



Compact, High Performance, High Definition H.264 Encoder & Decoder

Highest Performance HD H.264 Encoder/Decoder The Makito™ HD H.264 encoder and decoder support up to 1080p60 resolution and an incredible end-to-end latency of 70 milliseconds. Available with SDI (SDI, HD-SDI, 3G-SDI, Composite, S-Video) or DVI (DVI, XGA, Component), the Makito encoder addresses video over IP H.264 encoding anywhere on a resolution/bandwidth scale from CIF as low as 150 kbps to full HD at 15 Mbps. As a perfect mate to the Makito encoder, the Makito decoder supports up to 3G-SDI and HDMI.

Power Features Makito encoders can output a variety of stream types (Unicast/Multicast TS, RTSP, RTMP) and multiple bitrates (MBR) to various destinations concurrently, which allows integrators to serve desktops, mobile devices, set-top boxes, signage players, recorders, and streaming servers. The Makito also includes powerful media features such as snapshots, logo application, and Selective Mute™ to enable complete control and identification of sources and destinations directly from the encoder. The Makito is ideal for multi-channel enterprise IPTV delivery, for HD signage deployments, and for mass HD distribution/record environments such as schools, medical facilities, stadiums, auditoriums, professional training, and simulation environments.

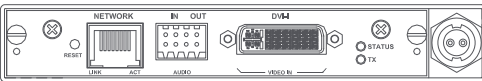
Ultra-Compact Encoding For remote installations or headends, the Makito offers highly flexible configurations. Available as an ultra compact appliance for single channel requirements, or within a 1RU (6 blades) or 4RU (21 blades) chassis for high-density encoding/decoding challenges, the Makito uses 1/5 of the rack space with 1/10 the power, and delivers 2x the resolution of typical 1RU encoders.

Product Features

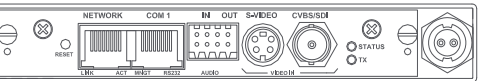
Product Benefits

70 Millisecond End-to-End Latency	Supports mission-critical and advanced communication challenges
1080p60 Resolution	Highest quality HD
DVI/XGA Input	Stream computer displays up to 1920 x 1080
High Density	Reduce rack space with 6 1080p60 encoders per 1RU
End-to-End Secure Video	Deliver protected multicast without copy risk
Selective Mute	Disable viewing audiences with notice
Multi-Bitrate (MBR) Streaming	Stream directly to desktops, mobile devices, and set-top boxes
Multi-Streaming	Stream to multiple systems/audiences simultaneously
Snapshots	Grab full resolution images before encoding
Logo Application	Identify streams and burn in graphics
Complete Product Range	Industry-proven product family including encoders, decoders and DVB-IP gateways
TalkBack™ Audio Decoding	Enable bi-directional audio from InStream players
Metadata Support	Insert synchronized KLV into the MPEG stream from IP, embedded, or serial data sources

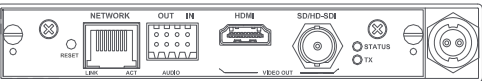
<p>MAKITO DVI ENCODER <i>Video Inputs:</i> Y, Pb, Pr / RGBHV component analog Y, Cb, Cr / DVI component digital <i>Video Resolutions:</i> 1920x1080p 60/59.94/50/30/29.97/25/24/23.98 Hz 1920x1080i 60/59.94/50 Hz 1280x720p 60/59.94/50/30/29.97/25 Hz 720x480/576i 60/59.94/50 Hz 720x480/576p 60/59.54/50 Hz (interlaced shown in fields per second) <i>Computer Resolutions:</i> 1400x1050 60 Hz 1024x768 85/75/60 Hz 1280x1024 75/60 Hz 800x600 85/75/60 Hz 1280x768 85/75/60 Hz 640x480 85/75/60 Hz <i>Audio Inputs:</i> Available through terminal block connector: Balanced stereo analog audio Unbalanced stereo analog audio</p>	<p>VIDEO ENCODING/DECODING <i>Compression Standard:</i> H.264 (MPEG-4 AVC part 10) ISO/IEC 14496-10 Main Profile Level 4.2 and lower intermediate levels I, IP framing Configurable Group of Picture (GOP) size Configurable frame rate <i>Bit Rates:</i> SD/HD from 150 kbps to 15 Mbps <i>Rate Control:</i> CBR/VBR <i>Latency (encode only):</i> Less than 55ms</p>	<p>SINGLE BLADE APPLIANCE (S-290E-HDSDI/DVI) <i>Dimensions:</i> 24mm H x 149mm W x 202mm D (0.92"H x 5.85"W x 8.0"D) <i>Weight:</i> 2.5 lbs. <i>Power:</i> 5VDC, 13W (each blade), 100-240VAC 15W external locking power supply <i>Temperature:</i> Operating: -20° to 50°C (-4° to 122°F) Non-operating: -40° to 50°C (-40° to 122°F)</p>
<p>MAKITO SDI ENCODER & MAKITO DECODER <i>Video Inputs (encoder only):</i> S-Video Composite (NTSC/PAL/PAL-M) SD-SDI / SMPTE 259M-C HD-SDI / SMPTE 292M & 296M 3G-SDI / SMPTE 274M & 424M & 425M <i>Video Outputs (decoder only):</i> HDMI SD-SDI / SMPTE 259M-C HD-SDI / SMPTE 292M & 296M 3G-SDI / SMPTE 274M & 424M & 425M <i>Video Resolutions:</i> 1920x1080p 60/59.94/50/30/24/23.98/29.97/25 Hz 1920x1080i 60/59.94/50 Hz 1280x720p 60/59.94/50/30/29.97/25 Hz 720x480/576i 60/59.94/50 Hz (interlaced shown in fields per second) <i>Audio Inputs/Outputs:</i> Available through terminal block connector: Balanced stereo analog audio Unbalanced stereo analog audio Embedded Audio SD-SDI SMPTE 272M HD-SDI SMPTE 299M HDMI (Decoder only)</p>	<p>AUDIO ENCODING/DECODING <i>Compression Standard:</i> MPEG-2 AAC-LC ISO/IEC 13818-7 MPEG-4 AAC-LC ISO/IEC 14496-3 <i>Audio Channels:</i> 2 per video channel <i>Bit Rates:</i> From 32 to 448 kbps per audio pair <i>Frequency Response:</i> From 20 Hz to 22 kHz</p>	<p>6 BLADE CHASSIS (F-MB6X-RAC, F-MB6X-DC, F-MB6X-MED) <i>Dimensions:</i> 19" rack mountable, 1RU 43.69mm H x 434.98mm W x 420.37mm D (1.72"H x 17.125"W x 16.55"D) <i>Weight:</i> 6 slot empty chassis – 17.5 lbs. Each blade – 0.5 lbs. <i>Power (internal power supply):</i> Redundant AC type 90-264VAC 47Hz-63Hz 300 Watt max. Medical Grade 90-264VAC 47Hz-63Hz 300 Watt max. DC type 20-36 VDC 300 Watt max. <i>Operating Temperature:</i> Operating: 0°C to 50°C (32°F to 122°F) Non-Operating: -40°C to 70°C (-40°F to 158°F) <i>Humidity:</i> up to 95% non-condensing</p>
<p>ADVANCED FEATURES Multi-Bitrate (MBR) Streaming SD De-interlacing Built-in Downscaling Deblocking Filter EIA-608-B/NTSC Line 21 Closed Captioning EIA-708-B/SDI Closed Captioning Forward Error Correction (FEC) AES Encryption 128-bit or 256-bit Logo Overlay Selective Mute SD Aspect Ratio Configuration SD AFD and WSS (x-290E-HDSDI) Color Space Configuration (x-290E-DVI) TalkBack™ (encoder only)</p>	<p>IP NETWORK INTERFACES <i>Standard:</i> Ethernet 10/100/1000 Base-T, auto-detect, Half/Full-duplex <i>Connector:</i> RJ45 <i>Networking Protocols:</i> Unicast streaming Multicast streaming (IGMP v3) Multiple unicast streaming MPEG transport stream over UDP / RTP Direct RTP - H.264 over RTP (RFC 3984) RTP / RTCP (RFC 3550) RTMP Static IP/DHCP QuickTime RTSP (RFC 3640) (Progressive resolutions only) SAP (RFC 2974)</p>	<p>21 BLADE CHASSIS (F-MB21B-R) <i>Dimensions:</i> 19" rack mountable, 4 RU 178mm H x 439.98mm W x 460mm D (7.00"H x 17.125"W x 18.00"D) <i>Weight:</i> 21 slot empty chassis – 38 lbs. Each blade – 0.5 lbs. <i>Power (internal power supply):</i> 90-132V and 180-240VAC 47Hz-63Hz 400 Watt max. <i>Temperature:</i> Operating: 0°C to 40°C (32°F to 104°F). Non-Operating: -40°C to 70°C (-40°F to 158°F). <i>Humidity:</i> up to 95% non-condensing</p>
	<p>MANAGEMENT INTERFACES <i>Standard:</i> RS-232 (optional for x-290E-DVI) RJ45 to RS-232 (DB-9 Management Cable Req'd.) <i>Management:</i> HTTPS (web browser) Command line over SSH/Telnet/RS-232 FTP/TFTP SNMP v3 Furnace Portal Server (VF Pilot)</p>	<p>METADATA (OPTIONAL) CoT over serial or UDP CoT to KLV conversion KLV over serial RS-232/422 KLV over UDP and SDI SMPTE 336M compliant MISB 0601.3 compliant MISB 0604.2 compliant Metadata multiplexing per MISB RP 0604 Synchronous or asynchronous modes</p>



Makito DVI Encoder



Makito SDI Encoder



Makito Decoder

Makito Product Portfolio & Ordering Information **

Makito SDI Encoder	S/B-290E-HDSDI	Makito Encoder Appliance (S) or Blade (B) – HD H.264 IP Video Encoder supporting 3G-SDI, HD-SDI, SDI, Composite, S-Video
Makito DVI Encoder	S/B-290E-DVI	Makito Encoder Appliance (S) or Blade (B) – HD H.264 IP Video Encoder supporting DVI, XGA, and Component
Makito Decoder	S/B-290D-HD	Makito Decoder Appliance (S) or Blade (B) – HD H.264 IP Video Decoder supporting 3G-SDI, HD-SDI, SDI, and HDMI
6 Slot Chassis	F-MB6X-RAC/MED/DC	6 slot 1RU rack mount chassis for Makito, Makito X, Barracuda, and Torpedo blades
21 Slot Chassis	F-MB21B-R	21 slot 4RU rack mount chassis for Makito, Makito X, Barracuda, and Torpedo blades

** For complete pricing and ordering, contact us at sales@haivision.com or your certified Haivision reseller.