Matrox® Monarch™ HD

Matrox Monarch HD Technical Specifications

Inputs and Outputs	
HDMI Video Input	Progressive 1920x1080 @ 60/59.94/50/30/29.97/25/24/23.98 Frames per second 1280x720@ 60/59.94/50 Frames per second Interlaced 1920x1080i 29.97/25 frames per second Video Input Format is Auto-Detected
HDMI Video Output	Preview output of video input signal. 2 Frame delay from input to output.
Audio Input	Processes first two channels of audio embedded in HDMI input signal. Unbalanced analog stereo input via 1/8" (3.5mm) jack. Line Level
Audio Output	Passthrough of all embedded audio channels in HDMI signal. Unbalanced analog stereo output via 1/8" (3.5mm) jack – passthrough of input. Line Level
H.264/MPEG-4 Part 10 (AVC) Video Encoder	
Resolutions	Selectable encoding resolutions ranging from: 128x128 to 1920x1080
Bit Rates Ranges	Record Only Mode: 100 kbps to 30 Mbps Stream Only Mode: 100 kbps to 20 Mbps

	Independent Stream and Record Mode**:
	  Recording: 100 kbps - 30 Mbps
	  Streaming: 100 kbps - 10 Mbps
	  Maximum combined total bitrate of 30 Mbps
	
	 **Note that when <u>both</u> streaming and recording resolutions are above 1280x720, the encode parameters must be identical for both processes. Completely Independent recording and streaming settings are available when either the streaming or the recording resolution is 1280x720 or below.*

Encode Frame Rates	Encode frame rates representing 1:1, ½ and ¼ of the input frames rates are supported *Note that the maximum encode frame rate is 30 fps when encode resolution is 1920 x 1080*
Encoding Profiles	Baseline, Main and High
Encoding Controls	2.0, 3.0, 3.1, 4.0, 4.1 Level Support GOP Size and Structure Variable bit rate support Average max/min data rate controls Deblocking Filter
MPEG-4 AAC Audio Encoder	
Standard	AAC-LC
Sample Frequency	32, 44.1 and 48 kHz when digitized from analog source
Channels	2 channels Stereo (L/R)
Bit Rates	Range from 32 kbps to 256 kbps
Scaler	
	High Quality multi-tap 10 bit Down Scaler and De-Interlacer. Available to both streaming and recording operations.
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 HD 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 Matrox Command Center. The simple Monarch HD Control API is also available to programmers to create their own application to start and stop the Monarch HD.
Physical Interface	On Device push buttons for independent streaming and recording Start/Stop control

Storage Types for File Recording	
2 x USB 2.0	Support for NTFS (3.1) and FAT32 file system *The Monarch HD 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 HD 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.*
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 Command Center Web UI	
Status Page	Provides relevant operational information concerning Status of MonarchHD 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	Recording and Streaming operations initiated here including Synchronized start/stop operations. Multiple Monarch devices can be synchronized in a Master/Slave topology to allow for synchronized record 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 provide PC or Mac based utilities to help detect Monarch HD Device on a particular Network (DHCP server required).

Physical	
Dimensions	5.60 in. long (14.2 cm) 4.30 in. deep (10.9 cm) excluding inserted SD-CARD 4.40 in. deep (11.2 cm) including inserted SD-CARD 1.22 in. (3.1 cm) high including rubber feet
Weight	0.66 lbs (300 grams) excluding power supply
Operating conditions	32 to 104 deg. F (0 to 40 deg. C), 20 to 80% relative humidity (non-condensing)
Power	• Line Voltage: 100-240V AC, 0.5A • Frequency: 50-60 Hz

	• Input: External AC/DC adapter - IEC320-C8 • Output: +5VDC, 3A max • Total power consumption: 15 Watts • 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	• FCC Class B, CE Mark Class B, ACMA C-Tick Mark, VCCI • RoHS Directive 2002/95/EC
Warranty	2 years with free telephone support

Kit Contents

In the box	• Matrox Monarch HD device • Matrox Monarch HD external power supply • IEC-C8 power cords (US, GB and EU)

Ordering Information

MHD/I	Matrox Monarch HD part number
MHD/MC100/KIT	Monarch HD and Matrox MC-100 Dual SDI to HDMI convertor combo kit
MRCH/RACK/KIT	Monarch Rack Mount Kit. Can fit up to three Monarch HD units in a 1RU space.
PWR/SUP/MHD	Monarch HD power supply unit. Does not include IEC-C8 power cord. These cables must be sourced locally.