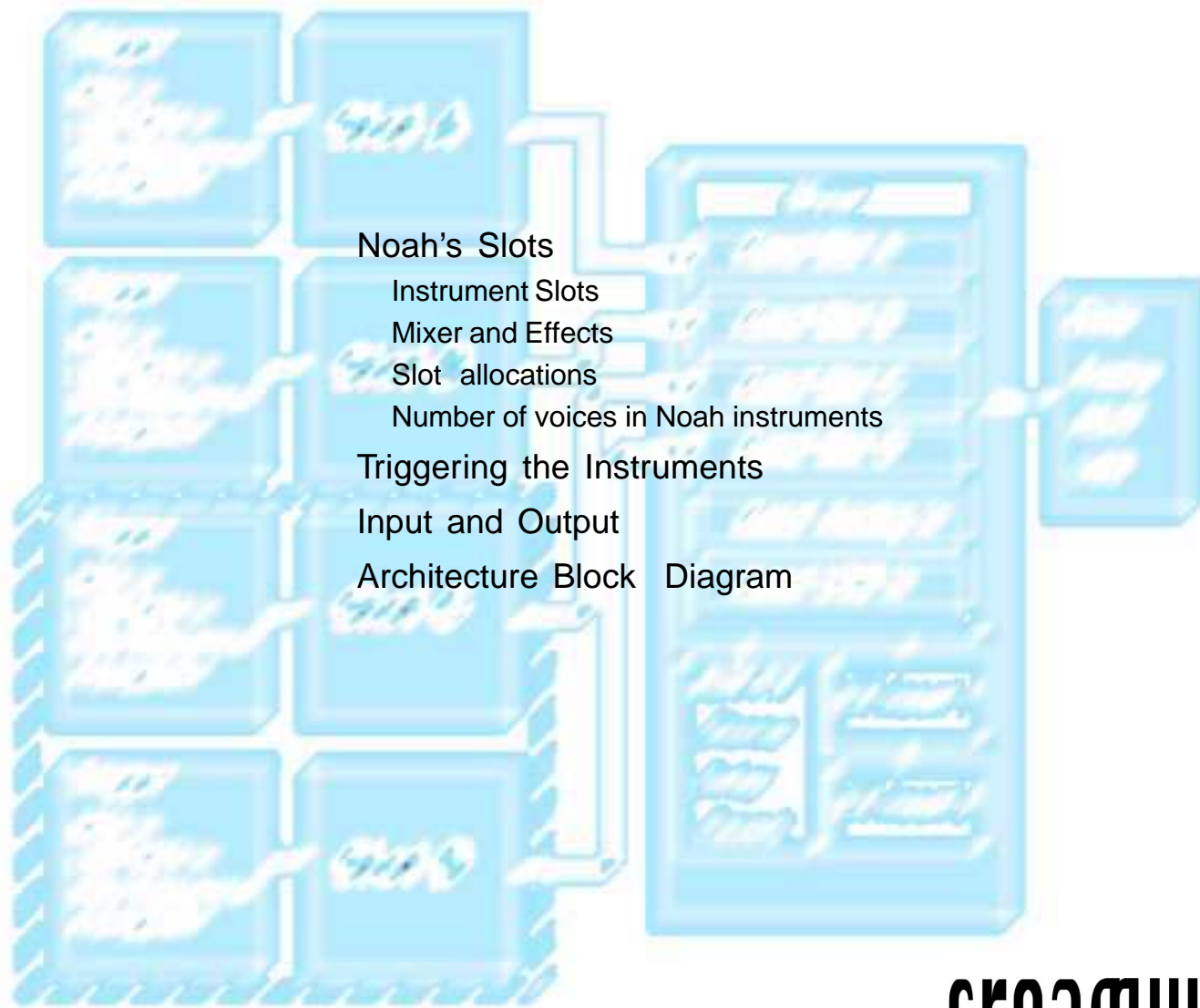


## Overview of the Noah Architecture



**NOAH** - Tactive Instrument Modeller

**creamw@re**<sup>©</sup>  
fidelity at work.

# Overview of the Noah Architecture

Noah processes all digital audio data with 6 special DSPs (Digital Signal Processors) while Noah EX has 10 DSPs. In each system an additional DSP is dedicated to the operating system. The DSPs are reserved for different tasks. Thus, some restrictions arise from the Slot model. Here the term Slot is equivalent to a block of DSPs reserved for a task, such as implementing one of the Noah instruments. Noah's great flexibility lies in the fact that you can load these slots with arbitrary Noah instruments or effects.

**All audio data are computed at a single sampling frequency of 44.1 kHz. Other sampling frequencies such as 48 kHz or 96 kHz are not possible.**

## Noah's Slots

### Instrument Slots

The basic version of Noah provides two slots (Slot 1 & 2) for Noah instruments. Each slot provides an equal amount of DSP power. You can either load individual instruments into each slot (Multi operating mode) or one instrument into both slots to extend the number of voices available to the instrument (Single operating mode).

Noah EX provides 4 slots (Slot 1-4), which likewise can all be used for a single instrument (in *Single* mode), with correspondingly higher polyphony, or for different instruments (in *Multi* mode). In Multi mode, slots can be combined freely as desired – each instrument can be loaded using one, two, three or four slots, with corresponding increases in voice count. An instrument loaded into a

particular slot occupies all subsequent slots up until the next slot into which an instrument has been loaded. The accompanying diagram shows some of the combinations which are possible.

Each of the instrument slots can be addressed individually through one of the two physical MIDI inputs (MIDI In, USB MIDI In) or by the onboard step sequencer or arpeggiator.

## Mixer and Effects

A portion of the DSP resources is reserved for the internal mixer and effects. In principle the Chorus, Delay and Reverb Aux effects are available at all times in the mixer's AUX paths to process signals from either the instrument slots or external sources. With the delay you can select from several versions. The selected version will be loaded into a special Delay slot within the Aux Effects group.

In addition, two Insert effects can be loaded either into a particular mixer channel to process the signal from a specific instrument slot, or into the master channel to process the overall mix.

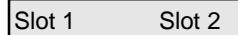
Because you can load insert effects into the channels reserved for analog input and USB audio, you can also use Noah as an effects processor for external signals.

## Slot allocations

The gray box indicates the number of slots occupied by a single instrument.

### Noah

Single Mode



(1 instrument with double the DSP performance)

Multi Mode



(2 instruments with basic DSP performance)

### Noah EX

Single Mode



(1 instrument with quadruple DSP performance)

Multi Mode

Different instruments can be loaded into one or more slots each. A few examples:



(4 Instrumente mit einfacher DSP-Leistung)



(3 instruments, one with double DSP performance, and two with basic DSP performance)



(2 instruments, each with double DSP performance)



(2 instruments with single and triple DSP performance)

## Number of voices in Noah instruments

As a result of Noah's flexible architecture, the voice count (polyphony) of a particular Noah instrument depends solely upon the complexity of the algorithms used to realize it. In contrast to some other manufacturers, our top priority is sound quality, and we allow no compromises to be made in this area. As a consequence of the relatively complex and computation-intensive algorithms which this necessitates, the polyphony of Noah instruments is sometimes lower than that offered by competing products of inferior sound quality.

The following overview lists the voice count for all Noah instruments.

Device	1 Slot	2 Slot	3 Slot***	4 Slot***
MINIMAX	3	6	10	13
LightWave	6	12	16	16 respectively 2 x 12 = 24 *
Pro One	2	5	8	11
SixString	2	6	9	12
Vectron P.	3	7	10	14
B-2003	full	full	full	full **
Interpole	-	-	-	-
Vocoderizer	-	-	-	-

\* for maximum polyphony - The limitation to 16 voices in the 4 slot configuration is due to the MidiVoiceControl, which can only manage a maximum of 16 voices.

\*\* full polyphony for each slot, meaning up to 4 B-2003s can be played with full polyphony.

\*\*\*Noah EX only

## Triggering the Instruments

Noah's instruments can be controlled by external MIDI signals arriving at the MIDI or USB ports (from a master keyboard or sequencer, for example), or by Noah's internal Arpeggiators or Step Sequencers. Altogether Noah provides four independent arpeggiators and step sequencers you can use to control up to four (in the EX version) loaded instruments. You can also use the arpeggiators and step sequencers to control external MIDI devices.

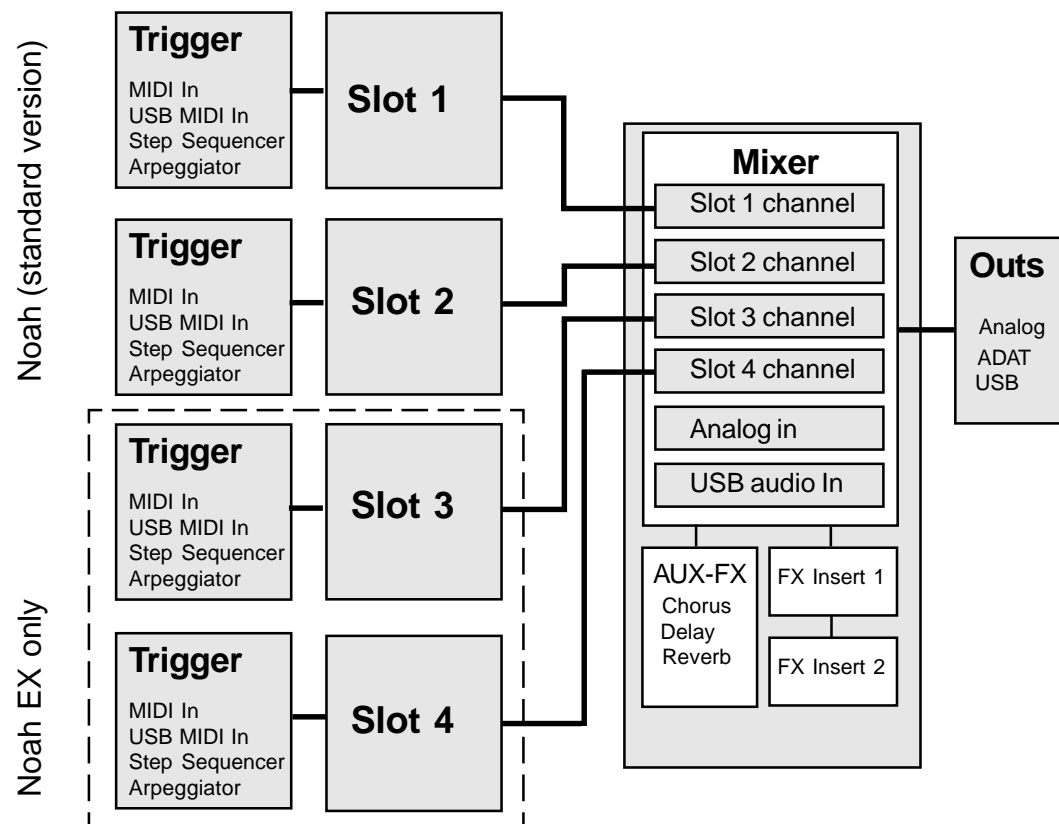
## Input and Output

Noah exchanges audio and MIDI data with your other studio gear over several inputs and outputs, and with your computer over the USB interface. Audio can be received over the stereo analog inputs, or the two USB audio channels. You can output 6 audio channels over the USB connection to the computer, or you can use the stereo analog outputs or the ADAT port (8 channels over an optical cable).

MIDI can be transmitted or received over both the MIDI In/Out connections or the USB port. Also, MIDI can be passed directly from the MIDI input to the MIDI Through connection or the USB MIDI output.

For word clock sync to your other studio gear Noah provides an external BNC word clock input connector.

# Architecture Block Diagram



Block diagram of the Noah architecture

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