

Messenger 2 Decoder (M2D)

HD/SD AVC/H.264 Decoder

COBHAM

The most important thing we build is trust.



Product Highlights

- Provides Ultra-Low-Latency for Real-Time Applications (~44 mS) when used with GMS' Messenger 2 AVC Encoders and Transmitters
- Built-in HD to SD Down-Conversion
- Compact Design with Local Control & Monitoring
- Optionally mounts to GMS' MSR C-OFDM Rx

Features

- DVB-ASI and LAN Inputs & Outputs**
- Supports ISO 13818 Transport Stream Demuxing & NAL Streams
- Support up to 60 megabits per second H.264 stream processing
- Pre-processing adaptive noise filter - MCTF
- HD-SDI, DVI, Component & Composite Video Outputs
- Balanced Analog Audio Outputs plus Digital Audio**
- Optional Genlock Capability
- Optional Embedded Audio
- Ethernet Port Connectivity (10/100 Mbits/s) for Streaming** and Control/Monitoring **

The Messenger 2 Decoder (M2D) is a companion product to GMS' AVC Encoders and Transmitters providing the highest Video Quality with Ultra-Low Latency and Fast Recovery essential for Wireless Coverage of Real-Time events such as Sports and Surveillance Applications. It supports HD & SD AVC Baseline Profile Decoding with certain additions and exclusions as described in the specification section below including interlaced support.

Provides AVC decoding with resolutions from CIF up to 1920 x 1080, frame rates to 60 frames per second, with Progressive or Interlaced formats, CBR or VBR all with 45 mS delay when encoded with a GMS AVC encoder. Additionally, with GMS' AVC Encoders, Instantaneous Decoder Refresh or re-lock can occur on slice boundaries providing the fastest recovery from corrupted streams. Both Frame and Field based Decoding is supported.

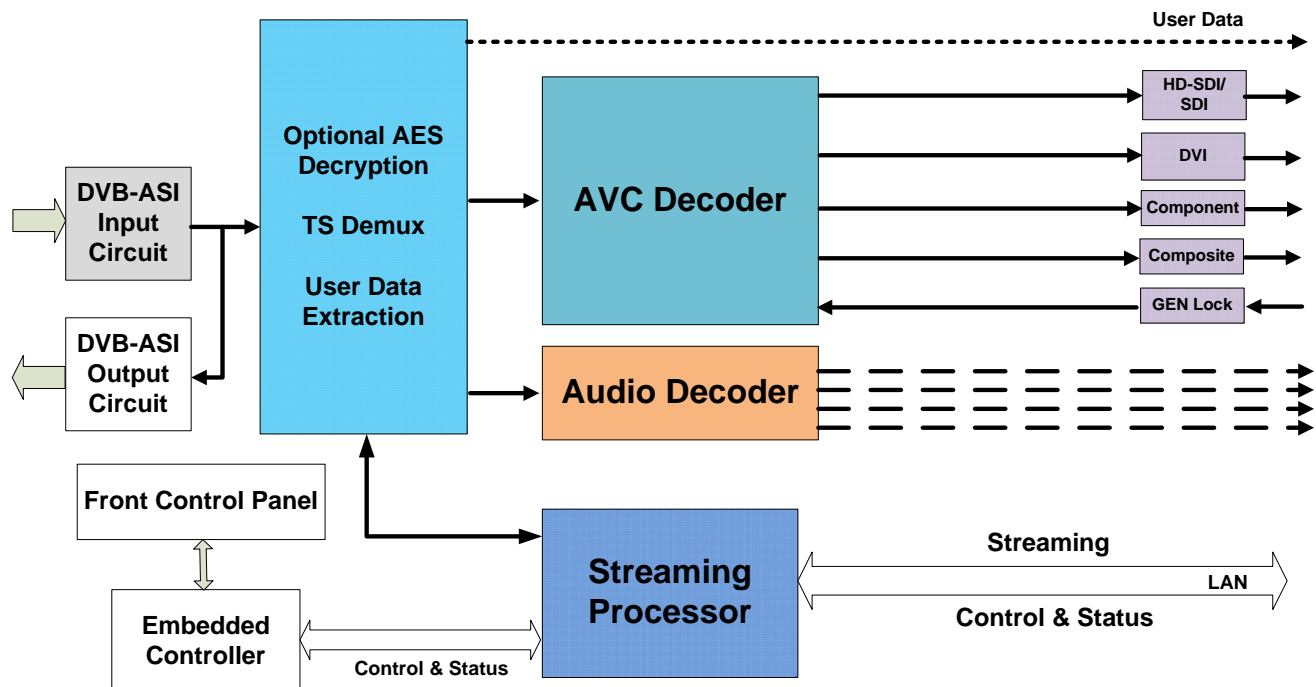
Specifications subject to change without prior notice
Typical values shown unless min or max is specified
100-DS0292X4 05/13/10 1 of 6

Messenger 2 Decoder (M2D)



HD/SD AVC/H.264 Decoder

The M2D Decoder includes both DVB-ASI and Ethernet ports. The system also offers a choice of transport protocols with support for AVC embedded within a MPEG-2 TS (ASI input or over IP)** and raw H.264 bit streams. Both transport mechanisms can be delivered over UDP and RTP/UDP**. A compressed stream can be input from the DVB-ASI interface, and reformatted for IP Streaming** and output at the same time that it is being locally



decoded. The Decoder incorporates error resiliency features. In the event of a damaged bit-stream, the Decoder can replace the corrupt slice with skips, and resume decoding at the next NAL unit. Alternatively, it can freeze the output until a new I-frame is received.

M2D Block Diagram

The Decoder can be set to tune both video and audio in two ways: Auto, and PID locking**. In *Auto* mode the unit will self acquire the first MPEG program in the transport stream and the first audio PID listed in the PMT for that Program. For Multiple Program Transport Streams (MPTS), the program number can be selected. Within the selected MPEG program, each of the two audio processors can have an audio PID from that program selected.

In *PID locking* mode** the M2D can be set to select video from a specific PID, and select audio for the 1st and 2nd audio processor from specific setting. This setting can be set manually using numeric PID values. In this mode, the M2D will only decode video or audio that has been manually set.

The M2D can be controlled either through its front-panel control interface or through its LAN interface**. Additionally, it has two LED status lights. One LED is for Input which is green when the selected input is OK (present

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and valid for transport stream interfaces, and meets settable criteria). The second LED status light is for Error conditions.

Specifications:

Serial Transport Stream I/O

General

Configuration: DVB-ASI or LAN IP, selectable (Not input simultaneously)

ASI Serial TS Input/Output

of ASI Inputs: 1, BNC-F
of ASI Outputs: 1 (loop-through), BNC-F
Max TS Rate: Up to 150 Mbps

IP Serial Input/Output**

of Ethernet Ports: 1, RJ-45
Streaming Format: RTP/UDP; IP Unicast or Multicast
Supports MPEG-2: Transport Stream over UDP or RTP
Output: DVB-ASI input can be reformatted for streaming and output at the same time that it is being Decoded.

Single or Multi-program Support

MPEG Decoder (Video, 2 Audio)

General

Compatibility Standard: MPEG-4 AVC/H.264 Baseline Profile Plus
Interlace Support
Bit streams Accepted: AVC video in MPEG TS per ISO/IEC 13818-2
PES packets per ISO/IEC 13818-1
Video Bit Rate: 1 Mbps to 60 Mbps

Video Decoder

Format @ Frame rate: 1080P @ 30Hz, 29.97Hz, 25Hz, 24Hz, 23.98Hz
1080I @ 30Hz, 29.97Hz, 25Hz
720P @ 60Hz, 59.94Hz, 50Hz, 30Hz, 29.97Hz, 25Hz, 24Hz, 23.98Hz
480I @ 29.97Hz
576I @ 25Hz
Display modes supported: Letterbox**, Cropped
Aspect Ratio: 16x9, 4x3 (format dependant)

Audio Decoder

Decoder Capabilities: MPEG-1, layers I and II
MPEG-2, layer II,

Messenger 2 Decoder (M2D)

HD/SD AVC/H.264 Decoder



MPEG-2 PES Formats: MPEG-2, MPEG-1
Audio Source: Selected Audio Services 1-2

Video Output

General

Output connectors: Qty 1 -HD-SDI, Qty 1 – DVI, Qty 1- Component, SD Only - Qty 2 – Composite

Output formats supported: 1920 x 1080 Progressive
1920 x 1080 Interlaced
1280 x 720 Progressive
720 x 480 Progressive
720 x 480 Interlaced
720 x 576 Interlaced

Frame rates: 60/50/30, 59.94/29.97, 25Hz
(progressive/interlaced)
(1080p limited to 30 frames per second max)

Aspect Ratio: 16x9 (fixed: 1080I, 720P)
16x9, 4x3 (format dependant)

Display Modes HD: Letterbox**, Cropped, Full
SD: Letterbox**, Cropped

HD-SDI (High Definition Serial Digital Interface)

Standard: SMPTE 292M
Data Bit Rate: 1.485Gbps
of Serial Outputs: 1
Connector: BNC (x1), female

Embedded Audio (Option)

Embedded audio format: SMPTE299M
Sample rate supported: 48KHz
Sample rate out: 48 KHz
embedded audio chs: 2 channels supported
Audio types supported: MPEG2 layer 1 and 2
Embedded audio control: No controls or enable; embedded audio is always on.

Analog Video

SD

Video format standards: PAL & NTSC Composite
of Analog outputs: 2
Connectors: RCA-F

HD

Messenger 2 Decoder (M2D)

HD/SD AVC/H.264 Decoder



Video format standards: Component
of Analog outputs: 1 set (Y, Pb, Pr)
Connectors: RCA-F

DVI (Digital Visual Interface)**

DVI Connector: DVI-I Socket – Female

Note: Can be converted to HDMI (Video Only) with external adapter (Sold Separately)

Audio Output

General

of Services: 2 Mono or 1 Audio Stereo Pairs
4 Mono** or 2 Audio Stereo Pairs**

Analog Audio Out

Output Type: Balanced, 2 channel pairs (+/-, L/R)
Connectors: Qty 2 – XLR-M
Qty 2- p/o High density 15-pin D-sub, female
Cable w/Optional connectors: DB15 to Qty 2 - XLR-M
Impedance: 600 ohms nominal

Remote Operation/Update Interface

Type: Ethernet, 10/100 BaseT
Connector: RJ45

Serial Remote operation interface

Type: USB
Connector: USB-A

Front Panel Indicators

Input LED: Green indicates valid input on selected input,
Off indicates no valid signal on the selected input
Error LED: Red indicates error is occurring
OFF indicates no errors detected

Power

DC Input: +9 to +36 VDC
DC Power: 15 Watts
AC Input Option: Via External Power Supply
Voltage Range: 100 - 120/ 200 – 240 VAC
Power: Maximum – 17.5W
Frequency: 47 – 63 Hz
Line cord: Detachable, 3-prong
Cooling: Forced air

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Operating Temperature: 0 to 50 degrees C
Operating Humidity: <95% Non-Condensing

GENLOCK (Option)

Genlock capability: HD – SD
Genlock Reference: 480i @ 29.97, Ref NTSC “black and burst”
1080i @ 29.97 fps
Ref NTSC “black and burst” or 1080i tri-level sync @ 29.97 fps
1080i @ 30 fps – Ref 1080i tri-level sync @30fps
1080i @ 50 fps – Ref 1080i tri-level sync @50fps
720p @ 50 fps – Ref 720p tri-level sync @ 50 fps
720p@ 59.94 fps–Ref 720 tri-level sync @ 59.94 fps
720p @ 60 fps – Ref 720 tri-level sync @ 60 fps

Physical Dimensions: 8.5” (W) X 10.75” (L) X 1.75” (H) (2” with feet installed)
21.6 cm (W) X 27.3 cm (L) X 4.5 cm (H)

Weight: 2.89lbs

*: Option

***: in Development. This feature will be supplied as a field FW update, when available.