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KUDOS PLUS™ MACH1 M.Sc

Motion Compensated Standards Converter

The **MACH1™ M.Sc** breaks the price barrier for superior performance standards conversion. Its motion compensated algorithm helps to deliver excellent results at an affordable 4-field-conversion price.

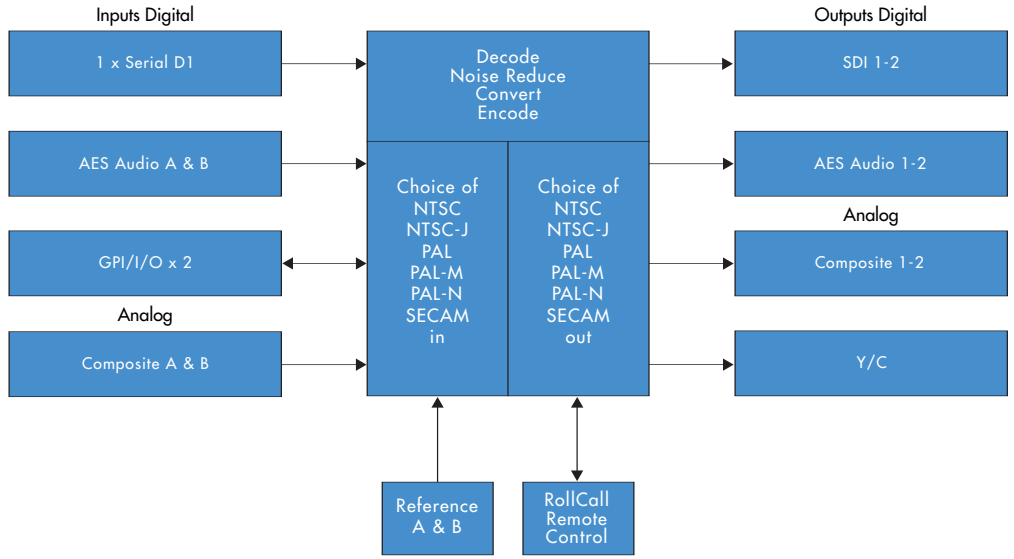
At just 1 RU size, full bi-directional conversion between composite PAL, NTSC and SECAM as well as 10-bit SDI signals is provided along with AES audio handling. Performance, size and price mean it is ideal for a wide range of applications including mobile applications, news and transmission. In addition, the clean motion portrayal of its M.Sc Motion Science standards conversion produces video that is not just good to look at, it is also compression-friendly – helping to minimize unnecessary motion artefacts in MPEG-2 bitstreams.

An ergonomically designed front panel allows rapid access to key functions, with a LCD display providing information on signal parameters. The unit is fully RollCall™ compatible and the Mach1 is designed to integrate up to two IQ modules. This powerful feature enables users to customize their unit according to their application or system needs.

Features

- Motion compensated conversion using M.Sc motion vectors
- Aspect ratio conversion with full positional control and blanking
- Noise reduction featuring recursive and median filtering
- Linear conversion mode using 4-field, 4-line aperture
- All 10-bit data path
- 2 x SDI inputs, 2 x SDI outputs
- 2 x composite inputs and outputs, 1 x Y/C input and output
- N4.43, NTSC, NTSC-J, PAL, PAL-M, PAL-N and SECAM composite color standards
- Output genlock
- Dual AES audio inputs and outputs
- Embedded audio is extracted, delayed and reinserted
- Horizontal and vertical picture enhancement
- Flexible options for video and audio I/O
- RollCall (single session) and GPI control

MACH 1 M.Sc Standards Converter



Full Product List

Base Model
Kudos Plus Mach1 Motion Compensated Standards Converter featuring MSc (Motion Science) processing technology (3598000)

Base Model
Kudos Plus Mach1TX Mach1 with blank front panel (3598010)

Option
Remote Control (3598001)

IQDEC04
Golden Gate Decoder, Synchronizer with Noise Reduction (IQDEC0400-1)

IQAAD00
4 Channel Audio ADC (IQAAD0014-1)

IQDAA00
4 Channel Audio DAC (IQDAA0014-1)

Features

Signal Inputs

SDI	2 via BNC connectors – SMPTE 259 M – 1997 and embedded audio SMPTE 272 M (level A)
Composite	2 via BNC connectors
AES/EBU Audio	2 x BNC; Unbalanced, 25-100 kHz asynchronous or 48 kHz synchronous to input video – SMPTE 276 M-1995
Reference (525)	1 via Loop-Through BNC connectors
Reference (625)	1 via Loop-Through BNC connectors

Signal Outputs

Composite	2 program outputs via BNC connectors
Separated Y/C	1 program output via 2 x BNC connectors
Serial Component	2 x BNC connectors – SMPTE 259 M – 1997 and embedded audio SMPTE 272 M (level A)
AES/EBU Audio	2 x BNC; Unbalanced, 48 KHz synchronous to output video - SMPTE 276 M -1995

Control

Control Interface

GPI	2 via BNC connectors Closing contact Input/Output
RollCall	Via BNC connector
Remote	S&W RollCall RS485 or RS422 @ 38 kB via 9 way D connector

Front Panel Controls

Memory	8 locations
Input Select	Composite A/B, SDI A/B, Y/C
Output format	525 / 625
Genlock	On/Off
Freeze	On/Off
Pattern / Black	On/Of
Noise Reduction	On/Off
Proc. amp	On/Off
Enhance	On/Off
Picture Timing	On/Off
Audio	On/Off
Setup	
Browse	
Motion Process	Motion compensation / linear
Size	
Horizontal size	50 % to 200 % continuously variable (full range in convert mode only)
Vertical size	50 % to 200 % continuously variable (full range in convert mode only)

Other Controls

Luminance Gain	±6 dB
Chrominance Gain	±3 dB
Black Level	±100 mV
NTSC Hue	±30 °
Luminance Noise Reduce	Off, Low, Medium, High
Chrominance Noise Reduce	Off, Low, Medium, High
Horizontal position	± half picture width continuously variable (full range in convert mode only)
Vertical position	± half picture height continuously variable (full range in convert mode only)
Picture timing	
Y/C Timing	+444 ns in steps of 148 ns
Picture Position/phase	+592 ns in steps of 148 ns
Audio	
Source selection	Embedded / External
Source pair select	Group / Pair select for audio extraction from input SDI – up to two stereo pairs passed
Destination pair select	Group / Pair select for audio insertion to output SDI
Delay offset	-40 ms to +160 ms
Enhance	
Horizontal enhancement	Off, Low, Medium, High
Vertical enhancement	Off, Low, Medium, High

Preset Controls

Pattern Select	Black/100 % Color Bars/75 % Color Bars/Ramp/Multi-burst
Genlock H Phase	+114 µs
Genlock mode	Internal/External lock
Gamut Legalizer	On/Off
Default Output	Freeze, Black, Pattern
Memory	Store/Name
GPI function	Programmable to most menu functions through user memories or delay output

Encoder Controls

Composite Output Standard	625 - PAL, PAL-N, SECAM 525 - NTSC, NTSC-J, PAL-M, NTSC4.43
Genlock SC Phase	+180 °
VITS insert	On/Off

Noise Reducer Controls

Y Noise Reduction Level	Off, Low, Medium, High
C Noise Reduction Level	Off, Low, Medium, High
Sparkle Filter	On/Off
Noise measurement	Auto/Manual
Manual Threshold Level	Auto + 7 levels
Median Filter	On/Off

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Decoder Controls

Input Standard	Auto / Manual - NTSC4.43, NTSC, NTSC-J, PAL, PAL-M, PAL-N, SECAM
ACC	On/Off
AGC	On/Off
NTSC Hue	±30 °
Indicators	
Input Loss	Input Select LED
Reference Loss	Genlock Select LED

Information

Feedback

Input Standard	Composite and SDI standard
Audio	Embedded channel data present, AES inputs present
EDH	present : error minute : error hour
Delay	Indication of delay of unit via GPO (high pulse)
Unit temperature	Internal temperature measurement

Additional

RollCall Functions	Logging Input Loss, Reference Loss, Input Standard, EDH Errors, AES Input, Audio (Embedded Channel present)
Temperature	

Specifications

Processing Delay

625 to 525	Linear mode = 70 msec MSc mode = 90 msec
525 to 625	Linear mode = 58 msec MSc mode = 75 msec
625 to 625	50 msec, 1- 39 ms (Size off)
525 to 525	42 msec, 1- 35 ms (Size off)
Return Loss: Inputs	better than 35 dB to 5.0 MHz
Return Loss: Outputs	better than 30 dB to 5.0 MHz
Return Loss SDI Inputs	better than 15 dB at 270 MHz
Return Loss SDI Outputs	better than 15 dB at 270 MHz

Power

Mains Supply	115/230 V 60/50 Hz 1.2 A
Power Consumption	140 W max

Mechanical

Temperature Range	0 ° to 40 °C operating
Cooling	Axial fan
Case Type	1 RU Rack Mounting
Dimensions Overall	483 x 440 x 45 mm (w x d x h) Depth from mounting face (including unmated connectors) 415 mm
Weight	9.75 kg

EMC Environment

This unit is intended for use in the commercial and light industrial environment E2.

Optional Processing Modules

Up to two additional modules can be added to the Mach1 chassis to increase the functionality and connectivity of the unit. An alternative high quality Golden Gate™ composite decoder (IQDEC04) may be selected to provide optimum composite decoding. To provide analog audio processing an analog to digital (IQAADOO) and digital to analog (IQDAA00) may be added individually or as a pair depending on the application.

IQDEC04 Golden Gate Decoder, Synchronizer with Noise Reduction

IQDEC04 12 bit Golden Gate Decoder with synchronizer and noise reduction. 2 composite or 1 Y/C inputs, 2 SDI outputs

IQAAD00 4 Channel Audio ADC

IQAAD00 Analog Audio ADC with delay. 4 balanced analog audio inputs, AES/video ref input, 2 balanced and unbalanced AES/EBU outputs, 1 GPI

IQDAA00 4 Channel Audio DAC

IQDAA00 Analog Audio DAC with delay. 2 unbalanced/ balanced AES/EBU inputs, 4 balanced analog audio outputs, 1 GPI

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