



Matrox Monarch HDX Technical Specifications

Inputs and Outputs	
Supported HDMI Video Input	<p><u>Progressive</u> 1920x1080 @ 60/59.94/50/30/29.97/25/24/23.98 Frames per second 1280x720 @ 60/59.94/50 Frames per second</p> <p><u>Interlaced</u> 1920x1080i 29.97/25 Frames per second</p>
HDMI Video Output	<p>Preview output of video input signal. Preview output is available when source SDI or HDMI.</p> <p><i>Note that when input is an SDI resolution, the HDMI preview output will show video windowboxed on an HD output.</i></p>
Supported SDI Video Input	<p><u>Progressive</u> 1920x1080 @ 60/59.94/50/30/29.97/25/24/23.98 Frames per second 1280x720 @ 60/59.94/50 Frames per second</p> <p><u>Interlaced</u> 1920x1080i @ 29.97/25 Frames per second 720x486i @ 29.97 Frames per second 720x576i @ 25 Frames per second</p> <p><u>Compliant with SMPTE 259M/292M/424M (Level A) / 425M</u></p>
SDI Video Output	<p>0 frame latency passthrough of Input signal. Output is a clean distribution of SDI incoming signal. Hardware bypass relay present in SDI signal path is "closed" on power failure.</p>
Audio Input	<p>Processes the first two channels of audio embedded in HDMI or SDI input signals. Unbalanced analog stereo input via 1/8" (3.5mm) jack Line Level</p>

Audio Output	<p>Passthrough of 8 channel of embedded audio channels in HDMI and SDI signals. Unbalanced analog stereo output via 1/8" (3.5mm) jack—passthrough of input. Line Level</p> <p><i>Note that all outputs are active regardless of audio and video input selection.</i></p>
Extra features	<p>Video Input Format is Auto-Detected in SDI and HDMI. All outputs are active regardless of audio and video input selection.</p>
Frame Synchronization	
Frame Synchronization	<p>The Monarch HDX contains frame synchronization circuitry designed to compensate for disruptions of the input signal. This circuitry is in place for both SDI and HDMI inputs. Streaming and recording operations will proceed cleanly with repeated or dropped frames.</p>
H.264/MPEG-4 Part 10 (AVC) Video Encoder	
Resolutions	<p>Selectable encoding resolutions ranging from: 128x128 to 1920x1080</p>
Bit Rates Ranges	<p>Single Encoder - Streaming mode: 20 Mbps Single Encoder - Recording mode: 30 Mbps Dual Encoder - Maximum of 10 Mbps for streaming channels Maximum of 30 Mbps combined for both channels</p>
Encode Frame Rates	<p>Encode frame rates selection includes; 60/50, 30/25/24 and 15/12.5.</p> <p>Single Encoder – Maximum of 1080p60 fps Dual Encoder – Maximum of 720p60 fps or 1080p30 fps</p>
Encoding Profiles	<p>Baseline, Main and High</p>
Encoding Controls	<p>2.0, 3.0, 3.1, 4.0, 4.1 Level Support GOP Size Variable bit rate support Average max/min data rate controls Deblocking Filter</p>
MPEG-4 AAC Audio Encoder	
Standard	<p>AAC-LC</p>
Sample Frequency	<p>32, 44.1 and 48 kHz when digitized from an analog source</p>
Channels	<p>2 channels Stereo (L/R)</p>
Bit Rates	<p>Range from 32 kbps to 256 kbps</p> <p><i>Note that audio codec settings are applied to both encoders.</i></p>
Scaler	
	<p>High Quality multi-tap 10 bit Down Scaler and De-Interlacer Available to both streaming and recording operations</p>

H.264 Input preview Stream	
Resolution	320x180
Average Bitrate	100-300 kbps
Stream Type	RTSP <i>Note the preview encoder is automatically disabled when primary encoder resolution are at the max to ensure best streaming and/recording performance.</i>
Recording File Format	
File Type	Industry Standard MP4 and MOV files with two channels of embedded AAC audio
Recording Lengths	Maximum file length of 300 minutes—irrespective of storage type used. File splitting feature allows a user to record continuously for long periods by defining file segment sizes. The Monarch HDX will create these sequential file segments over the course of the recording operation without losing a single frame of video. File segment can have a length of 1 to 300 minutes.
Network Interfaces	
Connector	RJ45 providing 10/100/1000 Base-T Ethernet with Static or DHCP addressing
Protocols	RTMP, RTSP/RTP IPv4 Support Unicast and Multi Unicast (number of clients may vary from 3 to 10)
User Interface	
Computer Based control	HTTP via standard PC or Mac web browser using Monarch HDX Command Center.
Physical Interface	On Device push buttons for independent streaming and recording with Start/Stop control
Storage Types for File Recording	
2 x USB 2.0	Support for NTFS (3.1) and FAT32 file system <i>The Monarch HDX will support writing to USB3 devices at USB2 speeds. Also note, there is a very high variability in the performance capabilities of “thumb” drives (even USB3 versions). Many are optimized for “read” operations while the Monarch HDX requires sustained “write” capabilities. For best results, Matrox recommends using powered USB drives. If small portable media is required, SD cards may be more suitable.</i>
1 x SD card Slot	Supports SD and SDHC cards. Only NTFS formatted SDXC cards are supported. (Class 10 highly recommended).
Network Mapped Drive	Support for writing to shared folders in computers found on a network using Windows Share protocols (suitable for Windows system) as well as NFS protocols (suitable for Mac and Linux systems).
Matrox Monarch HDX Command Center Web UI	
Start Stop Controls	These buttons are available at all times no matter where you navigate in the UI.
Status Page	Provides relevant operational information concerning Status of Monarch HDX unit at that time including; Input video detection and resolution, State and configuration of Streaming operation, State and configuration of Recording operation, Error conditions, etc.
Control Page	Multiple Monarch devices can be connected in a Master/Slave topology to allow for synchronized recording and streaming operations across multiple units via a single interface.

Record Settings	Configuration of recording parameters set within this page. A number of presets are included which are selected based on post event use of the recorded asset. If file is to be uploaded for VOD purposes, a YouTube preset may be selected. If content is to be edited for high quality production, a higher bitrate preset may be preferable.
Streaming Settings	Configuration of Streaming parameters performed on this page. The RTMP or RTSP credentials as well as encoding parameters are entered. Encoder presets have been included to quickly select an ideal encoder settings based on desired delivery resolution or bitrate. The loading of Flash Media Server XML configuration files is supported.
Administrative tools	Device Naming, IP configuration, Date/Time settings and a variety of other tasks performed via this page.
Additional Tools	Matrox provides PC or Mac based utilities to help detect the Monarch HDX Device on a particular Network (DHCP server required), to update Monarch HDX devices with latest firmware and to reboot the devcies remotely.
Physical	
Dimensions	Length (shell) - 5.6" (14.2cm), Length (shell +BNCs) - 6"(15.3cm), Width - 8.5" (21.6 cm), Height (shell) - 1.4"(3.6cm), Height (Shell + pads) - 1.5" (3.81cm)
Weight	1.3 lbs, 0.6 kg
Operating conditions	32 to 104 deg. F (0 to 40 deg. C), 20 to 80% relative humidity (non-condensing)
Power	<ul style="list-style-type: none"> • Input: 9-24 volts • Connector: Din4 • Total Power Consumption: 20-30 watts (42 max)
Power Supply	<ul style="list-style-type: none"> • Line Voltage: 100-240 VAC • Frequency: 50-60 Hz • Input: External AC/DC adapter - IEC320-C8 • DIN4 Locking Power Connector
Transport and Storage	Max Operating Altitude: 3000 meters Max Transport altitude: 12,000 meters Storage Humidity 5 to 95% relative humidity (non-condensing)
Regulatory	<ul style="list-style-type: none"> • EMI: FCC Class A, CE Mark Class A, ACMA C-Tick Mark, VCCI • Power-supply Safety : UL/CUL(UL60950-1), TUV-GS(EN60950-1), T-LICENSE(BS EN60950-1), CCC(GB4943.1-2011), PSE(J60950), SAA(AS/NZS60950-1), KC-MARK(K60950), S-MARK(IEC60950-1) • RoHS Directive 2002/95/EC
Warranty	2 years with free telephone support
Kit Contents	
In the box	<ul style="list-style-type: none"> • Matrox Monarch HDX device • Matrox Monarch HDX external power supply • IEC-C8 power cords (US, GB and EU)

Ordering Information

MHDX/I	Matrox Monarch HDX part number
MRCH/RACK/KIT	Monarch Rack Mount Kit. Can fit up to two Monarch HDX units in a 1RU space.
PWR/SUP/MHDX	Monarch HDX power supply unit. Does not include IEC-C8 power cord. These cables must be sourced locally.