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# MX-HDE-CVS-QAM/IP/ASI

The **MX-HDE-CVS-QAM/IP/ASI** accepts one **HD or SD** program from any of the following inputs: 1xComponent, 1xHD-SDI, 1xHDMI (unencrypted), 1xVGA, and 1xComposite. The MPEG-2 encoded outputs are available in the following formats simultaneously: 1xQAM, 1xASI, and 1xIP (100/1000Base-T Ethernet).

The 1xQAM RF output is frequency agile over the entire CATV frequency range of 5-1002 MHz, including sub channels T7-T14, and 2-158, with an output level of +40 dBmV.

Comprehensive remote monitoring and control is accomplished using any standard Web browser via a front-panel 100/1000 Ethernet connection. A rear-panel VGA output port is available for loop-through applications.

## 1xComponent/HD-SDI/HDMI/VGA/Composite

HD MPEG-2 Encoding  
DOLBY® Digital Audio Encoding



## Features

- Accepts one program from any of the following inputs: 1xComponent, 1xHD-SDI, 1xHDMI (unencrypted), 1xVGA, and 1xComposite
- Simultaneously delivers 1xQAM, 1xIP, and 1xASI
- Provides +40 dBmV QAM RF output level
- Provides full QAM output coverage from 5 to 1002 MHz (sub channels T7-T14, and 2-158)
- Supports custom video and transport stream bit rate settings
- Supports user-defined PSIP configuration
- Supports Real-time Dolby® Digital audio encoding
- Supports Closed Captioning EIA-608 and EIA-708
- Provides comprehensive GUI-based monitoring and control via standard Web browsers
- Compact design permits installation of up to 3 Encoder modules in 1RU

## Ordering Information

Model	Description
MX-HDE-CVS-QAM/IP/ASI	MPEG-2 HD Encoder; 1xComponent/HD-SDI/HDMI/VGA/Composite inputs; 1xQAM + 1xIP + 1xASI outputs
MX-HDE-3MCH	Optional 1RU Rack mount chassis; holds 3 modules

Made in U.S.A.

Dolby® is a registered trademark of Dolby Laboratories.



# TECHNICAL DATA and SPECIFICATIONS

## Input

<b>Component</b>	<b>Connectors:</b> 3x RCA for Video (Y, Pb, Pr) <b>Video Resolution:</b> 480i, 720p, & 1080i <b>Video Aspect Ratio:</b> 4:3 & 16:9 <b>Audio:</b> 2x RCA for Analog Audio (L, R) 1x RCA for Digital Audio (PCM)
<b>HD-SDI</b>	<b>Connector:</b> 1x BNC <b>Standard:</b> SMPTE 292M <b>Video Resolution:</b> 480i, 720p, & 1080i <b>Audio:</b> Embedded PCM and pass-through Dolby® Digital only
<b>HDMI</b>	<b>Connector:</b> 1x HDMI <b>Video Resolution:</b> 480i, 720p, & 1080i <b>HDCP Encryption:</b> Not supported <b>Audio:</b> Embedded PCM & pass-through Dolby® Digital only
<b>VGA</b>	<b>Connectors:</b> 2x Female VGA (Input + Loop-through Output) <b>Video Resolution:</b> 640x480 @ 60 fps 800x600 @ 60 fps 1024x768 @ 60 fps <b>Audio:</b> 2x RCA for Analog Audio (L, R) 1x RCA for Digital Audio (PCM)
<b>Composite</b>	<b>Connectors:</b> 1x RCA for Video (Y) <b>Video Resolution:</b> 480i <b>Audio:</b> 2x RCA for Analog Audio (L, R) 1x RCA for Digital Audio (PCM)

<b>Encoding Profile</b>	
<b>Video</b>	<b>Output Format:</b> MPEG-2 HD MP@ML; ISO 13818-2 <b>Chroma:</b> 4:2:0 <b>Resolution:</b> 480i, 720p, & 1080i <b>Frame Rate:</b> 29.97 fps (480i); 29.97 fps (1080i); 59.97 fps (720p) <b>Aspect Ratio:</b> 4:3 & 16:9 <b>GOP Structure:</b> I&P frames (user-selectable) <b>Video Bit Rate:</b> Variable (user-selectable) <b>Video Pre-filter:</b> Variable (user-selectable) <b>Color Space:</b> YCbCr and RGB
<b>Audio</b>	<b>Output Format:</b> Dolby® Digital <b>Sampling Rate:</b> 48 kHz <b>Bit Rate:</b> Variable; 96 - 448 Kbps (user-selectable)
<b>Closed Captioning</b>	<b>Component:</b> EIA-608; 1x RCA (CC) <b>HD-SDI:</b> EIA-/08; Embedded in HD-SDI input <b>HDMI:</b> EIA-608; 1x RCA (CC) <b>VGA:</b> EIA-608; 1x RCA (CC) <b>Composite:</b> EIA-608

## Alarms/Monitoring/Control

<b>Local Monitoring:</b>	1x Power LED 1x Status LED
<b>Local Control:</b>	1x IP Reset button
<b>Remote Monitoring and Control:</b>	GUI-based menu via standard Web browser (1x RJ45 connector; 100/1000Base-T, also used for IP output)

## Output

<b>QAM</b>	<b>Connector:</b> 1x "F" Female (Rear-panel) <b>Modulation:</b> QAM 16, 32, 64, 128, and 256 <b>Standards:</b> ITU-T J.83; Annex A and B <b>DVB Symbol Rate:</b> Variable; up to 7 MSymbol/sec (MBaud) <b>Frequency Range:</b> 5 to 1002 MHz <b>Tuning:</b> CATV Channel Selectable (Ch. T7 to T14, 2 to 158) <b>Channels' Bandwidth:</b> 6 MHz <b>RF Level:</b> +40 dBmV ±1 dB <b>RF Level Adjustment:</b> +35 to +42 dBmV, 1 dB increment <b>Frequency Tolerance:</b> ± 0.5 kHz @ 77 °F (25 °C) <b>Amplitude Stability:</b> ± 5 kHz over 32 to 122 °F (0 to 50 °C) <b>Amplitude Flatness:</b> ± 0.25 dB (over 6 MHz channel) <b>Phase Noise:</b> -98 dBc (@ 10 kHz) <b>Spurious:</b> -60 dBc <b>Broadband Noise:</b> -70 dBc (@ +40 dBmV output level, 5.5 MHz bandwidth) <b>Impedance:</b> 75 Ω <b>Spectral Inversion:</b> Auto Recognition <b>Carrier Suppression:</b> 45 dB <b>Return Loss:</b> 14 dB typical <b>Signal-to-Noise Ratio (SNR):</b> 40 dB typical <b>MER:</b> 40 dB typical <b>I/Q Phase Error:</b> Less than 1 degree <b>I/Q Amplitude Imbalance:</b> Less than 1%
<b>ASI</b>	<b>Connectors:</b> 1x BNC (Front-panel) <b>Format:</b> DVB-ASI <b>Standard:</b> ETSI EN 50083-9 <b>TS Bit Rate:</b> Variable (user-selectable)
<b>IP</b>	<b>Connector:</b> 1x RJ45 (Front-panel) <b>Standard:</b> 100/1000Base-T Ethernet <b>TS Bit Rate:</b> Variable (user-selectable) <b>UDP/RTP:</b> Supported (user-selectable)

## General

<b>Dimensions (W x D x H):</b>	5.65 x 14.10 x 1.72 inches (143.5 x 358.1 x 43.7 mm)
<b>Power:</b>	External Power Supply (Input 120 VAC / output 12 VDC @ 3 Amps)
<b>Power Dissipation:</b>	20 W
<b>Weight (one module):</b>	1.75 lbs (0.795 kg)
<b>Operating Temperature:</b>	32 to 122 °F (0 to 50 °C)
<b>Storage Temperature:</b>	-13 to 158 °F (-25 to 70 °C)
<b>Operating Humidity:</b>	0 to 95% RH @ 35 °C max, non-condensing
<b>Storage Humidity:</b>	0 to 95% RH @ 35 °C max, non-condensing

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