



# HDE-4S-PRO LL

## Professional MPEG-2 HD Low Latency Encoder

### Key Features

- Accepts up to (4) programs; HD-SDI loop-thru for monitoring
- Simultaneously delivers 4xQAM (adjacent), 4xIP (SPTS), 4xASI
- 250 mSec Encoding Speed when operating in Low Latency mode
- Supports real-time Dolby® Digital audio encoding
- Supports user-defined PSIP configuration



The HDE-4S-PRO LL is especially designed to deliver superior motion optimization for programming, such as fast-paced live sporting events. The low latency feature significantly reduces the standard encoder operational time delay and will benefit all applications that encodes and distributes live programming on-site.

The unit accepts up to (4) HD programs from: 4xHD-SDI. The MPEG-2 encoded outputs are available in the following formats simultaneously: 4xQAM, 4xIP (1000Base-T Ethernet), and 4xASI.

To improve transport efficiency, the encoder allows operators to assign (2) HD programs to a QAM output channel, and individually turn on/off each of the (4) adjacent QAM output channels.

### Ordering Information

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ISO 9001:2015 Certified

Rev: 012121

Model	Stock #	Description
HDE-4S-PRO LL	6372 LL	Professional MPEG-2 HD Low Latency Encoder 4xHD-SDI + 1 Spare to 4xQAM + 4xIP + 4x ASI w/ EAS



# HDE-4S-PRO LL

## Professional MPEG-2 HD Low Latency Encoder

### Input

<b>HD-SDI</b>	Connectors: 10xBNC total (4 inputs + 1 Spare in/loop thru) Standard: SMPTE 292M Video Resolution: 480i, 720p, & 1080i Audio: Embedded PCM; Pass-thru Dolby® Digital only
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<b>EAS</b> (Emergency Alert System)	Connectors: 3xRCA (Video, Audio L & R) Trigger Mechanism: 5-12 VDC & Dry Contact Closure (Terminal Strip)
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### Encoding Profile

<b>Video</b>	Output Format: MPEG-2 HD MP@ML; ISO 13818-2 Chroma: 4:2:0 Resolution: 480i, 720p, & 1080i Frame Rate: 29.97 fps (480i & 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 & RGB
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<b>Audio</b>	Output Format: Dolby® Digital Sampling Rate: 48 kHz Bit Rate: Variable; 96-448 Kbps (user-selectable)
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<b>Closed Captioning</b>	HD-SDI: EIA-708; Embedded in HD-SDI input
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### Alarms & Monitoring

<b>Local Monitoring:</b>	5x Input Status LEDs 1x Power LED 1x "F" Female RF Test Port
<b>Local Control:</b>	1x IP Reset button

<b>Monitoring/ Control:</b>	GUI-based menu via Web browser (1xRJ45 front-panel connector; 10/100Base-T)
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### Output

<b>QAM</b>	Connector: 1x "F" (Rear-panel; ≤ 4xRF QAM Ch.) Modulation: QAM 16, 32, 64, 128, & 256 Standards: ITU-T J.83; Annex A & B DVB Symbol Rate: Variable; ≤ 7 Msymbol/sec (Mbaud) Frequency Range: 54 to 1002 MHz Tuning: CATV Channel Selectable (Ch. 2-158) Channel Bandwidth: 24 MHz (4x Adjacent 6 MHz) RF Level: 40 dBmV (4 Ch. Combined) RF Level Accuracy: ± 1 dB 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 (@ +52 dBmV level, 5.5 MHz BW) Impedance: 75 Ω Spectral Inversion: Auto Recognition Carrier Suppression: 45 dB Return Loss: 14 dB typical Signal-to-Noise Ratio: 40 dB typical MER: 40 dB typical I/Q Phase Error: < 1 degree I/Q Amplitude Imbalance: < 1 percent
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<b>IP</b>	Connector: 1xRJ45 Standard: 1000Base-T Ethernet (GigE) TS Bit Rate: Variable (user-selectable) Network Protocols: UDP, RTP Multicast, Unicast (4xSPTS or SPTS/MPTS combined outputs)
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<b>ASI</b>	Connectors: 4x BNC (front-panel) Format: DVB-ASI Standard: ETSI EN 50083-9 TS Bit Rate: Variable (user-selectable)
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<b>Latency</b>	Standard Encoder: 900 msec <b>HDE-4S-PRO LL:</b> 250 msec
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### General Specifications

<b>Dimensions (W x D x H):</b>	19 x 18.125 x 1.75 in. (483x460x44 mm)
<b>Power:</b>	115-230 VAC, 60/50 Hz (Fuse 3.0, 250 VDC, SloBlo)
<b>Power Consumption:</b>	65 W (QAM/IP)
<b>Weight:</b>	10 lbs (4.54 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/ Storage Humidity:</b>	0 to 95% RH @35 °C max, non-condensing