

OPTIMA CUSTOM CONFIGURATION GUIDE

To customize an Optima Matrix Switcher, simply mix-and-match from the available boards, add up the total slots those boards fill, and purchase enclosure(s) to accommodate that total. For systems comprised of two or more linked enclosures, we will provide a link cable or hub at no additional charge.*

Since each board has its own input and output connectors, the physical signal path must be routed from inputs on the board to outputs on the same board. For multiple component signals, (such as RGBHV), boards can then be combined in logical groups via software configuration.

As always, our trained staff is available to provide matrix design assistance. Please contact us if you have questions.

*A link cable is provided with two-enclosure systems, and hub and link cables are provided with systems that contain three or more linked enclosures.

Audio Board List

STANDARD AUDIO

(5T, phoenix style connectors)

Designed for mono and stereo audio signals, all standard audio boards feature input gain control and output volume control accessible via front panel and serial commands.

I/O	FG#	MODEL	SLOTS
8x4	FG1046-539	AVS-OP-0804-AIO-ST-DVC-1S	1
8x8	FG1046-494	AVS-OP-0808-AIO-ST-DVC-1S	1
16x16	FG1046-533	AVS-OP-1616-AIO-ST-DVC-2S	2
16x24	FG1046-548	AVS-OP-1624-AIO-ST-DVC-2S	2
20x4	FG1046-473	AVS-OP-2004-AIO-ST-DVC-2S	2
20x20	FG1046-416	AVS-OP-2020-AIO-ST-DVC-2S	2
24x4	FG1046-500	AVS-OP-2404-AIO-ST-DVC-2S	2
24x16	FG1046-434	AVS-OP-2416-AIO-ST-DVC-2S	2
36x4	FG1046-425	AVS-OP-3604-AIO-ST-DVC-2S	2



HELPFUL HINT

The standard audio board connectors are designed for balanced stereo; however, they can be wired for unbalanced stereo or balanced or unbalanced mono.

SPECIFICATIONS

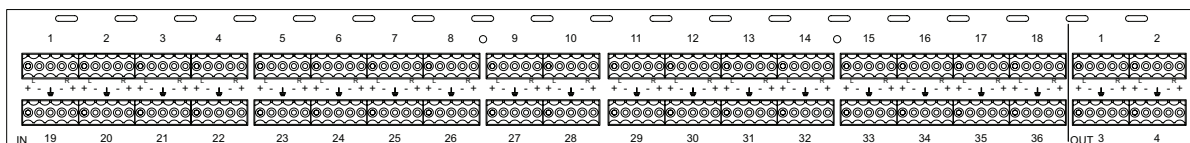
STANDARD AUDIO

- Input Level (Max): +22 dBu, balanced
- Input Impedance: 18 kOhms
- Output Level (Max): +22 dBu, balanced
- Output Impedance: 50 Ohms
- Frequency Response: ± 0.2 dB (20 Hz to 20 kHz)
- THD + Noise:
 - $< 0.03\%$ (20 Hz to 20 kHz, $V_{in} = -10$ to $+10$ dBu)
 - $< 0.01\%$ (20 Hz to 20 kHz, $V_{in} = 0$ to $+22$ dBu)
- Signal to Noise Ratio: > 120 dB (20 Hz to 20 kHz, $V_{in} = +20$ dBu)
- Crosstalk: < -110 dB (1 kHz, $V_{in} = +20$ dBu)
- Input Gain Adj. Range: ± 10 dB, via serial/control panel. Total of input gain plus output gain cannot exceed $+10$ dB
- Output Volume Adj. Range: $+10$ dB to -70 dB (mute), via serial/control panel. Total of input gain plus output gain cannot exceed $+10$ dB.
- Connectors: 5T



A CLOSER LOOK

Shown here: 36x4 Standard Video Board



Audio Board List (cont.)

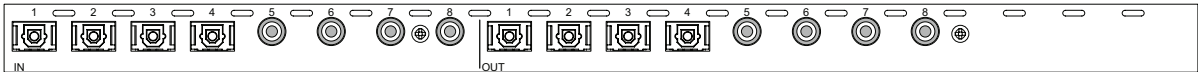
DIGITAL AUDIO
(optical and/or RCA connectors)
Designed for S/PDIF and TosLink® digital audio signals,
FG1046-461 can also convert between S/PDIF and TosLink®.

I/O	FG#	MODEL	SLOTS
8x8 TosLink - optical connectors	FG1046-455	AVS-OP-0808-AIO-TOSLINK-1S	1
8x8 8x8 S/PDIF - RCA connectors	FG1046-458	AVS-OP-0808-AIO-ST-DVC-1S	1
8x8 TosLink - S/PDIF - optical and RCA connectors	FG1046-461	AVS-OP-0808-AIO-TOSLINK-SPDIF-1S	1

- SPECIFICATIONS
- DIGITAL AUDIO (S/PDIF & TOSLINK)
- Resolution: 16 to 24 bit
 - Sample Rate: 32 kHz, 44.1 kHz, 48 kHz, 96 kHz
 - Rise & Fall Time: <20 nS
 - Jitter: <5 nS
 - Input Signal Amplitude: 0.2 Vpp to 2.5 Vpp terminated (S/PDIF)
 - Output Signal Amplitude: 0.4 Vpp to 1.0 Vpp terminated into 75 Ohms (S/PDIF)
 - CDR (Reclocking): Yes
 - Connectors: S/PDIF (RCA) & TosLink® (optical)



A CLOSER LOOK
Shown here: 8x8 TosLink, S/PDIF Board



Video Board List

STANDARD VIDEO (BNC connectors)

Designed for composite video (50 MHz)

I/O	FG#	MODEL	SLOTS
8x8	FG1046-440	AVS-OP-0808-VIO-STD-1S	1
16x16	FG1046-485	AVS-OP-1616-VIO-STD-2S	2
16x24	FG1046-545	AVS-OP-1624-VIO-STD-2S	2
20x4	FG1046-470	AVS-OP-2004-VIO-STD-2S	2
20x20	FG1046-413	AVS-OP-2020-VIO-STD-2S	2
24x4	FG1046-515	AVS-OP-2404-VIO-STD-2S	2
24x16	FG1046-431	AVS-OP-2416-VIO-STD-2S	2
36x4	FG1046-422	AVS-OP-3604-VIO-STD-2S	2

SPECIFICATIONS

STANDARD VIDEO (COMPOSITE, S-VIDEO, Y/C)

Input Level (Max): ± 2.5 Volts

Input Impedance: 75 Ohms

Output Level (Max): ± 2.5 Volts

Output Impedance: 75 Ohms

Frequency Response: 50 MHz or better (± 3 dB), 15 MHz or better (± 1 dB)

Crosstalk: < -60 dB ($f = 5$ MHz)

Differential Gain: $< 0.2\%$ or better ($f = 3.58$ MHz)

Differential Phase: $< 0.2^\circ$ or better ($f = 3.58$ MHz)

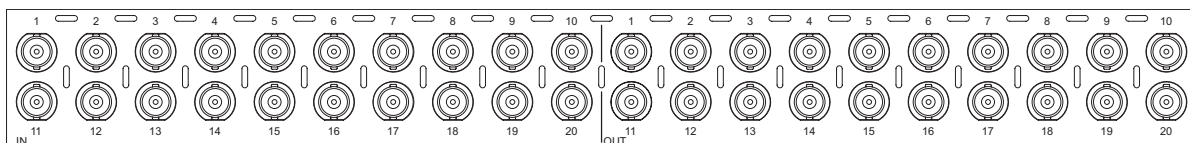
Signal to Noise Ratio: > 65 dB ($V_{in} = 0.7$ V, 100 IRE)

Connector Options: BNC, S-Video (4-pin Mini-DIN)



A CLOSER LOOK

Shown here: 20x20 Standard Video Board



S-VIDEO (4-pin Mini-DIN connectors)

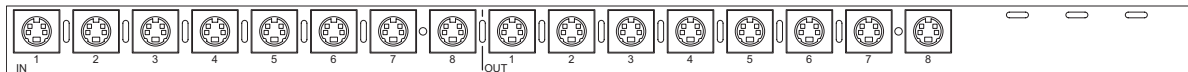
Designed for S-Video signals (50 MHz)

I/O	FG#	MODEL	SLOTS
8x8	FG1046-446	AVS-OP-0808-SVID-STD-1S	1
16x16	FG1046-488	AVS-OP-1616-SVID-STD-2S	2



A CLOSER LOOK

Shown here: 8x8 S-Video Board



Y/C (BNC connectors)

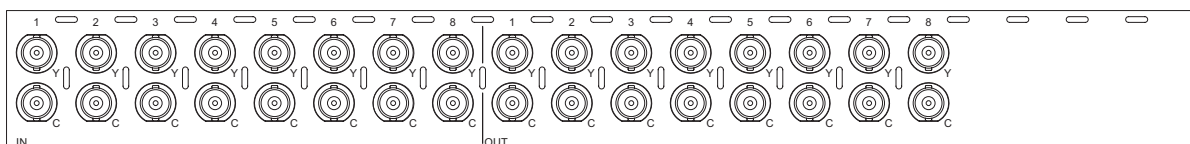
Designed for Y/c video signals (50 MHz)

I/O	FG#	MODEL	SLOTS
8x8	FG1046-476	AVS-OP-0808-VID-YC-2S	2



A CLOSER LOOK

Shown here: 8x8 Y/c Board



Video Board List (cont.)

WIDEBAND VIDEO

(BNC connectors)

Designed for RGB and RGsB, video signals (300 MHz)

I/O	FG#	MODEL	SLOTS
8x8	FG1046-437	AVS-OP-0808-VIO-WB-1S	1
16x16	FG1046-482	AVS-OP-1616-VIO-WB-2S	2
16x24	FG1046-542	AVS-OP-1624-VIO-WB-2S	2
20x4	FG1046-467	AVS-OP-2004-VIO-WB-2S	2
20x20	FG1046-410	AVS-OP-2020-VIO-WB-2S	2
24x4	FG1046-503	AVS-OP-2404-VIO-WB-2S	2
24x16	FG1046-428	AVS-OP-2416-VIO-WB-2S	2
36x4	FG1046-419	AVS-OP-3604-VIO-WB-2S	2

WIDEBAND VIDEO

(HD-15 connectors)

Designed for RGBHV (300 MHz)

I/O	FG#	MODEL	SLOTS
4x2	FG1046-530	AVS-OP-0402-VIO-HD15-1S	1
8x4	FG1046-497	AVS-OP-0804-VIO-HD15-2S	2
8x8	FG1046-536	AVS-OP-0808-VIO-HD15-2S	2
15x15	FG1046-593	AVS-OP-1515-VIO-HD15-3S	3

SPECIFICATIONS

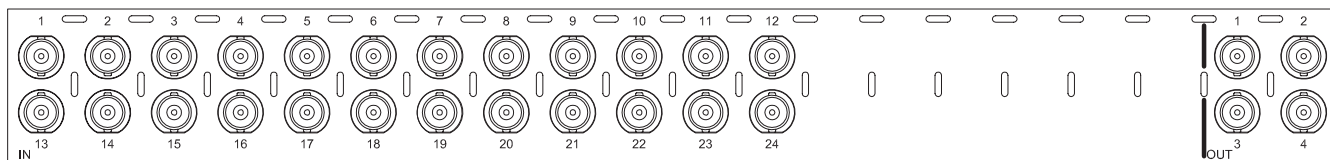
WIDEBAND VIDEO (RGB)

- Input Level (Max): ± 1.5 Volts
- Input Level (Max 20x20): ± 1.2 Volts
- Input Impedance: 75 Ohms
- Output Level (Max): ± 1.5 Volts
- Output Level (Max 20x20): ± 1.2 Volts
- Output Impedance: 75 Ohms
- Frequency Response:
 - 300 MHz or better (± 3 dB)
 - 100 MHz or better (± 1.5 dB)
- Frequency Response (20x20):
 - 300 MHz or better (± 3 dB),
 - 100 MHz or better (± 2 dB)
 - 50 MHz or better (± 1.5 dB)
- Crosstalk:
 - < -60 dB ($f = 5$ MHz)
 - < -35 dB ($f = 150$ MHz)
- Signal to Noise Ratio: > 65 dB ($V_{in} = 0.7$ V, 100 IRE)
- Connector Options: BNC, HD-15



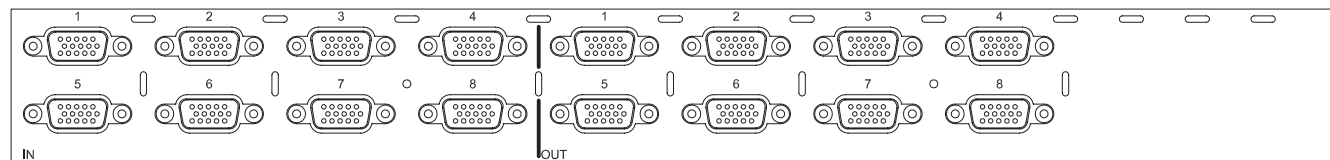
A CLOSER LOOK

Shown here: 24x4 Wideband Video Board



A CLOSER LOOK

Shown here: 8x8 HD-15 Board



Video Board List (cont.)

SYNC
(BNC connectors)

Designed for horizontal and vertical sync (H and V)

I/O	FG#	MODEL	SLOTS
8x8*	FG1046-443	AVS-OP-0808-SIO-HI-2S	2
16x16	FG1046-569	AVS-OP-1616-SIO-HI-2S	2
16x24	FG1046-566	AVS-OP-1624-SIO-HI-2S	2
20x4	FG1046-470	AVS-OP-2004-VIO-STD-2S	2
20x20	FG1046-560	AVS-OP-2020-SIO-HI-2S	2
24x4	FG1046-515	AVS-OP-2404-VIO-STD-2S	2
24x16	FG1046-554	AVS-OP-2416-SIO-HI-2S	2
36x4	FG1046-422	AVS-OP-3604-VIO-STD-2S	2



HELPFUL HINT

Each sync board contain one BNC connection per input/output number. Thus, a 20x4 board contains 20 input connections and 4 output connections. Use two 20x4 boards to route 20x4 H and V.

SPECIFICATIONS

SYNC

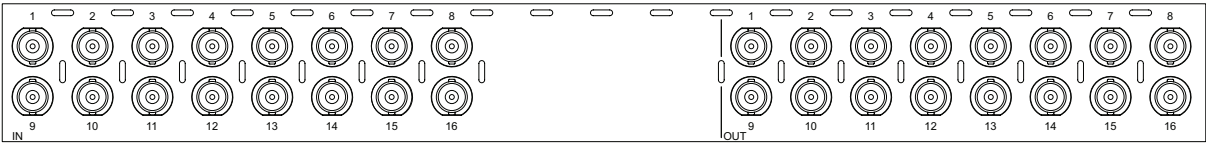
- Input Level Signal Range: 0 to +5.5 Volts
- Input Impedance: 22 kOhms
- Output Level Signal Range: 0 to +5.5 Volts
- Output Impedance: 75 Ohms
- In/Out Polarity: Active High or Low (output follows input polarity)
- Output Signal Level: Unity Gain
- Connectors: BNC

*The 8x8 sync board has H and V on the same board, thus it has 16 input connections and 16 output connections. All other sync boards contain one BNC connection per input/output number



A CLOSER LOOK

Shown here: 16x16 Sync Board



Video Board List (cont.)

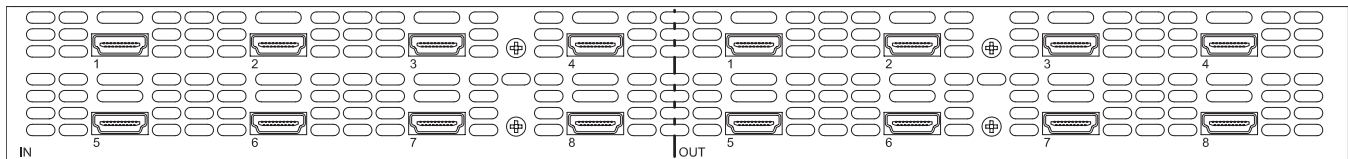
HDMI DIGITAL VIDEO (HDMI Connectors)

I/O	FG#	MODEL	SLOTS
8x8	FG1046-614	AVS-OP-0808-HDMI-2S	2

The Optima HDMI board is designed to route eight different HDMI sources, with HDCP authentication, to any or all 8 connected displays. While supporting resolutions up to 1920x1200 (including 1920x1080p), this HDMI 1.3 compatible true matrix switching solution features AMX's HDCP InstaGate® Technology allowing HDMI signal switching without delays due to HDCP re-authentication, and eliminating video stream interruption to existing HDMI signal paths. The board is pre-loaded with the most common EDID (Extended Display Identification Data) settings to ensure proper functionality with source devices, and allows specialized EDID settings to be loaded on each input through the included EDID Programmer application.



A CLOSER LOOK Shown here: 8x8 HDMI



SPECIFICATIONS

DIGITAL VIDEO (HDMI)

- Compatible Formats: HDMI 1.3a (HDCP 1.3), DVI 1.0
- Data Rate (Max): 4.95 Gbps
- Pixel Clock (Max): 165 MHz
- Progressive Resolution Support: 480p up to 1920x1200 @ 60 Hz (1600x1200 @ 60 Hz and higher requires reduced blanking)
- Interlaced Resolution Support: 480i, 576i, 1080i
- Audio Format Support:
 - Dolby Digital, DTS, L-PCM
 - Dolby Digital and DTS support up to 48 kHz, 5.1 channels
- Audio Resolution: 16 bit to 24 bit
- Audio Sample Rate:
 - 32 kHz, 44.1 kHz, 48 kHz, 96 kHz, 192 kHz
 - 2 Channel L-PCM support up to 192 kHz at 1080p (50,59 60 Hz), 2 Channel L-PCM support up to 96 kHz at 720p (50,59 60 Hz), 1080p (24, 25, 30, 50, 59, 60 Hz), 1080i (50, 59, 60 fields),
 - 2 Channel L-PCM support up to 48 kHz at all resolutions
- Signal Type Support:
 - HDMI
 - DVI-D (Single Link With Cable Adapter)
- DDC/EDID Support
 - EDID Provided by the Optima
 - EDID is user re-programmable
- HDCP Support
 - Yes, full matrix HDCP support (includes any input to any or all outputs) with AMX HDCP InstaGate® Technology
- Input Voltage (Nominal): 1.0 Vpp Differential
- Output Voltage (Nominal): 1.0 Vpp Differential
- Output Re-clocking (CDR): Yes
- Output +5 V DDC Pin: 50 mA max per output port
- Output Rise Time / Fall Time:
 - 75 ps min - 144 ps max (20% - 80%)
 - 0.12 UI min - 0.24 UI max (@ 1.65 Gbps, 20% - 80%)
- Connectors: HDMI Type A Female

EDID

- Standard Timing Identification:
 - ID 1: 1920x1080 @ 60 Hz (This is the preferred timing identified in the EDID.)
 - ID 2: 1680x1050 @ 60 Hz
 - ID 3: 1600x1200 @ 60 Hz
 - ID 4: 1280x800 @ 60 Hz
 - ID 5: 1280x720 @ 60 Hz
 - ID 6: 1280x1024 @ 60 Hz
 - ID 7: 1360x765 @ 60 Hz
 - ID 8: 1440x900 @ 60 Hz
 - ID 9: 2048x1152 @ 60 Hz
 - ID 10: 1600x900 @ 60 Hz
 - ID 11: 1400x1050 @ 60 Hz
 - ID 12: 1280x960 @ 60 Hz
- Established Timing:
 - 640x480 @ 60 Hz, 67 Hz, 72 Hz, 75 Hz
 - 800x600 @ 56 Hz, 60 Hz, 72 Hz, 75 Hz
 - 832x624 @ 75 Hz
 - 1024x768 @ 60 Hz, 70 Hz, 75 Hz, 87 Hz
 - 1280x1024 @ 75 Hz
 - 1152x870 @ 75 Hz

Detailed Timing Blocks:

- 1920x1080 @ 60 Hz 148.5 MHz
 - 1920x1080 @ 60 Hz 138.5 MHz
 - 1920x1080 @ 60 Hz 141.5 MHz
 - 1920x1200 @ 60 Hz 158.25 MHz
 - 1920x1200 @ 60 Hz 154.0 MHz
- ### CEA Video Information Code (VIC) Formats:
- VIC = 1, 640x480p 59.94/60 Hz 4:3
 - VIC = 2, 720x480p 59.94/60 Hz 4:3
 - VIC = 3, 720x480p 59.94/60 Hz 16:9
 - VIC = 4, 1280x720p 59.94/60 Hz 16:9
 - VIC = 5, 1920x1080i 59.94/60 Hz 16:9
 - VIC = 6, 720(1440)x480i 59.94/60 Hz 4:3
 - VIC = 7, 720(1440)x480i 59.94/60 Hz 16:9
 - VIC = 14, 1440x480p 59.94/60 Hz 4:3
 - VIC = 15, 1440x480p 59.94/60 Hz 16:9
 - VIC = 16, Native 1920x1080p 59.94/60 Hz 16:9
 - VIC = 17, 720x576p 50 Hz 4:3
 - VIC = 18, 720x576p 50 Hz 16:9
 - VIC = 19, 1280x720p 50 Hz 16:9
 - VIC = 20, 1920x1080i 50 Hz 16:9
 - VIC = 21, 720(1440)x576i 50 Hz 4:3
 - VIC = 22, 720(1440)x576i 50 Hz 16:9
 - VIC = 29, 1440x576p 50 Hz 4:3
 - VIC = 30, 1440x576p 50 Hz 16:9
 - VIC = 31, 1920x1080p 50 Hz 16:9
 - VIC = 32, 1920x1080p 23.97/24 Hz 16:9
 - VIC = 33, 1920x1080p 25 Hz 16:9
 - VIC = 34, 1920x1080p 29.97/30 Hz 16:9
 - VIC = 39, 1920x1080i 50 Hz 16:9
 - VIC = 41, 1280x720p 100 Hz 16:9
 - VIC = 42, 720x576p 100 Hz 4:3
 - VIC = 43, 720x576p 100 Hz 16:9
 - VIC = 44, 720(1440)x576i 100 Hz 4:3
 - VIC = 45, 720(1440)x576i 100 Hz 16:9
 - VIC = 47, 1280x720p 119.88/120 Hz 16:9
 - VIC = 48, 720x480p 119.88/120 Hz 4:3
 - VIC = 49, 720x480p 119.88/120 Hz 16:9

Audio Data Block:

- 2 Channel L-PCM 32, 44.1, 48, 88.2, 96, 176.4 192 kHz Sampling Frequency at 16, 20 or 24 bits per sample.
- AC-3 (Dolby Digital) 6 Channels (5.1) 48 kHz Sampling Frequency
- DTS 6 Channels (5.1) 48 kHz Sampling Frequency

Video Board List (cont.)

DVI

(DVI connectors)

I/O	FG#	MODEL	SLOTS
4x4	FG1046-479	AVS-OP-0404-VIO-DVI-1S	1
8x8	FG1046-659	AVS-OP-0808-VIO-DVI-2S	2



HELPFUL HINT

DVI boards are designed to route digital computer video.

SPECIFICATIONS

DIGITAL VIDEO (4X4 DVI)

- Data Rate (Max): 4.95 Gbps
- Pixel Clock (Max): 165 MHz
- Resolution Support: Up to 1600x1200 @ 60 Hz
- Signal Type: DVI-D (Single Link)
- DDC/EDID Support: EDID provided by Optima
- HDCP Support: No
- Input Voltage (nominal): 1.0 Vpp Differential
- Input Voltage (Max): 1.5 Vpp Differential
- Output Nominal Voltage: 1.0 Vpp Differential
- Output Re-clocking (CDR): Yes
- Output +5 V DDC Pin: 50 mA available on each output
- Output Rise Time / Fall Time: 75 ps min - 240 ps Max (20% - 80%)
- 0.12 UI min - 0.4 UI Max (@ 1.65 Gbps, 20% - 80%)
- Connectors: DVI-I female (DVI-D Single Link is the supported signal type)
- Special Note: Power requirements for this board allow for no more than 4 boards in a single enclosure.

4X4 EDID STANDARD TIMING IDENTIFICATION:

- ID 1: 1600x1200 @ 75 Hz*
- ID 2: 640x480 @ 120 Hz
- ID 3: 1024x768 @ 120 Hz
- ID 4: 1280x1024 @ 85 Hz
- ID 5: 800x600 @ 120 Hz
- ID 6: 1152x864 @ 120 Hz
- ID 7: 1600x1200 @ 60 Hz
- ID 8: 1280x800 @ 60 Hz

* This is the preferred timing identified in the EDID.

4X4 ESTABLISHED TIMING

- 720 x 400 @ 70 Hz, 88 Hz
- 640 x 480 @ 60 Hz, 67 Hz, 72 Hz, 75 Hz
- 800 x 600 @ 56 Hz, 60 Hz, 72 Hz, 75 Hz
- 832 x 624 @ 75 Hz
- 1024 x 768 @ 60 Hz, 70 Hz, 75 Hz, 87 Hz
- 1280 x 1024 @ 75 Hz
- 1152 x 870 @ 75 Hz

DIGITAL VIDEO (8X8 DVI)

- Data Rate (Max): 4.95 Gbps
- Pixel Clock (Max): 165 MHz
- Resolution Support: Up to 1920x1200 @ 60 Hz
- Signal Type: DVI-D (Single Link)
- DDC/EDID Support: EDID provided by Optima
- EDID is user re-programmable
- HDCP Support: No
- Input Voltage (Nominal): 1.0 Vpp Differential
- Input Voltage (Max): 1.5 Vpp Differential
- Input Equalization: Up to 40 dB Automatic
- Input Cable Length (Typ): Up to 50 ft, 1920x1200 @ 60 Hz Over High Quality DVI Cable
- Input Cable Length (Max): Up to 100 ft, 1920x1200 @ 60 Hz* Over High Quality DVI 24 AWG, Shielded-Twisted Pair Cable
- Output Nominal Voltage: 1.0 Vpp Differential
- Output Re-clocking (CDR): Yes
- Output Pre-emphasis: Yes, for improved cable drive
- Output +5 V DDC Pin: 1 A shared total available on outputs 1 - 4, 270 mA shared total available on outputs 5 - 8
- Output Rise Time / Fall Time: 80 ps min - 200 ps Max (20% - 80%), 0.13 UI min - 0.33 UI Max (@ 1.65 Gbps, 20% - 80%)
- Connectors: DVI-I female (DVI-D Single Link is the supported signal type)
- * Requires a source signal amplitude of 1 Vpp driving the cable.

8X8 EDID STANDARD TIMING IDENTIFICATION:

- ID 1: 1920x1200 @ 60 Hz*
- ID 2: 1920x1080 @ 60 Hz*
- ID 3: 1680x1050 @ 60 Hz
- ID 4: 1600x1200 @ 60 Hz
- ID 5: 1280x800 @ 60 Hz
- ID 6: 1280x720 @ 60 Hz
- ID 7: 1280x1024 @ 60 Hz
- ID 8: 640x480 @ 120 Hz

* This is the preferred timing identified in the EDID.

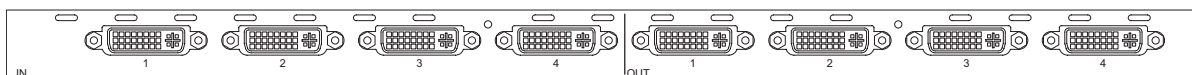
8X8 ESTABLISHED TIMING:

- 720x400 @ 70 Hz, 88 Hz
- 640x480 @ 60 Hz, 67 Hz, 72 Hz, 75 Hz
- 800x600 @ 56 Hz, 60 Hz, 72 Hz, 75 Hz
- 832x624 @ 75 Hz
- 1024x768 @ 60 Hz, 70 Hz, 75 Hz, 87 Hz
- 1280x1024 @ 75 Hz
- 1152x870 @ 75 Hz



A CLOSER LOOK

Shown here: 4x4 DVI Board



Video Board List (cont.)

SD-SDI DIGITAL VIDEO (BNC connectors)

SD-SDI conforms to SMPTE-259, SMPTE-344M

I/O	FG#	MODEL	SLOTS
4x4	FG1046-527	AVS-OP-0404-VIO-SDI-1S	1
8x8	FG1046-491	AVS-OP-0808-VIO-SDI-1S	1

SPECIFICATIONS

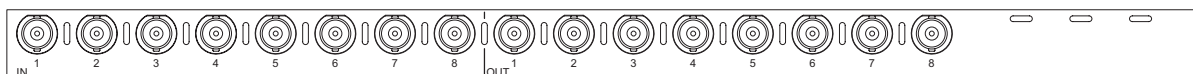
DIGITAL VIDEO (SD-SDI)

- Standard: Conforms to SMPTE-259M, SMPTE-344M
- Input Impedance: 75 Ohms
- Input Level (Max): 0.8 Vpp, $\pm 10\%$
- Output Impedance: 75 Ohms
- Output Level (Max): 0.8 Vpp, $\pm 10\%$
- Timing Jitter: < 0.1 UI @ 360 Mbps
- Alignment Jitter: < 0.1 UI @ 360 Mbps
- Rise and Fall Time: 600 ps, ± 100 ps (20%-80%)
- Bit Rates: 143 Mbps, 177 Mbps*, 270 Mbps, 360 Mbps, 540 Mbps*
(*Data not available for 177 & 540 Mbps bit rate)
- Data Type: 8 bit or 10 bit
- Auto Cable Equalization: Up to 350m of Belden 8281 or equivalent @ 270 Mbps
- Auto Data Rate Lock: Yes
- CDR (Reclocking): Yes
- Connectors: BNC



A CLOSER LOOK

Shown here: 8x8 SD-SDI Board



HD-SDI DIGITAL VIDEO (BNC connectors)

HD-SDI conforms to SMPTE-259M, SMPTE-292M, SMPTE-344M. dual-link HD-SDI can be achieved by using two HD-SDI boards

I/O	FG#	MODEL	SLOTS
8x8	FG1046-590	AVS-OP-0808-VIO-HDSD-1S	1



HELPFUL HINT

HD-SDI conforms to SMPTE-259M, SMPTE-292M, SMPTE-344M. dual-link HD-SDI can be achieved by using two HD-SDI boards.

SPECIFICATIONS

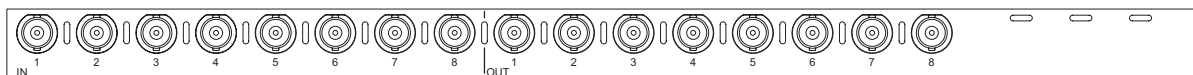
DIGITAL VIDEO (HD-SDI)

- Standard: Conforms to SMPTE-259M, SMPTE-292M, SMPTE-344M, SMPTE-372M* (*Data not available for SMPTE-372M dual-link format)
- Input Impedance: 75 Ohms
- Input Level (Max): 0.8 Vpp, $\pm 10\%$
- Output Impedance: 75 Ohms
- Output Level (Max): 0.8 Vpp, $\pm 10\%$
- Timing Jitter: < 0.1 UI @ 1.485 Gbps
- Alignment Jitter: < 0.1 UI @ 1.485 Gbps
- Bit Rates: 143 Mbps, 177 Mbps*, 270 Mbps, 360 Mbps, 540 Mbps*, 1.485 Gbps (*Data not available for 177 & 540 Mbps bit rate)
- Data Type: 8 bit or 10 bit
- Auto Cable Equalization
- Up to 140m of Belden 1694A or equivalent @ 1.485 Gbps, Up to 100m of Belden 8281 or equivalent @ 1.485 Gbps
- Auto Data Rate Lock: Yes
- CDR (Reclocking): Yes
- Connectors: BNC



A CLOSER LOOK

Shown here: 8x8 HD-SDI Board



Video Board List (cont.)

CATPRO RGBHV + STEREO

(HD-15 + 5T Phoenix style to RJ-45)

The Optima CatPro boards integrate routing and transmission of RGBHV + Stereo over twisted pair, eliminating the need for external transmission devices. With the ability to maintain resolutions up to 1600x1200 or 1920x1080 @ 60 Hz even at distances of up to 1,000 feet, you don't have to compromise video quality to run long distances. These boards are ideal for any small application sending local computer video to long distance outputs, such as lobby areas, education, portable command-and-control, or museum kiosk areas.

I/O	FG#	MODEL	SLOTS
4x8	FG1046-581	AVS-OP-0408-CATPRO-X-RGBHV-STI	2
8X8	FG1046-575	AVS-OP-0808-CATPRO-X-RGBHV-STI	2



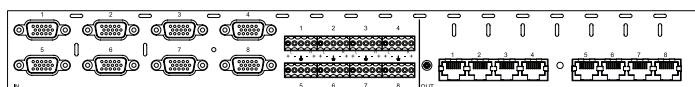
HELPFUL HINT

Video is brought into the CatPro boards via HD-15 connections while stereo is via 5T (phoenix style) connections. Then, those two discrete signal paths are combined and transmitted out via a single RJ-45 connection. At the destination device a CatPro Receiver is required to receive the signals via a RJ-45 connection and break them back into their native HD-15 and phoenix style connections.



A CLOSER LOOK

Shown here: 8x8 RGBHV + Stereo to CatPro Board



SPECIFICATIONS

All Specs are defined for use in conjunction with a CatPro Receiver

RGBHV + STEREO IN TO CATPRO OUT

- Signal Types:
 - Input: RGBHV + Stereo Audio (HD-15 & 5T)
 - Output: CatPro RGBHV + Stereo Audio (RJ-45)
- Maximum Resolution: 1600x1200(4:3) and 1920x1080p(16:9) @ 60 Hz up to 1000 ft
- RGB In Signal Level Range (Max): +0.75 V to -0.3 V Typ (terminated)
- RGB Out Signal Level Range (Max): +0.75 V to -0.3 V Typ (terminated, user adjustable with gain and peak using CatPro Receiver)
- RGB Out Skew Adjustment: 0 to 62 ns, in 2 ns increments on RGB channels (user adjustable using CatPro Receiver)
- RGB In/Out Impedance: 75 Ohms
- RGB SNR: > 50 dB (Vin = 0.7 V, 100 IRE)
- RGB Crosstalk:
 - < -60 dB (f = 5 MHz)
 - < -45 dB (f = 30 MHz)
- Sync In Impedance: 2.2 kOhms
- Sync In/Out Polarity: Active High or Low (output follows input polarity)
- Sync Out Signal Levels: Low = 0 V, High = +5 V (unterminated)
- Audio In/Out Signal Type: Stereo, Balanced or Unbalanced In / Unbalanced Out
- Audio In/Out Signal Level (Max): +8 dBu
- Audio In Impedance: 18 kOhms
- Audio Output Impedance: < 5 Ω
- Audio Frequency Response: < ± 0.3 dB, 20 Hz to 20 kHz
- Audio THD+N: < 0.04 %, 1 kHz, -10 dBu to +4 dBu
- Audio Crosstalk: < -95 dB (1 kHz, Vin = +4 dBu)
- Audio SNR: > 85 dB, 20 Hz to 20 kHz Vin = +8 dBu
- Audio Out Volume Adj. Range: Mute to +6 dB (user adjustable at CatPro Receiver)
- RGBHV Input Connector: Female HD-15
- Stereo Audio Input Connector: 5T
- RGBHV + Stereo Out Connector: Female RJ-45
- Compatible Cable Types: Category Cable 5, 5e, 6, 6e, UTP, and STP*.

*All measurements were taken using Cat5e Cable



Video Board List (cont.)

CATPRO RGBHV + STEREO RECEIVERS (Compatible CatPro Receivers)

DESCRIPTION	FG#	MODEL
CatPro RGBHV+Stereo Receiver	FG1010-48-01	AVB-RX-CATPRO-HD15-ST



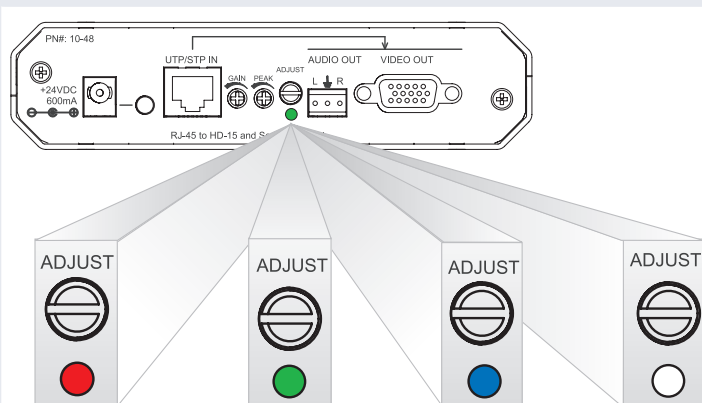
HELPFUL HINT

Make precise gain, peak and skew adjustments in seconds. Each receiver features a simple dial, and LED indicator for simple skew adjustments. A push of the dial and the LED illuminates with the color activated for adjustment (red, green, or blue). And, white indicates stereo audio volume control. Gain and peak adjustments are also simple via external potentiometers.



A CLOSER LOOK

Shown here: CatPro RGBHV + Stereo Receiver



SPECIFICATIONS

CATPRO RGBHV + STEREO RECEIVER

- Signal Types: RGBHV + Stereo Audio
- Maximum Resolution: 1600x1200(4:3) and 1920x1080p(16:9) @ 60 Hz up to 1000 feet
- RGB Out: At 1000 feet
- RGB Out Signal Level Range: +0.75 V to -0.3 V Typ (terminated, user adjustable with gain and peak)
- RGB Out Impedance: 75 Ohms
- RGB SNR Out: >50 dB
- RGB Out Skew Adjustment: 0 to 62 ns, in 2 ns increments on RGB channels (user adjustable)
- Sync Out Signal Levels: Low = 0 V, High = +5 V (unterminated)
- Sync Out Polarity: Active High or Low (follows input polarity)
- Audio Out: At 1000 feet
- Audio Out Signal Type: Stereo, Unbalanced
- Audio Out Signal Levels (Max): +8 dBu
- Audio Out Volume Control Range: Mute to +6 dB (user adjustable)
- Audio Out Frequency Response: ± 0.2 dB, 20 Hz to 20 kHz
- Audio Out THD+N: <0.04 %, 1 kHz, -10 dBu to +4 dBu
- Audio Out SNR: >105 dB, 20 Hz to 20 kHz $V_{in}=+4$ dBu
- Audio Output Impedance: <5 Ohms
- RGBHV + Stereo Input Connector: 1 Female RJ-45
- RGBHV Out Connector: 1 Female HD-15
- Stereo Audio Output Connector: 1 Pluggable 3.5mm Terminal Block

Enclosures

All Optima enclosures include a standard RS-232 control port, support AutoPatch's simple BCS serial control protocol, ship with free APCControl Software and are compatible with all leading 3rd party control systems.

To customize an Optima Matrix Switcher simply mix and match from the available boards, add up the total slots those boards fill, and purchase enclosure(s) to accommodate that total. For systems comprised of 2 or more linked enclosures, AutoPatch will provide a link cable or hub at no additional charge.

Since each board has its own input and output connectors, the physical signal path must be routed from inputs on the board to outputs on the same board. For multiple component signals, such as RGBHV, boards can then be combined in logical groups via software configuration (as shown in the RGBHV example below).

RACK UNITS	FG#	MODEL	SLOTS
2	FG1046-13	AVS-OP-ENC-BP-2U	4
3	FG1046-10	AVS-OP-ENC-BP-3U	6

Control Panels

Listed here are front panel control options and our APWeb Expansion Board which provides a TCP/IP control interface. Only one panel is needed when multiple enclosures are linked together to work as one system.

For more information on the capabilities of these control options as well as additional remote options please visit amx.com.

**Currently the APWeb Expansion Board is available in the 3 RU enclosure only. It is also available as a stand alone external module.

2 RU MODELS

DESCRIPTION	FG#	MODEL
8x8 CP-15	FG1046-261	AVS-OP-0808-CP15-2U
16x16 CP-15	FG1046-258	AVS-OP-1616-CP15-2U
16x24 CP-15	FG1046-255	AVS-OP-1624-CP15-2U
20x20 CP-15	FG1046-249	AVS-OP-2020-CP15-2U
24x16 CP-15	FG1046-252	AVS-OP-2416-CP15-2U
36x4 CP-15	FG1046-216	AVS-OP-3604-CP15-2U

3 RU MODELS

DESCRIPTION	FG#	MODEL
8x8 CP-15	FG1046-240	AVS-OP-0808-CP15-3U
16x16 CP-15	FG1046-237	AVS-OP-1616-CP15-3U
16x24 CP-15	FG1046-234	AVS-OP-1624-CP15-3U
20x20 CP-15	FG1046-216	AVS-OP-2020-CP15-3U
24x16 CP-15	FG1046-231	AVS-OP-2416-CP15-3U
36x4 CP-15	FG1046-210	AVS-OP-3604-CP15-3U
CP-20A	FG1046-213	AVS-OP-CP20A-3U
APWEB**	FG1046-313	AVS-OP-TCPIP-3U

SPECIFICATIONS

GENERAL

- AC Power: 100-240 VAC single phase, 50-60 Hz
- Power Consumption (Max): 260 Watts
- Power Consumption (Typ):
 - 150 Watts, fully loaded enclosure (3 RU)
 - 110 Watts, fully loaded enclosure (2 RU)
- BTU/hr (Max): 887
- BTU/hr (Typ):
 - 512 BTU/hr, fully loaded enclosure (3 RU)
 - 375 BTU/hr, fully loaded enclosure (2 RU)
- Operational Temperature: 32° to 110° F (0° to 43° C)
- Storage Temperature: -22° to 158° F (-30° to 70° C)
- Humidity: 0 to 90% non-condensing
- Note: Specifications are subject to change

DIMENSIONS

5 3/16" (3 RU)/ 3 1/2" (2 RU) x 19" x 12" (13.2/8.9 cm x 48.3 cm x 30.5 cm)

DIMENSIONS WITH/ WITHOUT RACK EARS

5 3/16" (3 RU)/ 3 1/2" (2 RU) x 17 3/8" x 12" (13.2/8.9 cm x 44.2 cm x 30.5 cm)

WEIGHT

- Appx. 12 lbs (5.44 kg) per loaded enclosure (3RU)
- Appx. 10 lbs (4.54 kg) per loaded enclosure (2RU)

MTBF

92,000 hours

CERTIFICATIONS

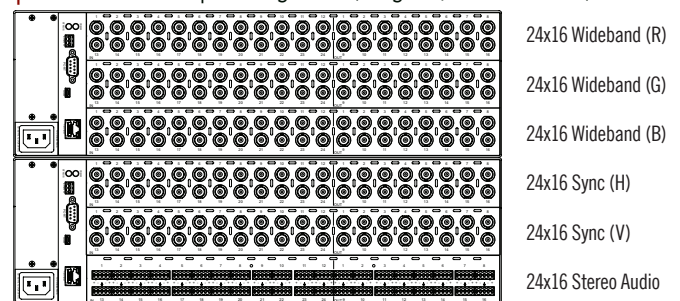
CE, FCC Class A, UL, cUL, RoHS/WEEE compliant



A CLOSER LOOK

Shown here: An example RGBHV + stereo configuration using Optima 3RU enclosures and a sample multiple format configuration using an Optima 2 RU enclosure

Optima 3 RU - Example Configuration (using two, 3 RU enclosures)



Optima 2 RU - Example Configuration

