



Decode Low Latency 4K UHD and HD Streams for Broadcast Quality Video

Low latency video decoding for live sports coverage, news broadcasts, corporate video, and mission-critical ISR deployments.

4K UHD / Quad HD Video Decoding The Haivision Makito X4 Decoder is a highly versatile real-time HEVC/H.265 and AVC/H.264 video decoder that can receive up to four 1080p50/60 HD streams or a single full 2160p50/60 4K UHD stream over IP, along with 32 channels of digital audio. Video streams with either 8- or 10-bit pixel depths and 4:2:0 or 4:2:2 chroma subsampling can be decoded by the Makito X4 Decoder and output as 12G-SDI video for 4K content or in HD with up to four 3G-SDI outputs.

Ultra Low Latency End-to-End A perfect companion to the Makito X4 Encoder, the Makito X4 Decoder can decode HEVC and H.264 video with extremely low latency and is ideally suited for live broadcast interviews and remote production.

Remote Production with Stream Sync Makito X4 Decoders support Haivision's Stream Sync technology which automatically synchronizes multiple streams based on timecode embedded by Makito X4 Encoders. Stream Sync for the Makito X series supports remote production of live video over IP, as a cost-effective alternative to satellite and dedicated fiber, by enabling synchronized switching between multiple video & audio sources and is a cost-effective alternative to deploying large teams of personnel & resources at remote event locations.

High Density Form Factor Available as a compact standalone appliance or as a blade for Haivision rack-mountable enclosures, the Makito X4 Decoder offers the highest density available for up to 84 HD or 21 UHD video channels within a single 4RU rack module.

Secure Reliable Transport The Makito X4 Decoder can decode video streams secured with AES 128- or 256-bit encryption using the SRT protocol, which is critical when sharing valuable content over the internet. In order to reliably deliver streams over unmanaged networks, SRT can adapt to changing network conditions and recover lost packets in real-time. As part of a secure end-to-end video workflow, SRT is available within all Haivision products including the Makito X4 Decoder.

FEATURES

BENEFITS

Ultra Low Latency

Extremely low latency decoding enabling interactivity for live bi-directional interviews and field contribution

4K UHD/Quad HD Video Decoding

Efficient real-time HEVC/H.264 video decoding up to 3840x2160p60 with 4:2:2 10-bit color for impeccable picture quality

Stream Sync for Remote Production

Ensure seamless live production by maintaining synchronization when switching between multiple video and audio sources

High-Density Form Factor

Compact appliance or blade module for scalable deployment in constrained spaces and high-density environments

SRT Support for Secure and Reliable Streaming

Receive live streams without packet loss over unpredictable networks and protect valuable video content by ensuring it is viewed by intended audiences only

MAKITO X4 VIDEO DECODER

OUTPUT VIDEO INTERFACES

- (Quad BNC Outputs)
- SD-SDI SMPTE 259M-C
- HD-SDI SMPTE 292M SMPTE 274M SMPTE 296M
- 3G-SDI SMPTE 424M (Level A only) SMPTE 425M
- 6G-SDI SMPTE 2081
- 12G-SDI SMPTE 2082
- UHD/4x3G-SDI (2SI as per SMPTE 425-5)

OUTPUT VIDEO RESOLUTIONS

- 3840x2160p60/59.94/50/30/29.97/25/24/23.98 HZ
- 1920x1080p60/59.94/50/30/29.97/25/24/23.98 HZ
- 1920x1080i60/59.94/50 HZ
- 1280x720p60/59.94/50/30/29.97/25 HZ
- 576i50
- 480i29.97/30
- (interlaced from HEVC only, shown in fields per second)
- No scaling capabilities

H.264/AVC VIDEO DECODING

- MPEG-4 AVC part 10 / ISO/IEC 14496-10
- Baseline, Main and High Profiles up to Level 5.2
- I, IP, IBP, IBBP, IBBBP, IBBBBP framing
- 8-bit or 10-bit pixel depth
- Chroma sub-sampling 4:2:0 or 4:2:2

H.265/HEVC VIDEO DECODING

- ISO/IEC 23008-2
- Baseline, Main and High Profiles up to Level 5.1
- I, IP, IBP, IBBP, IBBBP, IBBBBP framing
- 8-bit or 10-bit pixel depth
- Chroma sub-sampling 4:2:0 or 4:2:2

VIDEO DECODING

- Configurable output frame rate

OUTPUT AUDIO INTERFACES

- Embedded Audio:*
- SD-SDI SMPTE 272M HD/3G-SDI SMPTE 299M

AUDIO DECODING

- Compression Standard:*
- MPEG-2 AAC LC ISO/IEC 13818-7
- MPEG-4 AAC-LC ISO/IEC 14496-3
- Audio Channels:*
- Up to 16 stereo pairs
- Frequency Response:*
- From 20 Hz to 22 kHz

METADATA

- KLV over SDI (SMPTE 336)
- SMPTE 336M compliant
- MISB 0601.10 compliant
- MISB 0604.2 compliant
- Asynchronous & synchronous modes as per MISB 0604.2
- High precision timecode insertion as per MISB 0604.2
- KLV Metadata Processing (SMPTE 336, MISB 0601, 0102 and 0605 support)
- Time Code Support (SMPTE 12M)
- Closed Captioning (SMPTE 334-1/2)
- CEA-608 and CEA-607
- Active Format Description (AFD / SMPTE 2016)

IP NETWORK INTERFACES

- Standard:*
- Single Ethernet 10/100/1000 Base-T, auto-detect, Half/Full duplex
- Unicast streaming IPv4/IPv6
- Multiple unicast streaming
- 10G SFP+ Port (future use)
- Streaming Protocols:*
- MPEG-TS over UDP
- MPEG-TS over RTP
- Secure Reliable Transport (SRT)
- Advanced Streaming Features:*
- AES encryption 128-bit or 256-bit
- SRT Latency Control
- Still image insertion on loss of stream
- Forward Error Correction (FEC)

MANAGEMENT INTERFACES

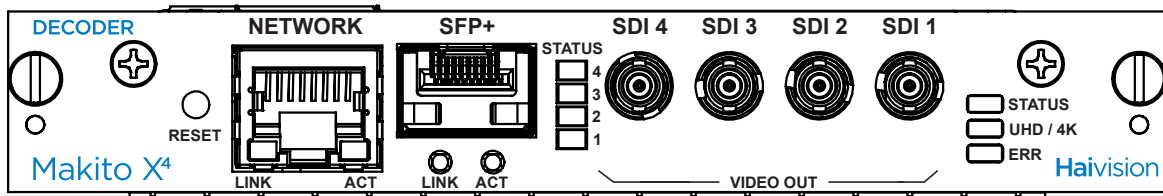
- IP/Ethernet (IPv4 and IPv6)
- Management:*
- HTTPS (web browser)
- Command line over SSH/Telnet
- SFTP/TFTP/SCP
- SNMP v3
- Haivision EMS (option)

SINGLE BLADE APPLIANCE

- Dimensions:*
- 21mm H x 129mm W x 196mm D
- (0.83" H x 5.1" W x 7.7" D)
- Weight:*
- 1.14 kg (2.55 lbs)
- Power:*
- 12VDC, 18W
- Temperature:*
- Operating: 0°C to 40°C (32°F to 104°F)
- Non-Operating: -30°C to 70°C (-22°F to 158°F)

MULTI-BLADE CHASSIS OPTIONS

- 6 blade chassis:*
- F-MB6X-RAC
- F-MB6X-DC
- F-MB6X-MED
- 21 blade chassis:*
- F-MB21X-R



Makito X4 Decoder

Makito X4 Video Decoder Product Portfolio & Ordering Information **

Makito X4 Video Decoder	S/B-MX4D-SDI4	Makito X4 quad-channel decoder appliance (S) or blade (B)
Makito X4 Video Decoder w/UHD	S/B-M4XD-SDI4-UHD	Makito X4 quad-channel decoder appliance (S) or blade (B) with UHD support

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