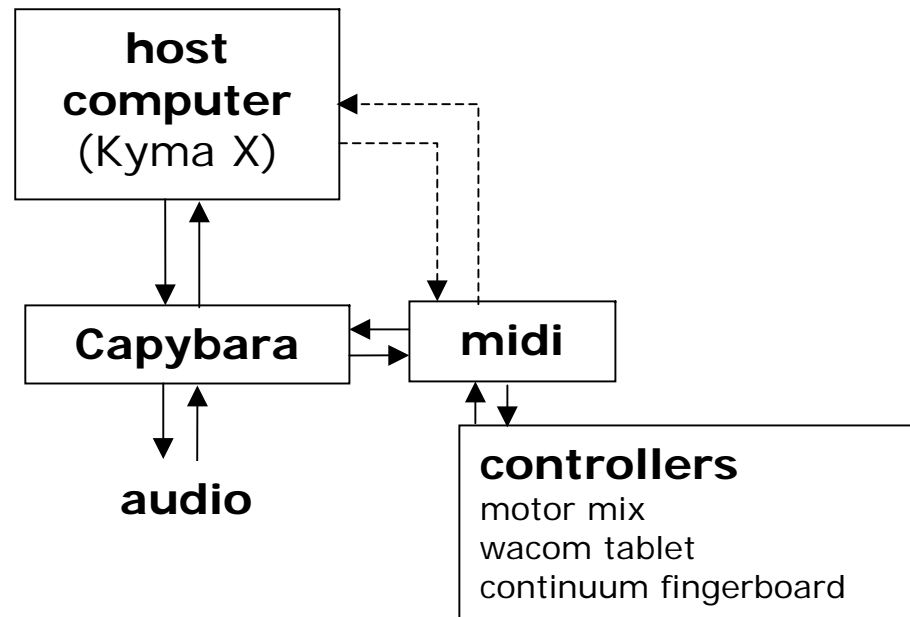


Introduction to the Kyma Sound Design Workstation

company: SymbolicSound (Champaign, Ill.)

software: Kyma X (6.22)

hardware: Capybara-320



Capybara·320



Basic Configuration

- four processors installed on the motherboard
- 12 expansion slots
- I/O and external sync
- External desktop or rackmount case

Expansion Card

- two processors installed
- 48 MB sample RAM (per card)
- Up to 12 expansion cards (for a total of 28 processors) can be added

Inputs and Outputs

- 4-8 channels
- 24-bit
- Balanced Analog (XLR) and Digital (AES/EBU)

External Synchronization

- Word Clock input
- VITC & LTC Timecode input and output

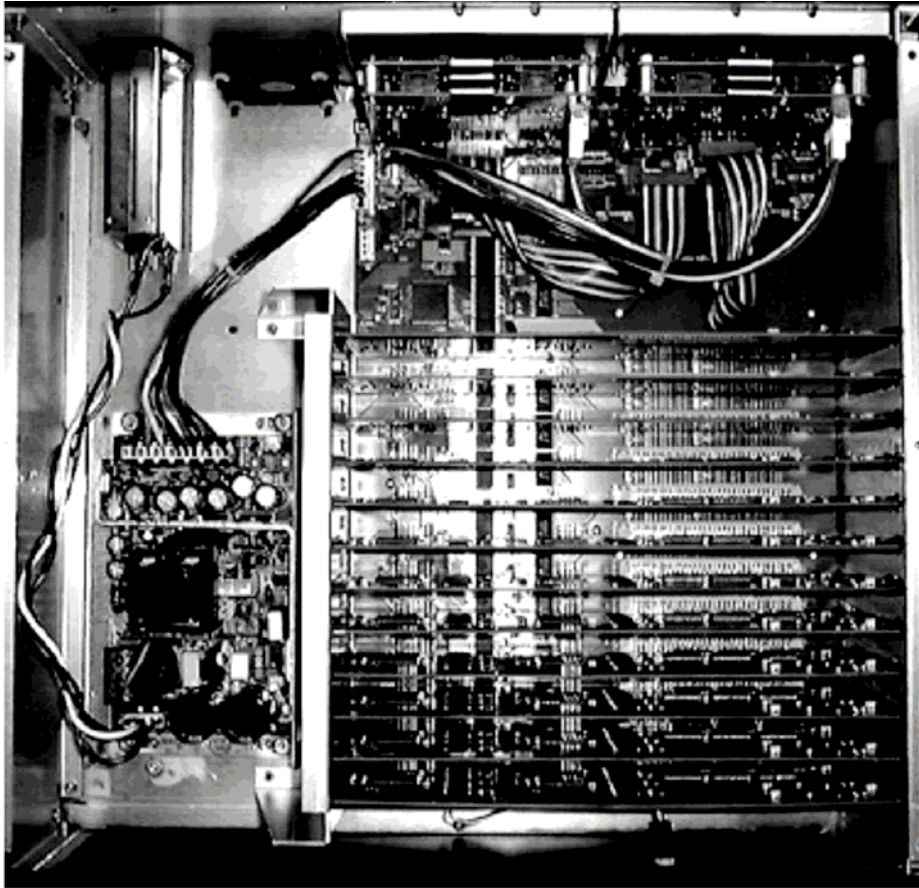
Interface options

- FireWire for Macintosh OS X and OS 9, Windows XP, 2000, and ME desktop and laptop machines
- 40 MB/s connection to host computer interface

Size

Units	Width	Depth	Height	Weight
Metric	43.18 cm	41.91 cm	13.97 cm	6.8 kg
English	17 in	16.5 in	5.5 in	15 lb

Capybara•320



Motherboard and Expansion card

- Two 80 MHz Motorola 56309 processors
- peak parallelism of 56309 = multiply, add, 3 on-chip memory fetches per instruction
- 160 MIPS

Basic Capybara•320 configuration (4 processors)
composite clock-speed 1.5 Gigahertz

Expanded configuration (up to 28 processors)
composite clock speed up to 11.2 Gigahertz

Memory

24 MB sample RAM per processor

Basic Capybara•320 configuration
96 MB RAM = 180" (at 44.1 kHz, sample = 24 bits)

Expanded configuration (up to 28 processors)
composite memory larger than 30 minute

Internal Signal-to-Noise Ratio

Each processor does 24-bit arithmetic and has a 56-bit accumulator, providing a maximum signal-to noise ratio of 336 dB.

Capybara·320



Converters

- Crystal, Burr Brown
- automatic sensing of balanced/unbalanced lines
- AES/EBU digital audio (+ S/PDIF adapters)

@ 48 kHz	A/D	D/A
S/N	110 dB	105 dB
Dynamic Range	110 dB	107 dB

@ 100 kHz	A/D/A
S/N	104 dB
Dynamic Range	104 dB

Other Specifications

Output level	+14.5 dBu
Input clipping level	+14 dBu
Input impedance	~10 k
Crosstalk	-110 dB

Software switchable sample rates:

100 kHz, 96.096, 96.000, 95.904, 92.180, 91.873, 90.000, 88.288, 88.200, 88.112, 84.672, 80.000, 70.000, 64.000, 60.000, 50.000, 48.048, 48.000, 47.952, 46.080, 45.937, 44.144, 44.100, 44.056, 42.336, 40.000, 32.000, 30.000, 20.000, 10.000

Capybara·320



Host computer

System requirements for Macintosh

Mac OS	Interface	RAM	Disk
>10.2	FireWire	256 MB	600 MB
>9.2 & < 10	FireWire	192 MB	600 MB
>9 & < 10	PCI, PCMCIA	192 MB	600 MB

System requirements for Windows

Windows OS	Interface	RAM	Disk
ME, 2000, XP	FireWire	256 MB	600 MB
98SE, ME	PCI, PCMCIA	256 MB	600 MB



Kyma X (6.22)

integrated software environment (developed in Smalltalk80, C++)

object-oriented visual language

functional representation based on data streams

encapsulation and abstraction of signal patches into new object classes

creation of "Tools" and executable files (non-standalone)

signal generation and processing

oscillators, a/d inputs, disk recording & playback, etc.

filtering, transfer functions, etc.

time-domain analysis, spectral analysis & resynthesis

math

built-in programming languages

CopyTalk code real-time event language that runs on the Copybara while computing

SmallTalk code scripting language, higher-level compiler (host)

implementation

automatic real-time scheduling on the Copybara multiprocessor

automatic memory allocation

documentation

KymaX revealed

Kyma reference book (black thick book)

self-describing object-classes

self-describing parameter-fields

factory sound library

support & community

<http://www.symbolicsound.com>

<http://www.symbolicsound.com/Tweaky/>

Sound Editor

Virtual Control Surface editor

Class editor

Timeline (and parameter automation)

Tools (programmable control interface)

Sound Browser

Kyma openable file types

kym (signal patches)

ktl (timeline)

8, 16, 24-bit audio files (aiff, wav, sd1 and sd2, ircam/ntu)

spc (spectral data) (also RE.aiff, GA.aiff, and EX.aiff)

pci (tools, programmable control interface)

mid (standard midi file)

txt (text)

asy (assembly microcode)