

# Matrox® Monarch™ EDGE

## 4K/Multi-HD Webcasting and Remote Production Encoder

Matrox Monarch EDGE is a next generation H.264 encoder with a powerful, low latency encoding engine. Packaging this codec with flexible connectivity in a compact form factor offers video professionals, system integrators, and broadcasting organizations better solutions to solve both new and existing challenges—while allowing them to use the world's most popular codec. Key applications include:

- 4K/Multi-HD Webcasting
- 4K/Multi-HD Remote Production
- High-Density Contribution

### Technical Specifications

#### Connectivity

##### Input connections

- 1x 12G SDI input per ST 2082
- 3x 3G SDI inputs per ST 425 (Level A mapping only)
- UHD support using 4 SDI inputs per SMPTE ST 425-5
  - Square division
  - 2x sample interleave input<sup>1</sup>
- 2x SFP 28 network ports (up to 25 Gbps)<sup>1</sup>
- Capture up to four independent 3 Gbps video streams or one 12 Gbps (4Kp60) stream encapsulated per SMPTE ST 2110-10, -20, and -21. Seamless protection (redundancy) according to SMPTE ST 2022-7.

##### Resolutions

- 2160p at 50, 59.94, 60 fps
- 1080p at 25<sup>1</sup>, 29.97<sup>1</sup>, 30<sup>1</sup>, 50, 59.94, 60 fps
- 1080i at 25, 29.97, 30<sup>1</sup> fps
- 720p at 50, 59.94, 60 fps

##### Configurable genlock

- Bi-level genlock output
- Bi-level or tri-level genlock input

##### Digital audio

- 8x channels of embedded audio support per SDI input. Two channels per input supported with first release.<sup>1</sup>

##### Analog audio

- 2x channels of balanced analog audio input via XLR connector
- 2x channels of balanced analog audio output via XLR connector<sup>1</sup>
- 1 channel of unbalanced stereo audio output via 1/8" TRS connector
- All sampled at 48 kHz

##### Audio processing

- Embedded or analog audio channels can be compressed as a stereo pair or processed as PCM<sup>1</sup> (uncompressed audio)
- Multi-channel audio support as separate audio pairs<sup>1</sup>

#### Control and management

##### Access

- Monarch EDGE Control Hub dedicated Windows® application
- RESTful HTTP API<sup>2</sup>

##### Physical

- On-device buttons and screen for basic set up and monitoring operations

##### Monitoring output

- 1x DisplayPort (HD output only)

#### Compression

##### Codecs

- Video: H.264/MPEG-4 part 10 (AVC)
- Audio: AAC-HE and AAC-LC

##### Bitrate per stream

- Video: Up to 150 Mbps (IBP), 500 Mbps (I frame)
- Audio: From 32 to 256 Kbps

##### Chroma sub-sampling

- 4:2:2 (8-bit and 10-bit), 4:2:0 (8-bit and 10-bit) – MDG4/E10/I
- 4:2:0 (8-bit only) – MDG4/E8/I

##### Encoding controls

- Up to 5.2 level support
- GOP size and structure
- Variable and constant bit rate support
- Average max/min data rate controls
- Encoding frame rates offered independent of input frame rates

##### Profile

- Up to High 4:2:2 profile (Hi422P)

##### Latency

- Encode latency as low as 50ms (network transfers and decode operation not included in value)

##### Encode density/workflow examples

- One (1) 3840 x 2160p @60 fps (encoded as 4:2:0 or 4:2:2) plus one 1080p (4:2:0 8 bit) proxy stream OR
- Four (4) 1920 x 1080 @60 fps (encoded as 4:2:0 or 4:2:2) plus four 720p30 (4:2:0) proxy stream

*There are a number of additional encoding profiles that can be generated per input.*

#### VANC ancillary data processing (SDI and IP)<sup>1</sup>

- Closed captioning (CC) embedded in VANC processing as CEA-608/708
- Vertical interval timecode (RP-188)
- HDR and colorimetry metadata

#### Tally light output<sup>1</sup>

- 8x tally signals (sent to cameras)
- Tally ports available via a 15-pin D-SUB connector

#### Streaming protocols

- MPEG-2 TS over UDP
- RTP/RTSP
- Native RTP<sup>1</sup> (unicast or multicast)
- SRT
- RTMP

#### Network

- 2x RJ45, 100/1000BASE-T Ethernet
- 2x MSA-compatible SFP28 cage supporting 10 GbE and 25 GbE modules<sup>1</sup>

#### Physical and power

##### Product dimensions (length x width x height)

- 8.53x7.45x1.68 in (21.7x18.9x4.3 cm)
- Rack-mountable; two Monarch EDGE appliances can fit in 1 RU space

##### Product weight

- 3.65 lbs (1,660 g)

##### Operating conditions

- 32 to 104 deg. F (0 to 40 deg. C), 20 to 80% relative humidity (non-condensing)

##### Power

- Line voltage: 12 volts
- Total power consumption: 45 watts [avg.]
- Connector: DIN 4

##### Power supply

- Line voltage: 100-240 VAC
- Frequency: 50-60 Hz
- Input: external AC/DC adapter - IEC320-C14
- DIN4 locking power connector

##### Regulatory

- 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

- Two-year limited warranty with free online or telephone support

#### Ordering information

##### MDG4/E10/I

- Monarch EDGE appliance with 4:2:0 8-bit and 4:2:2 10-bit encoding

##### MDG4/E18/I

- Monarch EDGE appliance with 4:2:0 8-bit encoding

##### MRCH/RACK/KIT

- Monarch Rack Mount Kit. Can fit up to two Monarch EDGE units in a 1RU space.

##### PWR/SUP/MDG

- Monarch EDGE power supply unit. Does not include IEC-C14 power cord. These cables must be sourced locally.

<sup>1</sup>. Enabled with future firmware update.  
<sup>2</sup>. Contact Matrox Representative for Availability.

## Matrox Monarch EDGE connections



- |   |                        |                           |
|---|------------------------|---------------------------|
| 1. USB 1                                | 7. Analog Audio Output | 14. *SFP28 Ports          |
| 2. USB 2                                | 8. Analog Audio Output | 15. Display Port          |
| 3. Power LED                            | 9. Genlock             | 16. USB 3                 |
| 4. Reset Button                         | 10. Balance Audio      | 17. Gigabit Ethernet Port |
| 5. LCD Panel                            | 11. Tally Signals      | 18. Power Connection      |
| 6. Navigation and Configuration Buttons | 12. 3G SDI             | 19. Power Switch          |
|   | 13. 12G SDI            |                           |

*\*SFP module supplied by third party*

### Contact Matrox

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