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

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OUTPUT VIDEO INTERFACES
(Quad mini-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

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, IBBBP, IBBBBP framing
Configurable output frame rate
Slice-based decoding
H.264/AVC Profiles
MPEG-4 AVC part 10 / ISO/IEC 14496-10
Baseline, Main and High Profiles up to Level 5.2
H.265/HEVC Profiles
ISO/IEC 23008-2
Baseline, Main and High Profiles up to Level 5.1

OUTPUT AUDIO INTERFACES
Embedded Audio:
SD-SDI SMPTE 272M HD/3G-SDI SMPTE 299M

AUDIO DECODING
Compression Standard:
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
2.0 channels
5.1 channels
7.1 channels
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-708
Active Format Description (AFD / SMPTE 2016)

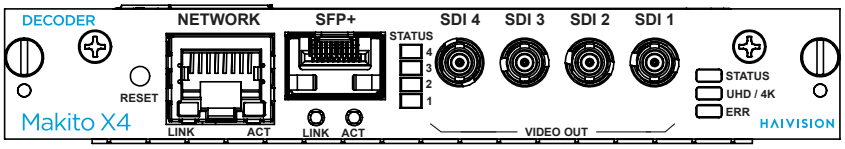
IP NETWORK INTERFACES
Connectivity:
RJ45 port Ethernet 10/100/1000 Mbps
SFP+ port for MSA compliant transceiver
Streaming Protocols:
MPEG-TS over UDP
MPEG-TS over RTP
Secure Reliable Transport (SRT)
Unicast streaming IPv4/IPv6
Multicast streaming (IGMPv3 & IPv6)
Multiple unicast streaming
Advanced Streaming Features:
AES encryption 128-bit or 256-bit
SRT Latency Control
Path Redundancy – SRT across multiple networks
Still image insertion on loss of stream
Forward Error Correction (FEC)

MANAGEMENT INTERFACES
IP/Ethernet (IPv4 and IPv6)
Management:
HTTPS (web browser)
REST API
Command line over SSH/Telnet
SFTP/TFTP/SCP
SNMP v3
Haivision EMS and Hub

SINGLE BLADE APPLIANCE
Dimensions:
24mm H x152mm 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)

MULTI-BLADE CHASSIS OPTIONS
6 blade chassis:
F-MB6X-RAC
F-MB6X-DC
F-MB6X-MED
21 blade chassis:
F-MB21X-R

Software Version: 1.6



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 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**.