

TAHOMA T# (T-SHARP) WALL / 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

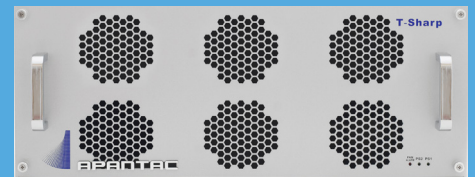
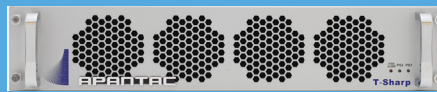


Up to 1920x1080P / 2048x1080P
HDMI/HDBaseT outputs
w/embedded audio

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



4 or 8 multiviewer 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



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

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

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

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

Tally GPI/ Count up/ down clock Trigger

Alarm GPO or GPI Control Panel/ Trigger

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**



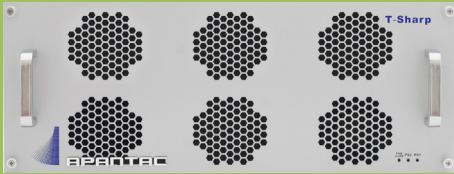
T# 1 RU

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



T# 2 RU

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



T# 4 RU

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

ON SCREEN ELEMENTS

- Audio Support:
 - Decode the 16 SDI Embedded Audio
 - Display up to 256 meters per output
 - Analog / AES Stereo Monitoring output
- UMDs & Labels:
 - Two 32 Character labels per / Output
 - Labels can be Static, Follow input or Dynamic (TSL)
- Safe Title / Safe Area Markers:
 - Two sets of Markers per Window
 - Line and Shadow for Marker Set 1
 - Line for Marker Set 2
- Alarms:
 - video presence/format, video frozen, black
 - audio presence, audio high/low
 - Visual Alarms and GPI output Parameters
- Analog & Digital Clocks / Counters
 - Free running or Sync up to LTC, NTP
 - Up and Down Counters
 - Control via GPI, AXP protocol
- Tallies:
 - GPI and TSL over IP control
 - Five Tally attributes:
 - 2 x LED, Text, Background & Border Color
 - Up to 4 Tally levels Control with TSL
- Presets & Configuration:
 - Create and Save up to 30 Presets
 - Recall them via GPI, AXP protocol over IP with
 - Hardware & Software panels
- Logos:
 - Bitmap logos are downloadable



This is not a simulated layout, it is an actual Output of a T#

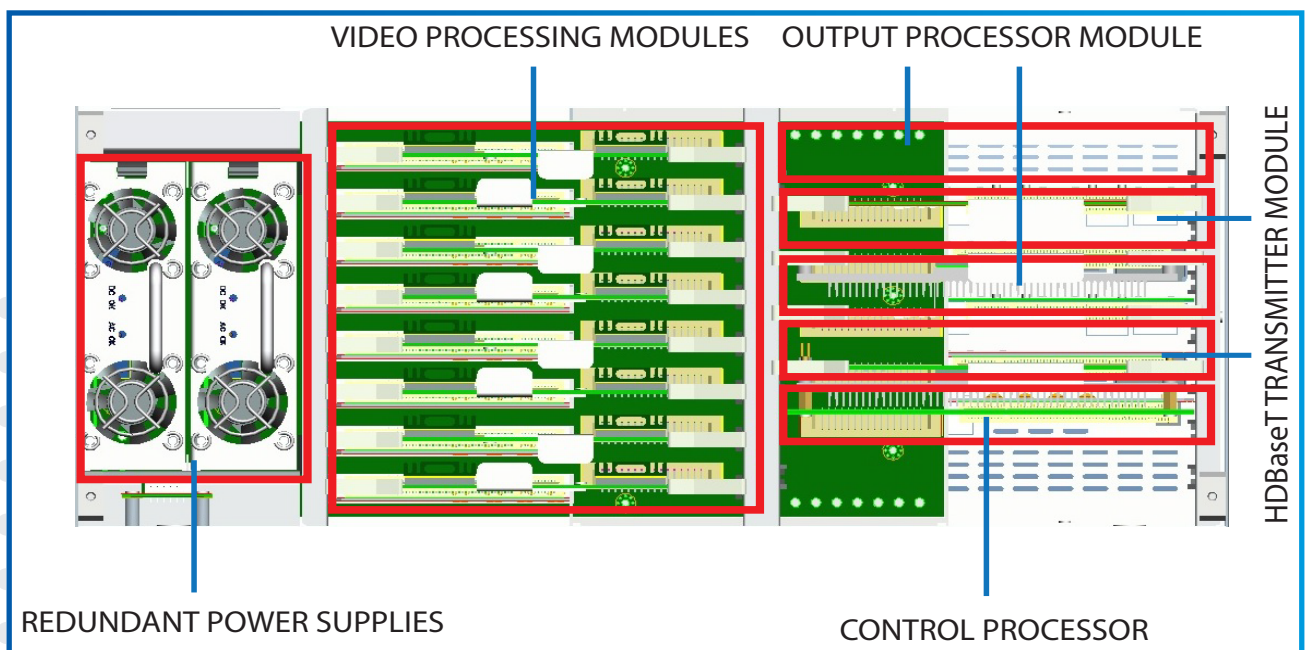
TAHOMA T# ARCHITECTURAL CONCEPTS

TAHOMAT# Frame Sizes

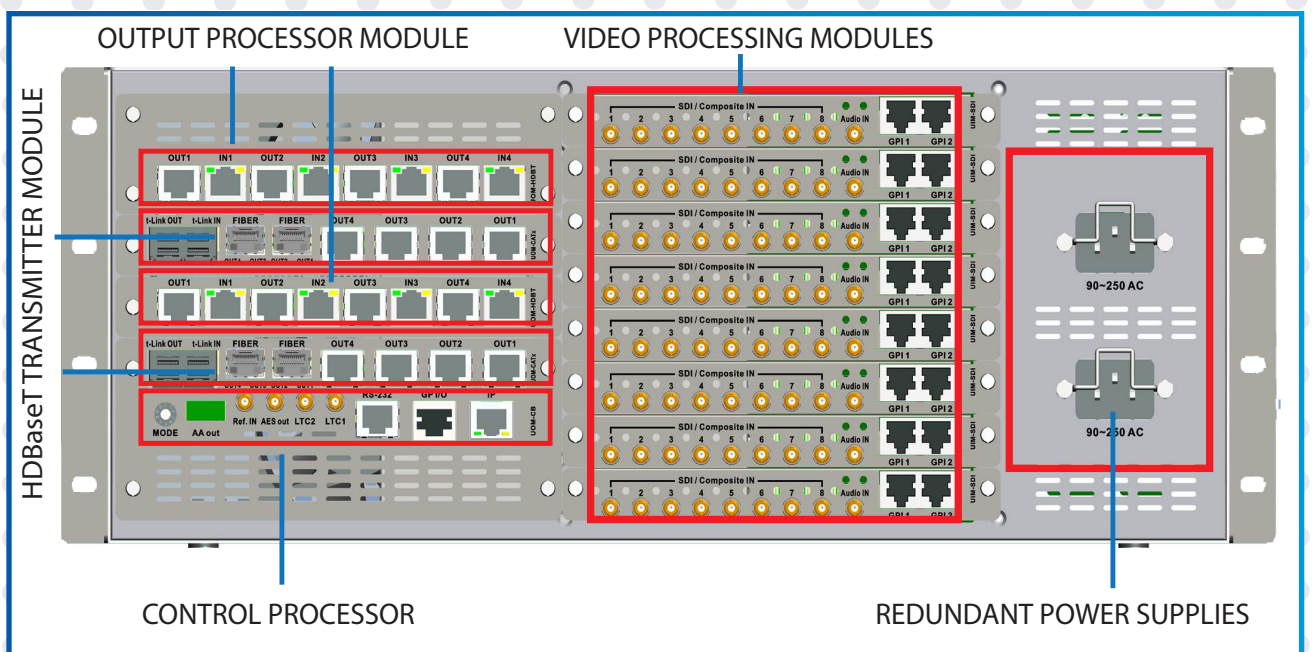
The T# comes in 3 different frame sizes, 1 RU, 2 RU and 4 RU. All of the frames are completely modular, therefore different I/O modules can be inserted to form different sizes of multiviewers.

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

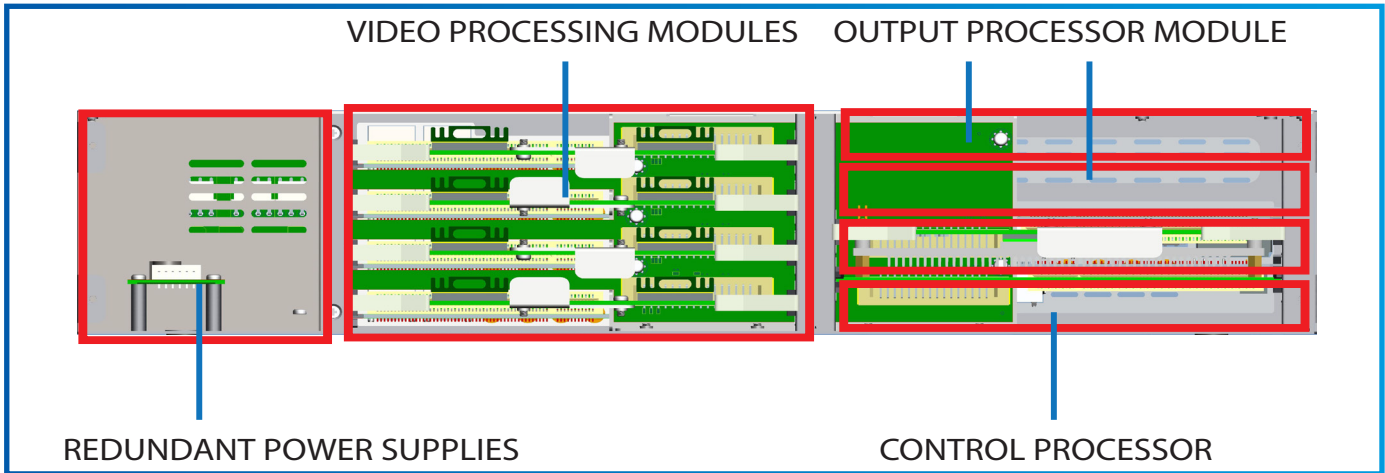
T# 4 RU Front Inside



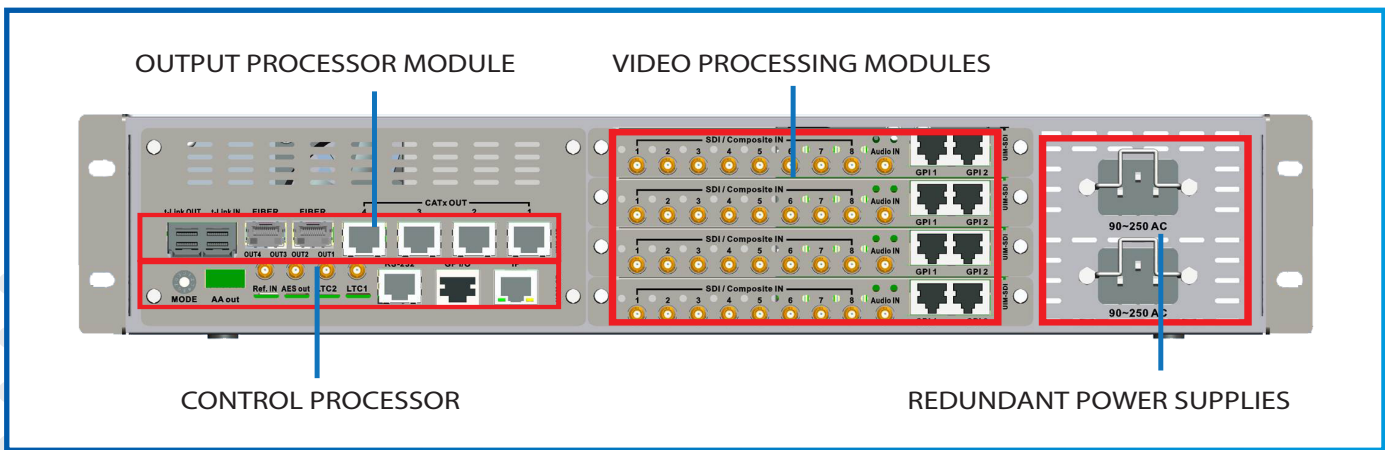
T# 4 RU Rear



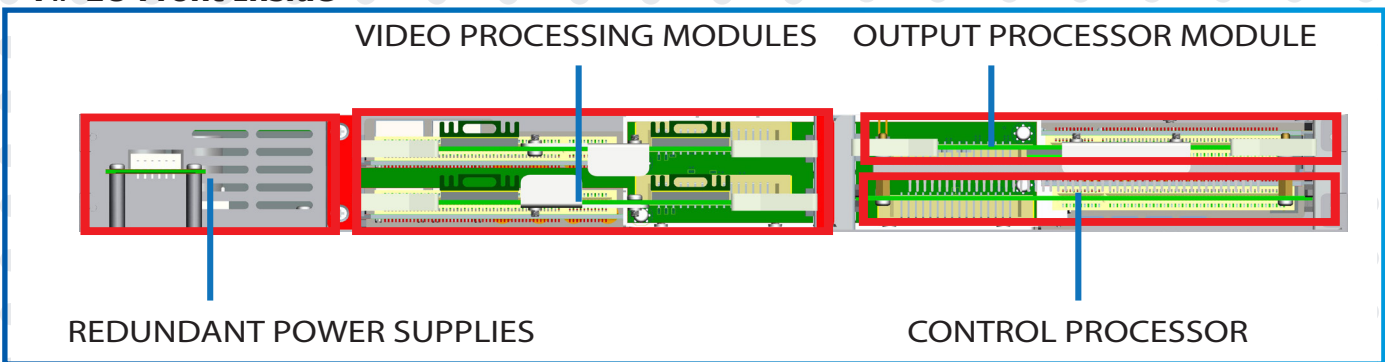
T# 2U Front Inside



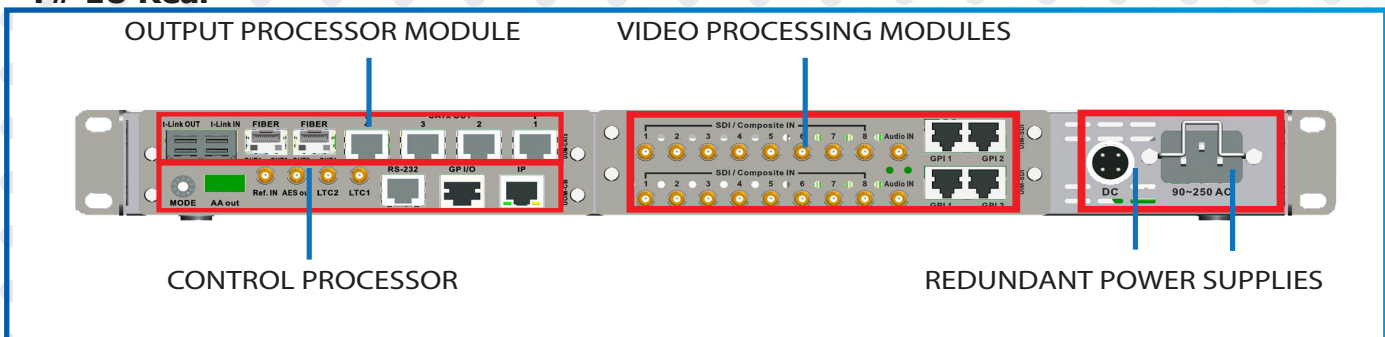
T# 2U Rear



T# 1U Front Inside



T# 1U Rear



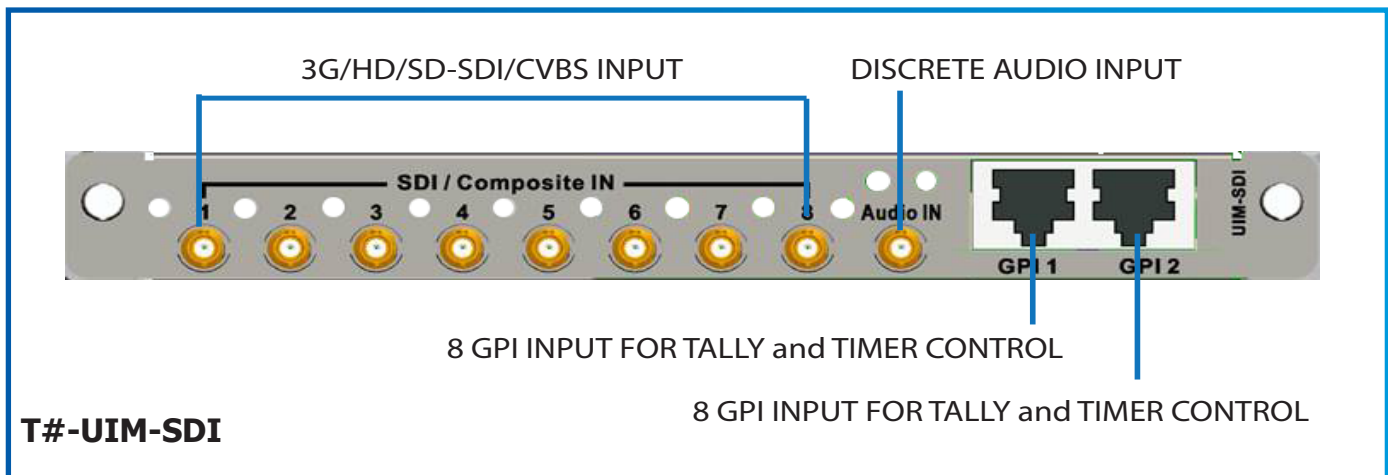
TAHOMA T# (T-SHARP) MULTIVIEWERS

The T# (T-Sharp) Multiviewer Platform

The newest member of the TAHOMA Multiviewer family

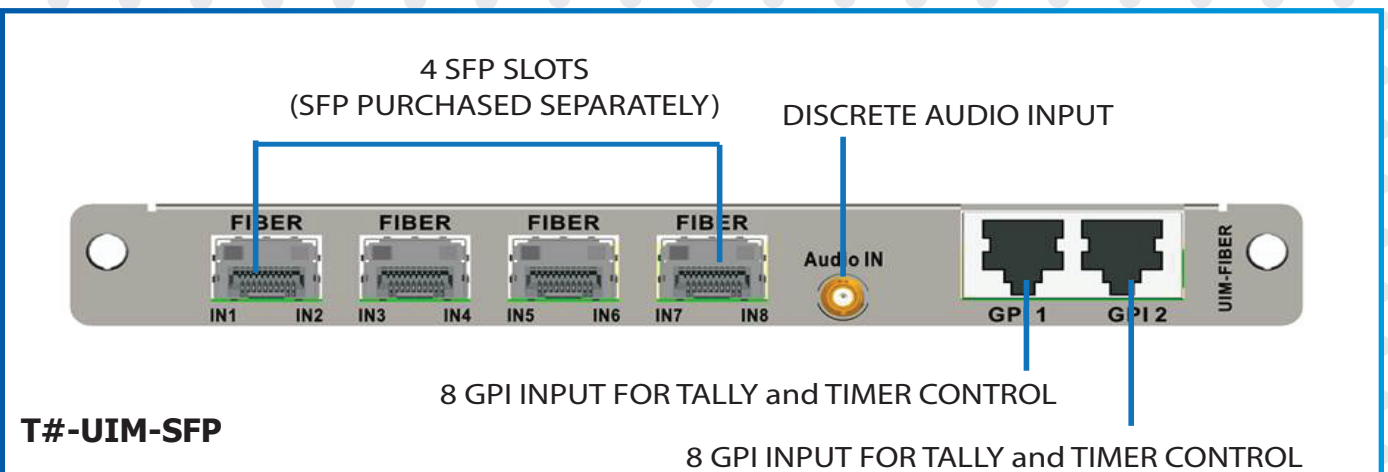
STANDARD BROADCAST INPUT BOARDS:

- 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



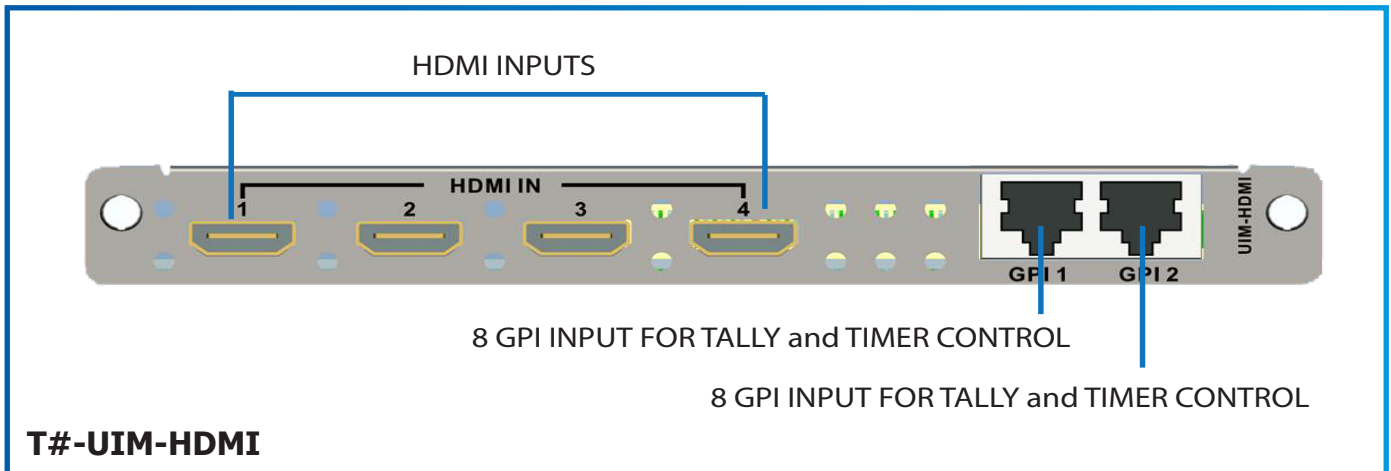
SFP TYPE BROADCAST INPUT BOARDS:

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



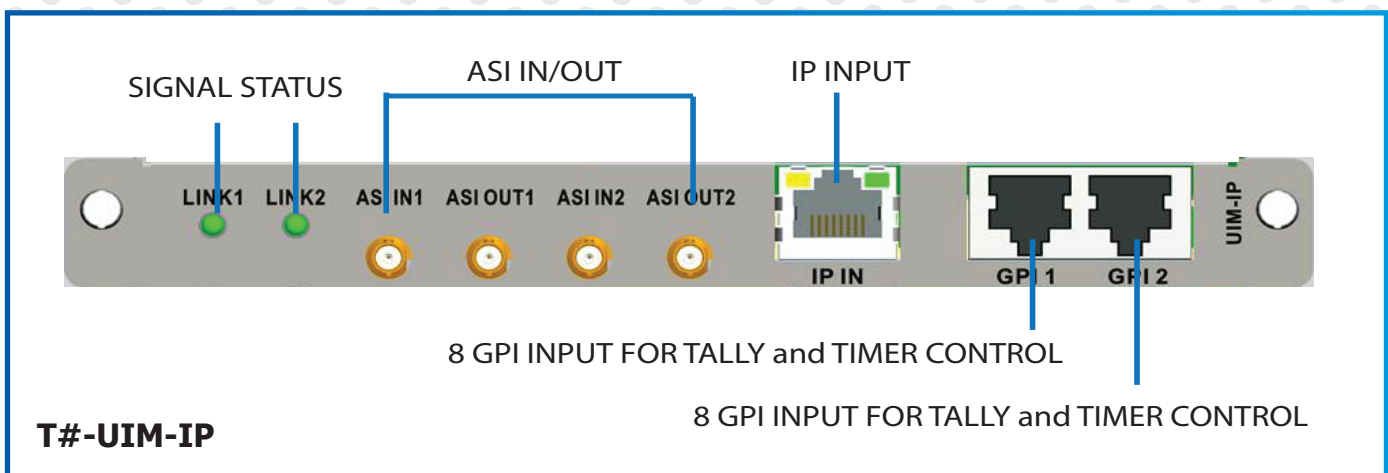
HDMI INPUT BOARDS:

- 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



IP INPUT BOARDS:

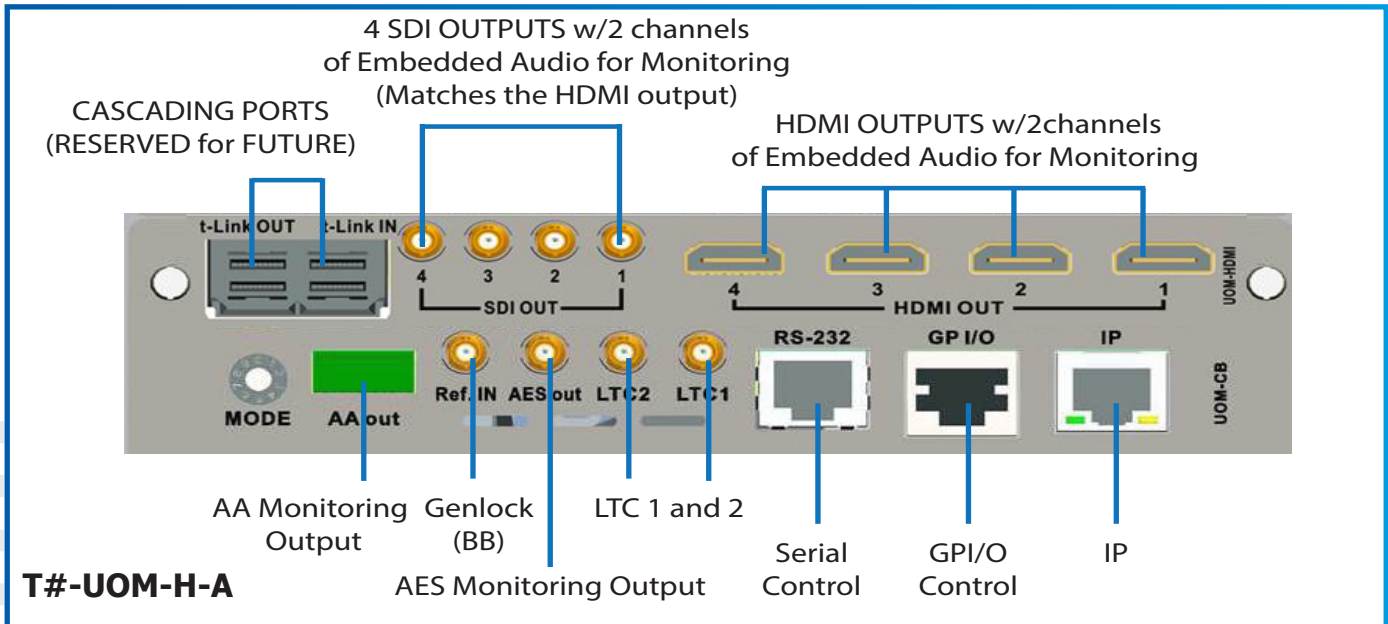
- Each input card has one RJ45 input and 2 ASI Inputs and Loop-out
- Each input card can decode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode
- MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz
- 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



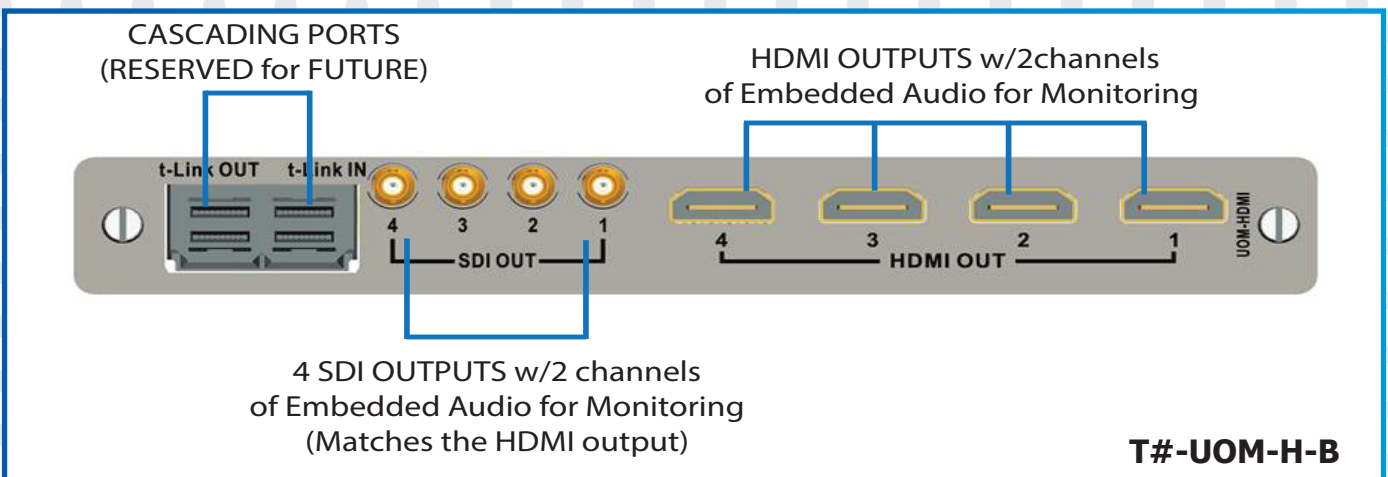
TAHOMA T# (T-SHARP) MULTIVIEWERS

OUTPUT BOARDS:

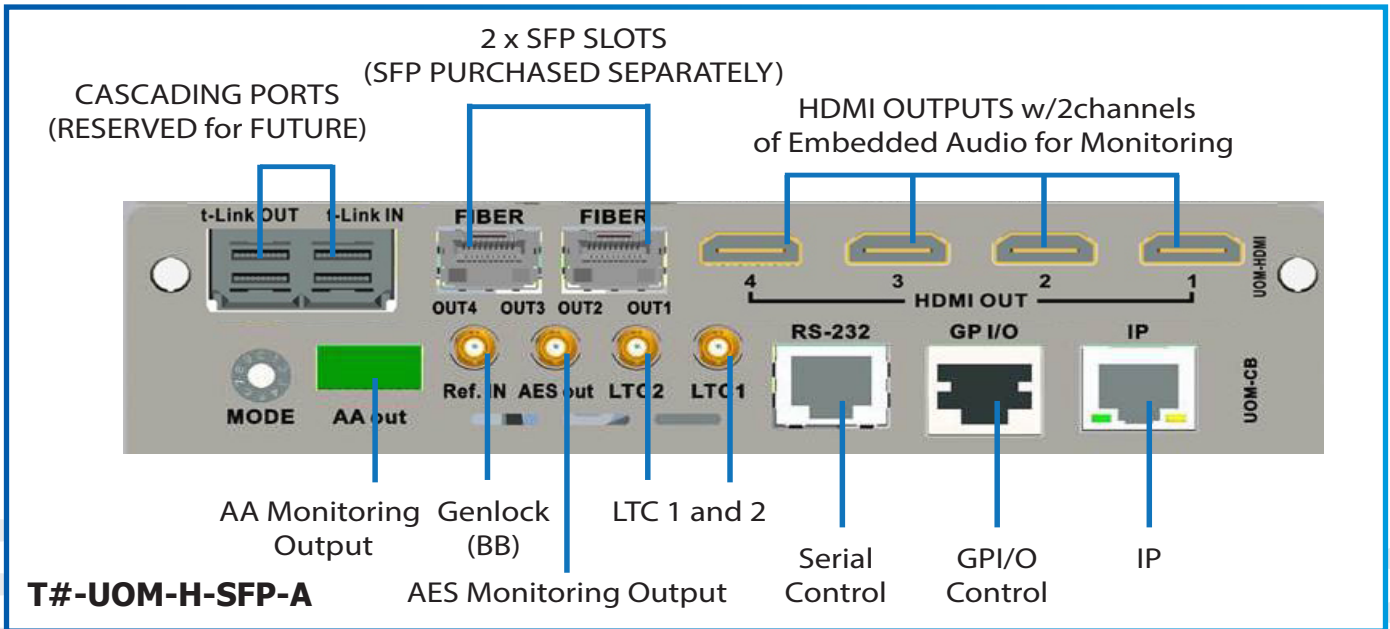
- T#-UOM-H-A (STANDARD)
 - 4 HDMI and 4 SDI outputs + control interfaces
 - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
 - SDI output resolution up to 1080p @50/60Hz
 - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock



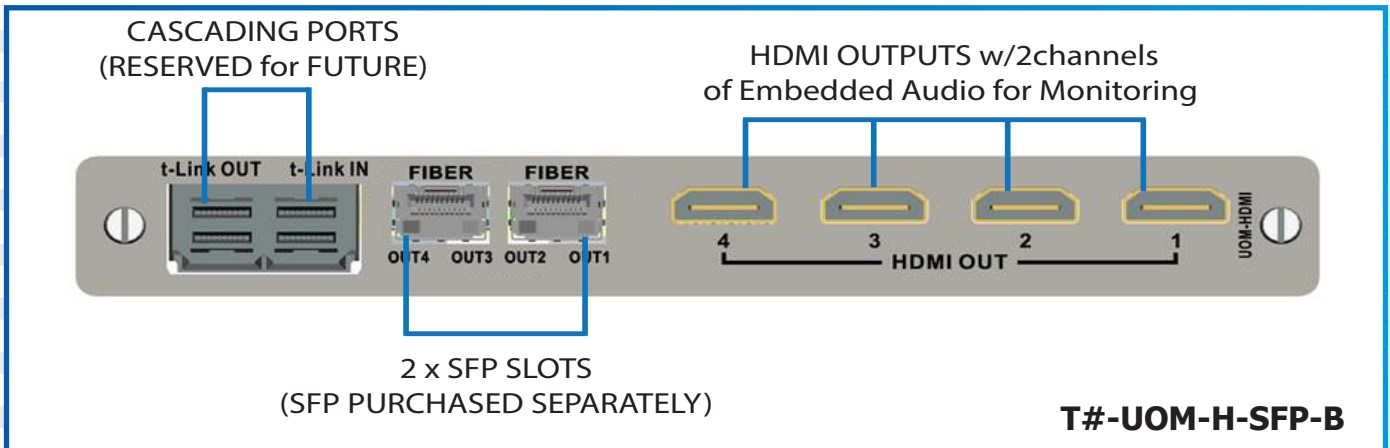
- T#-UOM-H-B (OPTION for 4 additional outputs)
 - 4 HDMI and 4 SDI outputs
 - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
 - SDI output resolution up to 1080p @50/60Hz



- 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

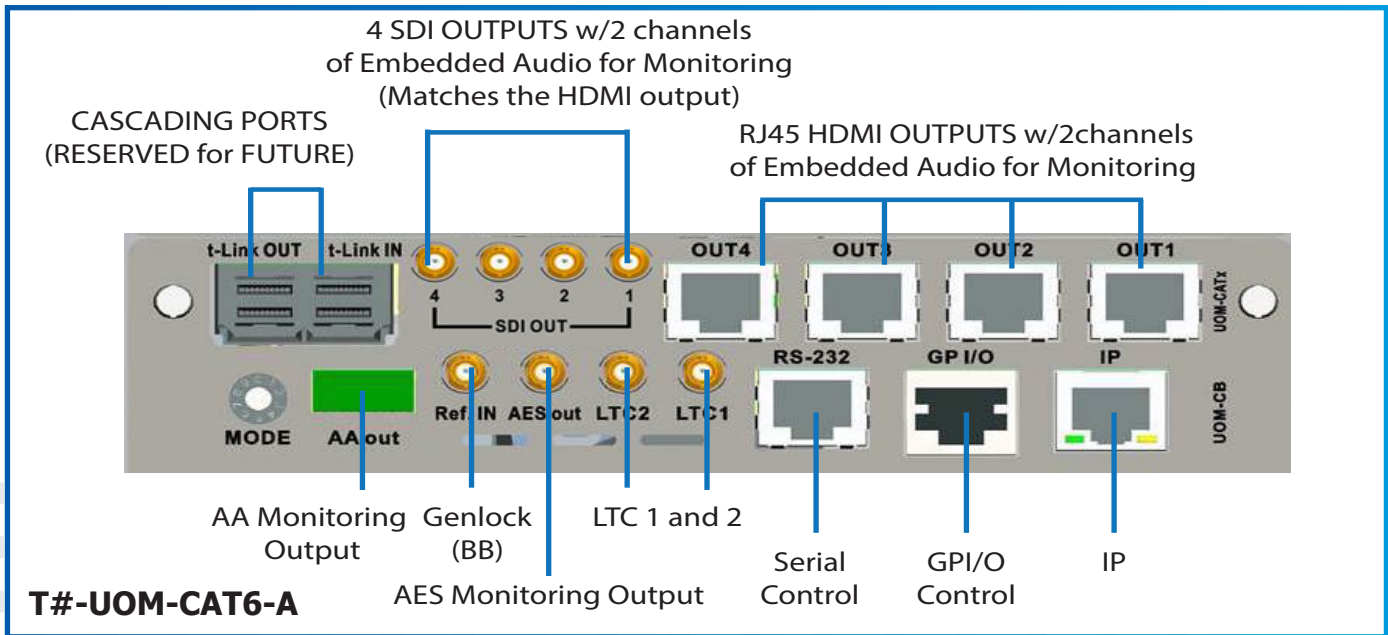


- T#-UOM-H-SFP-B (OPTION)
 - 4 HDMI output and 2 x SFP Slots
 - HDMI output resolution up to 1920x1200 @50/60Hz including 1080p
 - SDI output resolution up to 1080p @50/60Hz

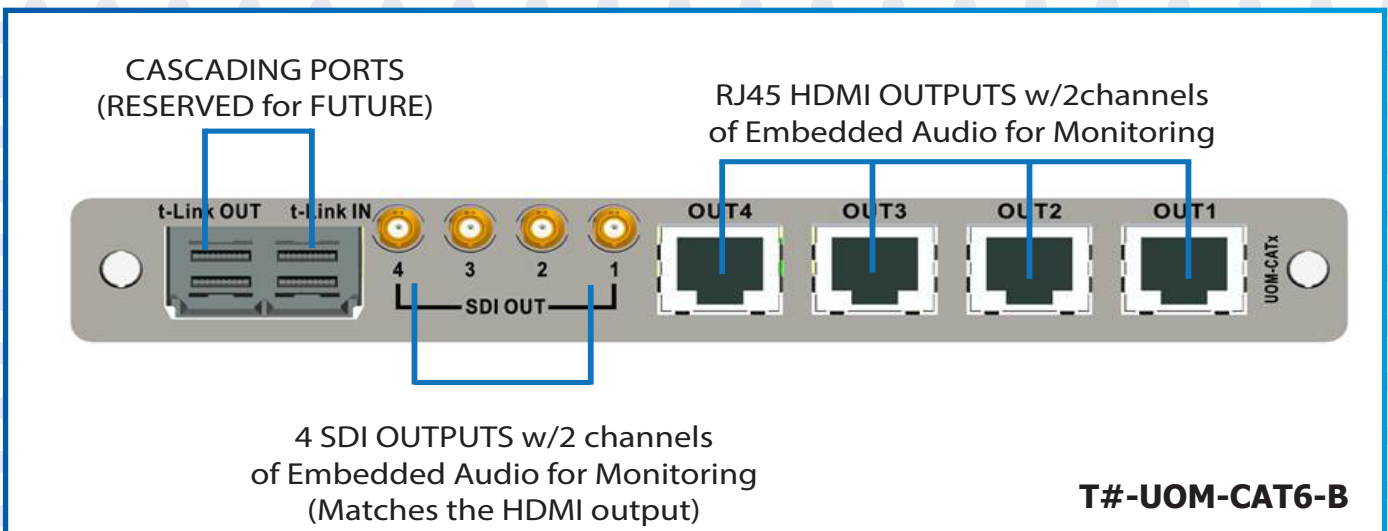


TAHOMA T# (T-SHARP) MULTIVIEWERS

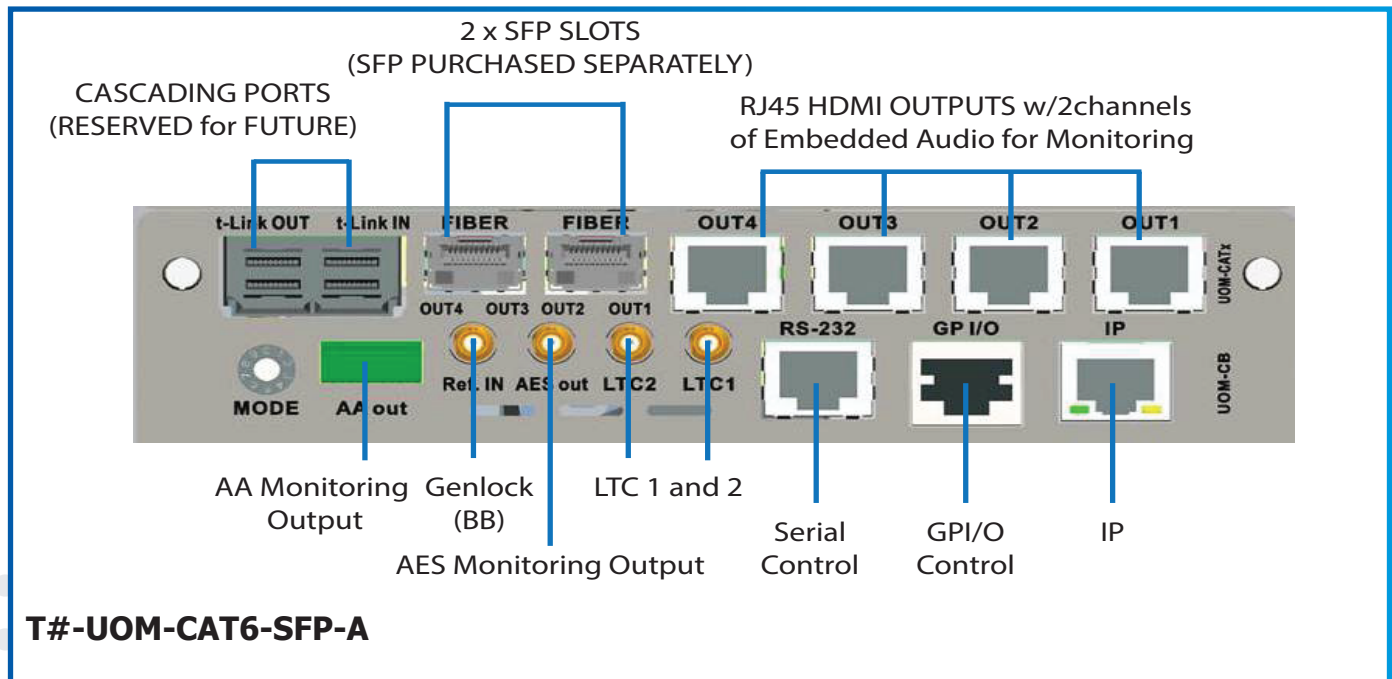
- T#-UOM-CAT6-A (OPTION)
 - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs + control interfaces
 - SDI output resolution up to 1080p @50/60Hz
 - IP, GPI/O, serial, 2 x LTC, AES and AA audio monitoring outputs and genlock
 - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
 - Optional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



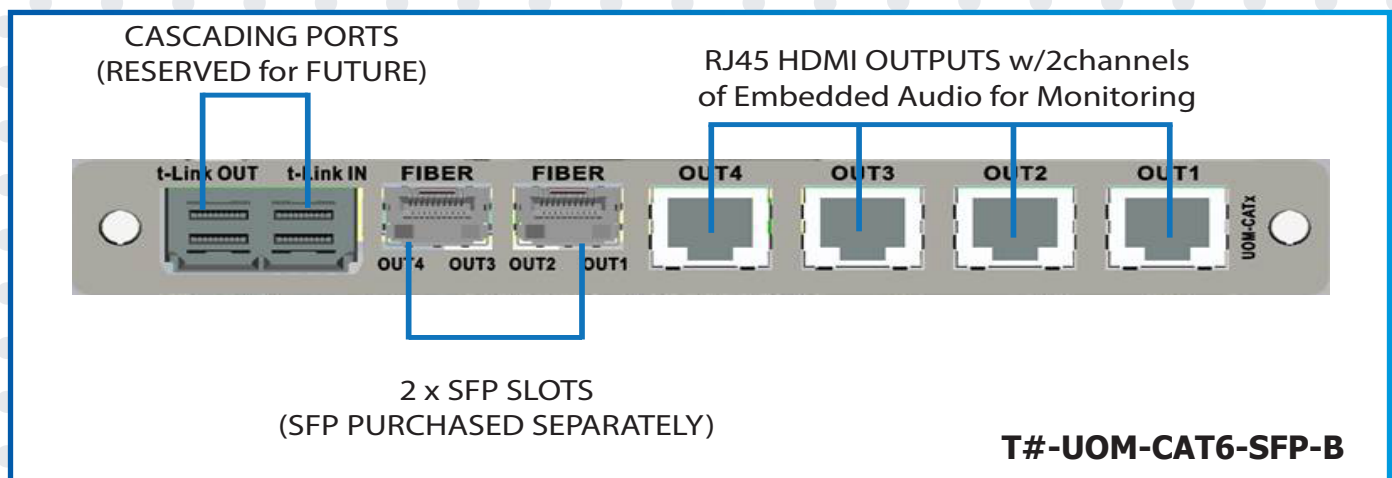
- T#-UOM-CAT6-B (OPTION)
 - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs
 - SDI output resolution up to 1080p @50/60Hz
 - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
 - Optional active long distance receivers up to 115 feet (35 meters)



- 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)

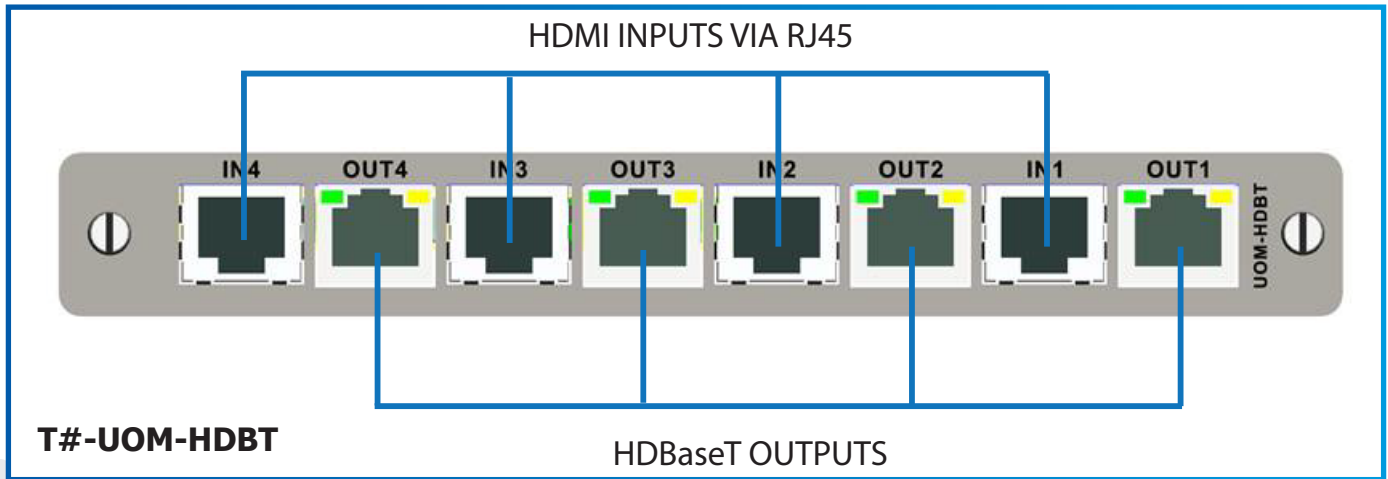


- T#-UOM-CAT6-B (OPTION)
 - 4 RJ45/CAT6 HDMI Extender and 4 SDI outputs
 - SDI output resolution up to 1080p @50/60Hz
 - Comes with 4 passive short-distance receivers up to 35 feet (10 meters)
 - Optional active long distance receivers up to 115 feet (35 meters)



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

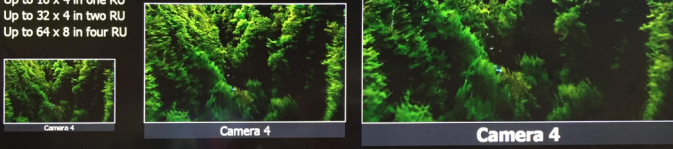


- Each input card has one RJ45 input and 2 ASI Inputs and Loop out
- Each input card can decode up to 8 streams of IP or ASI
- Compliant to ISO/IEC 13818-1 MPEG-2 Transport Stream Specification
- Demultiplexing incoming SPTS/MPTS
- MPEG2/H.264 decode
- MPEG2 MP@HL, resolution up to 1080P/1080i@60Hz
- 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

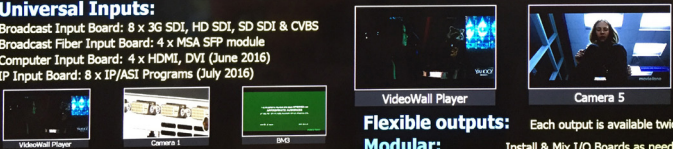
TAHOMA T# (T-SHARP) MULTIVIEWERS

T# Multiviewer Series

Three different chassis:
 Up to 16 x 4 in one RU
 Up to 32 x 4 in two RU
 Up to 64 x 8 in four RU



Universal Inputs:
 Broadcast Input Board: 8 x 3G SDI, HD SDI, SD SDI & CVBS
 Broadcast Fiber Input Board: 4 x MSA SFP module
 Computer Input Board: 4 x HDMI, DVI (June 2016)
 IP Input Board: 8 x IP/ASI Programs (July 2016)



Flexible outputs: Each output is available twice.
Modular: Install & Mix I/O Boards as needed

OUTPUT 1





New architecture:
 Source signal repetition across all outputs; Scaled Source Signal can be displayed many times on any output



HDMI or HDMI over CAT 6 and 3G/HD SDI or over Fiber (Rear Output module dependant)
 Move boards to a bigger chassis as your system grows

OUTPUT 2

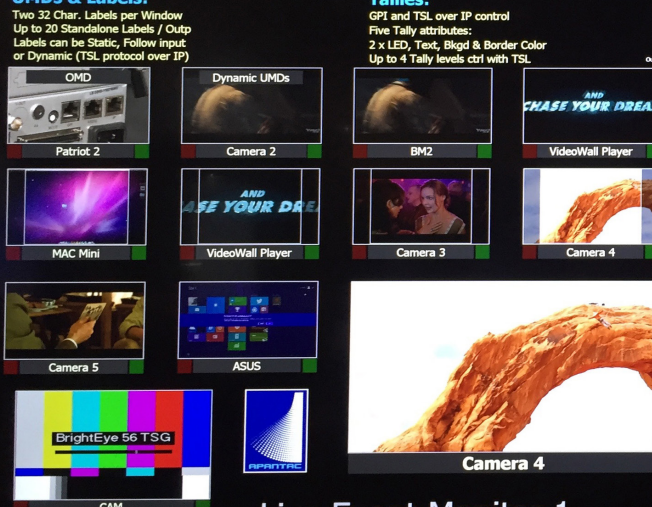
Audio Support:
 Decode the 16 SDI Embedded Audio
 Display up to 256 meters per output
 Analog / AES Stereo Mon. Output



Safe Title / Safe Area Markers:
 Two sets of Markers per Window
 Line and Shadow for Marker Set 1
 Line for Marker Set 2

UMDs & Labels:
 Two 32 Char. Labels per Window
 Up to 20 Standalone Labels / Output
 Labels can be Static, Follow input or Dynamic (TSL protocol over IP)

Tallies:
 GPI and TSL over IP control
 Five Tally attributes:
 2 x LED, Text, Bkgd & Border Color
 Up to 4 Tally levels ctrl with TSL



Live Event Monitor 1

OUTPUT 3, 4, 5, 6 =



OUTPUT 7



OUTPUT 8

Alarms:
Video Presence, Format, Frozen, Black detection
Configurable Detection & Behavior
Visual Alarms and GPI output parameters

Analog & Digital Clocks/Counters:
Free running or Sync up to LTC, NTP
Or use clocks as Up Down Counters
Counter Ctrl via GPI, AXP Protocol

Presets & Configuration:
Create & Save up to 30 Presets
Recall them via GPI, AXP protocol
over IP - HW & SW Panels
JDirector: Java based cfg. App.

Logos:
Download Bitmaps

Up/Down Counter 00:00:00

Date & Time 2016/06/09 Thu PM 12:09:12

infoComm16

ASUS

Live Event Monitor 2

Countdown 00:00:00

Camera 5
Camera 1
Camera 2
Camera 3
Camera 4
REC 1
Camera 2
REC 3
Camera 4
VideoWall Player
ASUS
BE56
MAC Mini
BM2
BE56
ASUS
MAC Mini
Las Vegas

4 x 1080P (UHD)

TAHOMA T# (T-SHARP) MULTIVIEWERS

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 Reach	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		Impedance	> 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	Phoenix
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

SPECIFICATIONS

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