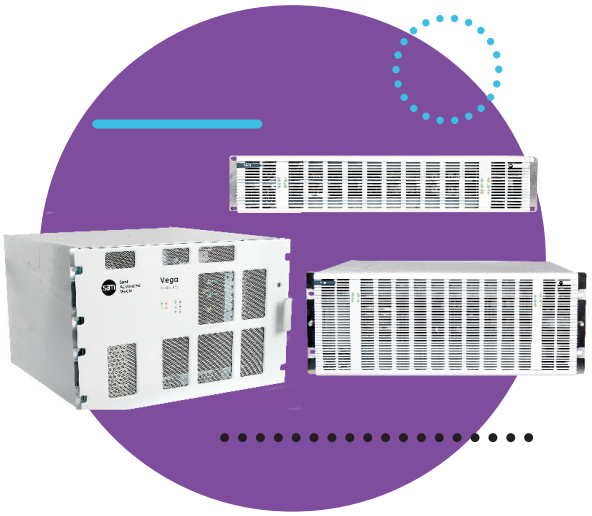
# Vega 100 Series — Flexible Resilient Hybrid Routing and Processing

Snell Advanced Media

**Data Sheet**

## The Vega 100 Series is available in three frame sizes from 6x6 to 144x288 with an impressive feature set including hybrid video and audio routing, powerful processing, input embedding, synchronizers and clean and quiet switching.



- **Vega 200 (2RU)**
  1x95 to 95x1
- **Vega 400 (4RU)**
  1x191 to 191x1
- **Vega 700 (7RU)**
  144x288 to 288x144

**Any mixture of:**

- SDI Video
  - SD/ASI, HD,3G
  - Fixed coax I/O
  - SFP coax, fiber and HDMI
- AES
  - Balanced or unbalanced
- Up to 6 MADI inputs and 6 MADI outputs

**Key Features:**

- Hybrid video and audio routing
- Embedded, AES and MADI audio routing
- Audio track shuffling
- Input Embedding
- Clean and quiet switching
- Line synchronization
- Ultra resilient
  - Redundant PSUs, controllers, crosspoints and fans

| | |
|---|---|
| **Flexible hybrid video and audio routing** | |
| Video, AES, Embedded and MADI interconnects for maximum flexibility in multiple audio formats. Balanced and Unbalanced AES connections. | Increased system design flexibility. Mixed signal routing in a compact frame. Ideal for small / medium live production in OBs and studios. |
| **Clean & quiet switching** | |
| Clean switching line disturbances, and V fade Audio. | Disturbance free on-air master control and switcher bypass applications. |
| **Asymmetric signal routing** | |
| Each signal port independently software configured for use as an input or an output. | No input or output port wastage! Can negate the need for the 'next size up' router (particularly for monitoring and distribution applications). Change the router size without hardware changes. |
| **Multiple video connection options** | |
| Coax, fiber SFP and HDMI I/O modules. Spans video physical layer boundaries. Simply route between SDI to HDMI. | No need for external fiber or HDMI converters. Reduced cabling, increased reliability. PC graphics and PC monitor routing. |
| **Extensive redundancy options** | |
| Dual redundant crosspoints, frame controllers, power supplies. | Full protection for critical or 'live' services. No loss of revenue from sub-assembly failure! |
| **Ultra compact frame** | |
| 50% more signal ports than conventional BNC electrical router for same rack height. | Greater efficiency with reduced racking space & costs. Or more ports for future expansion! |
| **Entry level lower cost alternative** | |
| Dedicated 12-port 'coax only' SDI rear modules. | Minimizes outlay and complexity for'all-coax' installations. |
| **Comprehensive set of 'soft' and/or 'hard' control options** | |
| Intuitive 'plug-n-play' control software and/or 1RU and 2RU control panels. | Multiple solutions for all workflow environments. All can co-exist on one router. |

## Vega 100 Series Architecture

### Input / Output Frame Types and Configuration

The Vega architecture allows for an individual channel on a rear panel to be configured as an input or an output. In the Vega 200 and 400 frames, this applies to all slots; in Vega 700 there is a mix of input, output and configurable bi-directional slots. See table opposite

### Module Types and Configuration

The table opposite shows which module types can be used as an input and output.

Input cards can be fitted to any Input or bi-directional slot.

Output cards can be fitted to any output or bi-directional slot.

The Audio crosspoint MUST be fitted in a bidirectional slot

### Vega 100 Series - Input/Output Port Configuration

| Frame | Module Slots | Type | Port Input/Output Options |
|---|---|---|---|
| Vega 200 | 8 | All ports can be configured as inputs or outputs | |
| Vega 400 | 16 | All ports can be configured as inputs or outputs | |
| Vega 700 | 36 | Video | 144 input ports (12 slots)<br>144 output ports (12 slots)<br>144 configuration (input or output) ports (12 slots) |
| | | Audio | 144 output ports (12 slots)<br>144 configuration (input or output) ports (12 slots) |

### Input/Output Module Types

| Type | No. of Channels | Input | Output |
|---|---|---|---|
| SDI coax | 12 | Yes | Yes |
| SDI SFP | 12 (6 HDMI) | Yes | Yes |
| SDI Input Processing | 9 | Yes | No |
| SDI Output Processing | 9 | No | Yes |
| Audio Crosspoint & MADI I/O | 6 in + 6 out | Yes | Yes |
| AES Balanced | 24 pairs (takes 2 slots) | Yes | Yes |
| AES Unbalanced | 24 pairs (takes 2 slots) | Yes | Yes |

#### SDI coax and AES modules

Each port is configured as an input or an output via the router controller configuration screen.

#### SDI SFP module

Each port is an input or output dependent on the type of SFP module fitted (receiver or transmitter). Ports can be configured by the router controller as input or output (fixing the configuration even if no SFP is fitted), or automatically set as input or output when an SFP is inserted.

#### SDI Input and output Processing modules

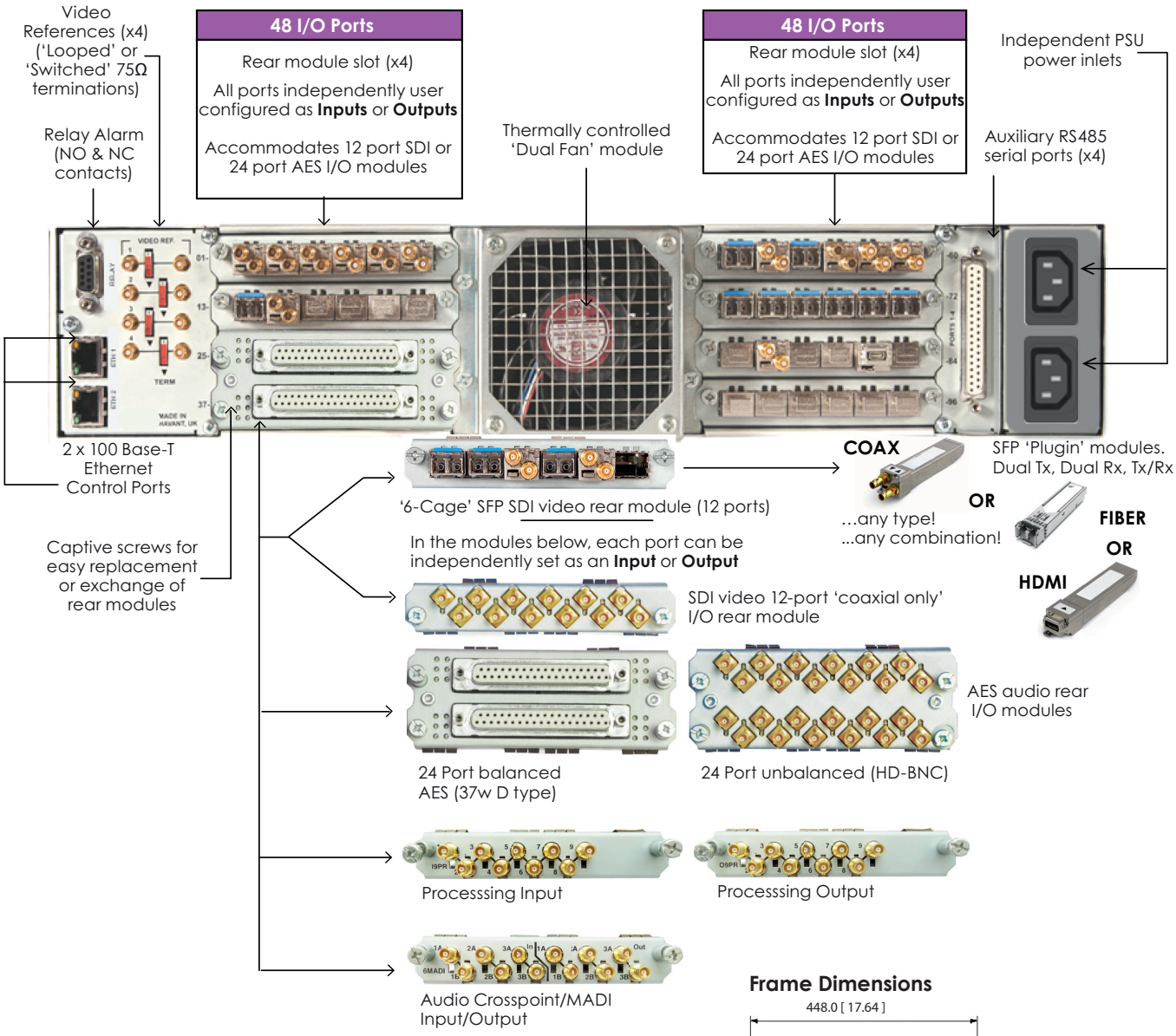
fixed input or output functionality

#### Audio crosspoint with MADI inputs and outputs

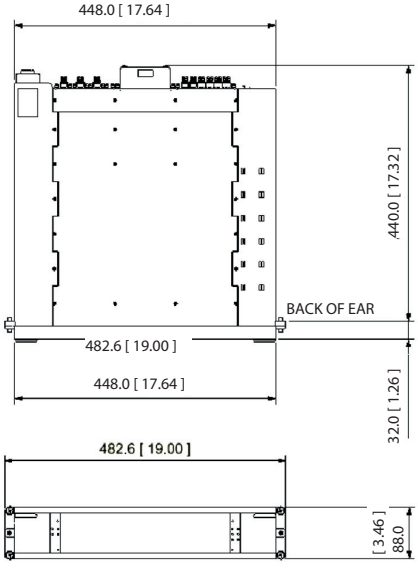
MADI fixed as 6 inputs and 6 outputs.

## Frames and options

### Vega 200




### Frame Dimensions

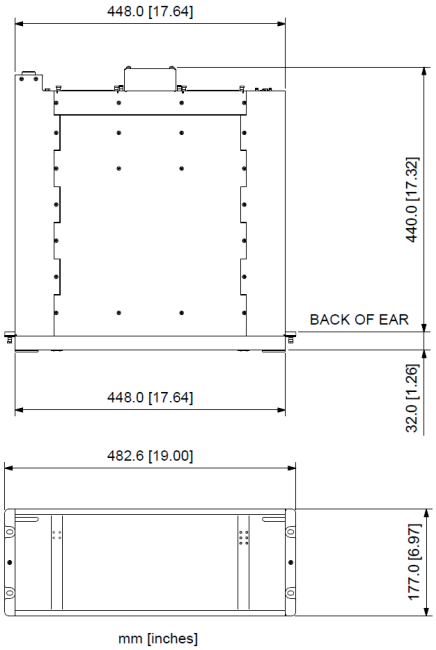


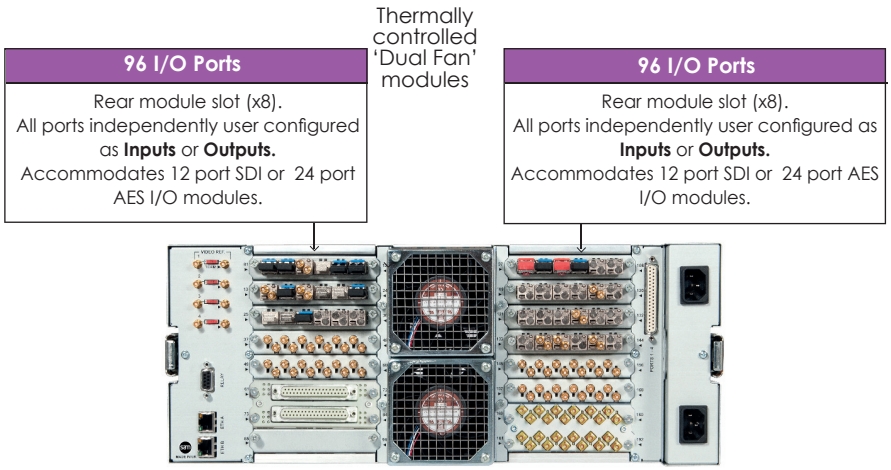

| Physical | |
|---|---|
| Weight | 10kg (22lb) max. fully loaded (all options) |
| **Power** | |
| Voltage | 100-240V AC, 47-63 Hz, |
| AC Input Power | 230W max. (Includes all redundancy options) |
| Fusing | 15A fast blowing fuses (x 2, on each PSU, not user replaceable) |

## Vega 400

16 module slots.
All ports can be configured as inputs or outputs.

### Frame Dimensions




| Physical | |
|---|---|
| Weight | 18kg (40lb) max. fully loaded (all options) |
| **Power** | |
| Voltage | 100-240V AC, 47-63 Hz, |
| AC Input Power | 384W max. (Includes all redundancy options) |
| Fusing | 15A fast blowing fuses (x 2, on each PSU, not user replaceable) |

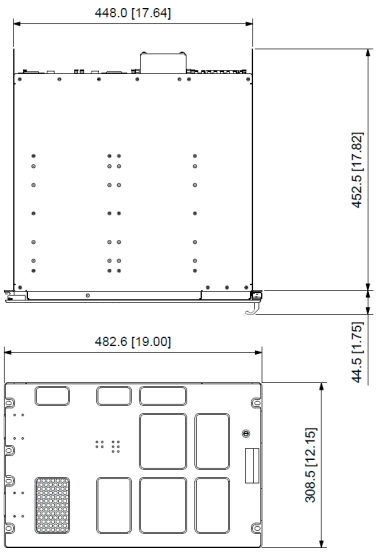
## Vega 700

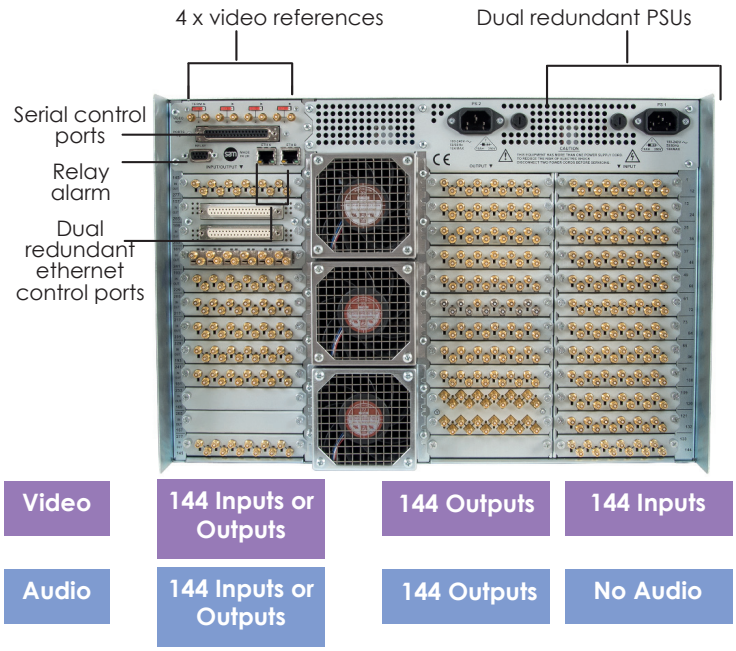
36 module slots.

### Video
144 input ports (12 slots).
144 output ports (12 slots).
144 configurable ports (12 slots).

### Audio
144 configurable ports (12 slots).
144 outputs (12 slots).

### Frame Dimensions




| Physical | |
|---|---|
| Weight | 31kg (68lb) max. fully loaded (all options) |
| **Power** | |
| Voltage | 100-240V AC, 47-63 Hz, |
| AC Input Power | 540W max. (Includes all redundancy options) |
| Fusing | Fuse 10A fast blow (on rear panel) |

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## SDI & AES Input/Output Modules

### SDI Rear Module for SFP 'Plug-Ins' (VG-RM6SFP - SDI)

**VG-RM6SFP-SDI**

| | |
|---|---|
| No. of SFP ports | 6 (12 x SDI signal ports) |
| Data rates | 2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s, 270Mb/s |
| Signal standards | SMPTE 424M/292M/259M (Reclocked – 'Bypass' option). DVB-ASI (Non reclocked) |

**Note:** SDI re-clocking circuitry is contained in VG-RM6SFP-SDI. All SFP modules are non reclocking.

**Catsii Multi-Color LED Indicators (12)**

| | | | | | |
|---|---|---|---|---|---|
| Blue | Output (Tx) = 'OK' | Green | Input (Rx) = 'OK' - Signal present | Flash Red | Error/Plug-in mismatch to configuration |
| Amber | Output (Tx) = OFF/Laser disabled | Red | Input (Rx) = No Signal detected | 'OFF' | EMI-Dust SFP/No Plug-in |

### SFP Fiber Modules

**General data**

| | | | |
|---|---|---|---|
| Receptacle | | LC Duplex Port | FOCIS-10-A-2-1-2 |
| Mating Plugs | | LC/PC Simplex (x 2) | FOCIS-3P-0-1-1-1-0 [Single mode] |
| | or | LC/PC Duplex | FOCIS-10-P-2-2-1-1-0 [Single mode] |
| Data Rates | | 2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s, 270Mb/s | |
| Signal Standards | | SMPTE 424M/292M/259M, DVB-ASI | |

Note: FOCIS = Fiber Optic Connector Intermateability Standard. Re: ANSI/TIA/EIA 604-10 (FOCIS 10)

Clasp

**All single mode TX modules are Class 1 laser products. They comply with IEC-60825 and FDA 21 CFR 1040.10 and 1040.11**

**Standard and Long Range Fiber Modules**

| Part Number | SM-T31T31-3G | SM-T31R-3G | SM-T55T55-3G | SM-T55R-3G | SM-RR-3G |
|---|---|---|---|---|---|
| Type | Dual 1330nm Tx | 1330nm Tx & wide-band Rx | Dual 1550nm Tx | 1550nm TX & wide-band Rx | Dual wideband Rx |

**Specification**

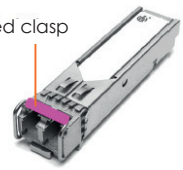
| TX - Transmitter(s) | | |
|---|---|---|
| Laser(s) | FP* | DFB** |
| Wavelength | 1310nm [+/- 30nm] | 1550nm [+/- 30nm] |
| Power | -2dBm typical -5dBm min, 0dBm max. | -2dBm typical - 5dBm min, 0dBm max |
| Extinction Ratio | 7dB min. | 7dB min. |
| Link Distance | Up to 30km @2.97Gb/s | Up to 45km @2.97Gb/s |
| Worst case*** | 10km max. @2.97Gb/s | 15km max. @ 2.97Gb/s |

| RX - Receiver(s) | |
|---|---|
| Receiver(s) | PIN + TIA |
| Wavelength | 1260 - 1620nm |
| Sensitivity | -25dBm typical -21dBm max. |
| Overload | 0dB max. |
| Link Distance | See TX modules |

**SM-RR-3G dual RX is also for use with dual CWDM TX below.**

### CWDM Fiber Modules

color coded clasp



| | CH1 | CH2 | CWDM Color Codes |
|---|---|---|---|
| **SM-T59T61-3G** | SM Fiber, 1591nm Tx | + 1611nm Tx, 3Gb/s SDI | Red/Brown |
| **SM-T55T57-3G** | SM Fiber, 1551nm Tx | + 1571nm Tx, 3Gb/s SDI | Yellow/Orange |
| **SM-T51T53-3G** | SM Fiber, 1511nm Tx | + 1531nm Tx, 3Gb/s SDI | Blue/Green |
| **SM-T47T49-3G** | SM Fiber, 1471nm Tx | + 1491nm Tx, 3Gb/s SDI | Grey/Violet |
| **SM-T43T45-3G** | SM Fiber, 1431nm Tx | + 1451nm Tx, 3Gb/s SDI | Black/Yellow Orange |
| **SM-T39T41-3G** | SM Fiber, 1391nm Tx | + 1411nm Tx, 3Gb/s SDI | White/Silver |
| **SM-T35T37-3G** | SM Fiber, 1351nm Tx | + 1371nm Tx, 3Gb/s SDI | Pink/Beige |
| **SM-T31T33-3G** | SM Fiber, 1311nm Tx | + 1331nm Tx, 3Gb/s SDI | Yellow Green/Yellow Ocher |
| **SM-T27T29-3G** | SM Fiber, 1271nm Tx | + 1291nm Tx, 3Gb/s SDI | Light Purple/Sky Blue |

| | |
|---|---|
| **Laser Output Power** | +2.5dBm typical. 0dBm to +5dBm |
| **Extinction Ratio** | **9dB min** |

**Note:** 18 CWDM Tx wavelengths available in 9 dual SFP modules conforming to ITU-T-REC-G.642.2
Clasp (Latch) Color Code is for Channel 1 CWDM wavelength

Note: CWDM link distance depends on MUX/DeMUX attenuations.

* FP = Fabry Pérot ** DFB = Distributed Feedback ***Test Pattern: SDI Pathological Matrix

### SFP HDMI Modules

| | SR-HDMIA (Receiver) | ST-HDMIA (Transmitter) |
|---|---|---|
| HDMI Format | 1.4 | 1.4 |
| Signal Ports | 1 | 1 |
| Connector | HDMI Type D plug with retention | HDMI Type D plug with retention |
| Formats Supported | HDMI/DVI input: 24 bit (3x8 bit) in video formats 525, 625, 720p, 1080i (50/59.94/60Hz), 1080p(23.98/24/25/29.94/30/50/59.94/60Hz) | SMPTE 424M, 292M and 259M compliant video in 525/625, 720p/1080i (50/59.94/60Hz), 1080p (23.98/24/15/29.97/30/50/59.94/60Hz) formats. HDMI/DVI output 24 bit (3x8 bit) |

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## SFP Coaxial Modules - CC-RRH-3G-N (Dual RX), CC-TRH-3G-N (TX/RX), CC-TTH-3G-N (Dual TX)

| | |
|---|---|
| SDI Signal Ports | 2 |
| Connectors | Amphenol RF HD-BNC (Jack) SMPTE 292M & 424M |
| Impedance | 75Ω [+/-0.1%] |
| Return Loss | <15dB 270MHz - 1.5GHz, <10dB @ 3GHz |
| Data Rates | 2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s, 270Mb/s |
| Signal Standards | SMPTE 424M/292M/259M, DVB-ASI |
| Options | Available as Dual Input (RX), Dual Output (TX), or 1x Input, 1x Output (TX/RX) |

| | Transmitter Specification | | Receiver Specification |
|---|---|---|---|
| Signal Amplitude | 800mV pk-pk [750mV min, 850mV max.] | Signal Amplitude | 950mV pk-pk max. |
| Rise & Fall time | 130ps max. @ 2.97Gb/s & 1.485Gb/s<br>800ps max. @270 Mb/s | Cable Equalization [Belden 1694A] | 120m [365ft] @ 2.97Gb/s<br>200m [655ft] @ 1.485Gb/s<br>400m [1310ft] @ 270Mb/s |
| DC offset | 0V +/- 0.5V | | |

## SDI Dedicated Coaxial Rear Modules (VG-RM12H-SDI)

| | |
|---|---|
| SDI Signal ports | 12 (Each port independently user settable as an input or an output) |
| Connectors | Amphenol RF HD-BNC (Jack) SMPTE 292M & 424M |
| Impedance | 75Ω [+/-0.1%] |
| Return Loss | <15dB 270MHz - 1.5GHz, <10dB @ 3GHz |
| Data Rates | 2.970Gb/s, 2.970/1.001Gb/s, 1.485Gb/s, 1.485/1.001Gb/s, 270Mb/s |
| Signal Standards | SMPTE 424M/292M/259M (Reclocked – 'Bypass' option)<br>DVB-ASI (Non reclocked) |
| CATSII LED Indicators (12) | Same as VG-RM6SFP-SDI [ see page 4] |

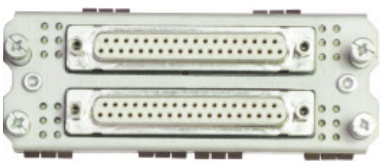
VG-RM12H-SDI

| | Transmitter Specification | | Receiver Specification |
|---|---|---|---|
| Signal Amplitude | 800mV pk-pk [750mV min, 850mV max.] | Signal Amplitude | 950mV pk-pk max. |
| Rise & Fall time | 130ps max. @ 2.97Gb/s & 1.485Gb/s<br>800ps max. @270 Mb/s | Cable Equalization [Belden 1694A] | 120m [365ft] @ 2.97Gb/s<br>200m [655ft] @ 1.485Gb/s<br>400m [1310ft] @ 270Mb/s |
| DC Offset | 0V +/- 0.5V | | |
| Timing Jitter | <0.25UI @ 1.5G & 3G, <0.15UI @ SD | | |
| Alignment Jitter | <0.15UI @ 1.5G & 3G, <0.10UI @ SD | | |

## AES Audio Input/Output Modules

**AES Balanced - VG-RM24D-AES**

| | | | |
|---|---|---|---|
| AES Ports | 24, Balanced | Impedance | 110Ω +/-20% |
| Connectors | 37w D type socket | Signal standards | AES3-2009 |



**Formats Supported (both types):**

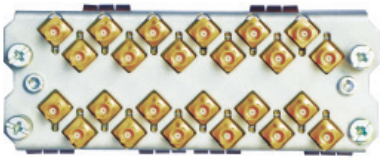
Synchronous AES & Dolby E - Fully transparent

Asynchronous AES - sample rate converted on inputs

Asynchronous Dolby E - not supported

**AES Unbalanced - VG-RM24H-AES**

| | | | |
|---|---|---|---|
| AES Ports | 24, Unbalanced | Impedance | 75Ω +/2Ω |
| Connectors | HD-BNC | Signal standards | AES3-2009 |



## Vega 100 Input Processing Module

The Vega Input Processing module can be used for the following functions:

- Audio de-embedding (16 channels)
- Line Synchronization
- Audio track shuffling within each video channel
- Silence or test tone insertion

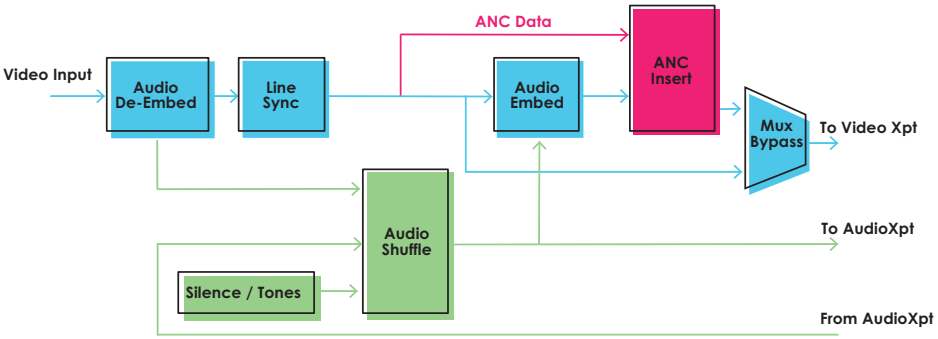
When an Audio Crosspoint is fitted to the Vega router:

- Input Embedding of routed audio channels from any input

**Key Features:**

- Embed any combination of audio from the incoming video, any audio source via the audio crosspoint, silence or test tones.
- Embed shuffled audio channels before the video crosspoint.
- Transparent to all Ancillary data (HANC and VANC).
- HANC and VANC data re-inserted on the same line.
- Audio embedding bypass path.

## VG-RMI9PR




| | | |
|---|---|---|
| No of Inputs | 9 | |
| Connector | HD-BNC (Gold Plated) 75Ω | |
| Data Rates | SD-SDI to ST259, HD-SDI to ST292, 3G-SDI to ST424, DVB-ASI to ETSI TR101 891 | |
| Return Loss | T<15dB to 1.5GHz, <10dB to 3GHz | |
| Cable Equalization (1694A) | 350m @ 270Mbit/s<br>200m @ 1.5Gbit/s<br>140m @ 3Gbit/s | |
| Cable Equalization (1855ENH) | 230m @ 270Mbit/s<br>110m @ 1.5Gbit/s<br>60m @ 3Gbit/s | |
| Embedded audio formats supported | ST272 SD-SDI (20 bit audio)<br>ST299 HD-SDI 720p 50/59.94/60 frames/s<br>ST299 HD-SDI 1080i 50/59.94/60 frames/s<br>ST299 3G-SDI 1080p 50/59.94/60 frames/s level A | |
| Delay (card input to output) | Minimum (µs) | Maximum (lines) |
| SD 525 | 11.9 | 19 |
| SD 625 | 11.9 | 18 |
| HD 720p/50 | 4.4 | 16 |
| HD 720p/59.94 | 4.4 | 19 |
| HD 720p/60 | 4.4 | 19 |
| HD 1080i/50 | 4.4 | 12 |
| HD 1080i/59.94 | 4.4 | 14 |
| HD 1080i/60 | 4.4 | 14 |
| 3G-A 1080p/50 | 2.2 | 12 |
| 3G-A 1080p/59.94 | 2.2 | 14 |
| 3G-A 1080p/60 | 2.2 | 14 |
| 3G-B | 0.04 (serial doman bypass) | N/A |
| DVB-ASI | 0.04 (serial doman bypass) | N/A |
| **Audio Processing** | | |
| AES | Transparent to VUC bits. Parity regenerated on outputs. | |
| Dolby E | Transparent to Dolby E | |
| Power Consumption | 12W | |

## Vega 100 Output Processing Module

The Vega Output Processing module can be used for the following functions:

- Clean and Quiet Switching
  - Line Synchronization with switch line disturbance clean-up
  - Audio V fade
- Audio track shuffling within each video channel
- Re-entering video with embedded audio into the video matrix
- Re-entering shuffled audio channels to the audio matrix
- Silence or test tone insertion
- Line Synchronization

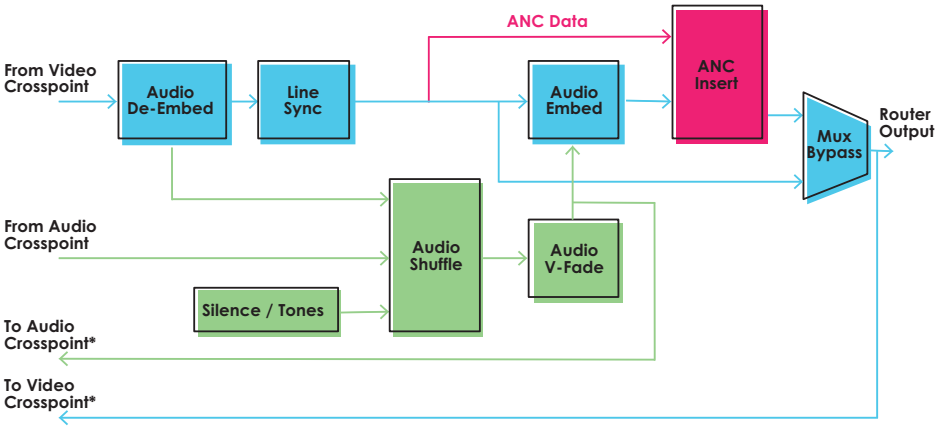
When an Audio Crosspoint is fitted to the Vega router:

- Audio embedding from any audio input (16 channels per video)

**Key Features:**

- Embed any combination of audio from the incoming video, any audio source, silence or test tones.
- Embed shuffled audio channels after the video crosspoint.
- Transparent to all Ancillary data (HANC and VANC).
- HANC and VANC data re-inserted on the same line.
- Audio embedding bypass path.

## VG-RMO9PR




*** Not available in V700 Output only slots**

## Specification

| | | |
|---|---|---|
| No of Outputs | 9 | |
| Connector | HD-BNC (Gold Plated) 75Ω | |
| Data Rates | SD-SDI to ST259, HD-SDI to ST292, 3G-SDI to ST424, DVB-ASI to ETSI TR101 891 | |
| Return Loss | T<15dB to 1.5GHz, <10dB to 3GHz | |
| Output Amplitude | 800mV pk-pk ±10% | |
| Rise / Fall Time | <90ps @ 3G, <180ps @ HD, < 650ps @ SD | |
| Timing Jitter | <0.25UI @ 1.5G and 3G, <0.15UI @ SD | |
| Alignment Jitter | <0.15UI @ 1.5G and 3G, <0.10UI @ SD | |
| Embedded Audio Formats supported | ST272 SD-SDI (20 bit audio)<br>ST299 HD-SDI 720p 50/59.94/60 frames/s<br>ST299 HD-SDI 1080i 50/59.94/60 frames/s<br>ST299 3G-SDI 1080p 50/59.94/60 frames/s level A | |
| Delay (card input to output) | Minimum (µs) | Maximum (lines) |
| SD 525 | 11.9 | 19 |
| SD 625 | 11.9 | 18 |
| HD 720p/50 | 4.4 | 16 |
| HD 720p/59.94 | 4.4 | 19 |
| HD 720p/60 | 4.4 | 19 |
| HD 1080i/50 | 4.4 | 12 |
| HD 1080i/59.94 | 4.4 | 14 |
| HD 1080i/60 | 4.4 | 14 |
| 3G-A 1080p/50 | 2.2 | 12 |
| 3G-A 1080p/59.94 | 2.2 | 14 |
| 3G-A 1080p/60 | 2.2 | 14 |
| 3G-B | 0.04 (serial doman bypass) | N/A |
| DVB-ASI | 0.04 (serial doman bypass) | N/A |
| **Audio Processing** | | |
| AES | Transparent to VUC bits. Parity regenerated on outputs | |
| Dolby E | Transparent to Dolby E | |
| Audio Fade Duration | Off (cut), Fast (80ms), medium (200ms), slow (500ms) | |
| Power Consumption | 12W | |

## Vega 100 Audio Crosspoint and MADI Input/Output Module

The Vega audio crosspoint also has 6 MADI inputs and 6 MADI outputs.

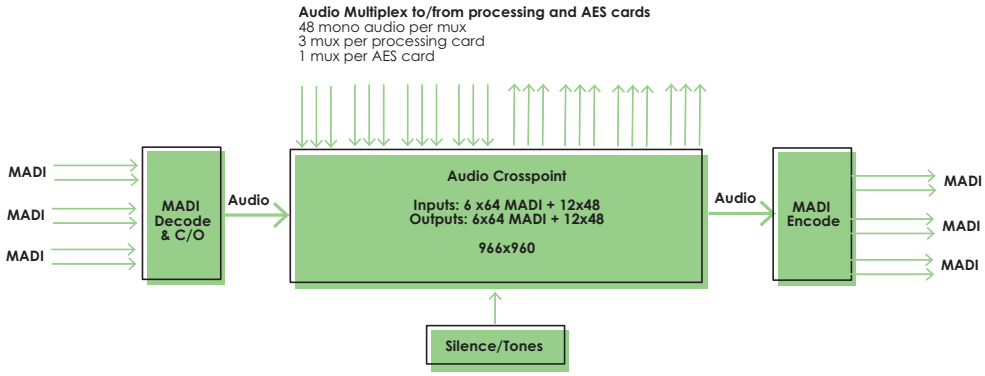
Together with internal audio connections to and from processing and AES cards, it routes signals from any MADI, AES or embedded input to any MADI, AES or embedded output.

The Audio router card must be installed when routing audio to or from any video channel on a processing card.

Routing between AES inputs and outputs only does not require an audio crosspoint.

- MADI inputs configurable as 6 in or redundant 3 in with auto failover.
- MADI outputs configurable as 6 out or dual 3 out.
- Audio routing between any MADI, AES or embedded input to any MADI, AES or embedded output.
- Synchronous 48kHz operation.
- Transparent to Dolby E.
- Transparent to AES Validity, User and Channel Status bits.
- Silence and test tone insertion.

## VG-RM6MADI




## Specification

| | |
|---|---|
| **Inputs** | |
| No & type | 6 / 3 dual redundant with auto –failover). HD-BNC (Gold Plated) 75Ω |
| Signal | MADI (56 or 64 channel, 48kHz) |
| Return Loss | <15dB to 125MHz |
| Maximum cable length | 100m (328ft) Belden 1855 (from 600mV source) |
| **Outputs** | |
| Output Amplitude | 600mV pk-pk ±10% |
| Rise / fall time | < 650ns |
| Signal path delay (MADI in to MADI out) | Minimum (µs) |
| **Audio Routing** | |
| AES | Transparent to VUC bits. Parity regenerated on outputs. |
| Dolby E | Transparent to Dolby E |

## System Examples

### Video only, or Two Level Video and AES Routing

Video requires one or more of video SFP or video coax cards.

Discrete AES inputs and outputs require one or more balanced AES or Unbalanced AES cards. In this scenario, routing audio does NOT need an audio crosspoint.

Cards can be fitted as shown in the table opposite.

| Frame | Video (coax or SFP) cards | AES audio (balanced or unbalanced) cards |
|---|---|---|
| Vega 200<br>Vega 400 | Fit in any slot - max 96 ports (Vega 200)/192 ports (Vega 400) (video or AES inputs or outputs in any combination) | |
| Vega 700 | Fit in any slot.<br><br>Note:<br>12 input only slots (144 inputs)<br>12 output only slots (144 outputs)<br>12 bi-directional slots (144 ports configurable as inputs or outputs) | Inputs - fit in 12 bi-directional slots only (max 144 inputs)<br><br>Outputs - fit in output or bi-directional slots (max 288 outputs)<br><br>Audio router sizes 1 x 287 to 144x144 (stereo AES sizes) |

### Video Routing with Clean and Quiet Switching on Outputs

Output processing modules provide clean and quiet switching (CQS) on video outputs. They can be fitted as shown in the table opposite.

Clean and quiet switching does not require an audio crosspoint to be fitted.

| Frame | Video (coax or SFP) Inputs or Outputs | Clean & Quiet switching Video Outputs | |
|---|---|---|---|
| | Fit Into | Fit Into | Max no. of cards (video O/P) |
| Vega 200 | Fit in any slot | Any slot | 7 slots (56 outputs) |
| Vega 400 | Fit in any slot | Any slot | 15 slots (135 outputs) |
| Vega 700 | Fit in any slot.<br><br>Note:<br>12 input only slots (144 inputs)<br>12 output only slots (144 outputs)<br>12 bi-directional slots (144 ports configurable as inputs or outputs) | 12 Output slots (108 outputs and/or bi-directional slots) | 24 slots (216 outputs) |

## System Examples cont.

### Embedded Audio and MADI Routing

The Audio crosspoint & MADI Interface card has 6 x MADI inputs and 6 x MADI outputs. Each pair of MADI inputs and outputs can be configured as redundant inputs with auto-failover, and dual outputs.

For any embedded or MADI routing the Audio crosspoint & MADI Interface card must be fitted.

Once fitted, all audio routing is via the audio crosspoint.

### Audio Routing with Embedded and MADI audio

Interconnections between the audio crosspoint, and processing and AES cards, use a 48 channel audio multiplex (Amux).

An Amux supports:

- Up to 24 pairs on an AES module
- Up to 16 channels from/to 3 video signals on a processing module

AES modules have 1 Amux in and 1 Amux out.

Processing modules have 3 Amuxes in and 3 Amuxes out (9 video signals, with 16 channels per video).

Amux use is user configurable – for maximum flexibility, each Amux is individually enabled on the input/ output modules.

Automatic configuration then connects up to 12 Amuxes in to the audio crosspoint, and up to 12 Amuxes out from the audio crosspoint.

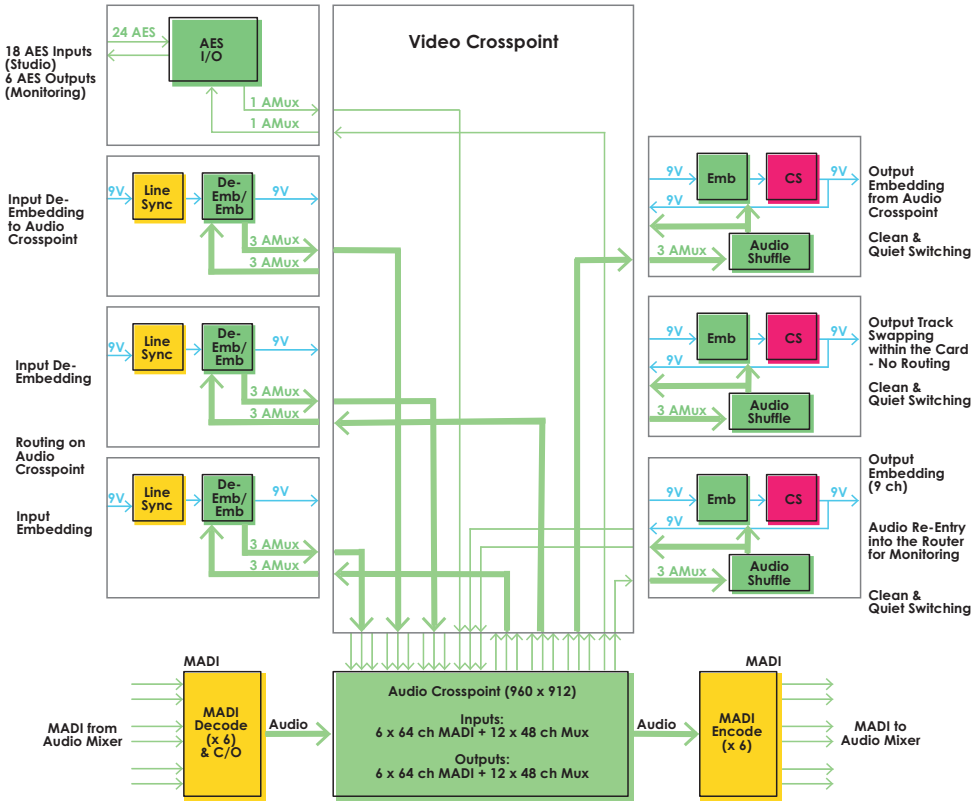
Amuxes are not required for:

- MADI inputs and outputs – these are integral to the Audio crosspoint module.
- Line synchronization and clean switching functions.
- Audio channel swapping within a video signal.

| Audio crosspoint capacity | Inputs | Outputs |
|---|---|---|
| MADI (64 channels per MADI) | 6 x 64 = 384 | 6 x 64 = 384 |
| Internal busses to processing and AES cards (48 channels per bus) | 12 x 48 = 576 | 12 x 48 = 576 |
| Silence and test tones | 6 | - |
| **Total** | 966 | 960 |

| Audio multiplex usage | Crosspoint Inputs | Crosspoint Outputs |
|---|---|---|
| Input processing card | 3 (de-embedding and audio routing) | 3 (input embedding from the crosspoint) |
| Output processing card | 3 (embedding of routed audio from the crosspoint) | 3 (output embedding from the crosspoint) |
| AES input/output modules | 1 | 1 |

The diagram below shows some possible configurations.




All channels are handled as mono audio on the crosspoint. Controller configuration allows audio to be set as stereo or surround signals containing multiple mono channels.

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## Ordering Information

| Mainframes | |
|---|---|
| VG-MF200 | Vega 200 Frame. Includes 2RU chassis, single PSU, single Controller, single crosspoint, and cooling fans |
| VG-MF400 | Vega 400 Frame. Includes 4RU chassis, single PSU, single Controller, single crosspoint, and cooling fans |
| VG-MF700 | Vega 700 Frame. Includes 7RU chassis, single PSU, single Controller, single crosspoint, and cooling fans |

**Note:** The mainframe is supplied with one PSU, one cross-point card and one controller card.
Dual redundant PSUs and/or cards are purchased separately and fitted prior to system test and dispatch. Either none, one, two or all three options should be purchased (per mainframe) depending on the level of redundancy thought to be appropriate. For critical 'Live' applications, all three DR options are recommended. Alternatively any option can be purchased for upgrade on site at a later date or simply for spares/replacements.

| Vega 200 Dual Redundant Options and Spares | |
|---|---|
| VG-PSU1 | Vega Power Supply Unit for VG-MF 200, 400, 096H and 192H frames |
| VG-XPT200 | Vega crosspoint for VG-MF200 & VG-MF096H 2U frame |
| VG-CTL6464 | Vega Controller Card for VG-MF200 and VG-MF096 mainframes |
| VG-FAN1 | Vega Rear Fan Unit for VG-MF200 & VG-MF096H 2U frames |

| Vega 400 Dual Redundant Options and Spares | |
|---|---|
| VG-PSU1 | Vega Power Supply Unit for VG-MF 200, 400, 096H and 192H frames |
| VG-XPT200 | Vega crosspoint for VG-MF200 & VG-MF096H 2U frame |
| VG-CTL6464 | Vega Controller Card for VG-MF200 and VG-MF096 mainframes |
| VG-BUF | Vega Buffer Card for 400, 700, 192 & 432 frames |
| VG-CTLBUF | Vega Controller & Buffer Card Set for 400, 700, 192H & 432H frames. Consists of VG-CTL6464 and VG-BUF |
| VG-FAN2 | Vega Rear Fan Unit for VG-MF400, 700, 192 & 432 frames |

| Vega 700 Dual Redundant Options and Spares | |
|---|---|
| VG-PSU2 | Vega Power Supply Unit for VG-MF700 & VG-MF432H frame |
| VG-XPT700 | Vega crosspoint for VG-MF700 & VG-MF432H 7U frame |
| VG-CTL6464 | Vega Controller Card for VG-MF200 and VG-MF096 mainframes |
| VG-BUF | Vega Buffer Card for 400, 700, 192 & 432 frames |
| VG-CTLBUF | Vega Controller & Buffer Card Set for 400, 700, 192H & 432H frames. Consists of VG-CTL6464 and VG-BUF |
| VG-FAN2 | Vega Rear Fan Unit for VG-MF400, 700, 192 & 432 frames |

| Compliance | |
|---|---|
| EMC - Emissions | EN55103-1 (EU), FCC Part 15 (USA) |
| EMC - Immunity | EN55103-2 (EU) |
| Safety | EN60950 (EU), UL1419 (USA) |
| Hazardous Material | RoHS-6 (UK) – Complies with EU Directive |
| **Auxiliary Ports** | |
| Physical Layer | RS485 x 4 ports |

| Control & Status | |
|---|---|
| **Network** | |
| Physical Layer | Ethernet 100 Base-T RJ45 |
| **Video References** | |
| No. of inputs | 4 looped HD-BNC |
| Impedance | 75Ω +/-0.1% or Hi Z (switched on rear panel) |
| Signals | 1Vpk-pk Analog Video/Syncs/Tri-level HD syncs |
| Switching Lines | Line 10 (525), Line 6 (625), Line 7 (HD) |
| **Alarm Relay** | |
| Connector | 9-way D/female/screw lock, NO & NC contacts |

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