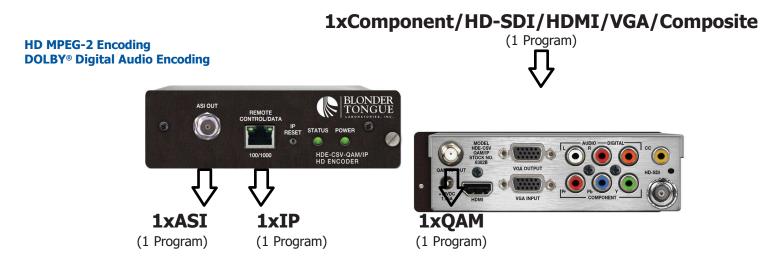# HDE-CSV-QAM/IP
Single Channel HD Encoder

The **HDE-CSV-QAM/IP** accepts one **HD** 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
(1 Program)

HD MPEG-2 Encoding
DOLBY® Digital Audio Encoding

1xASI
(1 Program)

1xIP
(1 Program)

1xQAM
(1 Program)

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	Stock #	Description
HDE-CSV-QAM/IP	6382B	MPEG-2 HD Encoder; 1xComponent/HD-SDI/HDMI/VGA/Composite inputs; 1xQAM + 1xIP + 1xASI outputs
HDE-3MCH	6389	1RU Rack mount chassis; holds 3 modules

Made in U.S.A.
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Specifications

Input

Output

Component	
Connectors:	3x RCA for Video (Y, Pb, Pr)
Video Resolution:	480i, 720p, & 1080i
Video Aspect Ratio:	4:3 & 16:9
Audio:	2x RCA for Analog Audio (L, R)
	1x RCA for Digital Audio (PCM and Dolby® Digital pass-through only)

HD-SDI	
Connector:	1x BNC
Standard:	SMPTE 292M
Video Resolution:	480i, 720p, & 1080i
Audio:	Embedded PCM and Dolby® Digital pass-through only

HDMI	
Connector:	1x HDMI
Video Resolution:	480i, 720p, & 1080i
HDCP Encryption:	Not supported
Audio:	Embedded PCM and Dolby® Digital pass-through only

VGA	
Connectors:	2x Female VGA (Input + Loop-through Output)
Video Resolution:	640x480 @ 60 fps
	800x600 @ 60 fps
	1024x768 @ 60 fps
Audio:	2x RCA for Analog Audio (L, R)
	1x RCA for Digital Audio (PCM and Dolby® Digital pass-through only)

Composite	
Connectors:	1x RCA for Video (Y)
Video Resolution:	480i
Audio:	2x RCA for Analog Audio (L, R)
	1x RCA for Digital Audio (PCM and Dolby® Digital pass-through only)

Encoding Profile	
Video	
Output Format:	MPEG-2 HD MP@ML; ISO 13818-2
Chroma:	4:2:0
Resolution:	480i, 720p, & 1080i
Frame Rate:	29.97 fps (480i); 29.97 fps (1080i); 59.97 fps (720p)
Aspect Ratio:	4:3 & 16:9
GOP Structure:	I & P frames (user-selectable)
Video Bit Rate:	Variable (user-selectable)
Video Pre-filter:	Variable (user-selectable)
Color Space:	YCbCr and RGB
Audio	
Output Format:	Dolby® Digital
Sampling Rate:	48 kHz
Bit Rate:	Variable; 96 - 448 Kbps (user-selectable)

Closed Captioning	
Component:	EIA-608; 1x RCA (CC)
HD-SDI:	EIA-708; Embedded in HD-SDI input
HDMI:	EIA-608; 1x RCA (CC)
VGA:	EIA-608; 1x RCA (CC)
Composite:	EIA-608

Output

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

ASI	
Connectors:	1x BNC (Front-panel)
Format:	DVB-ASI
Standard:	ETSI EN 50083-9
TS Bit Rate:	Variable (user-selectable)

IP	
Connector:	1x RJ45 (Front-panel)
Standard:	100/1000Base-T Ethernet
TS Bit Rate:	Variable (user-selectable)
UDP/RTP:	Supported (user-selectable)

General

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

Alarms/Monitoring/Control

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

Related Products

Model	Description
HDE-CHV-QAM/IP	MPEG-2 HD Encoder; 1xComponent/HDMI/VGA/Composite to 1xQAM + 1xIP
HDE-1C-QAM	MPEG-2 HD Encoder; 1xComponent/Composite inputs to 1xQAM + 1xIP