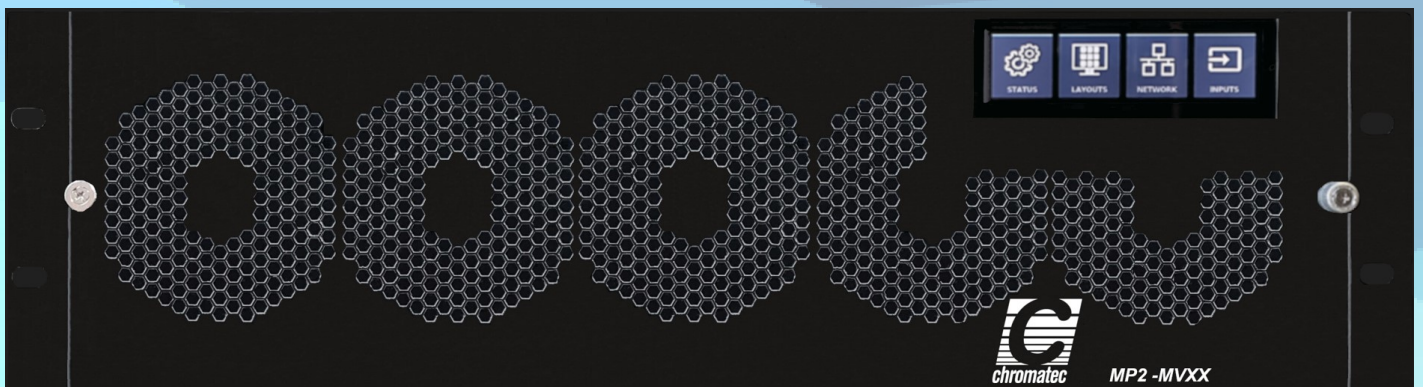
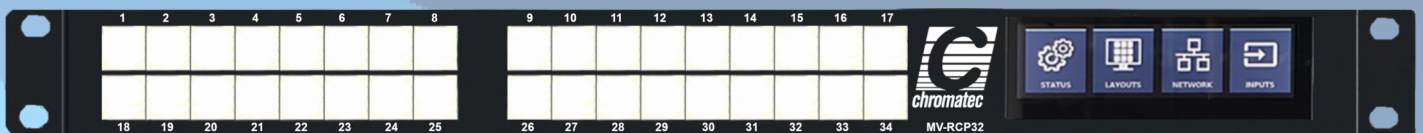
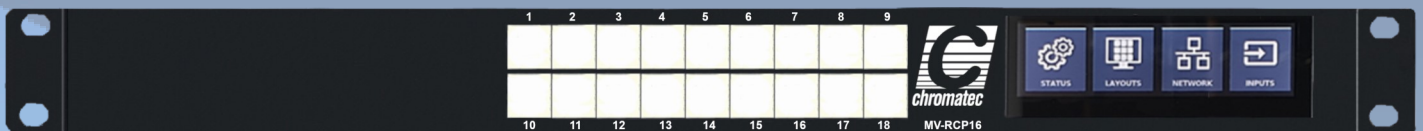


Chromatec High Performance Multiviewers



Technical and Operating Manual
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safety

Safety standards

This equipment complies with the following standards:

Standard for Safety - Professional Video and Audio equipment

This unit conforms to the protection requirements of the;

EMC Directive 2014/30/EU and to the relevant provisions of the following standards:

EN 55032: 2012 Class 4

EN 61000-3-2: 2014 Class A

EN 61000-3-3: 2013

EN 55103-2: 2009 Environment E2

LV Directive 2014/35/EU and to the relevant provisions of the following standards:

EN 60950-1: 2006

Safety of information Technology Equipment

RoHS Directive 2011/65/EU

The restriction of the use of certain hazardous substances in electrical and electronic equipment

Federal Communications Commission Rules 47 CFR: 2009, Part 15, Subpart B (Class A)

EMC Performance of Cables and Connectors

Chromatec products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the metal shell.

FCC Compliance

In order to comply with FCC/CFR47: Part 15 regulations, it is necessary to use the following specification of cable assemblies for HDMI/DVI interconnections:

For DVI to DVI or HDMI to HDMI or DVI to HDMI interconnection, use a high-quality triple-screened cable assembly with integrated ferrite suppression at both ends of the cable for optimum RF/EMI integrity in compliance with DVI and HDMI specifications.

Explanation of Safety Symbols



This symbol refers the user to important information contained in the accompanying literature.



This symbol indicates that hazardous voltages are present inside. No user serviceable parts inside. This unit should only be serviced by trained personnel

Safety Warnings

Caution:

These servicing instructions are for use by qualified personnel only.



To reduce risk of electric shock do not perform any servicing other than that contained in the Operating Instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

To reduce the risk of electric shock, do not expose this appliance to rain or moisture

Always ensure that the unit is properly earthed and power connections are correctly made.



This equipment must be supplied from a power system providing a **PROTECTIVE EARTH** connection and having a neutral connection which can be reliably identified.

The power outlet supplying power to the unit should be close to the unit and easily accessible.

Mains power supply

The mains voltage (100/240 volts) will be auto-detected provided it is in the range 100-240V AC 60/50Hz

The IEC power inlet is the mains disconnection device for these units.

A mains cable with a minimum rating of 10A, fitted with a 10A fuse is recommended

This equipment can have more than one power supply fitted. To reduce the risk of electrical shock, disconnect ALL the power cords before servicing.

Electric shock hazards exist if conductive instruments, neck chains or fingers etc. are placed within the unit or in close proximity of the input/output terminals connectors

Health and safety considerations

The Installation and Maintenance of the frames and any associated equipment must be carried out by **PERSONS SUITABLY QUALIFIED** to work with equipment which may be connected to the mains supply.

INCORRECT INSTALLATION can cause internal components to rupture and particles to be ejected from the product.

TOXIC FUME HAZARDS exist if the unit is subjected to direct flames or excessive temperature of above 100 Degrees Centigrade ambient.

The mounting and installation of the unit must be arranged by the user to comply with **ALL** current local safety regulations.



Installation

- Please remove all packaging and wrapping before use.
- Please refer to the previous Safety Section before connecting power to the unit and **check all cards and the power supply are correctly seated in the chassis** before initial power up.
- The installation and maintenance of a frame and any associated equipment must be carried out by persons suitably qualified to work with equipment which may be connected to the mains.
- The mounting and installation of this equipment must be arranged by the user to comply with all current local safety regulations.
- Before powering-up for the first time any newly installed or recently moved frames, please open the front panel and check that **all cards are fully inserted**. Every new chassis is fitted with card retaining features designed to keep the cards in place even when the chassis is subject to harsh movements. However, if these have been removed to access cards and not replaced, or if the frame has been damaged in transit, then cards may have jumped out of their mating connectors.

Rack mounting

- SMP-MV frames can be installed in 19" bays but they **MUST** be placed on a suitably specified and installed rack shelf and secured to the rack using the front ears with the correct rack mount screws or bolts.
- Do not rack mount the frames using only the front rack ears.
- If installing equipment immediately above or below a frame it is essential to ensure that the ventilation holes on PSU rear, side and top are not obstructed.
- For ventilation purposes, there must be a gap of at least 50mm (2 inches) for the front inlet and rear outlet grilles.
- You must allow at least 100mm (4 inches) of space at the rear of a frame for cables and connections.

Ventilation

Ventilation is assisted by cooling fans located on the removable front panel.

- The maximum ambient operating temperature must be less than 40°C.
- The inlet and outlet vents should be periodically cleaned and kept free from the build up of dust.
- To maintain adequate cooling, a frame must not be run for more than two minutes with the front panel open.
- For ventilation purposes, there **must** be a gap of at least 50mm (2 inches) for the front inlet and rear outlet grilles.
- Air is pulled through the ventilation holes in the front panels, circulated through the frame and expelled through the PSU rear, side and top ventilation holes.

Power and fuses

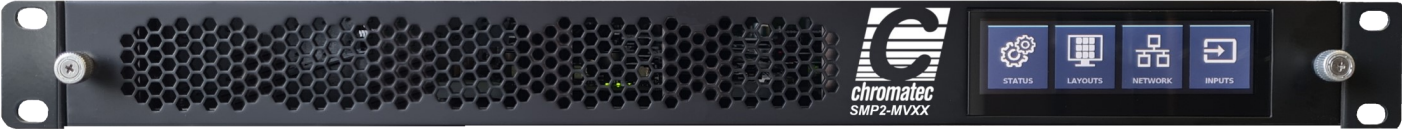
There are NO user-accessible fuses in this product. This equipment can have more than one power supply source fitted. To reduce the risk of electrical shock, disconnect ALL the power cords before servicing.

toc

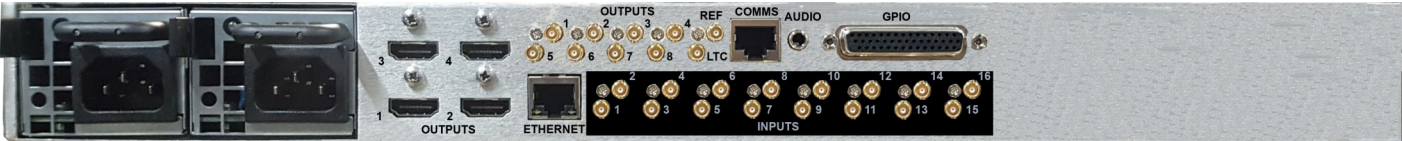
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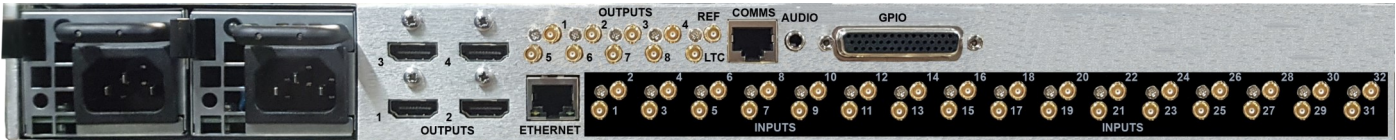
SMP-MVxx models



Front View (All Models)



Models: SMP-MV16/SMP-MV16-12



Models: SMP-MV32/SMP-MV32-12

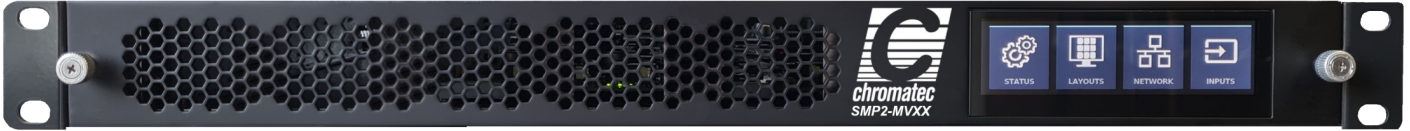


Models: SMP-MV48/SMP-MV48-12

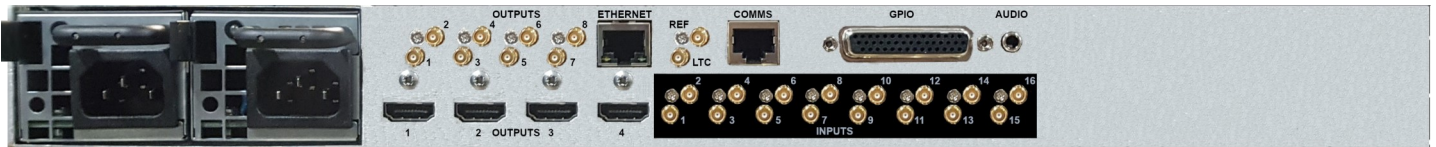
Order Codes

| Part Number | Description | Inputs |
|-------------|---|------------------|
| SMP-MV16 | Multiviewer with 16xSDI inputs and up to 8xSDI/4xHDMI Outputs | 16xSD/HD/FHD |
| SMP-MV32 | Multiviewer with 32xSDI inputs and up to 8xSDI/4xHDMI Outputs | 32xSD/HD/FHD |
| SMP-MV48 | Multiviewer with 48xSDI inputs and up to 8xSDI/4xHDMI Outputs | 48xSD/HD/FHD |
| SMP-MV16-12 | Multiviewer with 16xSDI inputs and up to 8xSDI/4xHDMI Outputs | 16xSD/HD/FHD/UHD |
| SMP-MV32-12 | Multiviewer with 32xSDI inputs and up to 8xSDI/4xHDMI Outputs | 32xSD/HD/FHD/UHD |
| SMP-MV48-12 | Multiviewer with 48xSDI inputs and up to 8xSDI/4xHDMI Outputs | 48xSD/HD/FHD/UHD |
| MV-12VPSU | Additional PSU 12V 450W | |

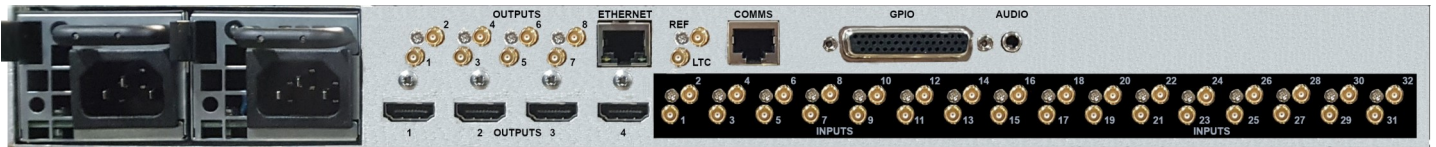
SMP2-MVxx models



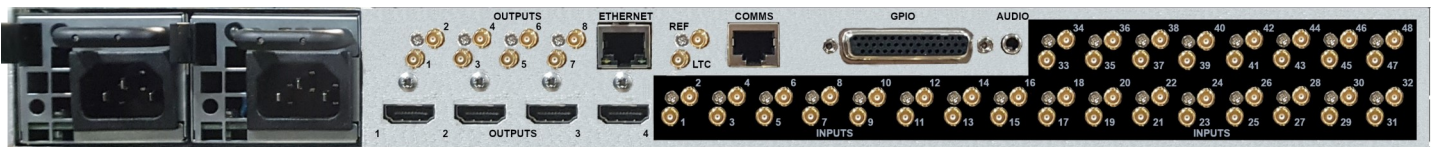
Front View (All Models)



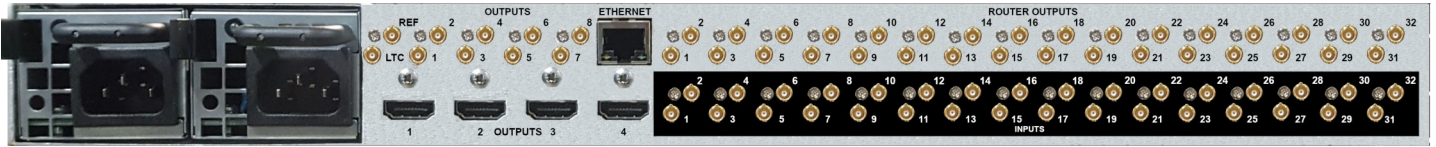
Models: SMP2-MV16-12



Models: SMP2-MV32-12



Models: SMP2-MV48-12

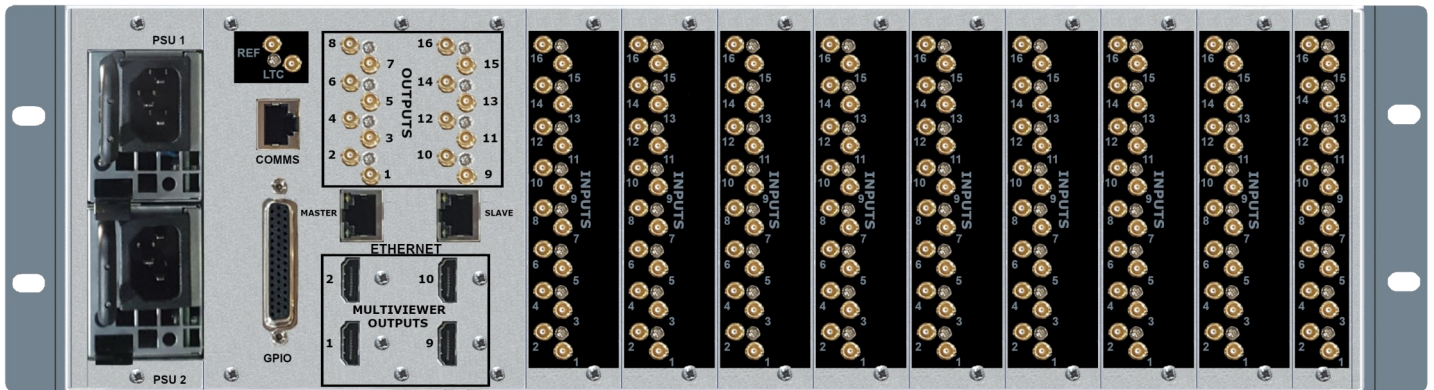
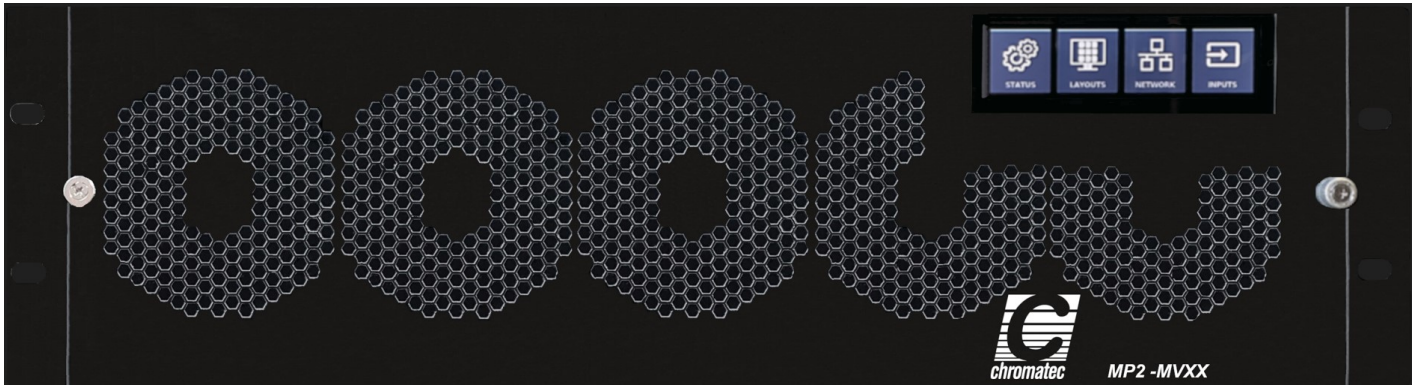


Models: SMP2-MV32R-12

Order Codes

| Part Number | Description | Inputs |
|---------------|--|------------------|
| SMP2-MV16-12 | Multiviewer with integrated 12G-SDI 16x16 multiviewer router 16xSDI inputs and up to 8xSDI/4xHDMI Head outputs. | 16xSD/HD/FHD/UHD |
| SMP2-MV32-12 | Multiviewer with integrated 12G-SDI 32x32 multiviewer router 32xSDI inputs and up to 8xSDI/4xHDMI Head outputs. | 32xSD/HD/FHD/UHD |
| SMP2-MV48-12 | Multiviewer with integrated 12G-SDI 32x32 multiviewer router with additional 16xSDI inputs and up to 8xSDI/4xHDMI Head outputs. | 48xSD/HD/FHD/UHD |
| SMP2-MV32R-12 | Multiviewer with integrated 12G-SDI 32x32 multiviewer router 32xSDI inputs and up to 8xSDI/4xHDMI Head outputs. Integrated 12G-SDI 32x32 router outputs. | 32xSD/HD/FHD/UHD |
| MV-12VPSU | Additional PSU 12V 450W | |

MP2-MVxx models

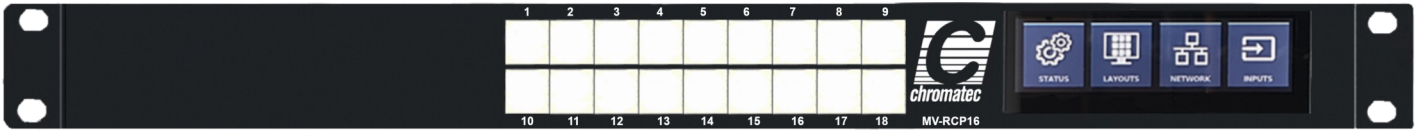


Model: MP2-MVxx

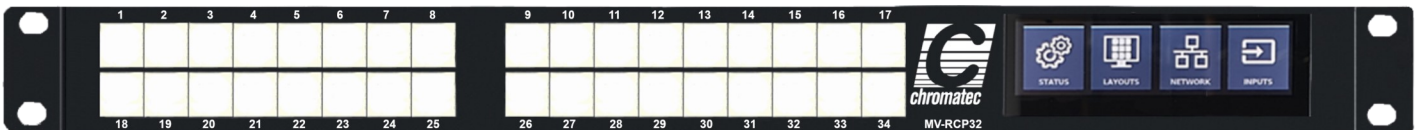
Order Codes

| Part Number | Description |
|---------------------|--|
| MP2-MVxx | Base Frame Modular Multiviewer with provision for up to 144 inputs and 16 x SDI Head outputs. and GPIO/COMMS/LTC/REF. Supplied with one MVC4-SDI as standard. An additional MVC4-SDI adds a further 8 x SDI head outputs. Inputs can be added in multiples of 16 with addition of VIP5 cards and Rears. Frame includes one PSU module as standard. |
| MP2-MVxxH | As MP2-MVxx above with the addition of HDMI outputs using MVC4-HDMI instead of MVC4-SDI. Base frame has MVC4-HDMI as standard with 8 x SDI and 2 x HDMI head outputs. An additional MVC4-HDMI adds a further 8 x SDI and 2 x HDMI head outputs. |
| MVC4-SDI | MVC4 with 8 x SDI Head outputs |
| MVC4-HDMI | MVC4 with 8 x SDI and 2 x HDMI Head outputs. |
| VIP5 | 16 channel video scaler |
| VIP5-R16-3G | Rear Module card for VIP5 with 16 x HDBNC up to 3G-SDI: SMPTE424M |
| VIP5-R16-12G | Rear Module card for VIP5 with 16 x HDBNC up to 12G-SDI: SMPTE ST-2082 |
| MV-12VPSU | Additional PSU 12V 450W |

Multiviewer Remote Control Panels MV-RCPxx



Model: MV-RCP16



Model: MV-RCP32



Model: MV-RCP16/32 (rear view)

Order Codes

| Part Number | Description |
|-------------|--|
| MV-RCP16 | Multiviewer remote control panel with TFT LCD and 18 switches with GPIO breakout |
| MV-RCP32 | Multiviewer remote control panel with TFT LCD and 34 switches with GPIO breakout |
| RCP-12VPSU | Desktop 12V power supply with IEC 15W |

Remote panel communication with the MV on a network

The MV's browser GUI provides a page for discovering remotes available on the network, which MV each one is assigned to (if any), and the ability to assign one or more of these remotes to the MV.

The TFT on the remote has similar menus to the MV's TFT where applicable - e.g. for displaying the status and selecting layouts.

Each hard button can be assigned to selecting a layout or triggering a timer, and the configuration for doing this is done from the MV's GUI.

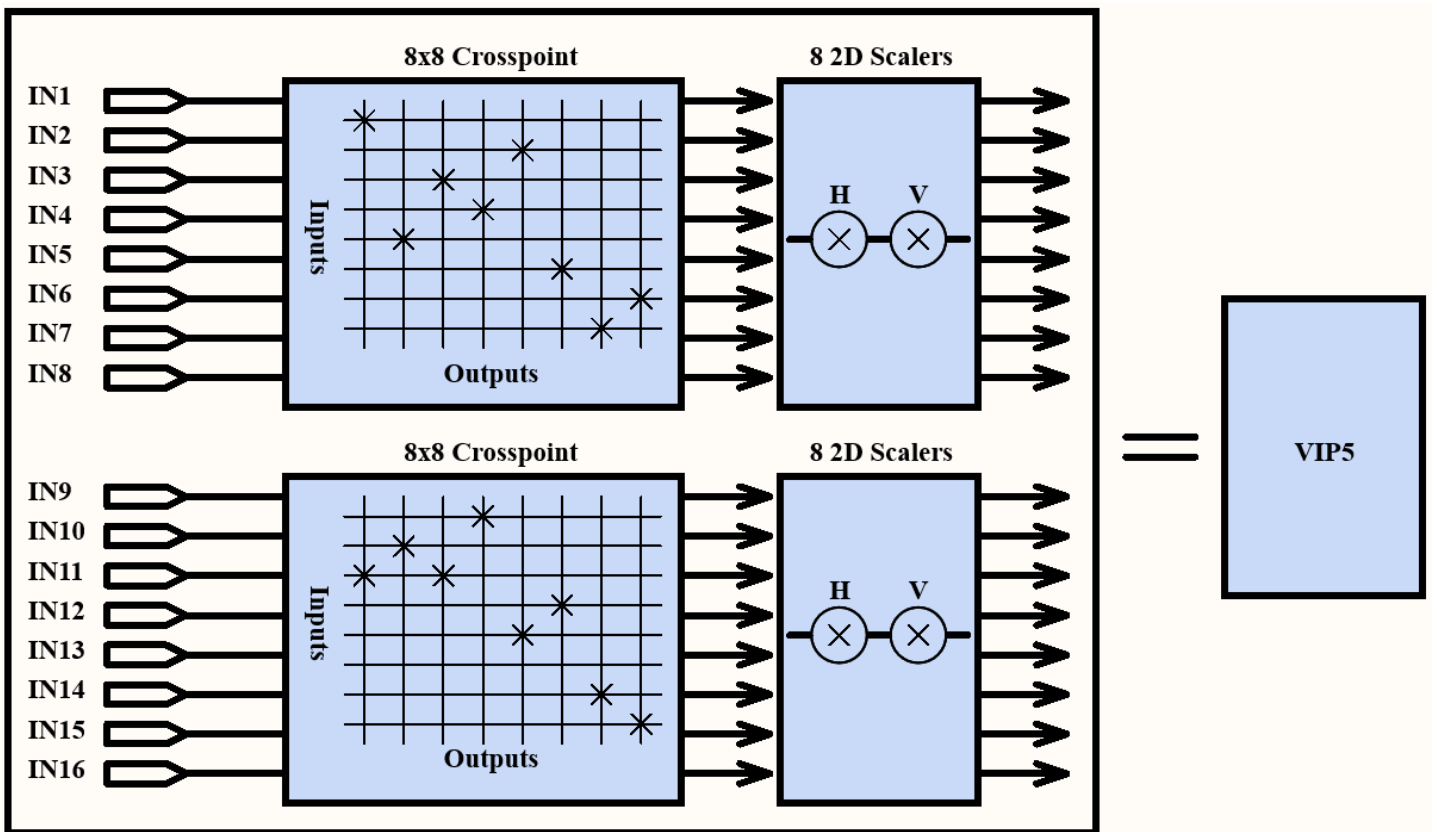
The GPI inputs serve the same purpose, and again are configured from the MV's GUI, as are the GPI outputs which can be assigned to specific alarms.

Description

SMP-MV16/32/48 and SMP-MV16/32/48-12

The SMP-MV16/32/48 multiviewers are cost effective broadcast-quality multiviewers with up to 48 inputs via HD-BNC. Based on the reliable VIP5 scaling engine, each model has a number of video scalars that is equal to the number of video inputs supported. Every input can be assigned to any head output and scaled sources can be duplicated on individually specified or ALL head outputs without consuming additional scalars.

An upstream 8x8 crosspoint in each VIP5 offers local routing of sources to scalars if there is a requirement to display the same source at different sizes on different head outputs. However, each scaled source that is not duplicated will consume a scalar.

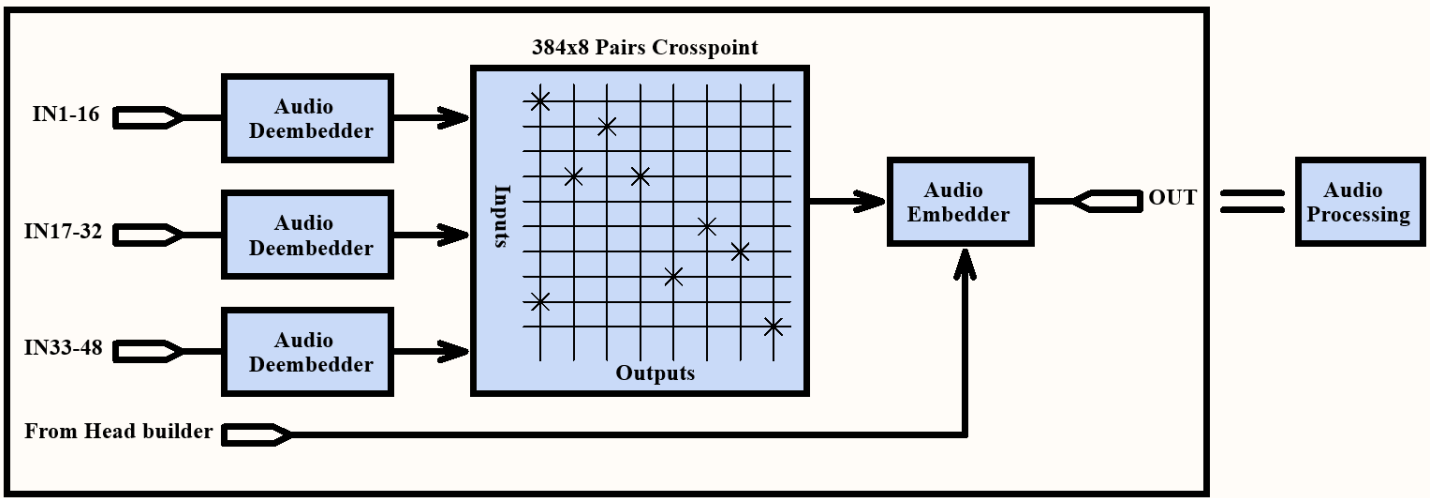


Block Diagram of VIP5 Video Scaler

SMP-MV16/32/48 and SMP-MV16/32/48-12 continued

All multiviewer models have integrated audio routing as shown in the block diagram below. Up to 8 audio pairs are de-embedded from each input source and fed to an audio crosspoint. De-embedded audio pairs are then available for routing and embedding on each multiviewer output head.

In the case shown below, with 48 inputs, each multiviewer head is preceded by a 384 x 8 pair audio crosspoint.



Block Diagram of audio processing

Source audio can be embedded on both SDI and HDMI outputs as shown below.

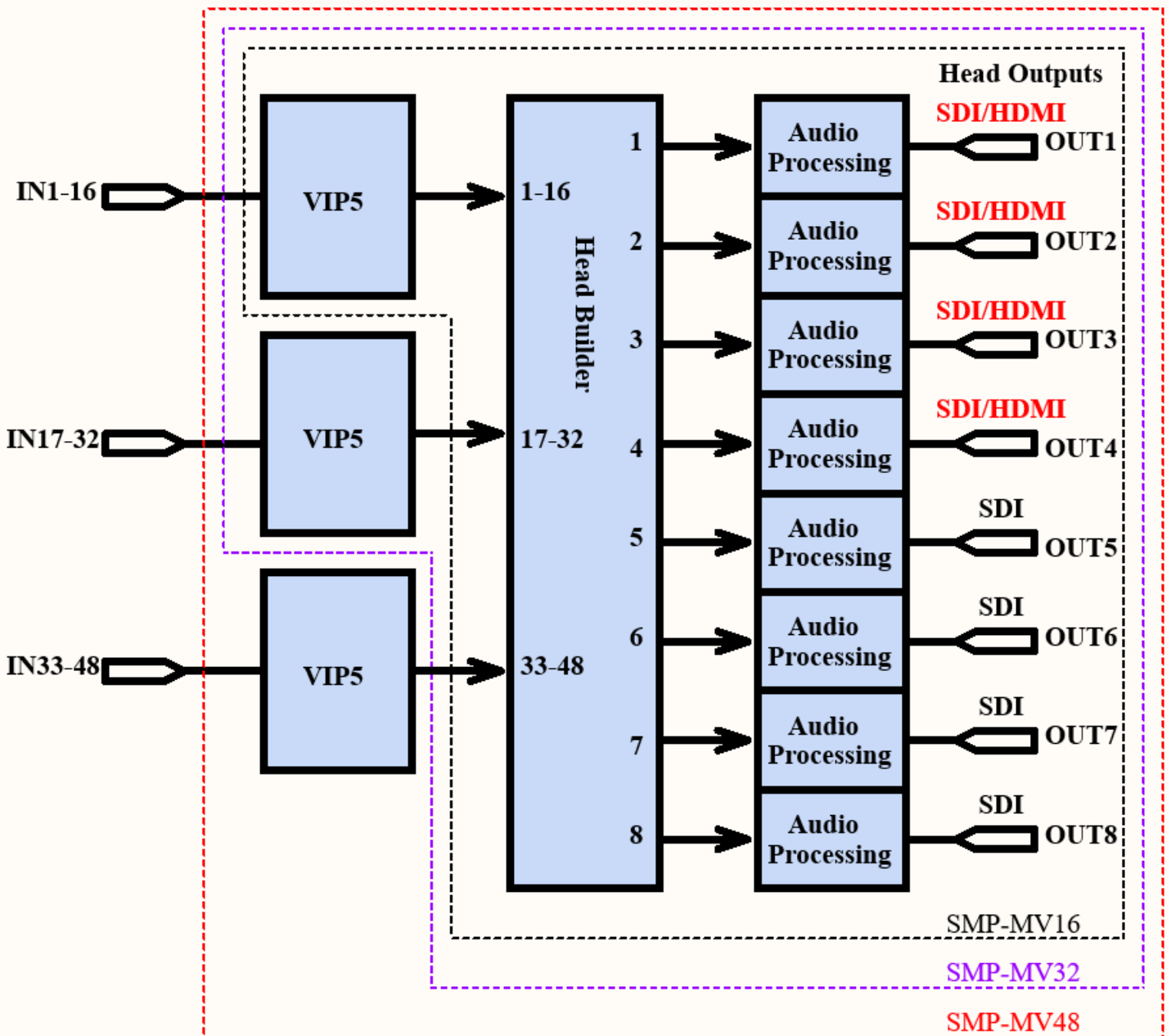
| SDI/HDMI out 1 embedded | | |
|-------------------------|--------------|---------------|
| | Input Source | Pair Number |
| Output 1 + 2 | Source 1 | Channel 1 + 2 |
| Output 3 + 4 | Source 1 | None |
| Output 5 + 6 | Source 1 | None |
| Output 7 + 8 | Source 1 | None |

SMP-MV16/32/48 and SMP-MV16/32/48-12 continued

A representative block diagram of the SMP-MV16/32/48 models is shown below.

All multiviewer models have integrated audio routing blocks preceding each multiviewer output head. These models have up to 8 SDI output heads and 4 duplicate HDMI heads depending on the operational mode.

- For 2K FHD operation - up to 8 Independent outputs are supported with simultaneous SDI and HDMI outputs at 3G-SDI FHD50/59/60 resolution.
- For 4K UHD operation - up to 2 independent outputs are supported with simultaneous QL-4x3G- SDI and HDMI outputs at YCbCr 4:2:0 UHD50/59/60 resolution.

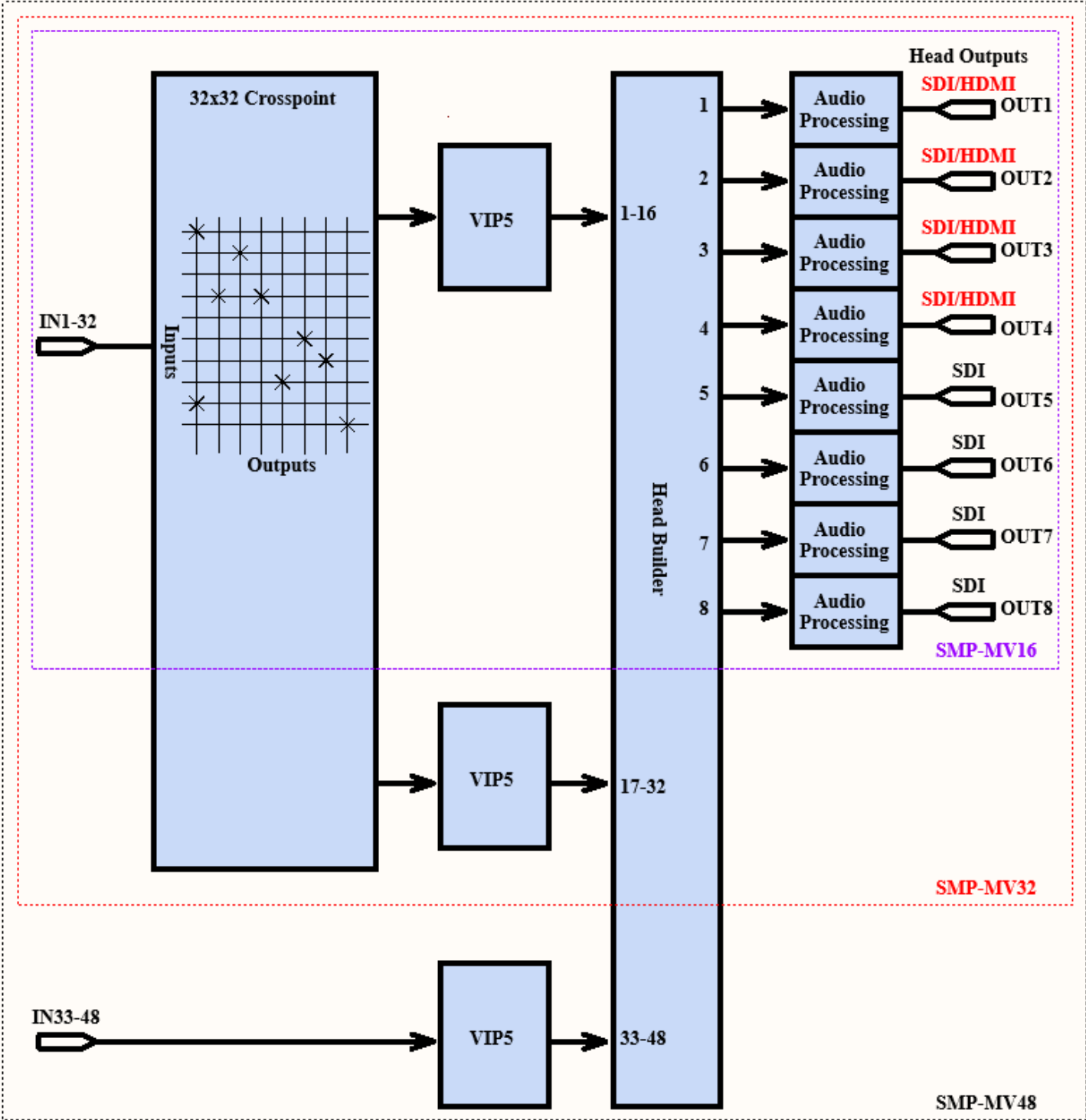


Block Diagram of SMP-MVxx Models

SMP2-MV16/32/48-12

A representative block diagram of the SMP2-MV16/32/48-12 models is shown below. These enterprise models all have a 32x32 crosspoint following the inputs that allows each source to access any scaler. The upstream router ensures that even the most demanding layouts can be accommodated without video blocking. Other key features are:

- For 2K FHD operation - up to 8 Independent outputs are supported with simultaneous SDI and HDMI outputs at 3G-SDI FHD50/59/60 resolution.
- For 4K UHD operation - up to 2 independent outputs are supported with simultaneous SL-12G- SDI and HDMI 2.0 outputs at YCbCr 4:2:2 UHD50/59/60 resolution.

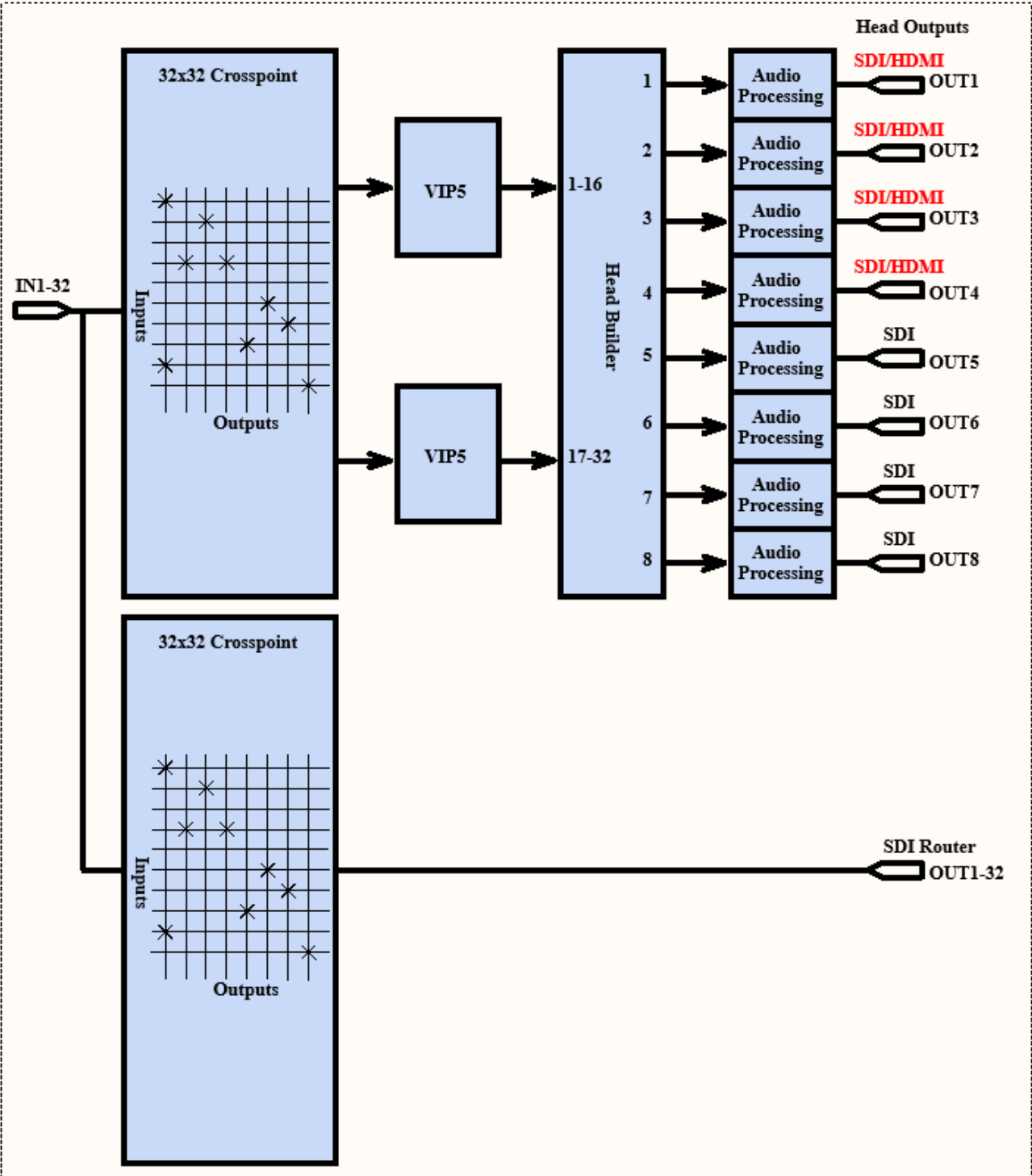


Block Diagram of SMP2-MVxx Models

SMP2-MV32R-12

A representative block diagram of the SMP2-MV32R-12 model is shown below. This enterprise model has two 32x32 crosspoints following the inputs. The multiviewer crosspoint allows each source to access any scaler, ensuring that even the most demanding layouts can be accommodated without video blocking. The second crosspoint acts as a conventional static router using browser control or as a dynamic router using Grass Valley protocols.

- For 2K FHD operation - up to 8 Independent outputs are supported with simultaneous SDI and HDMI outputs at 3G-SDI FHD50/59/60 resolution.
- For 4K UHD operation - up to 2 independent outputs are supported with simultaneous SL-12G- SDI and HDMI 2.0 outputs at YCbCr 4:2:2 UHD50/59/60 resolution.

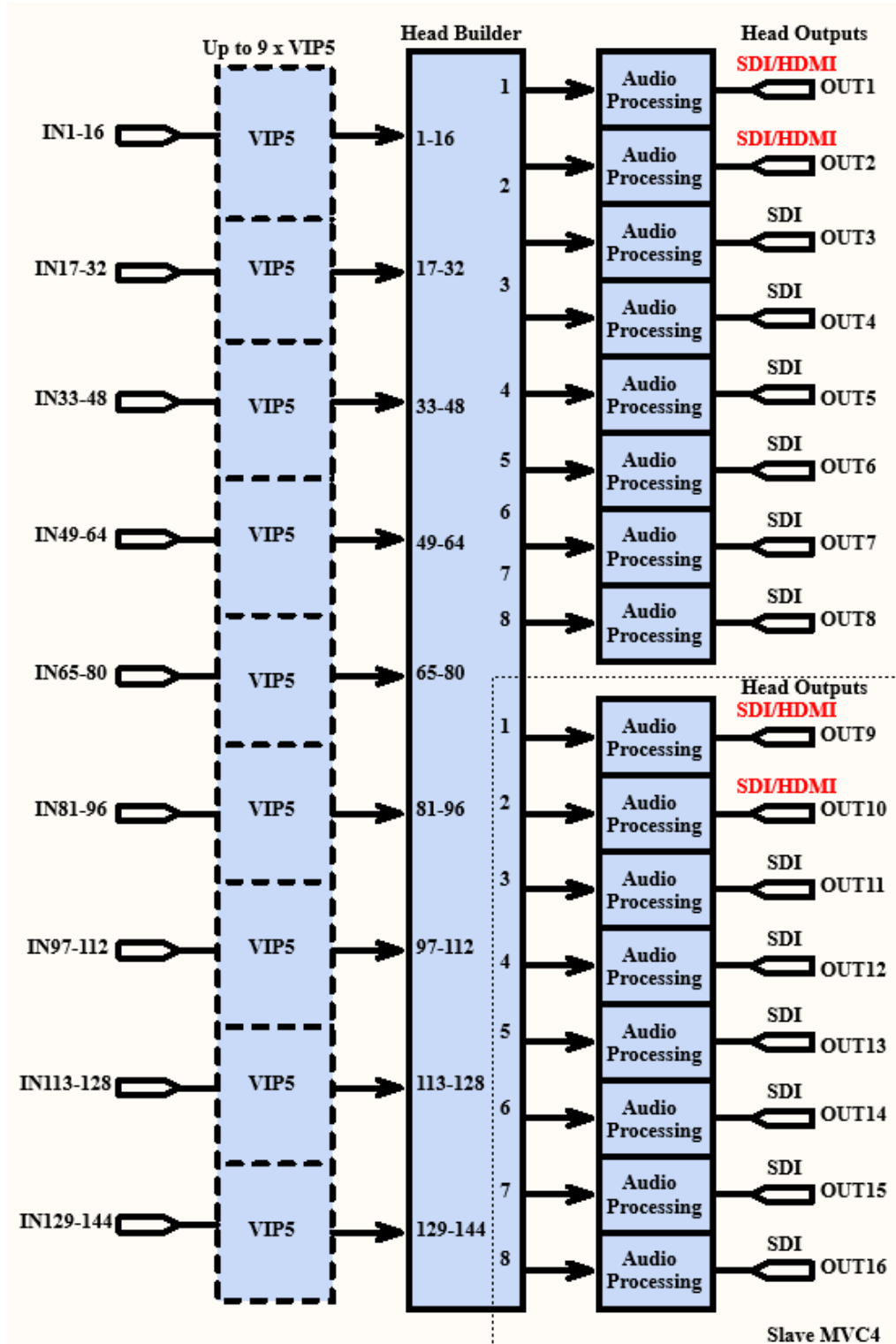


Block Diagram of SMP2-MV32R-12 Model

MP2-MVxx

A representative block diagram of the MP2-MVxx model is shown below. This fully modular multiviewer can be expanded from 16 inputs up to a maximum of 144 inputs in steps of 16. The number of output heads starts at 8 x SDI/2 x HDMI and can be expanded to 16 x SDI/4 x HDMI. Rear input cards can be either 3G-SDI capable or 12G-SDI.

- For 2K FHD operation - up to 8 Independent outputs are supported with simultaneous SDI and HDMI outputs at 3G-SDI FHD50/59/60 resolution.
- For 4K UHD operation - up to 2 independent outputs are supported with simultaneous SL-12G- SDI and HDMI 2.0 outputs at YCbCr 4:2:2 UHD50/59/60 resolution.



Block Diagram of MP2-MVxx Model

SPEC

SMP/SMP2 Frame Specification

| FRAME FEATURES | DESCRIPTION |
|------------------|--|
| 1RU Dimensions | Size: 440(W) x 44(H) x 516(D) mm Size: 483(W) x 44(H) x 516(D) mm with rack mount brackets Weight: 8 kg (two PSUs) |
| 1RU Cooling Fans | 5 fans each 40x40x20mm nominal 6-12V operating range. 10.8CFM 27.5dBA 0.092A 1.11W Sunon Vapo-Bearing technology |

| COMMS | DESCRIPTION |
|---------------|---|
| GPIO | High-density 44-way D-type. Assignable 32xGPIO Inputs, 8xGPIO Outputs |
| Ethernet | RJ45 LAN: 100BASE-T |
| Audio | 1 x 3.5mm stereo audio jack |
| RS422 & RS485 | 1 x RJ45 |

| ENVIRONMENTAL | DESCRIPTION |
|------------------------|---|
| Temperature | 0°C to 40°C |
| Humidity | 30% to 90% (no condensation) |
| AC/DC Power Module | (90VAC ~ 264VAC), 50/60 Hz Safety Compliance: CB, CE, CCC, cUL, UL, TÜV |
| Max. Power Consumption | 151.7W at 200-240VAC, 50Hz, 0.68A |
| Compliance | EMC – Emissions EU: EN55103-1 USA: FCCR 47 CFR: 2009, Part 15, Sub-part B (Class A) EMC – Immunity EU: EN55103-2. Safety EN: EN60950-1 USA: Tested to UL1419 (3rd Edition) Hazardous Material UK: RoHS-6 – Complies with EU Directive |

SPEC

SMP SDI Inputs

| VIDEO INPUTS | DESCRIPTION |
|--------------------|---|
| SDI Inputs | SMP-MVxx: up to 48xSD/HD/FHD with maximum resolution of FHD50/59/60. SMP-MVxx-12: up to 48xSD/HD/FHD/UHD with maximum resolution of UHD50/59/60. |
| SDI Format | SMP-MVxx: SD-SDI (SMPTE259M 270Mbit/s): 525/59.94Hz, 625/50Hz HD-SDI (SMPTE292M 1.5Gbit/s) 3G-SDI (SMPTE424M 3Gbit/s Level A Mapping, Level B Dual Stream Mapping) SMP-MVxx-12: As above plus 6G-SDI (SMPTE ST2081 6Gbit/s), 12G-SDI (SMPTE ST2082 12Gbit/s) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >350m, HD-SDI >150m, 3G-SDI >120m, 12G-SDI >50m |
| SDI Return Loss | Return Loss lower than -15dB up to 1.5GHz and -10dB up to 3GHz. -7dB up to 6GHz and -4dB up to 12GHz |
| SDI Embedded Audio | SD-SDI SMPTE-274M-A, HD & 3G SDI SMPTE 299M |
| SDI Connector | Dual HD-BNC 75ohm |

SMP SDI/HDMI Screen Outputs

| VIDEO OUTPUTS | DESCRIPTION |
|---------------------|--|
| SDI Screen Outputs | In 2K mode up to 8 x FHD50/59/60. In 4K mode up to 2 x UHD50/59/60. |
| HDMI Screen Outputs | All modes output format HDMI 1.4 In 2K mode up to 4 x FHD50/59/60 RGB 4:4:4 simultaneous with SDI outputs. In 4K mode up to 2 x UHD50/59/60 YCbCr 4:2:0 simultaneous with SDI outputs. |
| SDI Format | HD-SDI (SMPTE292M 1.5Gbs) 3G-SDI (SMPTE424M 3Gbs) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >350m, HD-SDI >150m, 3G-SDI >120m |
| SDI Connector | Dual HD-BNC 75ohm |

SPEC[®]

SMP2 SDI Inputs

| VIDEO INPUTS | DESCRIPTION |
|-----------------------|--|
| SDI Inputs | SMP2-MVxx: up to 48xSD/HD/FHD/UHD with maximum resolution of UHD50/59/60. SMP2-MV32-R: 32xSD/HD/FHD/UHD with maximum resolution of UHD50/59/60. |
| SDI Format | SD-SDI (SMPTE259M 270Mbit/s): 525/59.94Hz, 625/50Hz HD-SDI (SMPTE292M 1.5Gbit/s) 3G-SDI (SMPTE424M 3Gbit/s Level A Mapping, Level B Dual Stream Mapping) 6G-SDI (SMPTE ST2081 6Gbit/s), 12G-SDI (SMPTE ST2082 12Gbit/s) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >250m, HD-SDI >150m, 3G-SDI >100m, 12G-SDI >60m |
| SDI SMPTE Return Loss | Return Loss lower than -15dB up to 1.5GHz and -10dB up to 3GHz. -7dB up to 6GHz and -4dB up to 12GHz |
| SDI Embedded Audio | SD-SDI SMPTE-274M-A, HD & 3G SDI SMPTE 299M |
| SDI Connector | Dual HD-BNC 75ohm |

SMP2 SDI/HDMI Screen Outputs

| VIDEO OUTPUTS | DESCRIPTION |
|---------------------|---|
| SDI Screen Outputs | In 2K mode up to 8 x FHD50/59/60. In 4K mode up to 4 x UHD50/59/60 (when configured as 4 x Quads), otherwise 2 x UHD50/59/60 for arbitrary layouts. |
| HDMI Screen Outputs | All modes output format HDMI 2.0 YCbCr 4:2:2 10-bit Duplicates of SDI outputs. Up to 4 x UHD50/59/60. |
| SDI Format | 8 x SDI outputs configured as: HD-SDI (SMPTE292M 1.5Gbs), 3G-SDI (SMPTE424M 3Gbs) 2 x SDI outputs when configured as: 12G-SDI (SMPTE ST2082 12Gbit/s) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >250m, HD-SDI >150m, 3G-SDI >100m, 12G-SDI >50m |
| SDI Connector | Dual HD-BNC 75ohm |

SMP2-MV32R-12 SDI Router Outputs

| VIDEO OUTPUTS | DESCRIPTION |
|--------------------|---|
| SDI Router Outputs | SMP2-MV32-R: 32xSDI outputs with maximum resolution of UHD50/59/60 |
| SDI Format | HD-SDI (SMPTE292M 1.5Gbs), 3G-SDI (SMPTE424M 3Gbs) 12G-SDI (SMPTE ST2082 12Gbit/s) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >250m, HD-SDI >150m, 3G-SDI >100m, 12G-SDI >50m |
| SDI Connector | Dual HD-BNC 75ohm |

SPEC

MP2 Frame Specification

| FRAME FEATURES | DESCRIPTION |
|------------------|---|
| 3RU Dimensions | Size: 440(W) x 132(H) x 472(D) mm Size: 484(W) x 132(H) x 472(D) mm with rack mount brackets Frame Weight: 9.5 kg (two PSUs) Shipping Weight: 12.65 kg |
| 3RU Cooling Fans | 4 fans each 80x80x20mm nominal 6-12V operating range. 60 CFM 44.7dBA 0.31A 4.1W Sunon Vapo-Bearing technology 3 fans each 40x40x20mm nominal 6-12V operating range. 10.8CFM 27.5dBA 0.092A 1.11W Sunon Vapo-Bearing technology |

| COMMS | DESCRIPTION |
|---------------|---|
| GPIO | High-density 44-way D-type. Assignable 32xGPIO Inputs, 8xGPIO Outputs |
| Ethernet | RJ45 LAN: 100BASE-T |
| RS422 & RS485 | 1 x RJ45 |

| ENVIRONMENTAL | DESCRIPTION |
|------------------------|---|
| Temperature | 0°C to 40°C |
| Humidity | 30% to 90% (no condensation) |
| AC/DC Power Module | (90VAC ~ 264VAC), 50/60 Hz Safety Compliance: CB, CE, CCC, cUL, UL, TÜV |
| Max. Power Consumption | 450W at 200-240VAC, 50Hz, 2.1A |
| Compliance | EMC – Emissions EU: EN55103-1 USA: FCCR 47 CFR: 2009, Part 15, Sub-part B (Class A) EMC – Immunity EU: EN55103-2. Safety EN: EN60950-1 USA: Tested to UL1419 (3rd Edition) Hazardous Material UK: RoHS-6 – Complies with EU Directive |

SPEC

MP2 SDI Inputs

| VIDEO INPUTS | DESCRIPTION |
|-----------------------|--|
| SDI Inputs | Up to 144xSD/HD/FHD/UHD with maximum resolution of UHD50/59/60. |
| SDI Format | SD-SDI (SMPTE259M 270Mbit/s): 525/59.94Hz, 625/50Hz HD-SDI (SMPTE292M 1.5Gbit/s) 3G-SDI (SMPTE424M 3Gbit/s Level A Mapping, Level B Dual Stream Mapping) 12G-SDI (SMPTE ST2082 12Gbit/s) Note: requires 12G-SDI Rear and 12G Licence. |
| SDI Cable Length | Using Belden 1694A: SD-SDI >250m, HD-SDI >150m, 3G-SDI >100m, 12G-SDI >60m |
| SDI SMPTE Return Loss | Return Loss lower than -15dB up to 1.5GHz and -10dB up to 3GHz. -7dB up to 6GHz and -4dB up to 12GHz |
| SDI Embedded Audio | SD-SDI SMPTE-274M-A, HD & 3G SDI SMPTE 299M |
| SDI Connector | Dual HD-BNC 75ohm |

MP2 SDI/HDMI Screen Outputs

| VIDEO OUTPUTS | DESCRIPTION |
|--------------------------------|--|
| SDI Screen Outputs (each MVC4) | In 2K mode up to 8 x FHD50/59/60. In 4K mode up to 2 x UHD50/59/60 |
| HDMI Screen Outputs | Duplicates of SDI outputs. Up to 4 x UHD50/59/60 YCbCr 4:2:2 10-bit. HDMI 2.0 |
| SDI Format (each MVC4) | 8 x SDI outputs configured as: HD-SDI (SMPTE292M 1.5Gbs), 3G-SDI (SMPTE424M 3Gbs), 2 x SDI outputs when configured as: 12G-SDI (SMPTE ST2082 12Gbit/s) |
| SDI Cable Length | Using Belden 1694A: SD-SDI >250m, HD-SDI >150m, 3G-SDI >100m, 12G-SDI >50m |
| SDI Connector | Dual HD-BNC 75ohm |

SPEC

All Models: Features

| AUDIO PROCESSING | DESCRIPTION |
|---------------------------|---|
| Audio meters (video pips) | Each video pip can have its own audio meters with left/right or split meters All pairs of embedded audio can be displayed. |
| Audio meters (audio pips) | Audio pips can be configured up to a maximum of 512 (including video pips) with audio sources derived from the video inputs. |
| Embedded Audio on Outputs | SDI or HDMI outputs can be individually configured to include up to 4 pairs of embedded audio from any of the inputs. |
| Audio Monitoring Out | SMP/SMP2 frames only: 1 Pair of embedded audio from any input can be monitored on an 3.5mm stereo analogue line level output. |

| ALARMS | DESCRIPTION |
|------------------------|---|
| Alarms | Video Loss, Video Freeze, Video Black, Over/Under, Audio Carrier Loss, Audio Silence, Audio Over/Under threshold, Audio Phase Error, Audio mono, Source Metadata (EIA-608 encapsulated in EIA-708. CC, WST, OP-47, D-VITC, ATC loss and CRC errors). Zone based monitoring inside the pip to detect video freeze and Black. Audio loudness out of range |
| Alarm Outputs | Hard and Soft Alarm outputs Soft Outputs via LAN and/or SNMP |
| Tallies | Hard Tally (via GPIO up to a maximum of 32). Soft Tally (TSL v5.0 protocol over ethernet) with 2 tallies per tile. |
| Under monitor displays | Under Monitor Display (UMD) information may be generated from remote sources via the LAN operating on a remote PC or serial using TSL/Open protocols. Maximum UMD length 150 characters. |
| Clocks/Dates | Analogue and Digital Clocks with foreground and background colours. Date can be displayed with clocks. Clock/date display data can be derived from several sources; the system clock, NTP synchronisation, LTC, or VITC from a chosen SDI input. Time-zone and offset settings. |
| Timers | Programable Countdown Colour, Transition Colour and Destination Colour. Countdown timer may be setup to start at a certain time of the day or controlled by GPIO Inputs. Timer modes for single and dual GPIO inputs supporting Pause, Resume and Reset. |
| Battery Backup | A non-rechargeable battery ensures the time and date settings are retained if power is lost or the unit is powered down. |

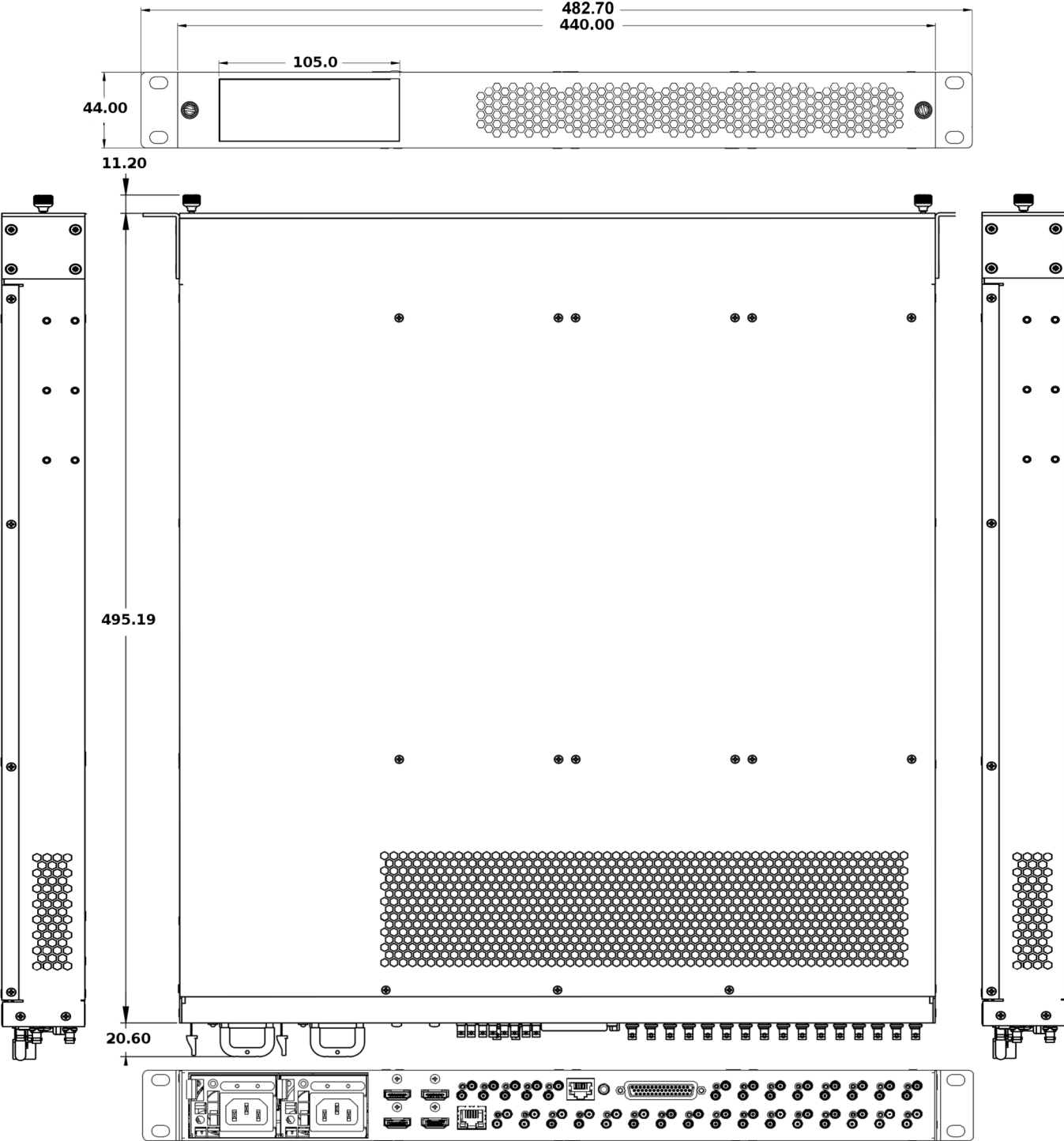
SPEC

All Models: Features continued..

| REFERENCE | DESCRIPTION |
|----------------------------|---|
| Genlock reference | BB/Tri-level sync nominal 1V pk-pk HD-BNC 75Ω |
| Time reference | LTC input or NTP (network protocol) Nominal 1V pk-pk HD-BNC High-Pass 47uF/1K ohm. |
| SOURCE METADATA | DESCRIPTION |
| Subtitles | WST on SD-SDI or OP-47 on HD-SDI |
| Aspect ratio | Automatic adjustment using AFD decoding |
| Timecode | D-VITC and Ancillary TC SD/HD-SDI |
| User Logo | PNG format with storage capacity up to 50MByte |
| Idents | Idents, text boxes and any TrueType fonts. Any true-type font (ttf) can be installed to allow Unicode characters to be displayed correctly. |
| FRAME FEATURES | DESCRIPTION |
| AC/DC Power Supplies | Up to 2 hot-swap power supplies with current sharing and intelligent monitoring |
| HID colour touch screen | Colour touch 480 pixel x 128 line LCD screen with status information and control |
| Modular Architecture | Hot swap modular video processing cards MVC3/MVC4/VIP5 and rears (MP2-MVxx) |
| Remote Control | Linux OS with Integrated HTML5 browser |
| 3rd Party Support | SMP2-MV32R router can be controlled using Grass Valley SWP-02/08 CROSSPOINT_CONNECT command (cmd ID 2). UMD updates using Open Protocol/TSL Protocol v3.1/v4.0 and v5.0 |
| Firmware updates | Field upgradeable via IP with on screen progress meter |
| Fault monitoring | CSV log files accessible via LAN and browser |
| Layouts | Burnt-in layouts, edit and save as new layouts, recall and upload/download |
| Redundant PSU | Slot available for Additional hot swap PSU |
| SDI Connector | Dual HD-BNC 75ohm |
| VIDEO PROCESSING | DESCRIPTION |
| Input Format detection | Automatic signal detection of input format |
| Video processing bit-depth | Internal bit depths and data paths are minimum 10-bit. |
| Video processing delay | Processing delay varies between 1 and 2 frames depending on the timing relationship between the video input and video output. |
| Input Formats Supported | SD-SDI: SMPTE259M, 125M: 525/60i, 625/50i YCbCr 4:2:2 1.5G-3G-SDI: SMPTE292M, 424M, 274M: 1920x1080 10-bit YCbCr 4:2:2 /60P/59.94P/50P/60i/59.94i/50i/30P/29.97P/25P/24P/23.98P 6G-12G-SDI: SMPTE2081-10, 2082-10, 2036-1: 3840x2160 10-bit YCbCr 4:2:2 /60P/59.94P/50P/30P/29.97P/25P/24P/23.98P |
| High Frame Rate Input | For example, each 720p360 image has 6 phases, so 5 cameras requires 30 scalers. Support for up to N/8 cameras, where N = number of inputs. |
| Multiple source scaling | Sources can be routed to any output with arbitrary scaling and location with the proviso that the number of unique video pips does not exceed the number of inputs. |
| High Dynamic Range | HLG, PQ and S-Log3 HDR formats supported. BT2100 up-mapping/down-mapping |
| Output Formats Supported | 3G-SDI: SMPTE424M, 274M: 1920x1080 10-bit YCbCr 4:2:2 /60P/59.94P/50P 6G- 12G-SDI: SMPTE2081-10, 2082-10, 2036-1: 3840x2160 10-bit YCbCr 4:2:2 /60P/59.94P/50P/30P/29.97P/25P |
| Maximum pips | A maximum of 512 unique tiles can be configured per output. The maximum number of video pips is limited to the number of video sources. |

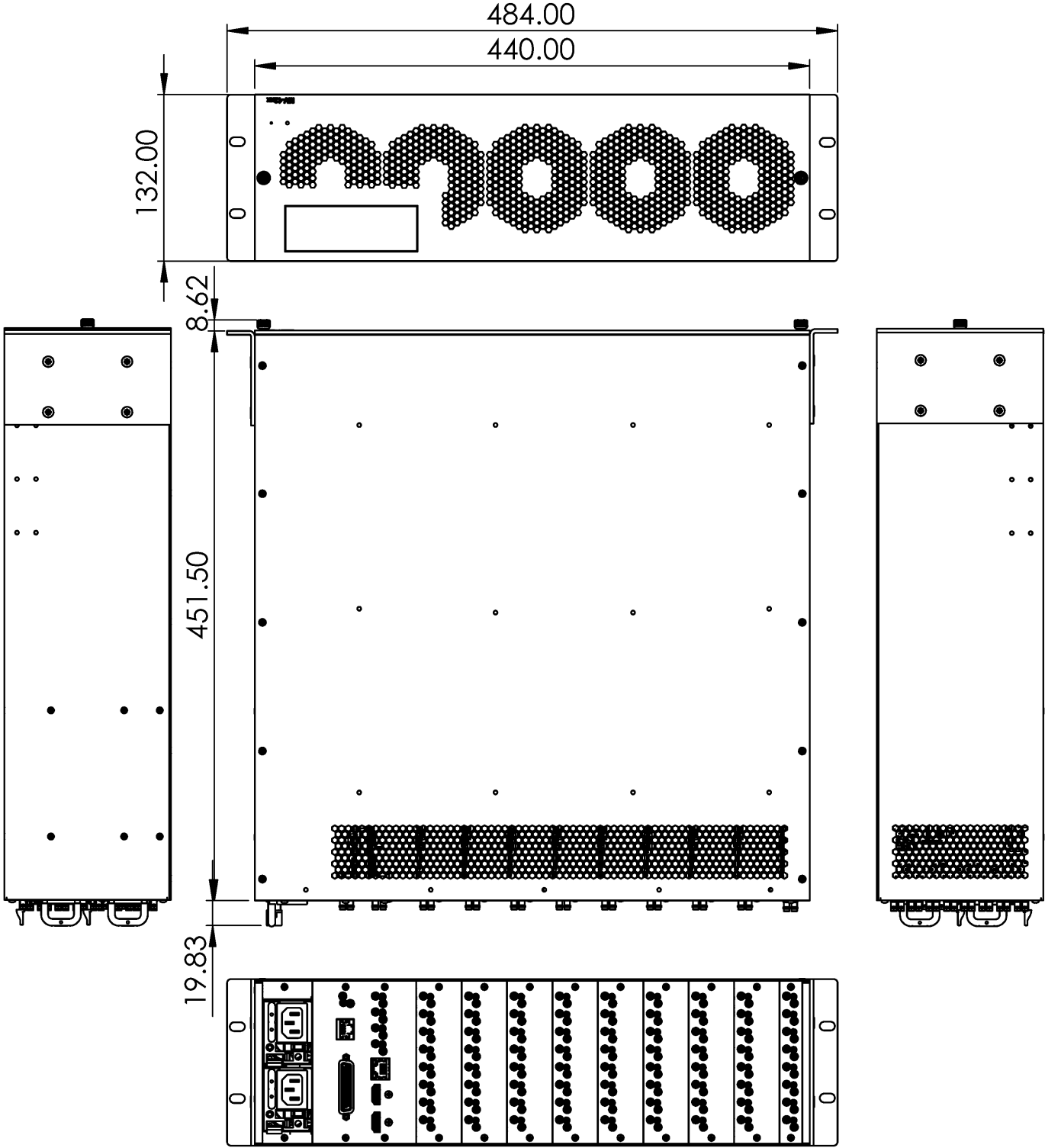
SPEC

SMP-MVxx/SMP2-MVxx Dimensions



SPEC

MP2-MVxx Dimensions

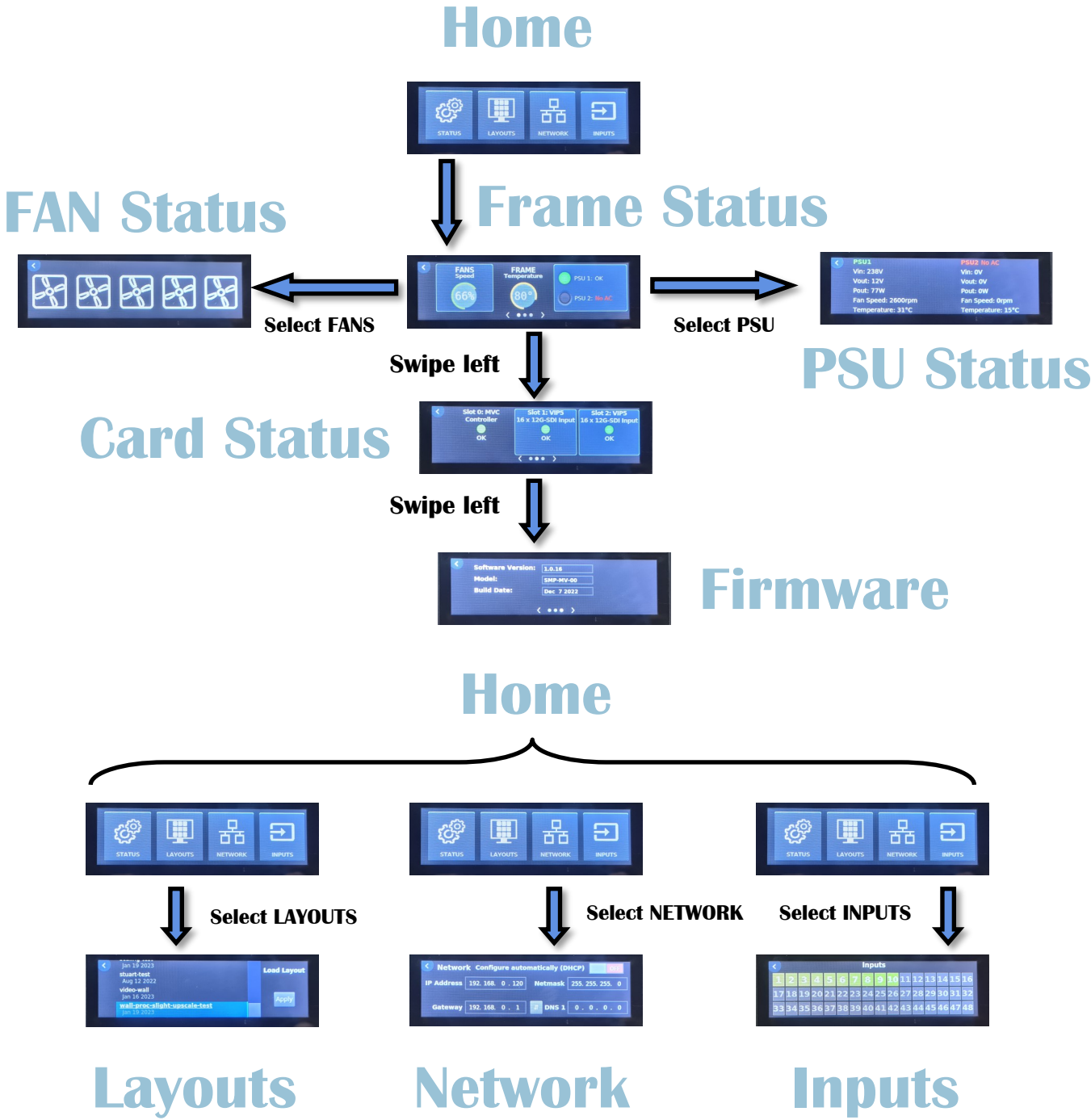


Operation

Touch Screen LCD display

Though control and monitoring of a frame will primarily be via the browser GUI, the front panel LCD display can provide a quick way of checking the frame status.

Network settings can be modified and layouts can be recalled from here.



Main Menu

Toolbar

GUI



Layout Workspace

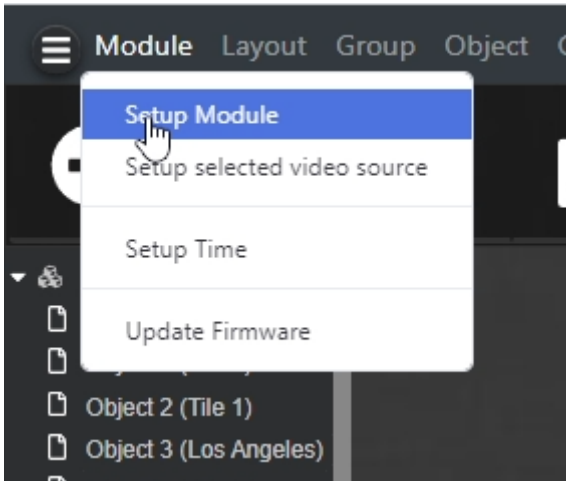
Object, Source and Layout Explorer

Quick Properties Editor

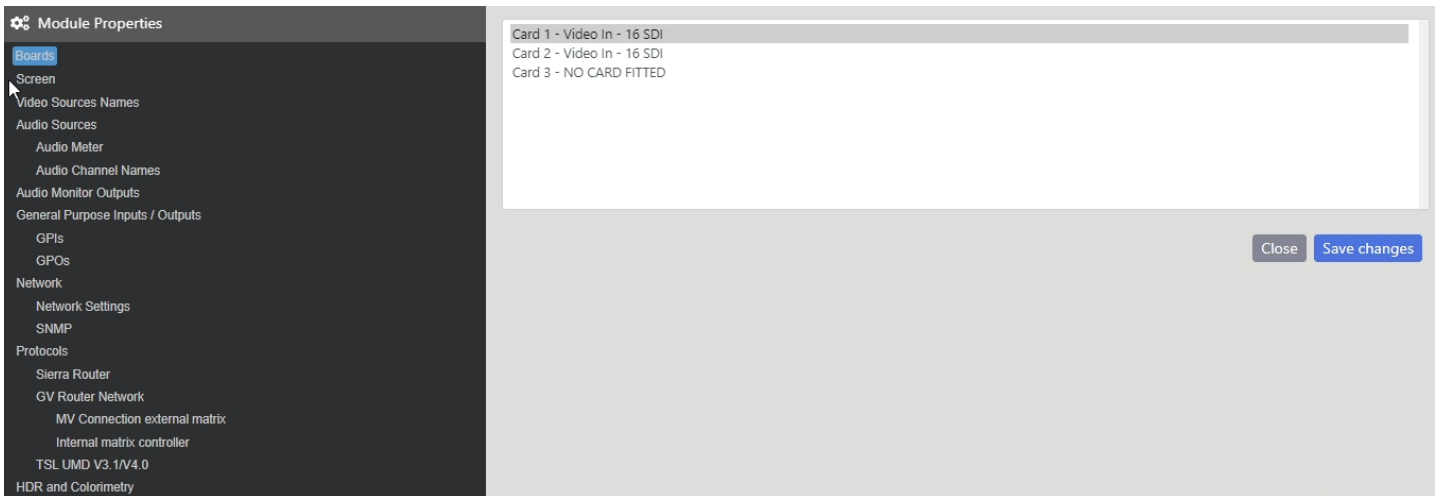
The browser GUI interface comprises the following areas:

| | |
|--|---|
| Main Menu | Comprising the Module, Layout, Group, Object, Grid and Help menus from which all parameters of the multiviewer can be configured |
| Layout Workspace | This is where Layouts are loaded for each video screen output. Existing Layouts can also be edited with Tile Objects added or removed, their Sources, Properties etc. modified as required. A Valid Workspace indicator flags any conflicts with new Tile Objects or changes made to existing tiles that are not compatible with the Layout being edited. |
| Toolbar | A selection of the most commonly used functions to allow for quick and easy Tile layout and Tile Object editing. |
| Object Source and Layout Explorer | Allows Tile Objects and Sources to be configured as well as allowing Layouts to be selected. |

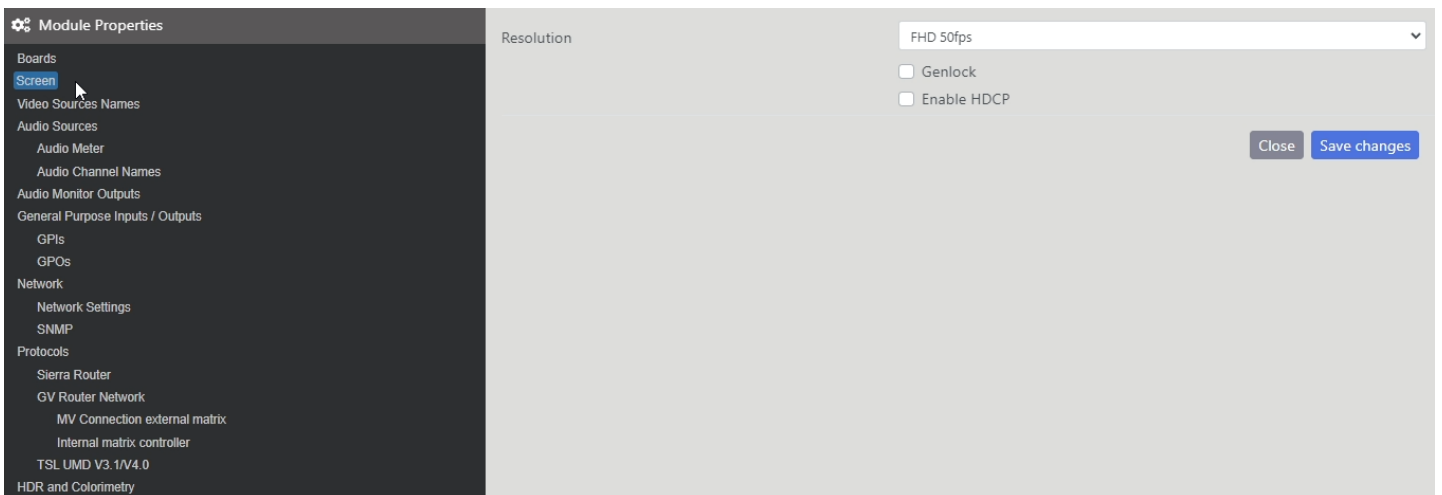
GUI



Module → Setup Module → Boards



Boards – Displays which slots are occupied by VIP5 video processing cards.



Module → Setup Module → Screen

Screen – Displays the current screen resolution. Genlock and Enable HDCP Checkboxes

| Setting | Resolution | Notes | Data Rate |
|---------------------|----------------------------|-------------|------------|
| UHD 50/59.94/60 fps | 3840x2160P 50/59.94/60 fps | Progressive | 12 Gbit/s |
| UHD 25/29.97/30 fps | 3840x2160P 25/29.97/30 fps | Progressive | 6 Gbit/s |
| FHD 50/59.94/60 fps | 1920x1080P 50/59.94/60 fps | Progressive | 3 Gbit/s |
| HD 50/59.94/60 fps | 1920x1080i 50/59.94/60 fps | Interlaced | 1.5 Gbit/s |

Module → Setup Module → Video Source Names

GUI

| Source | Name |
|-----------|-----------|
| Source 1 | Source 1 |
| Source 2 | Source 2 |
| Source 3 | Source 3 |
| Source 4 | Source 4 |
| Source 5 | Source 5 |
| Source 6 | Source 6 |
| Source 7 | Source 7 |
| Source 8 | Source 8 |
| Source 9 | Source 9 |
| Source 10 | Source 10 |
| Source 11 | Source 11 |
| Source 12 | Source 12 |
| Source 13 | Source 13 |
| Source 14 | Source 14 |
| Source 15 | Source 15 |
| Source 16 | Source 16 |
| Source 17 | Source 17 |
| Source 18 | Source 18 |
| Source 19 | Source 19 |
| Source 20 | Source 20 |
| Source 21 | Source 21 |

Source Name - enables Sources to be named



Default Source Names are same as Source ID i.e. Source 1, Source 2 etc. Source names are not labels that get transferred to UMDs, they are simply user names to assist with identifying Sources within the browser control interface. Source names can be used to set the TSL Display address when using the TSL protocol for controlling UMDs and tallies (refer to Open/TSL-UMD protocols note later in this document).

Module → Setup Module → Audio Meter

Module → Setup Module → Audio Meter

| Setting | Description |
|---------------------------|--|
| Scale regions | |
| Audio scale | Select the audio scale type required. Choose from DIN PPM, BBC PPM, Nordic PPM, VU, Extended VU and AES/EBU metering. |
| Upper level region | Select the Upper audio level value, the audio meter will change colour when the measured audio levels transition from this Upper level to the Over level. |
| Lower level region | Select the Lower audio level value, the audio meter will change colour when the measured audio levels transition from this Lower level to the Upper level. |
| Default | Return all values to the default setting for the chosen audio meter type. |
| Peak Hold | |
| Enable peak hold | When enabled the audio meter will hold the peak value for the number of seconds entered in the Hold time (seconds) window. |

Module → Setup Module → Audio Channel Names

Setting - enables Audio Sources to be named



Note: Names can be assigned to each audio channel. Names entered here will be displayed below the meter bars if the labelling for the meter is set to Text in the Edit Object Properties of the tile that the meter is in.

Module → Setup Module → Audio Monitor Outputs

GUI

Module Properties

- Boards
- Screen
- Video Sources Names
- Audio Sources
 - Audio Meter
 - Audio Channel Names
 - Audio Monitor Outputs**
- General Purpose Inputs / Outputs
 - GPIs
 - GPOs
- Network
 - Network Settings
 - SNMP
- Protocols
 - Sierra Router
 - GV Router Network
 - MV Connection external matrix
 - Internal matrix controller
 - TSL UMD V3.1/V4.0
 - HDR and Colorimetry

Stereo Monitor Out

| Output | Input Source | Pair Number |
|--------------|--------------|---------------|
| Output 1 + 2 | Source 1 | Channel 1 + 2 |

SDI/HDMI out 1 embedded

| Output | Input Source | Pair Number |
|--------------|--------------|---------------|
| Output 1 + 2 | Source 1 | Channel 1 + 2 |
| Output 3 + 4 | Source 1 | None |
| Output 5 + 6 | Source 1 | None |
| Output 7 + 8 | Source 1 | None |

SDI/HDMI out 2 embedded

| Output | Input Source | Pair Number |
|--------------|--------------|---------------|
| Output 1 + 2 | Source 1 | Channel 1 + 2 |
| Output 3 + 4 | Source 1 | None |
| Output 5 + 6 | Source 1 | None |
| Output 7 + 8 | Source 1 | None |

SDI/HDMI out 3 embedded

| Output | Input Source | Pair Number |
|--------------|--------------|-------------|
| Output 1 + 2 | Source 1 | None |
| Output 3 + 4 | Source 1 | None |
| Output 5 + 6 | Source 1 | None |
| Output 7 + 8 | Source 1 | None |

SDI/HDMI out 4 embedded

| Output | Input Source | Pair Number |
|--------------|--------------|-------------|
| Output 1 + 2 | Source 1 | None |

Close Save changes

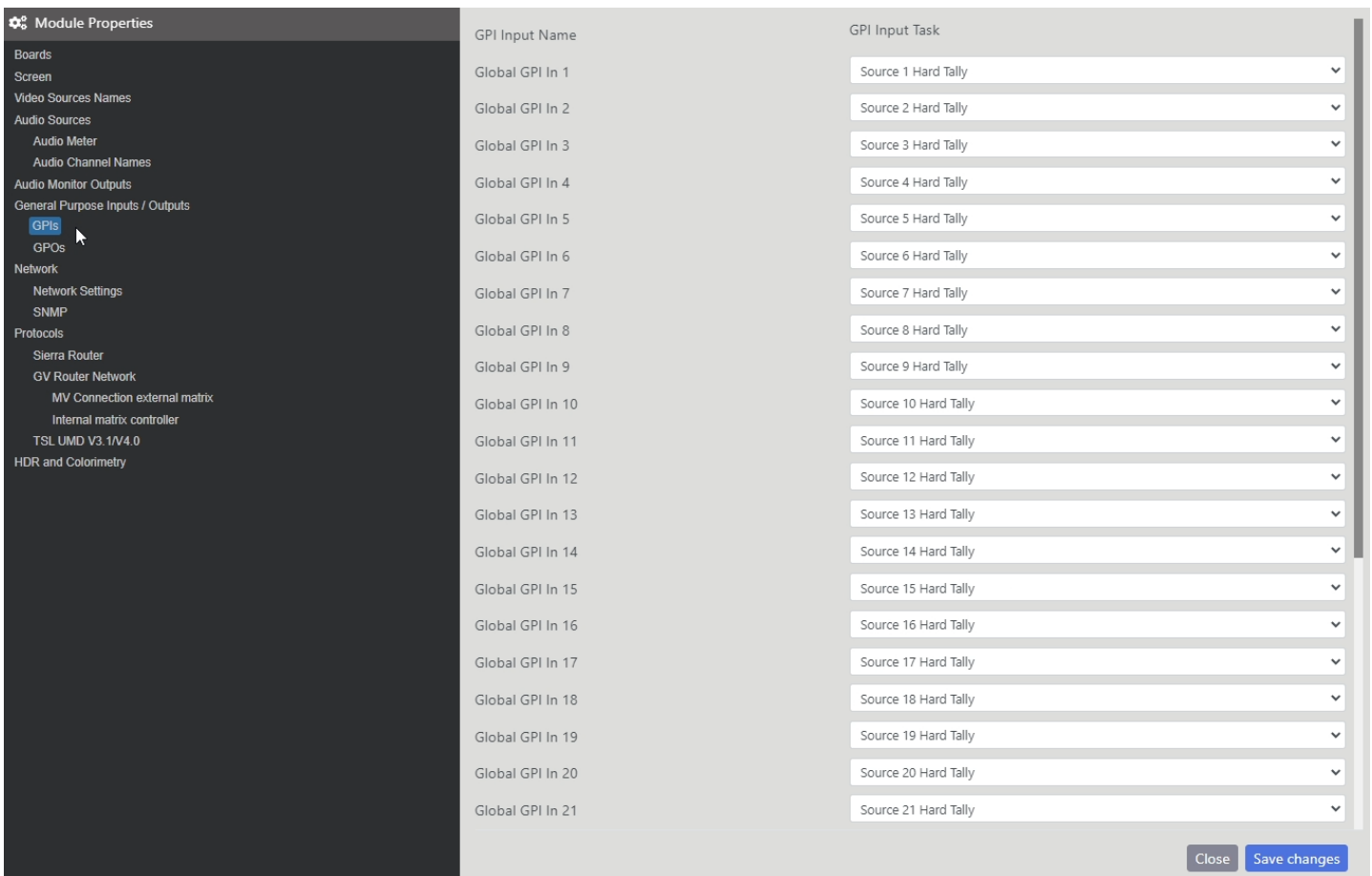
Audio monitor output



In The Stereo Monitor Out section, the Input SDI source and Stereo Pair can be assigned to the audio jack output. In the SDI/HDMI out 1/2/3/4 embedded section, the Input SDI source and Stereo Pair can be assigned to the HDMI and SDI embedded outputs

GUI

Module → Setup Module → GPIs



GPI Input Task

Assigns the task to execute on each Global or Video GPI in when activated.

Source X Hard Tally: turns on/off the tally relating to the Source in tiles that have the tally configured as Hardware, reference Chromatec document: Tally Configuration for more details on how to configure a tally.

e.g.. if Global GPI In 1 is configured for Source 2 Hard Tally and a tile that uses Source 2 has its tally Left-right sources set to Hardware 1 - Software 1 then the left tally in that tile will turn on when GPI In 1 is closed, off when GPI In 1 is open. If the tile has its tally set to Hardware 1 - Hardware 1 then both tallies will be controlled by Global GPI IN 1.

Timer x trigger: Multiple GPI inputs can be configured to control the resetting, pausing and resumption of timers, see Timer properties for more detail.

Global GPIs are located on the rear GPIO connector which has 32 GPI Inputs and 8 GPO outputs

GUI

Module → Setup Module → GPOs

| GPO Output Name | GPO Output Task | Inverted (ON=HiZ, OFF=Pulled low) |
|------------------|-----------------|--|
| Global GPI Out 1 | None | <input type="checkbox"/> All Inverted |
| Global GPI Out 2 | None | <input type="checkbox"/> |
| Global GPI Out 3 | None | <input type="checkbox"/> |
| Global GPI Out 4 | None | <input type="checkbox"/> |
| Global GPI Out 5 | None | <input type="checkbox"/> |
| Global GPI Out 6 | None | <input type="checkbox"/> |
| Global GPI Out 7 | None | <input type="checkbox"/> |
| Global GPI Out 8 | None | <input type="checkbox"/> |

| Setting | Description |
|------------------------|--|
| GPO Output Task | Assign alarm condition to the selected Global or Video GPI Out X option. A selection of alarm conditions including None, Source X alarm, Video loss on any source etc are available from the pull-down menu. |
| Copy | Copy the previous GPO Output task, incrementing by 1, to the current GPO Output task. e.g. If Global GPI Out 2 is set to Source 2 alarm and the Copy button is pressed for Global GPI Out 3, it then gets set to Source 3 alarm. |
| Inverted | Inverts the polarity of the alarm output signal. When not inverted the output is pulled low when the alarm is active, high impedance when not active. |

Module → Setup Module → Network Settings

| | |
|--------------|--------------------------|
| Hostname | sama5d3-mvc31y |
| DHCP | <input type="checkbox"/> |
| IP Address | 192.168.0.120 |
| Netmask | 255.255.255.0 |
| Gateway | 192.168.0.1 |
| DNS Server 1 | 0.0.0.0 |
| DNS Server 2 | 0.0.0.0 |

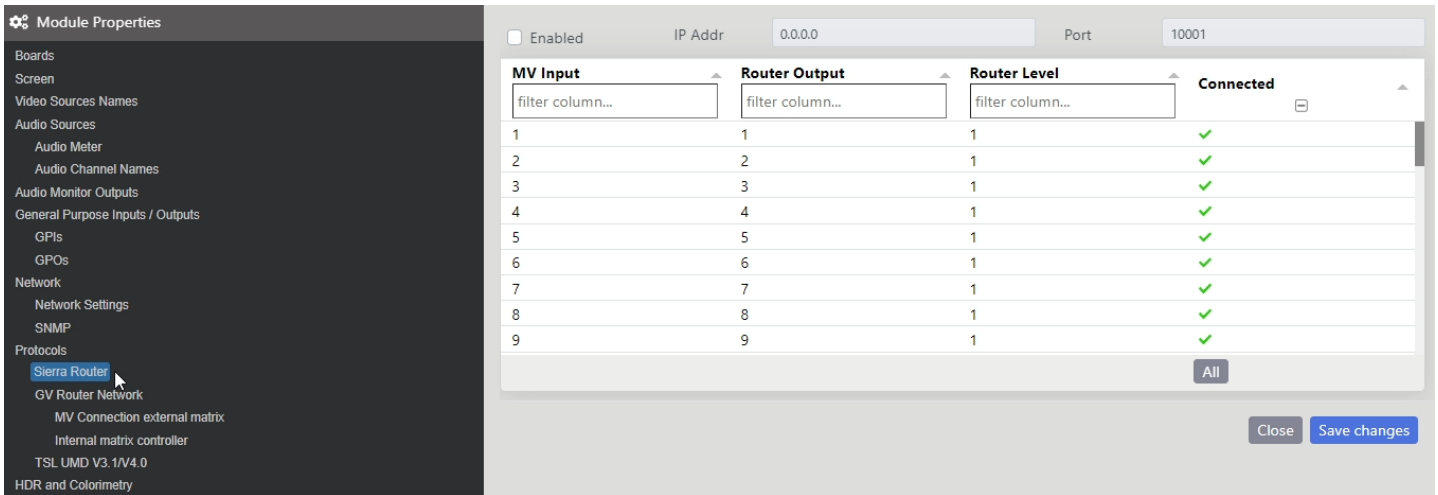
Module → Setup Module → Network Settings

| Setting | Description |
|--------------|---|
| Hostname | Enter a friendly name for the frame. |
| Use DHCP | Check to use DHCP for automatic acquisition of network settings. Uncheck for entry of fixed network settings. |
| IP Address | Enter fixed IP address. |
| Netmask | Enter network mask, if required. |
| Gateway | Enter gateway address, if required. |
| DNS Server 1 | Enter DNS server address, if required. |
| DNS Server 2 | Enter DNS server address, if required. |

Module → Setup Module → SNMP

| Setting | Description |
|------------------|--|
| SNMP Version | Check required SNMP version to use for traps |
| Add | Reveals dialogue for entering SNMP Manager IP address and adding to list. This is the list of managers that traps will be sent to. |
| Delete | Deletes selected SNMP Manager IP address from the list |
| Resend traps | Check to resend SNMP traps at regular intervals. The rate is also set here. |
| SNMP Communities | Enter the SNMP community names that managers will use for setting / getting OID values. The trap community is the one that will be used by the multiviewer when sending traps. |
| SNMP Indexing | Select whether SNMP indexing will start from 0 or 1. |
| Save MIB Files | Download the MIB module files from the multiviewer to use in the SNMP Manager. |

Module → Setup Module → Protocols → Sierra Router



Protocols – Sierra Router tab



This allows the physical connections between the Sierra router and the frame, and the configuration of the TCP settings of a connection to a Sierra Video Systems Router.

Once the connection to the router has been established, the first row of UMDs in each video window will acquire the applicable source names of the router according to the source that is feeding the destinations connected to the multiviewer. As cross-points are changed in the router, the UMDs will be updated.

| Setting | Description |
|--|--|
| Enabled | Allows the multiviewer to connect to a Sierra router over Ethernet. (If this is ticked AND the serial port protocol is set to Sierra Router then the serial port will NOT attempt to connect to a router). |
| IP Address | The IP address of the Sierra router. |
| Port | TCP port to connect to the Sierra router with. Normally a Sierra router uses port 10001, however this can vary. |
| Physical connections from Router to Multiviewer | <p>This allows the wiring between the routers physical outputs and the multiviewers physical inputs to be configured.</p> <p>This table also applies to the serial port settings if the serial port is being used to communicate with the router.</p> <p>The columns are:</p> <p>MV Input – Lists all the inputs on the multiviewer. Fields in this column cannot be edited.</p> <p>Router Output – In these fields, enter the physical output number of the router that is connected to the multiviewers input.</p> <p>Router Level – In these fields, enter the level in the router that the output comes from.</p> <p>Connected – Uncheck this field if the associated input does not come from the router.</p> |

GUI

Module → Setup Module → Protocols → GV Router → Connection

| MV Input | Controller | Matrix N... | Matrix Le... | Router D... | Destinati... | Connected |
|---------------|---------------|---------------|---------------|---------------|---------------|-------------------------------------|
| filter columr | filter columr | filter columr | filter columr | filter columr | filter columr | <input type="checkbox"/> |
| 1 | Serial Port | 1 | 1 | 1 | 1 | <input checked="" type="checkbox"/> |
| 2 | Serial Port | 1 | 1 | 2 | 2 | <input checked="" type="checkbox"/> |
| 3 | Serial Port | 1 | 1 | 3 | 3 | <input checked="" type="checkbox"/> |
| 4 | Serial Port | 1 | 1 | 4 | 4 | <input checked="" type="checkbox"/> |
| 5 | Serial Port | 1 | 1 | 5 | 5 | <input checked="" type="checkbox"/> |
| 6 | Serial Port | 1 | 1 | 6 | 6 | <input checked="" type="checkbox"/> |
| 7 | Serial Port | 1 | 1 | 7 | 7 | <input checked="" type="checkbox"/> |
| 8 | Serial Port | 1 | 1 | 8 | 8 | <input checked="" type="checkbox"/> |
| 9 | Serial Port | 1 | 1 | 9 | 9 | <input checked="" type="checkbox"/> |

Protocols – Grass Valley Router tab



Use when configuring IP connections to GV router controllers, and the physical connections from GV routers to the frame. When communication with a GV router is established, the first row of UMDs in each video window will acquire the applicable source names of the router according to the source that is feeding the destinations connected to the multiviewer. As cross-points are changed in the router, the UMDs will be updated.

| Setting | Description |
|--------------------|---|
| Delete | Deletes a controller from the List |
| New or Edit button | Opens up the GV Controller Configuration window shown on the following page |

Module → Setup Module → Protocols → GV Router → Internal Matrix Controller

Protocols – Grass Valley Matrix Controller

Generally this is more appropriate for frames with a router since it allows a GV controller to configure the router, but it can also be used to set source names (UMDs). Set the TCP port number(s) for the applicable GV SW-P-08 / SW-P-02 protocol being used here.

Module → Setup Module → Protocols → TSL Tally & UMD

TSL Tally & UMD

This allows tallys to be turned on, off, and change colour, and UMD text to be changed from a TSL Tally controller.

| Setting | Description |
|--|--|
| Protocol Version | Select the version that the TSL Controller uses. Versions 3.1 and 4.0 are older ones generally designed for RS422 but can be used here over Ethernet. They do not provide Unicode character capability. Version 5 is specifically designed for Ethernet and allows UMD text to contain Unicode characters. |
| Local server ports | UMD: If the TSL Controller sends messages using UDP then enter the port number it uses here. Otherwise leave this blank. TCP: If the TSL Controller uses TCP for communicating and it needs to connect to the multiviewer then enter the TCP port number it uses here. Otherwise leave this blank |
| TCP remote servers | If the TSL Controller requires TCP clients to connect to it so it can send messages then enter the IP address and port number here, separated by ':'. If there are multiple TSL Controllers then separate them with spaces. e.g. There are two controllers at addresses 192.168.0.150 and 192.168.0.151, both using ports 8900 then: 192.168.0.150:8900 192.168.0.151:8900. |
| Clear UMDs and tallys when: | The multiviewer stores all TSL messages it receives so that they can later be applied when the layout is refreshed or a new one is loaded. If previously received messages should be discarded when a layout is uploaded to the wall then tick the appropriate box(es). - current layout is reloaded: the reloading of the current layout will not use any of the previously received TSL messages. All tallys and UMDs will be in the state set by the layout. - new layout is loaded: if a new layout is uploaded to the wall then all tallys and UMDs will be in the state set by the new layout. |
| Text response to TSL "OFF" code | TSL contains 4 UMD text states: "OFF, RED, GREEN, or AMBER". This setting determines how the text should respond to the "OFF" state. - Turn text off: UMD text will not be visible. - TSL text, layout colour: Display the text provided by TSL messages using the text colour configured in the multiviewer layout. - Layout text, layout colour: Restore the UMD text to the original text configured in the layout. |

| Setting | Description |
|---|---|
| Text response to TSL "COLOUR" code | Determines how the text should respond to the TSL text "RED / GREEN / AMBER" states. - Change to TSL colour: Set the UMD text colour as indicated in the TSL messages. - Ignore: Use the UMD text colour configured in the multiviewer layout. |
| Address mapping: Use input number as the address | Applies the TSL address to multiviewer source mapping 1:1. TSL addressing starts at 0, so without any offset applied TSL address 0 controls multiviewer source 1. To offset this tick the Apply offset to the address box and enter an offset value. The general mapping used will be indicated in the two lines below this ("TSL address 0 controls..."). |
| Address mapping: Use source name as the address | With this addressing scheme the multiviewer source names need to contain a "UMDn" string in their name, where n = an offset of the TSL address. Again, the general mapping used will be indicated in the two lines below this. |
| Address mapping: Use Custom source / TSL addressing | Use this scheme if the TSL address to multiviewer source mapping is not 1:1 or the screen index that the TSL Controller uses is not 0. When this option is selected a table will be displayed allowing each multiviewer source to be assigned custom TSL screen and address indexes, or disabled if not used. |

Address mapping table

Table that gets displayed for entering TSL screen and address indexes when the Use custom source / TSL addressing option is selected.

Address mapping

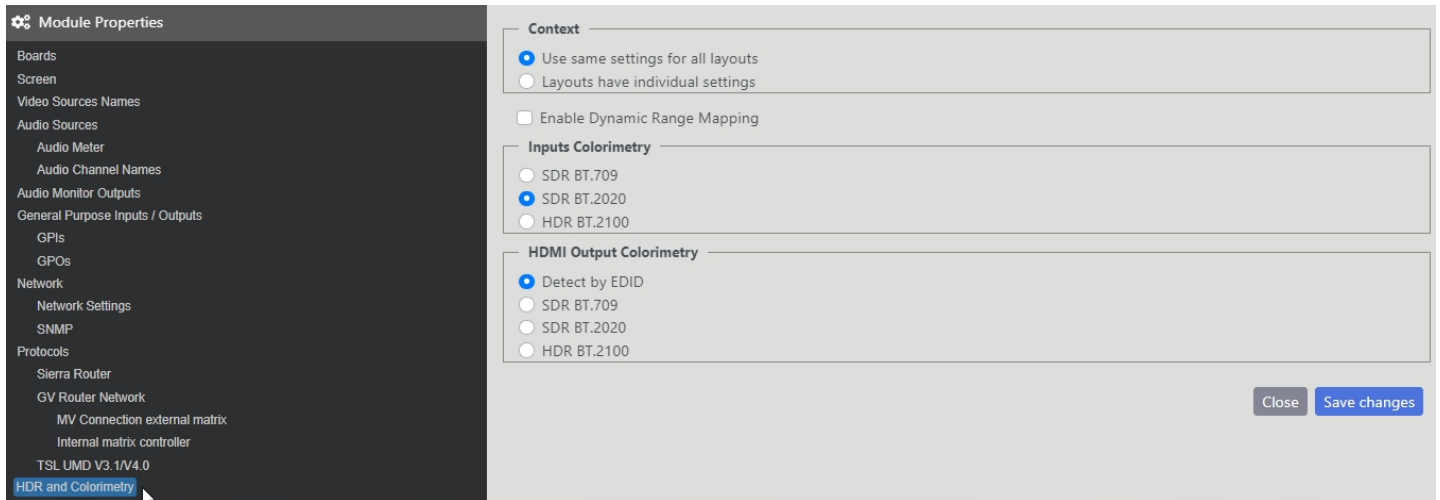
Use input number as the address
 Use source name as the address
 Use custom source / TSL addressing

TSL screen and address ranges: 0 to 65534

| Video Input | Enabled | TSL Screen | TSL Address |
|-------------|---------|------------|-------------|
| All | ✗ | 0 | 0 |
| 1 | ✓ | 0 | 7 |
| 2 | ✓ | 0 | 6 |
| 3 | ✓ | 0 | 5 |
| 4 | ✓ | 0 | 4 |
| 5 | ✓ | 0 | 3 |
| 6 | ✓ | 0 | 2 |
| 7 | ✓ | 0 | 1 |
| 8 | ✓ | 0 | 0 |
| 9 | ✗ | 0 | 6 |
| 10 | ✗ | 0 | 9 |

GUI

Module → Setup Module → HDR & Colorimetry



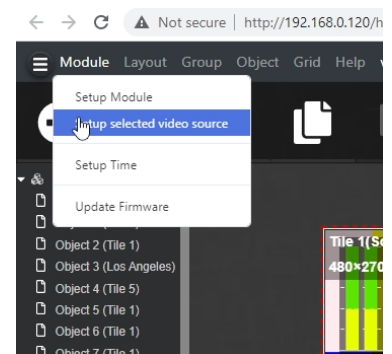
HDR and Colorimetry



This assumes that all inputs are the same colorimetry standard and the displays attached use a different standard and some transformation needs to be done (e.g. HDR BT.2100 inputs are being displayed on a SDR BT.2020 monitor).

Only the gamma gets adjusted, so the transformation is not as accurate as 3D matrix transformation. Generally, BT.709 is the colorimetry used in 2K HD SDR, BT.2020 is used in 4K HD SDR, and BT.2100 is used in HLG HDR.

Module → Setup Selected Video Source



Module → Setup Selected Video Source → Audio

GUI

Source Properties (ID: 1 ::: Username: CAM 1)

Audio Alarms Detection / Overscan zones Copy to Other Sources

PPM/VU metering

Digital audio reference: -20 dBFS

Audio loss threshold: -40 dB (-60dBFS)

Audio over threshold: 10 dB (-10dBFS)

Out of phase threshold: 135 degrees

Mono threshold: 0 degrees

Loudness metering

Mode: EBU R128

Short term window: 3.0 secs

Target: -23.0 LUFS

Max. lower deviation: -1.0 LU

Max. upper deviation: 1.0 LU

Alarm - channel enable

| Source | Audio loss | Audio over | Phase | Mono | Carrier loss | Loudness deviation |
|---------|------------|------------|-------|------|--------------|--------------------|
| All | × | × | × | × | × | × |
| Left 1 | ✓ | ✓ | ✓ | × | ✓ | × |
| Right 1 | ✓ | ✓ | ✓ | × | ✓ | × |
| Left 2 | ✓ | ✓ | ✓ | × | ✓ | × |
| Right 2 | ✓ | ✓ | ✓ | × | ✓ | × |
| Left 3 | ✓ | ✓ | ✓ | × | ✓ | × |
| Right 3 | ✓ | ✓ | ✓ | × | ✓ | × |
| Left 4 | ✓ | ✓ | ✓ | × | ✓ | × |
| Right 4 | ✓ | ✓ | ✓ | × | ✓ | × |
| Left 5 | × | × | × | × | × | × |

Save changes Close

| Setting | Description |
|--------------------------------|--|
| Digital Audio Reference | Set the analogue to digital reference level when applying an analogue meter scale to a digital source, or a digital meter scale to an analogue source. It can be set within the range of -30 to -3 dBfs. This has no effect when digital audio is used with a digital scale. |
| Alarms | <p>The thresholds for Audio Loss, Audio Over, and Out of phase alarms can be set, along with the alarm enabling of individual channels. The 16 channels listed here relate to the 16 embedded audio channels.</p> <p>e.g. Channels selected under Audio Loss will trigger an alarm when the audio level on the associated channel falls below the threshold set above.</p> <p>Out of phase threshold: Set how far out of phase or uncorrelated the audio pairs need to be to trigger the out of phase alarm. 90 to 180 degrees.</p> <p>Mono threshold: Set how close in phase or correlated the audio pairs need to be to trigger the mono phase alarm. 0 to 45 degrees. e.g. 0 degrees means the channels need to be identical to trigger the mono alarm.</p> |

Module → Setup Selected Video Source → Audio

Loudness Metering:

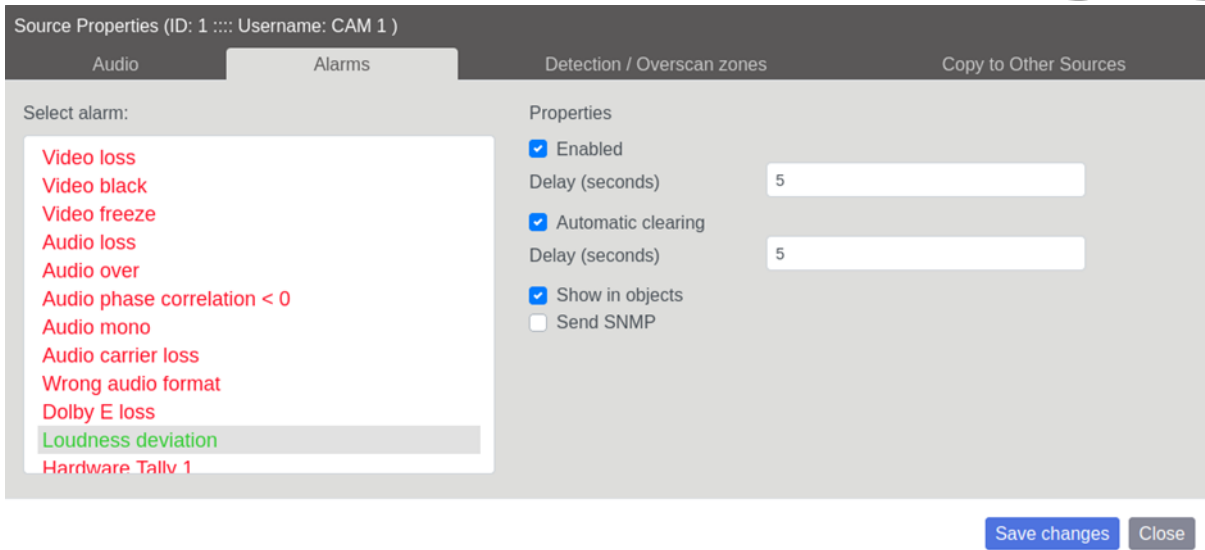
| Setting | Description |
|--|--|
| Mode | Select the loudness standard to use. With EBU E128 and ATSC A/85 the target and deviation settings cannot be adjusted. Select custom if these need to be adjusted. |
| Short Term Window | The window length in seconds to use for loudness meters for this source. |
| Target | Target loudness level. |
| Max. lower deviation and Max. upper deviation | This is how far the levels can deviate from the target loudness before the loudness deviation alarm will trigger. The triggering of the alarm also depends on the alarm timeout setting. e.g. If the Loudness deviation alarm timeout is set to 10 seconds and the loudness exceeds the deviation range for 5 seconds and then comes back into range then the alarm timeout countdown will reset. The loudness level needs to be outside the deviation range for longer than the alarm timeout period. If Max. lower deviation is set to the minimum level of -70LU then the lower deviation alarm is disabled. |



NOTE: The Alarms - channel enable selection, only selects which channels are potentially enabled for triggering alarms. The overall alarm type also needs to be enabled in the Alarm tab (see next section) – e.g. the Audio Loss alarm needs to be enabled in the Alarm tab for any of the selected Audio Loss channels to trigger an alarm.

Module → Setup Selected Video Source → Alarm

GUI



Alarms

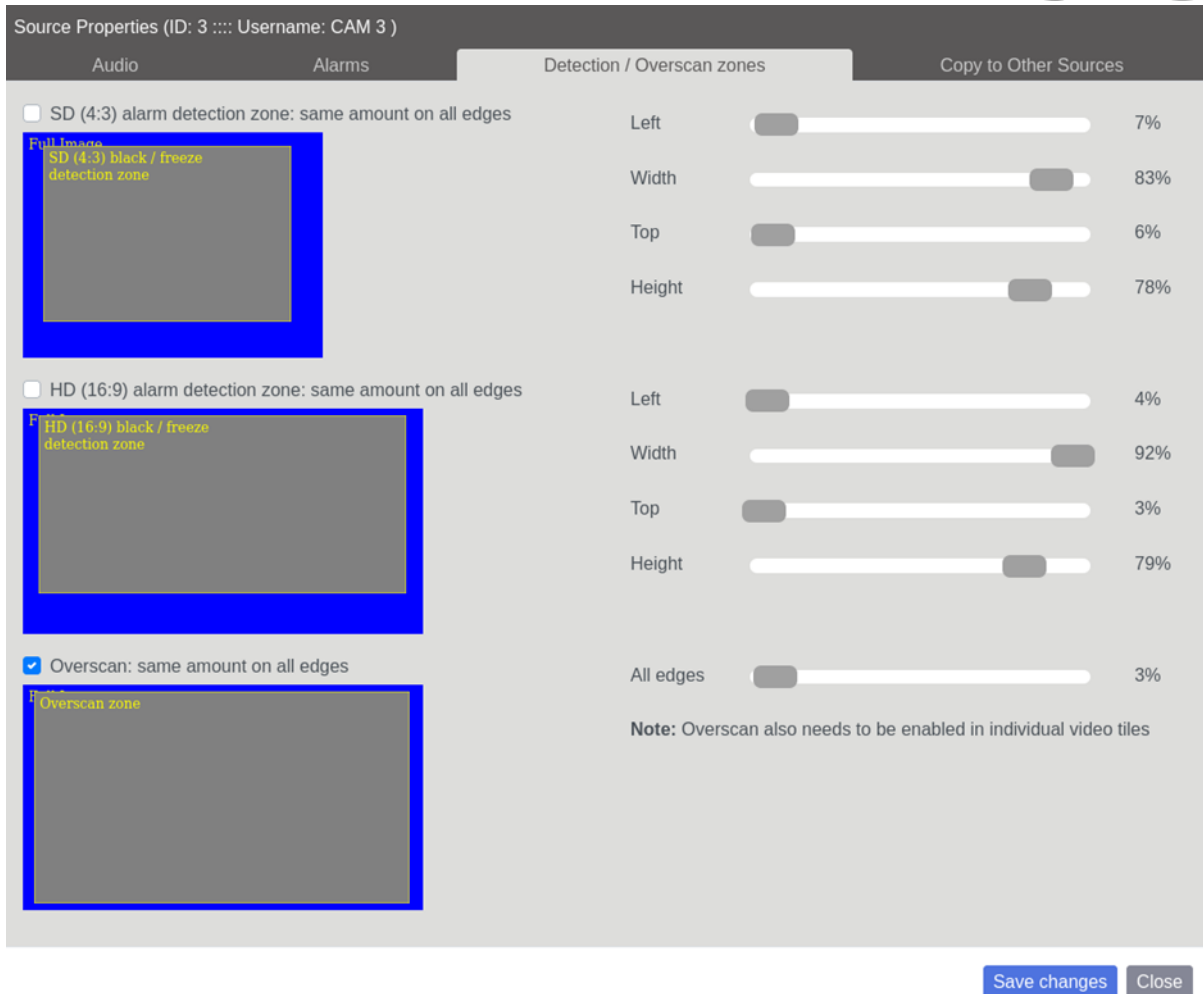
The properties section allows each alarm to be set individually for onset and auto-clear delay, logging status and visibility in objects and lists.

| Setting | Description |
|--------------------|--|
| Select alarm | Click on an alarm to select it and then be able to set its Properties. |
| Enabled | Enables the selected alarm. NOTE: Enabled alarms change from red to a green circle. |
| Delay (seconds) | Set the delay before the alarm starts. |
| Automatic clearing | Enable the alarm to be cleared after the time set below. |
| Delay (seconds) | Set the delay before the alarm is automatically cleared. |
| Show in objects | Display alarms in objects |
| Send SNMP | Check to send SNMP trap in response to alarm |

| Notes | Description |
|------------------------|---|
| Closed caption loss | This alarm will activate if closed captions are not present on the expected teletext page or closed captioning display service. e.g. If the teletext is set up to monitor page 801 for captions, and there are no captions on this page then the alarm will activate. |
| Teletext (WST) loss | This is only relevant if the source is SD-SDI, and will activate if there is no WST present at all (not just the magazine page set up to be monitored). |
| Teletext (OP-47) loss: | This is only relevant if the source is HD-SDI, and will activate if there is no OP-47 present at all (not just the magazine page set up to be monitored). |
| D-VITC loss | This is only relevant if the source is SD-SDI. |
| Dolby-E loss | This only applies to pairs that have explicitly been configured in an audio meter to expect a Dolby E format. For these pairs, if the source is not Dolby E then the alarm will be triggered if this alarm type is enabled. |

Module → Setup Selected Video Source → Detection/Overscan zones

GUI



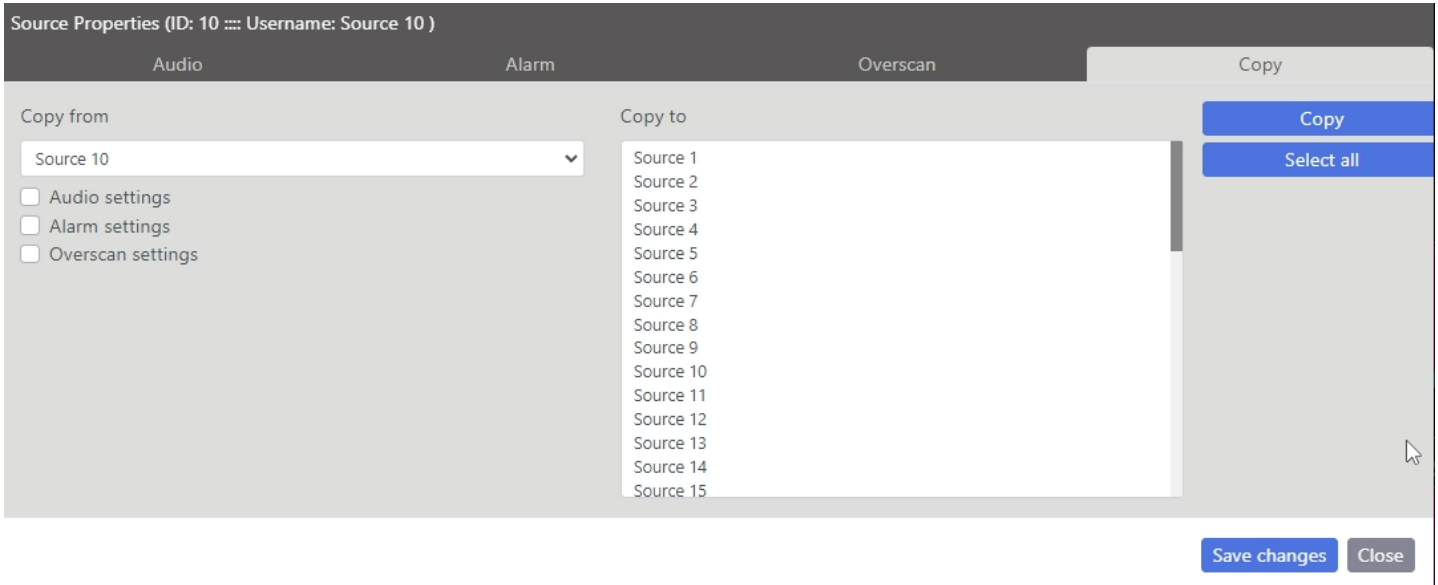
Detection/Overscan zones Tab

The Detection/Overscan zones tab allows the user to control the area of the image that is to be included in video black and video freeze alarms. The appropriate source aspect ratio is selected and the sliders are then used to configure a rectangular window.

The Detection/Overscan zones tab allows adjustments to the amount of the image that is viewed in a tile when overscan is enabled within that tile. Each source can be individually adjusted.

| Setting | Description |
|---|--|
| Overscan by the same amount on all edges | When this is checked only one adjustment will appear for adjusting all 4 edges that mark the boundary of the overscan region by the same amount. When unchecked, the following four menu items appear providing manual adjustment of the edges marking the overscan region. |
| Left/Width/Top/Height | Slider control. Adjusts the Left/Width/Top/Height of the overscan region. |

Module → Setup Selected Video Source → Copy

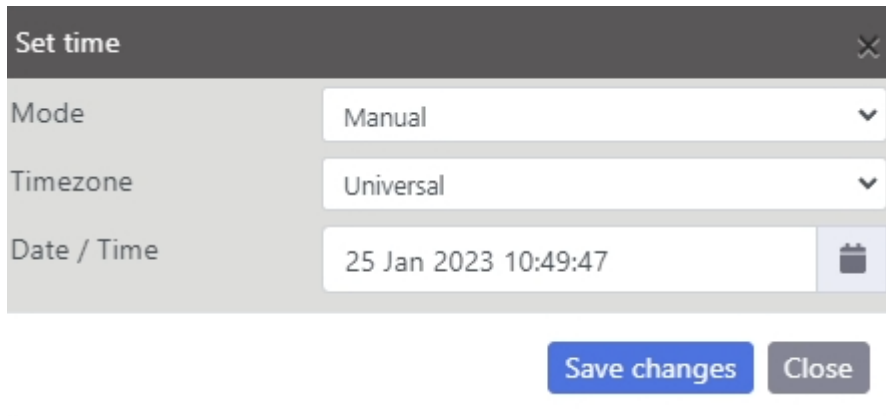


Copy Tab

The Copy tab allows Audio, Alarm and Overscan settings to be copied to other Sources. Multiple Sources can be selected by holding down the [Ctrl] key while clicking on the required Sources.


| Setting | Description |
|----------------------|--|
| Audio/Alarm/Overscan | Check to copy audio settings from selected source(s) |
| Select All/None | Select/Deselect all sources |
| Copy To | Copy settings to selected sources(s) |

Module → Setup Time



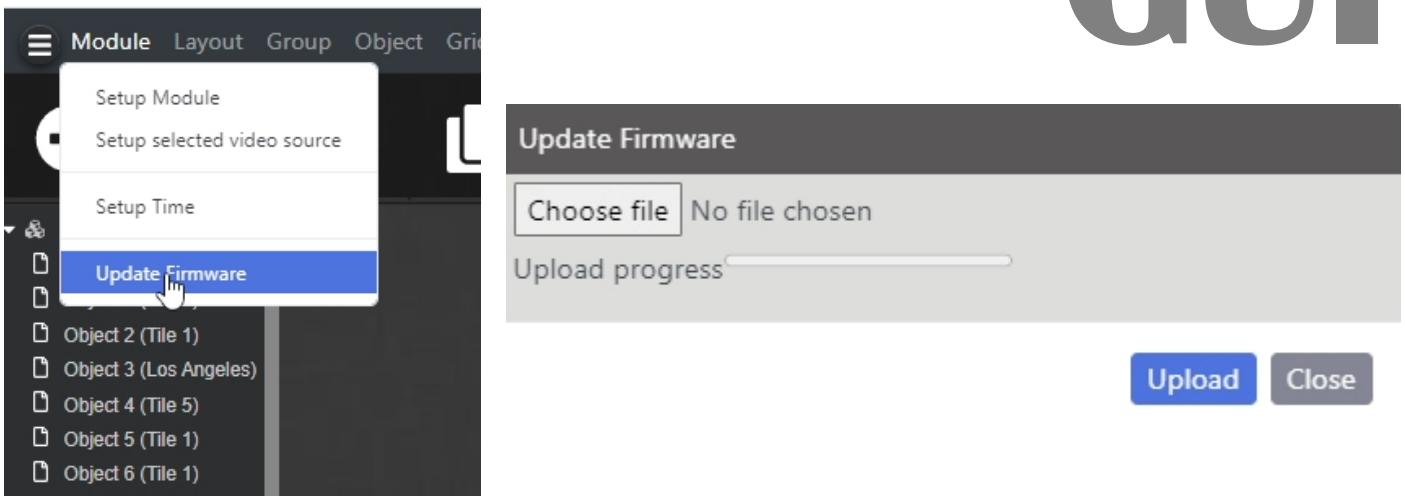
Set time

Clock/date display data can be derived from several sources; the system clock, NTP synchronisation, LTC, or VITC from a chosen SDI input.

| Setting | Description |
|---|--|
| Time | To set the clock source, go to the tab and select the desired source: Manual, NTP, LTC or VITC. |
| Timezone | The timezone should be set to the appropriate region before adjusting the clock. |
|  <p>NOTE: In the absence of any clock, the system time is used. A battery on the MVC3 card ensures the time and date is retained if the unit is powered down.</p> | |
| Manual | In this mode the time and date of the system clock will be shown and can be adjusted. Press the Get button to show the current time. To adjust the time enter the new time and date in the appropriate fields and then press the Set button. |
| NTP | In this mode the time is sourced from an NTP server (or multiple NTP servers can be entered) via the ethernet connection. Press the Add button to add a new server, and enter the host name or IP address of the new server. |
| LTC | In this mode the time is sourced from the LTC input. If no LTC is present then the system clock will be used (if LTC is present, but later disappears then the clock will continue advancing without any discontinuity). |
| VITC | The time can be sourced from VITC if that is present on any SDI input. Select the chosen SDI source number that contains VITC. If no VITC is present then the system clock will be used (if VITC is present, but later disappears then the clock will continue advancing without any discontinuity). |

GUI

Module → Update Firmware



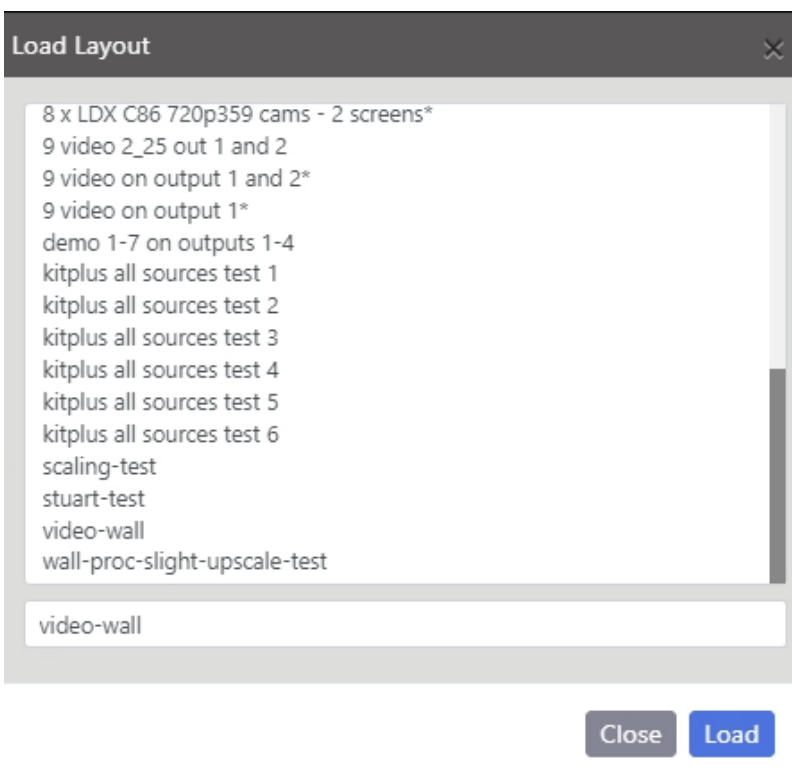
Update Firmware

Select Choose-File to navigate to the firmware update package which has the following format, mvc3-bundle-chromatec-version.raucb or mvc4-bundle-chromatec-version.raucb depending on which model is being updated.

When the file has been selected click upload to begin the process. The ongoing progress of uploading and updating will be displayed and once complete the browser will reload the page.

The No-File-Chosen is an indicator that no file has been selected yet to start uploading. This will be the case when SFTP or equivalent has been used to transfer the firmware directly to the /data directory. The multiviewer silently detects when the transfer has finished uploading and commences the firmware update automatically. There is no need to power cycle the frame.

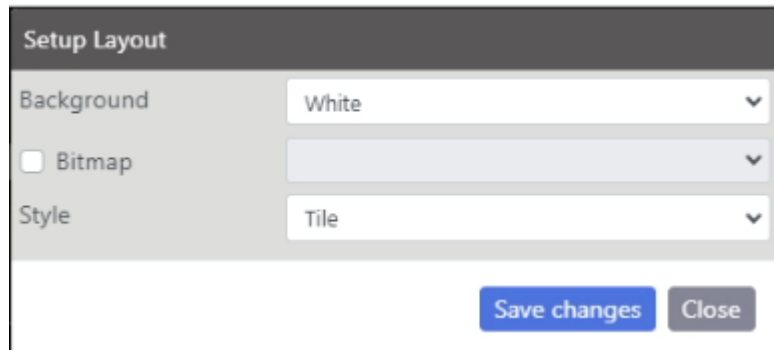
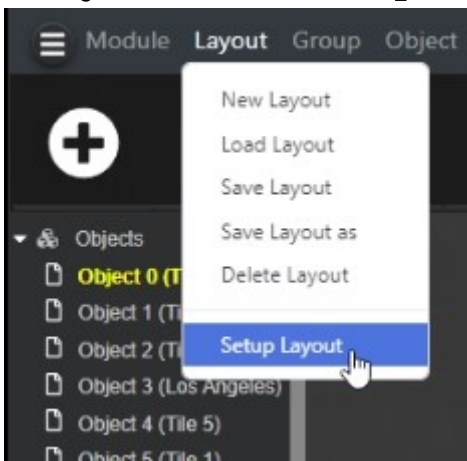
Layout → New/Load/Save/Save Layout As/Delete Layout



| Setting | Description |
|----------------|---|
| New Layout | Offers to save the current layout before removing all objects from the editor workspace ready to create a new layout. |
| Load Layout | Loads a previously saved layout. |
| Save Layout | Copy settings to selected sources(s) |
| Save layout as | Saves current layout with a different name |
| Delete layout | Delete a selected layout from the saved list. |

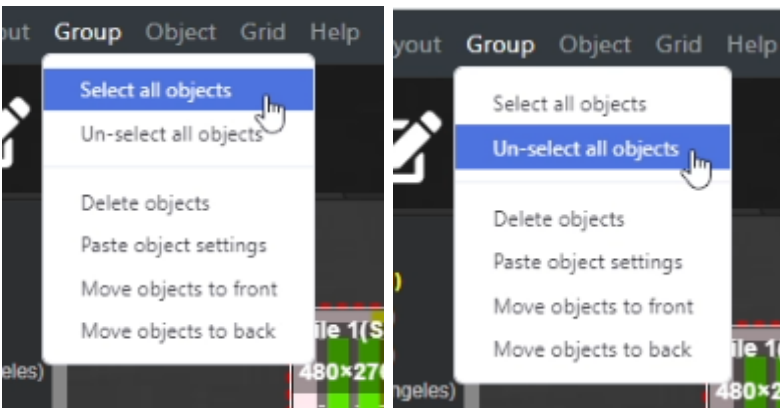
GUI

Layout → Setup Layout



| Setting | Description |
|------------|---|
| Background | Set the display background colour. |
| Bitmap | Enables the selected bitmap from the pull down menu on the right to be used as the background. The picture should be in png format |
| Style | Select bitmap style: Centre - centres bitmap Tile - display bitmap in multiple tiles Scale - scales bitmap to fit the display background |

Group → Select All/Unselect All



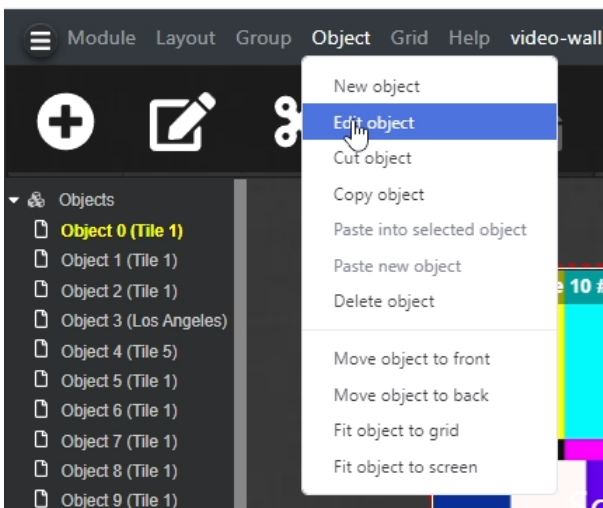
| Setting | Description |
|-----------------------|--|
| Select All | All Tile Objects in the current screen will be selected and can be operated on as a group. |
| Unselect All | All Tile Objects become independent and are no longer part of a group. |
| Cut objects | Removes all the Tile Objects in the group. |
| Paste objects | Pastes the Object that is on the clipboard to all Tile Objects in the group. |
| Move objects to front | Moves all Tile Objects in the group to the front. |
| Move objects to back | Moves all Tile Objects in the group to the back. |



Note: Multiple tiles can be selected by clicking and holding the mouse down in a vacant area of the screen and dragging the mouse over the desired tiles. Tiles selected are indicated by a dashed red border with a red circle in the bottom left. The group of selected tiles can all be moved by clicking and holding the mouse down in one of the selected tiles and dragging the mouse.

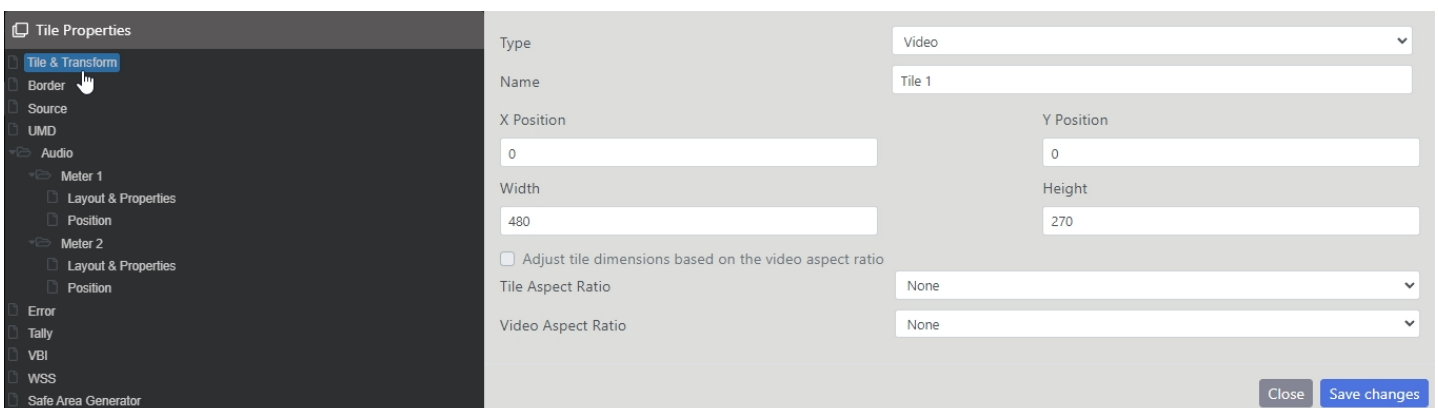
GUI

Object/New/Edit/ Cut/Copy/Paste into selected object/ Paste new object/ Delete object



| Setting | Description |
|-----------------------------|---|
| New object | Creates a new Tile Object. |
| Edit object | Opens the Edit Object dialogue for the Tile Object that is currently selected. |
| Cut object | Cut the currently selected Tile Object . |
| Copy object | Copies the display properties of the currently selected Tile Object (excludes Source properties). |
| Paste object | Pastes the copied display properties to the currently selected Tile Object. |
| Paste new object | Creates a new object and paste to it any previously copied display properties. |
| Delete object | Deletes the currently selected Tile Object. |
| Move object to front | Sends the currently selected Tile Object in front of all other objects. |
| Move object to back | Sends the currently selected Tile Object behind all other objects. |
| Fit object to grid | Sets the size of the currently selected Tile Object to the chosen grid pitch. |
| Fit object to screen | Set the selected Tile Object to full-screen size. |

Object → Edit object → Tile & Transform



Edit Object menu

The Edit object menu is used to set up all the attributes of a Tile Object and can be accessed in the following ways:

- From the Object menu (Main menu > Object menu > Edit Object).
- Double clicking on the Tile Object to be edited.
- Double clicking on the required Object in the Object source and explorer menu.

Object → Edit object → Tile & Transform → Type **GUI**

| Setting | Description |
|--|--|
| Type | Defines object type. Choose from None, Video, Audio, Text, Logo, Clock and Timer. |
| Name | Name of the tile, can be up to 40 characters long |
| X Position/Y Position/ Width/Height | Size and position of the tile can be altered by entering figures here, and any adjustments will be reflected in the outline of the rectangles drawn to represent the tiles. Conversely, any resizing or repositioning of the tiles done graphically will be reflected in the figures presented here. |
| Adjust tile dimensions based on video aspect ratio | Video Objects only Locks the tile aspect ratio to match the Video Aspect Ratio setting so that no letter boxing or pillar boxing is required to maintain the correct aspect ratio. NOTE: When this box is ticked Tile Aspect Ratio selection will be greyed out. |
| Tile Aspect Ratio | The aspect ratio of the tile can be set so that as either width or height are changed then the corresponding height or width will be automatically adjusted to retain the ratio. If None is selected the tile can be freely resized. |
| Video Aspect Ratio | Video Objects only. The video aspect ratio can be set so that as either width or height are changed then the corresponding height or width will be automatically adjusted to retain the ratio. Select 4:3 for SD, 16:9 for HD to set the aspect ratio based on the signal resolution. If None is selected the tile can be freely resized. |

Tile Properties



Note: the tile properties will vary depending on the TYPE of tile selected i.e. None, Video, Audio, Text, Logo, Clock and Timer.

Object → Edit object → Tile & Transform → Video

Video Tile Properties



Note: The following properties are available when the tile is of type Video. Important Note: Many of the property settings are common for different types of tiles - where there are different settings they will be highlighted in each section.

Object → Edit object → Border

| Setting | Description |
|------------------|---|
| Separator | Number of pixels separating the edge of the video content from the tile border. |
| Width | Pixel width of the border. |
| Colour | Colour of the border. |
| Visible | Turns the border on and off. |

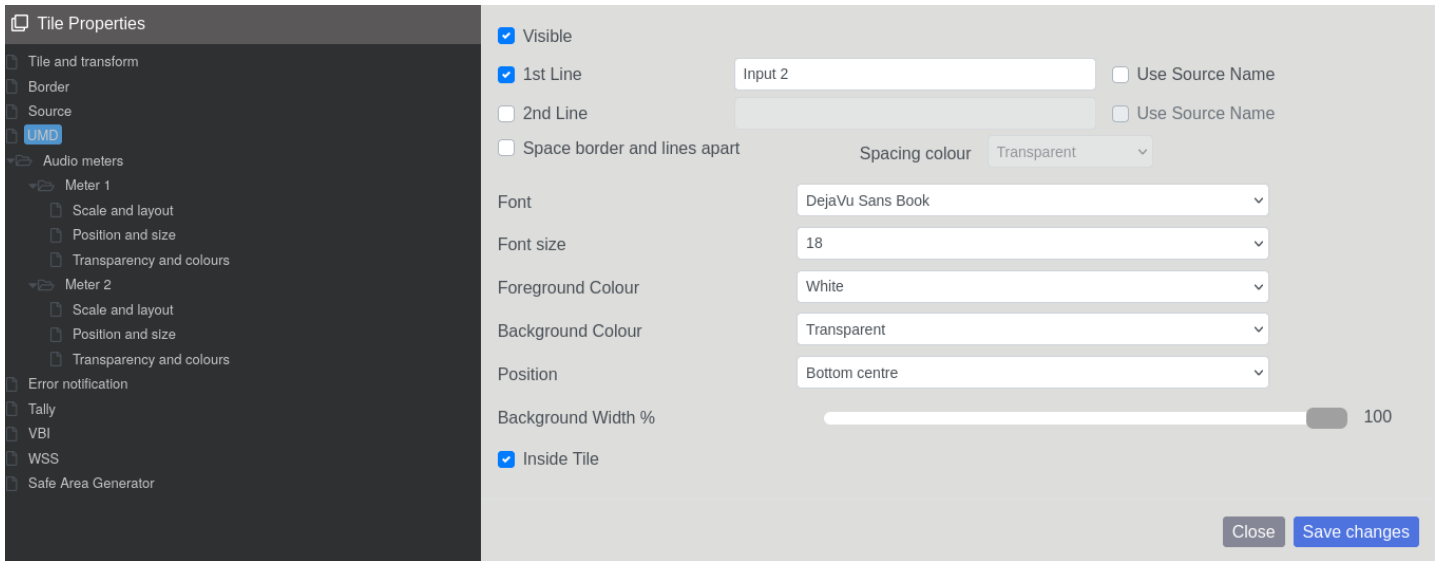
Object → Edit object → Source



Note: The Source Tab only exists within the Properties tab of Video and Audio type tiles.

| Setting | Description |
|--------------------------------------|---|
| Source | For a video tile, this selects the source of the video to display in the tile. For an audio tile, it selects the audio channels that have been set up to be associated with the chosen source. |
| SMPTE ST425 3G Level B Source | When the source is SMPTE ST425 (3G-SDI) Level B Dual Stream there are two images in the link, this selects which image to display. |
| Display on all screens | This will display the video tile on both outputs. The tiles remain locked to each other on both outputs (moving the tile on one screen will also move it to the same position on the other screen). |
| Overscan | Tick to overscan the video image by the amount set in the Overscan tab |
| Display resolution | Ticking this box will display a message in the top left corner of the tile indicating the format and resolution of the video input. |
| Duration of display | If display resolution is enabled, this sets the number of seconds that the message will be displayed after a change in the format or resolution occurs. NOTE: If no video is present then the message remains on display. |
| Colour | If display resolution is enabled this sets the colour of the video input format message. |

Object → Edit object → UMD



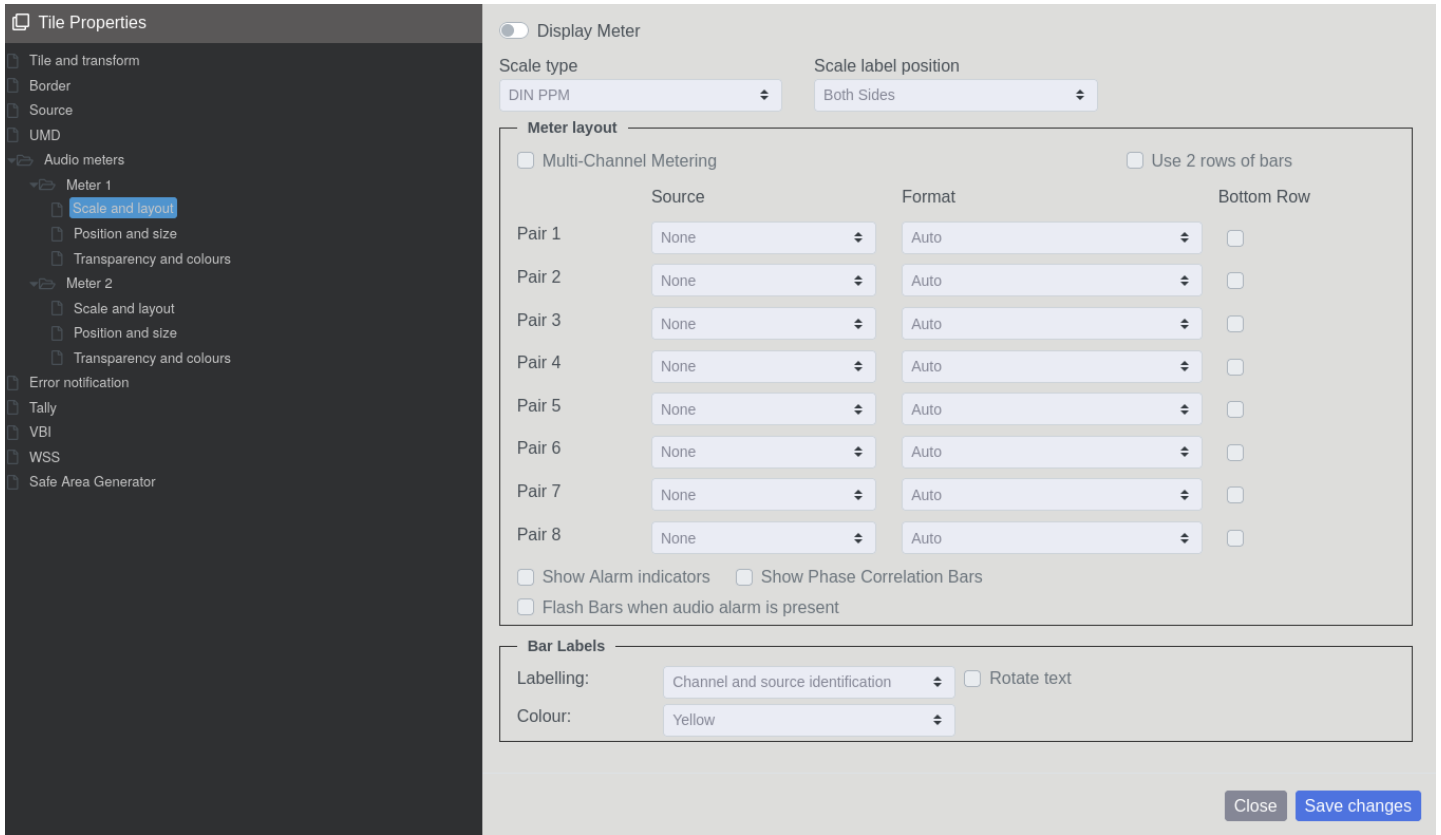
UMD Tab

Under Monitor Display (UMD) information may be generated from remote sources via the LAN using browser software operating on a remote PC, or via the RS232/422 port using TSL or other protocols. Up to two lines of UMD text can be left, centre, or right justified and may be placed anywhere in the tile.

| Setting | Description |
|---|---|
| Text 1st line/ Text 2nd line | Enter UMD text (via keyboard). |
| Use source name | Enables the use of the assigned source name for the UMD text. |
| Font | Choose font of the text. |
| Font size | Choose the font-size of the text. |
| Foreground colour | Sets the colour of the text. |
| Background colour | Sets the colour of the UMD background. |
| Position | Position of UMD relative to the tile.. |
| Separator | Places a separator between the UMD and the objects image and also between each line of text. Using the pull down menu, the colour of the separator can be chosen. |
| Inside tile | Places the UMD bar inside the tile (within the active picture). |
| Transparent on video | Enables the transparency of the UMD when it is in the picture area. |
| Transparency level | Sets the transparency of the UMD when it is in the picture area. |
| Visible | Enables the UMD to be seen on the tile. |
| Background width % | Adjusts the UMD background width from 0% (width of the UMD text) to 100% (full width of the tile). |

Object→Edit object→Audio→Meter→Scale and Layout

Image shown below with Scale type set to PPM/VU



| Setting | Description applies to Meter 1 and Meter 2 |
|-------------------------------|---|
| Display meter | Enables each audio meter groups. |
| Scale type | Sets the scale type of all the audio and loudness meter bars on display in this meter. One group can be loudness, the other PPM/VU (or both loudness, or both PPM/VU). You cannot have different types of PPM/VU - e.g. one group set to AES, the other set to DIN PPM will result in both being whatever the first group is set to. |
| Scale label position | Sets the positioning of the scale labelling on either side of the meter |
| Multi-channel metering | When enabled the following settings are required. |
| Use 2 rows of bars | Tick to split into 2 sections. For sources that are to appear in the bottom row, tick the 2 nd row box next to the pair setting. When unticked only one row of audio meter bars is displayed |
| Audio source | Sets the source to display in each of the 16 bars of the meter. These allow up to 8 pairs to be configured for displaying in any order. Set to None to turn a pair off, or select Embedded or External audio pair as the source. |
| Audio format | This selects the expected audio format. If set to auto, then the number of bars that are displayed for this pair depends on the decoded format. When Dolby E meter segment metadata is the source, there may be up to 8 channels to display for one source pair. If set to a fixed format (PCM, Dolby E 5.1 +2 etc.) then the number of bars displayed will be fixed. If the decoded format differs from the one that is set here then the levels will still be displayed (for the appropriate number of channels), however the “wrong format” colour will be used for the bars. (See Wrong Colour format setting). |

Object→Edit object→Audio→Meter→Layout and Properties

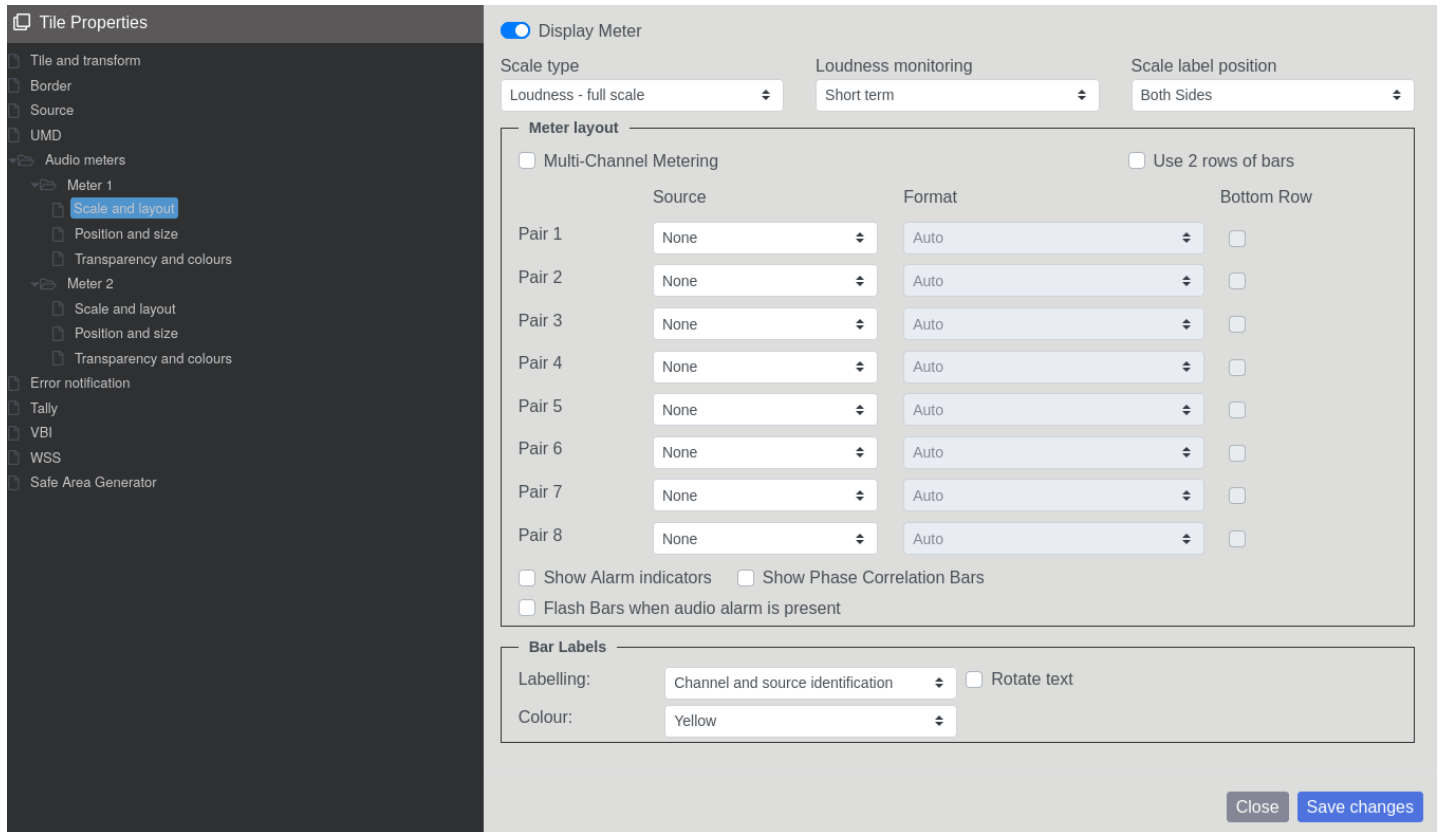
GUI

Continued...


| Setting | Description applies to Meter 1 and Meter 2 |
|--|---|
| Bottom row | Select this if the meter is to be split into 2 sections. For sources that are to appear in the bottom row, tick the bottom row box next to the pair setting. |
| Show alarm indicators | Enables the alarm indicators at the top of the bars. Colours displayed correspond to the following error messages: <ul style="list-style-type: none"> • Audio loss: yellow • Audio over: red • Carrier loss: cyan • Phase error (correlation < 0 or mono detected): magenta |
| Show phase correlation bars | Phase correlation bars are displayed at the top of the bars when selected. |
| Flash bars when an audio alarm is present | Enables the flashing of the audio bars when an audio alarm is detected, (to attract attention). |
| Bar labels | Sets the display of the bar labels to either an enumerated format, or the labels as entered for the respective channels, or off. When labels entered for the respective channels is chosen (the Text option), it uses the labels entered via the Module > Audio Channel Names menu. |
| Rotate Text | Rotates the label characters by 90 degrees and draws the labels from top down (as opposed to characters being upright and drawn from left to right). |
| Colour | Sets the colour of the bar labels. |

**Object→Edit object→Audio→Meter→Scale and Layout,
Image shown below with Scale type set to Loudness**


GUI



The Loudness layout above shows a loudness scale being selected and next to it the option for choosing whether to display short term, momentary, or both.

 Meter Layout settings are described in the previous section with Scale Type set to PPM/VU.

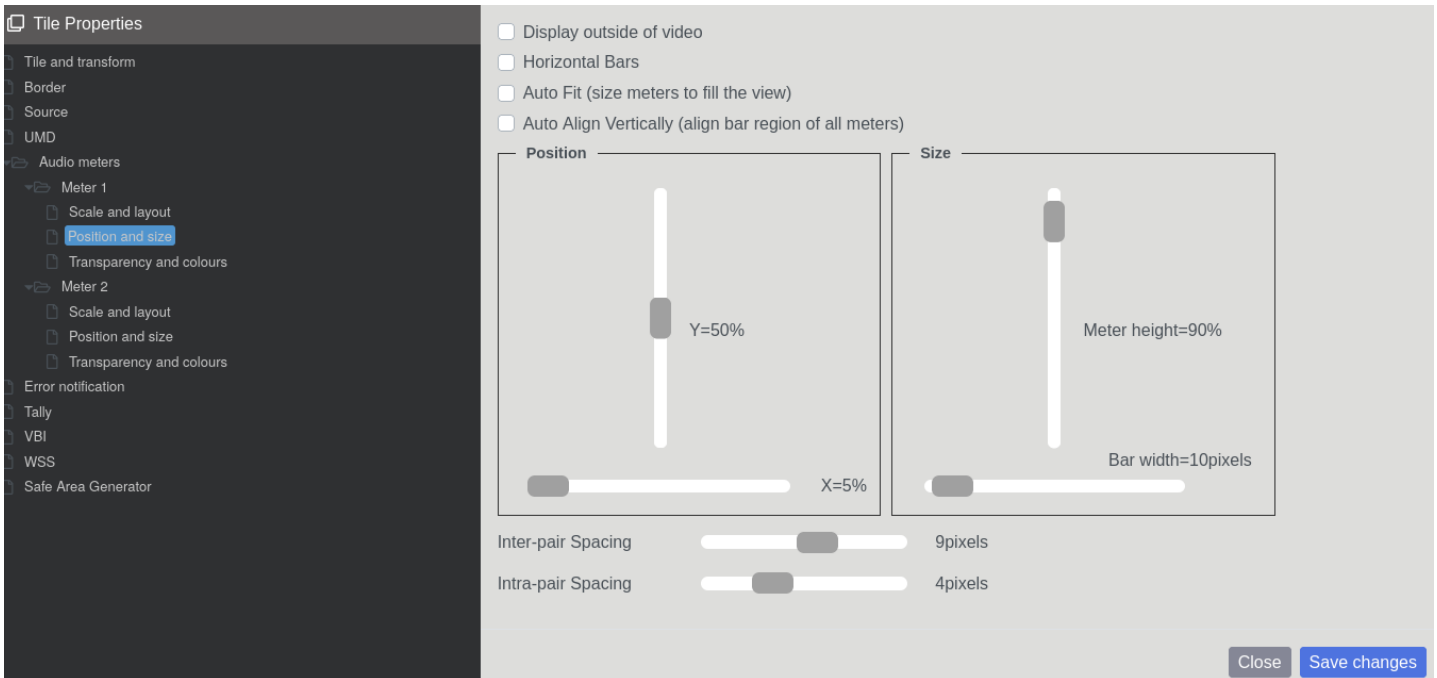
| Setting | Loudness metering |
|----------------------------|--|
| Scale type | Has the additional Loudness - EBU +18, Loudness - EBU +9, and Loudness - full scale options available. When one of these is selected there is the option to select the Loudness monitoring type. |
| Loudness monitoring | Selects whether to monitor short term, momentary or both. When short term or momentary is selected there will only be one bar level for each pair chosen for displaying in the Meter Layout section. When short term and momentary is selected there will be two meters for each pair chosen. Short term meters are indicated by an “S” beneath the meter. Momentary by “M”. |

 **Note:** The short term meter uses the window length set for the source in the Source Properties > Audio tab. The momentary meter uses the standard window length of 0.4s, as specified in EBU Tech 3341-2016.

Note: Loudness meters can only monitor PCM audio at a sample rate of 48kHz (i.e. not Dolby E).

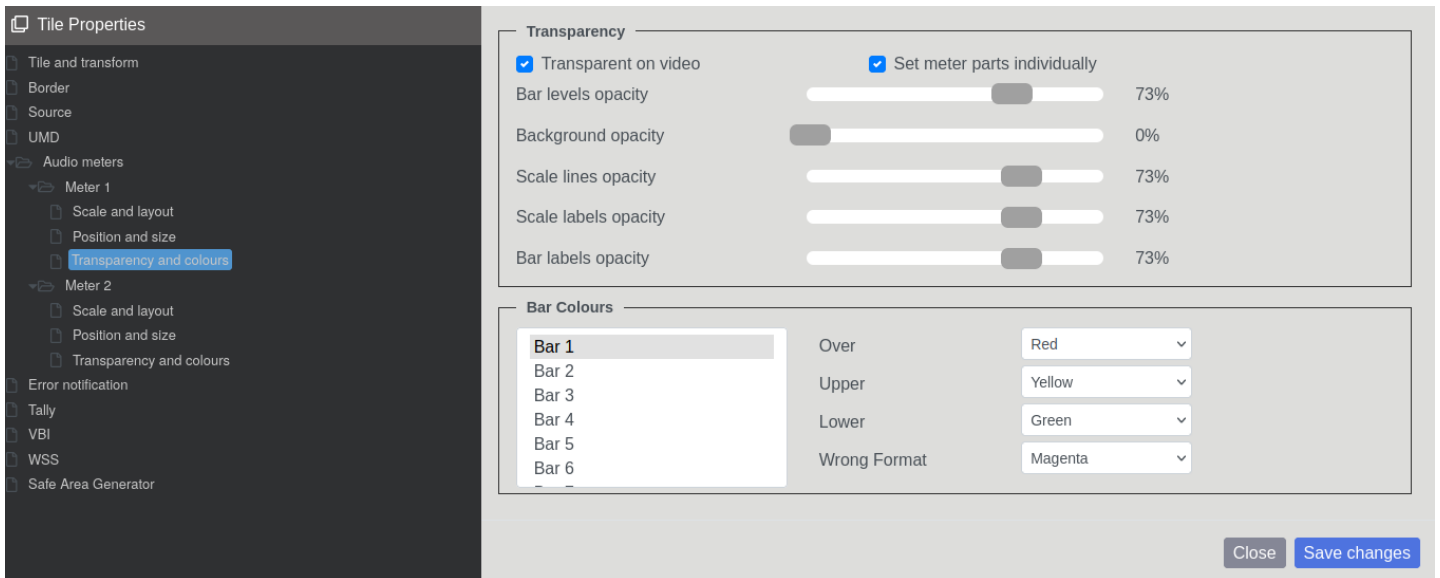
Note: If the source of a loudness meter is Dolby E then it will flash full scale on and off to indicate it cannot be measured.

Object → Edit object → Audio → Meter → Position and Size



| Setting | Description applies to Meter 1 and Meter 2 |
|---------------------------------|--|
| Display outside of video | Reduces the width of the video portion of the tile and positions the meter against the inner edge of the tile so that it is not overlapping the video. NOTE: to maintain the desired aspect ratio of the video, go to the WSS tab, select WSS/AFD for the mode, tick the Auto size video image, and set the Default aspect ratio to the applicable value. |
| Horizontal Bars | Audio bars will be horizontal when checked. |
| Auto fit | Automatically scales the meter to fit into the whole tile. NOTE: The Position and Size settings are disabled when this is selected. |
| Auto align vertically | Automatically align the base and height of audio meters that are in tiles of the same vertical position and height. When audio meters are configured they might have different heights below the meter region (e.g. the labels might be different lengths for different meters). They can also have different heights above the meter region (e.g. some might have alarm indicators turned on, others might not). This results in the vertical positioning of the bar graphs of each meter to differ. This feature will align vertically all the bargraphs of different meters. NOTE: It only aligns meters in tiles that are in the same vertical position and have the same height. |
| Position | Sets the vertical and horizontal position of the meter within the window (disabled when Auto fit is ticked). |
| Size | Sets the vertical and horizontal size of the meter within the window (disabled when Auto fit is ticked). |
| Inter-pair spacing | Sets the number of pixels appearing between two meter bars belonging to different pairs. |
| Intra-pair spacing | Sets the number of pixels appearing between two meter bars belonging to the same pair. |

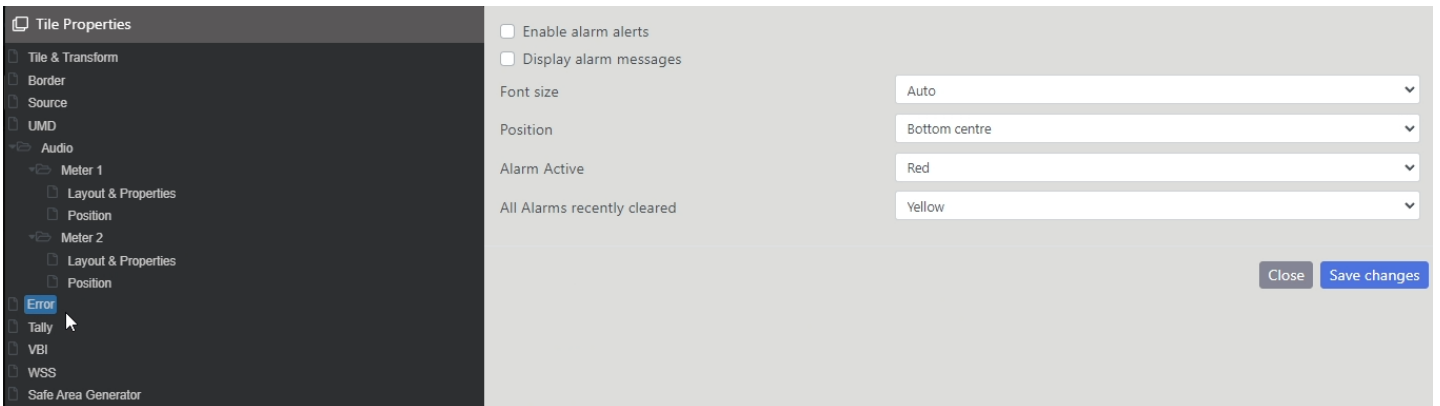
Object → Edit object → Audio → Meter → Transparency and Colours



| Setting | Description |
|-------------------------------------|---|
| Transparent on video | Enables the transparency of the meter bars when they are on the in-picture area. |
| Set meter parts individually | When unticked there will only be a single opacity setting for adjusting the overall meter. When ticked, individual parts of the meter can be adjusted. |
| Opacity | The single opacity setting when “Set meter parts individually” is unticked. |
| Bar levels opacity | The opacity of the bar levels. |
| Background opacity | The opacity of the meter background. |
| Scale lines opacity | The opacity of the scale lines (graticules). |
| Scale labels opacity | The opacity of the scale label units. |
| Bar labels opacity | The opacity of the bar labels (labels beneath each bar indicating the channel number/name). |
| Bar Colours | Selects bar to which the colour of the over, upper, lower range, and wrong format applies. |
| Over Colour | Sets the over range colour for the bar selected in the Bar Colours control. |
| Upper Colour | Sets the upper range colour for the bar selected in the Bar Colours control. |
| Lower Colour | Sets the lower range colour for the bar selected in the Bar Colours control. |
| Wrong Format | Not applicable if Audio Format is set to Auto. Sets the colour that will be used for the bar if the audio format disagrees with the format set in the Audio format field. |

GUI

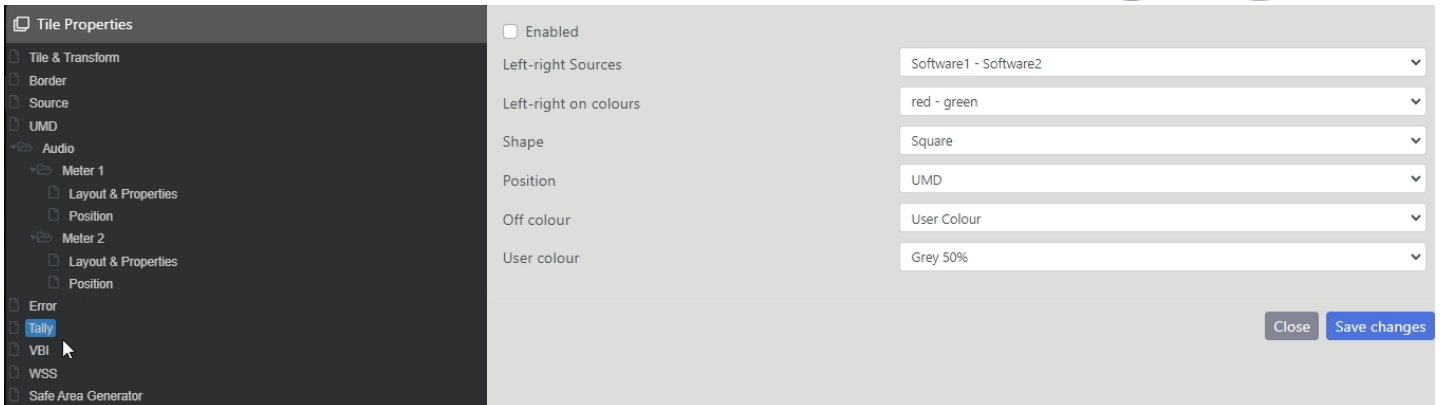
Object → Edit object → Error



| Setting | Description |
|------------------------------------|--|
| Enable alarm alerts | Enables alarm indications within the tile. |
| Display alarm messages | When enabled all the alarms that are currently triggered or have recently been cleared will be displayed in the tile. NOTE: Only one alarm type gets displayed at a time, it will cycle through them if multiple alarms are present. |
| Font size | Select the font size. NOTE: If Auto is selected the alarm text is automatically sized to suit the tile it is being displayed on |
| Position | Sets the position of the meter within the window |
| Alarm active | Sets the border colour of the tile when an alarm triggers. Also applies to the colour of alarm messages for alarms that are active. |
| All alarms recently cleared | Sets the border colour of the tile when no alarms are currently triggered, but some have recently cleared but not reset yet. This also applies to the colour of alarm messages for recently cleared alarms. |

GUI

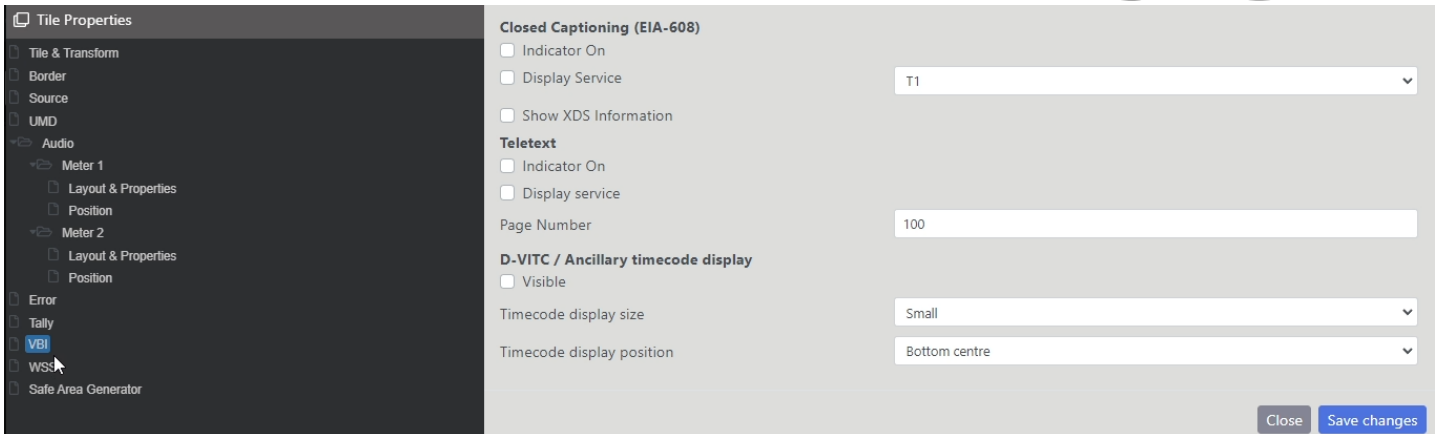
Object → Edit object → Tally



| Setting | Description |
|------------------------------|--|
| Enabled | Turns the display of the tally on/off. |
| Left-right sources | <p>Select Hardware or one of two Software tallies. The Hardware tally is the GPI tally that has been set up for the video source of the tile. This GPI-to-source assignment is configured in the GPI inputs tab. For each applicable GPI, select a Source....Hard Tally here.</p> <p>The two Software tallies operate in accordance with the TSL protocol or the Open Protocol tally commands. TSL has up to 127 display addresses; each address comprising 4 tallies and a UMD. The address assigned to a source depends on how the TSL protocol has been configured. For the Open Protocol control, see setsourcetally in Open Protocol.pdf Each video window can use the first 2 tallies of its display address to trigger the 2 tallies available in its UMD bar, or the border tally if set up appropriately.</p> |
| Left-right on colours | Select red-green, green-red, red-red and green-green. |
| Shape | <p>Select Fill or Square. When set to Square the left-right colour settings apply to the 2 squares displayed on the left-right sides of the UMD. When set to Fill the UMD and / or border (depending on the Position setting) will be filled with the left or right colour, depending on which tallies are triggered.</p> <p>The left tally has the highest priority - if it is triggered then the UMD/border will be the left colour. Otherwise, if the right tally is triggered then the UMD/border will be the right colour.</p> |
| Position | Select UMD, Border or UMD-border. |
| Off colour | Sets the disabled colour to either UMD colour, Border colour, or the User colour.. |
| User colour | Selects disabled colour if Off colour is set to be User Colour. |

Object → Edit object → VBI

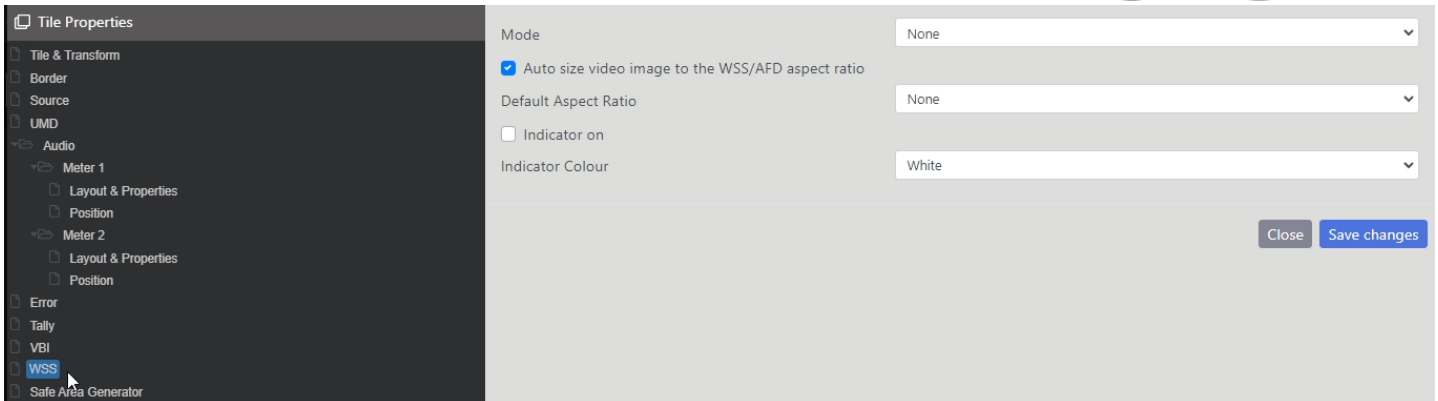
GUI



| Setting | Description |
|------------------------------------|---|
| Closed Captioning (EIA-608) | NOTE: These settings apply to EIA-608 encapsulated in EIA-708. |
| Indicator on | Enables a “CC” indicator to be shown in the tile if the selected closed caption type is present. |
| Display service | Displays the closed caption text in the tile when enabled and the pull down menu selects the type of service to be displayed. |
| Show XDS information | Shows the information contained in the extended data services |
| Teletext | NOTE: These settings apply to composite or SDI video that contains WST subtitles, and SDI video that contains OP-47 teletext subtitles. |
| Indicator on | Enables the indicator to be shown if teletext is present in the video. Displays “WST” or “OP-47”, depending on the type present or no indicator if none present. |
| Page number | Selects which teletext page is to be viewed. |
| D-VITC / Ancillary timecode | NOTE: This is only available on SDI inputs. |
| Visible | Turns on a timecode display in a fixed position near the bottom centre of the tile within the video. The display will start to be cropped when the tile is 150 pixels or less wide. For each input it is possible to display either the Ancillary Timecode (from SD- HD- or 3G-SDI inputs) or D-VITC (from SD-SDI inputs only). If multiple sources of timecode are present in a video source then the timecode selected for display in order of priority is: Ancillary VITC, Ancillary LTC and D-VITC. |
| Timecode display size | Select the size of the timecode to be displayed |
| Timecode display position | Select the position of the timecode to be displayed |
| D-VITC Note | D-VITC is only available on SD sources as there is currently no standard for HD sources. Ancillary Timecode is available on both SD and HD sources. |
| WST Teletext Note | WST Teletext can only be decoded from Composite inputs. |
| CC Note | Closed Caption pages of Teletext using the OP-47 standard can be displayed on SDI inputs |

Object → Edit object → WSS

GUI



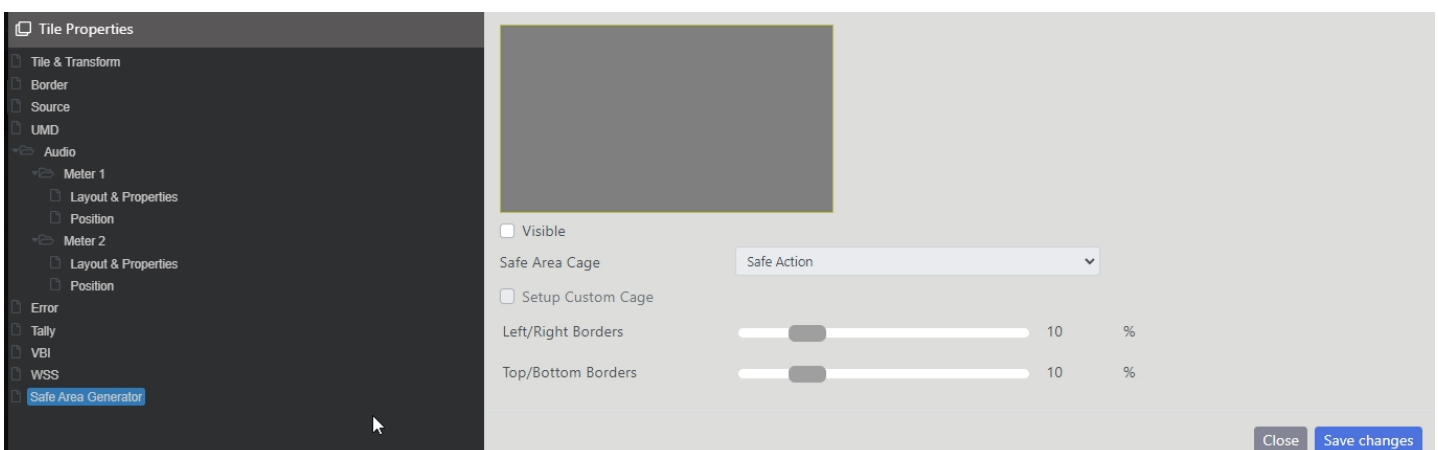
WSS Tab



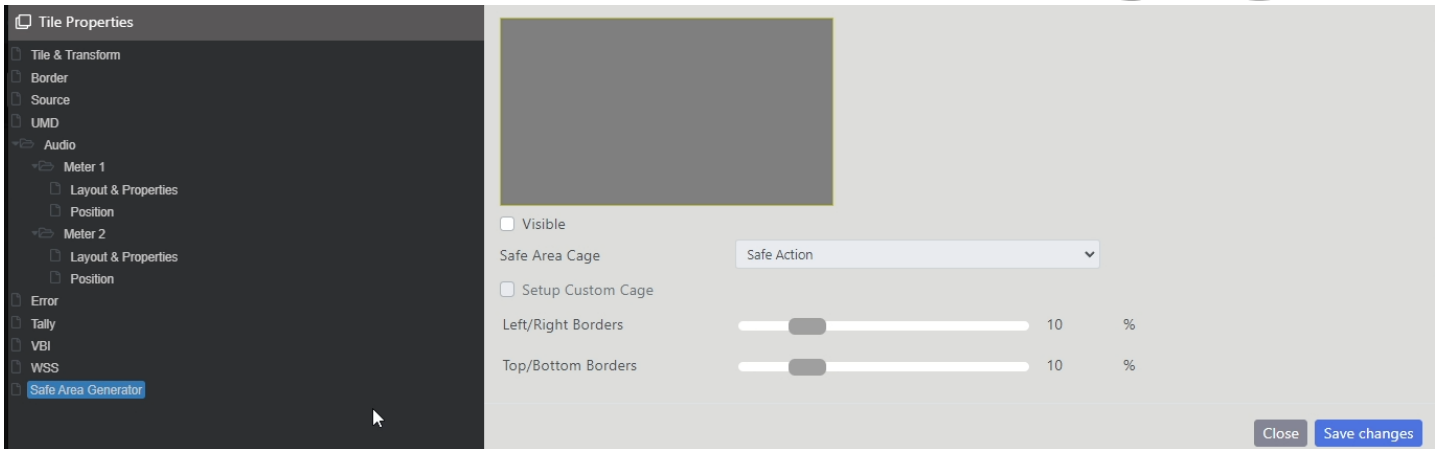
This tab only exists in tiles that are of Video type. If VBI data is present on a video input and the video is an SDI source then the WSS/AFD data can be used to control Aspect Ratio.

| Setting | Description |
|--|---|
| Mode | Selects the type of WSS/AFD to decode, select None, WSS, AFD or WSS/AFD |
| Auto size video image to the WSS/AFD aspect ratio | When enabled, the aspect ratio of the video will automatically respond to any changes in the selected WSS or AFD information. When unticked the default video size is defined by the Video Aspect Ratio setting on the Edit object - Type tab |
| Default aspect ratio | Chooses the aspect ratio to use when the correct one is unknown (for example if WSS or AFD is not present). Select 4:3 for SD, 16:9 for HD. |
| Indicator on | When enabled this will present an indicator in the tile if there is aspect ratio information available. |
| Indicator colour | Sets the colour of the indicator text |

Object → Edit object → Safe Area Generator



Object → Edit object → Safe Area Generator



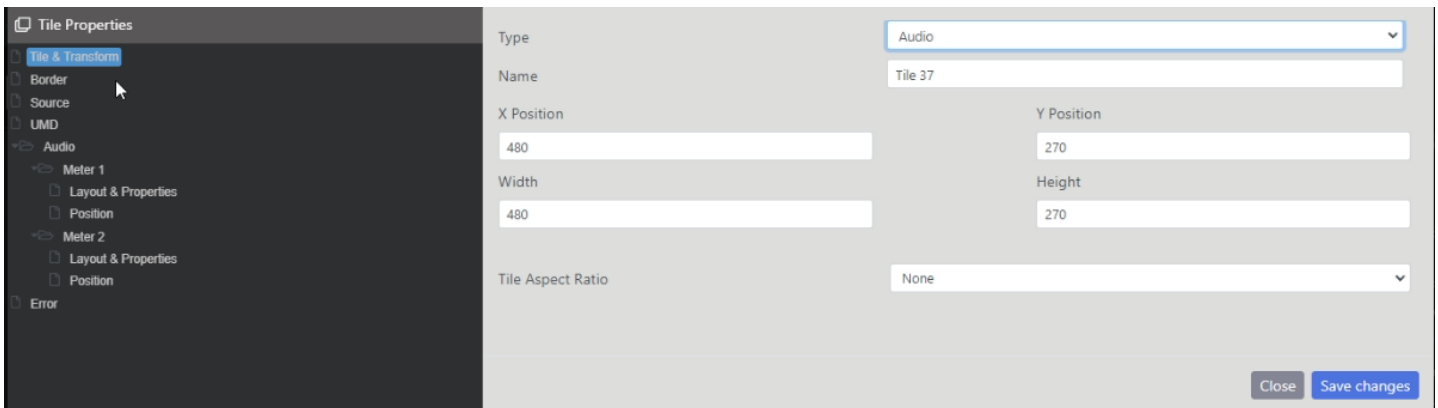
Safe Area Generator Tab

This tab only exists in tiles that are of Video type.

| Setting | Description |
|---------------------------|---|
| Visible | When ticked, this will show the safe area outline in the video |
| Safe Area Cage | If a pre-set safe area cage is to be shown then choose the appropriate one from this list. |
| Setup Custom Cage | When checked a custom safe area cage can be drawn using the vertical and horizontal border controls. |
| Vertical Borders | Adjust the vertical borders of the safe area. The slide bar can be used, or numbers manually entered. |
| Horizontal Borders | Adjust the horizontal borders of the safe area. The slide bar can be used, or numbers manually entered. |

GUI

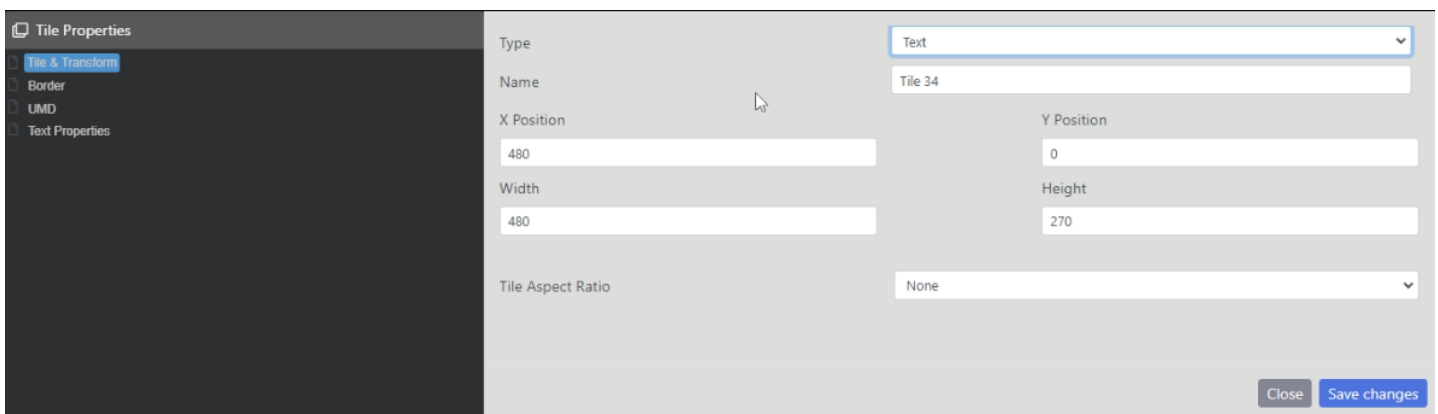
Object → Edit object → Tile & Transform → Audio



Audio Tile Properties

Important Note: The Border, Source, UMD, Audio Layout & Properties and Error Properties have the same parameters as the ones already shown for the tile type - Video.

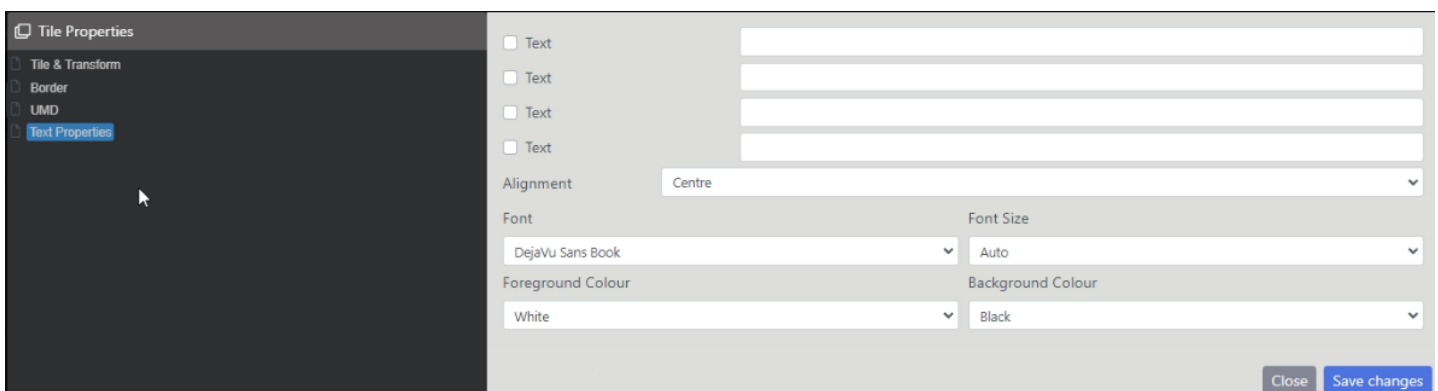
Object → Edit object → Tile & Transform → Text



Text Tile Properties

Important Note: The Border and UMD Properties have the same parameters as the ones already shown for the tile type - Video. The Text Properties TAB only exists in tiles that are of type - Text

Object → Edit object → Tile & Transform → Text → Text Properties

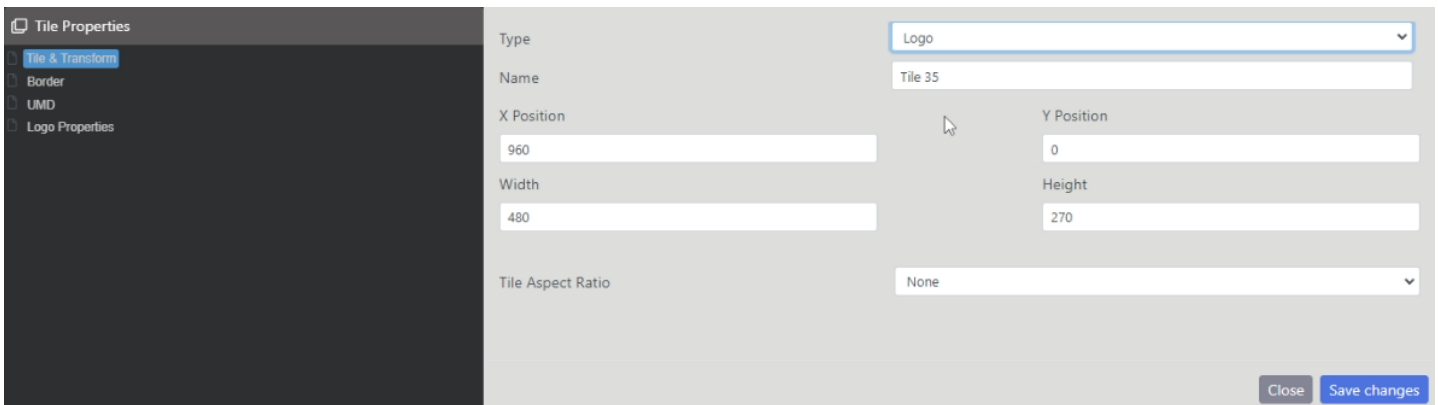


Object→Edit object→Tile & Transform→Text→Text Properties

GUI

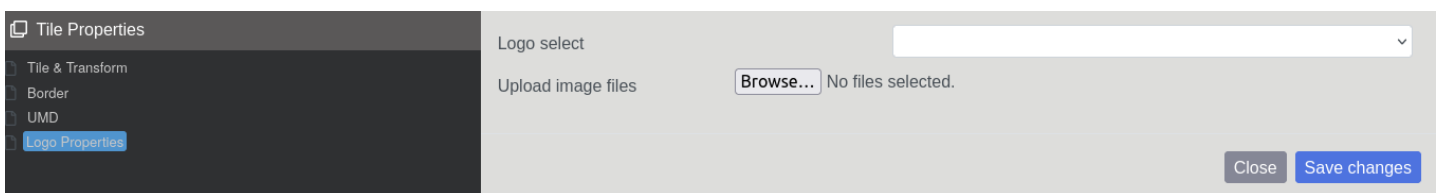
| Setting | Description |
|------------|--|
| Text | Enter up to four lines of text and set it to hidden or visible |
| Alignment | Justify text within the tile |
| Font | Select text font |
| Font size | Select font size |
| Foreground | Set text colour |
| Background | Set text background colour |

Object→Edit object→Tile & Transform→Logo



Logo Tile Properties

Important Note: The Border and UMD Properties have the same parameters as the ones already shown for the tile type - Video. The Logo Properties TAB only exists in tiles that are of type - Text



Logo Select Tab



Select one of the logo files from the drop down list. The selected logo will be scaled to fit the tile dimensions.

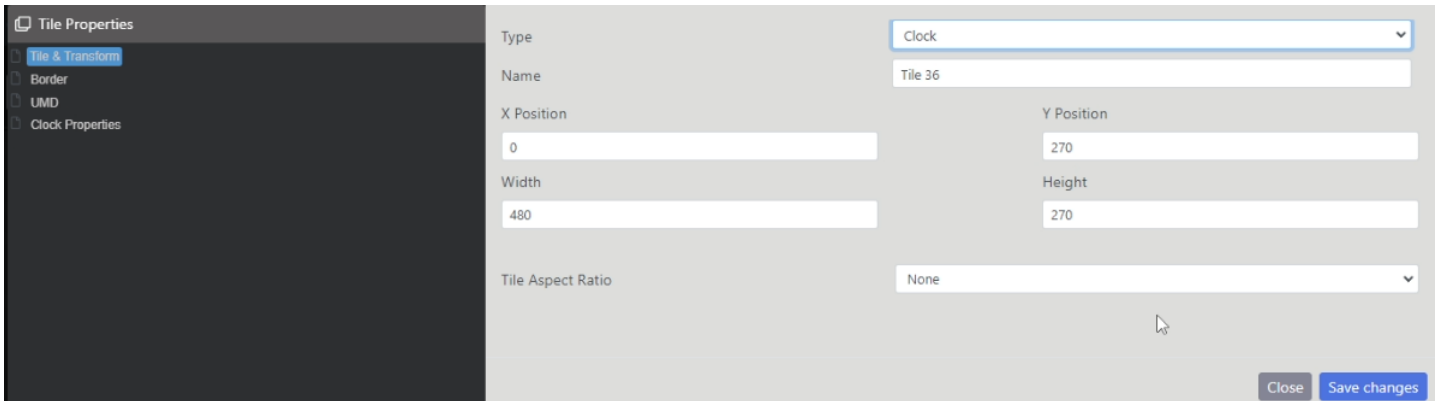
Graphics files can be uploaded directly to the multiviewer using the Browse selection.

Alternatively files can be uploaded via SFTP to the /data/mv/logos folder to add entries to the list.

Files must be in png format.

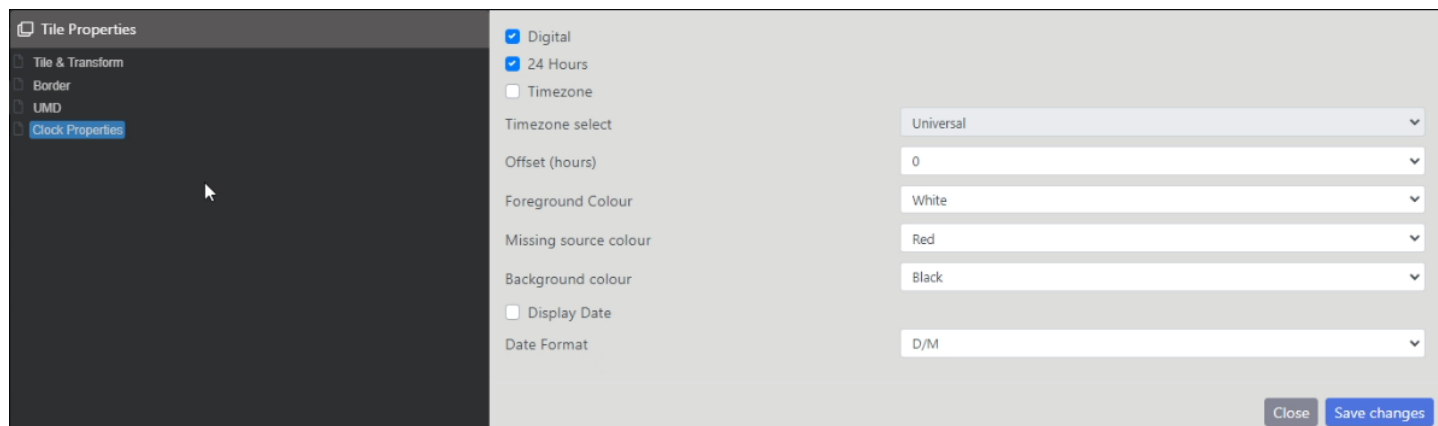
PNG logo storage capacity up to 50MByte.

Object → Edit object → Tile & Transform → Clock



Clock Tile Properties

Important Note: The Border and UMD Properties have the same parameters as the ones already shown for the tile type - Video. The Clock Properties TAB only exists in tiles that are of type - Clock



| Setting | Description |
|-----------------------------|---|
| Digital | Enable for digital clock type otherwise clock type will be analogue. |
| 24 hours | Enable for 24 hour clock (applicable to digital clock type only). |
| Timezone | Enables pull-down menu for GMT within the range of GMT -14 to GMT +12 or specific Region/City time zones. |
| Offset (hours) | Applies offset from -12 to +12 hours (works in combination with the Timezone setting if it is enabled) |
| Foreground colour | Sets the clock colour. |
| Missing clock source colour | Sets the colour when the clock source is missing |
| Background colour | Sets the clock background colour. |
| Display Date | Enables current date (applicable to digital clock type only). |
| Date Format | Sets the format of the date when displayed. |

Object → Edit object → Tile & Transform → Timer

Timer Tile Properties

Important Notes: The Border and UMD Properties have the same parameters as the ones already shown for the tile type - Video. The Timer Properties TAB only exists in tiles that are of type - Timer. The Timer properties tab is used to setup a timer to run based on the time of day or controlled by GPIO Inputs.

Object → Edit object → Tile & Transform → Timer → Timer Properties



When Timer Mode is set to Start at a certain time of day, the following options are shown:

| Setting | Description |
|-------------------------|--|
| Start at (hh:mm:ss) | Set the timer start time using 24 hour clock format. |
| Stop at (hh:mm:ss) | Set the timer stop time using 24 hour clock format. |
| Font | The font to use for the digits. |
| Font Size | If the font size is set to Auto then the digits will be sized to fit in the window, up to a certain maximum font size. |
| Countdown Colour | This is the colour of the timer digits up until 10 seconds before the start time is reached |
| 10s before start colour | This is the colour of the timer digits for the 10 second duration before the start time is reached. The timer will still be counting down from 00:00:00 during this period. |
| After start colour | This is the colour of the timer digits in the interval between the start time and the stop time. The timer counts upwards from 00:00:00, commencing at the start time. When the stop time is reached, it will return to the countdown colour, counting the amount of time remaining before the start time will be reached again. |

Object→Edit object→Tile & Transform→Timer→Timer Properties (continued)



Note: The following table applies to the options when Timer Mode is set to Start at a certain time of day. The settings below determine when the timer will be triggered.

| Setting | Description |
|-------------------------|---|
| When Enabled | If the time of day is earlier than the selected Start at time, the timer will count down the time remaining until the Start at time. |
| | Once the Start at time is reached the timer will then count up until the Stop at time is reached. |
| | When the Stop at time is reached the timer will then commence a countdown of the time remaining until the Start at time. |
| When Not Enabled | The timer will display 00:00:00 during the period preceding the Start at time and will then count up until it reaches the Stop at time. |
| | Once it reaches the Stop at time the timer will again display 00:00:00 until the Start at time. |

Time of day Timer Example:

Trigger the timer to start at 10:00am and stop at 10:30am, and countdown beforehand

- Set the Start at and Stop at times to 10:00:00 and 10:30:00 respectively.
- When the time of day is 10 seconds before 10am the timer will change colour to orange and display 00:00:10
- When 10am is reached it will switch to red and start counting up from 00:00:00
- When 10:30am is reached it will be displaying 00:30:00
- Immediately after that it will change back to white and start counting down from 23:30:00 – the amount of time remaining before 10am the next day.



Note: when Timer Mode is set to Start at a certain time of day, the timer will always countdown while the time is not between the start and stop time.

Timer Properties (continued)



Note: When Timer Mode is set to Control with GPIs, the following options are shown. The timer can count up or down and can be paused and resumed as required.

| Setting | Description |
|--|--|
| Enable Pause and Resume GPIs using: | |
| When Enabled | The timer can be paused and resumed with GPIs and the available GPI Sources pull-down menus will depend on which of the following three options is chosen: |
| When Not Enabled | The timer can only be started with a GPI and the Reset GPI option is all that is available in the GPI Sources menu. |
| Two GPIs | Two separate GPIs can be used for pause and resume. GPI Sources pull-down menu options available: Reset GPI, Pause GPI, Resume GPI |
| One GPI, active=pause, inactive=resume | In this mode only one GPI is used for controlling pause and resume. When the GPI is active the timer pauses. When inactive the timer resumes. GPI Sources pull-down menu options available: Reset GPI, Pause/Resume GPI. |
| One GPI, alternating between pause and resume | In this mode only one GPI is used for controlling pause and resume. If the timer is currently running, triggering the GPI will pause the timer. If the timer is currently paused then triggering the GPI will resume the timer. GPI Sources pull-down menu options available: Reset GPI, Pause/Resume GPI |
| Countdown first after a reset | When this is selected and the Reset GPI is triggered, the timer will countdown from the set start time to 00:00:00 first before continuing to count up. If this is not selected then it starts counting up from the set start time when the Reset GPI is triggered. |
| Reset to (hh:mm:ss) | Set the timer start time using 24 hour clock format. |
| Other settings | Colour and font settings are the same as those listed on previous page |

Timer Properties (continued)

GPI Timer Example:

Trigger the timer by a GPI, and allow it to be paused and resumed using individual GPIs. Initially it is to countdown from 00:00:30

- First three GPIs have to be assigned as timer triggers. This can be done with Module Menu > Setup Module > GPIs > GPI Inputs.
- Select the 3 GPIs that are to be used to control the timer - e.g. if the first 3 GPIs are connected then select "Timer 1 trigger" in the "Global GPI In 1" option, "Timer trigger 2" in the "Global GPI In 2" option etc..
- Press OK to close this GPI window
- Open Object > Edit Object > Properties of the Timer tile (or double click on it)
- In the Timer Properties tab select "Control with GPIs"
- Check Enable Pause and Resume GPIs using:
- Select Two GPIs (for pause and resume)
- In the GPI sources, select Timer trigger 1,2 and 3 for the three types of GPIs
- Set the Reset to (hh:mm:ss) time to 00:00:30 and tick the Countdown first box.
- The timer can be started initially with either the reset or resume GPI. It will start counting down from 00:00:30 and will be coloured white
- When it reaches 00:00:10 it will change to orange and 10 seconds later when it reaches 0, it will change to red and then start counting up.
- The timer continues to count upwards indefinitely, wrapping back to 00:00:00 after 24 hours.
- At any time, the pause and resume GPIs can be activated
- Any further assertions on the reset GPI will reset it back to 00:00:30, and it will immediately start counting down again if currently running, or remain at 00:00:30 if currently paused, until it is resumed again.



Notes:

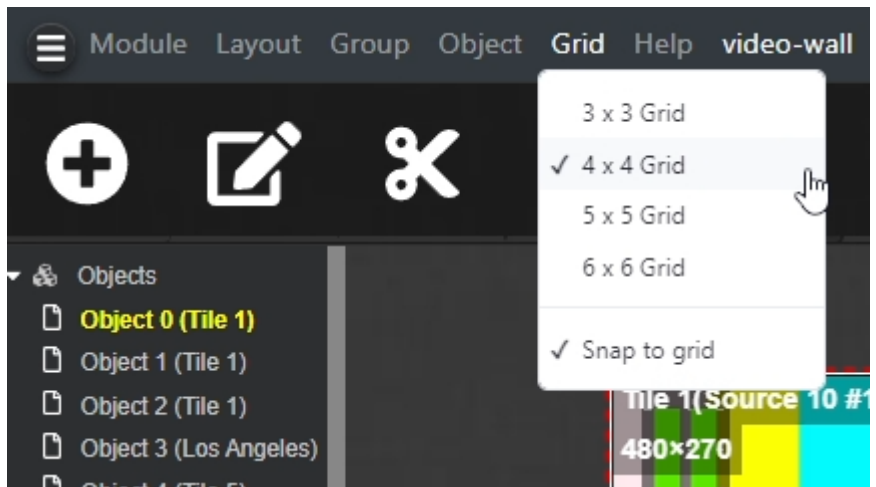
- In the example above, which uses 2 GPIs, GPI triggering of the timer is only sensitive to positive edges - so a transition from 0V to 3V or greater on the relevant GPI pin will trigger the timer. But if the GPI trigger mode had been set to "One GPI with active=pause and inactive=resume" then the trigger will occur when the level is 3V or greater.
- It does not have to be held above this threshold indefinitely to remain counting.
- It must remain asserted for at least 200ms though to trigger the timer.
- Any further transitions from 0V to 3V or above will re-trigger it.

GUI

Grid

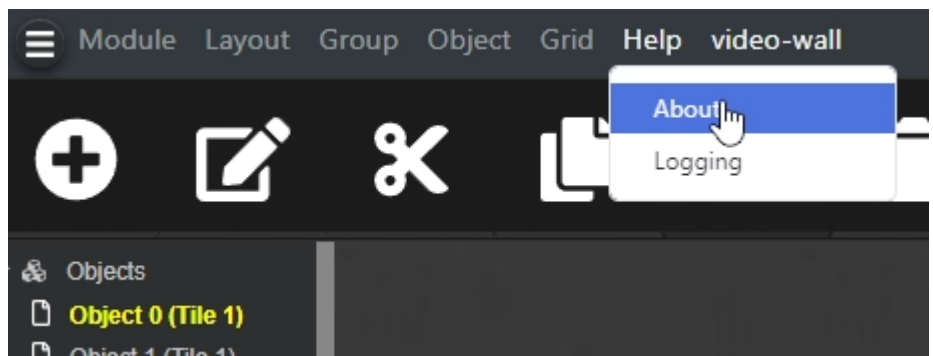
Grid Menu

Accessible from the Main menu, the Grid menu enables the layout workspace to be defined by a grid for ease of aligning Tile Objects in a regular arrangement. The Size Object to Grid function in the main toolbar works in conjunction with this feature and automatically sizes the currently selected tile to the cell size of the grid that has been set.



| Setting | Description |
|---------------------------------|---|
| 3 x 3, 4 x 4, 5 x 5, 6 x 6 grid | check to display the required grid |
| Snap to Grid | Enables tiles to be snapped to the nearest grid position when repositioning. The top left corner of the tile is anchored to the top left corner of the grid position. |

Help → About



GUI

Help → About

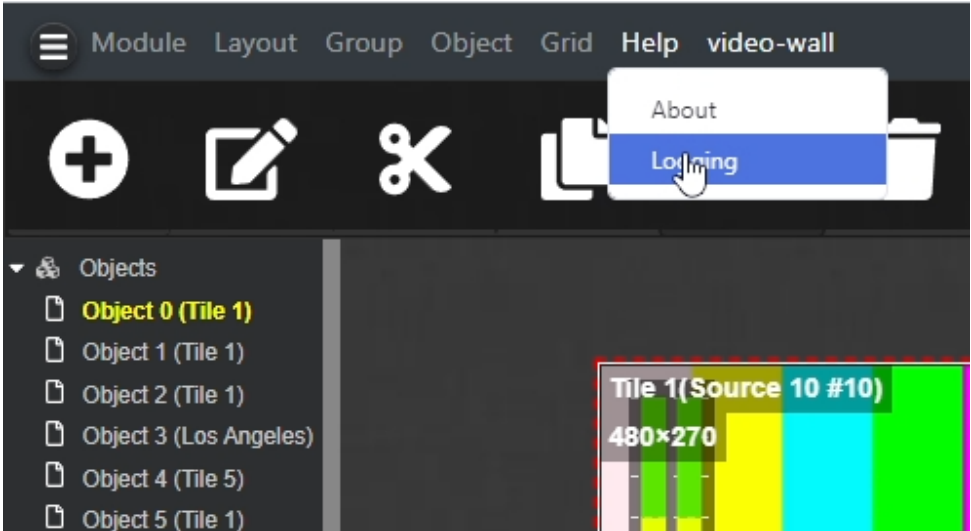


Help About System

Help is found on the Main menu. The current system status and firmware revisions of all cards and rears detected in the chassis and is accessed from Help > About

| Setting | Description |
|---------|--|
| About | Shows in numerical order starting from Slot 0, the main card type fitted in that slot along with its firmware revision. For all input cards, the type of rear fitted along with its firmware revision is also shown. To view all the cards in the chassis, it may be necessary to use the righthand scroll bar and scroll downwards. |

Help → Logging



Help → Logging

GUI

Logging

```

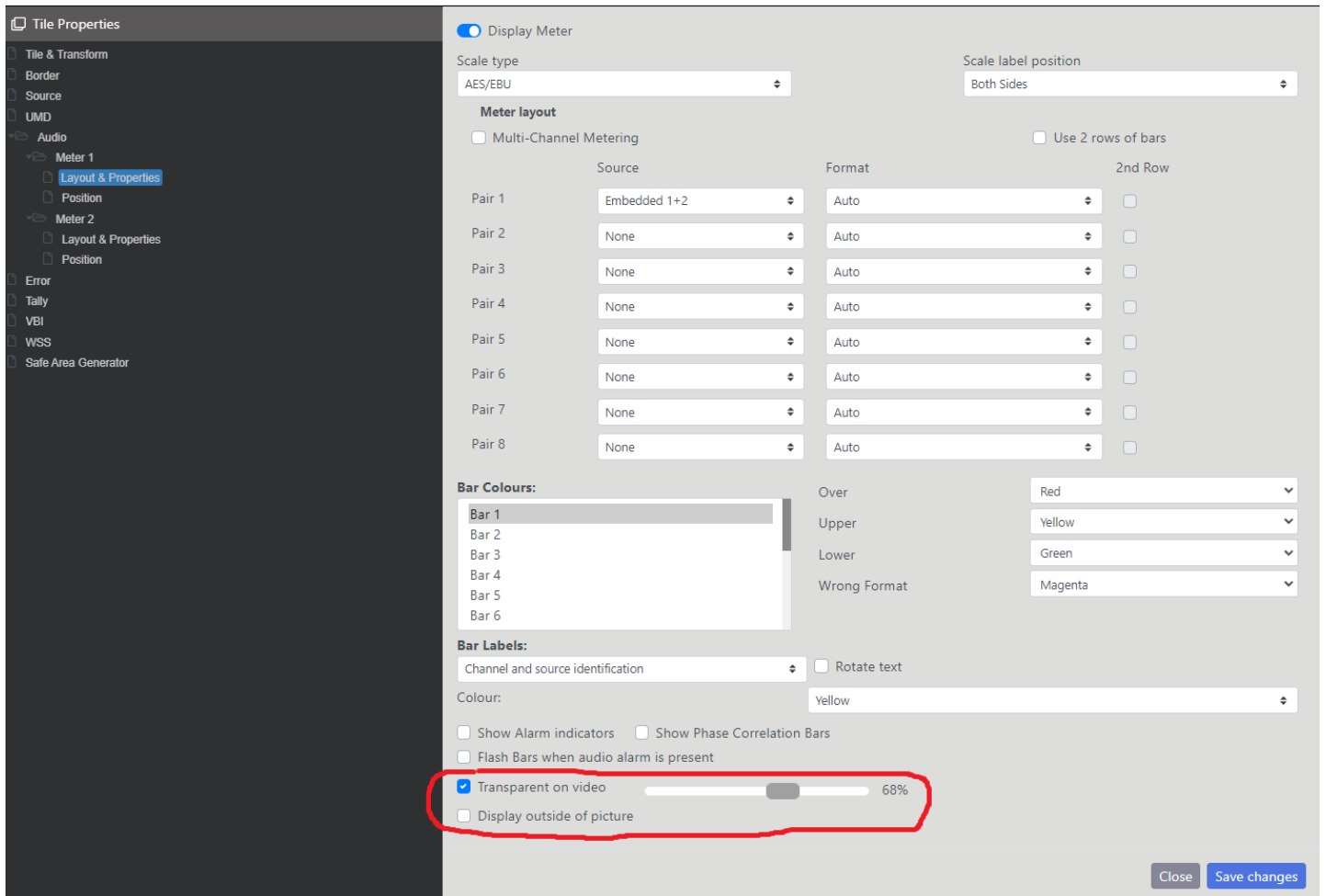
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: tx_read_edid_block 0
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: EDID version 1.3, 1 extension blocks, vip 0x80
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: tx_read_edid_block 1
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: EDID extension block type CEA-861 revision 3
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: EDID supports basic audio, enabling HDMI mode
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: set_res: pixclk=148500000 vfreq=50 htot=2640 vtot=1125
Jan 25 10:43:13 user.info kernel: sii9136 hdmitx-1: TX TMDS ON
Jan 25 10:43:13 user.warn multiviewer: No SendToMV handler for module0.audioOut
Jan 25 10:43:16 user.err multiviewer: Unable to open /data/etc/ntp_dis.conf
Jan 25 10:43:18 user.err multiviewer: Unable to open /data/etc/ntp_dis.conf
Jan 25 10:43:19 user.info multiviewer: Slot 2:fpga1: feedin phase success, start=231 end=334 pos=282
Jan 25 10:43:20 user.info multiviewer: Slot 1:fpga0: feedin phase success, start=130 end=223 pos=176
Jan 25 10:43:20 user.info multiviewer: UpdateDisplay reason 4: I/O card change
Jan 25 10:43:20 user.info multiviewer: Master slots: video=2, ancillary=2
Jan 25 10:43:21 user.info multiviewer: Slot 1:fpga1: feedin phase success, start=1 end=102 pos=51
Jan 25 10:43:34 user.warn multiviewer: No ReadFromMV handler for module0.audioOut
Jan 25 10:43:41 user.info multiviewer: MVC temperature: FPGA = 43, thermistor = 15
Jan 25 10:44:11 user.info multiviewer: Free memory = 414652kB
Jan 25 10:44:41 user.info multiviewer: MVC temperature: FPGA = 53, thermistor = 18
Jan 25 10:45:12 user.info multiviewer: Free memory = 414636kB
Jan 25 10:45:42 user.info multiviewer: MVC temperature: FPGA = 57, thermistor = 20
Jan 25 10:46:12 user.info multiviewer: Free memory = 414716kB
Jan 25 10:46:42 user.info multiviewer: MVC temperature: FPGA = 60, thermistor = 21
Jan 25 10:47:12 user.info multiviewer: Free memory = 414208kB
Jan 25 10:47:42 user.info multiviewer: MVC temperature: FPGA = 60, thermistor = 22
Jan 25 10:48:13 user.info multiviewer: Free memory = 414232kB
Jan 25 10:48:43 user.info multiviewer: MVC temperature: FPGA = 60, thermistor = 22
Jan 25 10:49:13 user.info multiviewer: Free memory = 414232kB
Jan 25 10:49:43 user.info multiviewer: MVC temperature: FPGA = 60, thermistor = 22
Jan 25 10:49:46 user.err multiviewer: Unable to open /data/etc/ntp_dis.conf
Jan 25 10:50:14 user.info multiviewer: Free memory = 414232kB
    
```

[Download all](#) [Refresh](#)

| Setting | Description |
|--------------|--|
| Download all | Downloads the log and saves it wherever the browser usually saves downloads. |
| Refresh | System log is refreshed with current settings. |

know-how

How to configure Horizontal and Vertical Audio Meters

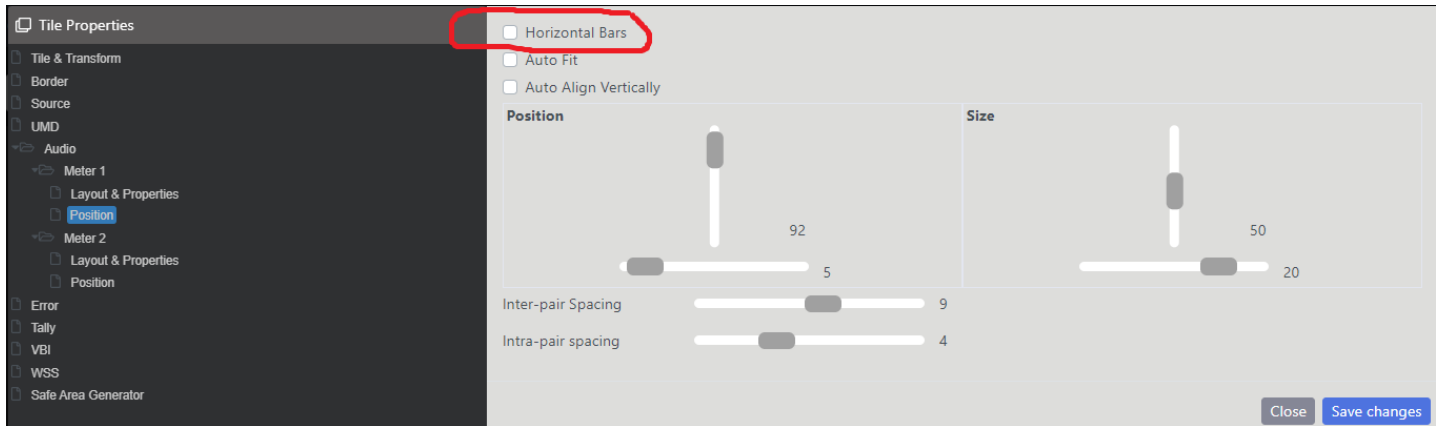


Procedure:

1. Select the tile that is to be edited.
2. Configure the Audio Meter 1 and 2 Properties. Note that the meters can be set to appear outside of the picture if the checkbox "Display outside of picture" is selected. Otherwise the audio meters will appear as Transparent on the video with the transparency setting shown by the slider and percentage as shown above.

know-how

Configuration of Horizontal and Vertical Audio Meters

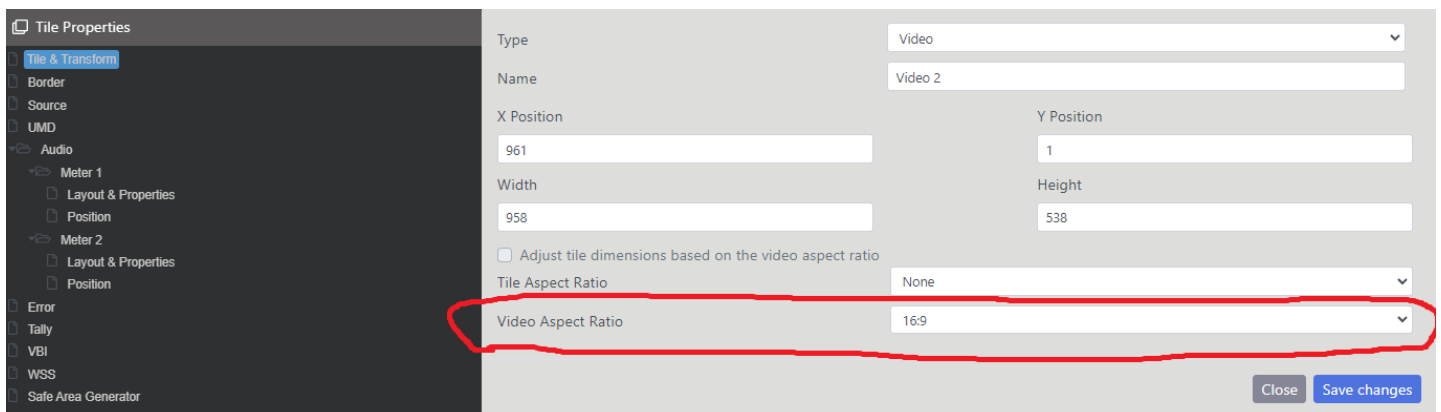


Procedure:

Audio position (highlighted) is used to select horizontal audio bars when this option is selected.

When Horizontal Bars is unselected then the bar type will be vertical.

The bar may be positioned and resized using the Position and Size sliders on this page or the settings in the quick-tile properties can be used instead.



Procedure:

Note that when audio meters are displayed outside of the picture area then the picture aspect ratio can be preserved by setting the Video Aspect Ratio to match the video source. This will ensure that the audio meter settings are taken into account when the source is scaled to ensure that the aspect ratio of the source remains at the set value (usually 16:9).

know-how

How to configure Horizontal and Vertical Audio Meters



Vertical meters inside picture:

The example above shows vertical audio meters inside the picture with left meter set to 20 pixels bar width and 50% scaling. The meter on the right hand side has 10 pixel bar width and 90% scaling.

The image has 16:9 aspect ratio.



Vertical meters outside picture:

The example above shows vertical audio meters outside the picture with meters set to 10 pixels bar width and 90% scaling. The image has been scaled to maintain the correct aspect ratio of 16:9

know-how

How to configure Horizontal and Vertical Audio Meters



Horizontal meters inside picture:

The example above shows partially transparent horizontal audio meters inside the picture with bars set to 10 lines and 90% width. The image has 16:9 aspect ratio.



Horizontal meters outside picture:

The example above shows horizontal audio meters outside the picture with bars set to 10 lines and 90% width. The image has been SCALED to maintain the correct aspect ratio of 16:9

know-how

How to configure Horizontal and Vertical Audio Meters



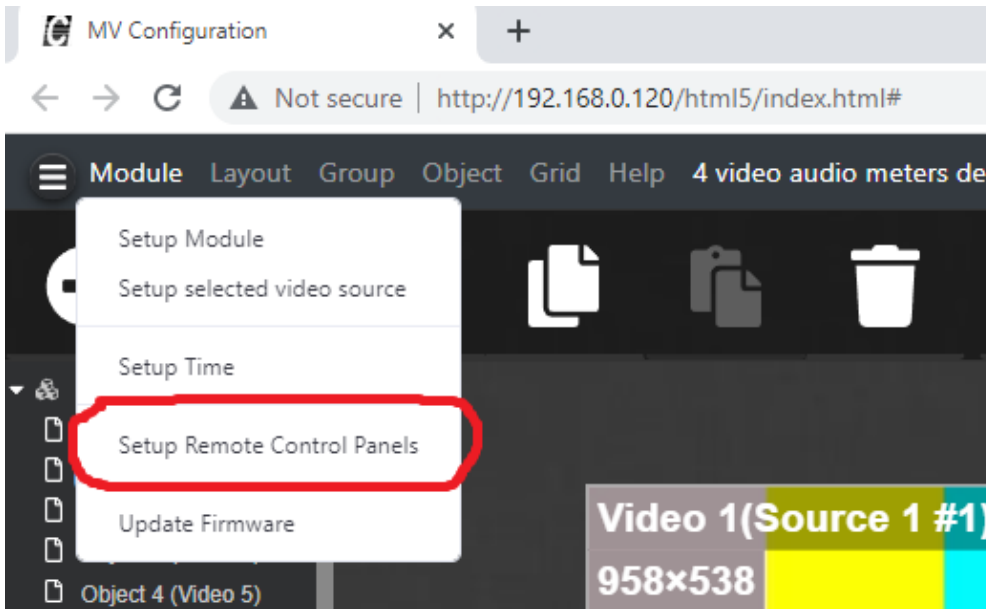
Comparison of audio meters inside and outside of picture

The example above shows the same source displayed in 4 tiles with horizontal and vertical audio meters.

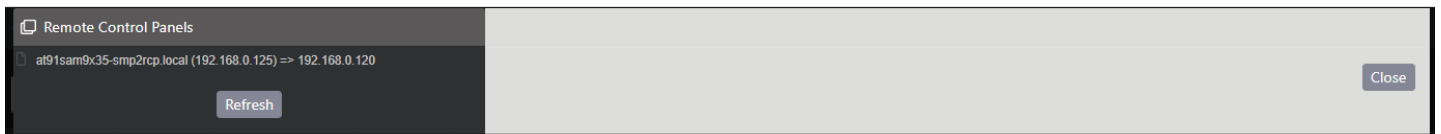
The images that contain audio meters that are configured to appear outside of the video, have been adjusted to maintain the correct aspect ratio.

know-how

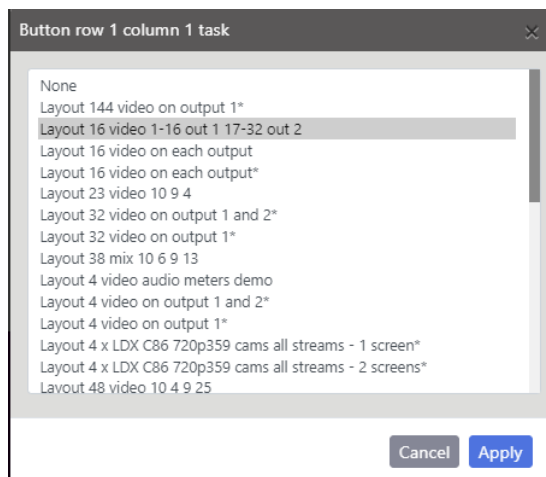
Assigning a Remote Control Panel to a multiviewer



The Remote Control Panel can be selected using the MV Browser as shown Opposite.



Available Remote panels will appear in the browser and can be enabled by selecting the remote unit.



Assigning the layout

Once the remote has been selected then the layouts that have been assigned to buttons will be displayed as shown above. Alternatively selecting a button will allow a different layout to be Assigned as shown opposite

know-how

Layout recall using Remote Control Panel



The Remote Control Panel is shown above with an SMP-MV32.

The touch screen control and status displays are both shown in their default settings.

Top row of switches indicates that the layout assigned to position 7 is being displayed currently.



When the Layout icon is selected on both units then the current layout is shown.

know-how

Layout recall using Remote Control Panel



The Layout can also be loaded on the remote panel by selecting a new layout from the list available in the menu and then pressing the Apply button. In this case the illuminated switch changes to match the selected layout. The multiviewer layout is also updated so that they are always synchronised.



The Layout can also be loaded on the multiviewer by selecting a new layout from the list available in the menu and then pressing the Apply button. In this case the illuminated switch changes to match the selected layout. The remote layout and illuminated button is also updated so that they are always synchronised.

know-how

Layout recall using Remote Control Panel



In the image above the layout corresponding to switch position 8 is shown. The layout is loaded immediately the switch is selected and the current layout changes simultaneously on the remote panel and the multiviewer so that they are always synchronised.



In the image above the layout corresponding to switch position 9 is shown. The layout is loaded immediately the switch is selected and the current layout changes simultaneously on the remote panel and the multiviewer so that they are always synchronised.

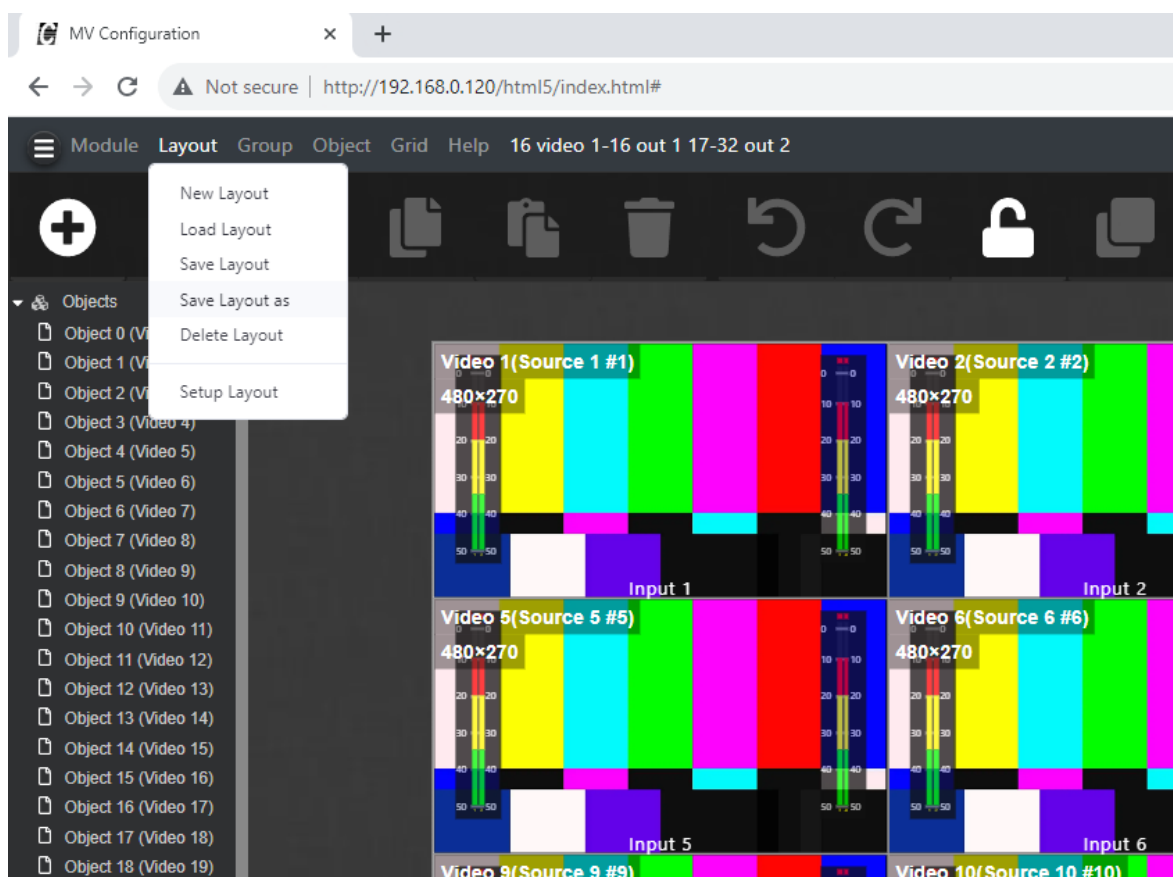
know-how

How to Backup and transfer XML Layout files

XML Layouts

Layouts are stored in XML format (extensible markup language) which is a set of codes, or tags, that describes the text in a digital document.

The layouts can be backed up and restored to the MV later if required or they can be copied to a different MV to allow the same layout to be used on different multiviewers.



Procedure:

In the browser GUI select the Layout tab to show the different layout options. Options provided allow layouts to be created, loaded, saved, renamed and deleted.

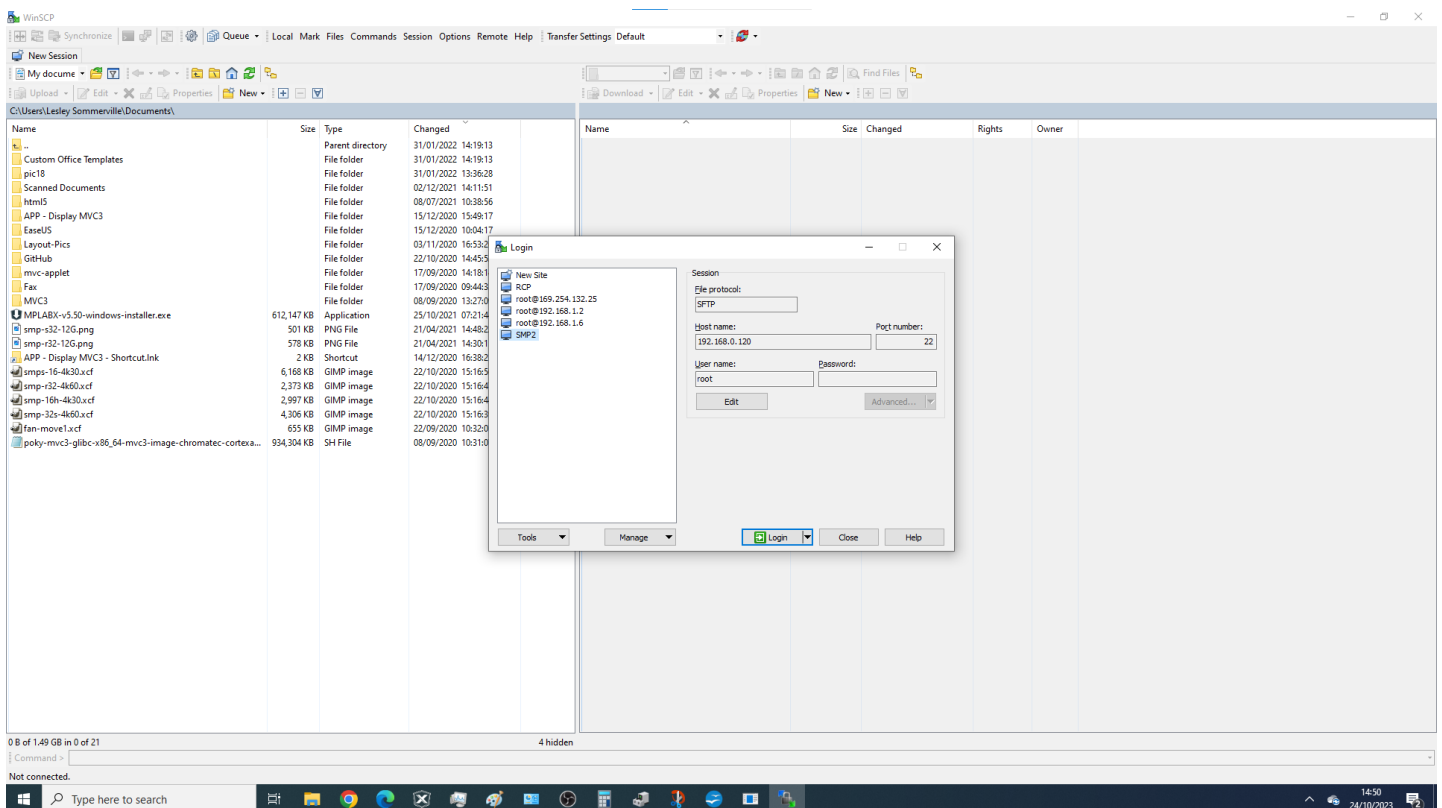
know-how

How to Backup and transfer XML Layout files (cont.)

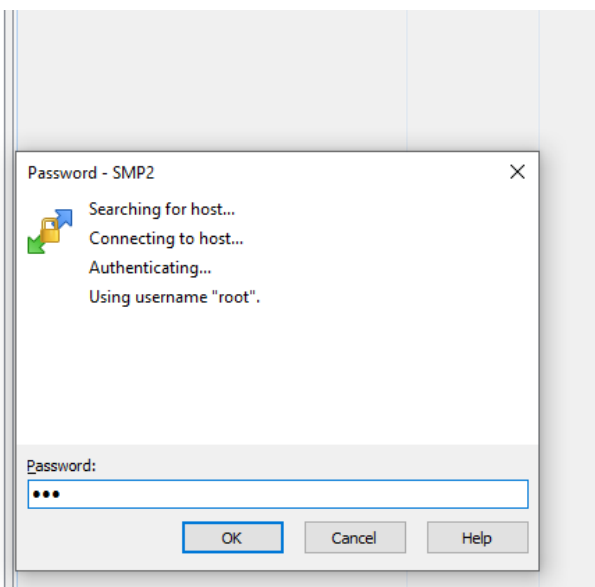
Backing up XML files:

- 1) Use a client FTP program such as "FileZilla" or "SmartFTP" or "WinSCP" to open an FTP connection to the MV
- 2) Enter the IP address of the MV with the additional parameters: Username: root Password: smv

The screen capture below shows WinSCP being using SFTP protocol to connect to the MV with IP address 192.168.0.120



12/2020 15:49:17
 12/2020 10:04:17
 11/2020 16:53:26
 10/2020 14:45:52
 09/2020 14:18:14
 09/2020 09:44:33
 09/2020 13:27:09
 10/2021 07:21:44
 04/2021 14:48:22
 04/2021 14:30:11
 12/2020 16:38:21
 10/2020 15:16:50
 10/2020 15:16:47
 10/2020 15:16:44
 10/2020 15:16:39
 09/2020 10:32:01
 09/2020 10:31:07



know-how

How to Backup and transfer XML Layout files (cont.)

Backing up XML files (continued)

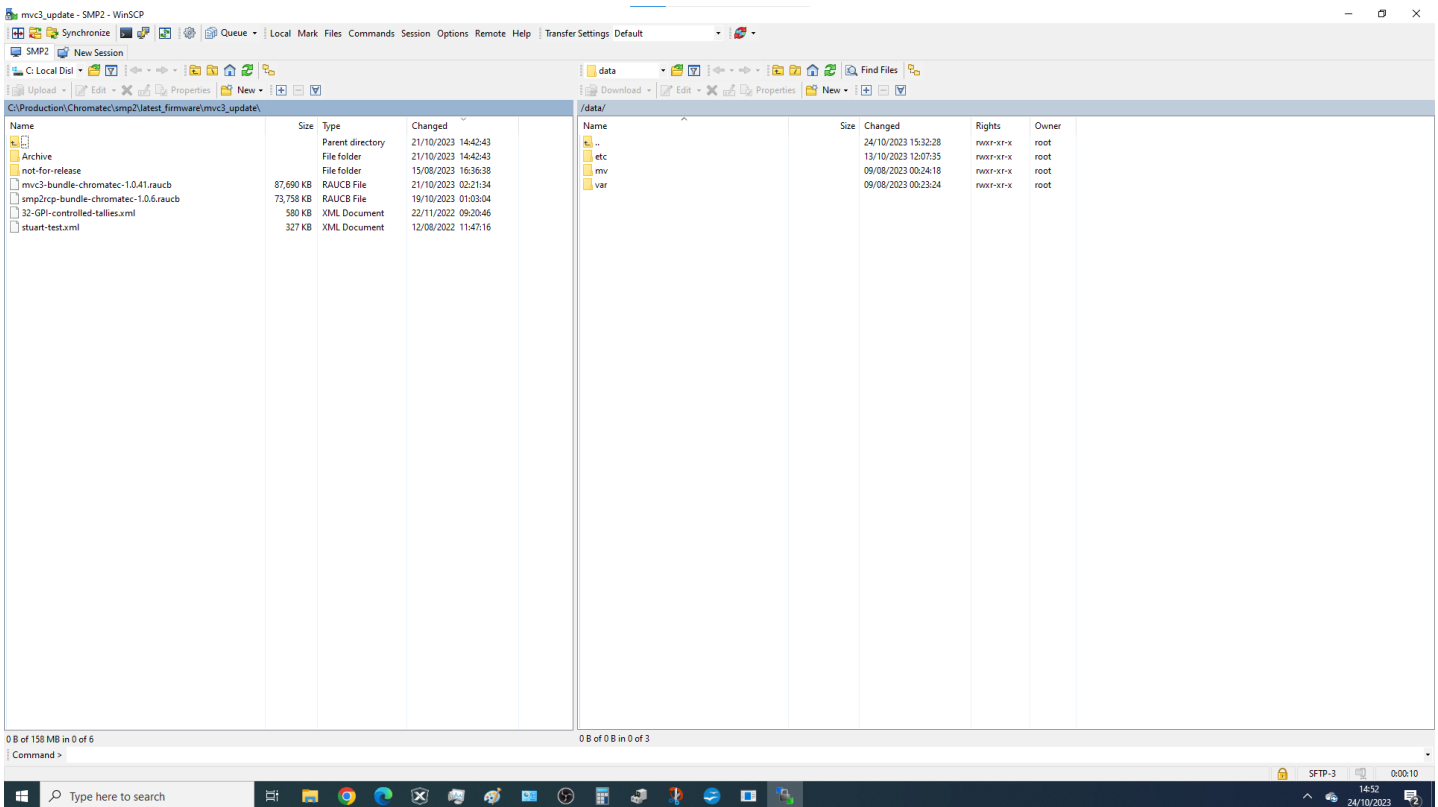
The default directory is /data as shown in the following image. Firmware update files that are transferred to this location are automatically installed by the operating system. Power cycling is not necessary.

3) Select the mv folder and then select the layouts folder to display the current user layouts.



Note: The MV is supplied with some burnt-in layouts that cannot be deleted and do not appear in the layouts folder. Layouts that are added when the MV is being tested also appear in this folder. These test layouts can be copied or deleted and can be considered as user layouts.

4) On the left hand window, navigate to the location where the layout file is to be copied.



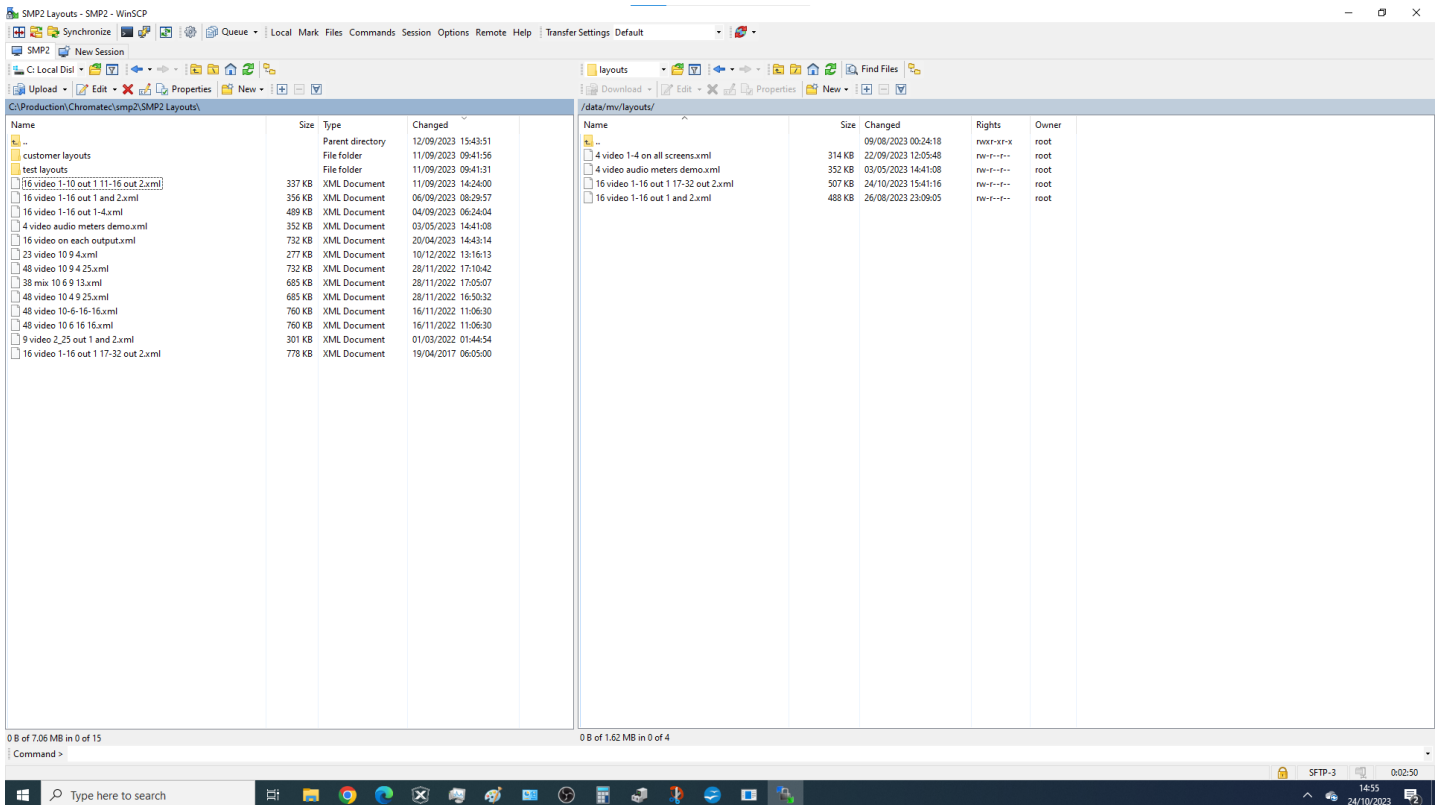
Backing up XML files (continued)

5) From the Layouts window select the .XML layout file and copy or drag it to the left window to start the transfer.

6) When the download is complete close FTP program .

know-how

How to Backup and transfer XML Layout files (cont.)



Transferring XML files

Restoring an XML Layout file to a Multiviewer is the same as backing up XML files with the exception that XML files are uploaded from the source location in the left hand window to the layouts folder.

When the file transfer is complete, the uploaded XML layout file will be available to use in the Load Layout list.

7) Click on the Load Layout button, select the uploaded layout and click on the OK button.

8) The layout will be loaded – NOTE: At this point the layout has only been loaded into GUI and will not be displayed on the multiviewer output screen.

9) Click on the Update Layout button to transfer the layout to the multiviewer display output screen

Parameters that are NOT held in the XML layout file



Note: System parameters configured on the following Module Properties tabs and sub tabs are not saved as part of a XML layout file and must be setup manually if moving a layout XML file to another multiviewer:

- 1) Screen tab
- 2) Network tab
- 3) GPIs tab
- 4) GPO Alarms sub tab
- 5) GPI Inputs sub tab
- 6) Protocols tab
- 7) Serial Ports sub tab

know-how

How to use Unicode characters and true-type fonts (ttf)

A Unicode symbol is a unique number that represents a specific character or symbol in the Unicode standard. A TrueType font character is a specific design of a character or symbol that is used to display text in a digital document or on a computer screen. The MV stores all UMDs as Unicode characters, as well as transferring UMD strings to and from the Web app as Unicode characters. Any true-type font (ttf) can be installed on the SMP-MV to allow the Unicode characters to be correctly displayed.

Protocols: TSL v5 can carry Unicode characters for updating the UMD - it encodes them as UTF-16LE. The Open Protocol uses UTF-8 encoding.

Procedure

The general method involves using any sftp client to transfer the ttf file to the SMP-MV.

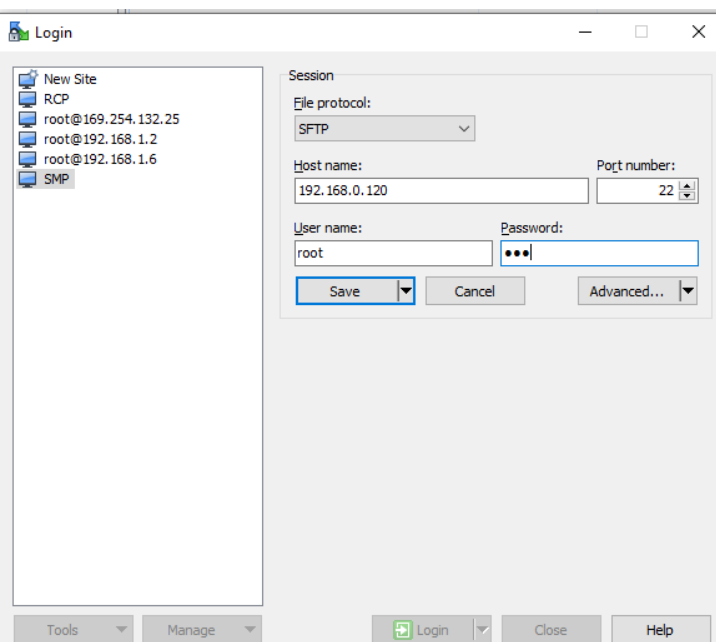
The Devanāgarī script, composed of 48 primary characters, including 14 vowels and 34 consonants, is the fourth most widely adopted writing system in the world, being used for over 120 languages and is one of the official scripts of the republic of India.

The following example uses WinSCP to transfer the “Lohit-Devanagari.ttf” to the SMP-MV.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F |
|--------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U+090x | ॐ | ॐ | ॐ | ॐ | अ | आ | इ | ई | उ | ऊ | ऋ | ॠ | ऌ | ॡ | ए | ऐ |
| U+091x | ॐ | ऑ | ओ | औ | क | ख | ग | घ | ङ | च | छ | ज | झ | ञ | ट | ठ |
| U+092x | ठ | ड | ढ | ण | त | थ | द | ध | न | न | प | फ | ब | भ | म | य |
| U+093x | र | ॠ | ल | ळ | ळ | व | श | ष | स | ह | ॠ | ा | ि | ि | ि | ि |
| U+094x | ी | ु | ू | ृ | ृ | ॠ | े | े | ै | ौ | ौ | ौ | ि | ि | ि | ौ |
| U+095x | ॐ | ' | ' | ' | ' | ' | ॠ | ॠ | क | ख | ग | ङ | ङ | ङ | फ | स |
| U+096x | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ |
| U+097x | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ | ॠ |

Devanāgarī Unicode

This ttf contains the Devanāgarī Unicode block (U+0900..U+097F) shown in the image opposite. Courtesy Wikipedia.



Login

When first running WinSCP a new Login window should open.

Otherwise go to the Session ->New session window.

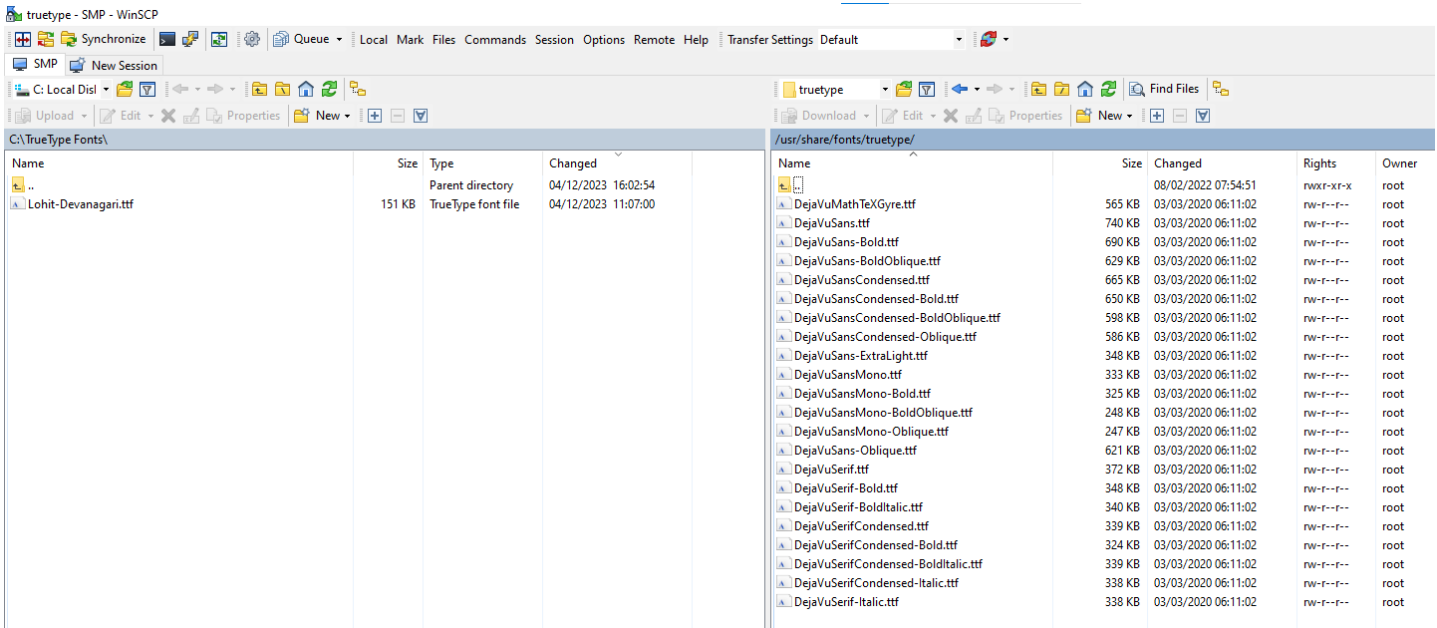
In the Login window enter the details as shown.

Modify the Host name IP address if the SMP-MV differs from the one shown.

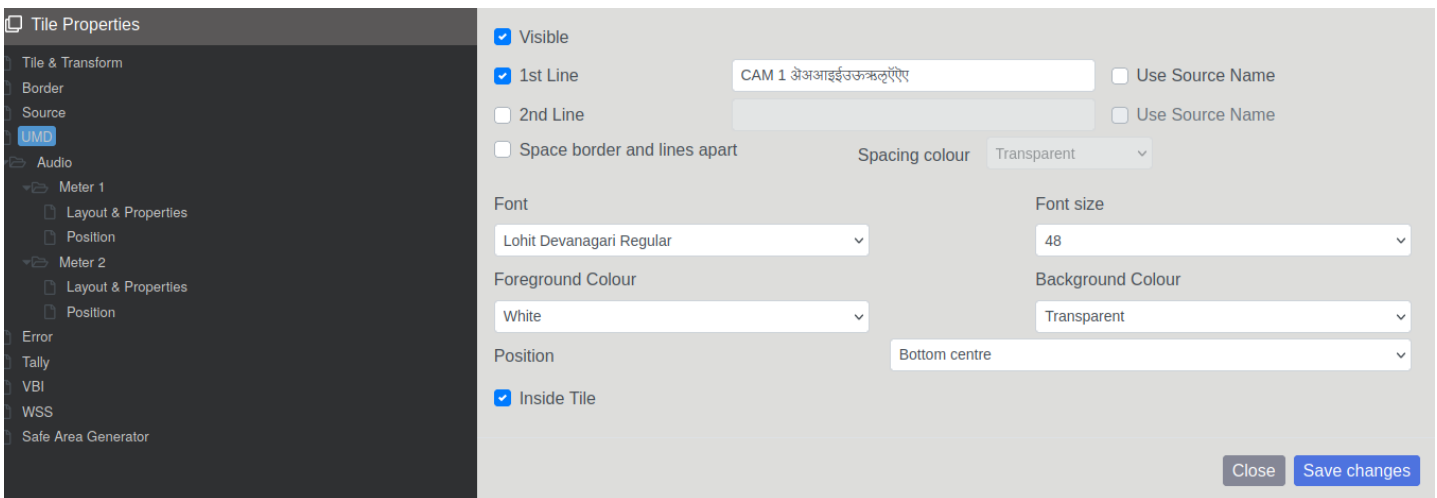
The password to enter is smv.

Click on Login.

2. Once connected the left tab will show the file system of the PC, the right tab will show the file system of the SMP-MV. In the left tab navigate to the location of the ttf file on the PC that is to be transferred. In the right tab navigate to the SMP-MV's /usr/share/fonts/truetype directory as shown below.



3. Drag the ttf file from the left tab into the right tab to transfer it to the SMP-MV.
4. Wait for at least 10 seconds after transferring and then reboot (power cycle) the SMP-MV. The MV needs to restart to see that it has new font(s).
5. When the SMP-MV has started up again, the new font (and other related settings) can be selected in the UMD page of the Tile Properties corresponding to a tile. For example, the image below shows the Lohit Devanāgarī font selected along with some characters from the Devanāgarī Unicode block entered into the 1st Line of the UMD settings. Once these changes have been saved, and the layout uploaded to the screen, the Devanāgarī characters will appear in the UMD.



Important Notes

- Installing a font using this method will result in it being deleted when a firmware update is done.
- If another font is chosen in the UMD settings and it does not contain the characters entered in the UMD lines then those characters will not appear (i.e. in this example, choosing Devanāgarī as the font and entering Devanāgarī characters will work, but then choosing one of the default font sets that come with the existing firmware will not show the characters).
- A future firmware upgrade could allow font sets to be installed through the browser UI and store them in a location that does not get overwritten when further firmware updates are done. The future upgrade could also search through other installed font sets if the current chosen one does not contain the character(s) entered in the UMD lines.

Contacts

| | |
|------------------------------------|---|
| Chromatec Technical Support | <p>Office hours: 9:00am - 6:00pm (GMT) Telephone: +44 2392 170330 E-mail: stuart.office@chromatec.com</p> |
| Emergency Technical Support | <p>Office hours: 9:00am - 5:00pm Australia Sydney NSW (GMT+11) E-mail: michael@chromatec.com</p> |
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| Chromatec Sales enquiries | <p>Office hours: 9:00am - 6:00pm (GMT) Telephone: +44 2392 170330 E-mail: sales@chromatec.com</p> |

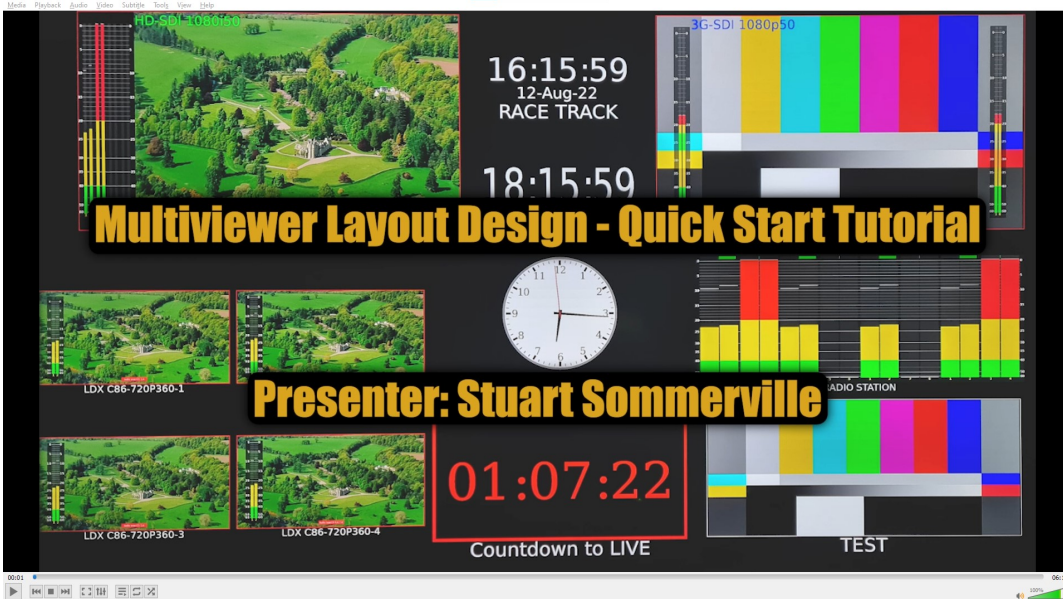
info

| Useful References | Description |
|---|---|
| Open Protocol Operation.pdf | Chromatec document describing the commands that can be used for adjusting certain settings remotely. This protocol uses XML to control certain features of the frame in a user-friendly way, either over Ethernet / IP or through the serial port. |
| https://tslproducts.com/media/1959/tsl-umd-protocol.pdf | <p>Link to TSL-UMD specification on TSL website. The TSL protocols are widely implemented throughout the industry, especially for Multiviewer use. There is no charge for the use of these protocols.</p> <ul style="list-style-type: none"> • UMD V3.1 is the TSL basic industry standard serial protocol. • UMD V4.0 extends the basic V3.1 protocol to add full control of text and tally lamp colours. • UMD V5.0 is a new protocol, specifically aimed at multiviewer display devices, over Ethernet. |
| SMP-MV16/32/48 Installation and Service Manual | Chromatec document covering installation and basic maintenance of SMP-MV16/32/48 channel multiviewers |

Online Training Support



Check out our support training videos on YouTube on a wide-range of multiviewer topics.



Display Meter

Scale type: DIN PPM | Scale label position: Both Sides

Meter layout

Multi-Channel Metering | Use 2 rows of bars

| Pair | Source | Format | 2nd Row |
|--------|---------------|--------|--------------------------|
| Pair 1 | None | Auto | <input type="checkbox"/> |
| Pair 2 | None | Auto | <input type="checkbox"/> |
| Pair 3 | Embedded 3+4 | Auto | <input type="checkbox"/> |
| Pair 4 | Embedded 9+10 | Auto | <input type="checkbox"/> |

Source Properties (ID: 1 ::: Username: Source 1)

Copy from: Source 1

Copy to: Source 1, Source 2, Source 3, Source 4

Audio settings
 Alarm settings
 Overscan settings

| Source | Audio Loss | Audio Over | Phase | Carrier Loss |
|---------|------------|------------|-------|--------------|
| Left 1 | ✓ | ✓ | ✓ | ✓ |
| Right 1 | ✓ | ✓ | ✓ | ✓ |
| Left 2 | ✓ | ✓ | ✓ | ✓ |
| Right 2 | ✓ | ✓ | ✓ | ✓ |
| Left 3 | ✗ | ✗ | ✗ | ✗ |
| Right 3 | ✗ | ✗ | ✗ | ✗ |
| Left 4 | ✗ | ✗ | ✗ | ✗ |
| Right 4 | ✗ | ✗ | ✗ | ✗ |
| Left 5 | ✗ | ✗ | ✗ | ✗ |

Buttons: Save changes, Close

