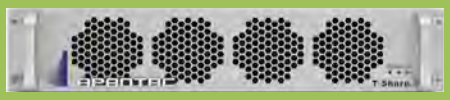
TAHOMA T# (T-SHARP) MULTIVIEWERS

T#: 3 FRAME SIZES, 52 PRE-CONFIGURED SDI MULTIVIEWER MODELS. ANY PRE-CONFIGURED MULTIVIEWER CAN BE EXPANDED EASILY BY ADDING INPUT OR OUTPUT BOARDS

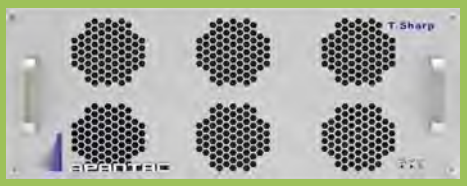
T# 1 RU

T# - 16x4
T# - 8x4-H
T# - 16x4-IP



T# 2 RU

T# - 16x4
T# - 8x4-H
T# - 12x4-H
T# - 16x4-H
T# - 16x4-IP
T# - 24x4
T# - 24-4-IP
T# - 32x4
T# - 32x4-IP



T# 4 RU

T# - 8x4
T# - 8x4-H
T# - 8x4-IP
T# - 8x8
T# - 8x8-H
T# - 8x8-IP
T# - 16x4
T# - 16x4-H
T# - 16x4-IP
T# - 16x8
T# - 16x8-H
T# - 16x8-IP
T# - 24x4
T# - 24x4-H
T# - 24x4-IP
T# - 24x8
T# - 24x8-H
T# - 24x8-IP
T# - 32x4
T# - 32x4-H
T# - 32x4-IP
T# - 32x8
T# - 32x8-H
T# - 32x8-IP
T# - 40x4
T# - 40x4-IP
T# - 40x8
T# - 40x8-IP
T# - 48x4
T# - 48-4-IP
T# - 48x8
T# - 48-8-IP
T# - 56x4
T# - 56x4-IP
T# - 56x8
T# - 56x8-IP
T# - 64x4
T# - 64x4-IP
T# - 64x8
T# - 64x8-IP

TAHOMA T# (T-SHARP) MULTIVIEWERS

T# Multiviewer Platform

The newest member of the TAHOMA Multiviewer family

- Single frame of processing delay on baseband inputs
- Fast boot up (< 10 seconds)
- Modular architecture
- All input cards are hot swappable
  - CVBS to UHD input cards
  - HDMI input cards
  - IP (H.264/Mpeg4, Mpeg2) input cards
  - SFP input cards can accept SDI fiber or SMPTE 2022 SFPs
- Up to 4 outputs per output board (maximum 2 output boards = 8 outputs)
- Any input can be duplicated up to 64 times and displayed on any output, regardless of format
- Built-in video/audio alarm detection
  - video presence/format, video black, video frozen, no WSS/AFD
  - audio presence, audio high/low
- Visual and optional SNMP alarms & logging single frame of processing time
- Multiple labels per video window - UMD, OMD, IMD and standalone labels
- Up to 30 presets per output
- Supports TSL 3.1 and 4.0 (IP and RS232)
- Supports AXP2 (Apantac eXchange Protocol version 2)
- Supports 3rd party routers and production switchers*
- Redundant power supplies
- Multiple analog and digital clocks
- 2 sets of “safe area / safe title” markers per image
- 3 year limited warranty

***** Check with your Apantac representative for supported protocols

Up to 1920x1080P / 2048x1080P
HDMI/HDBaseT outputs
w/embedded audio

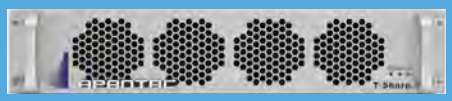
3Gpbs/HD/SD outputs
on BNC/SFP
w/embedded audio

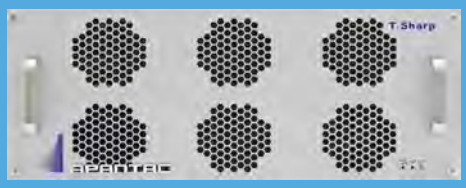
HDMI

SDI

AES/
AA

4 or 8 mutiviewer outputs





Up to 64 SDI inputs
or Up to 32 HDMI inputs
or Up to 64 H.264/ASI decodes
or Up to 32 ST-2022-# with SFPs

IP

Configuration port. 3rd party router / switcher interface. SNMP. ASCII protocol

2 x LTC

LTC #1 to synchronize clocks. LTC #2 for count down / count up timer trigger

RS-232/
RS-422

Serial Control Panel / Apantac ASCII Protocol / 3rd party Router/ Switcher

Discrete
Audio

Up to 128 channels of AES / AA Balanced/ Unbalanced discrete audio

GPI/O

Tally GPI/ Count up/ down clock Trigger

GPI/O

Alarm GPO or GPI Control Panel/ Trigger

notes

TAHOMA T# (T-SHARP) MULTIVIEWERS

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- Supports 3rd party routers and production switchers*
- Redundant power supplies
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Up to 1920x1080P / 2048x1080P
HDMI/HDBaseT outputs
w/embedded audio

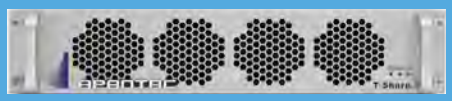
3Gpbs/HD/SD outputs
on BNC/SFP
w/embedded audio

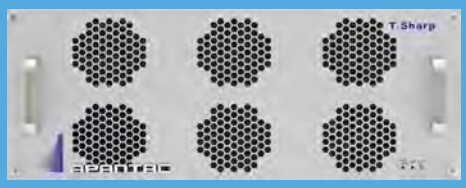
HDMI

SDI

AES/
AA

4 or 8 mutiviewer outputs





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Tally GPI/ Count up/ down clock Trigger

GPI/O

Alarm GPO or GPI Control Panel/ Trigger

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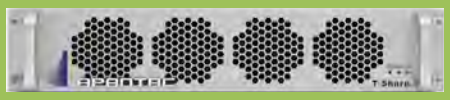
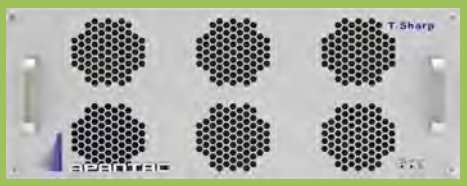
T# - 8x4-H
T# - 16x4-IP



T# 2 RU

T# - 16x4
T# - 8x4-H
T# - 12x4-H
T# - 16x4-H
T# - 16x4-IP
T# - 24x4
T# - 24-4-IP
T# - 32x4
T# - 32x4-IP



T# 4 RU

T# - 8x4
T# - 8x4-H
T# - 8x4-IP
T# - 8x8
T# - 8x8-H
T# - 8x8-IP
T# - 16x4
T# - 16x4-H
T# - 16x4-IP
T# - 16x8
T# - 16x8-H
T# - 16x8-IP
T# - 24x4
T# - 24x4-H
T# - 24x4-IP
T# - 24x8
T# - 24x8-H
T# - 24x8-IP
T# - 32x4
T# - 32x4-H
T# - 32x4-IP
T# - 32x8
T# - 32x8-H
T# - 32x8-IP
T# - 40x4
T# - 40x4-IP
T# - 40x8
T# - 40x8-IP
T# - 48x4
T# - 48-4-IP
T# - 48x8
T# - 48-8-IP
T# - 56x4
T# - 56x4-IP
T# - 56x8
T# - 56x8-IP
T# - 64x4
T# - 64x4-IP
T# - 64x8
T# - 64x8-IP

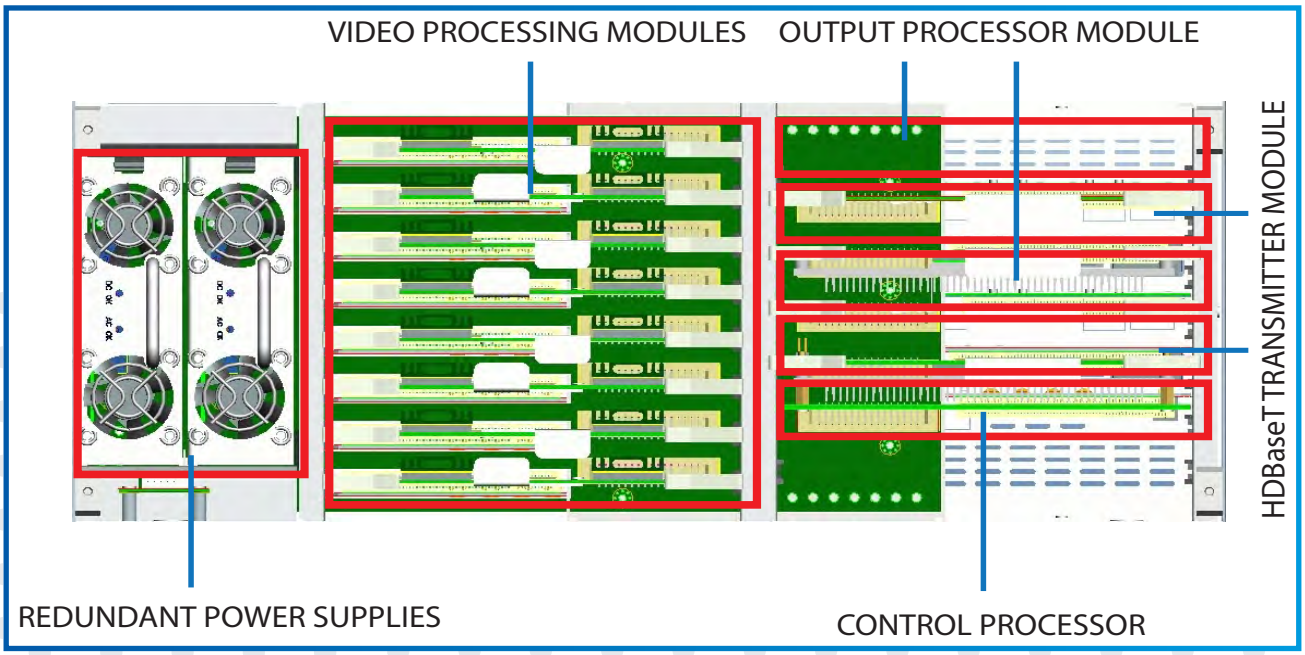
TAHOMA T# ARCHITECTURAL CONCEPTS

TAHOMAT# Frame Sizes

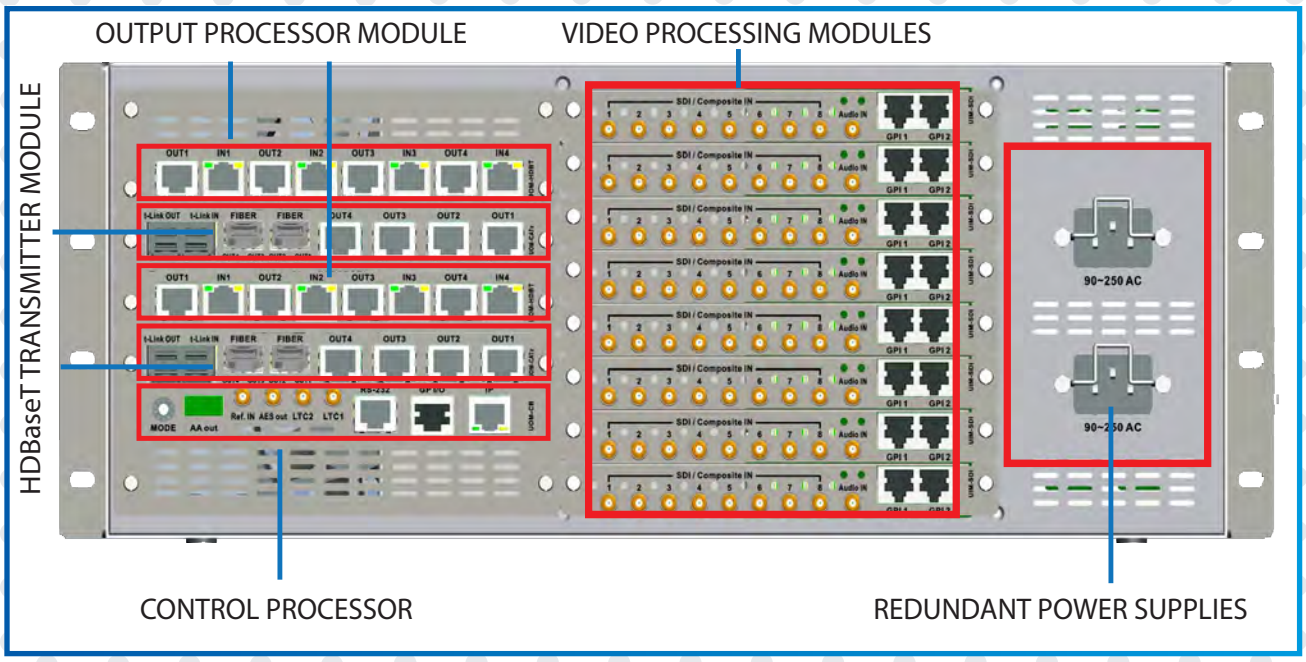
The T# comes in 3 different frame sizes, 1 RU, 2 RU and 4 RU. All of the frames are completely modular, therefore different I/O modules can be inserted to form different sizes of multiviewers.

- **All frames are completely modular**
- **Comes standard dual power supplies**
- **Coolings are front to back**

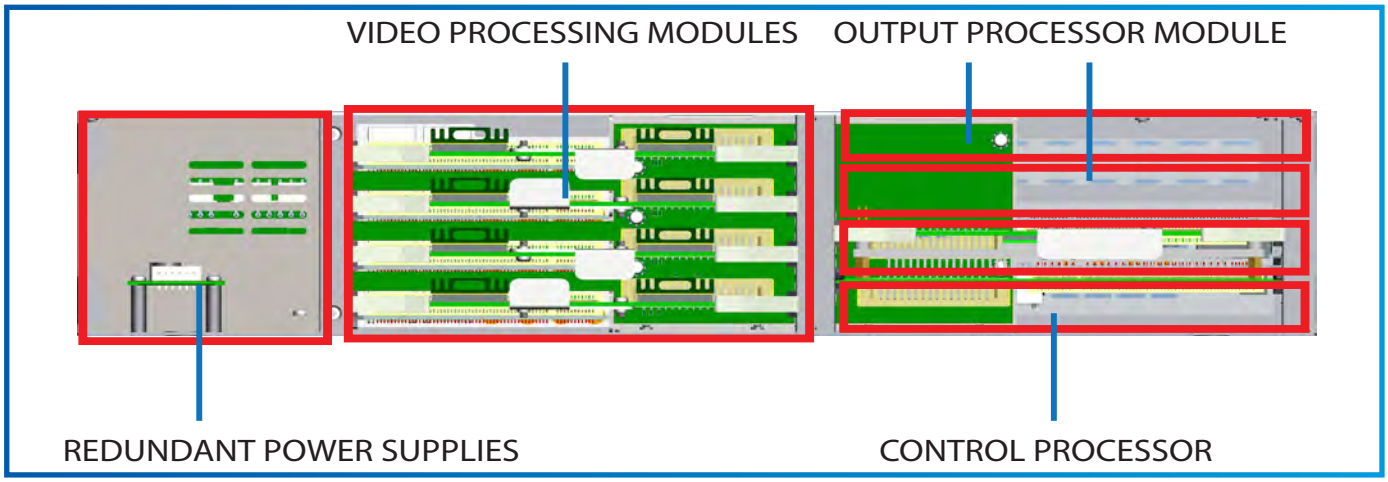
T# 4 RU Front Inside



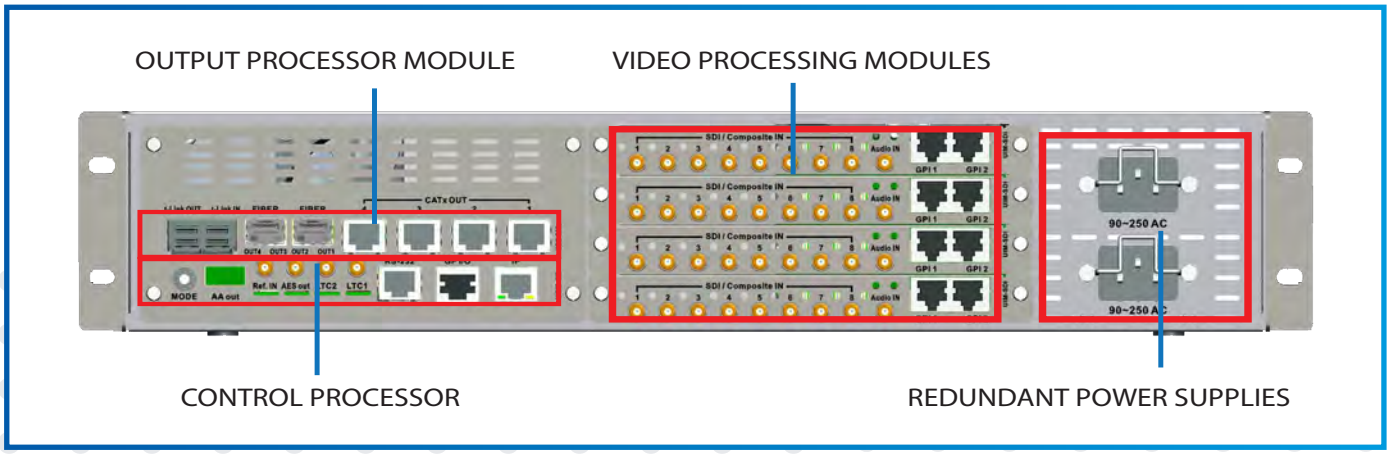
T# 4 RU Rear



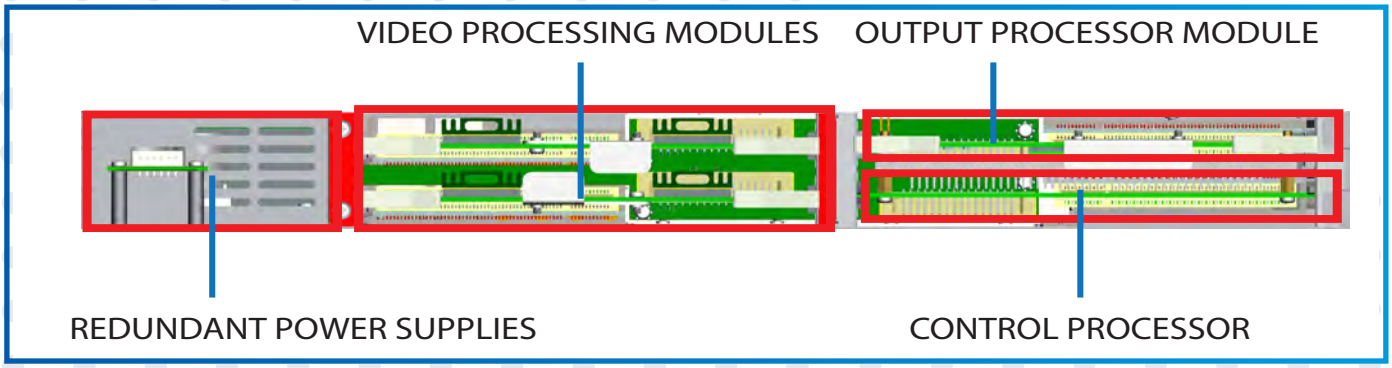
T# 2U Front Inside



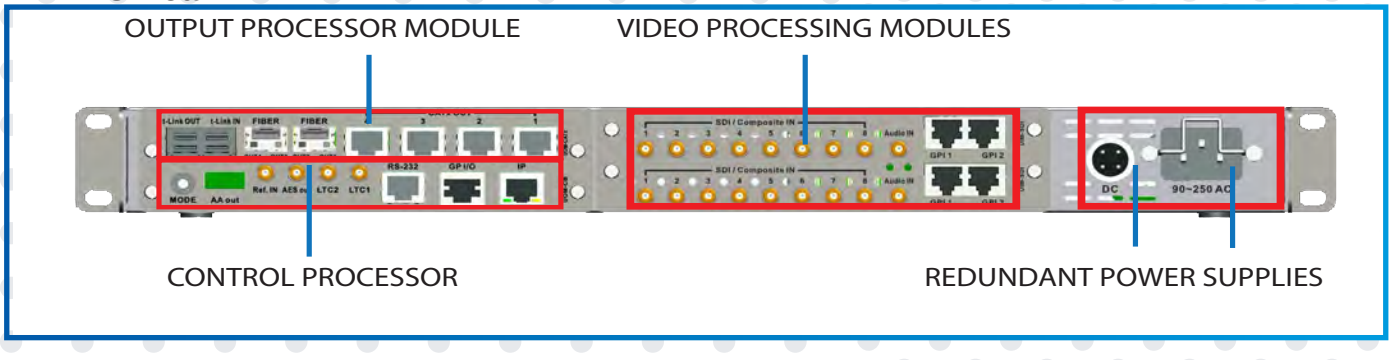
T# 2U Rear



T# 1U Front Inside



T# 1U Rear



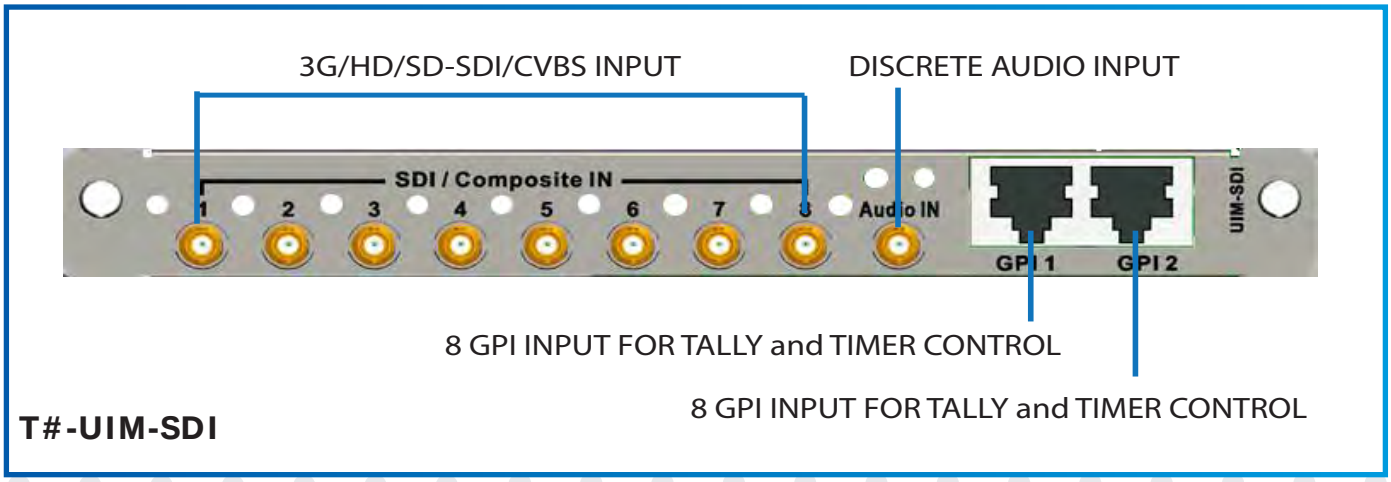
TAHOMA T# (T-SHARP) MULTIVIEWERS

The T# (T-Sharp) Multiviewer Platform

The newest member of the TAHOMA Multiviewer family

STANDARD BROADCAST INPUT BOARDS:

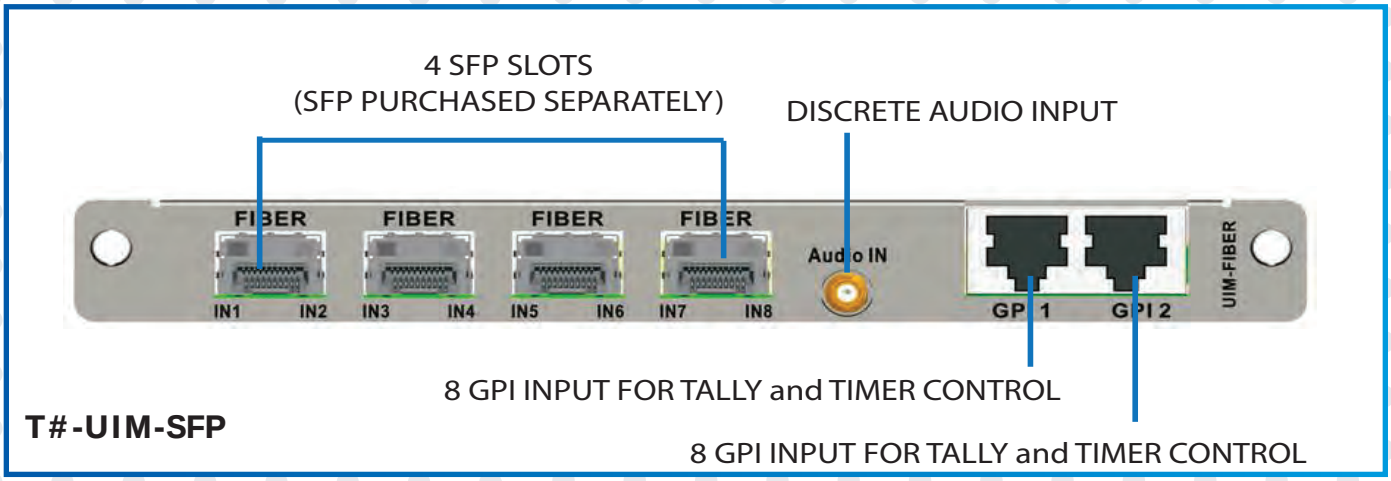
- Each input card supports 8 video inputs
- All input cards are hot pluggable
- Automatic input aspect ratio detection, by frequency, by WSS and AFD
- Decodes closed captioning on Line 21, CEA608/708 on each input
- Decode and display 16 channels of embedded audio per SDI input
- When fully populated, can display up to 64 SDI windows per display
- Can mix and match with other input boards



T#-UIM-SDI

SFP TYPE BROADCAST INPUT BOARDS:

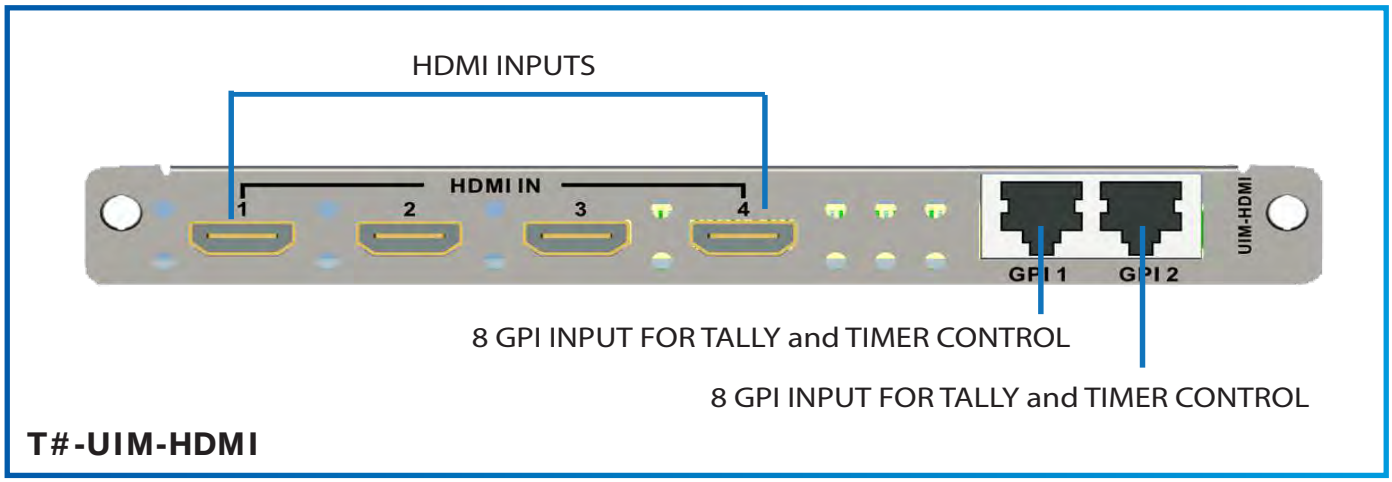
- Has all functionality of the standard broadcast input boards
- Intead of fixed BNCs, there are four SFP slots for future proof inputs
- SFP modules are sold separately



T#-UIM-SFP

HDMI INPUT BOARDS:

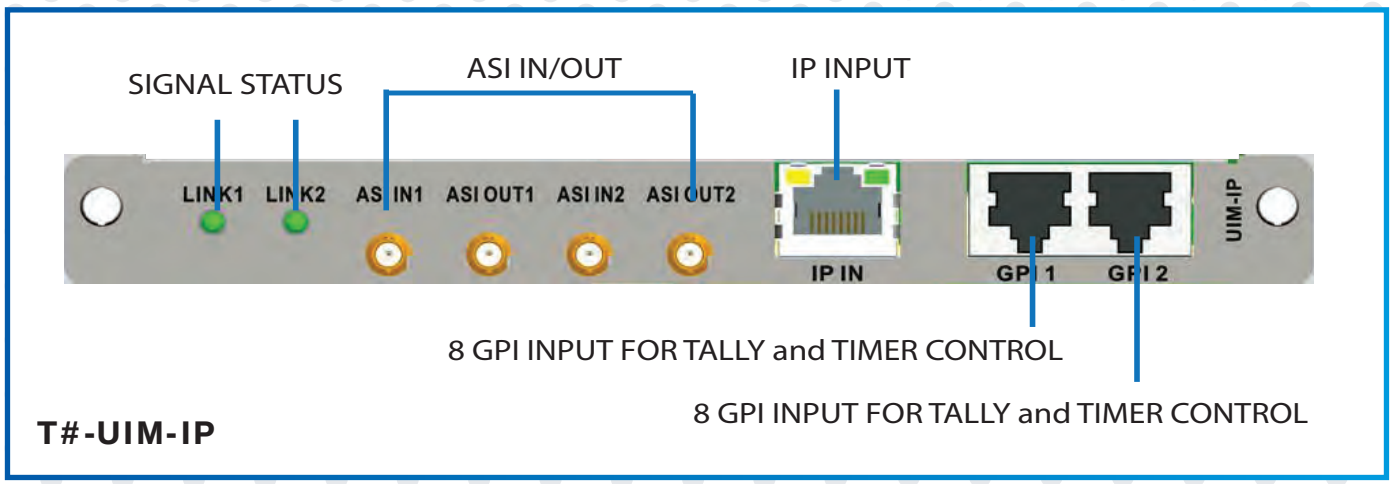
- Each input card supports 4 HDMI inputs
- Supports up to 1920x1200 (1080P) input resolutions
- All input cards are hot pluggable
- When fully populated, can display up to 32 HDMI windows per display
- Can mix and match with other input boards



T#-UIM-HDMI

IP INPUT BOARDS:

- Each input card has one RJ45 input and 2 ASI Inputs and Loop-out
- Each input card can decode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode
- MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz
- Supports both 50 and 60Hz
- All input cards are hot pluggable
- When fully populated, can display up to 64 decode IP windows per display
- Can mix and match with other input boards

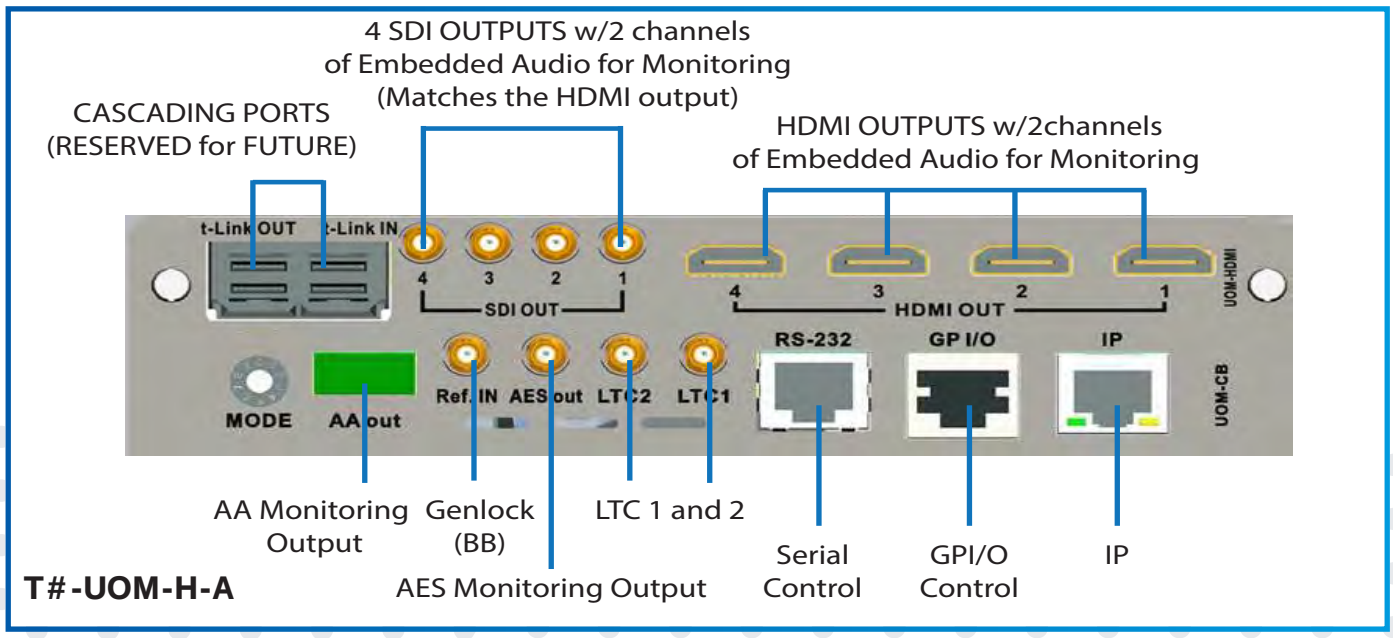


T#-UIM-IP

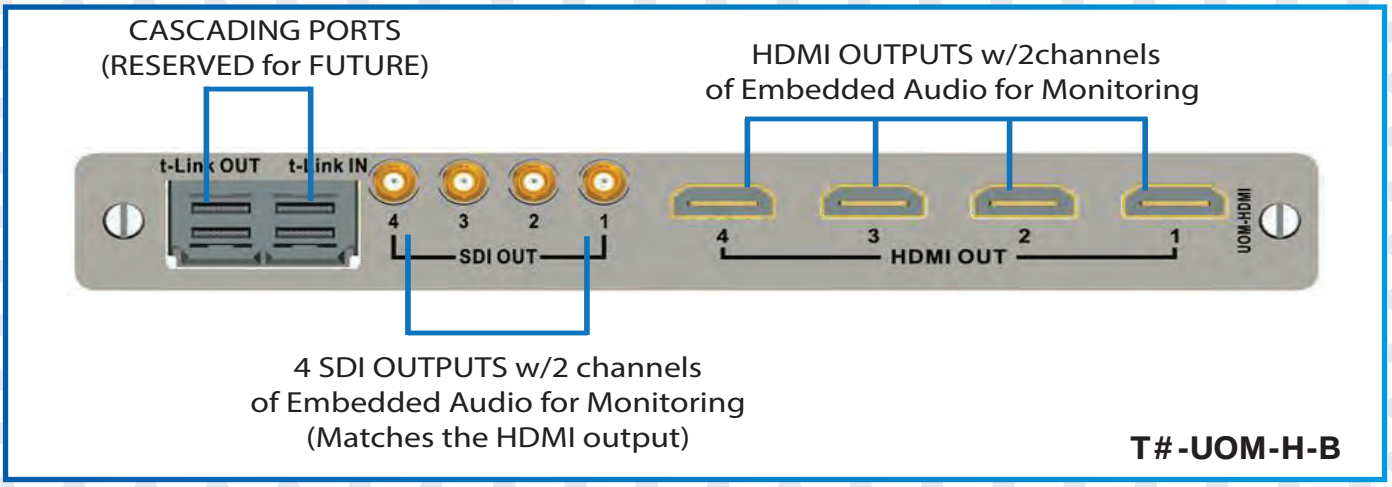
TAHOMA T# (T-SHARP) MULTIVIEWERS

OUTPUT BOARDS:

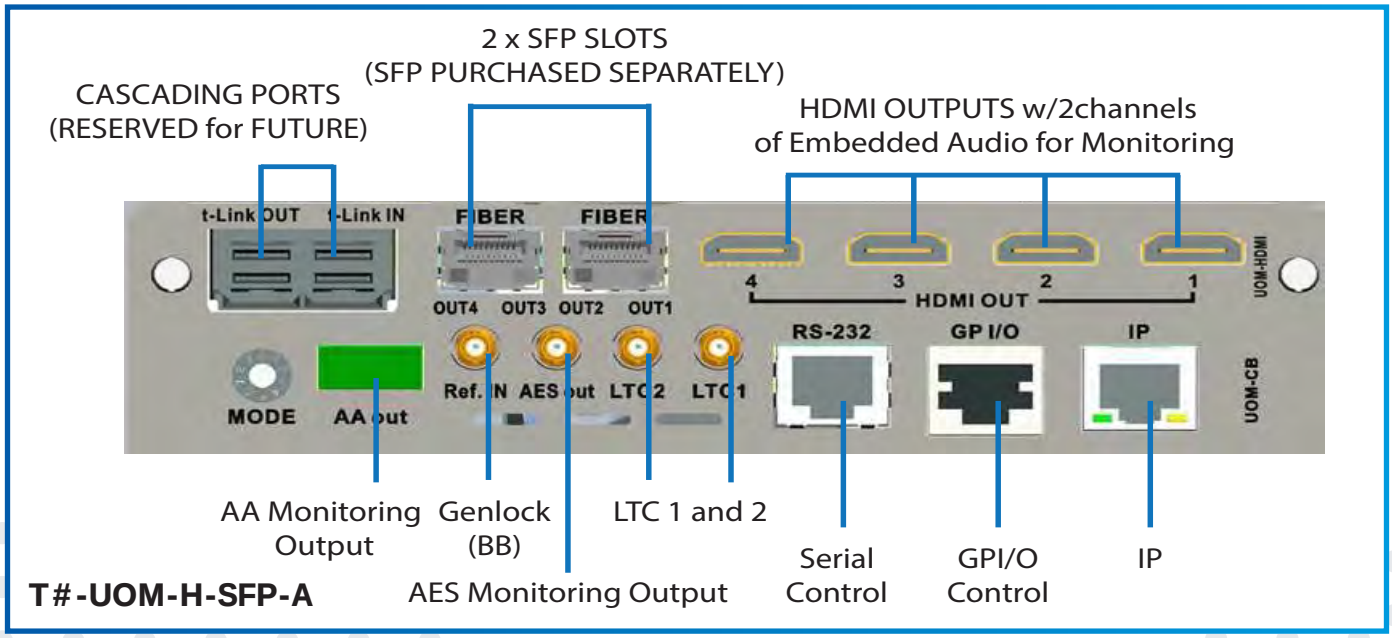
- T#-UOM-H-A (STANDARD)
  - 4 HDMI and 4 SDI outputs + control interfaces
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock



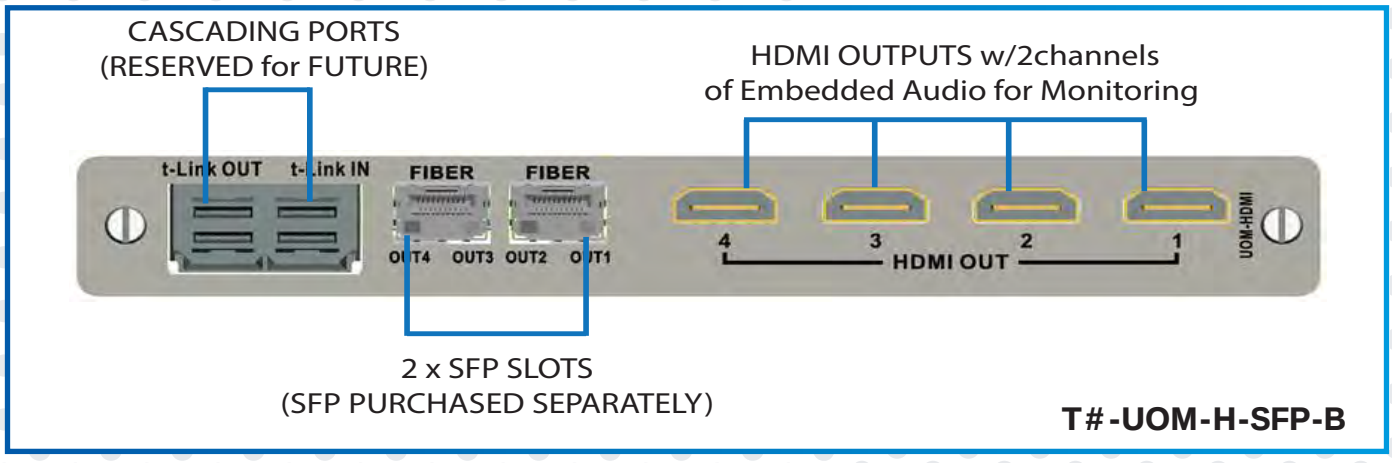
- T#-UOM-H-B (OPTION for 4 additional outputs)
  - 4 HDMI and 4 SDI outputs
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz



- T#-UOM-H-SFP-A (OPTION)
  - 4 HDMI output and 2 x SFP Slots + control interfaces
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock

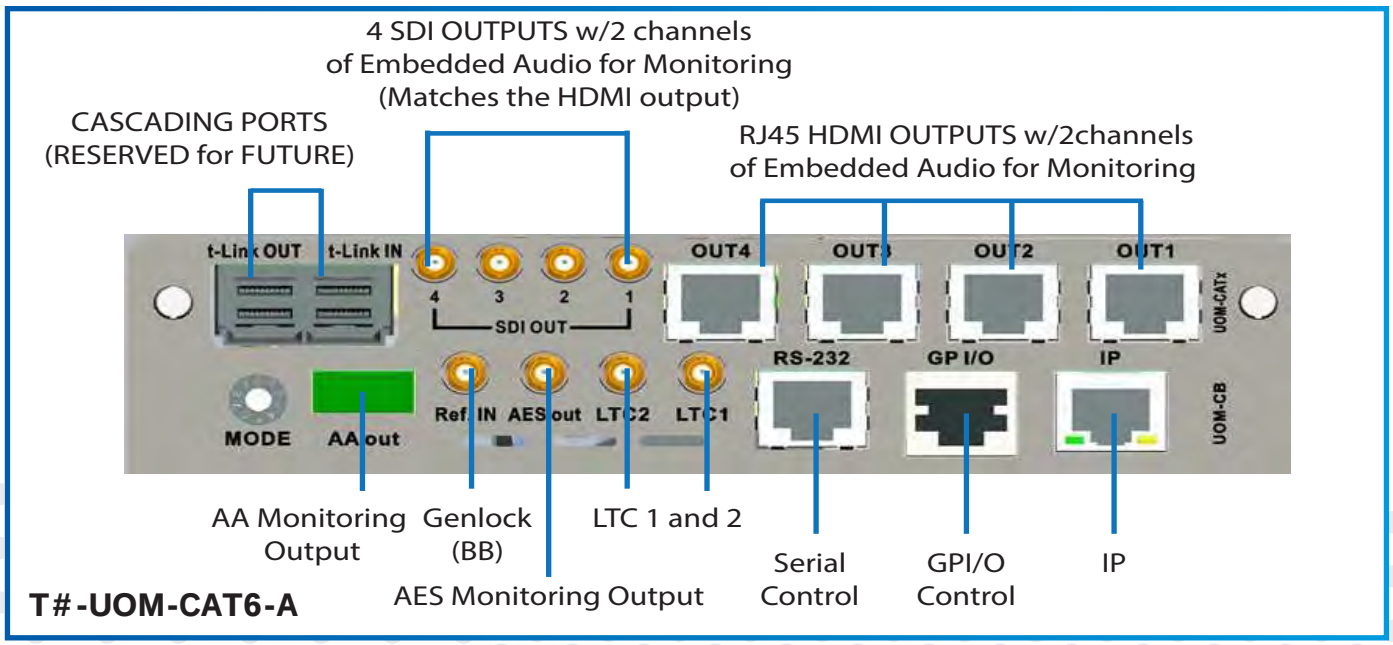


- T#-UOM-H-SFP-B (OPTION)
  - 4 HDMI output and 2 x SFP Slots
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz



TAHOMA T# (T-SHARP) MULTIVIEWERS

- T#-UOM-CAT6-A (OPTION)
  - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs + control interfaces
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock
  - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
  - Optional active long distance receivers up to 115 feet (35 meters)



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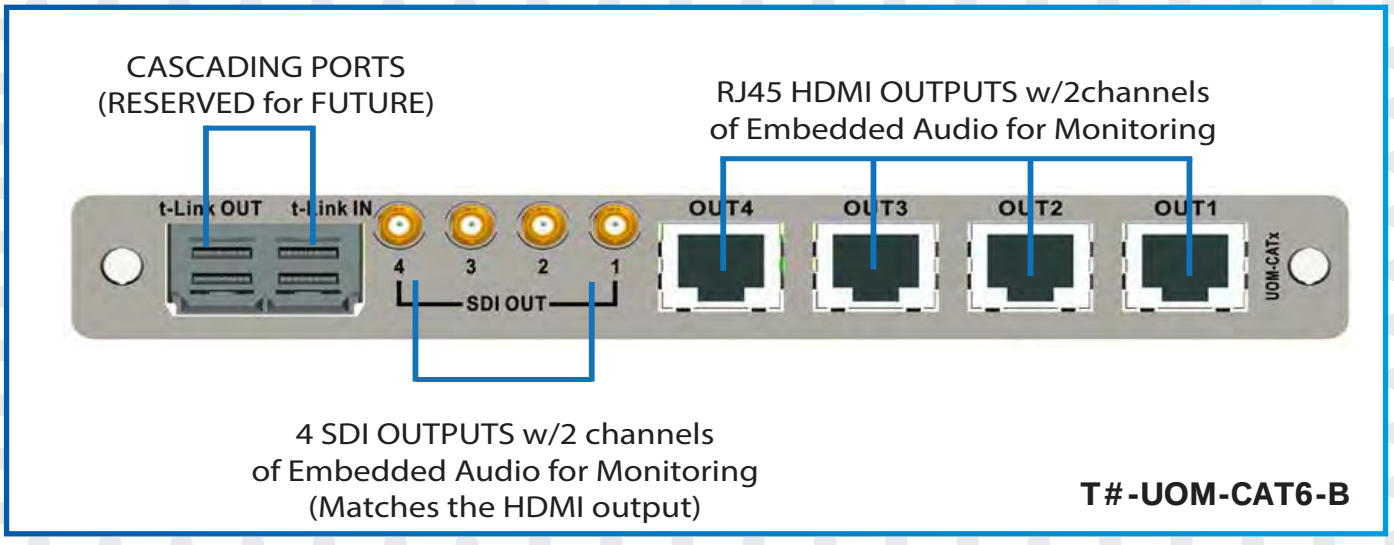

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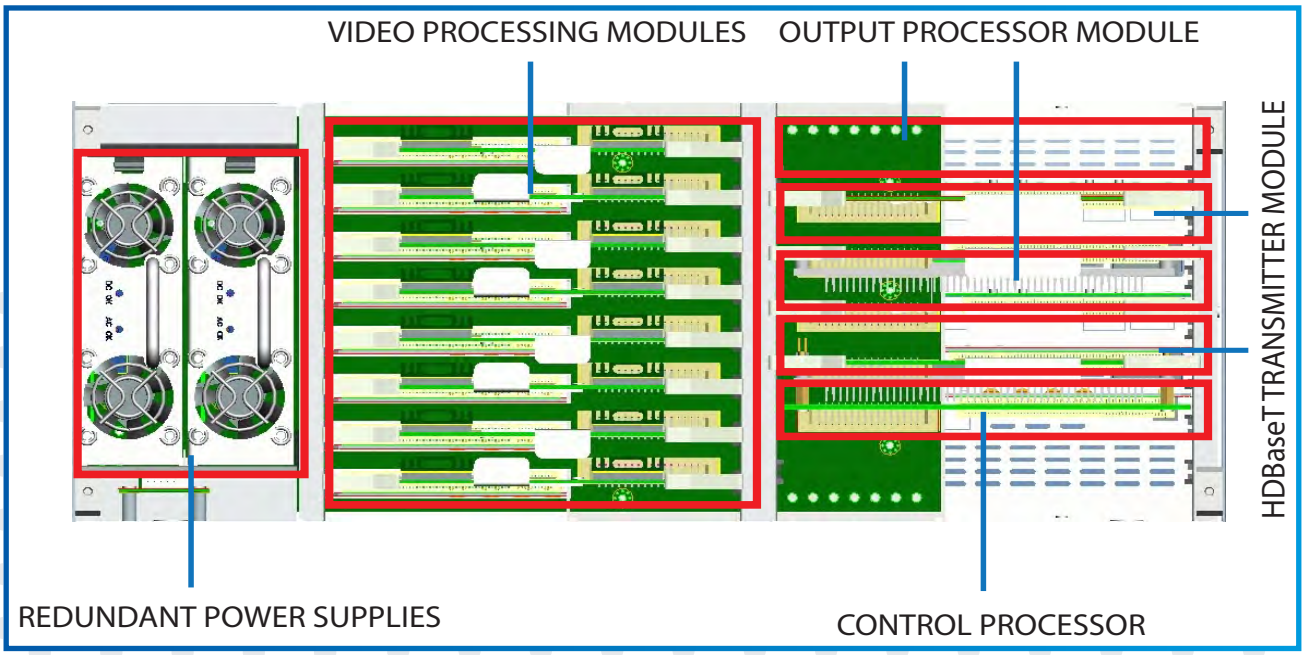
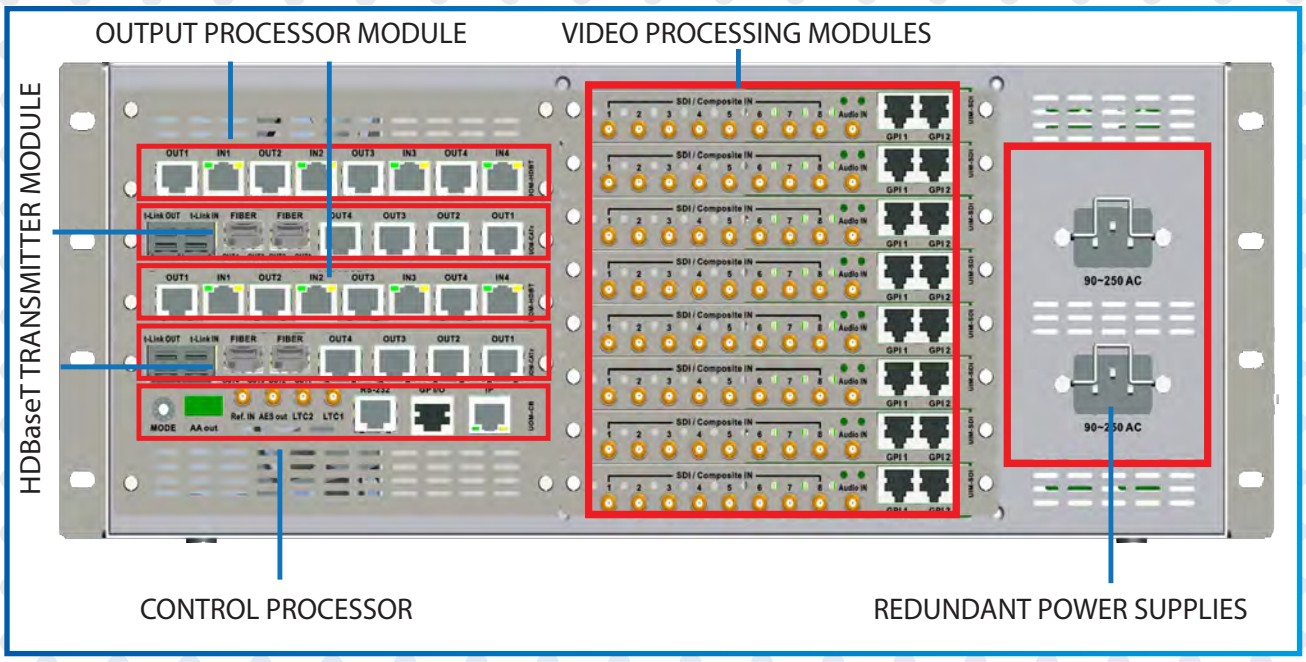
- **Coolings are front to back**

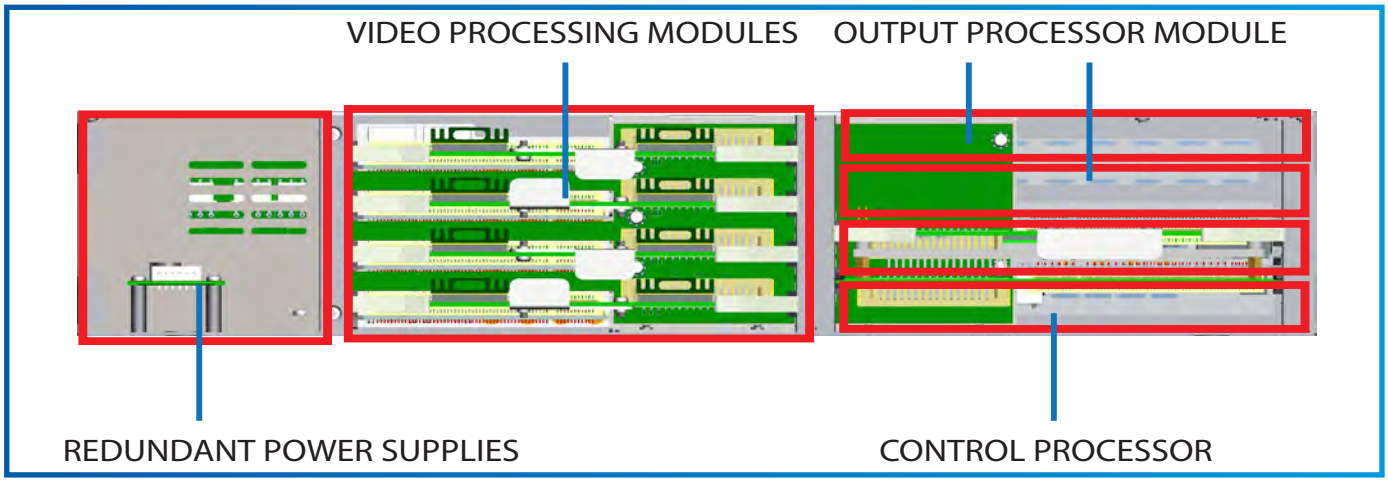
T# 4 RU Front Inside



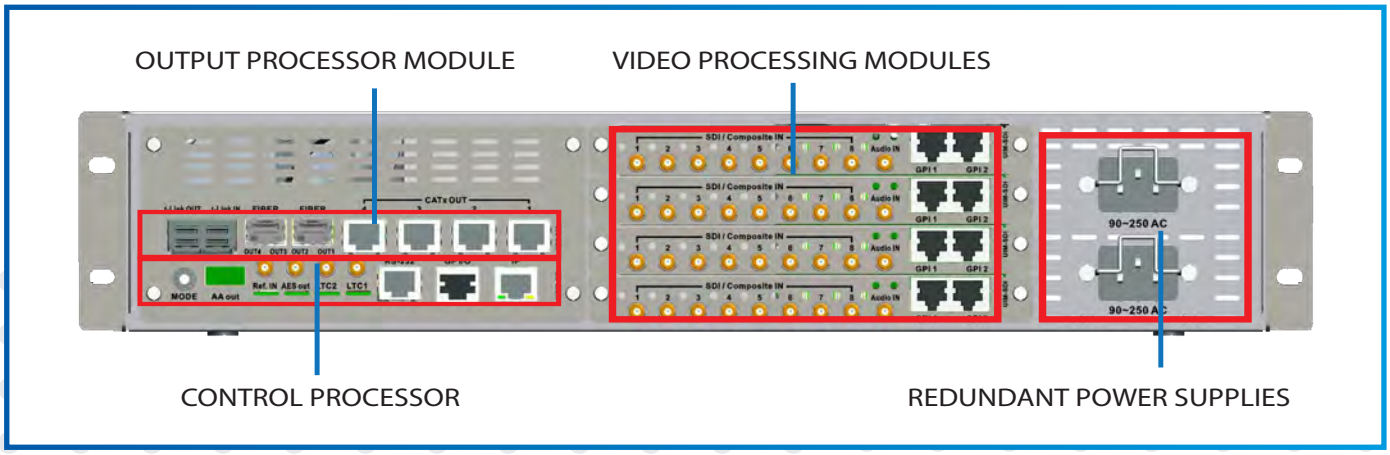
T# 4 RU Rear



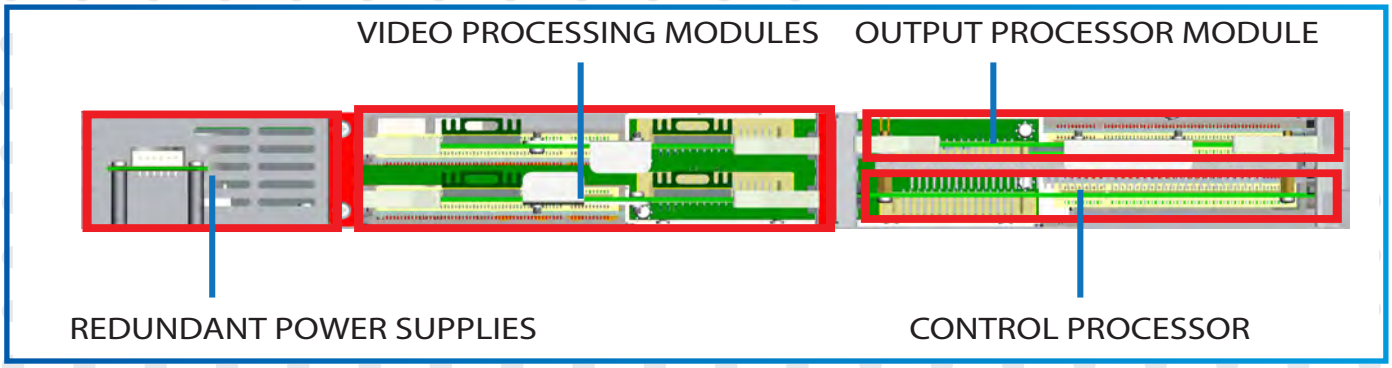
T# 2U Front Inside



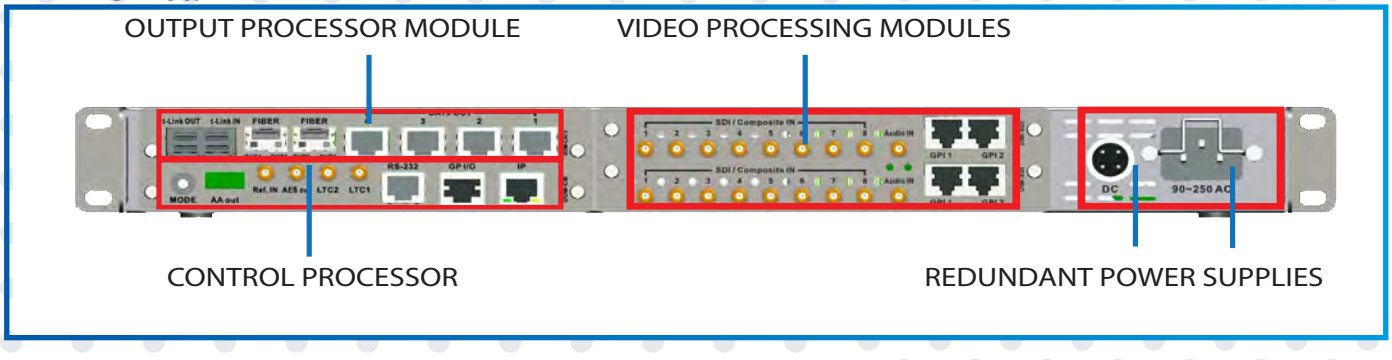
T# 2U Rear



T# 1U Front Inside



T# 1U Rear



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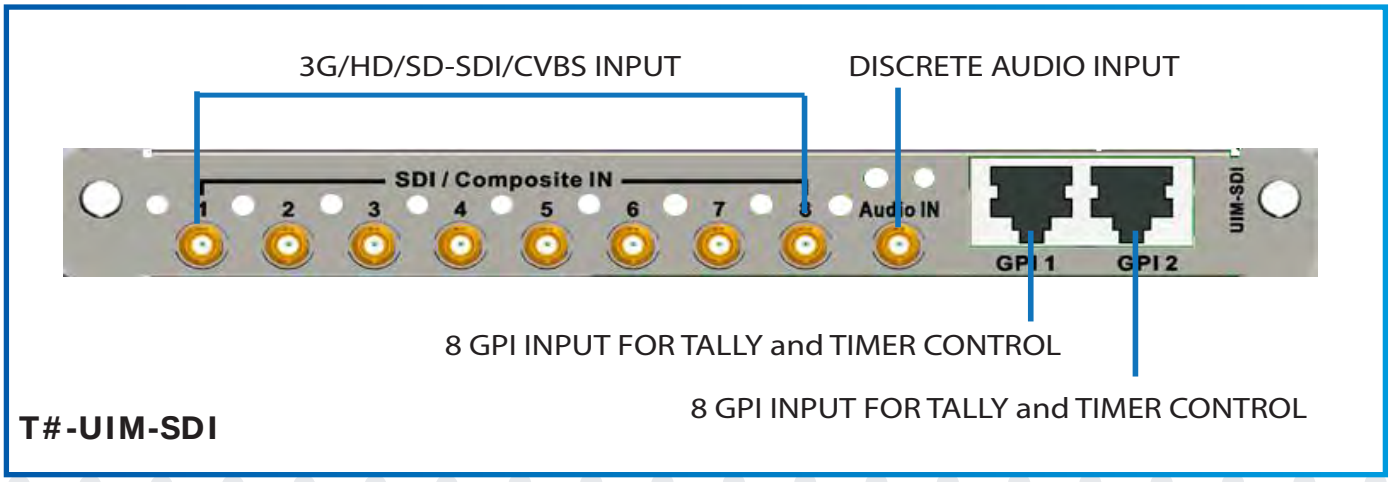
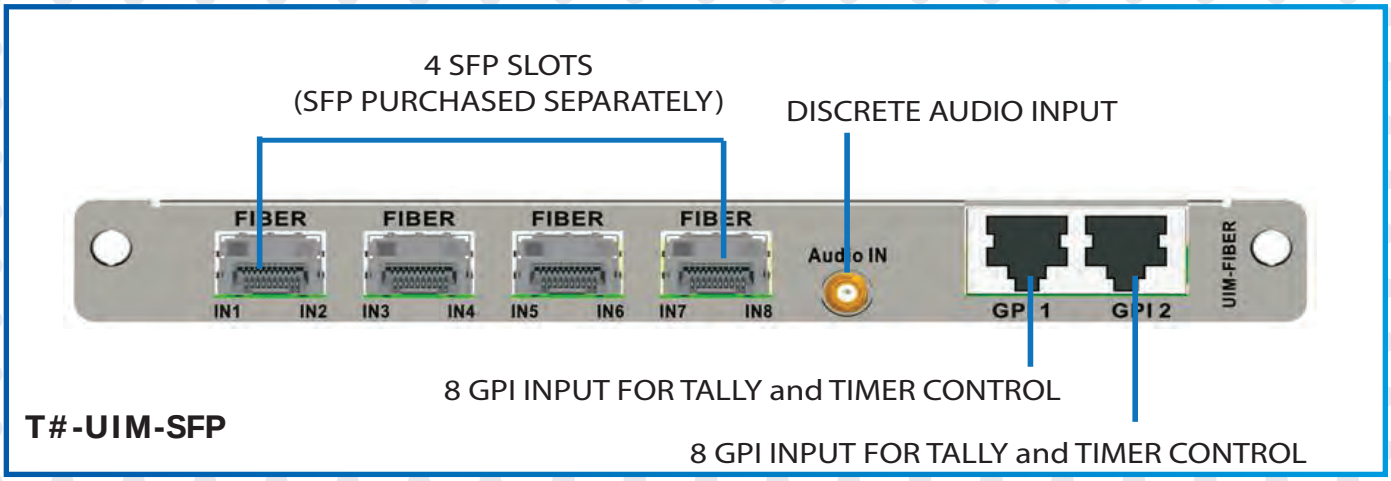
- Each input card supports 8 video inputs
- All input cards are hot pluggable
- Automatic input aspect ratio detection, by frequency, by WSS and AFD
- Decodes closed captioning on Line 21, CEA608/708 on each input
- Decode and display 16 channels of embedded audio per SDI input
- When fully populated, can display up to 64 SDI windows per display
- Can mix and match with other input boards



T#-UIM-SDI

SFP TYPE BROADCAST INPUT BOARDS:

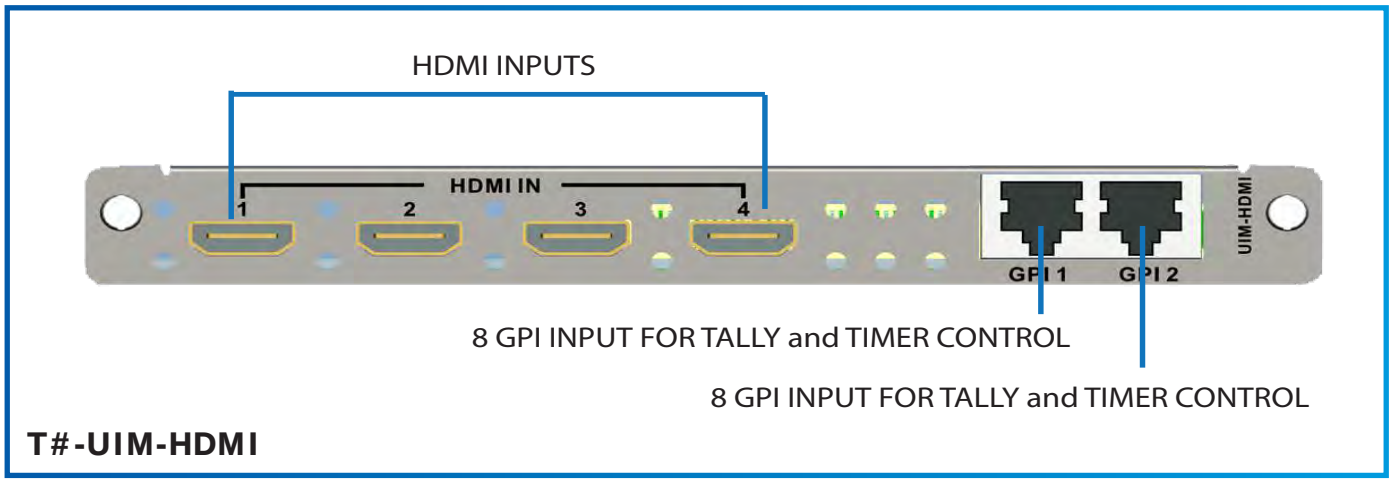
- Has all functionality of the standard broadcast input boards
- Intead of fixed BNCs, there are four SFP slots for future proof inputs
- SFP modules are sold separately



T#-UIM-SFP

HDMI INPUT BOARDS:

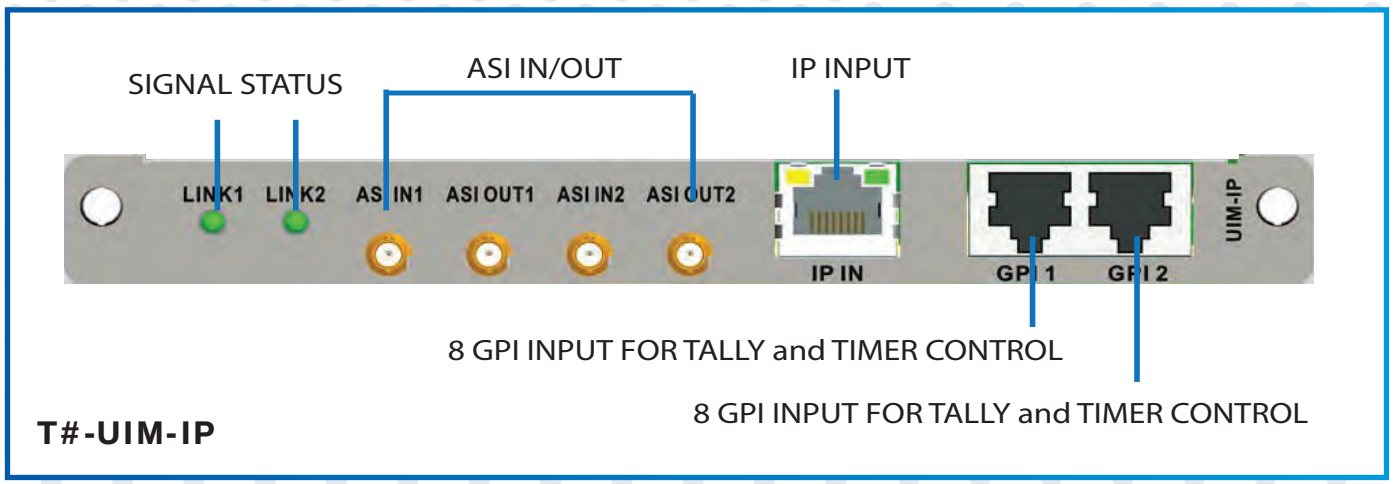
- Each input card supports 4 HDMI inputs
- Supports up to 1920x1200 (1080P) input resolutions
- All input cards are hot pluggable
- When fully populated, can display up to 32 HDMI windows per display
- Can mix and match with other input boards



T#-UIM-HDMI

IP INPUT BOARDS:

- Each input card has one RJ45 input and 2 ASI Inputs and Loop-out
- Each input card can decode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode
- MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz
- Supports both 50 and 60Hz
- All input cards are hot pluggable
- When fully populated, can display up to 64 decode IP windows per display
- Can mix and match with other input boards

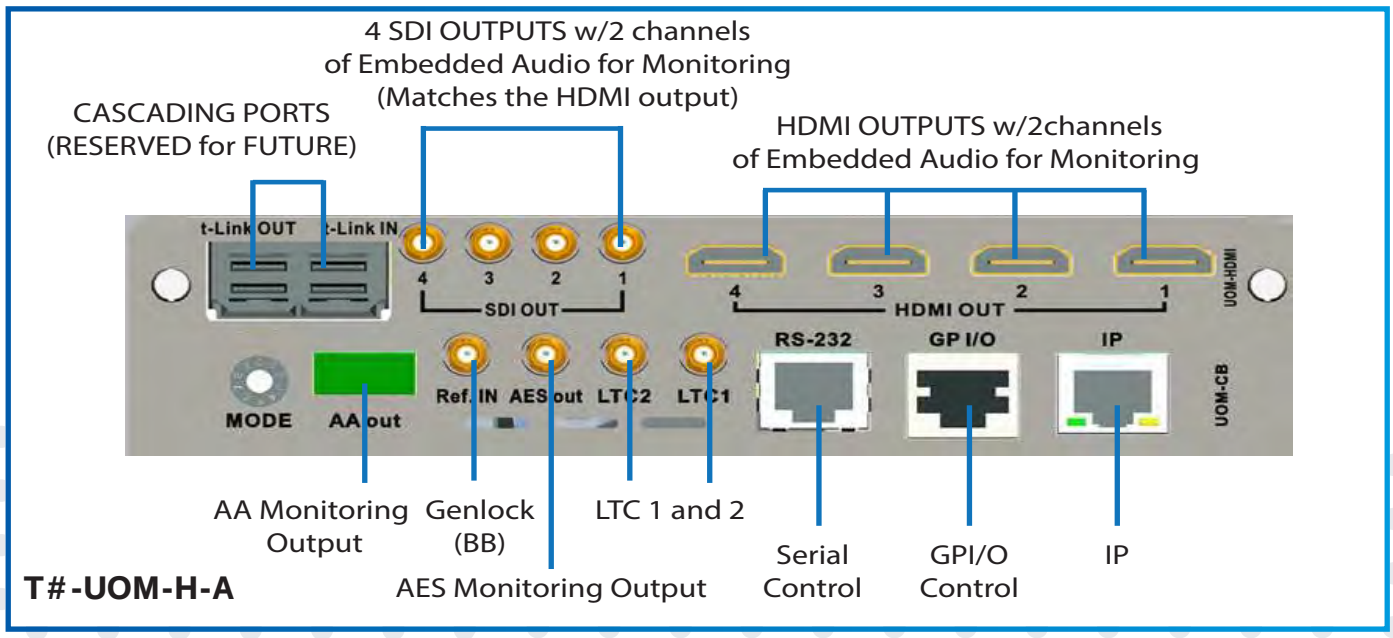


T#-UIM-IP

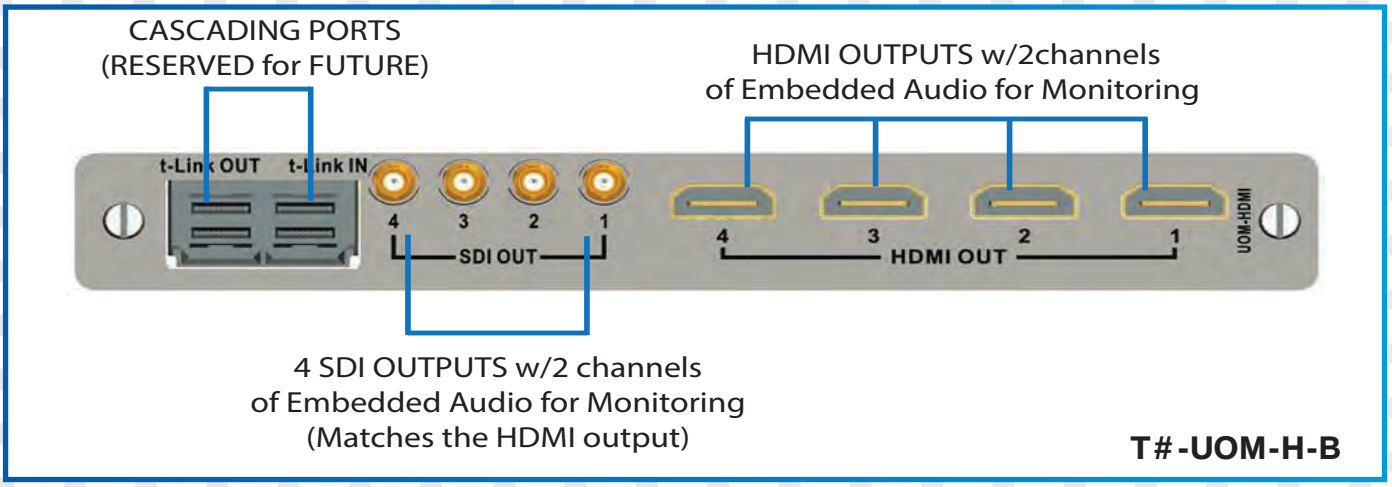
TAHOMA T# (T-SHARP) MULTIVIEWERS

OUTPUT BOARDS:

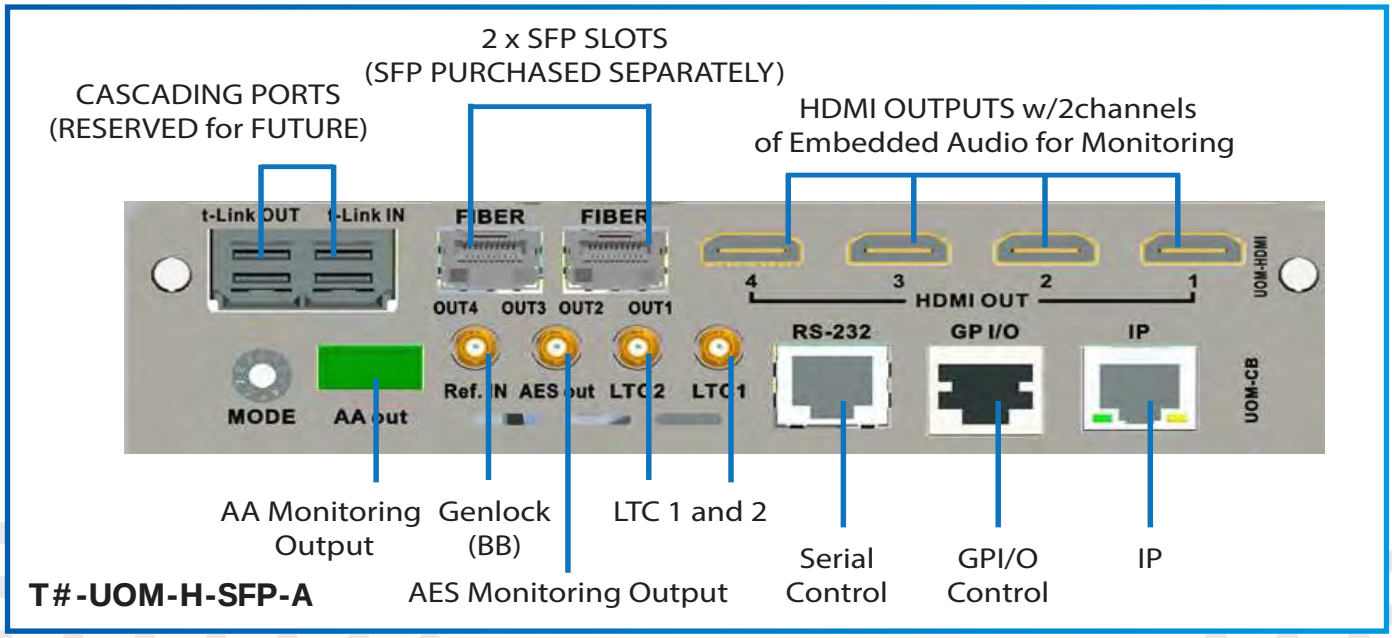
- T#-UOM-H-A (STANDARD)
  - 4 HDMI and 4 SDI outputs + control interfaces
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock



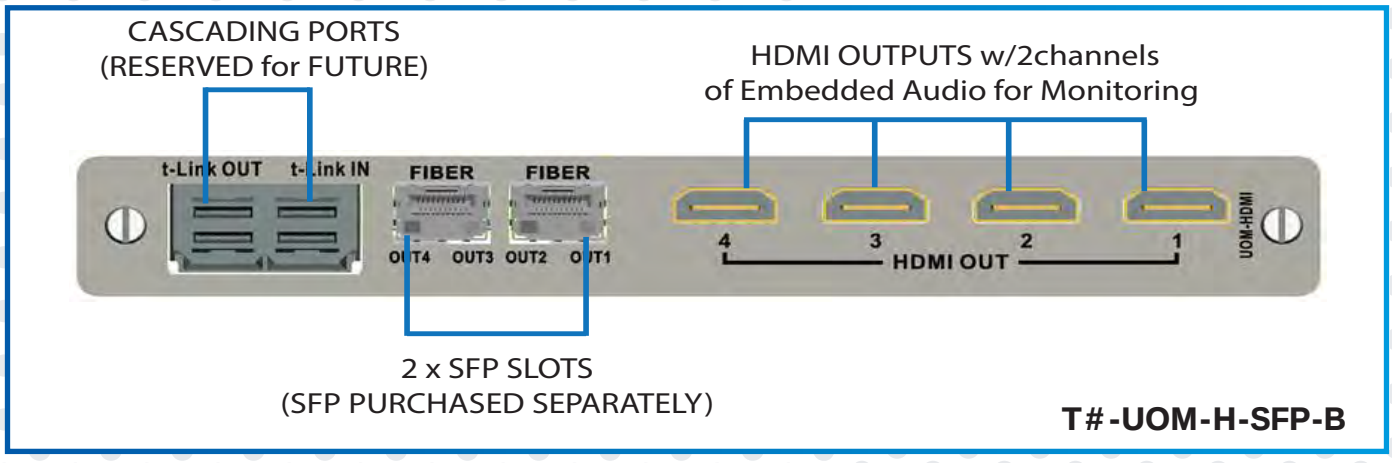
- T#-UOM-H-B (OPTION for 4 additional outputs)
  - 4 HDMI and 4 SDI outputs
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz



- T#-UOM-H-SFP-A (OPTION)
  - 4 HDMI output and 2 x SFP Slots + control interfaces
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock

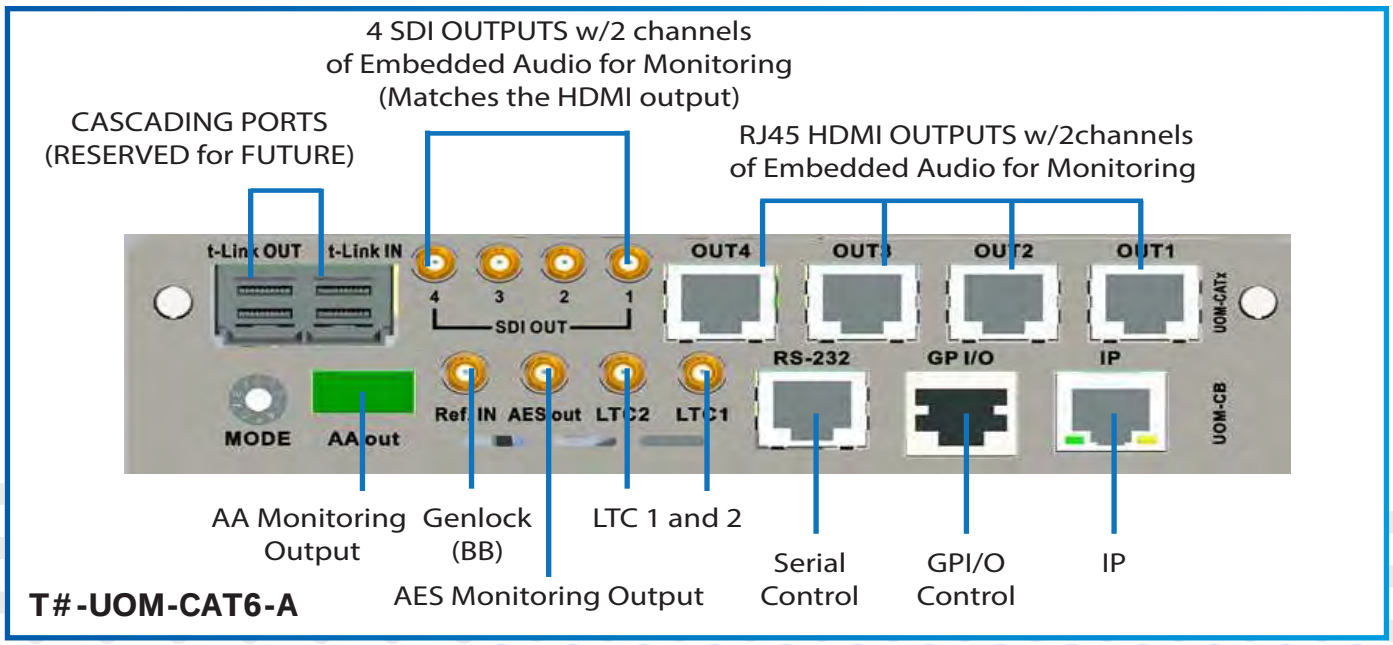


- T#-UOM-H-SFP-B (OPTION)
  - 4 HDMI output and 2 x SFP Slots
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz

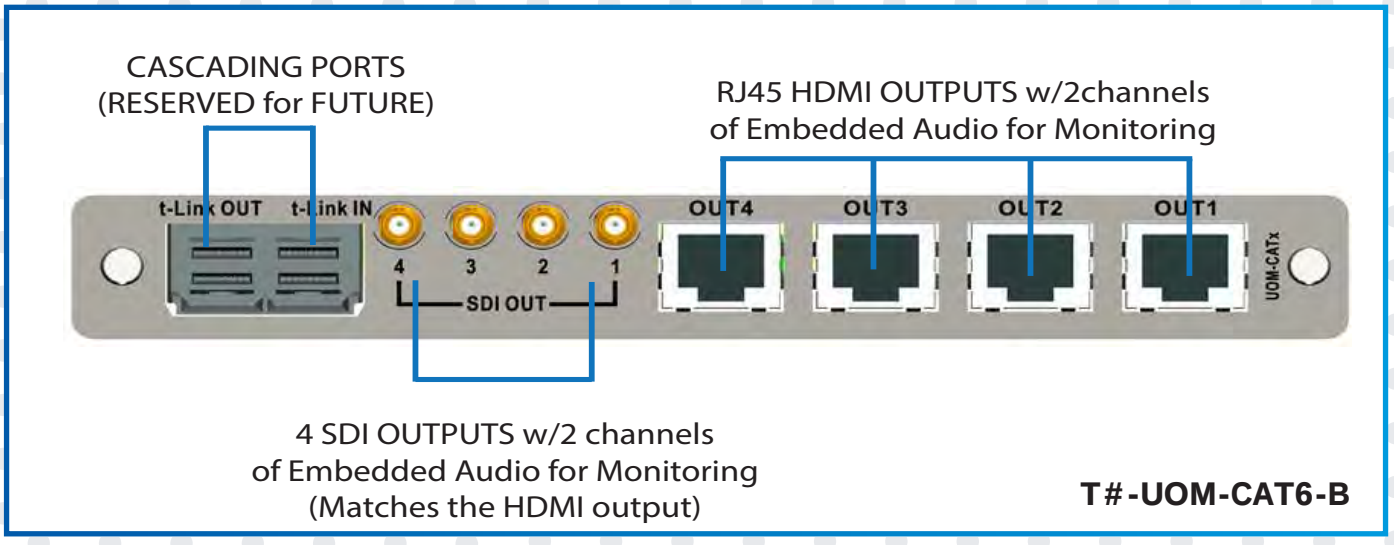


TAHOMA T# (T-SHARP) MULTIVIEWERS

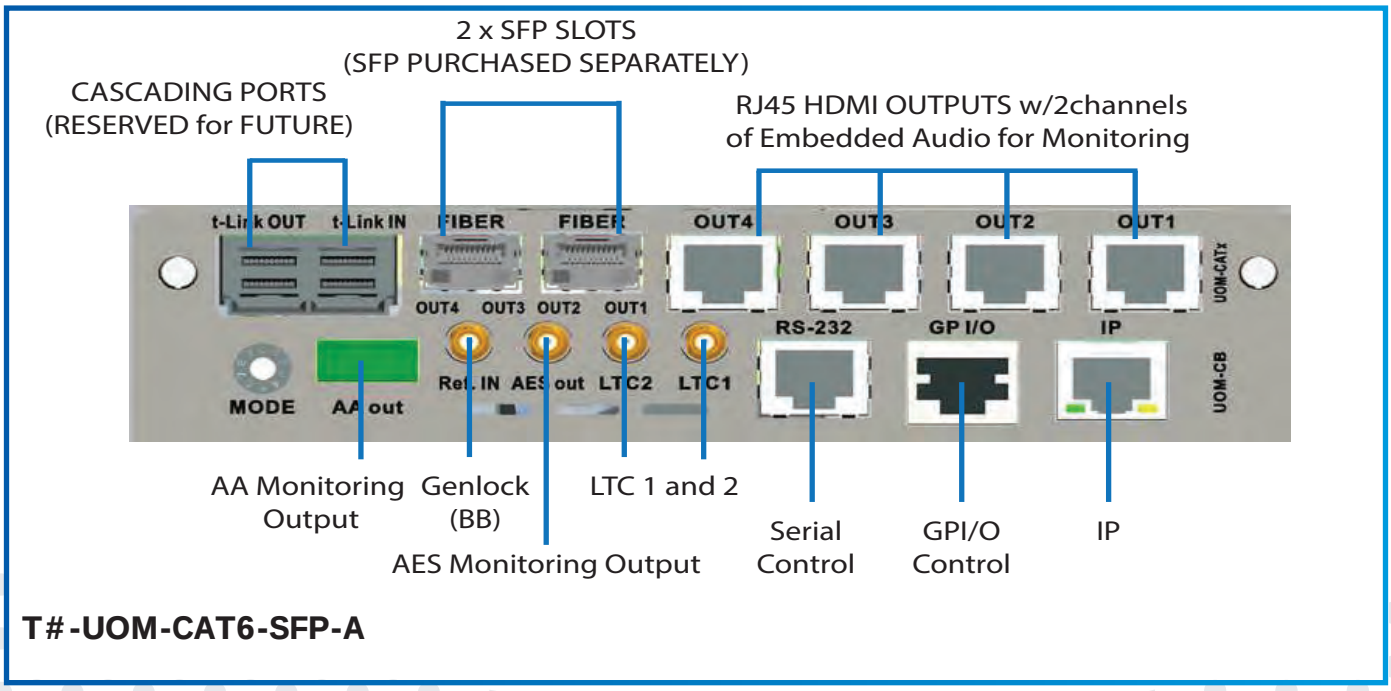
- T#-UOM-CAT6-A (OPTION)
  - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs + control interfaces
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock
  - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
  - Optional active long distance receivers up to 115 feet (35 meters)



- T#-UOM-CAT6-B (OPTION)
  - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs
  - SDI output resolution up to 1080p @50/60Hz
  - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
  - Optional active long distance receivers up to 115 feet (35 meters)

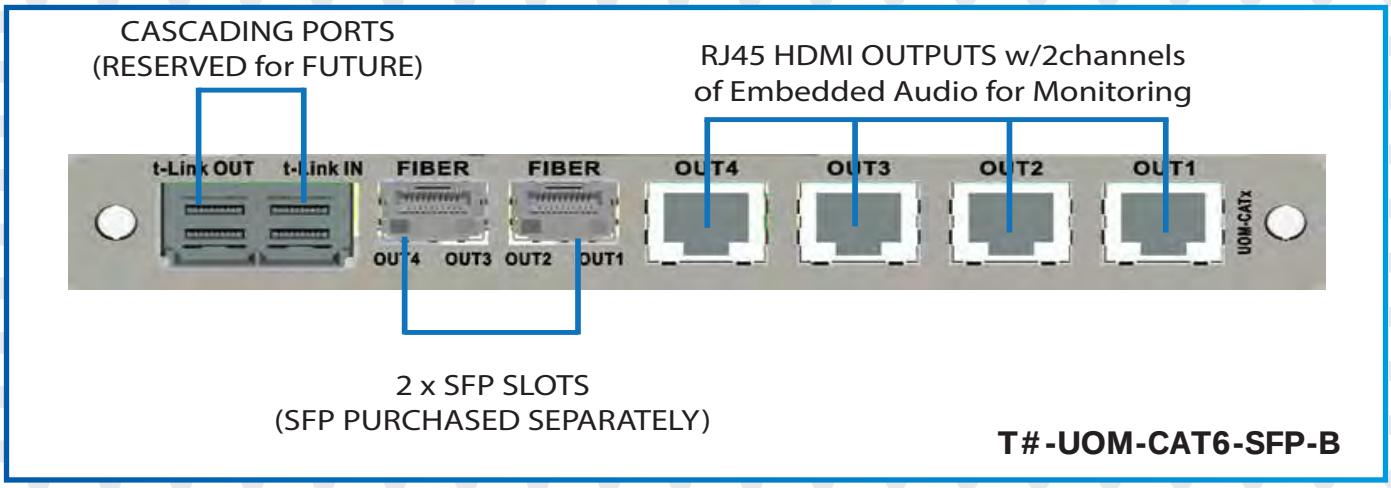


- T#-UOM-CAT6-SFP-A (OPTION)
  - 4 RJ45/CAT6 HDMI Extender and 2 x SFP Slots + control interfaces
  - SDI output resolution up to 1080p @50/60Hz
  - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock
  - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
  - Optional active long distance receivers up to 115 feet (35 meters)



T#-UOM-CAT6-SFP-A

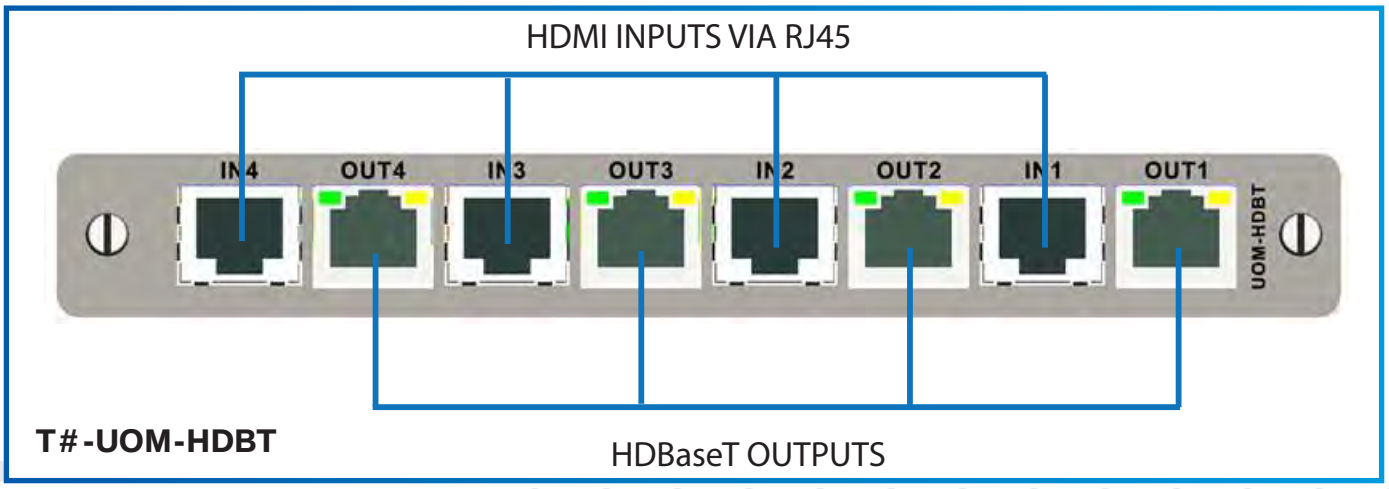
- T#-UOM-CAT6-B (OPTION)
  - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs
  - SDI output resolution up to 1080p @50/60Hz
  - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
  - Optional active long distance receivers up to 115 feet (35 meters)



T#-UOM-CAT6-SFP-B

TAHOMA T# (T-SHARP) MULTIVIEWERS

- T#-UOM-HDBT (OPTION)
  - 4 x HDBaseT Extender output. Must be used with T#-UOM-CAT6-A/B or T#-UOM-CAT6-SFP-A/B
  - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
  - SDI output resolution up to 1080p @50/60Hz



- Each input card has one RJ45 input and 2 ASI Inputs and Loop out
- Each input card can decode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode
- MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz
- Supports both 50 and 60Hz
- All input cards are hot pluggable
- When fully populated, can display up to 64 decode IP windows per display
- Can mix and match with other input boards

SPECIFICATIONS

VIDEO INPUTS (8 to 64 auto-detect 3G/HD/SD-SDI, CVBS)		**IP: ASI/H.264**	
Connectors	HD BNC	Signal	ASI/H.264
3G-SDI		Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification	
Signal	SMPTE 424M-2006 Level A and B	Demultiplexing incoming SPTS/MPTS	
		MPEG2/H.264 decode	
Formats	1920x1080p60 Hz 1920x1080p59.94 Hz 1920x1080p50Hz	MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz	
		Supports both 50 and 60Hz	
Audio	SMPTE 299M	Connectors	4 HDBNC (2 in 2 out), 1 RJ-45
Equalization	120 m at 3G		
Return Loss	>15db up 1.5GHz >10db from 1.5GHz to 3GHz	**MULTIVIEWER OUTPUTS**	
		HDMI	4 or 8
Jitter	<0.3UI	Connector	HDMI Type A, HDMI Extender out (RJ45) HDBaseT (RJ45)
HD-SDI		Cable Rearch	15 ft for HDMI, 35 ft RJ45 with passive receiver
Signal	4:2:2 SMPTE 292M-C (1.5Gbps)	Signal Path	8/10 bit output
Formats	720p29.97 Hz, 720p25Hz 720p24Hz, 720p59.94Hz 729p50Hz, 1080i59.94Hz 1080i29.97Hz (PSF), 1080p29.97Hz 1080i50Hz, 1080i25 (PSF) 1080p25Hz, 1080p23.98Hz/24Hz 1080i50Hz	Format	800x600 to 1920x1200P (Including 1080P) Supports 50/60 and 59.94 Hz
		3G/HD-SDI	4 or 8
		Signal	3G/HD-SDI SMPTE 424M and 292M
		Return Loss	>15db up 1.5GHz >10db from 1.5GHz to 3G
Audio	SMPTE 299M	Jitter	3G: <0.3 UI, 1.5 <0.21 UI
Equalization	140m at 1.5 Gbps (Belden 1698A)	**LTC INPUT**	
Return Loss	>15db up to 1.5 GHz	**Signal**	**SMPTE 12M-1995 (EBU3259-E)**
Jitter	<0.2 UI	Level	500 mVp-p to 10 Vp-p
SD-SDI		Imaedance	> 10k ohm
Signal	4:2:2 SMPTE 259M-C (270 mbps)	Refresh Rate	50/59.94 Hz
Format	525 and 625	**COMMUNICATION**	
Audio	SMPTE 274M-1994	ETHERNET	
Equalization	400m at 270 Mbps (Belden 1694A)	Signal	10/100/1000 Base-T
Return Loss	> 15db up to 270 MHz	**SERIAL PORT**	
Jitter	< 0.2UI	Signal	RS-232
COMPOSITE		Connector	RJ-45
Signal	NTSC (SMPTE-170M) PAL (ITU624-2)	**ANALOG AUDIO OUT**	
		Impedance	< 600 ohm
Signal Level	1V nominal	Level	+24 dbu maximum
DC Offset	0V, + - 0.1V	Connector	Pheonix
Impedance	75	**VIDEO PROCESSING PERFORMANCE**	
Return Loss	40db up to 5MHz	Signal Path	8 bit Ycbcr to 24 bit RGB
HDMI		Processing delay	1 frame in genlock mode, 1-2 frame in non-genlock mode
Signal	HDMI/DVI (with converter cable)		
Max Resolution	1920x1080/1920x1200 @ 60Hz	**REFERENCE**	
Audio	4 channels of embedded audio	**External**	BB
Connector	4 x HDMI Type A female	Connector	HD BNC

TAHOMA T# (T-SHARP) MULTIVIEWERS

SPECIFICATIONS			
T# (1 RU) FRAME			
Power supply	Optional External Redundant Power Supply		
Input voltage	90 - 240 V		
Frequency	50 / 60 Hz		
Power	150 W max		
Dimension	446 x 455 x 44 mm		
TEMPERATURE			
Range	0 - 40 C		
Weight	7.5 kg		
COMMUNICATIONS			
Ports	Ethernet 10/100 Base-T		
Alarm	GPI contacts		
T# (2RU) FRAME		**GPI In**	
Power supply	Built-in redundant power supplies	Connectors	RJ50
Input voltage	90 - 240 V	Number of inputs	8
Frequency	50 / 60 Hz	Pull up voltage	+5 V
Power	200 W max	Source current	2 mA
Dimension	446 x 455 x 87		
TEMPERATURE		Activation	0.1 V max
Range	0 - 40 C	Over Voltage	+6.5 V
Weight	10.3 kg	Pulse duration	8 ms min
COMMUNICATIONS		**GPI BI-DIRECTIONAL**	
Ports	Ethernet 10/100 Base-T	Connector	RJ50
Alarm	GPI Contacts	Number of I/O	8
		INPUT MODE	
T# (4RU) FRAME		Pull-up voltage	+5V
Power Supply	Hot swappble redundant power supplies	Source current	2 mA
Input voltage	90 - 240 V		
Frequency	50 / 60 Hz	Activation	0.1 V max
Power	500 W max	Over voltage	+6.5V
Dimensions	446 x 455 x 87	Pulse Duration	8 ms min ??
TEMPERATURE		**OUTPUT MODE**	
Range	0 - 40C	Current	50 mA max
Weight	19.6 kg	Reverse current	-100 mA max
COMMUNICATIONS			
Ports	Ethernet 10/100 Base-T		
Alarm	GPI contacts		

notes