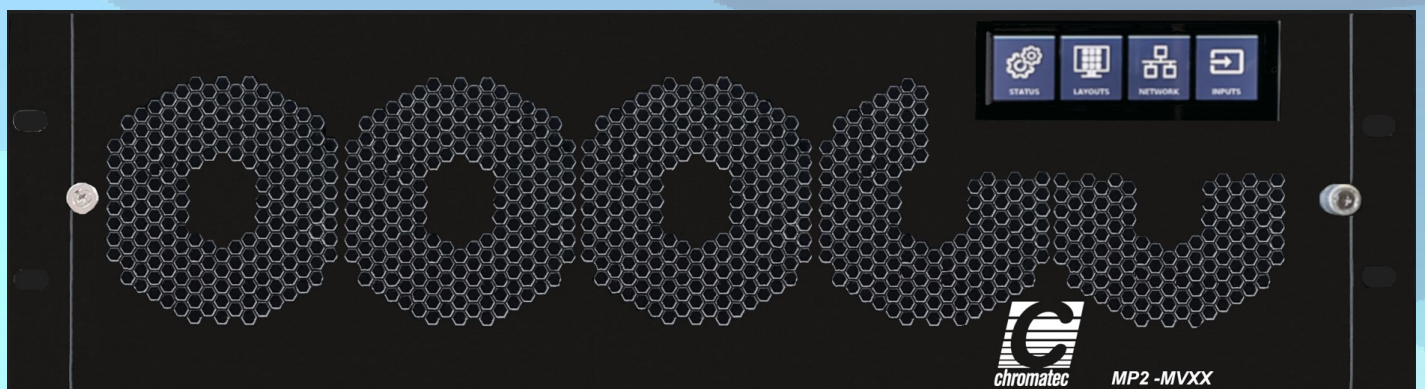
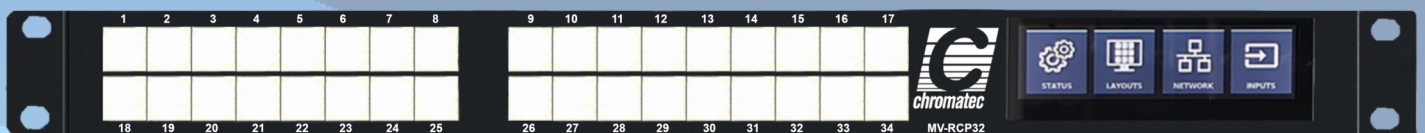
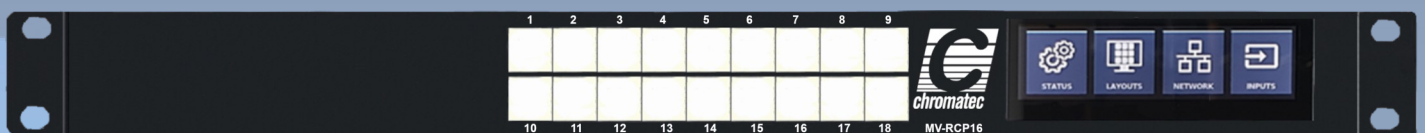


# Chromatec High Performance Multiviewers



**Chromatec**  
**Installation and Service Manual 2.2**  
**[www.chromatec.com](http://www.chromatec.com) © 2023**



# 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.

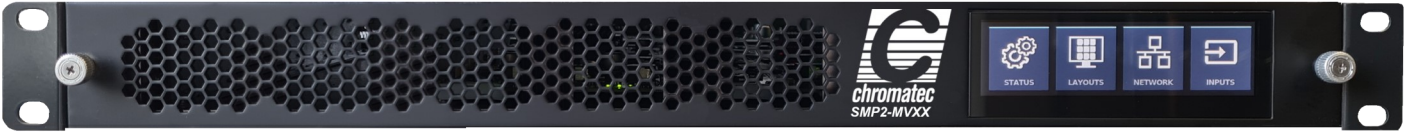
# toc

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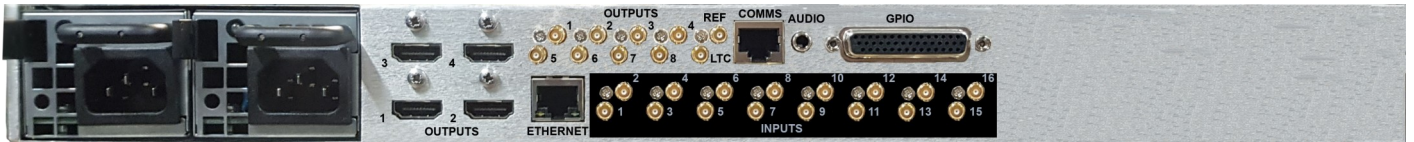
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# Multiviewer Models

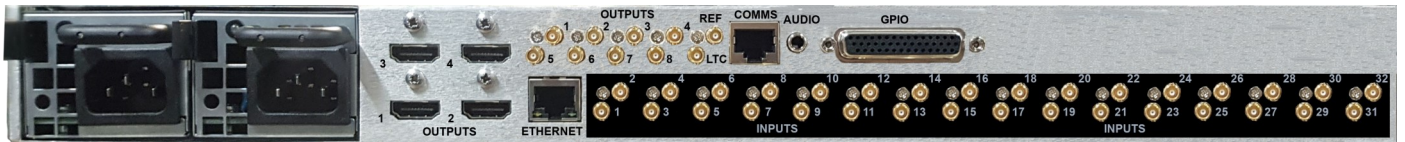
# SMP-MVxx models



Front View (All Models)



Models: SMP-MV16/SMP-MV16-12



Models: SMP-MV32/SMP-MV32-12



Models: SMP-MV48/SMP-MV48-12

## Order Codes

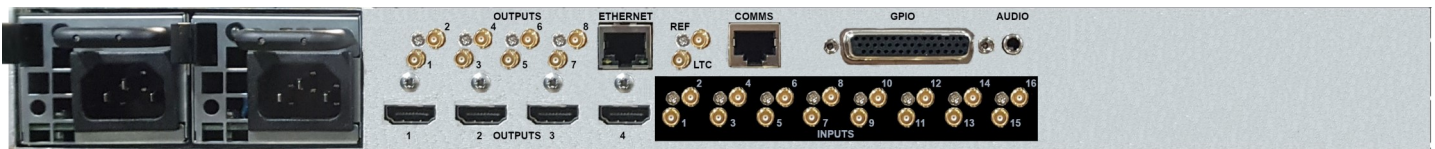
Part Number	Description	Inputs
SMP-MV16	Multiviewer with 16xSDI inputs and up to 8xSDI/4xHDMI Outputs	16xSD/HD/FHD
SMP-MV32	Multiviewer with 32xSDI inputs and up to 8xSDI/4xHDMI Outputs	32xSD/HD/FHD
SMP-MV48	Multiviewer with 48xSDI inputs and up to 8xSDI/4xHDMI Outputs	48xSD/HD/FHD
SMP-MV16-12	Multiviewer 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	

# Multiviewer Models

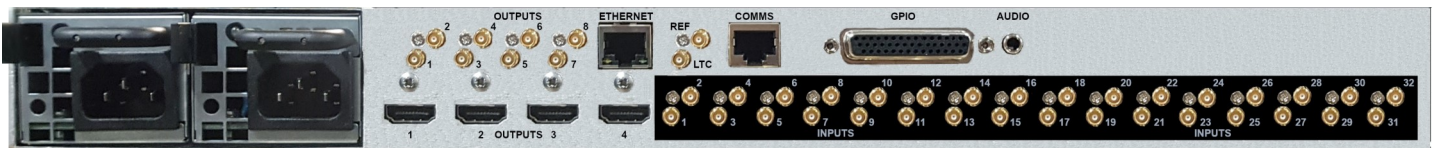
# SMP2-MVxx models



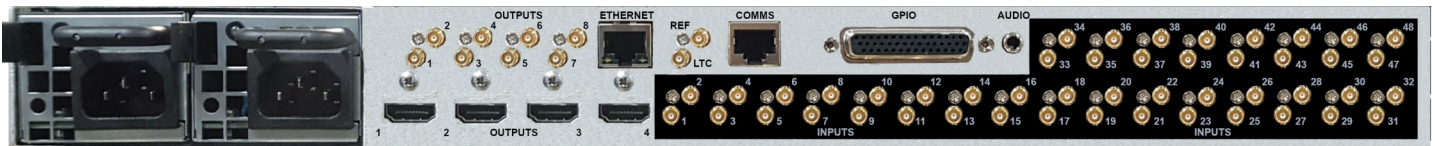
Front View (All Models)



Models: SMP2-MV16-12



Models: SMP2-MV32-12



Models: SMP2-MV48-12



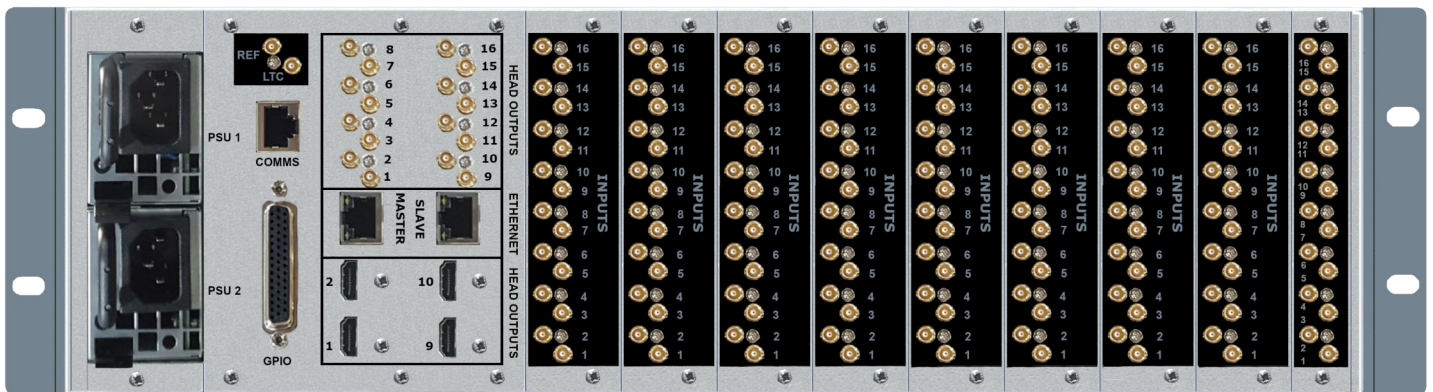
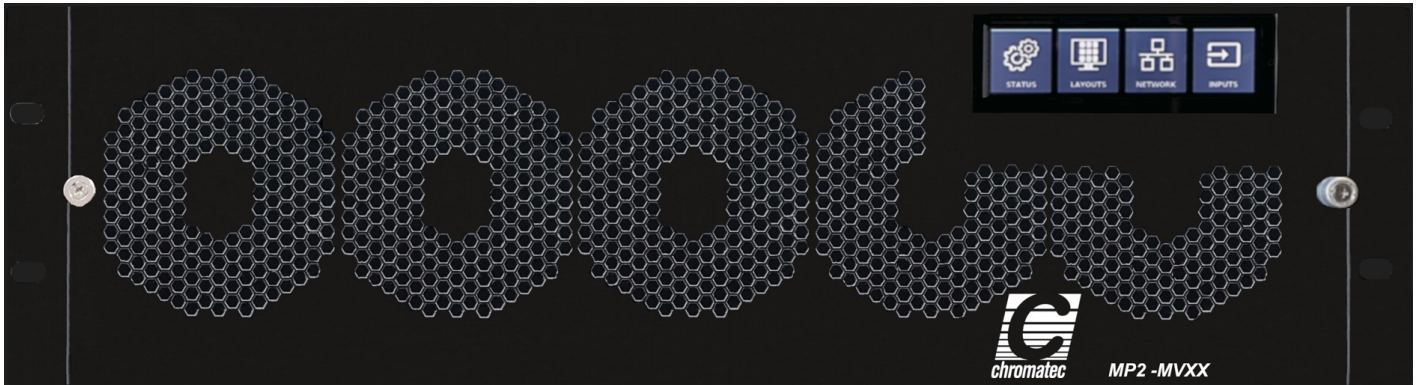
Models: SMP2-MV32R-12

## Order Codes

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

# Multiviewer Models

# MP2-MVxx models



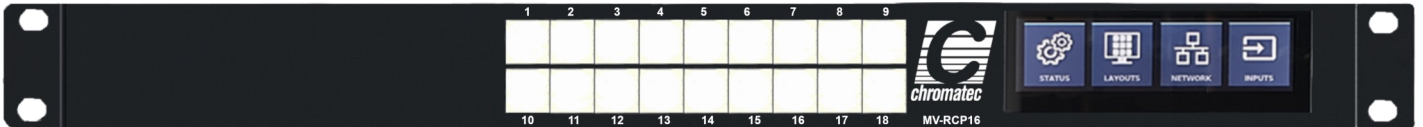
**Model: MP2-MVxx**

## Order Codes

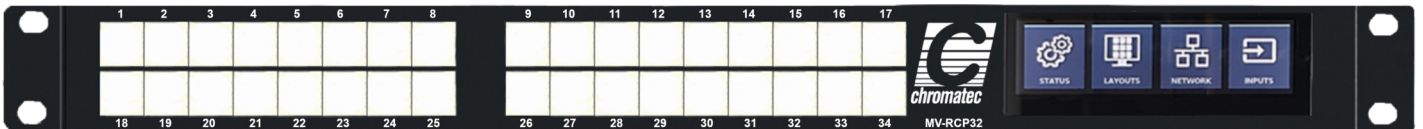
Part Number	Description
<b>MP2-MVxx</b>	Base Frame Modular Multiviewer with provision for up to 144 inputs and 16 x SDI Head outputs. and GPIO/COMMS/LTC/REF. Supplied with one MVC4-SDI as standard. An additional MVC4-SDI adds a further 8 x SDI head outputs. Inputs can be added in multiples of 16 with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



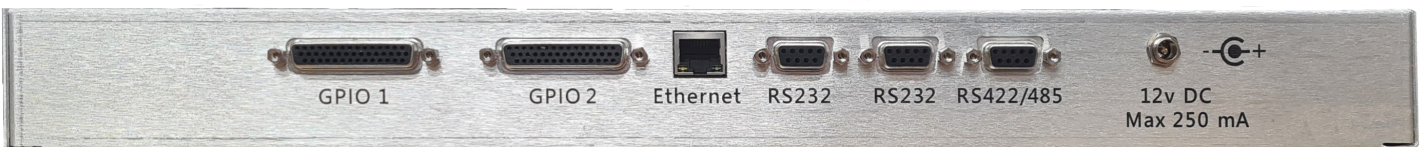
# Multiviewer Remote Control Panels MV-RCPxx



**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

# 1. Unpacking

## Contents

Check that the following items are included with your **SMP-MV16/32/48** multiviewer

Item	Description
<b>SMP-MV16/32/48</b>	1RU Frame with pre-installed modular cards 1xMVC3,1,2 or 3xVIP5 depending on model Pre-installed PSU modules MV-12VPSU
<b>Power Cord</b>	Regional specific 6A fused power cord
<b>Userguide</b>	Printed Userguide
<b>Service Manual</b>	Printed Service Manual

Check that the following items are included with your **SMP2-MV16/32/48** multiviewer

Item	Description
<b>SMP-MV16/32/48</b>	1RU Frame with pre-installed modular cards 1xMVC4 ,1,2 or 3xVIP5 depending on model Pre-installed PSU modules MV-12VPSU
<b>Power Cord</b>	Regional specific 6A fused power cord
<b>Userguide</b>	Printed Userguide
<b>Service Manual</b>	Printed Service Manual

Check that the following items are included with your **MP2-MVxx** multiviewer

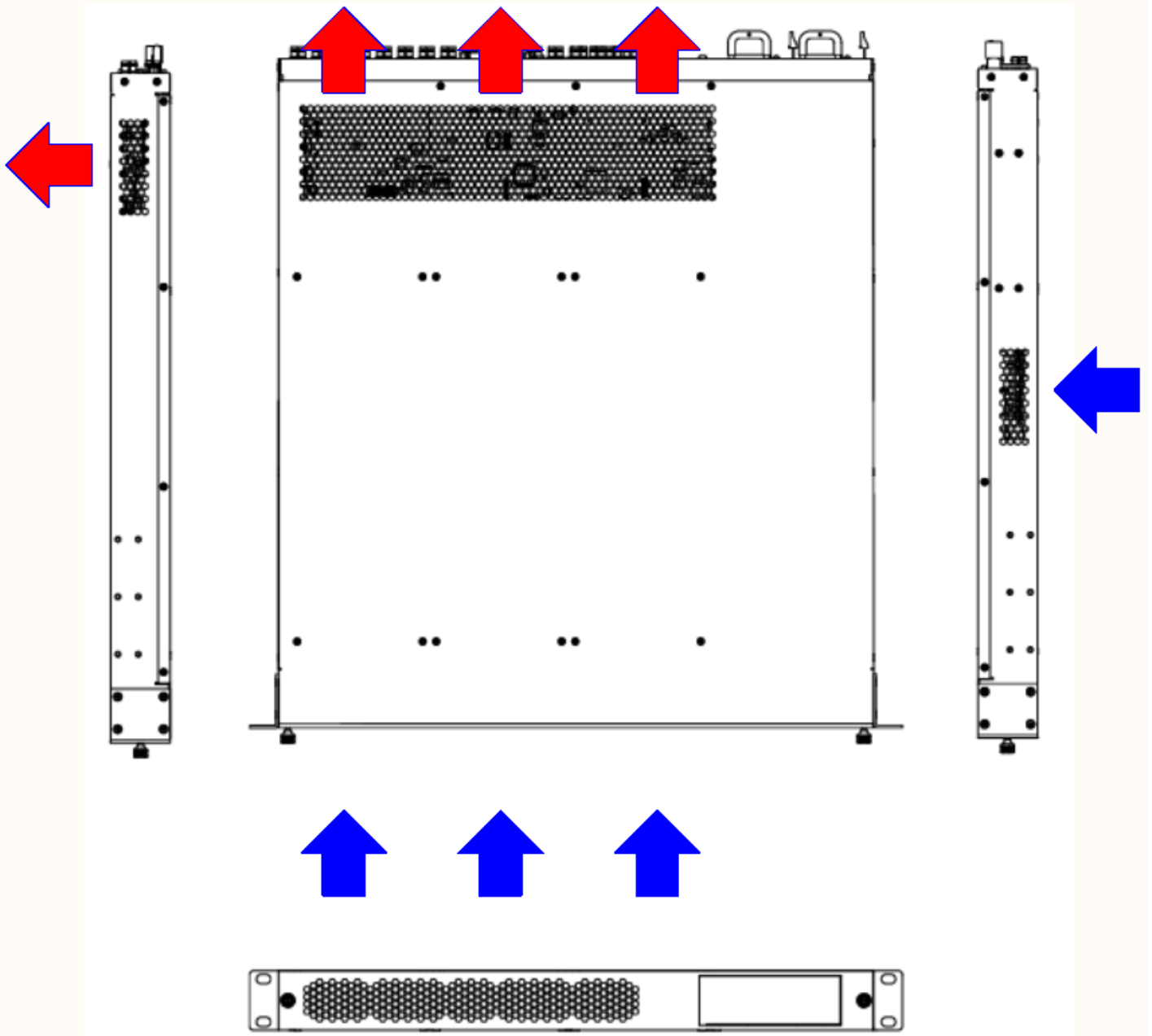
Item	Description
<b>SMP-MV16/32/48</b>	1RU Frame with pre-installed modular cards 1,2 xMVC4 and quantity of VIP5 depending on number of channels required. Pre-installed PSU modules MV-12VPSU
<b>Power Cord</b>	Regional specific 6A fused power cord
<b>Userguide</b>	Printed Userguide
<b>Service Manual</b>	Printed Service Manual

Check that the following items are included with your **MV-RCP16/32 Remote Control Panel**

Item	Description
<b>MV-RCP16/32</b>	Short depth 1RU Frame with fixed control and front panel cards
<b>Power Cord</b>	Regional specific 6A fused power cord
<b>RCP-12VPSU</b>	Desktop 12V power supply with IEC 15W
<b>Userguide</b>	Only when MV-RCP16/32 is shipped without corresponding SMP-MV16/32/48
<b>Service Manual</b>	Only when MV-RCP16/32 is shipped without corresponding SMP-MV16/32/48

# 2. installation

## SMP/SMP2-MV16/32/48 Ventilation



### Frame Ventilation

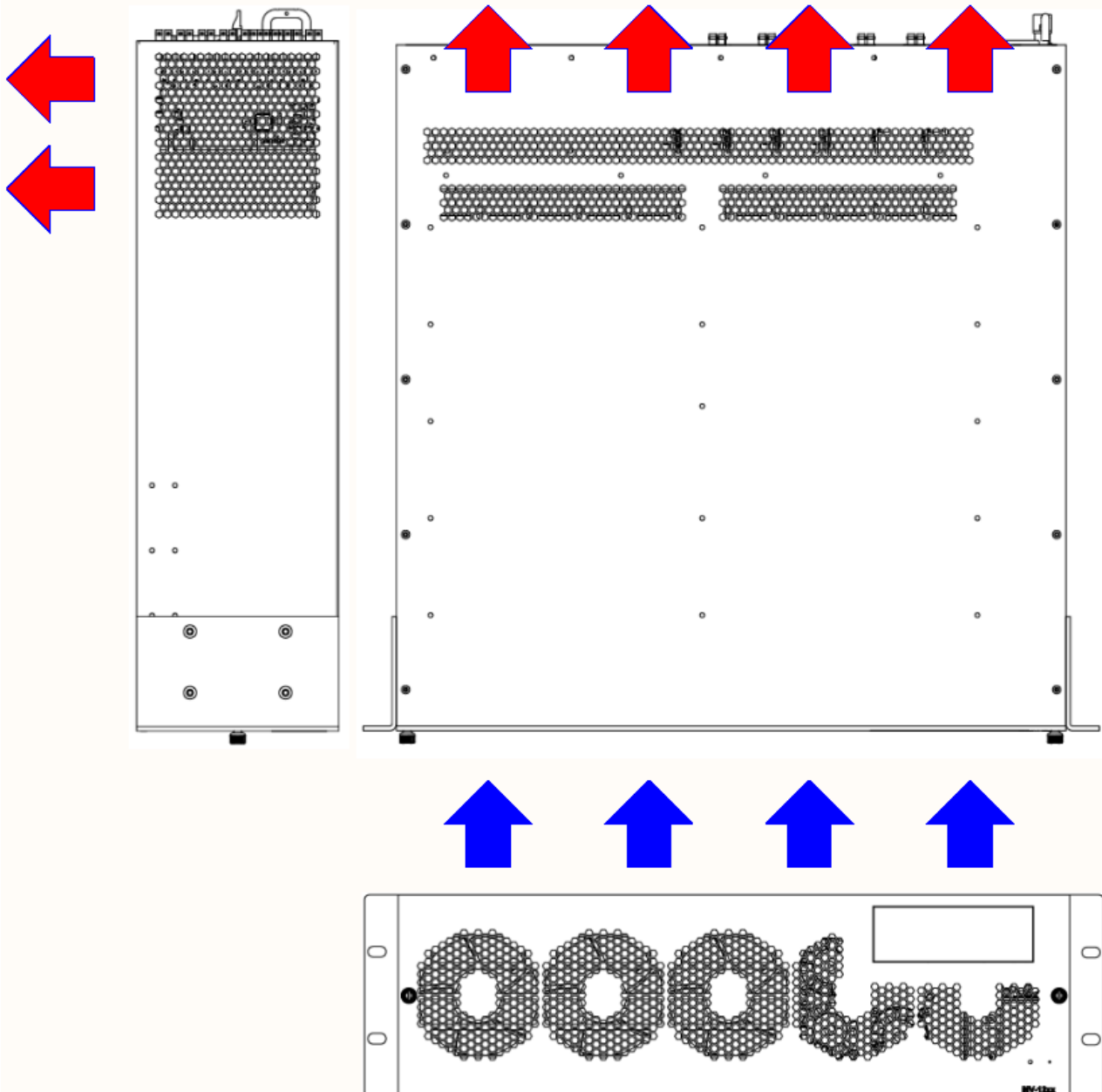
The frame is vented from front to side and top using a fan module assembly located on the front panel assembly. In addition, each PSU module has a non-serviceable fan that is located within the PSU module and draws air from the side of the frame and vents out to the rear of the frame.

Air must be allowed to flow freely through the air vents on the top, side and rear of the frame.

There must be a gap of at least 50mm (2 inches) for the front inlet and rear outlet grilles.

# 2. installation

## MP2-MVxx Ventilation



### Frame Ventilation

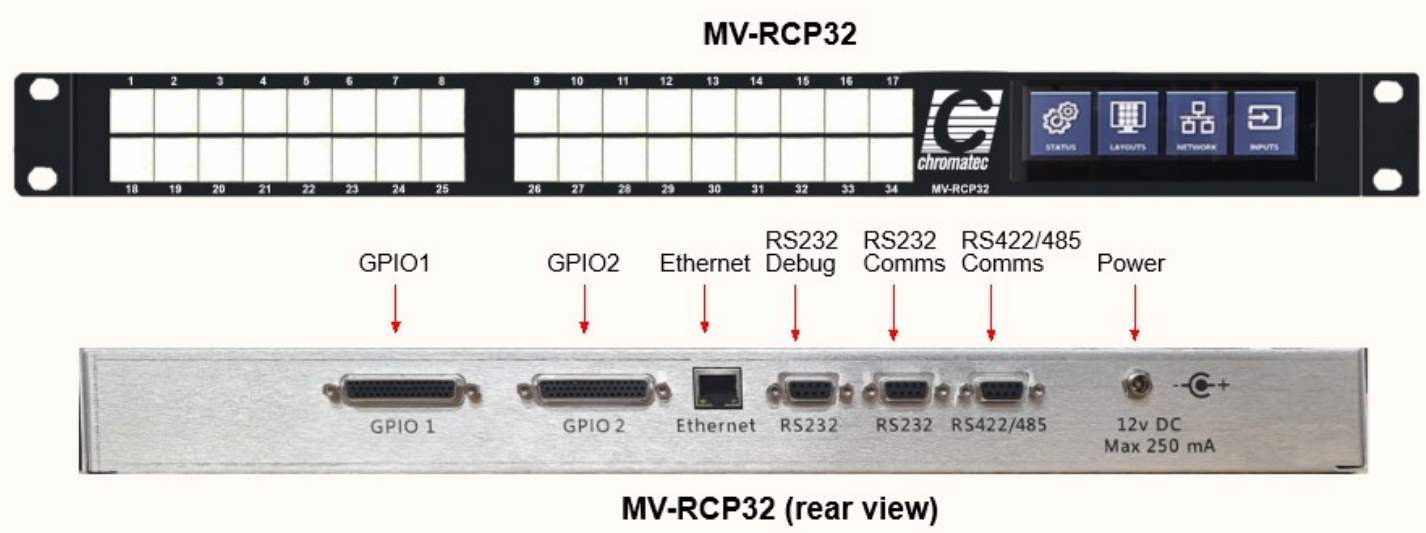
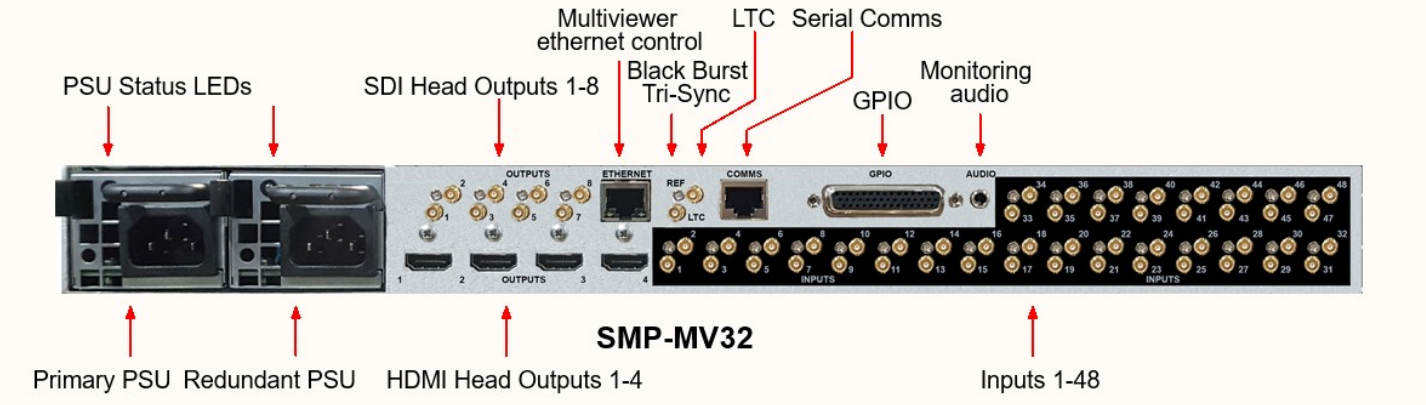
The frame is vented from front to side and top using a fan module assembly located on the front panel assembly. In addition, each PSU module has a non-serviceable fan that is located within the PSU module and draws air from the side of the frame and vents out to the rear of the frame.

Air must be allowed to flow freely through the air vents on the top, side and rear of the frame.

There must be a gap of at least 50mm (2 inches) for the front inlet and rear outlet grilles.

# service

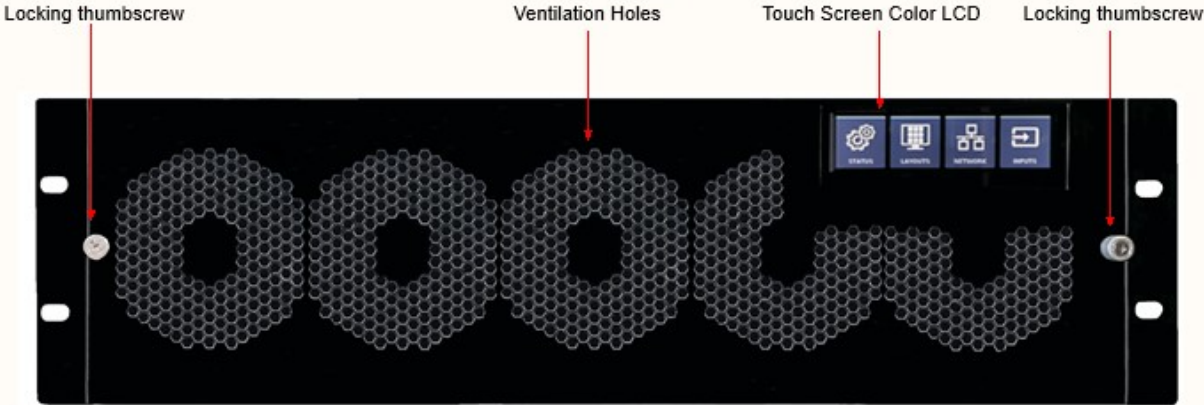
## Inputs/Outputs SMP/SMP2-MV16/32/48 MV-RCP16/32



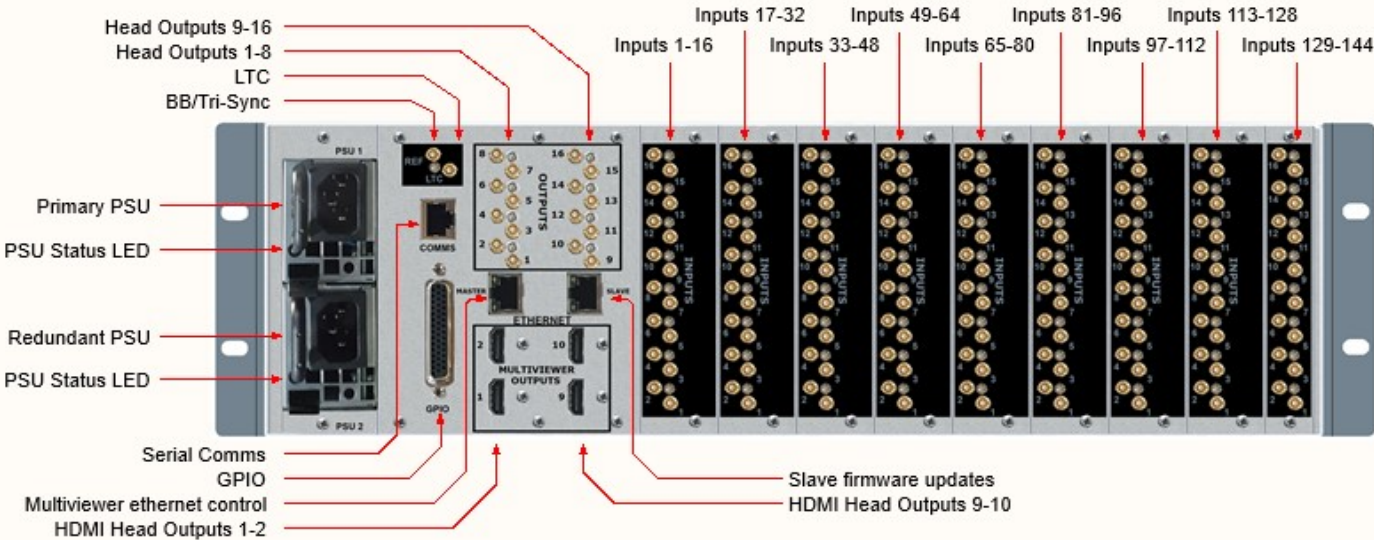
# Inputs/Outputs MP2-MVxx

# service

Front View



Rear View



Rear View (base frame)

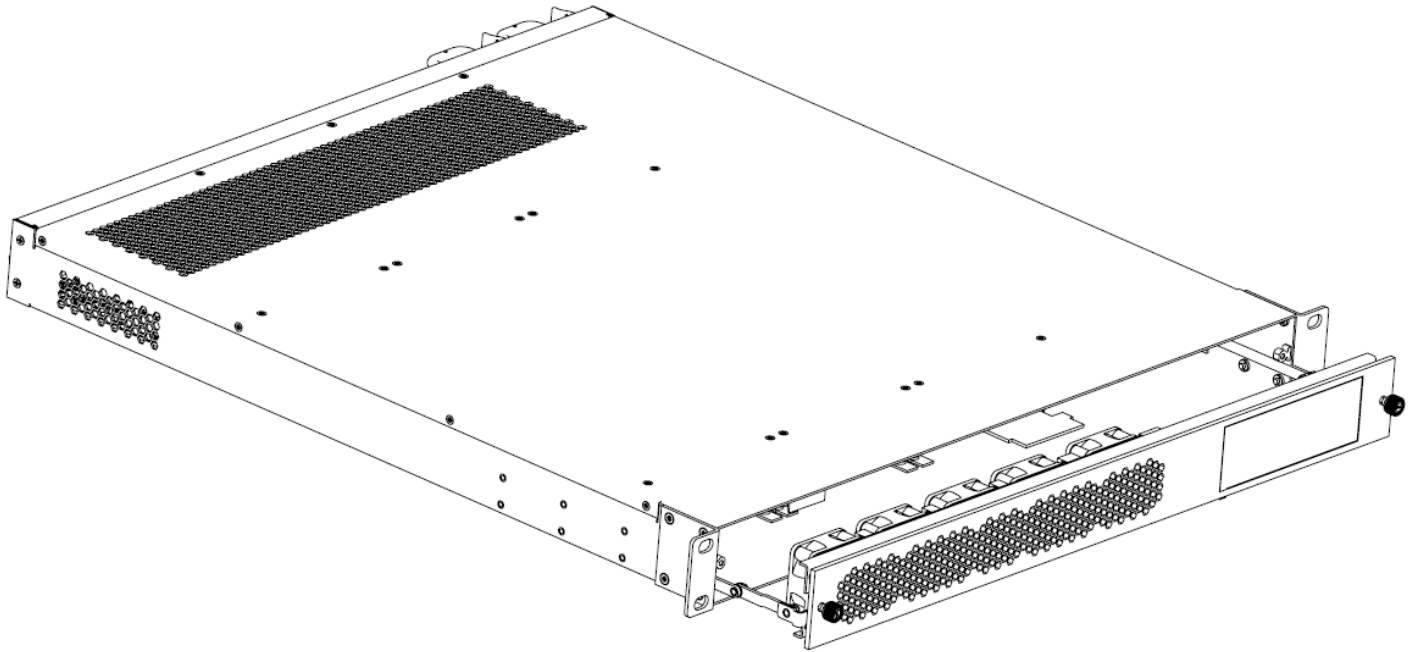


### MP2-MVxx Connections

Note Head Outputs 9-16 only available when slave MVC4 is fitted.  
 SLAVE ethernet only used for firmware updates.  
 The number of available inputs can be increased in steps of 16.  
 Base frame model MP2-MVxxH shown with 2x MVC4-SDI.


## Front panel SMP/SMP2-MV16/32/48

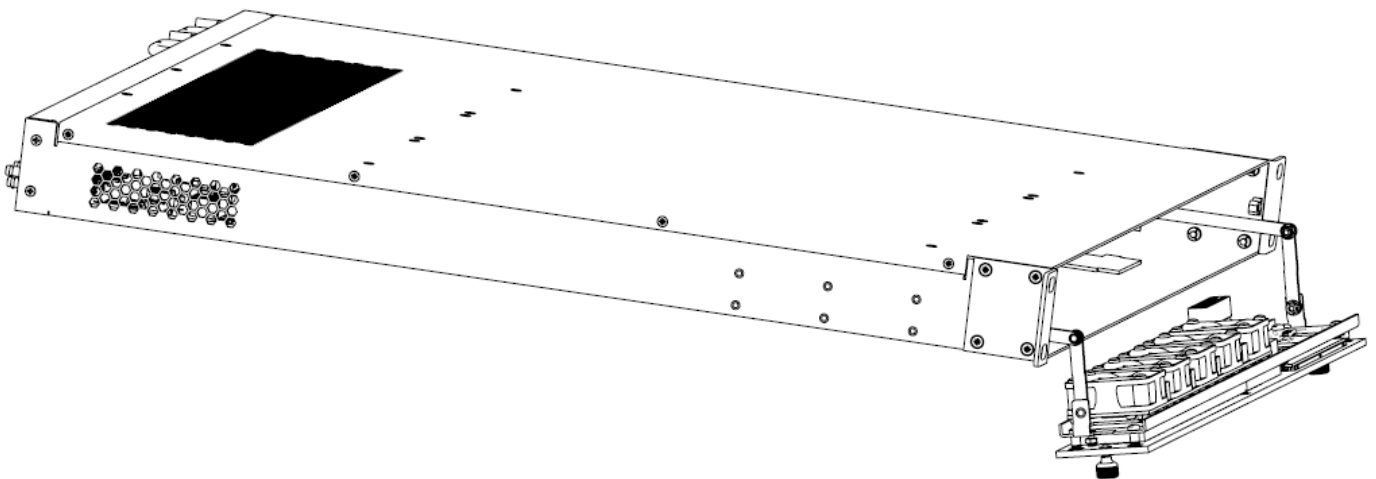
# service



### Opening the front panel

The front panel can be opened by fully unscrewing the front panel retaining thumbscrews and then pulling the front panel straight forward until it is at the limit of its travel. The panel is retained by two extending arms that are hinged to allow the panel to move clear of the cards as shown in the diagram below.

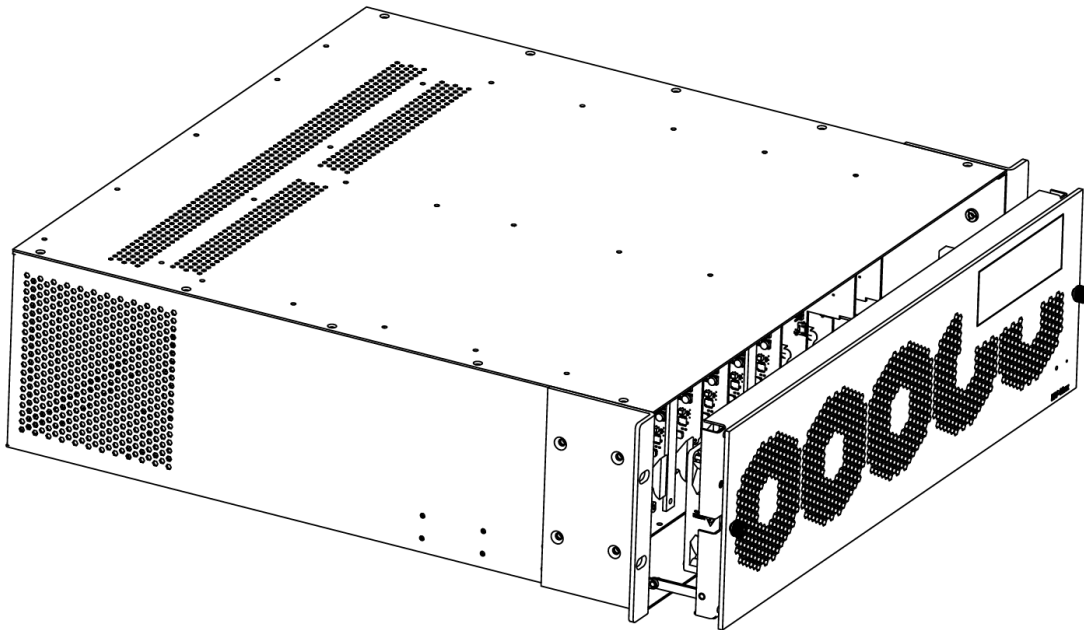
 Ensure that the front panel is fully clear of the frame before rotating downwards about the hinged arms as shown below:



The image above shows the hinged front panel now positioned to allow access to the cards.

## Front panel MP2-MVxx

# service

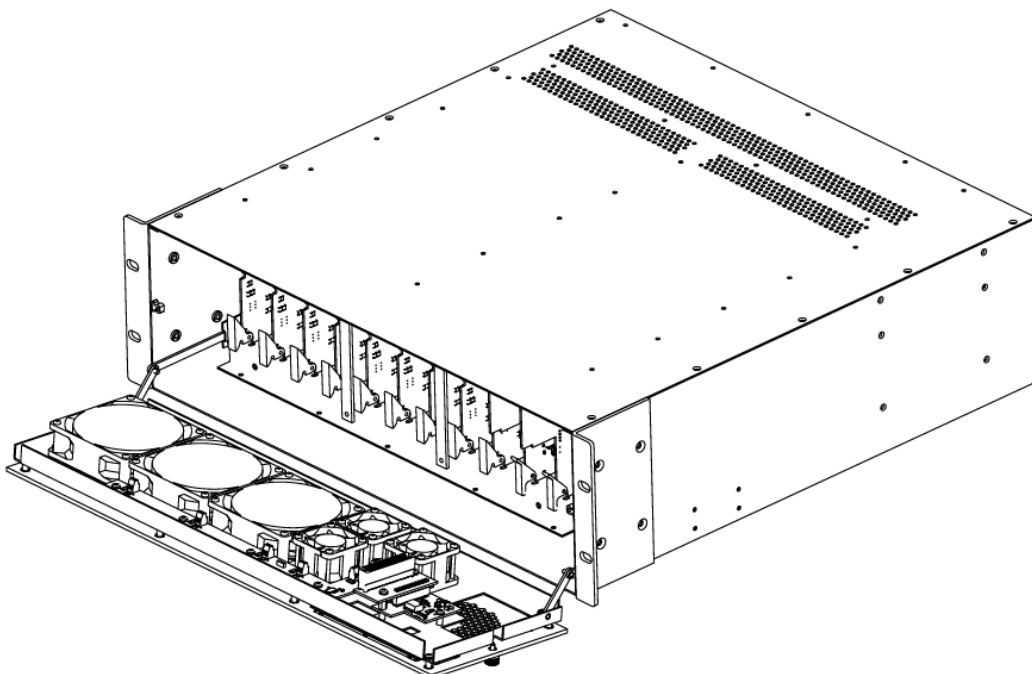


### Opening the front panel

The front panel can be opened by fully unscrewing the front panel retaining thumbscrews and then pulling the front panel straight forward until it is at the limit of its travel. The panel is retained by two extending arms that are hinged to allow the panel to move clear of the cards as shown in the diagram below.



Ensure that the front panel is fully clear of the frame before rotating downwards about the hinged arms as shown below:

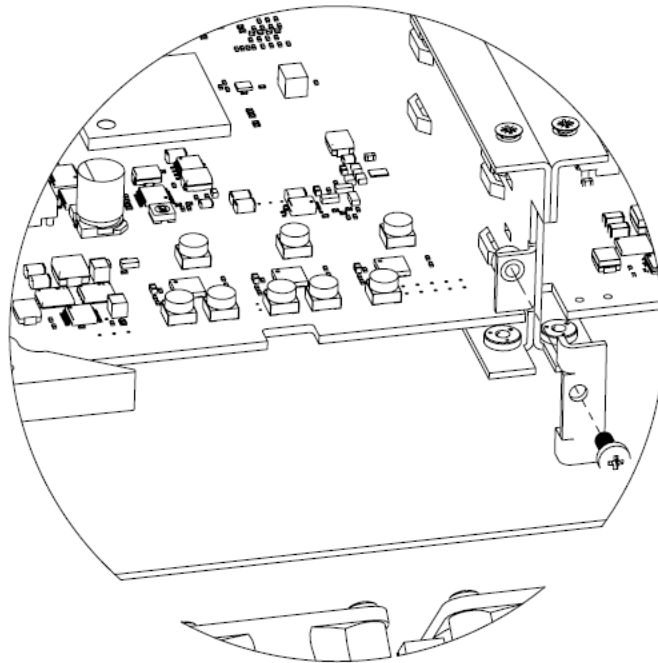


The image above shows the hinged front panel positioned to allow access to the cards.



# service

## Removing Cards SMP/SMP2-MV16/32/48



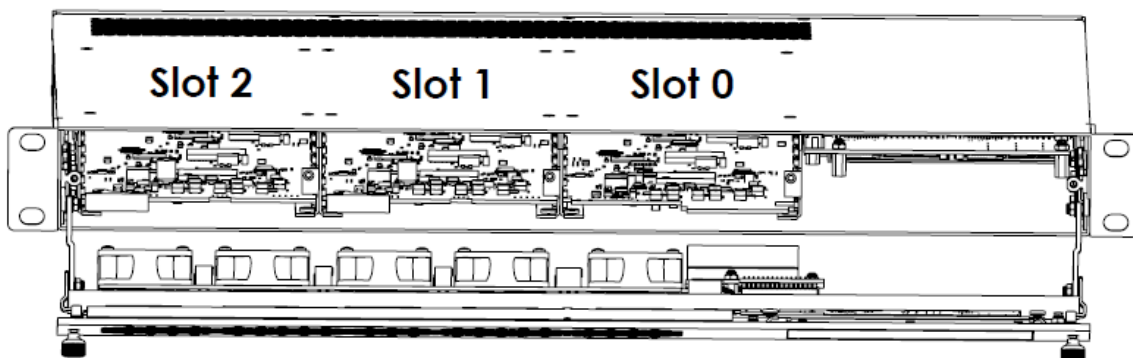
### Card Retainers

Cards can be accessed when the front panel has been moved clear.



Important Note: Individual card retainers **must** be removed before using the ejector to remove cards. If resistance is felt when trying to remove the card using the ejector then check if the retainer is still fitted.

The MVC3 card located in SLOT 0 does not have a card ejector - the card extension can be used to remove the card once the retainer has been removed.

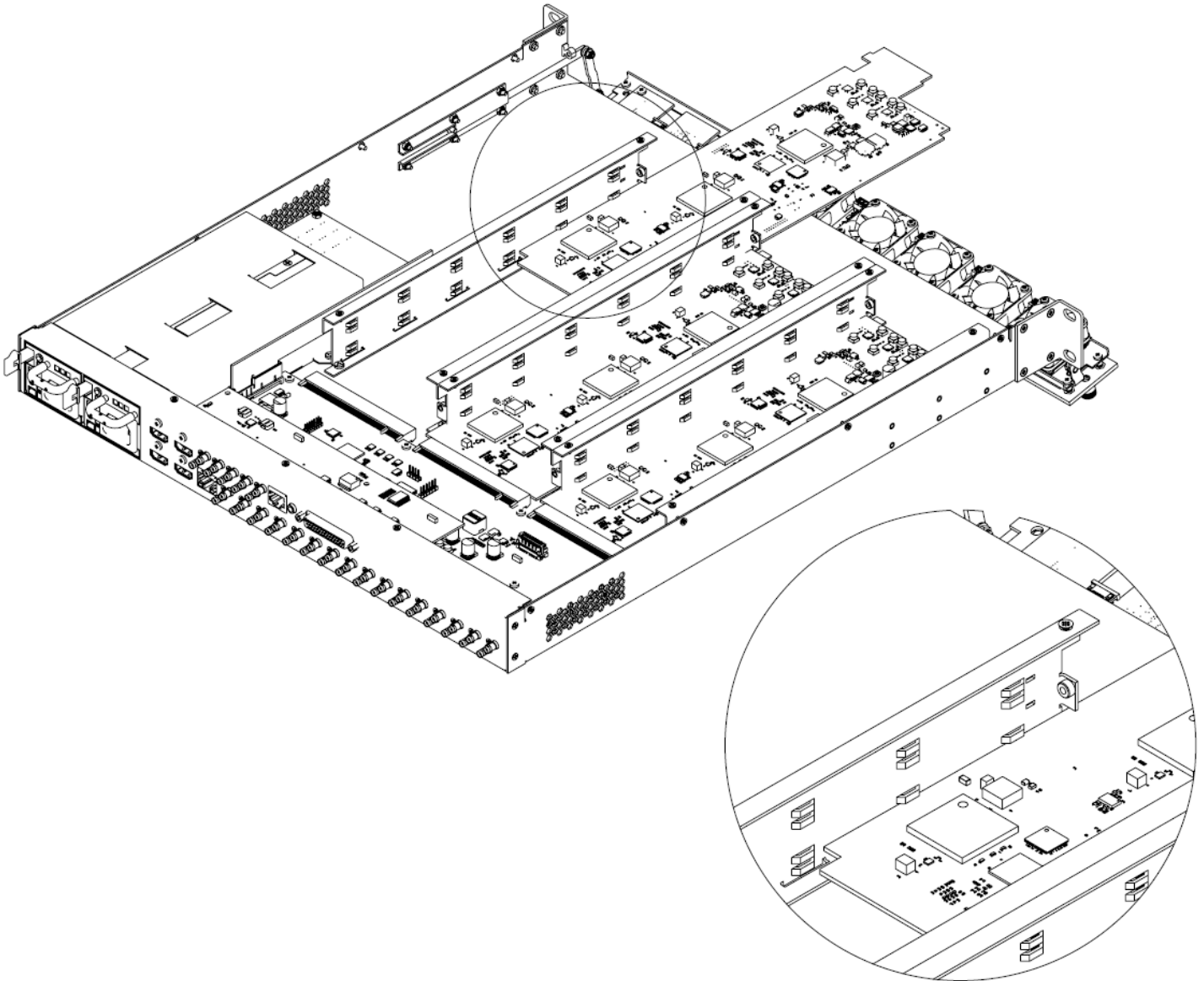


### Slot Numbers

The frame has SLOTS for each card which are numbered from SLOT0 to SLOT2 on the lower row of cards as shown in the drawing above. The SMP-MV48 model has an additional VIP5 card that is located in SLOT3 which sits above SLOT2 in the drawing above.

# service

## Removing cards SMP/SMP2-MV16/32/48



### Card Guides

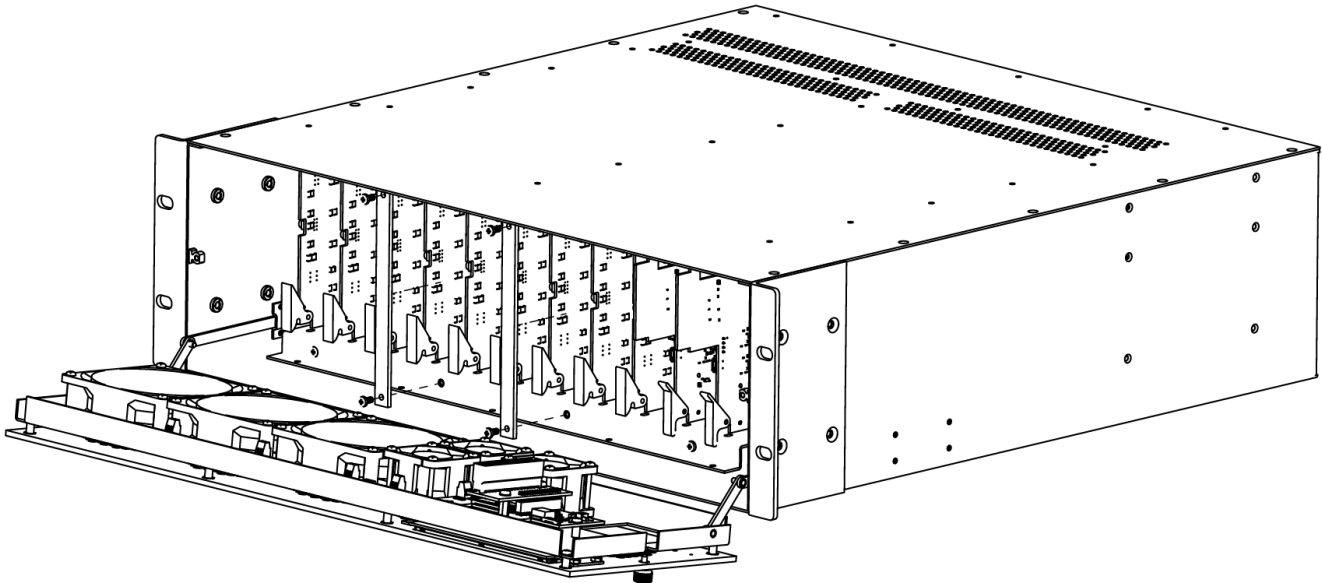


Cards slide along punched-out card guides, as shown above (the lid has been removed from the drawing to make the detail easier to see) - NEVER FORCE A CARD.

If it becomes very tight to slide the card in, remove the card and then carefully reinsert, checking the card is correctly aligned in ALL the pcb guides along the length of the card guide as shown above.

# service

## Removing Cards MP2-MVxx

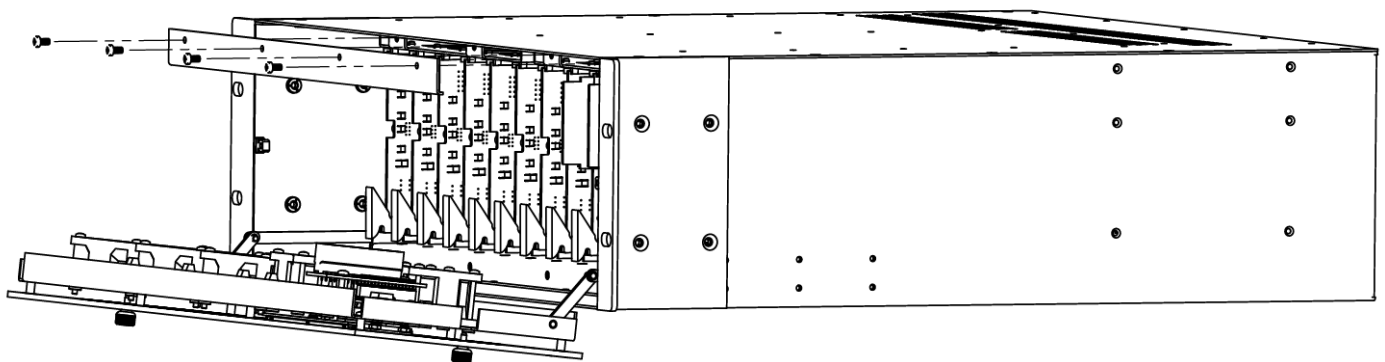


### Transport bar

The MP2-MVxx frame is shipped with up to 4 vertical transport bars as shown in the image above. The bars are screwed to the upper and lower card guides using 2 x M3 pan-head screws.



These bars do not need to be removed for normal operation but they must be removed to access the cards.



### Card Retaining bar

Cards can be accessed when the front panel has been moved clear from the frame so that the cards can be accessed. The card retainer is a bar that runs along the top of the cards and is screwed to the upper card guide using 4 x M3 screws as shown above.

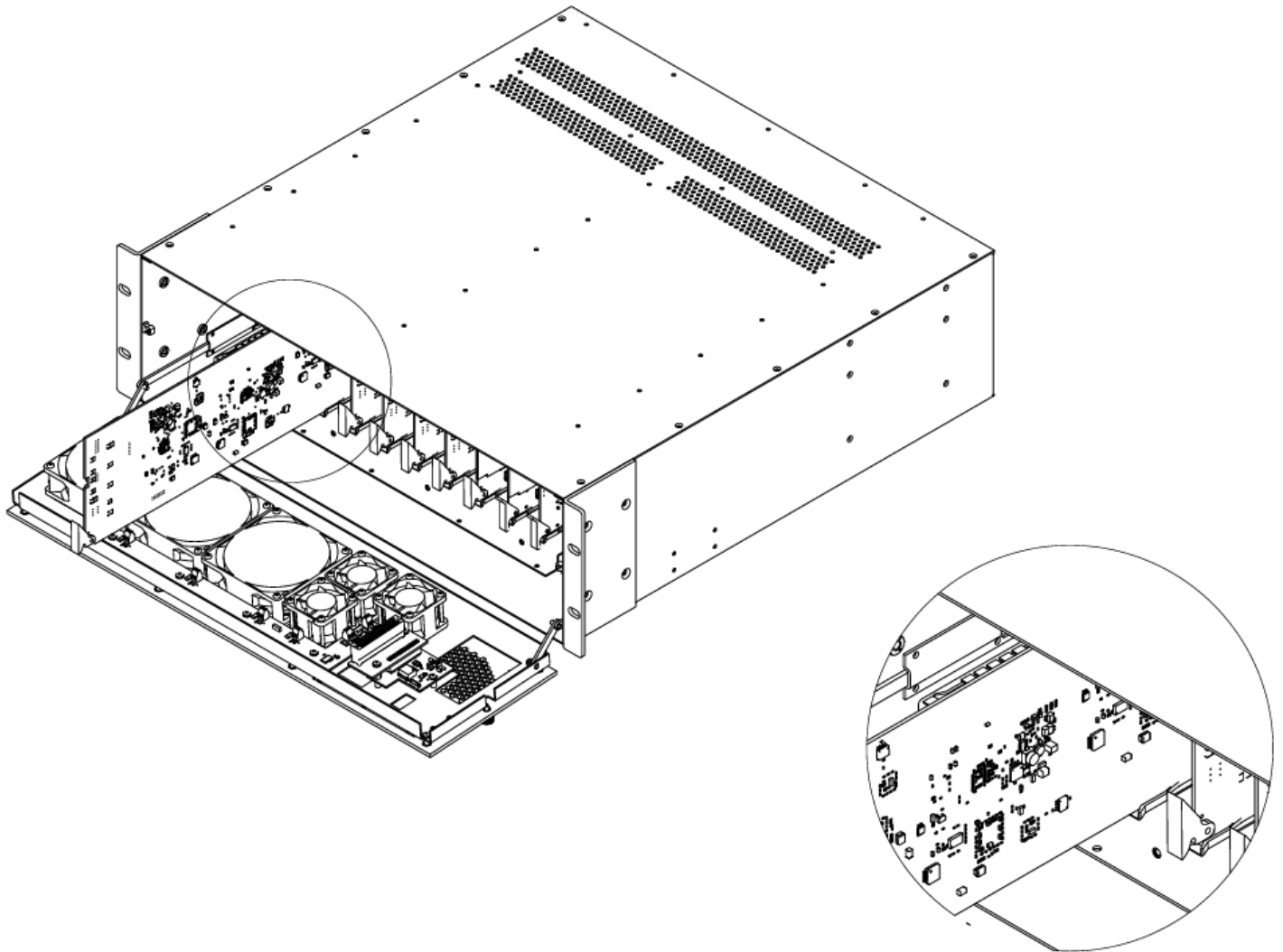
Important Note: The card retaining bar **must** be removed before using the ejector to remove cards. If resistance is felt when trying to remove a card using the ejector then check if the retainer is still fitted.



The MVC4 cards located in SLOT 0 and SLOT 1 do not have a card ejector - the card extension can be used to remove the card once the retainer has been removed.

## Removing Main cards MP2-MVxx

# service



### Card Guides

Cards slide along punched-out card guides, as shown above (the lid has been removed from the drawing to make the detail easier to see) - NEVER FORCE A CARD.



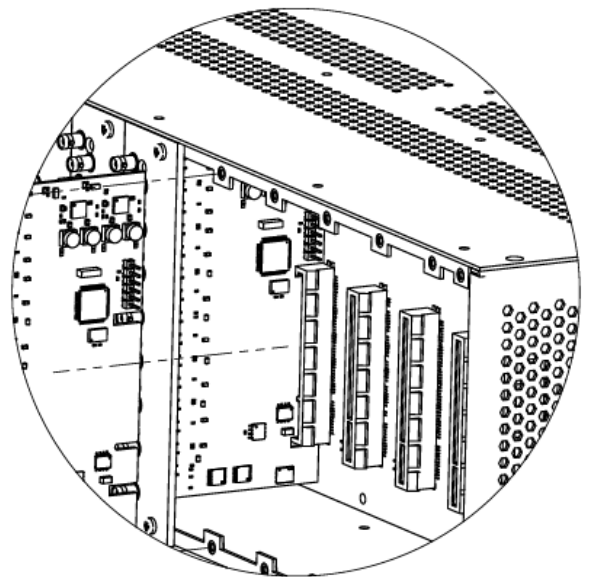
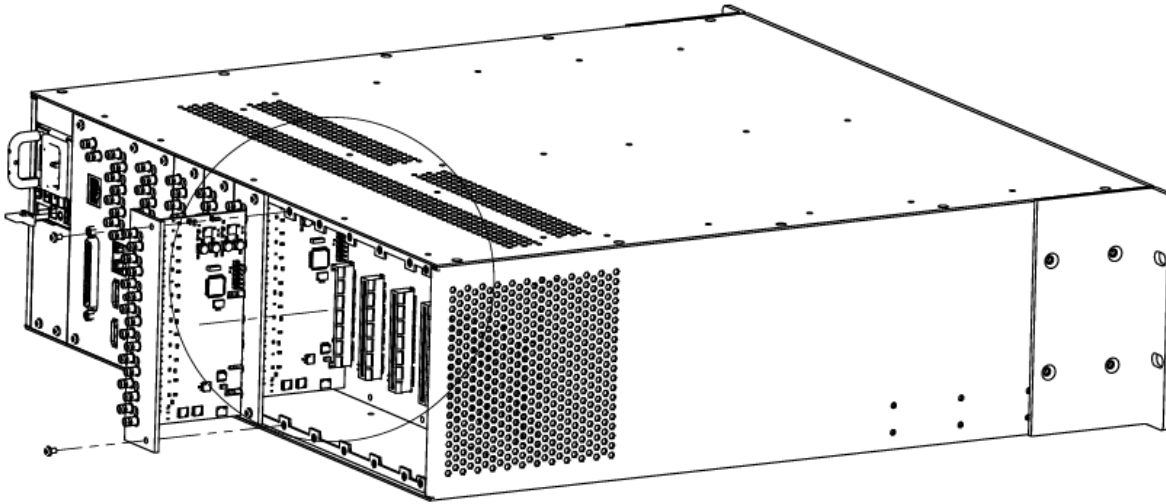
If it becomes very tight to slide the card in, remove the card and then carefully reinsert, checking the card is correctly aligned in ALL the pcb guides along the length of the card guide as shown above.

### Slot Numbers

The MP2-MVxx frame has SLOTS for each card which are numbered from SLOT0 adjacent to the power supply to SLOT10 at the opposite side.

## Removing Rear Cards MP2-MVxx

# service

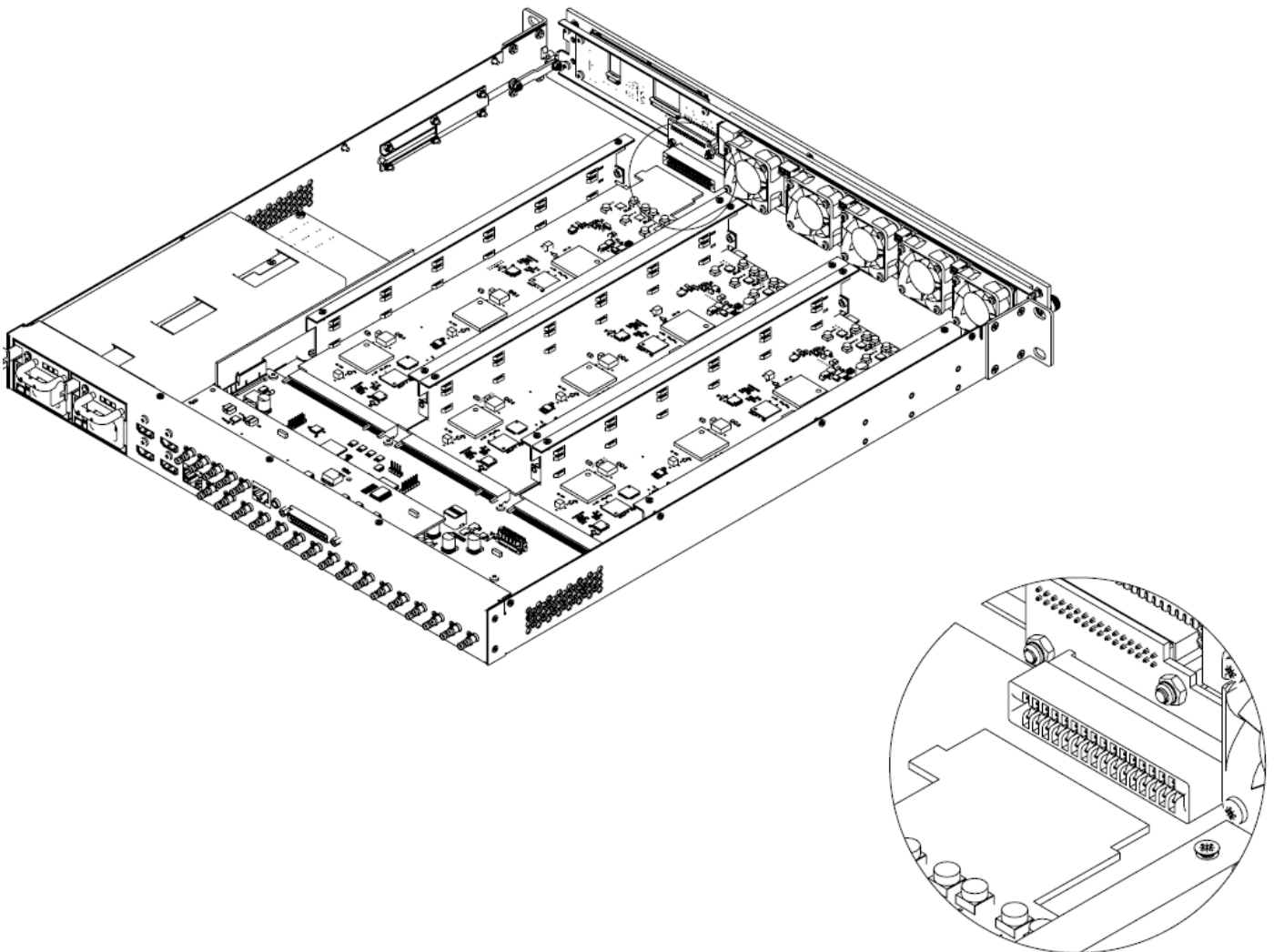
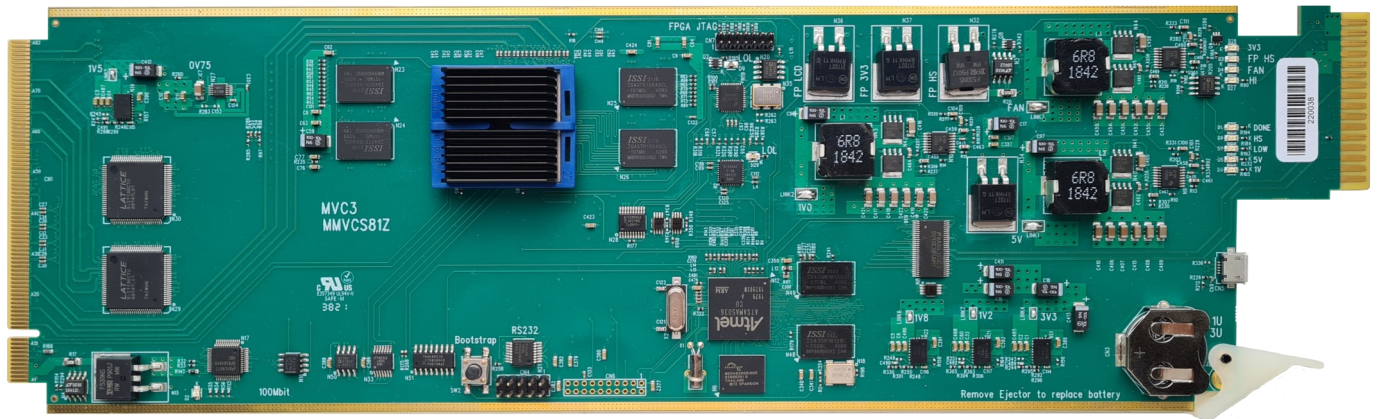


### Removing and Fitting rear cards

Rear cards are retained by 2 off M2.5x6mm screws that secure the rear to the upper and lower retaining strips. To remove a rear card the screws should be removed and the rear cards gently eased clear from the frame. Care should be taken when removing the rear to avoid damaging any of the components on the bottom of the PCB. Insertion of rear cards is the reversal of the process to remove the rear.

## MVC3 used in: SMP-MV16/32/48

# service



### MVC3 Edge Fingers

The MVC3 is located in SLOT 0 position (adjacent to the PSU modules).

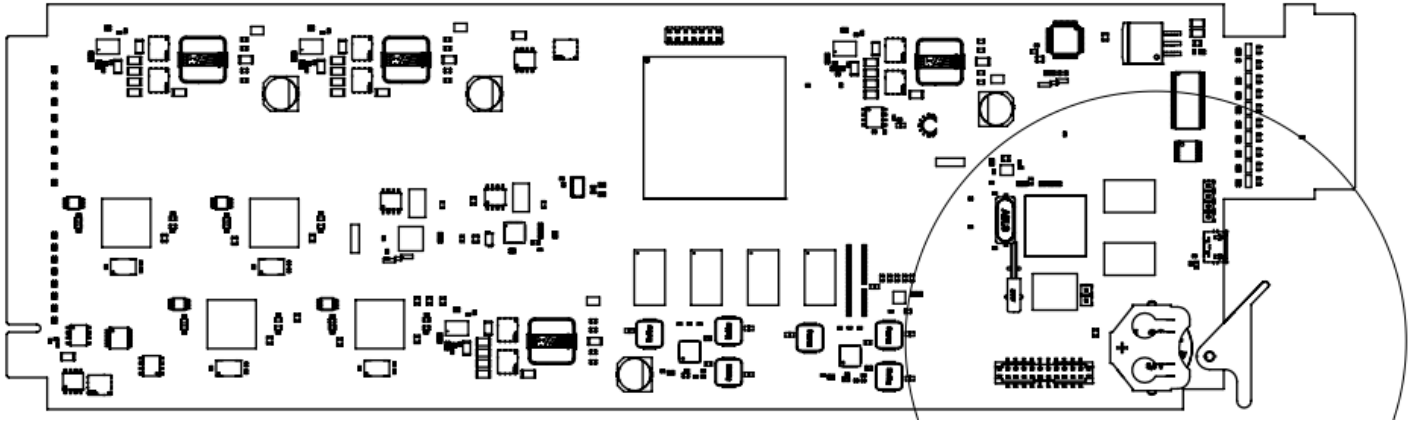


This card has edge fingers which engage with the front panel connector to drive the LCD display.  
The MVC3 card **must** be located in SLOT 0.

## MVC3 (cont.)

## service

## Battery backup for real-time clock and date



## Button Cell battery



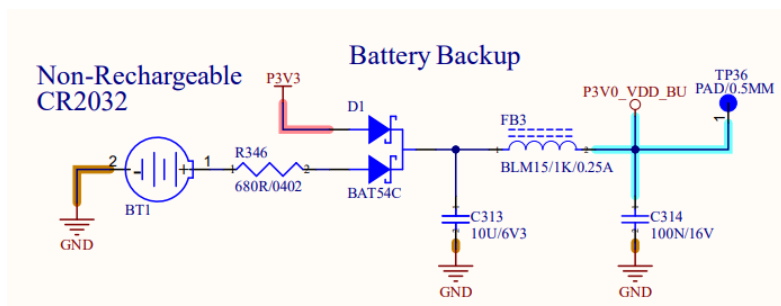
In the absence of a network clock, the system time is used. A removable battery on the MVC3/MVC4 card ensures the time and date is retained if the unit is powered down. The battery is located at the front of the MVC3/MVC4 cards as shown in the image above.

To replace the battery card ejector must first be removed by using a small tool such as a screwdriver to push the split pin through the PCB hole until the ejector can be removed.

Then, gently push the battery from the rear of the holder until it's free, and use your fingers to pick it up. The old battery should be disposed of according to local regulations.

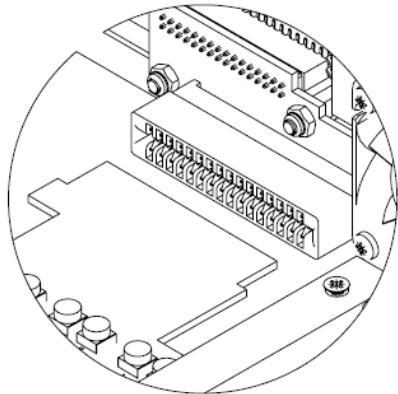
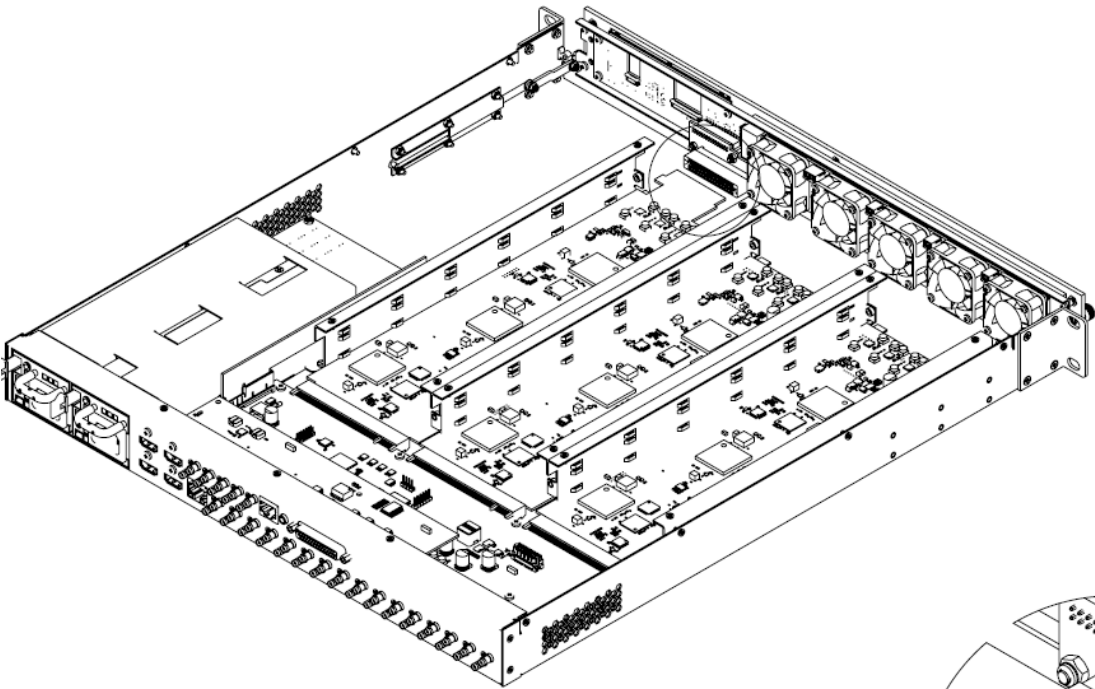
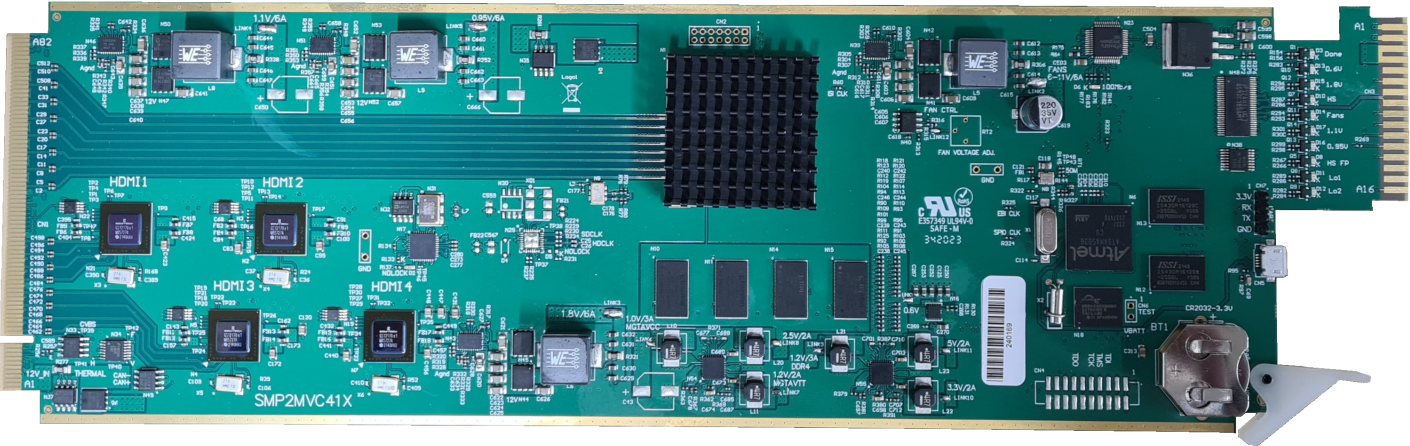
The Lithium 3V 20mm diameter button cell is **NON RECHARGEABLE** type CR2032.

Typical lifespan of the battery should exceed 5 years and a warning will be issued in the Help > About messages and front panel display when the firmware detects that the real-time clock is no longer being retained.



MVC4 used in:  
SMP2-MV16/32/48 and MP2-MVxx

# service



### MVC4 Edge Fingers

The MVC4 is located in SLOT 0 position (adjacent to the PSU modules).

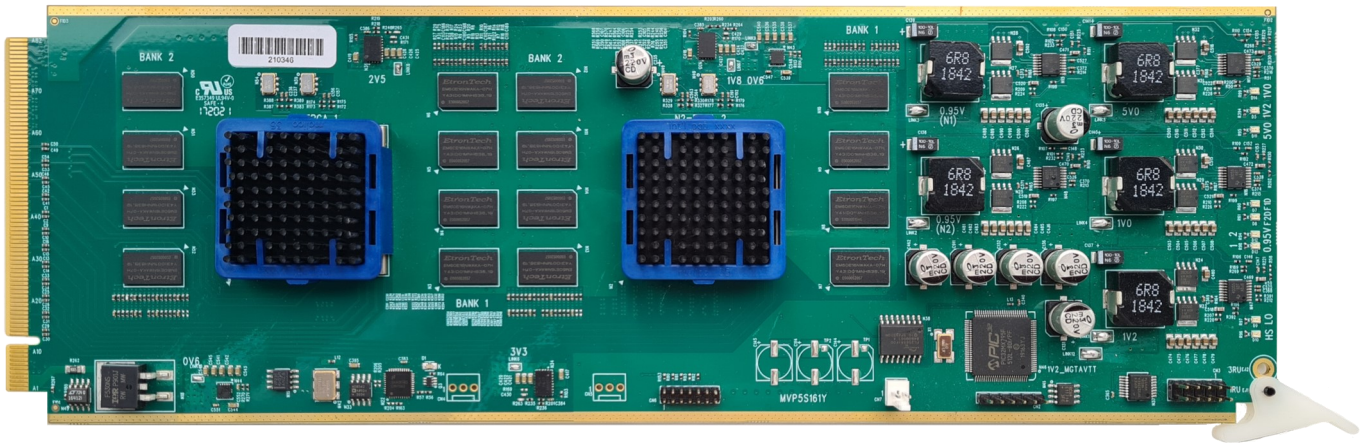


This card has edge fingers which engage with the front panel connector to drive the LCD display.  
The MVC4 card **must** be located in SLOT 0.



## VIP5

## service



## VIP5



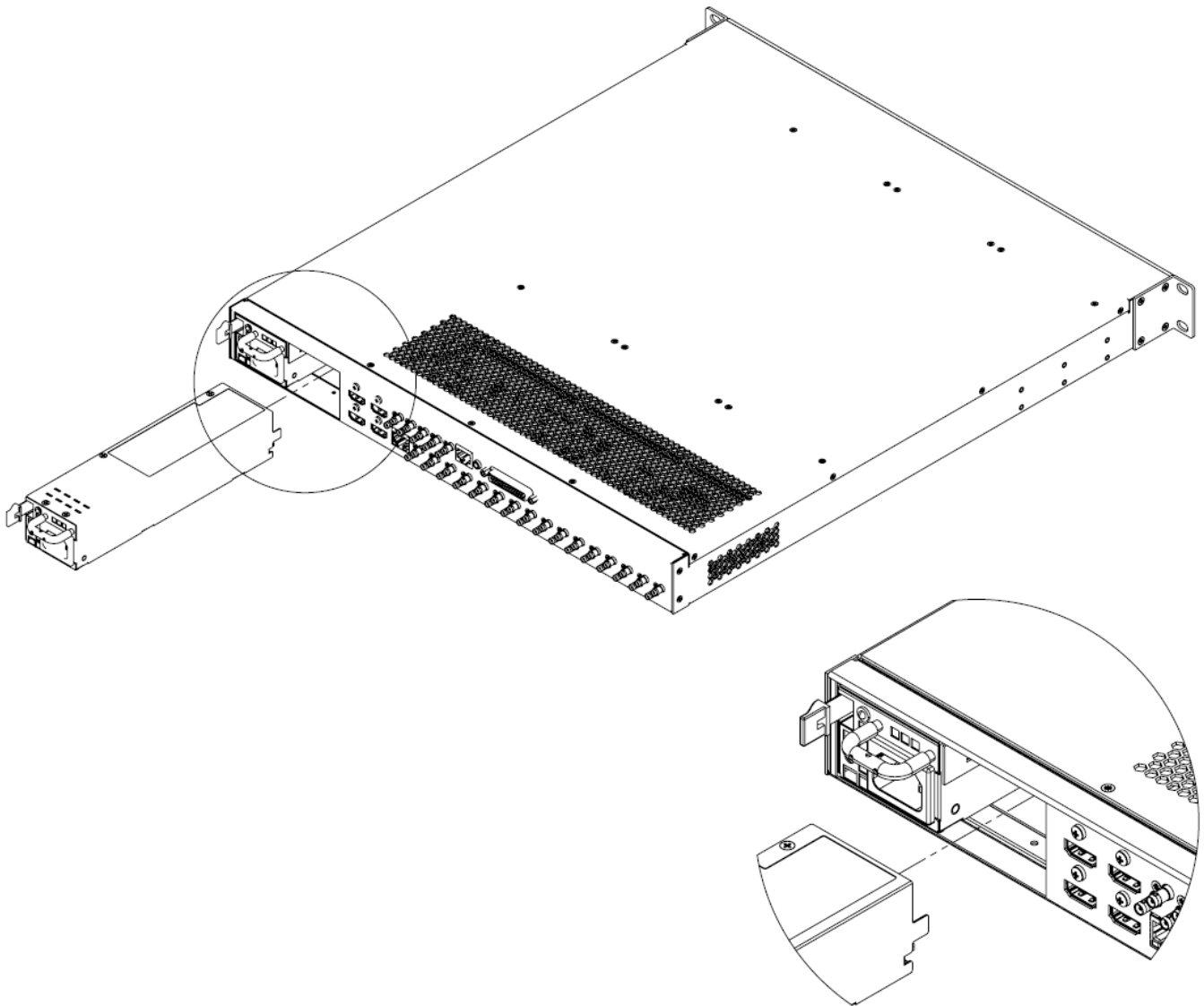
If there is only one VIP5 present then it **must** be located in SLOT 1 (adjacent to the MVC3).

If a 2nd VIP5 card is present then it **must** be located in SLOT 2 on the lower row of cards.

If a 3rd VIP5 card is present then it **must** be located on the upper row of cards above SLOT 2.

# service

## PSU Modules SMP-MVxx/SMP2-MVxx



### Accessing PSU modules

#### To remove:

Push the PSU locking lever towards the IEC socket which will retract two spring-loaded legs from the chassis and free the PSU allowing it to be removed. Using the handle on the PSU, slowly pull the PSU out – it will be tight, especially so until it is free of its mating connector – DO NOT FORCE IT OUT.

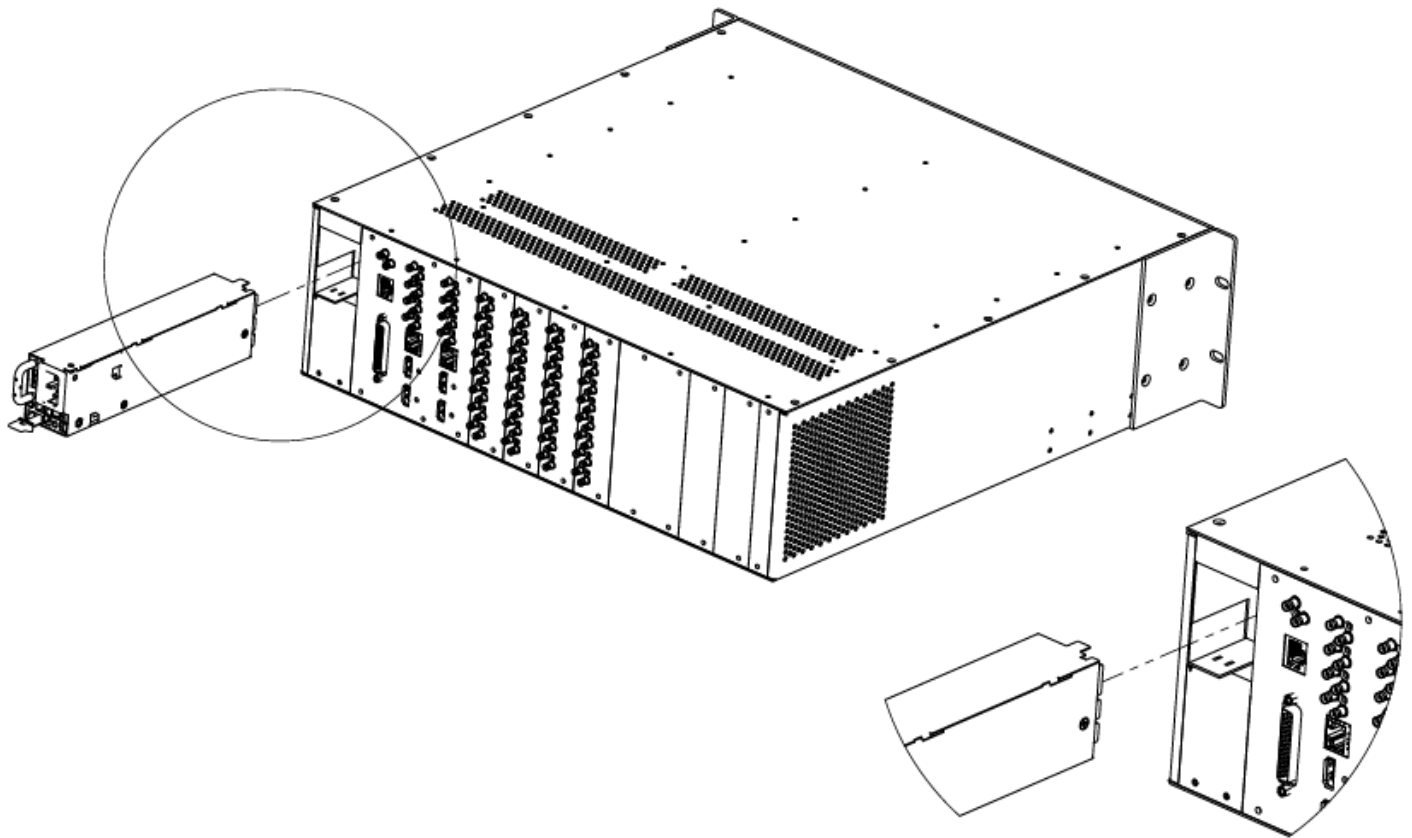
#### To install:

Slide the PSU in, it is a tight fit and will require a firm push – DO NOT FORCE IT IN.

There will be a loud click when the PSU is fully seated into its mating connector as two spring-loaded legs will pop into the PSU chassis locking the PSU in place.

## PSU Modules MP2-MVxx

# service



### Accessing PSU modules

#### To remove:

Push the PSU locking lever towards the IEC socket which will retract two spring-loaded legs from the chassis and free the PSU allowing it to be removed. Using the handle on the PSU, slowly pull the PSU out – it will be tight, especially so until it is free of its mating connector – DO NOT FORCE IT OUT.

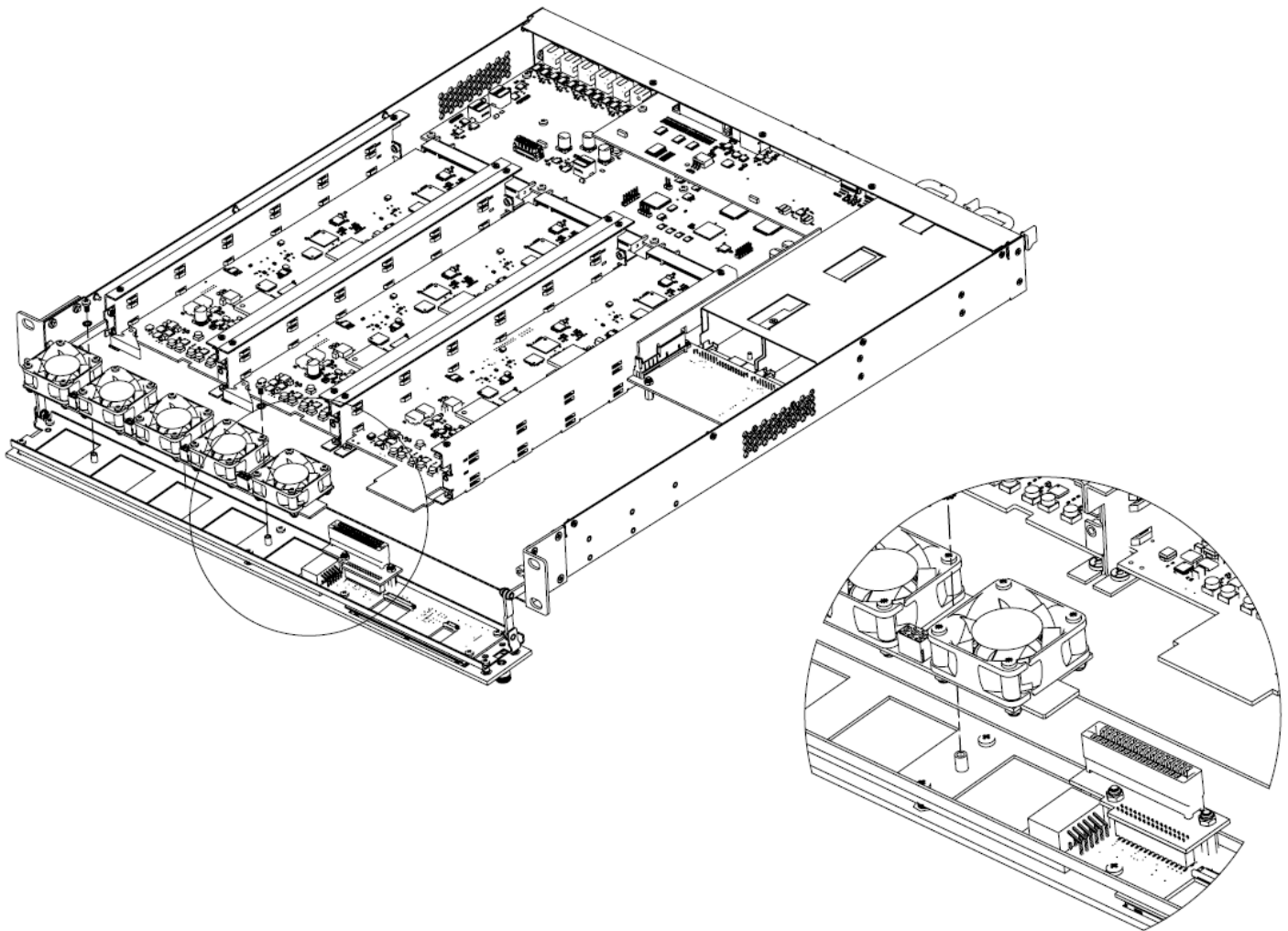
#### To install:

Slide the PSU in, it is a tight fit and will require a firm push – DO NOT FORCE IT IN.

There will be a loud click when the PSU is fully seated into its mating connector as two spring-loaded legs will pop into the PSU chassis locking the PSU in place.

# SMP-MVxx/SMP2-MVxx FAN assembly

# service

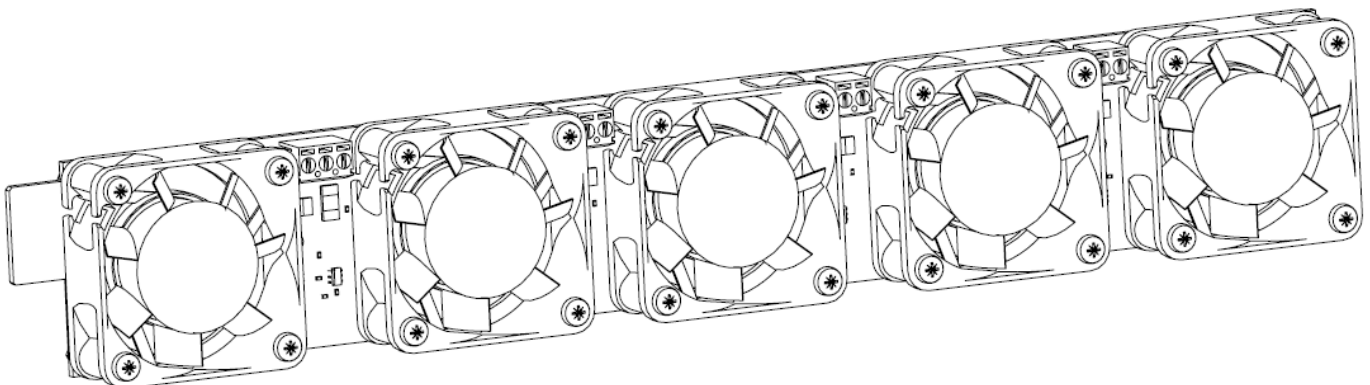


## Accessing the FAN assembly

If a fan fails, it can be removed and replaced with another one of the same type. In the 1RU frame, the complete fan assembly can be quickly removed and replaced with a new one.

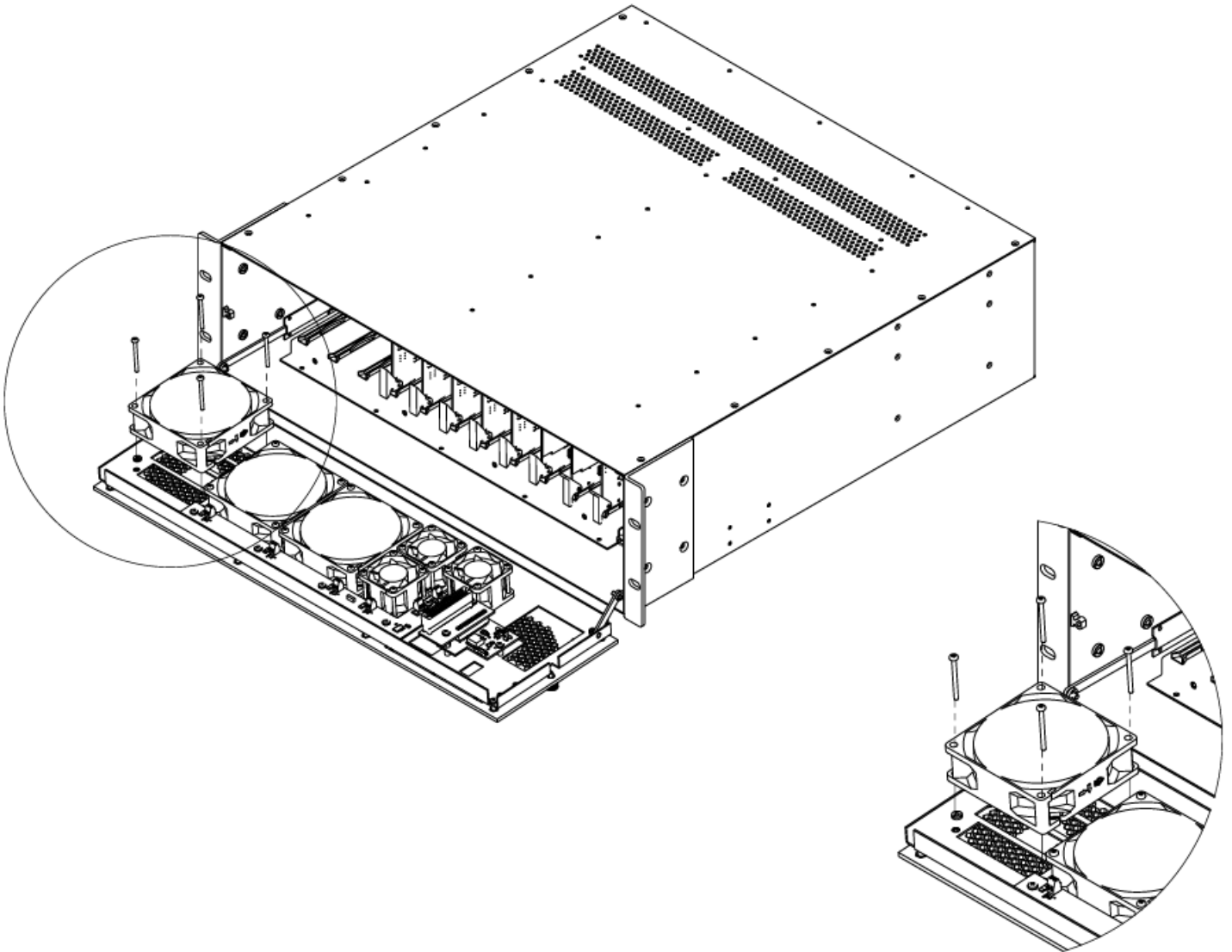
To remove the fan assembly board, first remove the two screws (and washers) as shown. Then carefully slide the fan assembly out of its mating connector as highlighted below, and it will be free to remove.

Once the fan assembly has been removed, it is also possible to replace individual fans if required, by removing the locking nuts that are accessible from the bottom side of the fan assembly.



## MP2-MVxx FAN assembly

# service

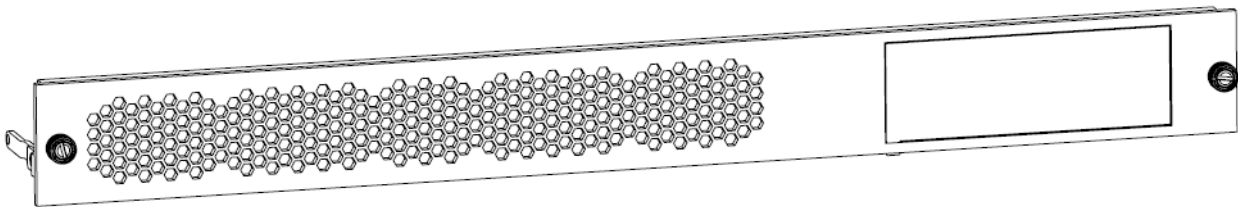
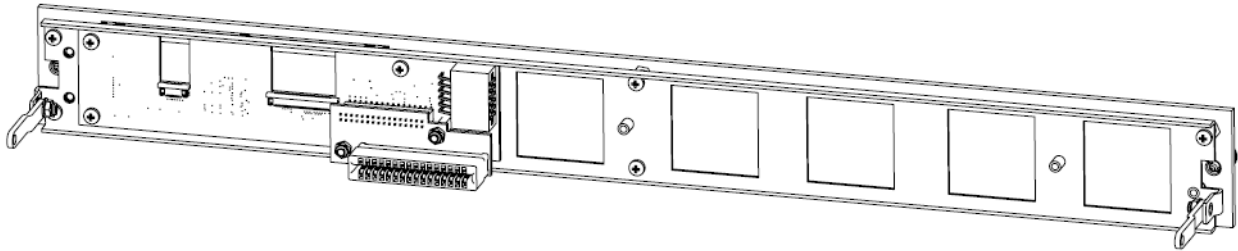


### Accessing the FAN assembly

If a fan fails, it can be removed and replaced with a new one of the same type. Each fan is retained by 4 off M3 which screw into threaded inserts in the front panel assembly as shown in the image above.

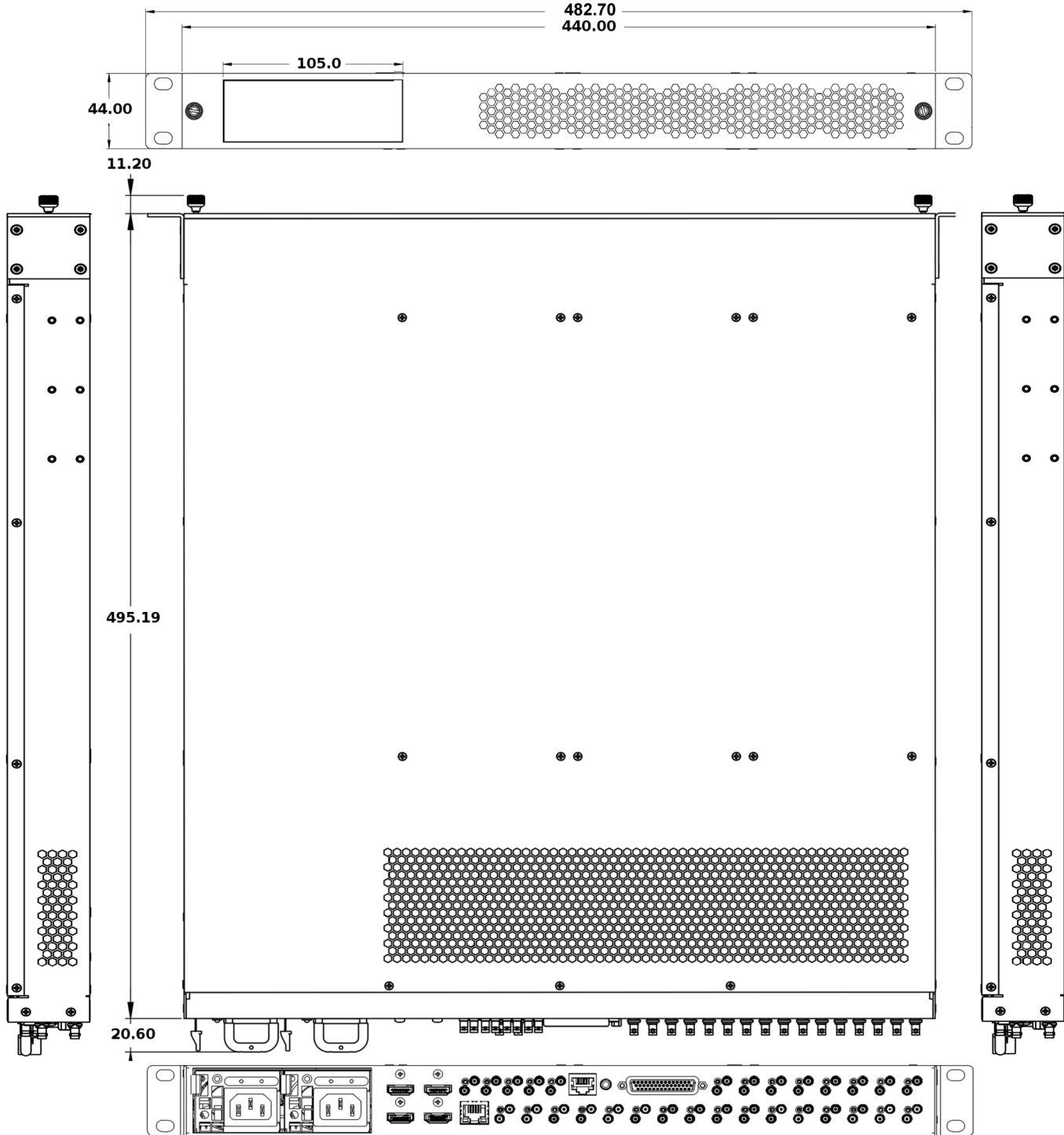
## Air Filter

# service



### Cleaning the air filter

With the fan assembly removed, access to the filter element on the front panel is easily obtained. Use either a vacuum cleaner (from either side) or a blower to remove any dust accumulation (if using any form of compressed gas to blow the dust out – WEAR EYE PROTECTION).

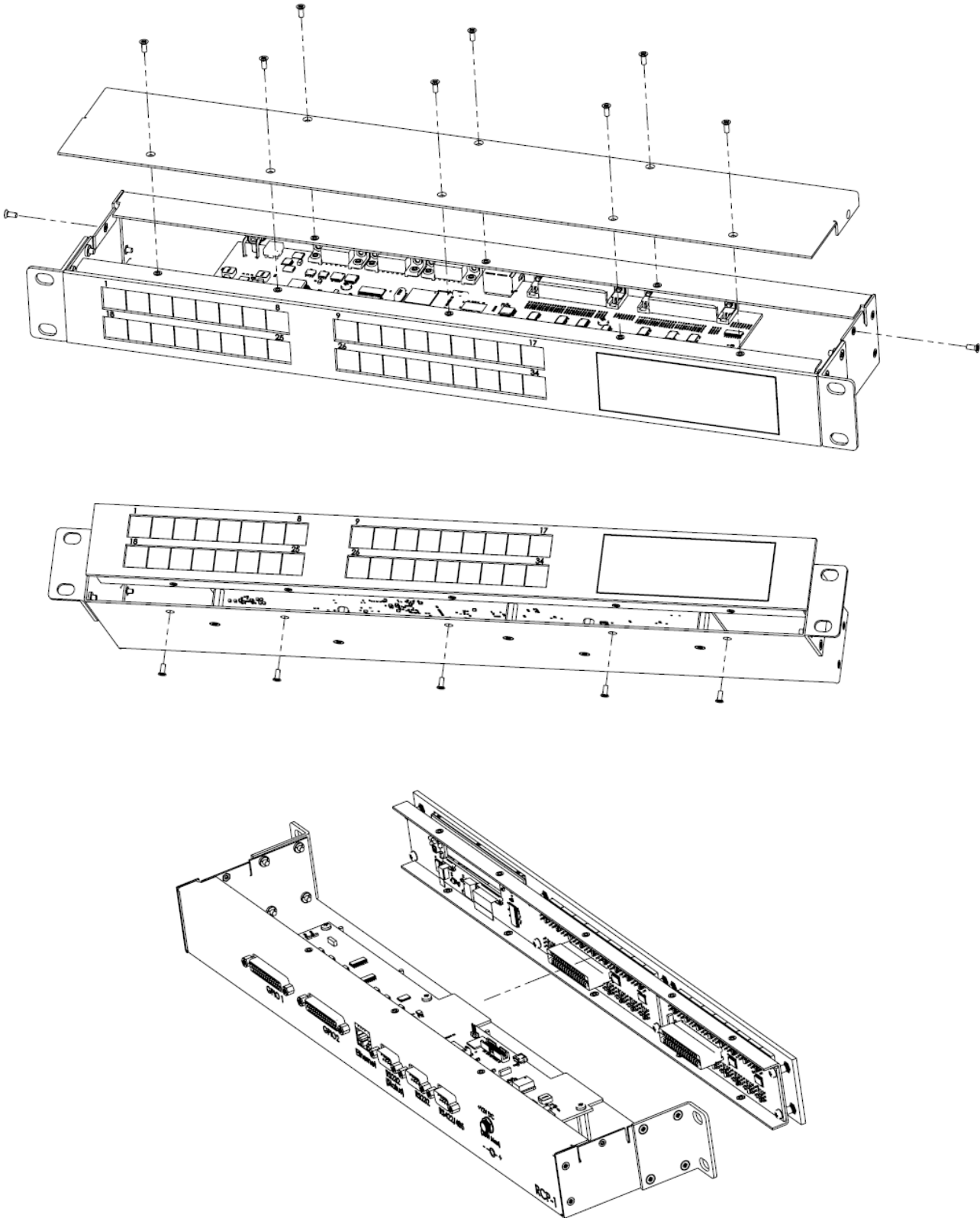


### Frame Dimensions

Multiviewer overall frame dimensions are shown above

# MV-RCP32

# service



### MV-RCP32 Assembly

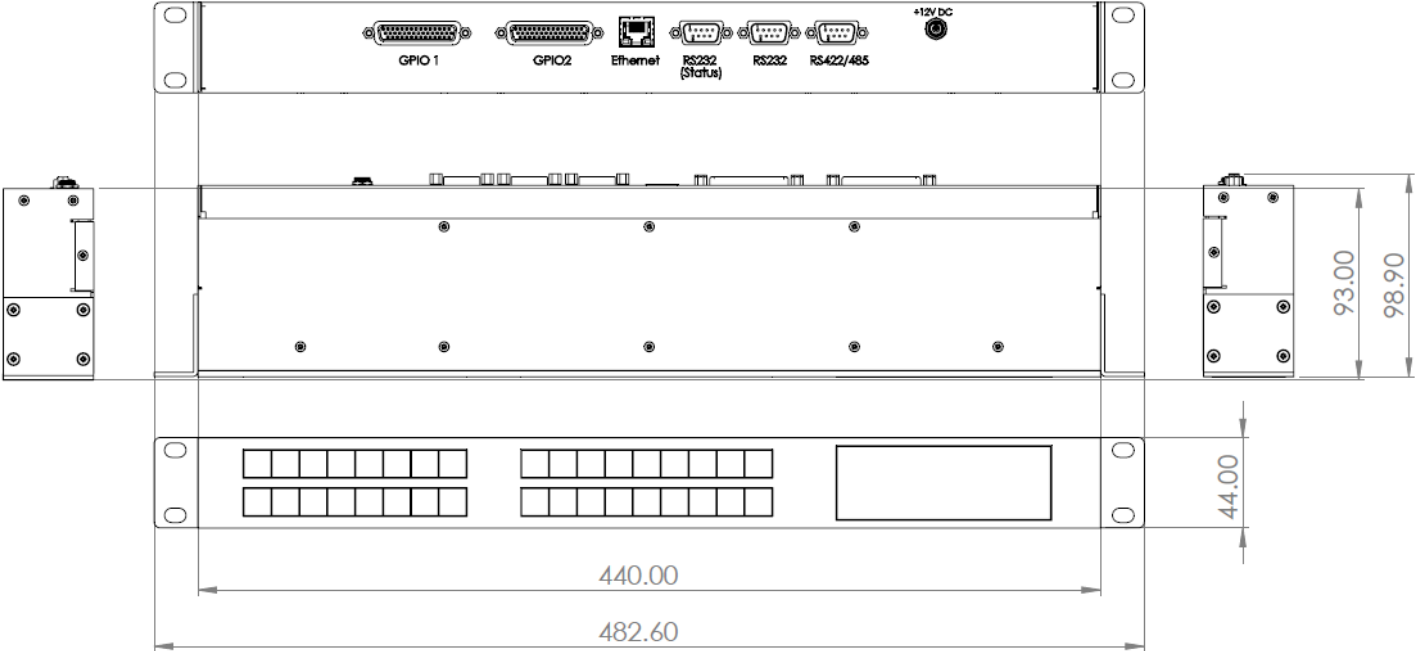


The MV-RCP32 lid must first be removed to gain access to the unit. Please note the locations of all screws retaining the front panel to the chassis.



# MV-RCP32

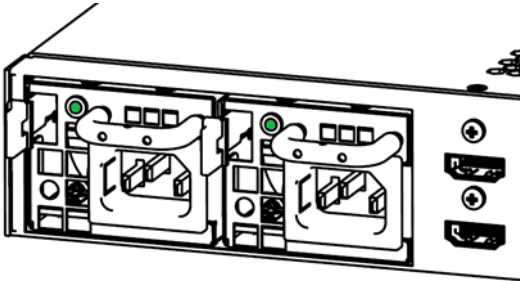
# service



MV-RCP32 Overall Dimensions

# 3. troubleshooting

## PSU Modules



### Status

Each PSU has a bi-colour LED to the left of the removal/insertion handle at the rear of the SMP2 as shown below, which can provide useful information on the status of each PSU.

PSU condition	PSU bi-colour LED (red/green)
No AC power to both PSUs	OFF
No AC power to PSU	1Hz flashing red
AC present, only standby output (5V) on	1Hz flashing green
AC present 12V supply output ON and OK	green
PSU failure	red
PSU warning	1Hz flashing red/green

NOTE: Flashing frequency: 1Hz = 1second red/1second green

If either of the LEDs is OFF or NOT solid GREEN (correct AC input and DC output), please investigate further - input AC should be in the range 90-264VAC (~50/60Hz).

If a chassis fails to power cycle or completely shuts down during operation and both LEDs are off the most likely reasons are:

Mains cable not present or accidentally removed.

Power supply not fully inserted.

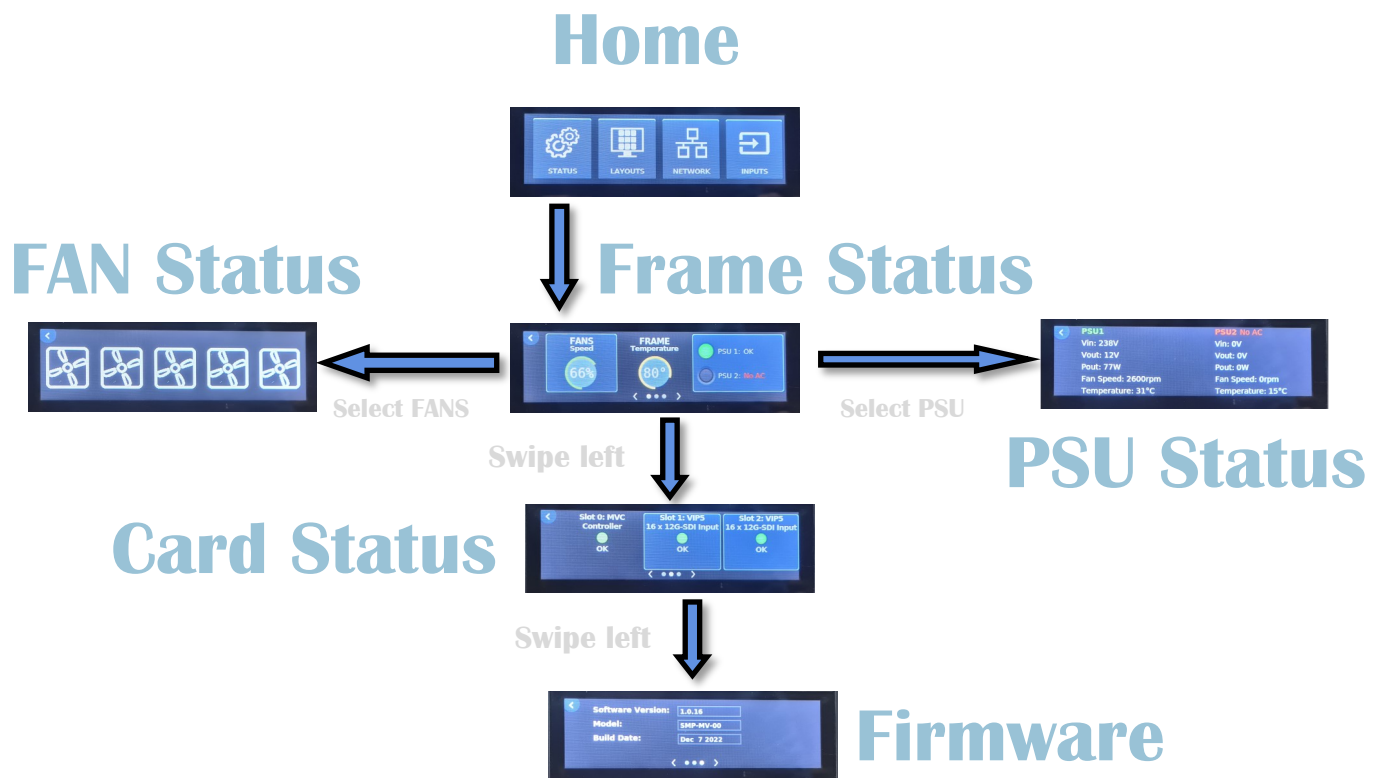
Blown mains cable fuse.

Power supply (PSU) safety shutdown.

PSU failure.

# checks

## Checking Frame status



### 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.

From the Home menu follow the instructions above to navigate to the following menus:

- Fan Status - if any of the fans have failed, this will be indicated in the corresponding image.
- Frame Status - the fan duty cycle and frame temperature are listed along with the PSU status.
- PSU Status - Detailed information on the PSU modules is shown here.
- Card Status – MVC3 and VIP5 modular card status is shown here.
- Firmware - Firmware version and model number information is listed here.

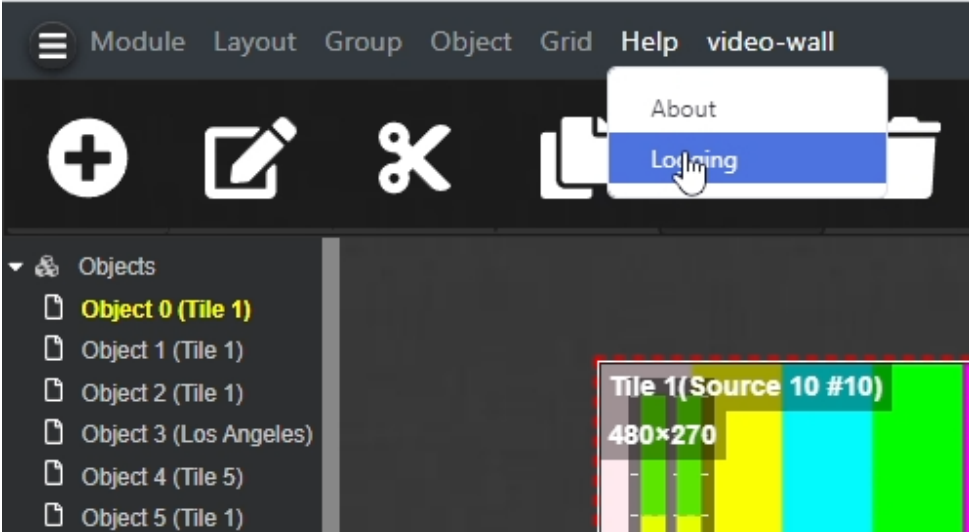


When reporting a fault please make a note of the settings for each of the screens listed above.

# Checking browser status

# checks

Help → About



## Help About System

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

Please use a screen capture tool like the 'Windows 'Snipping Tool' to capture the entire **About** output (dragging a corner with a mouse cursor will expand the 'capture' window).

## Checking browser status (cont.)

# checks

### Help → Logging

#### 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](#)

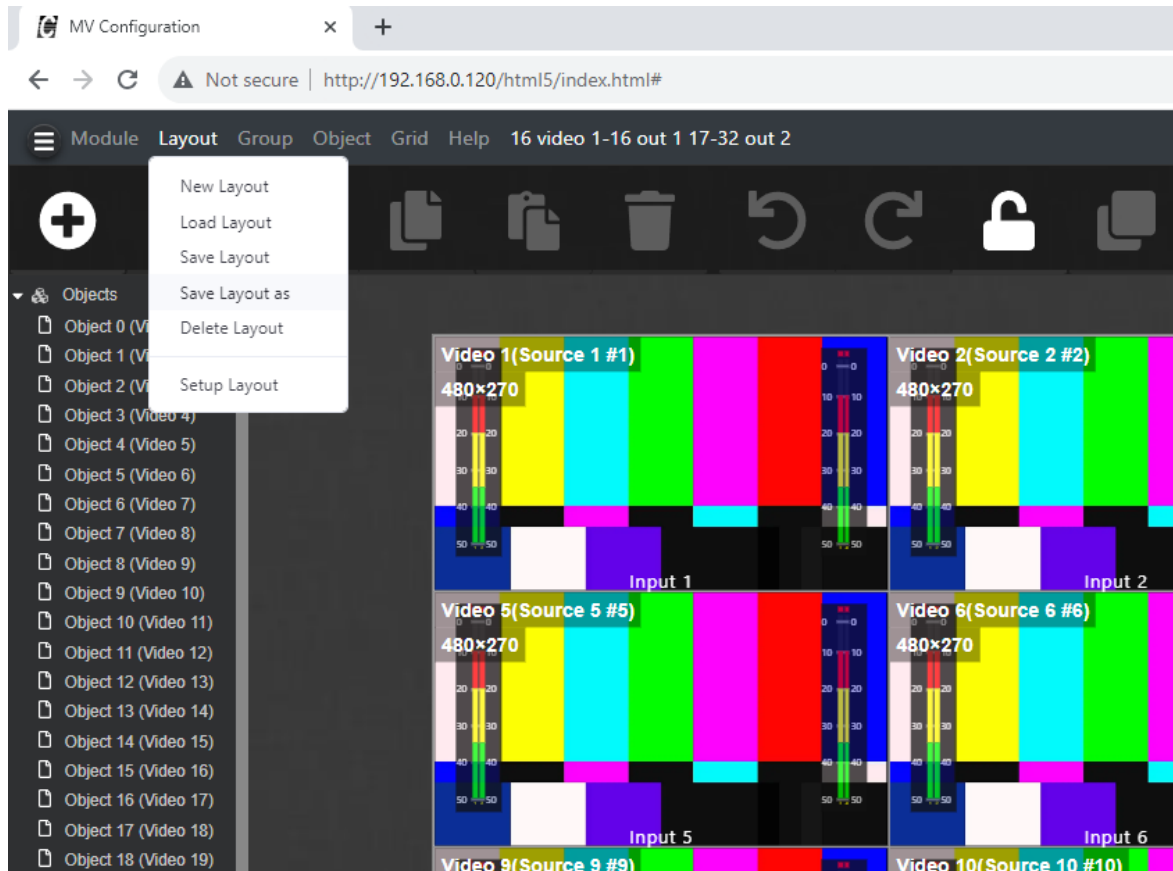
Setting	Description
<b>Download all</b>	Download the log and save it wherever the browser usually saves downloads. When reporting a fault please select Download all to create a txt logfile file from the current session. This file can be retrieved via the 'downloads' icon in the users browser and sent for analysis.
<b>Refresh</b>	System log is refreshed with current settings.

# checks

## Copying 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:

Please refer to the latest version of the Chromatec MV Operator manual Know How section on How to



Backup and Transfer XML Layout files for a full description of how to save the XML Layout File.

### When Reporting a problem or a fault

1. If the fault is associated with a layout then save the layout file and send it for analysis
2. If the fault is associated with hardware and the browser is still functional then:
3. Save the logfile and send it for analysis.
4. Copy the Help > About page.
5. Take a note of the status settings reported in the LCD display.
6. If the fault is associated with a card then open the front panel and check if there are any cards that are not displaying green LEDs indicating local power supply status.

# 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
<b>SDI Inputs</b>	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.
<b>SDI Format</b>	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)
<b>SDI Cable Length</b>	Using Belden 1694A: SD-SDI >350m, HD-SDI >150m, 3G-SDI >120m, 12G-SDI >50m
<b>SDI Return Loss</b>	Return Loss lower than -15dB up to 1.5GHz and -10dB up to 3GHz. -7dB up to 6GHz and -4dB up to 12GHz
<b>SDI Embedded Audio</b>	SD-SDI SMPTE-274M-A, HD & 3G SDI SMPTE 299M
<b>SDI Connector</b>	Dual HD-BNC 75ohm

## SMP SDI/HDMI Screen Outputs

VIDEO OUTPUTS	DESCRIPTION
<b>SDI Screen Outputs</b>	In 2K mode up to 8 x FHD50/59/60. In 4K mode up to 2 x UHD50/59/60.
<b>HDMI Screen Outputs</b>	In 2K mode up to 4 x FHD50/59/60 simultaneous with SDI outputs In 4K mode up to 2 x UHD50/59/60 simultaneous with SDI outputs.
<b>SDI Format</b>	HD-SDI (SMPTE292M 1.5Gbs) 3G-SDI (SMPTE424M 3Gbs)
<b>SDI Cable Length</b>	Using Belden 1694A: SD-SDI >350m, HD-SDI >150m, 3G-SDI >120m
<b>SDI Connector</b>	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	Duplicates of SDI outputs. Up to 4 x UHD50/59/60 YCbCr 4:2:2 10-bit. HDMI 2.0.
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
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.
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)

# 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	Grass Valley SW-P-02, SW-P-08, RollCall 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

## All GPIO Inputs

### GPIO Signals

Up to a maximum of 32xGPIO Inputs, 8xGPIO Outputs may be assigned.

A High-density 44-way D-type socket with the following pinout is used.

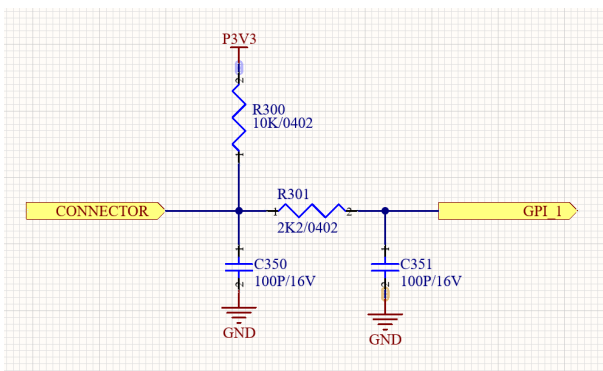
GPIO Inputs	Pin	GPIO Inputs	Pin	GPIO Inputs	Pin	GPIO Inputs	Pin
GPI1	1	GPI9	9	GPI17	17	GPI25	25
GPI2	2	GPI10	10	GPI18	18	GPI26	26
GPI3	3	GPI11	11	GPI19	19	GPI27	27
GPI4	4	GPI12	12	GPI20	20	GPI28	28
GPI5	5	GPI13	13	GPI21	21	GPI29	29
GPI6	6	GPI14	14	GPI22	22	GPI30	30
GPI7	7	GPI15	15	GPI23	23	GPI31	41
GPI8	8	GPI16	16	GP24	24	GPI32	42

### GPIO Input Circuit



Note: The GPIO input circuit is shown below for a single input. The GPIO input is triggered when the input is shorted to GND - typically from an open collector driver.

Each input is pulled up to 3.3V with a 10K resistor.



GPIO Input circuit (1 off 32 shown)

<b>Description</b>	Activated by external contact closure to GND
<b>Pull-up Voltage</b>	3.3 Volts
<b>Source current</b>	0.33mA when input shorted to GND
<b>Low-level activation</b>	0.8V maximum
<b>Connector</b>	DB-44

# SPEC

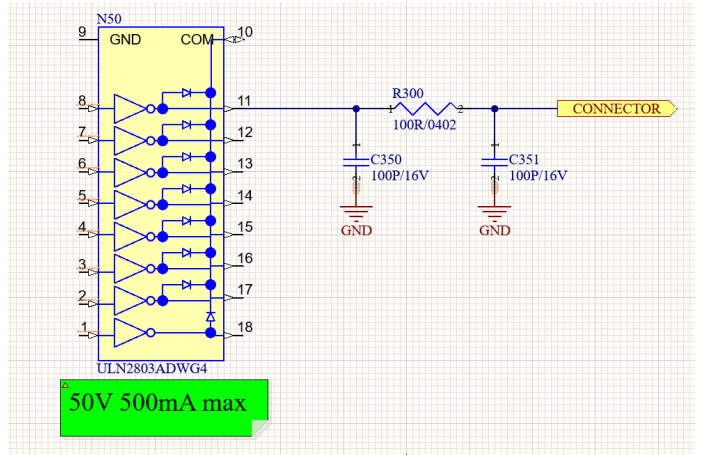
## All GPIO Outputs

### GPIO Output Signals

Up to a maximum of 8xGPIO Outputs

A High-density 44-way D-type socket with the following pinout is used.

<b>Description</b>	<b>Open Collector Darlington Transistor</b>
<b>Output current</b>	500mA maximum
<b>Off Voltage</b>	50V maximum
<b>Leakage Current</b>	50 micro amps maximum
<b>Connector</b>	DB-44



GPIO Output circuit (1 off 8 shown)

GPIO Outputs	Pin
GPI1	32
GPI2	33
GPI3	34
GPI4	35
GPI5	36
GPI6	37
GPI7	38
GPI8	39

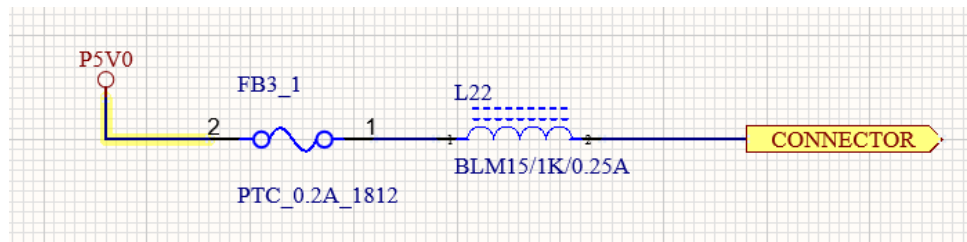
DB-44 GND	Pin
GND	40
GND	43
GND	44

### GPIO Fused Power



A +5V output with 200mA PTC fuse is provided on pin 31 that can be used to power an external receiver.

DB-44 PWR	Pin
GND	31

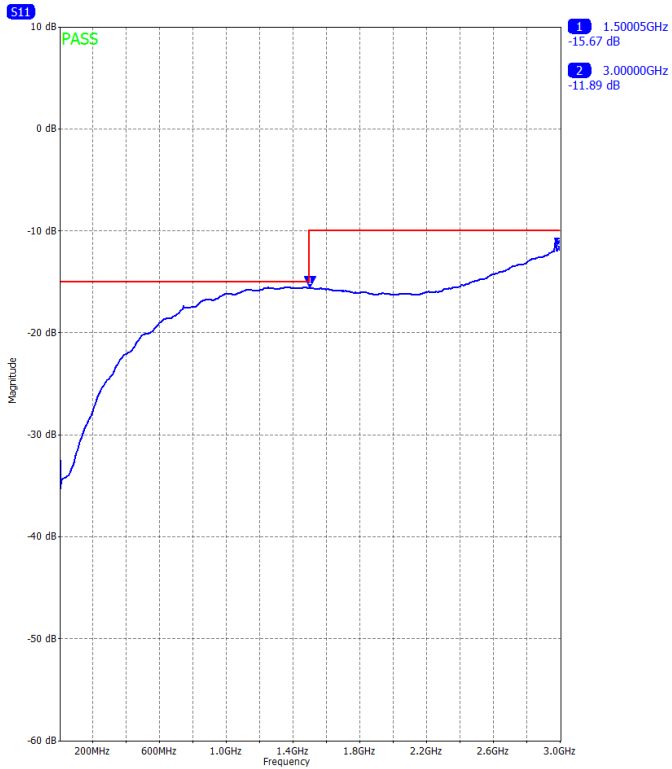
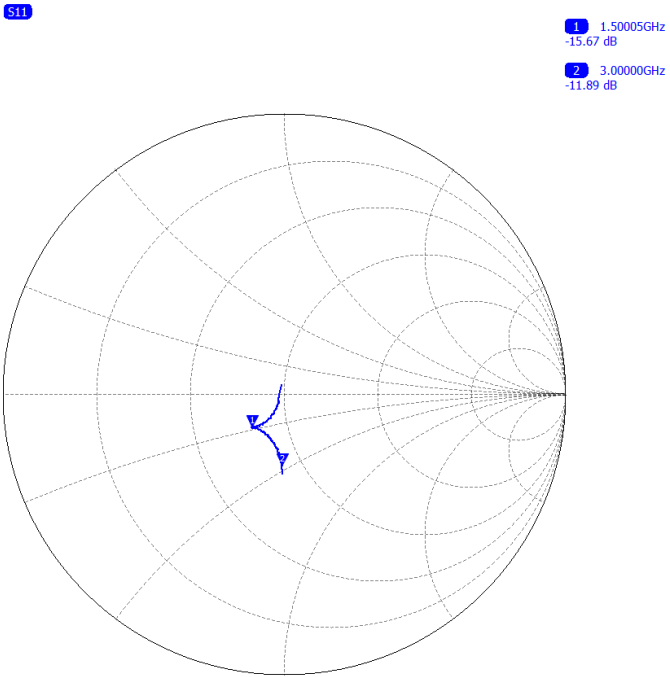


# Results

## Return Loss measurement results

### Procedure:

- 1) Calibrate the USB VNA using Dual-HDBNC 75ohm connectors.
- 2) Test upper and lower return loss performance
- 3) Verify performance meets SMPTE limits  
Less than -15dB to 1.5GHz and less than -10dB to 3GHz.

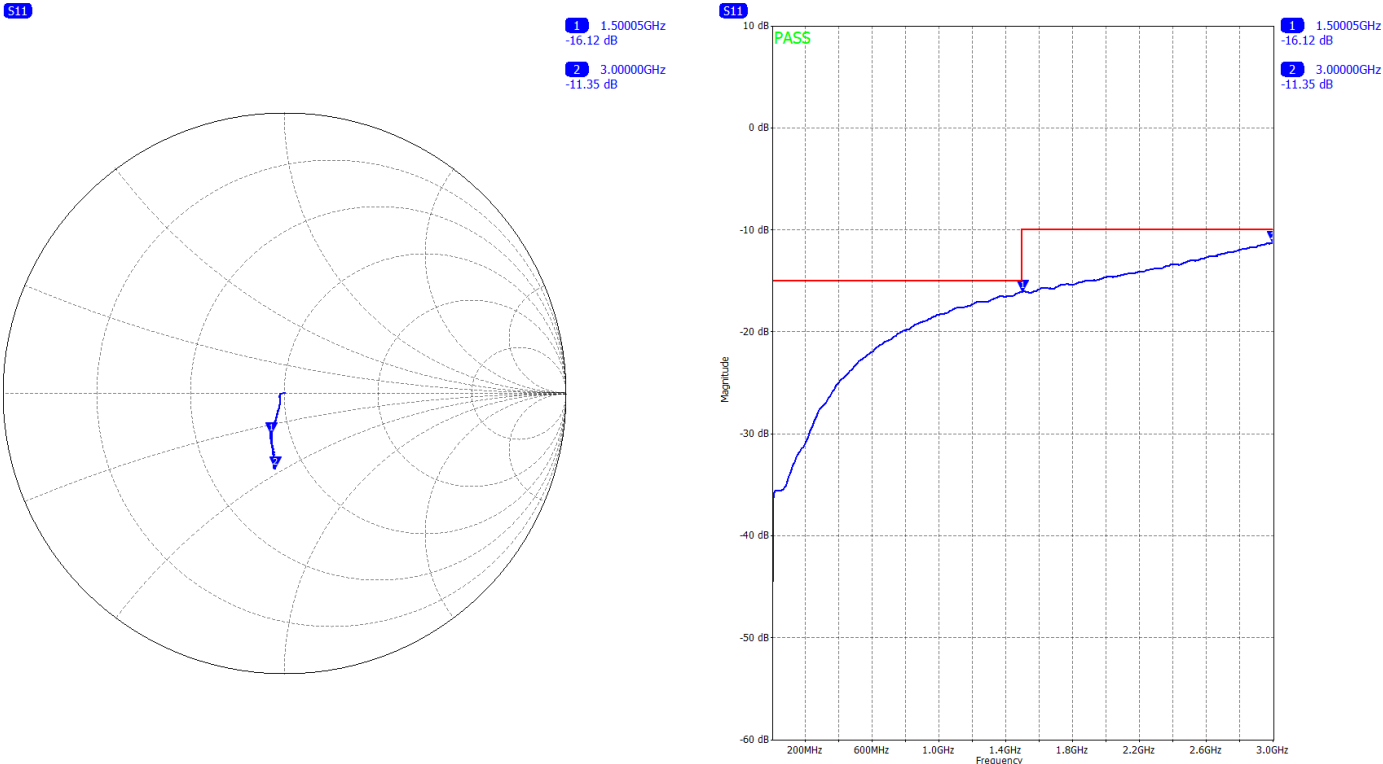


Lower BNC position Smith Chart impedance plot and return loss from 100kHz to 3GHz sweep.



# Results

## Return Loss measurement results (cont.)



Upper BNC position Smith Chart impedance plot and return loss from 100kHz to 3GHz sweep.

# Contacts

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# info

<b>Useful References</b>	<b>Description</b>
<b>Open Protocol Operation.pdf</b>	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.
<a href="https://tslproducts.com/media/1959/tsl-umd-protocol.pdf">https://tslproducts.com/media/1959/tsl-umd-protocol.pdf</a>	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. <ul style="list-style-type: none"> <li>• UMD V3.1 is the TSL basic industry standard serial protocol.</li> <li>• UMD V4.0 extends the basic V3.1 protocol to add full control of text and tally lamp colours.</li> <li>• UMD V5.0 is a new protocol, specifically aimed at multiviewer display devices, over Ethernet.</li> </ul>
<b>SMP-MV16/32/48 Technical and Operating Manual</b>	Chromatec document covering operation 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.

