



Decode Low Latency 4K UHD, HD and HDR 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 in support of immersive audio formats including Dolby Atmos. 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.

High Dynamic Range In addition to SDR, 10-bit pixel depths, and wide color gamut support (WCG), the Makito X4 Decoder can also automatically decode live content for HDR workflows using HLG or PQ (ST 2084) transfer functions.

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 supports remote production of live video over IP as an efficient alternative to satellite and 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 Performance

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

4K UHD/Quad HD Video Decoding

Real-time 4K UHD video decoding with wide color gamut and HDR support, delivering pristine picture quality broadcast production, ISR, and situational awareness applications.

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.

Flexible and Future Proof

Enable future migration from HD to 4K, SDR to HDR, and SDI to SMPTE ST 2110.

SRT Support for Secure and Reliable Transport

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

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)
 SMPTE ST 2110 output (with 10G SFP+ transceiver)

VIDEO RESOLUTIONS

3840x2160p 60/59.94/50/30/29.97/25/24/23.98 Hz*
 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**

No scaling capabilities

VIDEO DECODING

8-bit or 10-bit pixel depth
 Chroma sub-sampling 4:2:0 or 4:2:2
 BT.709 color space and WCG (BT.2020)
 SDR and HDR - HLG or PQ (ST 2084)
 I, IP, IBP, IBBP, IBBBBP, IBBBBBP framing
 Configurable output frame rate
 Slice-based decoding

H.264/AVC Profiles:

MPEG-4 AVC part 10 / ISO/IEC 14496-10
 Baseline, Main, High, High 10 and High 4:2:2 Profiles
 up to Level 5.2

H.265/HEVC Profiles:

ISO/IEC 23008-2
 Main, Main 10, Main 4:2:2 Profiles up to Level 5.1

AUDIO INTERFACES*Embedded Audio:*

SD-SDI SMPTE 272M
 HD/3G-SDI SMPTE 299M

AUDIO DECODING*Compression Standard:*

Dolby Digital AC-3 / E-AC-3
 SMPTE 302M Uncompressed LPCM
 MPEG-1 Layer 1/2/3 ISO/IEC 11172-3
 MPEG-2 AAC LC ISO/IEC 13818-7
 MPEG-4 AAC-LC ISO/IEC 14496-3

Audio Channels:

Up to 8 pairs per output
 MPEG Surround ISO/IEC 23003-1
 Surround audio grouping up to 7.1
 Dolby Atmos

Frequency Response:

From 20 Hz to 22 kHz

METADATA

KLV over SDI
 SMPTE 336M compliant
 MISB 0601.10 compliant
 MISB 0604.2 compliant
 MISB 0605 compliant
 MISB 0102 compliant
 SMPTE 12 timecode
 SMPTE 334 closed captioning
 EIA/CEA/CTA-608/708 CC pass-through
 SMPTE 2016 AFD

NETWORKING*Interfaces:*

1x RJ45 port Ethernet 10/100/1000 Mbps
 1x SFP+ port for MSA compliant transceiver

Streaming Protocols:

MPEG-TS over UDP
 MPEG-TS over RTP
 Secure Reliable Transport (SRT)
 Unicast streaming
 Multicast streaming (IGMPv3)

Advanced Streaming Features:

AES encryption 128-bit or 256-bit
 SRT Latency Control
 Forward Error Correction (FEC)
 Both IPv4 and IPv6 Support

Management:

HTTPS (web browser)
 REST API
 Haivision EMS and Haivision Hub 360
 Command line over SSH/Telnet
 SFTP/TFTP/SCP
 SNMPv3
 NMOS (IS-04, IS-05, IS-09)

SIZE, WEIGHT, POWER*(single height appliance)**Dimensions:*

24mm H x 152mm W x 192mm D
 (0.94" H x 5.98" W x 7.56" D)

Weight:

1.08 kg (2.37 lbs)

Power:

12VDC, 18W

Temperature:

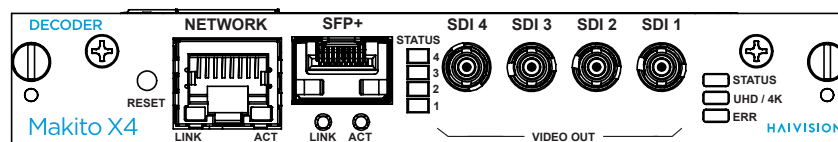
Operating: 0°C to 40°C
 (32°F to 104°F)
 Non-Operating: -30°C to 70°C
 (-22°F to 158°F)

Compatible with Haivision MB6x and MB21x
 multi-blade chassis

Software version 1.7

* SMPTE ST 2110 output up to 2160p30

** Interlaced video encoding shown in fields per second and supported in HEVC only



Makito X4 Decoder

Makito X4 Video Decoder Product Portfolio & Ordering Information **

Makito X4 Decoder Blade - HD	B-MX4D-SDI4	Makito X4 SDI Decoder Blade - HEVC/H.265 & AVC/H.264 IP Video Decoder
Makito X4 Decoder Appliance - HD	S-MX4D-SDI4	Makito X4 SDI Decoder Appliance - HEVC/H.265 & AVC/H.264 IP Video Decoder
Makito X4 Decoder Blade - UHD	B-MX4D-SDI4-UHD	Makito X4 UHD Decoder Blade - HEVC/H.265 & AVC/H.264 IP Video Decoder
Makito X4 Decoder Appliance - UHD	S-MX4D-SDI4-UHD	Makito X4 UHD Decoder Appliance - HEVC/H.265 & AVC/H.264 IP Video Decoder
Makito X4 Decoder - 4K/UHD License	SWO-MX4D-UHD	Support up to UHD/12G-SDI - upgrade from HD to 4K UHD
Makito X4 ST 2110 License	SWO-MX4-2110	Support for SMPTE ST 2110 over 10 Gbps interface - software license
Makito X4 HDR License	SWO-MX4-HDR	Support HLG and PQ (ST 2084) transfer function - software license

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

DODIN APL CERTIFIED:

Makito X4 Decoder is on the Department of Defense Information Network Approved Product List (DODIN APL) under tracking number 2118301.