TAHOMA
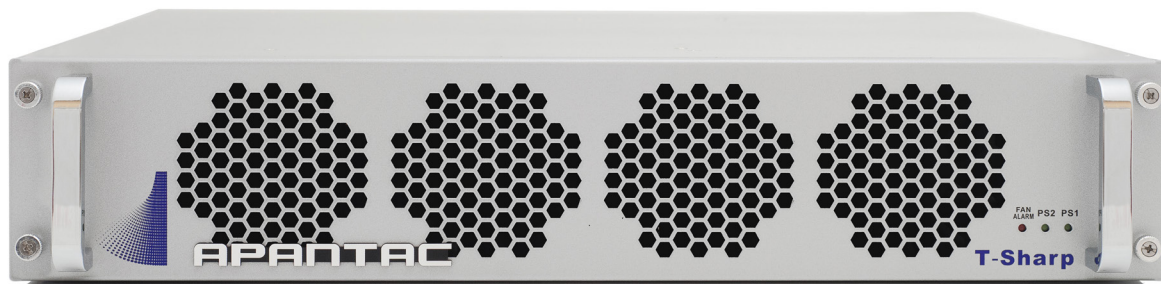## T#

2 Frames sizes (2 RU and 3 RU), can mix and match 12G/3G/HD/SD-SDI/CVBS, HDMI 1.4, HDMI 2.0, IP, fiber by adding input or output cards

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T#-01-2019

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Up to 64 input and 16 outputs multiviewer, any input is available to any output

Key Features

- Fast boot up (< 10 seconds)
- Single frame of processing delay on baseband inputs
- Modular architecture
- All input and output boards are hot swappable
- Supports CVBS to 12G input cards
- HDMI 1.4 input cards
- HDMI 2.0 input cards
- DP 1.2 input cards
- IP (H.264/Mpeg4, Mpeg2) input cards
- SFP input cards can accept SMPTE SDI fiber or SMPTE 2022 and 2110
- Maximum of 64 auto-detect inputs of 3G/HD/SD-SDI/composite signals
- Maximum of 32 auto-detect inputs of 12G/3G/HD-SDI inputs
- Maximum of 64 inputs of HDMI 1.4
- Maximum of 32 inputs of HDMI 2.0
- **Maximum of 16 1080P outputs**
- **Maximum of 4 UHD 2160P outputs**
- Can support up to 64 windows on each output
- Any input can be routed to any output
- Any input can be duplicated up to 64 times
- Supports UMD, OMD, IMD and standalone labels up to 32 characters
- Supports multiple labels per window
- Supports dynamic UMD via TSL protocol v3.1 (IP and RS-232) or TSL protocol v5.0 (IP)
- Supports 2 sets of "safe area" markers per image
- Multiple analog and digital clocks per multiviewer outputs
- Customizable logos
- Supports up to 30 presets per output
- Video audio alarms includes - video presence/format, video black, video frozen, audio presence, audio high/low
- Supports AXP2 (Apantac eXchange Protocol, version 2)
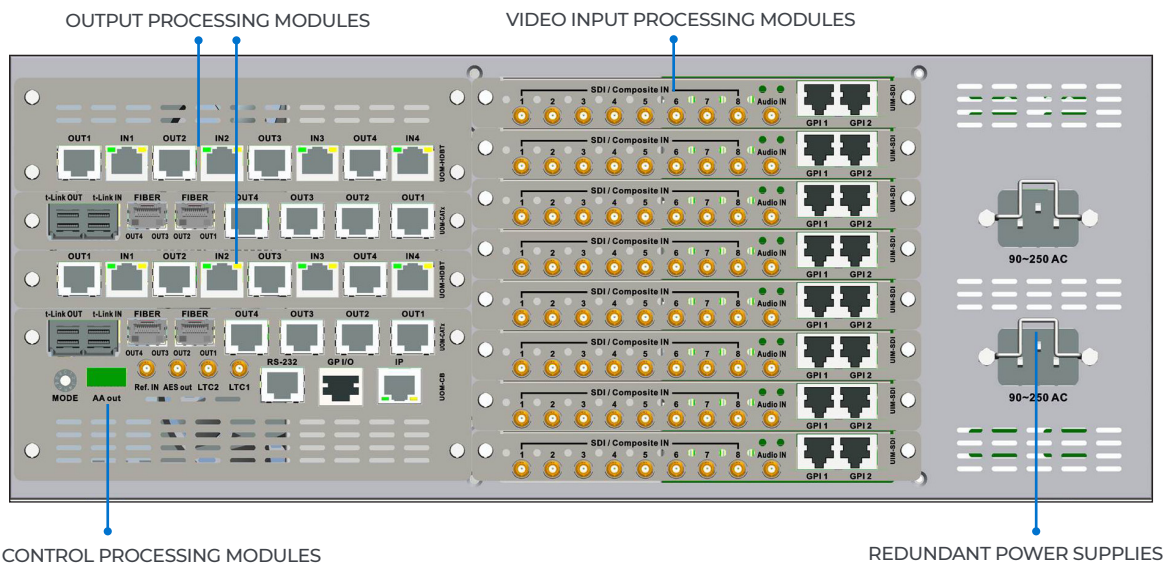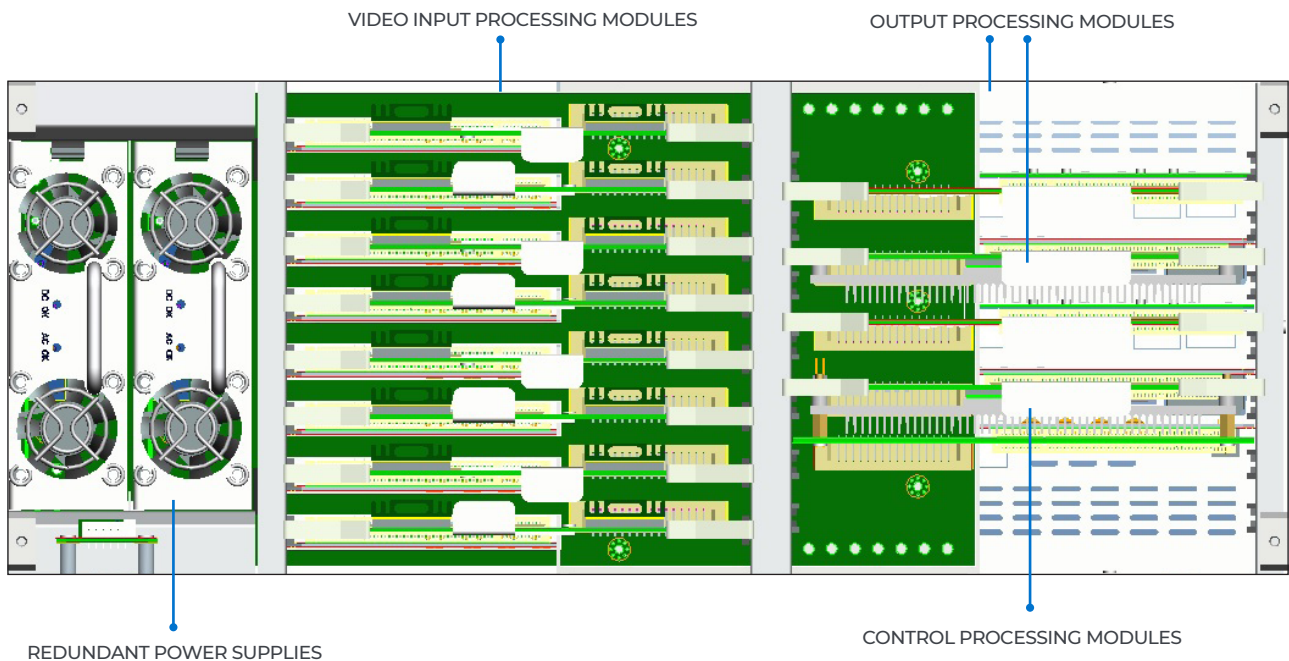- Supports 3rd party routers and production switcher protocols*

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Architectural Concepts

Frame sizes

- T# comes in 3 different frame sizes, 1 RU, 2 RU and 4 RU. All frames are modular, therefore different I/O modules can be inserted to form different sizes of multiviewers, and all boards are interchangeable between the frames
- T# comes standard with redundant power supplies
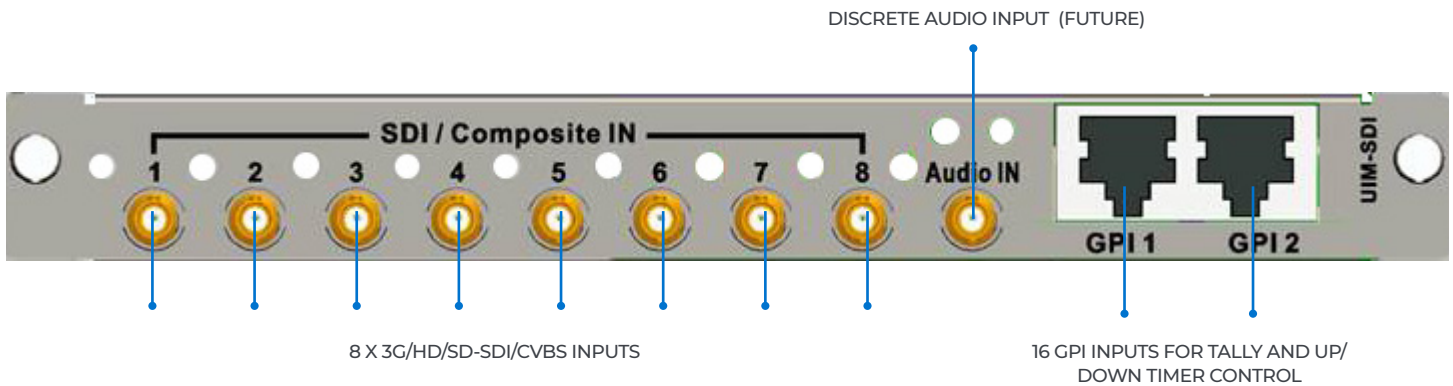- Cooling flow is front to back

VIDEO INPUT PROCESSING MODULES

OUTPUT PROCESSING MODULES

REDUNDANT POWER SUPPLIES

CONTROL PROCESSING MODULES

OUTPUT PROCESSING MODULES

VIDEO INPUT PROCESSING MODULES

CONTROL PROCESSING MODULES
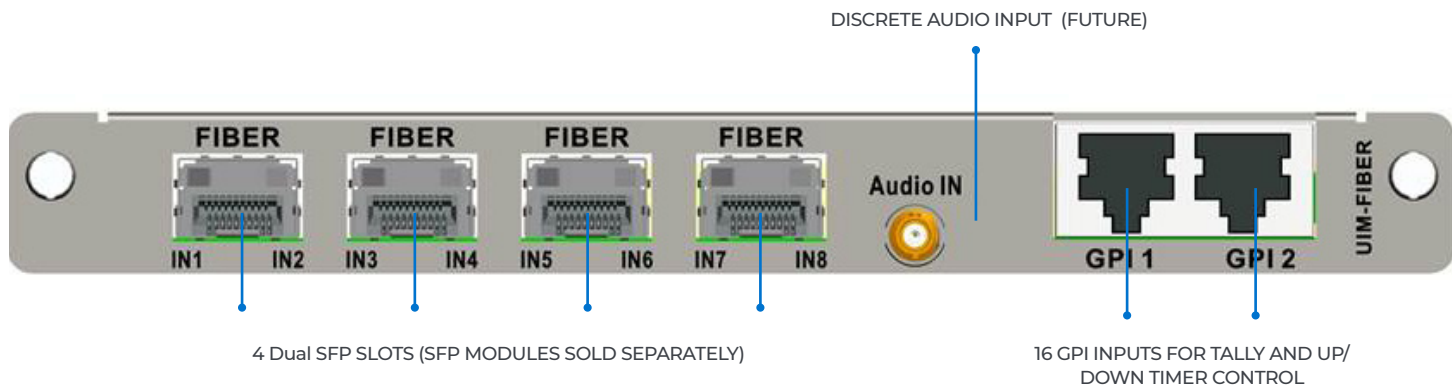
REDUNDANT POWER SUPPLIES

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Standard Broadcast Input Boards (UIM-SDI)

- Each input card supports 8 video inputs
- All input cards are hot swappable
- Automatic input aspect ratio detection, by frequency or WSS and AFD
- Decodes closed captioning on line 21, CEA 608/708 on each input
- Decodes and displays 16 channels of embedded audio per SDI input
- When fully populated, can display up to 64 SDI/composite windows per display
- Can mix and match with other input cards

DISCRETE AUDIO INPUT (FUTURE)

8 X 3G/HD/SD-SDI/CVBS INPUTS

16 GPI INPUTS FOR TALLY AND UP/
DOWN TIMER CONTROL

SFP Fibert Input Boards (UIM-SFP)

- Has all functionality of the standard broadcast input boards
- Instead of fixed BNCs, there are four dual input SFP slots
- SFP slots for SDI or IP fiber modules. SFP modules sold separately
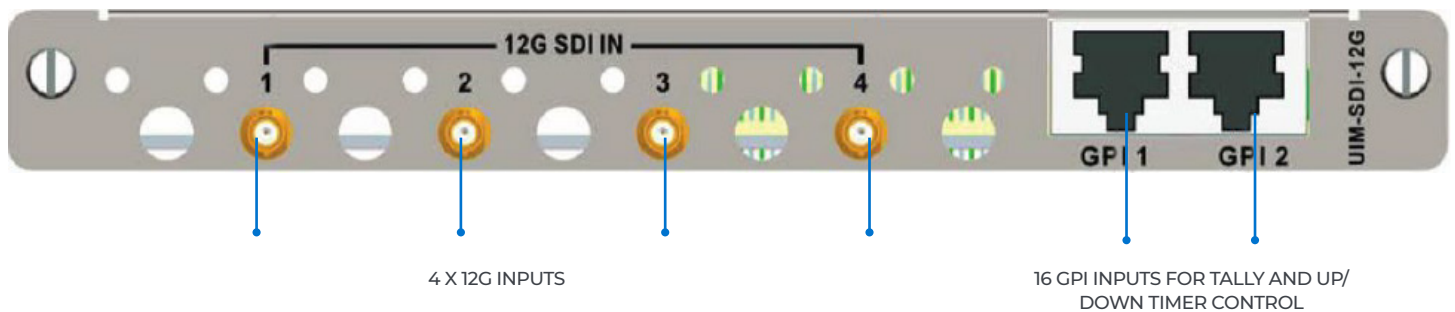- Can mix and match with other input cards

DISCRETE AUDIO INPUT (FUTURE)

4 Dual SFP SLOTS (SFP MODULES SOLD SEPARATELY)

16 GPI INPUTS FOR TALLY AND UP/
DOWN TIMER CONTROL

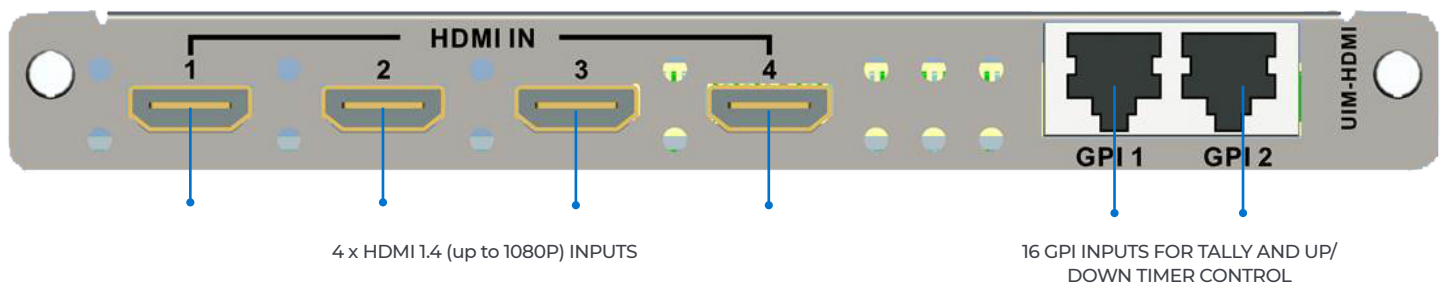APANTAC

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12G SDI Broadcast Input Boards (UIM-SDI-12G)

- Each input card supports 4 12G/3G/HD-SDI video inputs
- All input cards are hot swappable
- Decodes and displays 16 channels of embedded audio per SDI input
- When fully populated, can display up to 32 12G SDI windows per display
- Can mix and match with other input cards

4 X 12G INPUTS   16 GPI INPUTS FOR TALLY AND UP/
                                              DOWN TIMER CONTROL

HDMI Input Boards (UIM-HDMI) - 4 Inputs

- Each input card supports 4 HDMI 1.4 inputs
- All input cards are hot swappable
- Decodes and displays 4 channels of embedded audio per HDMI input
- When fully populated, can display up to 32 HDMI windows per display
- Can mix and match with other input cards

4 x HDMI 1.4 (up to 1080P) INPUTS   16 GPI INPUTS FOR TALLY AND UP/
                                               DOWN TIMER CONTROL

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HDMI Input Boards (UIM-HDMI-8) - 8 Inputs

- Each input card supports 8 HDMI 1.4 inputs with Mini HDMI connectors
- All input cards are hot swappable
- Decodes and displays 4 channels of embedded audio per HDMI input
- When fully populated, can display up to 64 HDMI windows per display
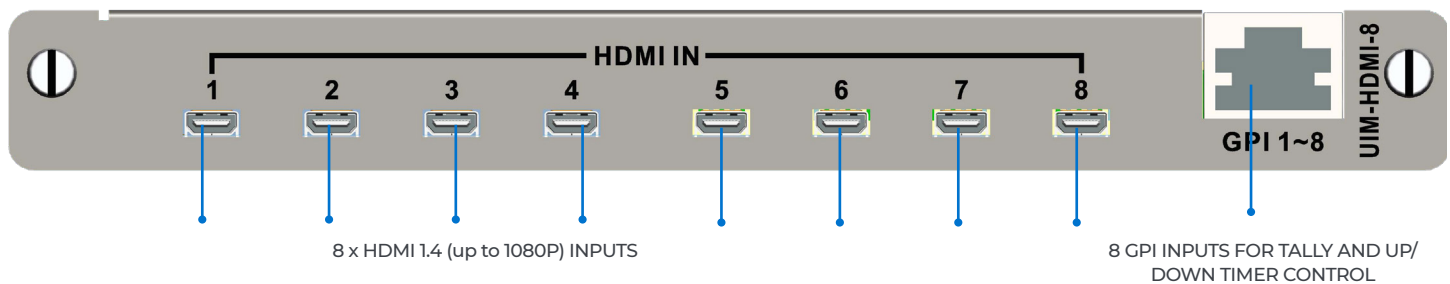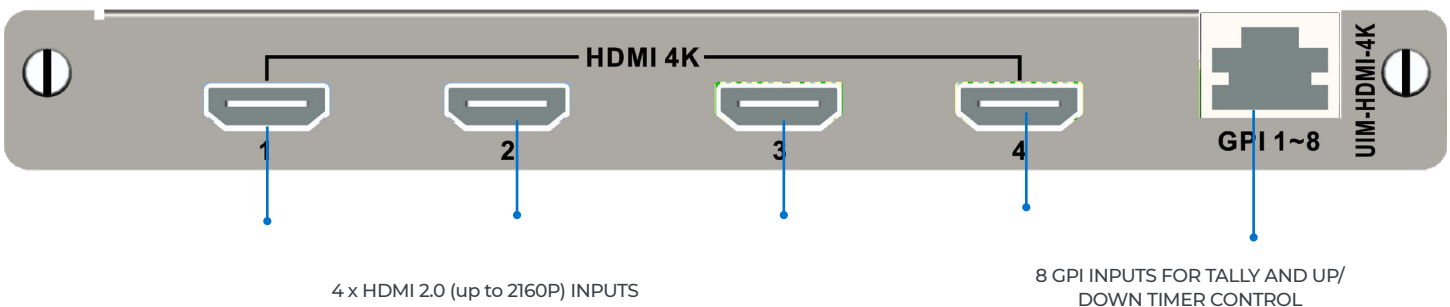- Can mix and match with other input cards

HDMI IN

1 2 3 4 5 6 7 8

GPI 1~8

UIM-HDMI-8

8 x HDMI 1.4 (up to 1080P) INPUTS

8 GPI INPUTS FOR TALLY AND UP/DOWN TIMER CONTROL

HDMI 2.0 UHD Input Boards (UIM-HDMI-4K)

- Each input card supports 4 HDMI 2.0 inputs
- All input cards are hot swappable
- Decodes and displays 4 channels of embedded audio per HDMI input
- When fully populated, can display up to 32 HDMI windows per display
- Can mix and match with other input cards
** Does not support 4:2:2 or HDR inputs

HDMI 4K

1 2 3 4

GPI 1~8

UIM-HDMI-4K

4 x HDMI 2.0 (up to 2160P) INPUTS

8 GPI INPUTS FOR TALLY AND UP/DOWN TIMER CONTROL

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DP 1.2 Input Boards (UIM-DP-4K)

• Each input card supports 4 DP 1.2 inputs
• All input cards are hot pluggable
• Decodes and displays 4 channels of embedded audio per DP input
• When fully populated, can display up to 32 HDMI windows per display
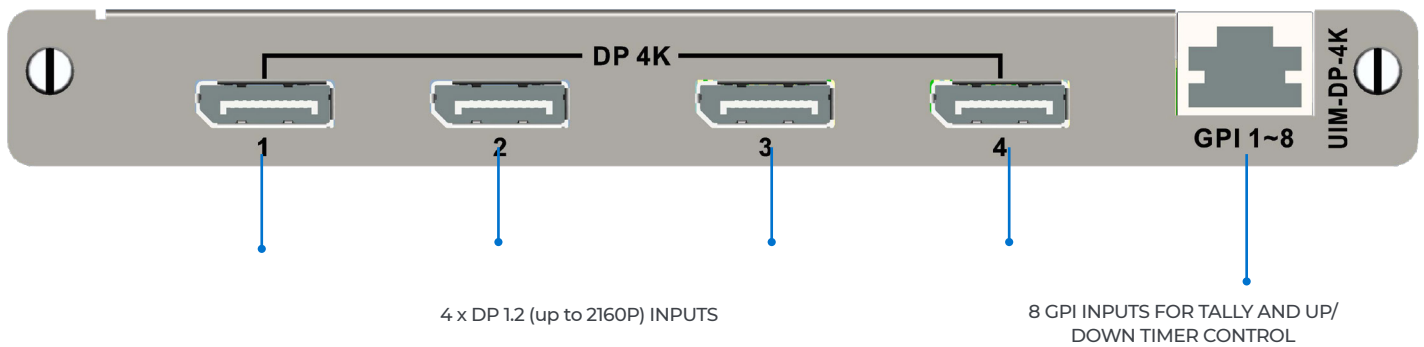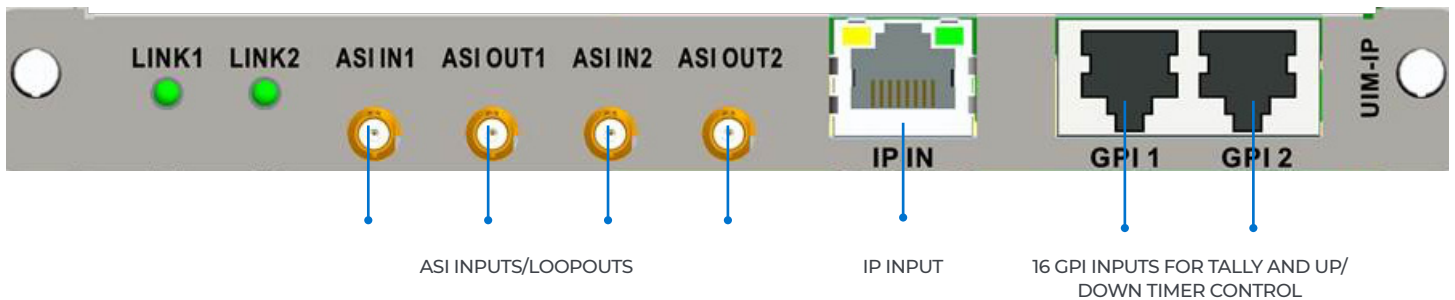• Can mix and match with other input cards

DP 4K

1 **2** **3** **4** **GPI 1~8** **UIM-DP-4K**

4 x DP 1.2 (up to 2160P) INPUTS

8 GPI INPUTS FOR TALLY AND UP/DOWN TIMER CONTROL

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IP Input Boards (UIM-IP)

- Each input card has one RJ45 input and 2 ASI inputs with loop outs
- Each input card can deode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MEG-2 transport stream specificaiton
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode, Mpeg2 MP@HL, resolution up to 1080P/1080i@60Hz/50Hz
- All input cards are hot swappable
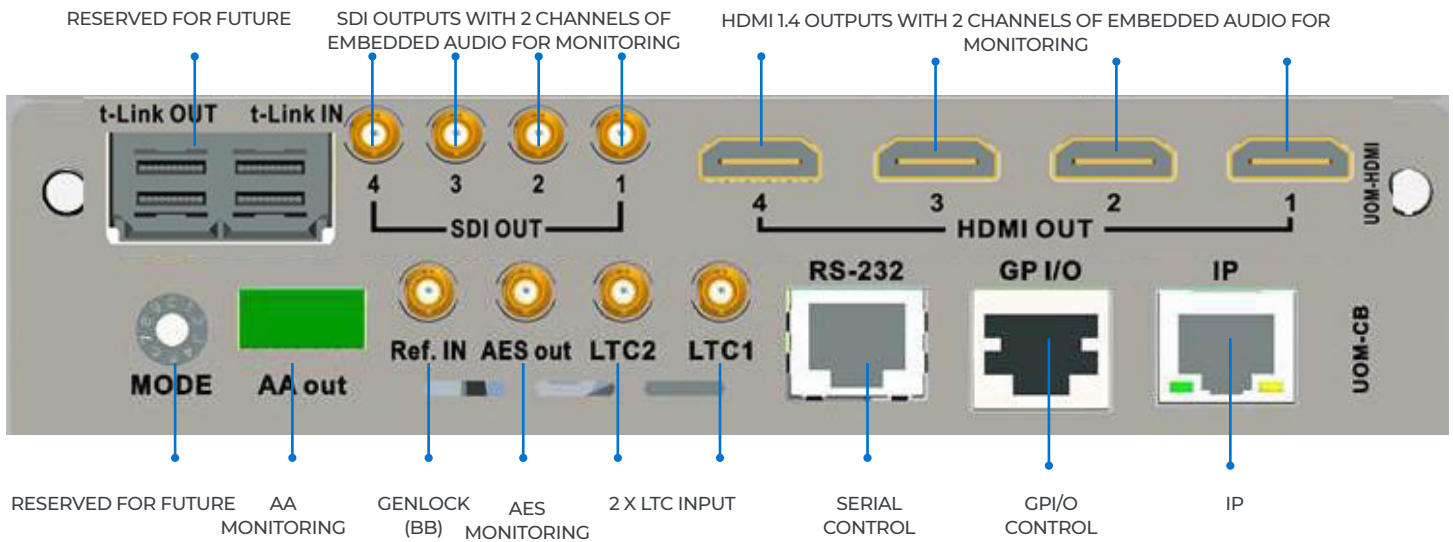- When fully populated can display up to 32 decoded IP windows per display

ASI INPUTS/LOOPOUTS   IP INPUT   16 GPI INPUTS FOR TALLY AND UP/
                                                       DOWN TIMER CONTROL

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Standard Output Board (UOM-H-A)

- 4 HDMI and 4 SDI outputs + control interfaces
- HDMI outputs resolution up to 1080P@50/60Hz
- SDI outputs resolution up to 1080P@50/59.94Hz
- IP, GPI/O, serial (RS-232), 2 x LTC, AES and AA audio monitoring outputs and genlock

RESERVED FOR FUTURE   SDI OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING

RESERVED FOR FUTURE   AA MONITORING   GENLOCK (BB)   AES MONITORING   2 X LTC INPUT   SERIAL CONTROL   GPI/O CONTROL   IP

Expansion Output Board (UOM-H-B)

- Adds 4 more HDMI and SDI outputs
- HDMI outputs resolution up to 1080P@50/60Hz
- SDI outputs resolution up to 1080P@50/59.94Hz

RESERVED FOR FUTURE   SDI OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING
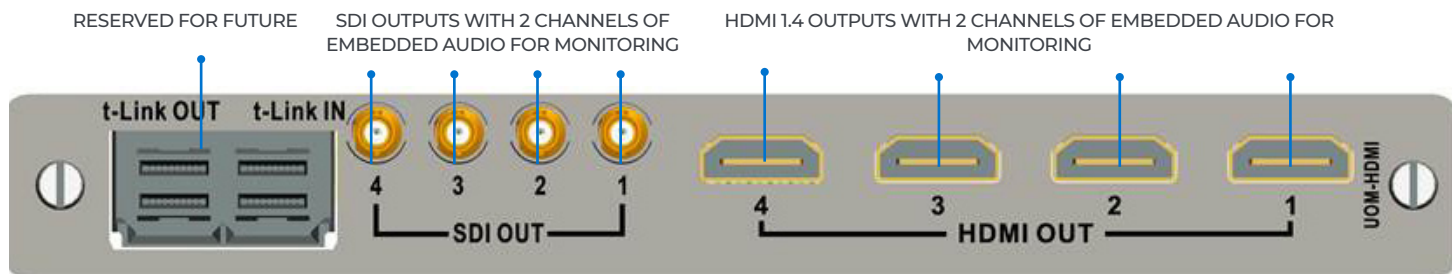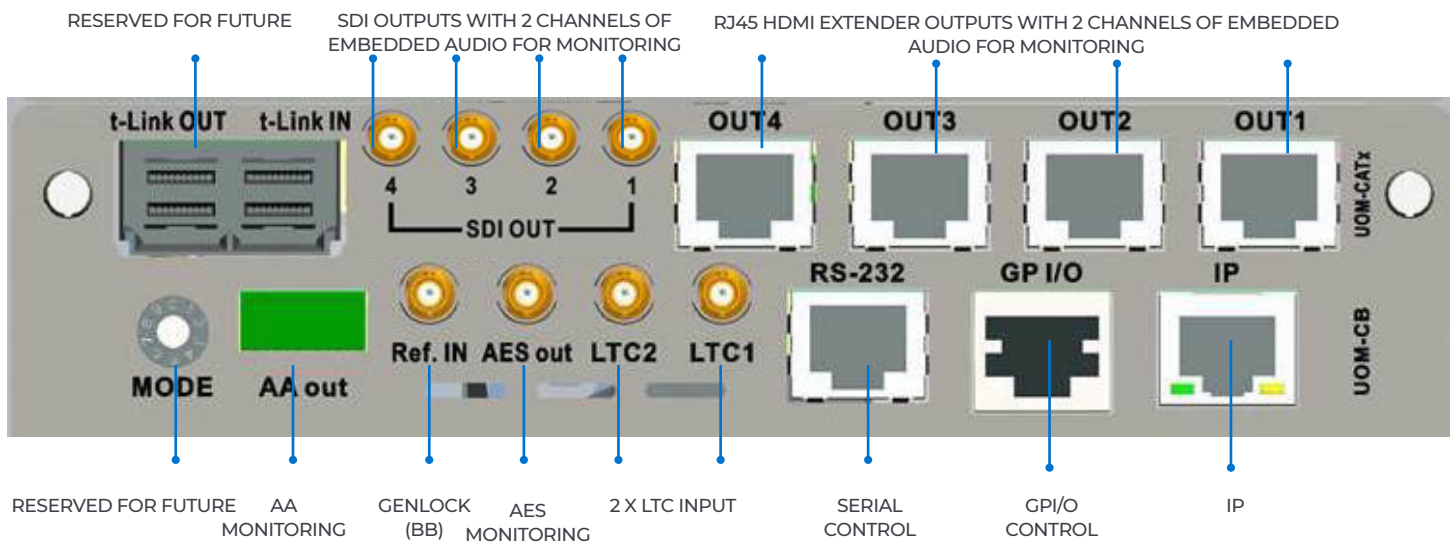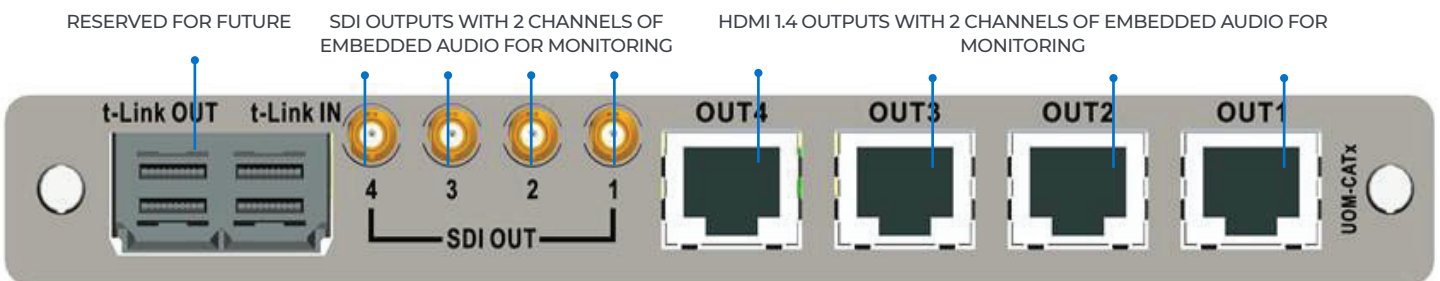
Optional CAT-6 Extender Output Board (UOM-CAT-A)

- 4 RJ45 HDMI extender and 4 SDI outputs + control interface
- HDMI outputs resolution up to 1080P@50/60Hz
- SDI outputs resolution up to 1080P@50/59.94Hz
- IP, GPI/O, serial (RS-232), 2 x LTC, AES and AA audio monitoring outputs and genlock

RESERVED FOR FUTURE   SDI OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING   RJ45 HDMI EXTENDER OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING

RESERVED FOR FUTURE   AA MONITORING   GENLOCK (BB)   AES MONITORING   2 X LTC INPUT   SERIAL CONTROL   GPI/O CONTROL   IP

Optional Expansion CAT-6 Extender Output Board (UOM-CAT-B)

- Adds 4 more RJ45 HDMI extender and SDI outputs
- HDMI outputs resolution up to 1080P@50/60Hz
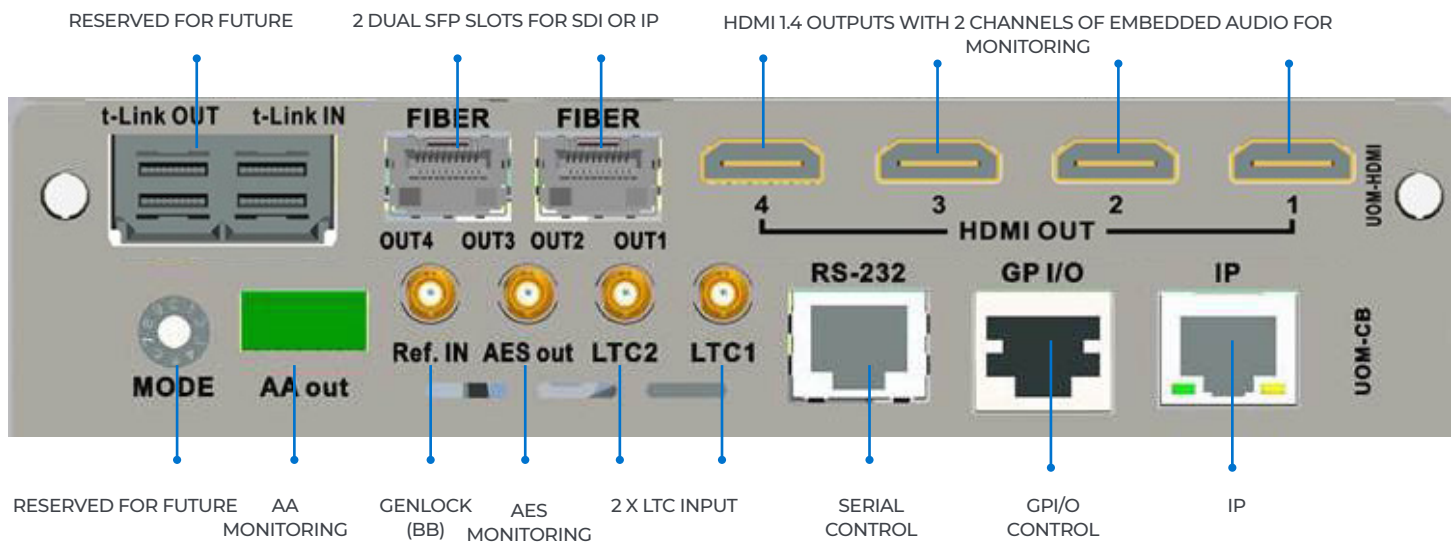- SDI outputs resolution up to 1080P@50/59.94Hz

RESERVED FOR FUTURE   SDI OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING
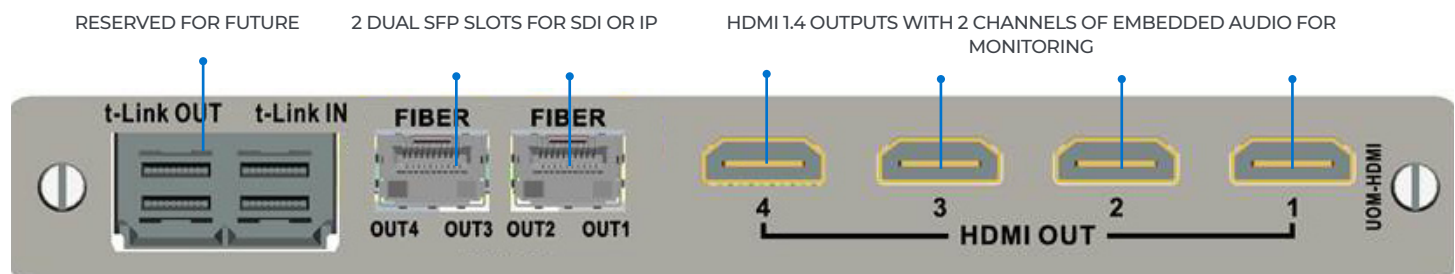
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Optional Output Board with HDMI and SFP (UOM-H-SFP-A)

- 4 HDMI and 4 SFP outputs + control interfaces
- HDMI outputs resolution up to 1080P@50/60Hz
- SFP slots for SDI or IP fiber modules. SFP modules are sold separately
- IP, GPI/O, serial (RS-232), 2 x LTC, AES and AA audio monitoring outputs and genlock

RESERVED FOR FUTURE   2 DUAL SFP SLOTS FOR SDI OR IP   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING

RESERVED FOR FUTURE   AA MONITORING   GENLOCK (BB)   AES MONITORING   2 X LTC INPUT   SERIAL CONTROL   GPI/O CONTROL   IP
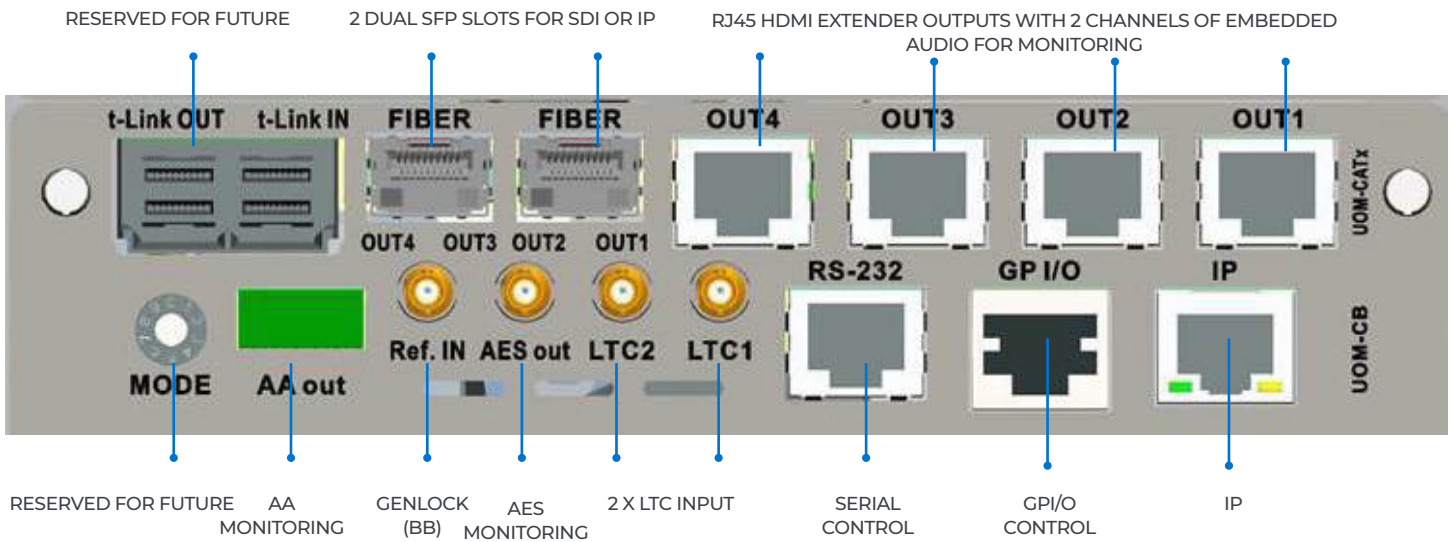
Expansion Output Board with HDMI and SFP (UOM-H-SFP-B)

- Adds 4 more HDMI and SDI outputs
- HDMI outputs resolution up to 1080P@50/60Hz
- SFP slots for SDI or IP fiber modules. SFP modules are sold separately

RESERVED FOR FUTURE   2 DUAL SFP SLOTS FOR SDI OR IP   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING
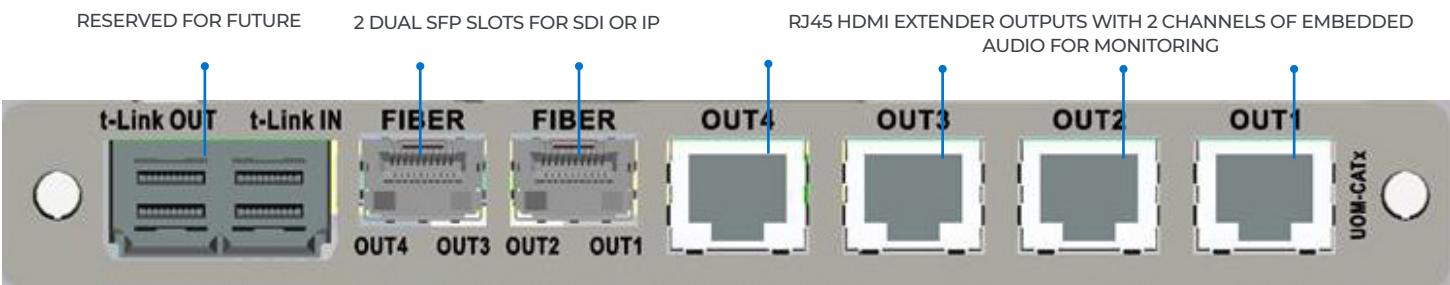
Optional CAT-6 Extender and SFP Output Board (UOM-CAT-SFP-A)

- 4 RJ45 HDMI extender and 4 SDI outputs + control interface
- HDMI outputs resolution up to 1080P@50/60Hz
- SFP slots for SDI or IP fiber modules. SFP modules are sold separately
- IP, GPI/O, serial (RS-232), 2 x LTC, AES and AA audio monitoring outputs and genlock

RESERVED FOR FUTURE | 2 DUAL SFP SLOTS FOR SDI OR IP | RJ45 HDMI EXTENDER OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING

RESERVED FOR FUTURE | AA MONITORING | GENLOCK (BB) | AES MONITORING | 2 X LTC INPUT | SERIAL CONTROL | GPI/O CONTROL | IP

Optional Expansion CAT-6 Extender and SFP Output Board (UOM-CAT-SFP-B)

- Adds 4 more RJ45 HDMI extender and SDI outputs
- HDMI outputs resolution up to 1080P@50/60Hz
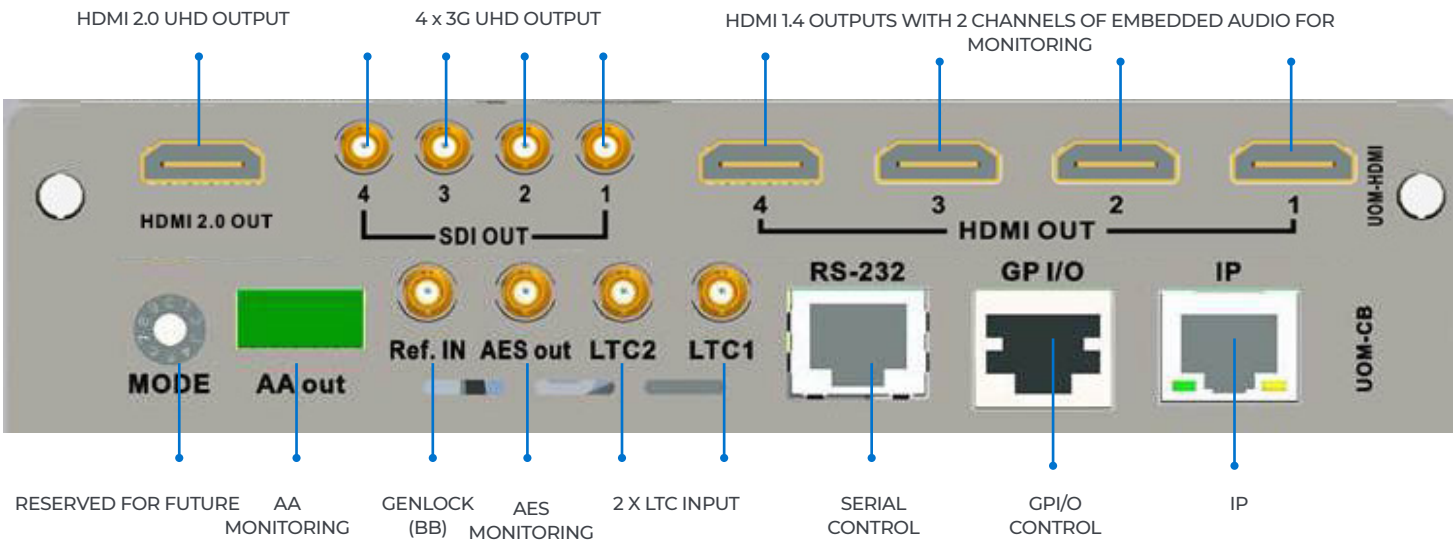- SFP slots for SDI or IP fiber modules. SFP modules are sold separately

RESERVED FOR FUTURE | 2 DUAL SFP SLOTS FOR SDI OR IP | RJ45 HDMI EXTENDER OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING
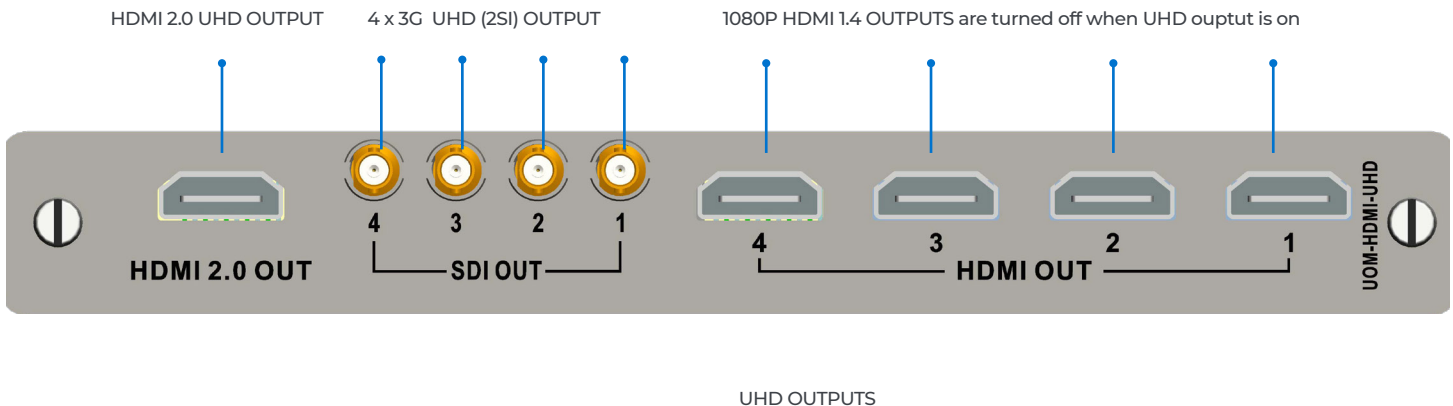
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Optional Output Board with HDMI 2.0 (UOM-UHD-A)

- 1 x HDMI 2.0 (UHD) and 4 x 3G UHD outputs + control interfaces
- HDMI 2.0 outputs resolution up to UHD@50/60Hz
- HDMI 1.4 outputs resolutions up to 1080P@50/50Hz
- IP, GPI/O, serial (RS-232), 2 x LTC, AES and AA audio monitoring outputs and genlock

HDMI 2.0 UHD OUTPUT   4 x 3G UHD OUTPUT   HDMI 1.4 OUTPUTS WITH 2 CHANNELS OF EMBEDDED AUDIO FOR MONITORING

RESERVED FOR FUTURE   AA MONITORING   GENLOCK (BB)   AES MONITORING   2 X LTC INPUT   SERIAL CONTROL   GPI/O CONTROL   IP

Optional HDMI 2.0 UHD Output Board (UOM-UHD-B)

- 1 x HDMI 2.0 (UHD) output
- 4 x 3G UHD outputs (Quad link UHD)

HDMI 2.0 UHD OUTPUT   4 x 3G UHD (2SI) OUTPUT   1080P HDMI 1.4 OUTPUTS are turned off when UHD ouptut is on

UHD OUTPUTS
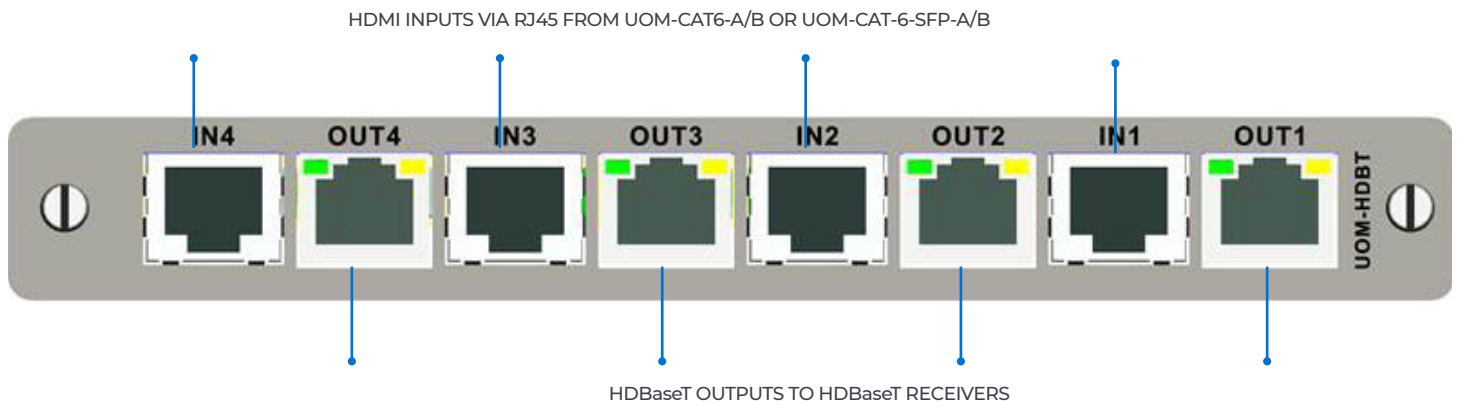
Optional HDBaseT Extender Board (UOM-HDBT)

- 4 HDBaseT extender outputs
- Must be used with UOM-CAT6-A or B or UOM-CAT6-SFP-A or B output boards
- Maximum 2 per T# frame

HDMI INPUTS VIA RJ45 FROM UOM-CAT6-A/B OR UOM-CAT-6-SFP-A/B

HDBaseT OUTPUTS TO HDBaseT RECEIVERS

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Specifications

VIDEO INPUTS		HDMI 2.0	
Connectors	HD BNC	Signal	HDMI 2.0 up to 2160P
12G-SDI		Max Resolution	3840x2160P@60Hz
Signal	SMPTE 2082	Audio	4 Channels of embedded audio
Formats	3840x2160P60Hz 3840x2160P59.94 3840x2160P50Hz	Connectors	4 Type A HDMI
Audio	16 channels of embedded audio	**IP: ASI/H.264**	
3G-SDI		Signal	ASI/H.264
Signal	SMPTE 424M-2006, Level A and B	Compliant to ISO/IEC 13818-1 MPEG2 Transport Stream	
Formats	1920x1080P60Hz, 1920x1080P59.94 1920x1080P50Hz	De-multiplexing incoming SPTS/MPTS	
		MPEG2/H.264 decode, MPEG2 MP@HL, up to 1080P/i@50/60Hz	
Audio	SMPTE 299M	Connectors	4 HDBNC (2 in, 2 out for ASI), 1 RJ45
HD-SDI		**DP 1.2**	
Signal	SMPTE 292M	Signal	DP 1.2 up to 3840x2160P
Format	720p29.97 Hz, 720p25Hz, 720p24Hz, 720p59.94Hz 729p50Hz, 1080i59.94Hz 1080i29.97Hz (PSF), 1080p29.97Hz 1080i50Hz, 1080i25 (PSF) 1080p25Hz, 1080p23.98Hz/24Hz, 1080i50Hz	Audio	4 Channels of embedded audio
		Connectors	4 Display Port
		ANALOG AUDIO OUT - Phoenix Connecto	
		Impedance	< 600 ohm
Audio	SMPTE 299M	**VIDEO PROCESSING PERFORMANCE**	
SD-SDI	4:2:2 SMPTE 259M-C (270 mbps)	Signal Path	8 bit Ycbcr to 24bit RGB
Formats	525 and 625	Processing delay	1 frame in genlock mode 1 - 2 frames in non-genlock mode
Audio	SMPTE 274-1994		
COMPOSITE		**REFERENCE - Not Required**	
Signal	NTSC (SMPTE-170M), PAL (ITU624-2)	Externa	**BB**
Signal Level	1 V nominal	Connecto	HD-BNC
DC Offset	0V, + - 0.1V	**MULTIVIEWER OUTPUTS**	
Impedance	75 ohm	HDMI	4 to 16 HDMI 1.4, 1 to 4 HDMI 2.0
HDMI 1.4		Cable Reach	15 ft
Signal	HDMI 1.4 up to 1080P	Signal Path	8/10 bit output
Max Resolution	1920x1080P@60Hz	Format	2160P (UHD), 1080P, 50/60 and 59.94 Hz
Audio	4 Channels of embedded audio	3G-SDI	**4 to16 1080P, 1 to 4 Quadlink 12G**
Connectors	4 Type A HDMI or 8 Mini HDMI	Signal	3G/HD-SDI SMPTE 424M and 292M

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Specifications

LTC INPUTS		T# (4 RU) FRAME	
Signal	SMPTE 12M-1995 (EBU3259-E)	Power supply	Built-in redundant hot swappable PS
Level	500 mV p-p to 10 V p-p	Input voltage	90 - 250 V
Impedance	> 10k ohm	Frequency	50 / 60 Hz
Refresh Rate	50/59.94	Power	500 W max
		Dimension	446 x 455 x 176 mm
COMMUNICATION		**TEMPERATURE**	
ETHERNET	10/100/1000 Base-T	Range	0 - 40 C
Connector	RJ-45	Weight	19.6 kg
SERIAL PORT	**RS-232**	**COMMUNICATIONS**	
Connector	RJ45	Ports	Ethernet 10/100/1000 Base-T
		Alarm	GPI contact
T# (2 RU) FRAME		**GPI In**	
Power supply	Built-in redundant power supplies	Connectors	RJ50
Input voltage	90 - 250 V	Number of inputs	16 per input card
Frequency	50 / 60Hz	Pull up voltage	+5 V
Power	200 W max	Source current	2 mA
Dimension	446 x 455 x 87 mm	Activation	0.1 V max
TEMPERATURE		Over voltage	+6.5 V
Range	0 - 40 C	Pulse duration	8 ms min
Weight	10.3 kg	**GPI BI-DIRECTIONAL**	
COMMUNICATIONS		Connectors	RJ50
Ports	Ethernet 10/100/1000 Base-T	Number of I/O	8
Alarm	GPI contacts	**INPUT MODE**	
		Pull up voltage	+5 V
		Source current	2 mA
		Activation	0.1 V max
		Over voltage	+6.5 V
		Pulse duration	8 ms min
		OUTPUT MODE	
		Current	50 mA max
		Reverse current	-100 mA max