HD2020 Video PassPort™

1RU Multi-Path Video Converter and Frame Synchronizer

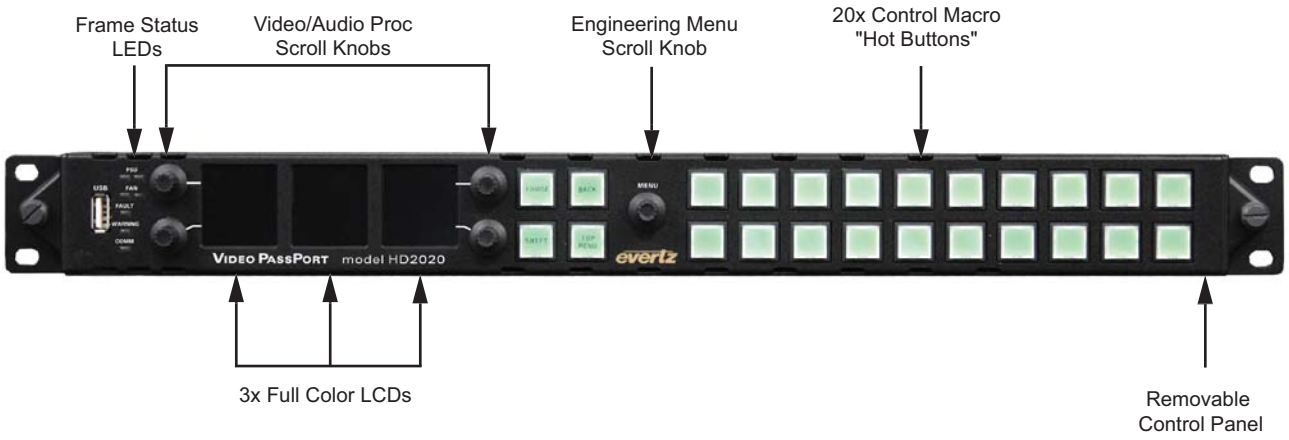
The Evertz HD2020 Video PassPort™ is a high performance 1 RU video conversion and frame synchronization platform. The HD2020 integrates four fully independent and unique up/down/cross conversion paths with a wide range of video/audio input/outputs. Each conversion path includes a full frame synchronizer. The Video PassPort™ is an ideal multi-path video/audio processor for any analog, digital or HDTV facility and represents an indepensable tool as facilities upgrade from analog to digital and HDTV infrastructure. The HD2020's processing capabilities and simple to use front panel interface makes it an ideal choice for ENG and DSNG truck applications.

The HD2020 can support up to 4x 3G*/HD/SD coax serial in, 4x 3G*/HD/SD fiber optic serial in, composite analog video in, 4x mono analog audio in, 8x AES digital audio in as well as a DVI input. The HD2020 can support up to 4x 3G*/HD/SD coax serial out, 4x 3G*/HD/SDI fiber optic serial out, composite analog video out, 8x mono analog audio out, 8x AES digital audio out as well as a full screen DVI output. A second DVI output is also available on which the HD2020 can generate a multi-image display from eight select video clean switch inputs/outputs. Discrete analog and AES audio inputs levels are also monitored and presented on the multi-display output.

A reference input with a passive loop is available to allow the HD2020 to lock to external reference. Finally, 8x Flex BNCs (4x Flex Left and 4x Flex Right) are incorporated to allow future expansion of functionality using Flex Processing Modules

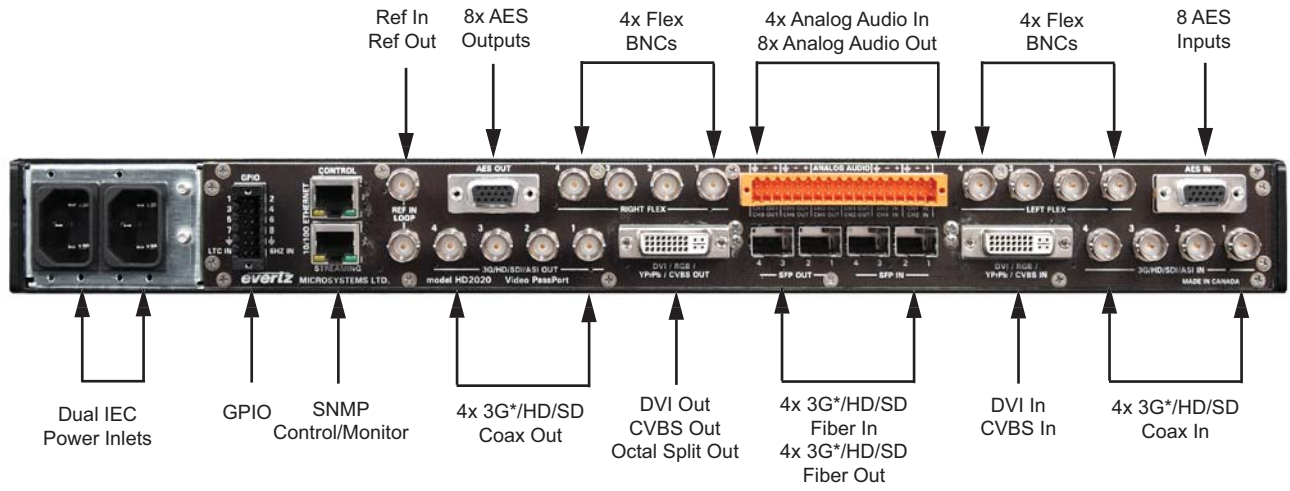
This Evertz converter is packaged in a space savings 1RU form factor and is designed for high availability 24/7 applications. The HD2020 has front serviceable and removable processing electronics in addition to dual power supplies and a removable front control panel.

An embedded web server enables quick and easy uploading, downloading and design of system configurations using the STAMP™ configuration tool. Dual 10/100 Ethernet ports are provided for SNMP control/monitoring. The HD2020 is fully VistaLINK® PRO enabled for advanced remote control and monitoring. Additional multi-unit remote control options include a hardware based remote control panel and a PC based software remote control panel.



The HD2020 front panel has been designed to deliver an easy to use and intuitive operator interface. The HD2020 can be controlled using the front panel engineering menu or through the use of twenty (20) front panel hot buttons. Each front panel hot button can be programmed as a "Control Macro" where multiple user defined parameters can be changed with a single button push. Using the front panel SHIFT button, an additional 20 "Control Macros" are also available.

Real time audio and video procing is achieved using the 4x video/audio proc scroll knobs located on the HD2020 front panel. Quick access to user programmable procing profiles is accomplished through simple "double punching" of front panel hot buttons. Power supply, fan and frame status is also continuously monitored and reported via the front panel Frame Status LEDs.



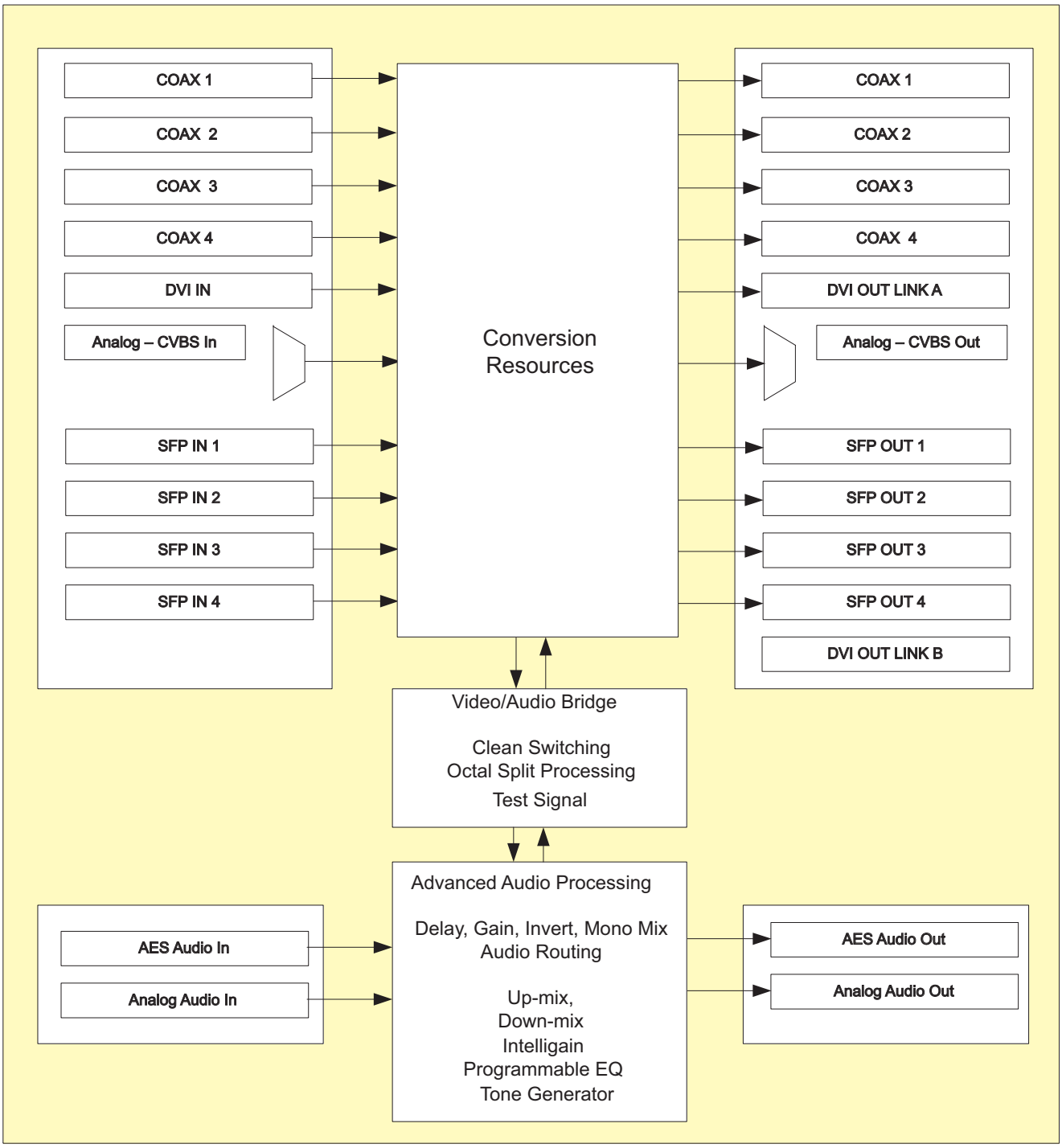
The Complete Solution Provider

The HD2020 processing architecture allows its four up/down/cross conversion paths to independently connect to any system input and independently drive any system output. In addition, eight unique video sources can be routed to the Advanced Audio/Video Bridge (AAVB). Within the AAVB, sources are routed to the HD2020 internal audio processor, two internal eight input video clean switches and the internal octal split display processor. The HD2020 also supports internal bars and tone generation with source ID character burn-in capabilities. Video clean switch outputs can drive any system output.

Within the audio processor per channel audio delay is available for each embedded and discrete audio input channel. Following this, stereo to 5.1 up-mixing (+UMX), 5.1 to stereo down-mixing (+DMX), Intelligain™ audio loudness management (+IG) can be performed. In addition, a programmable audio equalizer is available (+EQ).

Two 16 channel audio embedders with per channel audio routing, inversion, gain and mono mixing capabilities feed the two AAVB clean switch outputs. Similar per channel audio routing, inversion, gain and mono-mixing capabilities are available for the 8x AES outputs (16 channels) and the 8x mono analog audio outputs.

HD2020 Block Diagram



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Specifications

Coax Inputs:

Number of Inputs:	4
Connector:	BNC per IEC 61169-8 Annex A
Input Equalization:	300m @ 270 Mbs with Belden 1694A or equivalent 100m @ 1.5 Gbs with Belden 1694A or equivalent
Return Loss:	> 15 dB to 1.5 GHz
Data Rate	Auto-sensing SD and HD (270 Mbs & 1.5 Gbs)
Formats	525i/59.94, 720p/59.94, 1080i/59.94 625i/50, 720p/50, 1080i/50

Fiber Inputs

Number of Inputs	4
Connector	LC
Form Factor	Dual Optical SFP Receiver
Wavelength	1260-1620 nm
Data Rate	Auto-sensing SD and HD (270 Mbs and 1.5 Gbs)
Formats	525i/59.94, 720p/59.94, 1080i/59.94 625i/50, 720p/50, 1080i/50

DVI and Analog Video Inputs

Number of Inputs	1
Connector	DVI-I (Female)
Breakout Cable	DVI-I to DVI-D and 5x RGBHV BNCs
Standards	DVI-D: 1080p/720p @ 59.94 HZ (no HDCP) DVI-D: 1080p/720p @ 50 Hz(no HDCP) CVBS - NTSC on G channel CVBS - PAL on G channel

Analog Audio Inputs

Number of Inputs	4
Type	Mono signals, balanced analog audio
Connector	Removable terminal strip
Input Impedance	10kΩ minimum (differential)
Sampling Freq	Analog signal sampled at 48kHz
Signal Level	0dBFS = 19dBu/25dBu software selectable
Freq Response	±0.5dB (20Hz to 20kHz)
THD+N	> 99dB (20Hz to 20kHz, -1dBFS)
CMRR	> 85dB @ 100Hz

AES Audio Input

Number of Inputs	8x AES inputs
Standard	SMPTE 276M, synchronous or asynchronous
Connector	DB15
Input Type	Unbalanced
Impedance	75 Ω
Signal Level	1 Vp-p
Sampling Rate	48 KHz

Reference Input and Passive Loop

Type	NTSC -bi-level sync PAL color -bi-level sync
Connector	BNC per IEC 61169-8 Annex A

GPIO

Number	8 (configurable as inputs or outputs)
Type	Opto-isolated, active low with internal pull-ups to +5V
Connector	Removable terminal block
Signal Level	Closure to ground
Function	Virtual front panel button push Tally of front panel button push

Coax Outputs:

Number of Outputs	4
Connector	BNC per IEC 61169-8 Annex A
Signal Level	800 mV nominal
DC Offset	0V ± 0.5V
Rise/Fall Time	200 ps nominal
Overshoot	< 10% of amplitude
Return Loss	> 15 dB to 1.5 GHz
Wide Band Jitter	< 0.20 UI
Format	525i/59.94, 720p/59.94, 1080i/59.94 625i/50, 720p/50, 1080i/50

Fiber Outputs

Number of Inputs	4
Connector	LC
Form Factor	Dual Optical SFP Transmitter
Wavelength	1310 nm
Data Rate	SD and HD (270 Mbs and 1.5 Gbs)
Format	525i/59.94, 720p/59.94, 1080i/59.94 625i/50, 720p/50, 1080i/50

DVI and Analog Video Outputs

Number of Outputs	1
Connector	DVI-I (Female)
Breakout Cables	DVI-I to DVI/RGBHV break out cable DVI "Y Cable" break out cable
Standards	DVI-D Out A: 1080i/720p@59.94 HZ (no HDCP) DVI-D Out A: 1080i/720p@50 (no HDCP) DVI-D Out B: 1680x1050 out when running 1080i DVI-D Out B: 1920x1080p out when running 720p DVI-D Out B: 1440x900 out when running 525i CVBS - NTSC on G channel CVBS - PAL on G channel

Analog Audio Outputs

Number of Outputs	8
Type	Mono signals, balanced analog audio
Connector	Removable terminal strip
Output Impedance	60Ω max
Output Loads	Hi Z
Peak Conv Level	0dBFS = 18dBu/24dBu software selectable
Sampling Freq	48kHz
Freq Response	±0.1dB (20Hz to 20kHz)
THD+N	> 80dB (20Hz to 20kHz, -1dBFS)

AES Audio Outputs

Number of Outputs	8x AES inputs
Standard	SMPTE 276M
Connector	DB15
Input Type	Unbalanced
Impedance	75 Ω
Signal Level	1 Vp-p
Sampling Rate	48 KHz

Ordering Information

HD2020	Multi-Path Video Converter and Frame Synchronizer (two conversion paths standard)

HD2020-3G	Multi-Path Video Converter and Frame Synchronizer with 3G I/O support (Contact Factory)

Ordering Options

+2X	Upgrade to Four Conversion Paths
+CF2G	Embedded Compact Flash for Test Signal Storage
+AA	Balanced Analog Audio I/O
+FP	HD2020 Local Front Panel
+FL-HIO	Triple bidirectional HD/SD I/O left flex module
+FR-HIO	Triple bidirectional HD/SD/ I/O right flex module
+UMX	Stereo to 5.1 PCM Surround Sound Up-Mix
+DMX	5.1 PCM Surround Sound Down-Mix
+IG	IntelliGain™ Audio Loudness Management
+EQ	Programmable Audio Frequency Equalizer
+2TX	1x Dual SFP Fiber Transmitter (two fiber outputs)
+4TX	2x Dual SFP Fiber Transmitter (four fiber outputs)
+2RX	1x Dual SFP Fiber Receiver (two fiber inputs)
+4RX	2x Dual SFP Fiber Receiver (four fiber inputs)
+PCRCP	PC Remote Control Panel

Accessories:

HD2020-RCP	HD2020 Remote Control Panel
WPDVI-DVIBNC5	DVI to DVI/RGBHV break out cable
WPDVI-DVI2	DVI "Y' break out cable
WPAES8-BNCM-6F	WPAES8-BNCM-6F cable
7701RS	Mechanical Rear Support

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