

A large, dark blue circular graphic with a thin white border, containing white text. The background of the entire advertisement is a blue-tinted image of a broadcast studio with a camera on a tripod and a monitor displaying a soccer player.

## 4K/multi-HD 8-bit encoder for webcasting.

Deliver high-quality 4K or multi-HD webcasts with the Monarch EDGE E4 8-bit encoder. Purpose-built for professional streaming, the E4 8-bit combines dynamic H.264 encoding with low-latency performance. Supporting up to four simultaneous HD inputs or a single 4K stream, Monarch EDGE E4 8-bit enables broadcasters and content creators to produce unique and compelling webcasting workflows with a compact, low power appliance.

## Key features and benefits.

### Even more reach

Monarch EDGE E4 8-bit's powerful encoding engine allows users to stream each input to multiple OVPs simultaneously for unprecedented reach and exposure. With Monarch EDGE's ability to reach over 16 streaming destinations, users can extend their reach and engage with their audiences where they are rather than luring them to a single OVP.

### Pristine quality delivered to any screen

Producing and delivering live events in 4K is becoming more widespread, and homes across the globe are adding increasingly fast network download capabilities, as well as 4K TVs to accommodate this content. OVPs are capable of downscaling content optimized for large 4K TV screens to smaller screens when 4K streams are sent to them. When OVPs let TVs tackle the upscaling of HD content to fill screens, the result is not optimal. Monarch EDGE E4 8-bit eliminates any compromise by encoding 4K at high frame rates (50 or 60 fps), while the OVP handles any downscaling so content providers can deliver a superlative 4K viewing experience.

### Cloud-based remote production made simple

Produce live multi-camera events more efficiently by minimizing on-site resources and keeping talent in-house. Monarch EDGE E4 8-bit delivers synchronized, high-quality camera feeds over IP to centralized or cloud-based production systems, reducing travel and equipment costs while enabling studios to cover more events with the same team.

### Uncompromising H.264 quality

The H.264 codec is universally accepted for web contribution and live streaming. Monarch EDGE E4 8-bit's unique implementation of the codec keeps bitrates exceptionally low while minimizing latency without sacrificing quality. The device's independent encoding operations per input can be configured to stream to a single or multiple destinations. Each operation benefits from a powerful scaling and de-interlacing engine to ensure only pristine images and audio are encoded.

### Flexible protocols

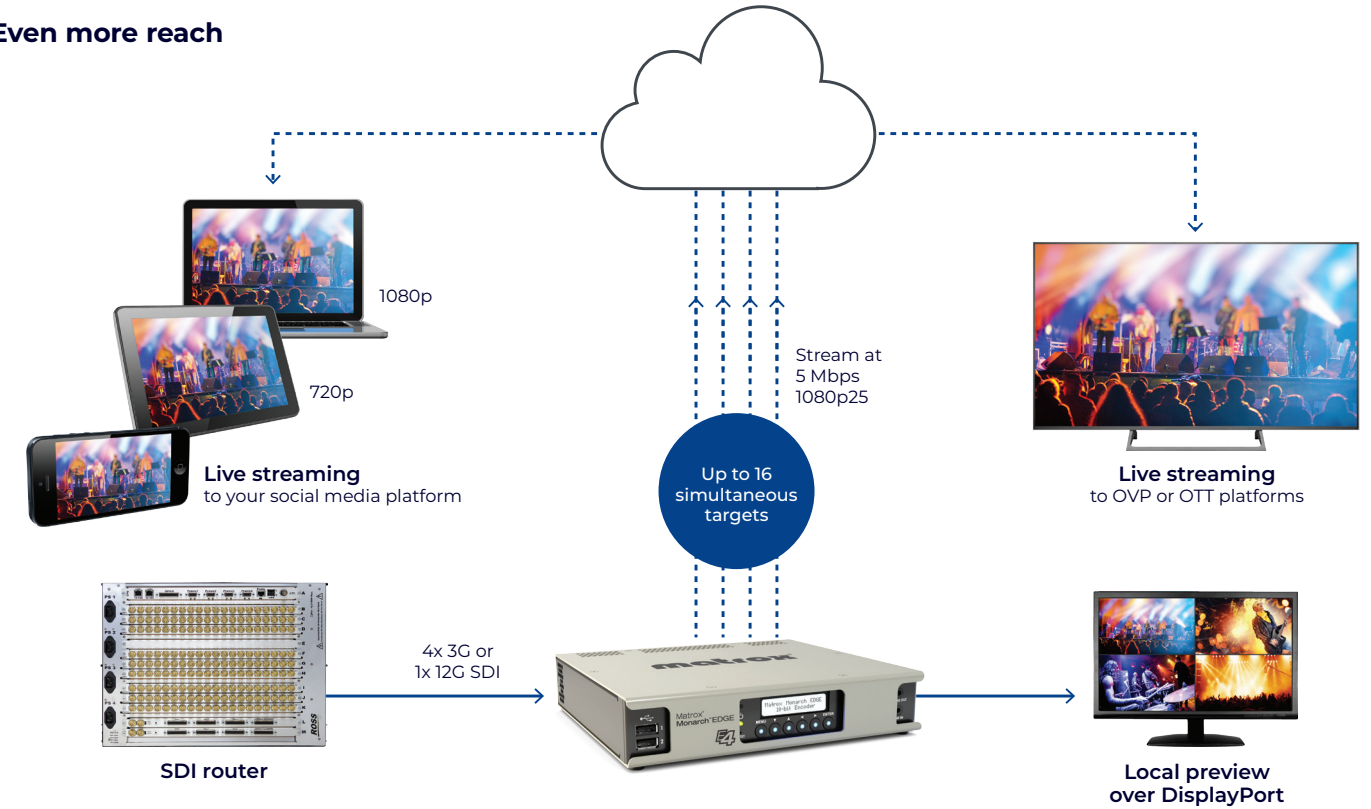
Monarch EDGE E4 8-bit supports a variety of streaming protocols such as MPEG-2 TS, RTSP, and SRT. Social media platforms such as Facebook and YouTube use the ever-popular RTMP format. SRT is an open-source format that provides the reliability of RTMP, while reducing latency on open networks. On local networks, MPEG-2 TS or RTSP streams can be selected for delivery over in-house networks. Finally, multiple destinations can be targeted for each encoding profile.

### Robust and practical design

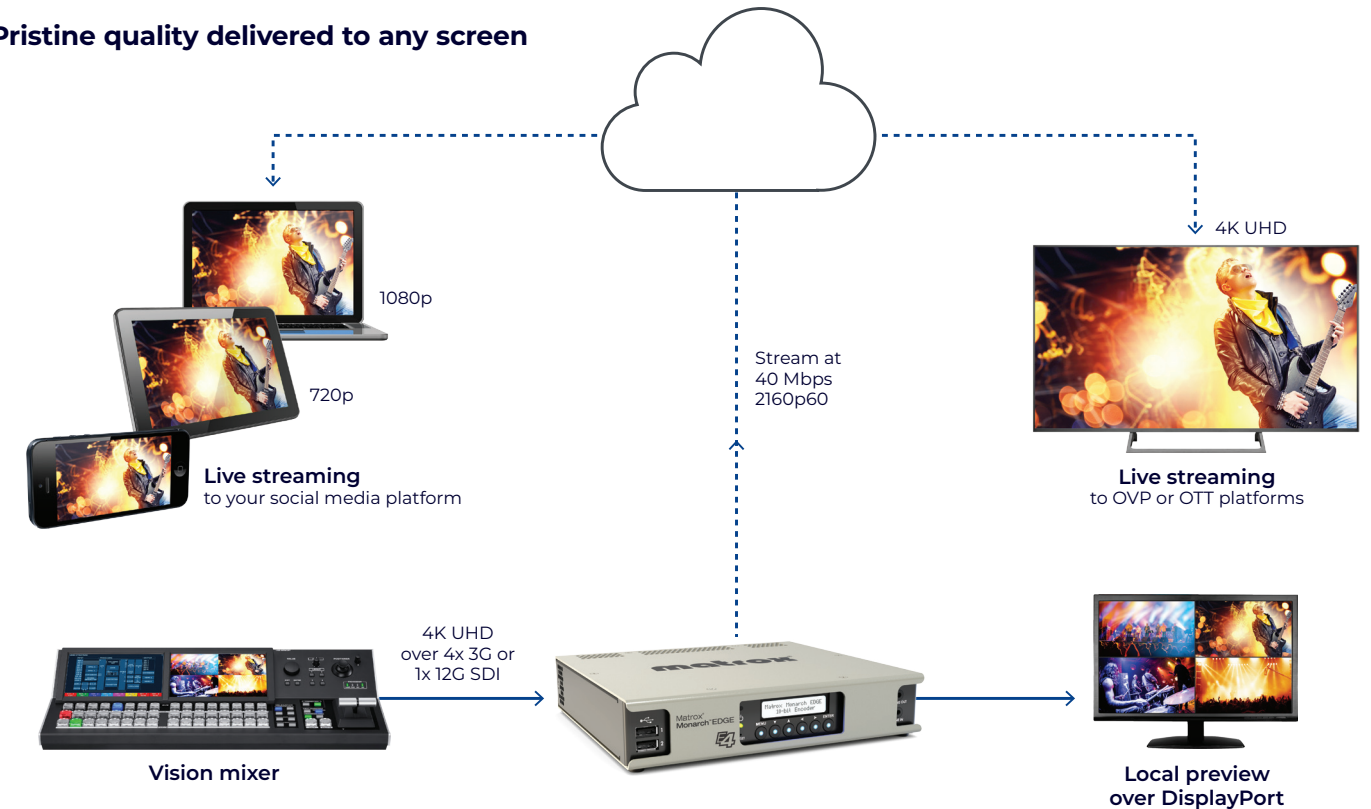
The Monarch EDGE E4 8-bit encoder was built with reliability in mind. An LCD screen on the front of the appliance allows the user to quickly access its status and basic configuration settings. A locking power connector safeguards against connection loss during production. Redundant 1 GbE Ethernet ports allow for media and control. Monarch EDGE's compact design ensures it can be installed in a fly-pack or with a second Monarch EDGE unit in a 1RU-rack space.

## Workflows.

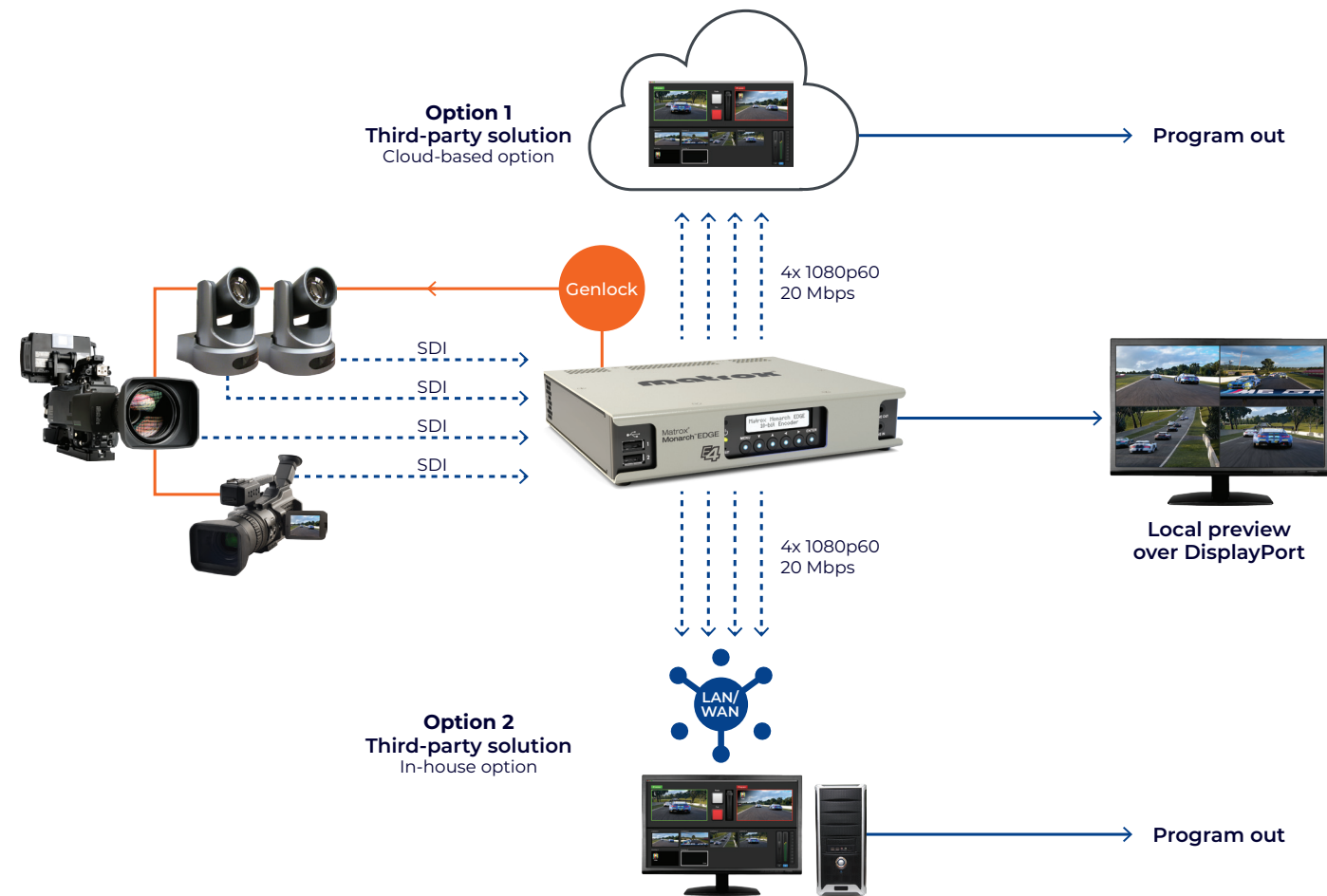
### Even more reach



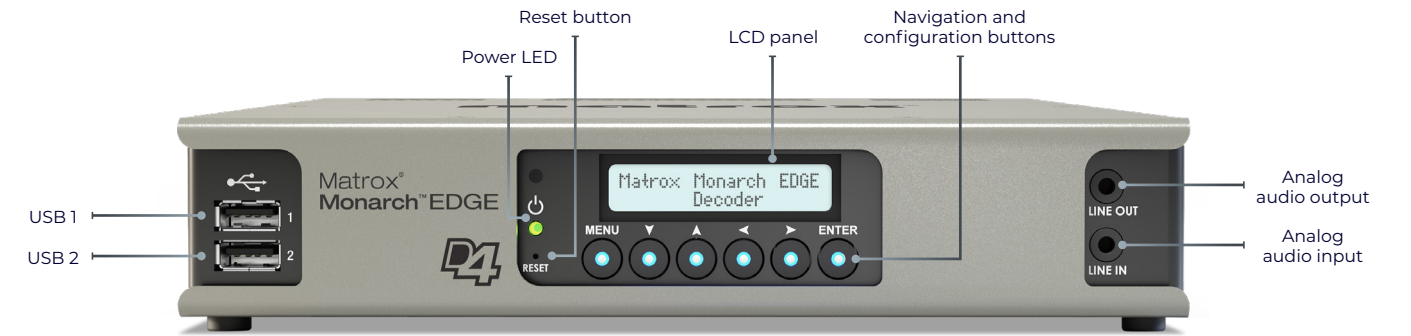
### Pristine quality delivered to any screen



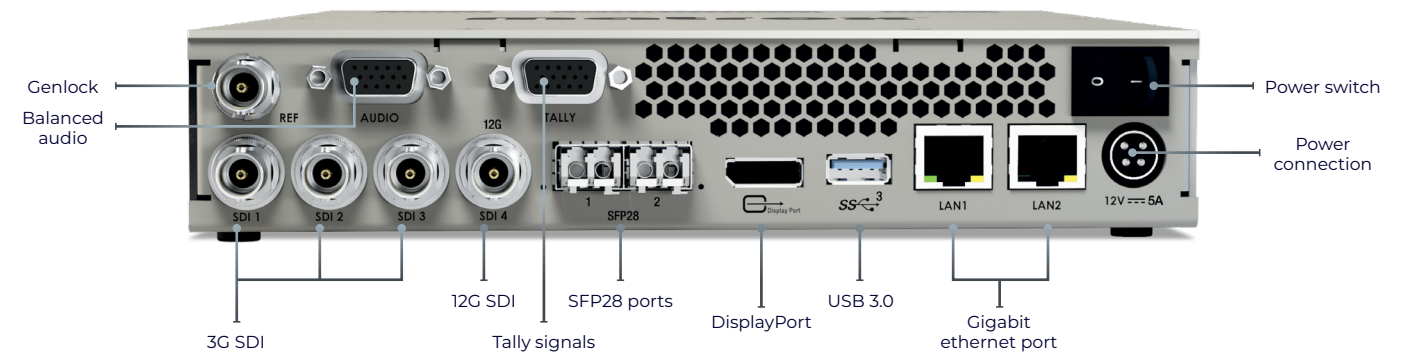
## Cloud-based remote production made simple



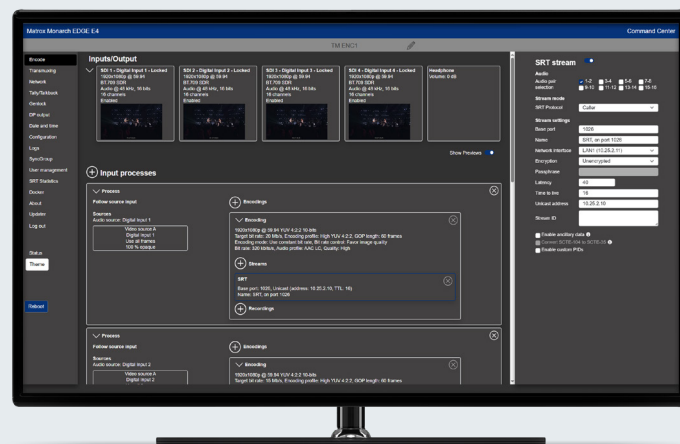
## Appliance overview



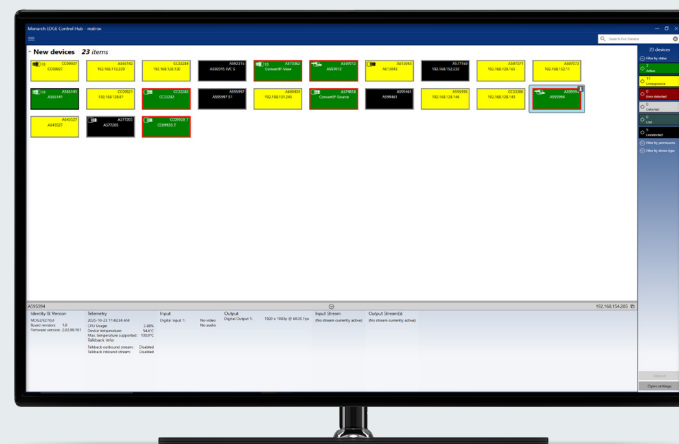
Matrox Monarch EDGE E4 8-bit (front view)



Matrox Monarch EDGE E4 8-bit (back view)



Monarch EDGE Commander Center



Monarch EDGE Control Hub

## Monarch EDGE Commander Center.

Enhance your experience with Monarch EDGE devices with Monarch EDGE Commander Center. Manage and access your Monarch EDGE devices locally or online via a web browser, without additional software installation requirements. Benefit from web-based firmware updates and included technical support to ensure your devices are up-to-date and running smoothly.

## Monarch EDGE Control Hub.

Take control of your workflows with Monarch EDGE Control Hub. This software enables you to discover all Monarch EDGE units on a local network through a Windows® desktop application.

## Technical specifications

<b>Product</b>	<b>Monarch EDGE E4 and Monarch EDGE E4 8-bit</b>
<b>Part number</b>	<ul style="list-style-type: none"> <li>MDG4/E10/I2 (4:2:0 8-bit, 4:2:0 10-bit, and 4:2:2 10-bit encoding)</li> <li>MDG4/E8/I2 (4:2:0 8-bit encoding)</li> </ul>
<b>Connectivity</b>	
<b>Input connections</b>	<ul style="list-style-type: none"> <li>1x 12G SDI per SMPTE ST 2082</li> <li>3x 3G SDI per SMPTE ST 425 (Level A and B mapping)</li> <li>UHD support using 4x SDI per SMPTE ST 425-5 <ul style="list-style-type: none"> <li>Square division</li> <li>2x sample interleave<sup>1</sup></li> </ul> </li> <li>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 2022-71</li> </ul>
<b>Resolutions</b>	<ul style="list-style-type: none"> <li>2160p at 50, 59.94, 60 fps</li> <li>1080p at 23.98, 24, 25, 29.97, 30, 50, 59.94, 60 fps</li> <li>1080i at 25, 29.97, 30 fps</li> <li>720p at 50, 59.94, 60 fps</li> </ul>
<b>Genlock</b>	<ul style="list-style-type: none"> <li>Bi-level genlock output (encoder)</li> </ul>
<b>Digital audio</b>	<ul style="list-style-type: none"> <li>16x channels of embedded SDI audio is supported per input</li> <li>16x channels of audio support per encode using SRT or MPEG2-TS</li> </ul>
<b>Analog audio<sup>2</sup></b>	<ul style="list-style-type: none"> <li>2x channels of balanced analog audio input via XLR connector</li> </ul>
<b>Audio processing</b>	<ul style="list-style-type: none"> <li>Embedded or analog audio channels can be compressed as a stereo pair or processed as PCM<sup>1</sup> (uncompressed audio)</li> <li>Multi-channel audio support as separate audio pairs</li> </ul>
<b>USB ports</b>	<ul style="list-style-type: none"> <li>2x USB 2.0 (front)</li> <li>1x USB 3.0 (back)</li> </ul>
<b>Confidence preview</b>	<ul style="list-style-type: none"> <li>1x DisplayPort 1.1</li> <li>Maximum resolution: 1920x1080</li> </ul>
<b>Multi-unit synchronization support</b>	<ul style="list-style-type: none"> <li>Yes</li> </ul>
<b>Reconfigurable I/O</b>	<ul style="list-style-type: none"> <li>Yes (for Monarch EDGE E4 10-bit SKU only)</li> </ul>
<b>Control and management</b>	
<b>Access</b>	<ul style="list-style-type: none"> <li>Matrox Monarch EDGE Command Center (web UI)</li> <li>Monarch EDGE Control Hub dedicated Windows® application</li> <li>RESTful HTTP API<sup>3</sup></li> </ul>
<b>Physical</b>	<ul style="list-style-type: none"> <li>On-device buttons and screen for basic set up and monitoring operations</li> </ul>
<b>Compression</b>	
<b>Codecs</b>	<ul style="list-style-type: none"> <li>Video: H.264/MPEG-4 part 10 (AVC)</li> <li>Audio: AAC-HE, and AAC-LC, and PCM S302M</li> </ul>
<b>Bitrate per stream</b>	<ul style="list-style-type: none"> <li>Video: Up to 120 Mbps</li> <li>Audio: From 32 to 256 Kbps</li> </ul>
<b>Chroma sub-sampling</b>	<ul style="list-style-type: none"> <li>4:2:2 (8-bit and 10-bit), 4:2:0 (8-bit and 10-bit) – MDG4/E10/I2</li> <li>4:2:0 (8-bit only) – MDG4/E8/I2</li> </ul>
<b>Encoding controls</b>	<ul style="list-style-type: none"> <li>Up to 5.2 level support</li> <li>GOP size and structure</li> <li>Variable and constant bit rate support</li> <li>Average max/min data rate controls</li> <li>Encoding frame rates offered independent of input frame rates</li> </ul>
<b>Decoding controls</b>	<ul style="list-style-type: none"> <li>Scaling of HD/UHD resolutions</li> <li>Frame rate conversions</li> </ul>
<b>Profile</b>	<ul style="list-style-type: none"> <li>Up to High 4:2:2 profile (Hi422P)</li> </ul>
<b>Latency</b>	<ul style="list-style-type: none"> <li>Encode latency as low as 100ms glass-to-glass (network transfers not included in value)</li> </ul>
<b>Encode density/ workflow examples</b>	<ul style="list-style-type: none"> <li>4:2:2 workflows <ul style="list-style-type: none"> <li>1x 3840x2160p @60fps</li> <li>Plus 1x 1080p30 proxy stream (8-bit)</li> </ul> </li> <li>or</li> <li>4x 1920x1080p @60fps</li> <li>Plus 4x 720p30 proxy stream (8-bit)</li> <li>4:2:0 workflows <ul style="list-style-type: none"> <li>2x 3840x2160p @60fps</li> <li>or 8x 1920x1080p @60fps</li> <li>or 16x 1920x1080p @30fps</li> </ul> </li> </ul>

## VANC ancillary data transport as per ST-2038

	<ul style="list-style-type: none"> <li>Closed captioning (CC) embedded as CEA-608/708</li> <li>SCTE-104 messages (Matrox encoder to decoder) <ul style="list-style-type: none"> <li>SCTE-104 to SCTE-35 translation</li> <li>SCTE-35 to SCTE-104 translation</li> </ul> </li> <li>Vertical interval timecode (ST 12-2)<sup>1</sup></li> <li>HDR and colorimetry metadata</li> </ul>
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## Tally<sup>4</sup>

	<ul style="list-style-type: none"> <li>8x tally signals (sent to cameras - encoder)</li> <li>Tally ports available via a 15-pin D-SUB Connector</li> </ul>
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## Streaming protocols

	<ul style="list-style-type: none"> <li>MPEG-2 TS over UDP or RTP</li> <li>RTP/RTSP</li> <li>Native RTP (unicast or multicast)</li> <li>SRT (Caller, Listener and Rendez-Vous and Stream ID modes)</li> <li>RTMP (encoder only)</li> </ul>
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## Network

	<ul style="list-style-type: none"> <li>2x RJ45, 100/1000BASE-T Ethernet</li> <li>2x MSA-compatible SFP28 cage supporting 10 GbE and 25 GbE modules<sup>1</sup></li> </ul>
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## Physical and power

<b>Product dimensions</b>	<ul style="list-style-type: none"> <li>8.53 (L) x7.45 (W) x1.68 (H) in</li> <li>21.7 (L) x18.9 (W) x4.3 (H) cm</li> <li>Rack-mountable; two Monarch EDGE appliances can fit in 1 RU space</li> </ul>
<b>Product weight</b>	<ul style="list-style-type: none"> <li>3.65 lbs (1,660 g)</li> </ul>
<b>Operating conditions</b>	<ul style="list-style-type: none"> <li>32 to 104 deg. F (0 to 40 deg. C), 20 to 80% relative humidity (non-condensing)</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>Line voltage: 12 volts</li> <li>Total power consumption: 45 watts [avg.]</li> <li>Connector: DIN 4</li> </ul>
<b>Power supply</b>	<ul style="list-style-type: none"> <li>Line voltage: 100-240 VAC</li> <li>Frequency: 50-60 Hz</li> <li>Input: external AC/DC adapter – IEC320-C14</li> <li>DIN4 locking power connector</li> </ul>
<b>Regulatory</b>	<ul style="list-style-type: none"> <li>EMI: FCC Class A, CE Mark Class A, ACMA C-Tick Mark, VCCI <ul style="list-style-type: none"> <li>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)</li> </ul> </li> <li>RoHS directive 2002/95/EC</li> </ul>
<b>Warranty</b>	<ul style="list-style-type: none"> <li>Two-year limited warranty with free online or telephone support</li> </ul>

## Ordering information

<b>MDG4/E10/I2</b>	<ul style="list-style-type: none"> <li>Monarch EDGE appliance with 4:2:0 8-bit, 4:2:0 10-bit, and 4:2:2 10-bit encoding</li> <li>Includes IEC-C14 power cord (US, UK, AUS, EUR)</li> </ul>
<b>MDG4/E8/I2</b>	<ul style="list-style-type: none"> <li>Monarch EDGE appliance with 4:2:0 8-bit encoding</li> <li>Includes IEC-C14 power cord (US, UK, AUS, EUR)</li> </ul>
<b>MRCH/RACK/KIT</b>	<ul style="list-style-type: none"> <li>Monarch Rack Mount Kit. Can fit up to two Monarch EDGE units in a 1RU space</li> </ul>
<b>PWR/SUP/MDG</b>	<ul style="list-style-type: none"> <li>Monarch EDGE power supply unit. Does not include IEC-C14 power cord. These cables must be sourced locally.</li> </ul>
<b>MDG/AUD/CBL</b>	<ul style="list-style-type: none"> <li>Monarch EDGE break out audio cable. Provides two input channels and two output channels. DB15 to XLR I/O.</li> </ul>

## Accessories

<b>NRG Redundant Power Supply</b>	<ul style="list-style-type: none"> <li>NRG-5-1DB: Rack tray with one NRG RPSU pre-installed</li> <li>NRG-5-2DB: Rack tray with two NRG RPSU pre-installed</li> </ul>
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1. Enabled with future firmware update.

2. Available via optional audio cable.

3. Contact your Matrox Video representative.

4. This feature is offered via a 15 Position Pin D-Sub Standard Connector.

With the help of a Pinout diagram, a cable can be assembled to interface to any tally output interface on the vision mixer.