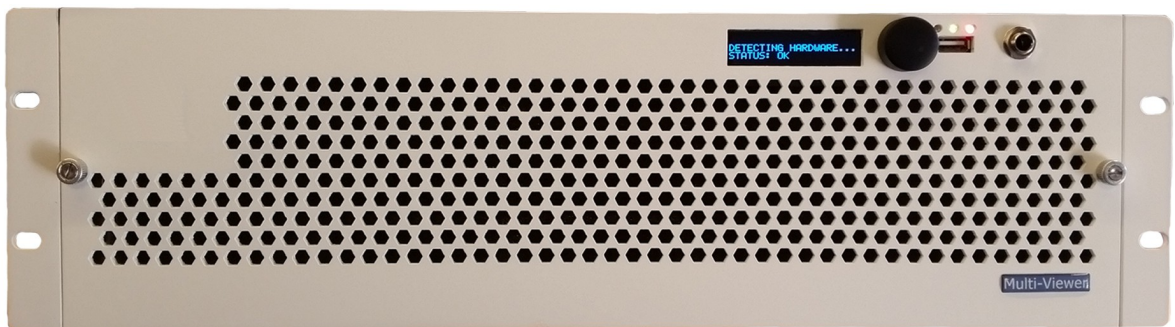


Extracts from User guide

SMP-xx/SMP-xx-R *1 RU Modular Platform*



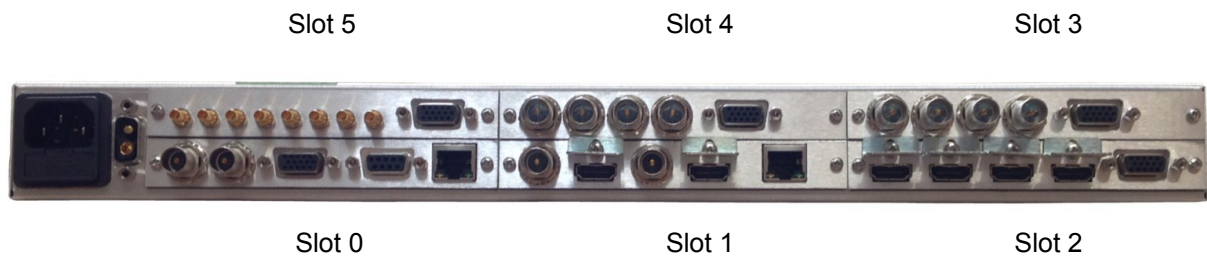
MP-xx *3 RU Modular Platform*



Connector I/O

SMP-xx frame – This has six rear slot locations. Slot 0 is reserved for the MPX-RNG network rear in all applications and any other compatible rear will not locate correctly into this slot location. Likewise, the MPX-RNG rear cannot be inserted into any other slot location.

Slots 1-5 must then be populated from Slot 1 onwards with no gaps. Blanking plates are available to cover unused slot locations.



SMP-xx frame rear slot locations

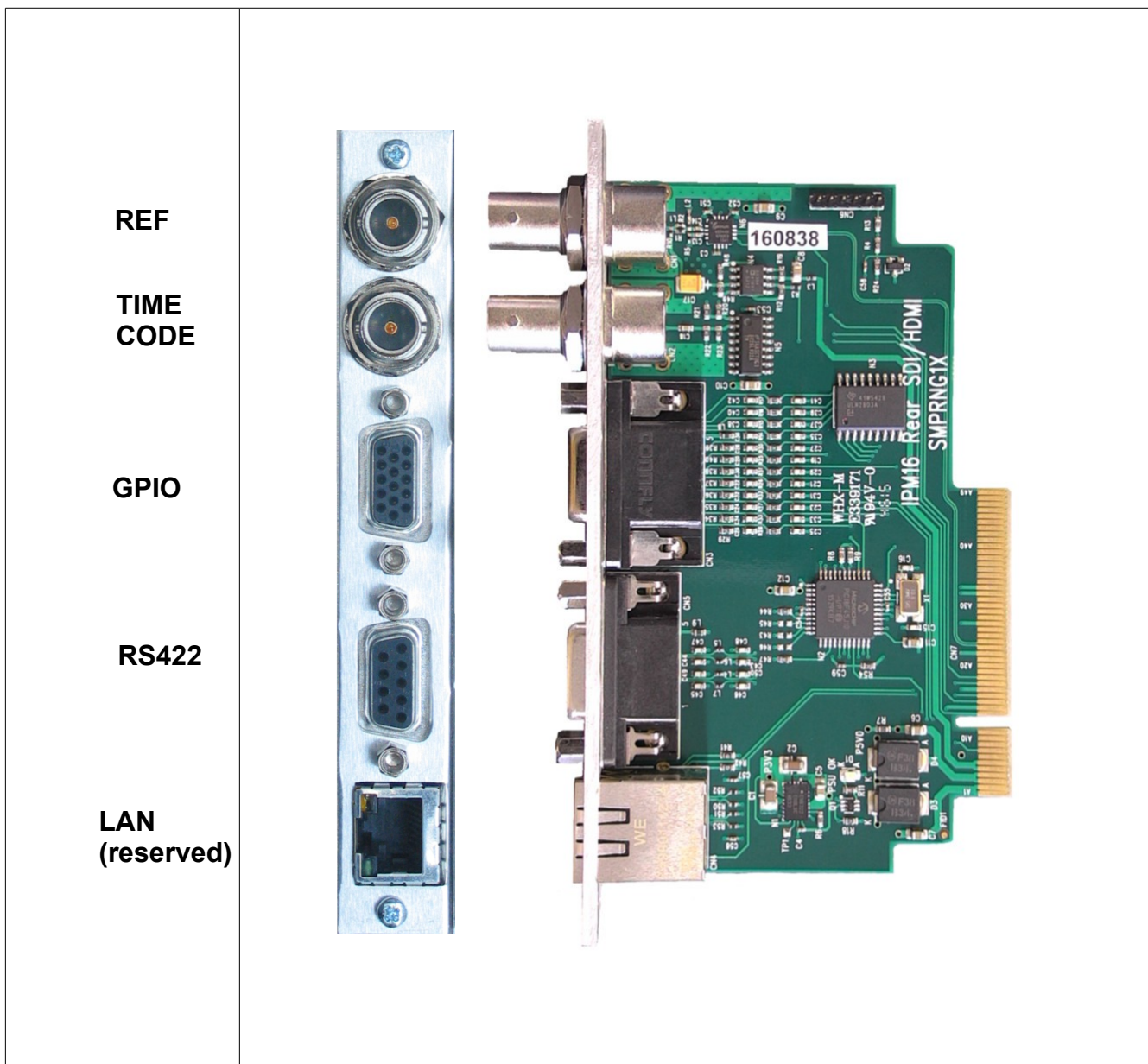
For the **SMP-xx** frame, any main card slot that is occupied must have a compatible rear fitted in the corresponding rear slot.

Network rears

MPX-RNG (network) rear – This is the only rear that has a different mechanical format between the 1U and 3U Frames. The signal connectivity is identical, the only difference is the 3U version has a wider rear plate. All other rears are identical in form and functionality and can be used in either sized frame.

Audio meter browser control is **only** via the LAN port on a video output rear such as the **RMP-MVC, RMP-DV2SD2** or **RMP-MVC2**.

SMP-xx 1U frame – Looking from left to right, the RNG rear uses coaxial BNC connectors for reference and timecode inputs. The global GPI I/O connector is a high density 15 way female 'D' connector and the serial port is a 9 way female 'D' connector. A standard RJ45 connector is provided as an **auxiliary LAN** connection.

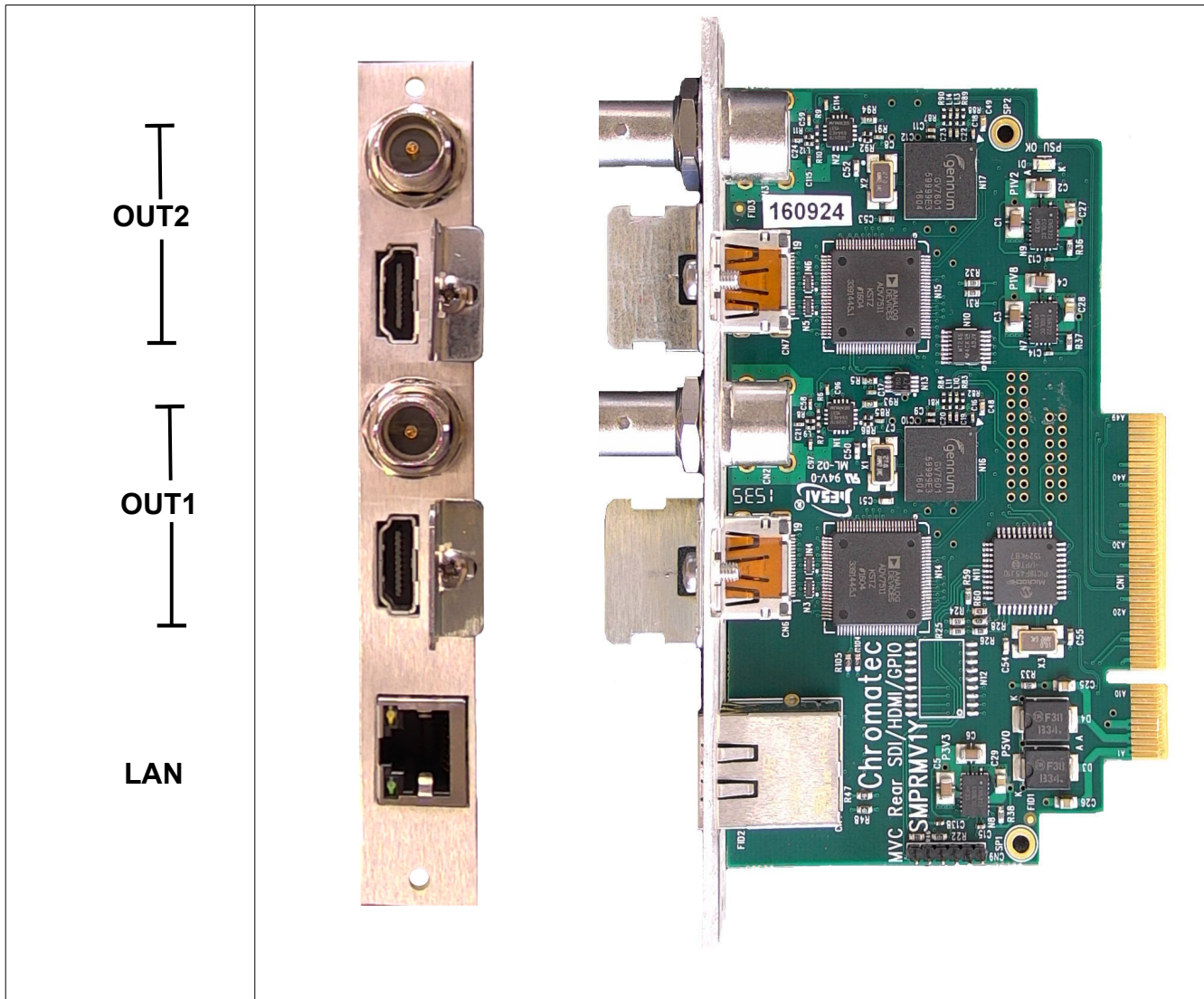


1U SMP-xx **MPX-RNG** rear

Output rears up to 4K resolutions

Three different audio meter video/audio output rears are available; the **RMP-MVC**, **RMP-DV2SD2** and the 4K capable **RMP-MVC2** offering a variety of connector types and signal resolutions.

RMP-MVC rear – This is a 2K output rear fitted with two Type A HDMI connectors and two coaxial BNC connectors. **Two independent video outputs are provided via each HDMI connector**, each of which is paired with a BNC providing a slaved SDI output with embedded audio. A standard RJ45 connector is provided as a LAN connection from which the audio meter browser control application is accessed.

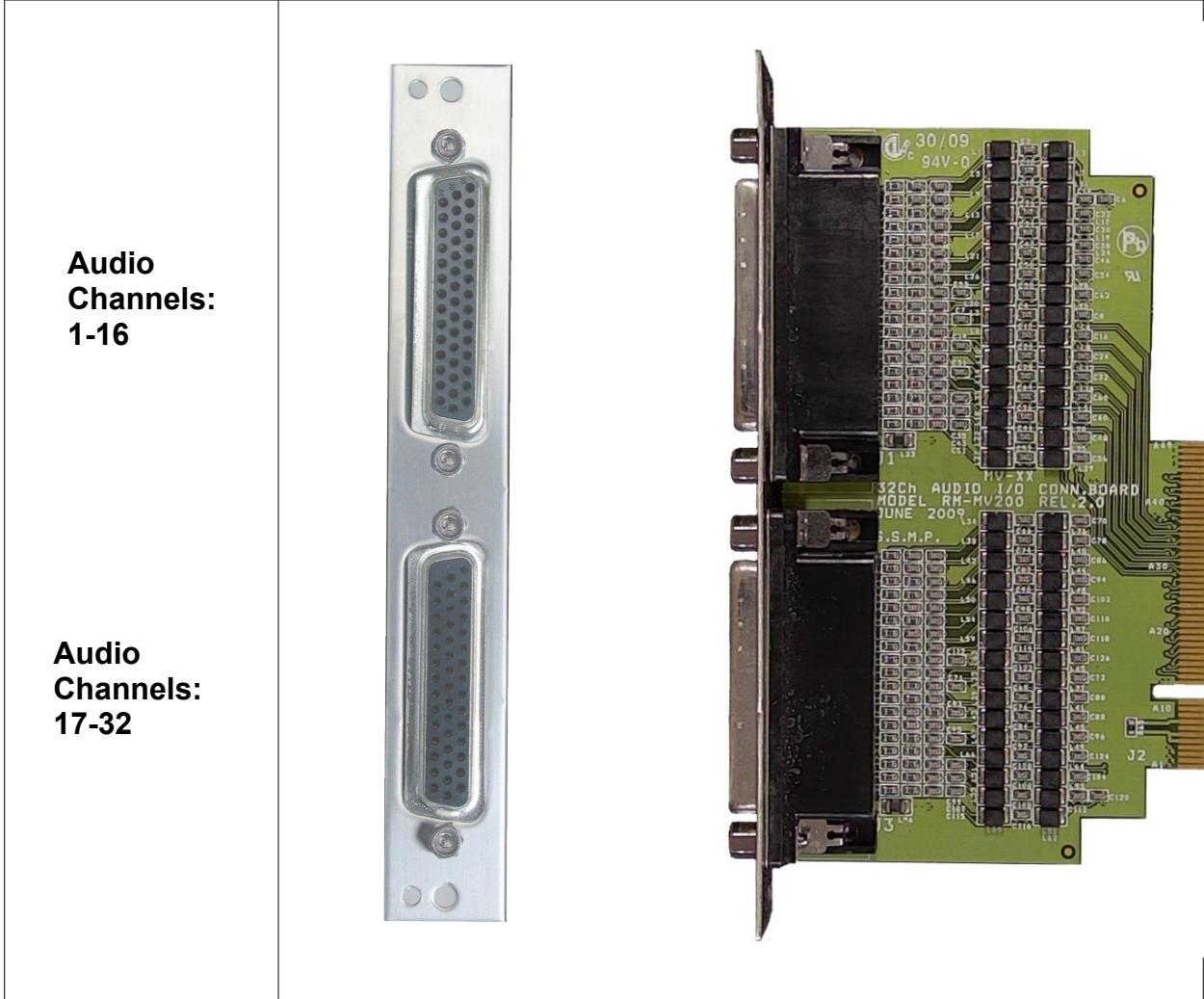


RMP-MVC rear (shown here with H-Lok HDMI retention brackets)

NOTE: Please see [Appendix G](#) regarding the **HDMI cable retention** capability for safely securing HDMI cables against accidental removal.

Audio rears

RMP-A32 rear - Audio **input** or **output** rears are fitted with two high density 44 way female 'D' connectors supporting a total of 32 audio input channels (16 channels/connector). With the appropriate interface cable, the audio rear is capable of accepting analogue or digital audio signals.



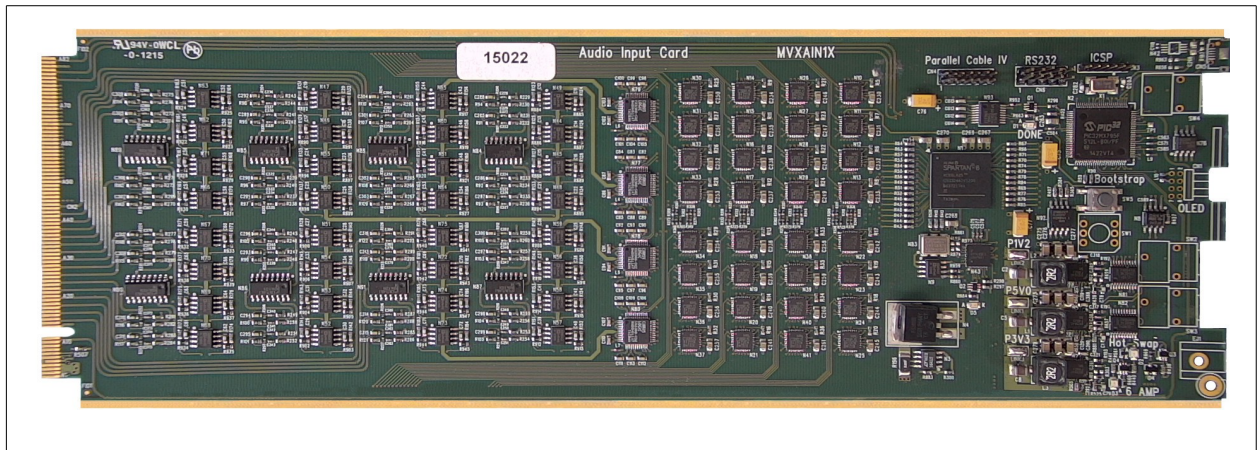
RMP-A32 rear

Audio inputs

Audio levels may be displayed using up to 16 bargraphs in each tile, either superimposed on each video image or outside active video. Audio data can be extracted from all incoming embedded audio (when using SDI or HDMI inputs).

External audio can also be input to the frames using specific audio input cards available in three formats:

- **AIPxxA** analogue only audio input cards (up to 32 channels)
- **AIPxxD** digital only audio input cards (up to 32 AES/EBU pairs) with sample rate conversion for maximum flexibility
- **AIP32AD** analogue and digital audio input cards (up to 32 channels/AES/EBU pairs)



AIP32AD

Multiple instances of these audio input cards may be installed, but please see the [Configuration rules](#), in the Hardware Configuration section at the end of this manual, for the optimum placement of **audio input cards** in the audio meter chain.

To allow for maximum system flexibility, the analogue and digital audio input cards are available in the following input configurations:

Analogue audio input card	Max. no. of channels supported	Digital audio input card	Max. no. of AES pairs supported (<i>Channels</i>)
AIP08A	8	AIP08D	8 (16)
AIP16A	16	AIP16D	16(32)
AIP32A	32	AIP32D	32(64)

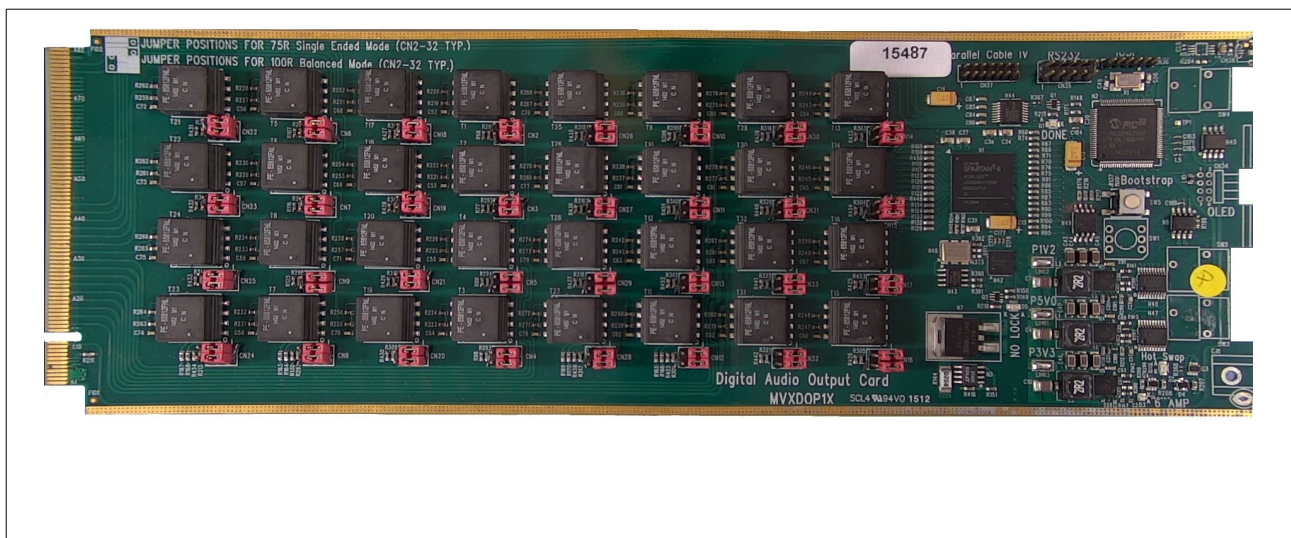
An **AIP32AD** card is also available supporting a user selectable mixture of analogue and digital audio inputs up to a maximum of 32 channels/AES pairs.

NOTE: Digital audio cards have twice the effective channel capacity of analogue cards because digital audio is transmitted as AES pairs comprising two discreet channels (though these are often just the left and right stereo components).

Audio outputs

A number of options are available for monitoring all incoming audio streams:

- A front panel mounted 6.35mm phono socket allows two channels of selected audio to be monitored through a pair of connected stereo headphones. Channel selection can be via the web browser interface or by using the front panel mounted OLED display and selection knob.
- Embedded audio is available via the HDMI and SDI outputs on each RMP-MVC rear module and can be monitored with a suitable display or audio de-multiplexer.
- External audio output is also possible by installing specific audio output cards available in two formats: the **AOPxxA** analogue audio output card capable of supporting up to 32 analogue channels, and the **AOPxxD** digital output card that can support up to 32 AES/EBU pairs.



AOP-32D

To allow for maximum system flexibility, the analogue and digital audio output cards are available in the following input configurations:

Analogue audio output card	Max. no. of channels supported	Digital audio output card	Max. no. of AES pairs supported (<i>Channels</i>)
AOP08A	8	AOP08D	8 (16)
AOP16A	16	AOP16D	16(32)
AOP32A	32	AOP32D	32(64)

NOTE: Digital audio cards have twice the effective channel capacity of analogue cards because digital audio is transmitted as AES pairs comprising two discrete channels (though these are often just the left and right stereo components).

Please see [Appendix F](#) for an explanation of how to set the digital audio output cards up for balanced/unbalanced output terminations.

NOTE: Dolby E cannot be decoded and monitored. The sources of audio that can be monitored are non-Dolby SDI embedded in, HDMI embedded in, and PCM or analogue audio in from the AIPxxA/D audio input cards.

The total number of external audio outputs supported per audio meter instance is 96 analogue channels or 96 AES pairs. Combinations of analogue and digital outputs can be 32 analogue channels / 64 AES pairs or 64 analogue channels / 32 AES pairs. If an analogue/AES combination is required then both AOPxxA and AOPxxD cards must be fitted. The only valid placement combinations of the audio output cards (in any order, immediately to the left of the MPX-MVC card, as viewed from the rear) are:

- **1 x AOPxxA cards** – for 32 analogue output channels
- **2 x AOPxxA cards** – for 64 analogue output channels
- **3 x AOPxxA cards** – for 96 analogue output channels
- **1 x AOPxxD card** – for 32 AES outputs (64 audio channels)
- **2 x AOPxxD card** – for 64 AES outputs (128 audio channels)
- **3 x AOPxxD card** – for 96 AES outputs (192 audio channels)
- **1 x AOPxxA + 1 x AOPxxD card** – for 32 analogue and 32 AES outputs
- **1 x AOPxxA + 2 x AOPxxD card** – for 32 analogue and 64 AES outputs
- **2 x AOPxxA + 1 x AOPxxD card** – for 64 analogue and 32 AES outputs

Please see the [Configuration rules](#), in the Hardware Configuration Section at the end of this manual, for the optimum placement of **audio output cards** in the audio meter chain.

Audio I/O rear connector pin assignments

Interface cable 1	Interface Cable 2	+VE	-VE	GNDs
Ch 1/AES 1	Ch 17/AES 17	15	30	
Ch 2/AES 2	Ch 18/AES 18	14	29	
Ch 3/AES 3	Ch 19/AES 19	13	28	
Ch 4/AES 4	Ch 20/AES 20	12	27	
Ch 5/AES 5	Ch 21/AES 21	11	26	
Ch 6/AES 6	Ch 22/AES 22	10	25	
Ch 7/AES 7	Ch 23/AES 23	9	24	
Ch 8/AES 8	Ch 24/AES 24	8	23	
Ch 9/AES 9	Ch 25/AES 25	7	22	
Ch 10/AES 10	Ch 26/AES 26	6	21	
Ch 11/AES 11	Ch 27/AES 27	5	20	
Ch 12/AES 12	Ch 28/AES 28	4	19	
Ch 13/AES 13	Ch 29/AES 29	3	18	
Ch 14/AES 14	Ch 30/AES 30	2	17	
Ch 15/AES 15	Ch 31/AES 31	1	16	
Ch 16/AES 16	Ch 32/AES 32	33	34	
Grounds	Grounds			31, 32, 35-44 inc.

Interface Cable 1 Female 44 way 'D' connector audio I/O assignments channels 1 – 16

Interface Cable 2 Female 44 way 'D' connector audio I/O assignments channels 17 – 32

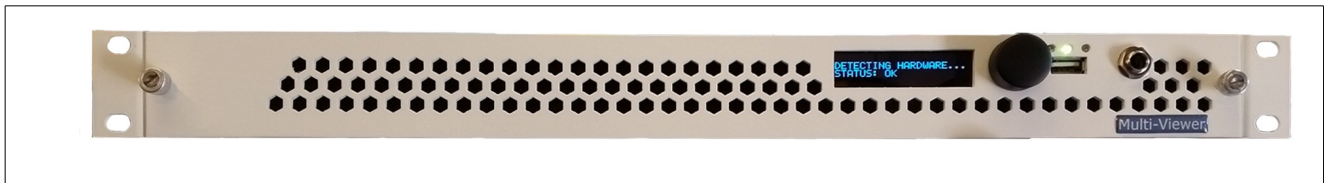
AES/EBU inputs or outputs may be selected per pair to be either balanced or unbalanced, the settings are set via switches on the audio card (see [Appendix F](#)).

Operation

Front panel and card removal/installation

The front panels for both the 1U and 3U frames incorporate an OLED display and selection knob for detailed status updates, a USB type A socket, three LED indicators indicating general chassis functionality and a 6.35mm headphone socket for audio monitoring.

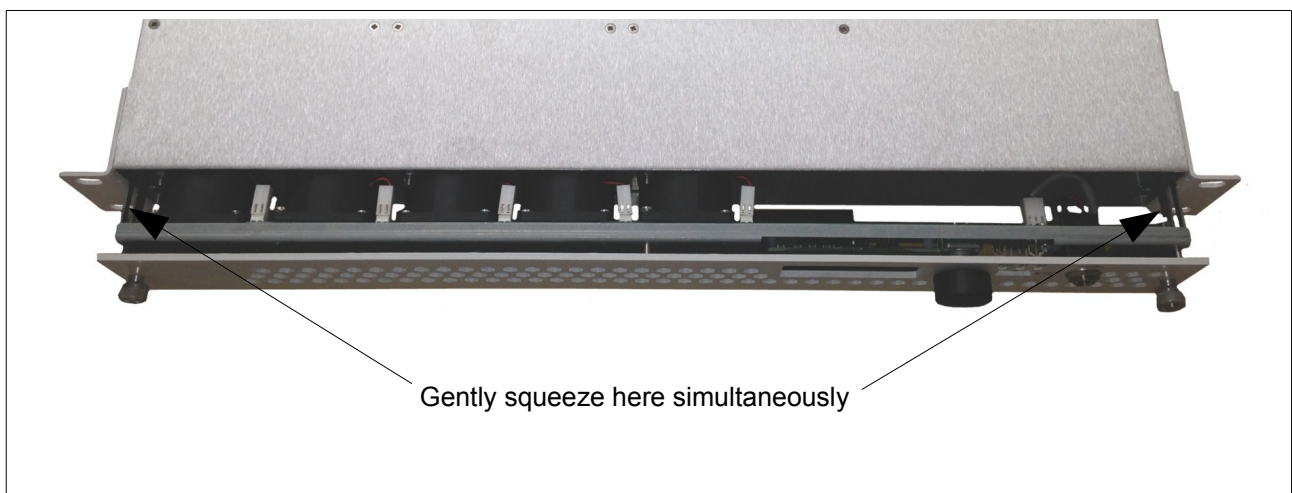
SMP-xx(-R) 1U frame - When the front panel is shut, it is securely held in place by two spring-loaded balls on either side of the panel which locate into matching indents in the chassis frame.



SMP-xx(-R) front panel

The front panel is mounted on an assembly that is fitted with a pair of short rails either side. Each rail engages a small pivot on the main chassis that retains the front panel when it is first removed from the chassis by **pulling** on the two silver knurled knobs mounted on either side of the front panel (Unlike the MP-xx, turning these knobs has no effect, they are designed to be pulled).

Complete front panel removal is then accomplished by gently squeezing the rails inwards; this should detach the rails from the pivots. To refit the front panel, the reverse procedure is carried out. The MPX-NET network card has an extended finger section on the front edge of the card which locates into a connector on the rear of the front panel. As the front panel is shut, the retaining rails should allow the MPX-NET card fingers to slide easily into this connector. If excessive resistance is met when shutting the front panel, please check for obstructions.

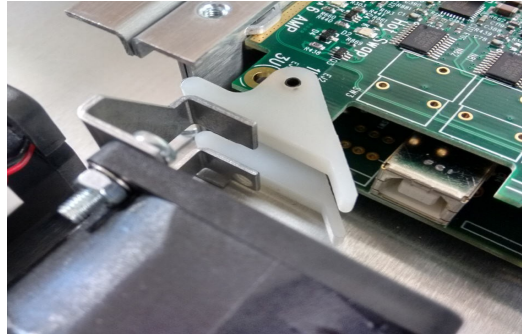


SMP-xx(-R) 1U frame front panel removal

NOTE:When the 1U front panel has been detached, please be careful when removing it completely from the chassis.

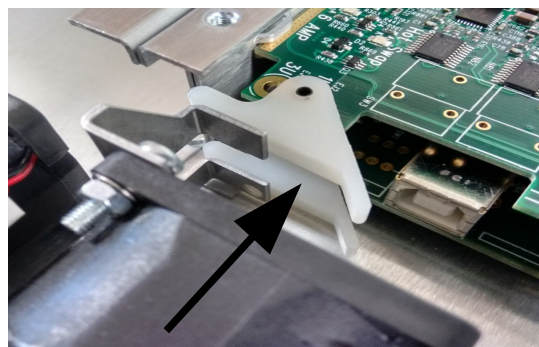
Card retaining brackets are attached to three of the fans. These rest against the card ejectors when the front panel is completely closed.

They are designed to stop the main cards from moving during transport of the chassis by resting gently against the card ejectors as shown in the following image.



SMP-xx(-R) main card retaining brackets

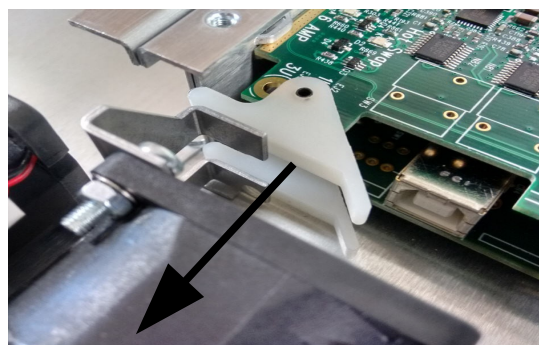
To install a card into the chassis, please push forward on the centre of the card ejector as shown in the image below. The card will require a firm push to fully seat home.



Push here

SMP-xx(-R) main card installation

To remove a card, simply pull the ejector back from the tip in the direction of the arrow in the image below (remove front panel first!).



Pull here

SMP-xx(-R) main card removal

Initial setup

A frame is supplied with the factory default IP addresses:

MPXNET card: 192.168.0.120 – note this IP interface is reserved for firmware updates

MPXMVC card: 192.168.0.121.

The LAN port on the back of the MPX-MVC card must be used for controlling the audio meter. Currently, the only purpose for the LAN port on the back of the MPX-NET card is for updating the MPX-NET's firmware.

To aid with initial set-up, or in the event that the frame IP address is unknown, the IP address can be checked or changed using the front panel OLED display. Cycle through the menu using the knob and edit the IP settings if necessary.

Alternatively, a simple PC utility is available that searches for networked frames and enables their IP address to be revealed and changed if need be.

The currently set IP address is always indicated on the display output during the boot cycle. However, this may not be visible should the resolution of the video output from the frame not be compatible with the display device at that time.

All factory default settings, including the default IP address, may be recovered by means of a keyboard connected to the frame or REMOTE-mv USB ports (see section on keyboard operation).

NOTE: If installing new audio meter units into an environment with existing units, check all units are running the latest firmware release. Improvements or bug fixes in the latest firmware release may result in the operation of a unit being different from those running on older firmware.

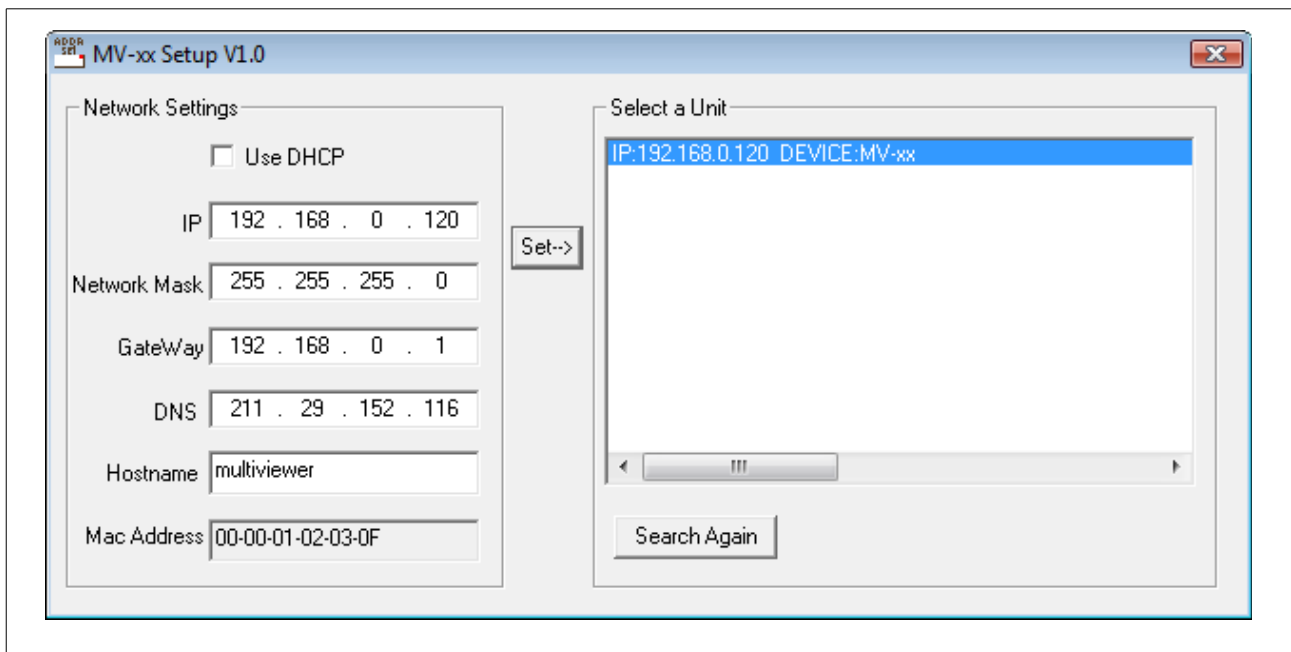
Network settings

These settings only need to be manually entered if DHCP is not to be used. This would be required for a network that uses fixed IP addresses and does not rely on a DHCP server to allocate them automatically. The IP address must be unique on the network. Please see your system administrator if these details are required.

IP settings can be configured from the front panel OLED menu, or via the LAN using the audio meter web interface or the MVSetup utility (PC only).

If the audio meter is currently set to an IP address that cannot be reached by a PC's current network settings then the web interface will not work – in that case the front panel OLED menu is the best option for setting up the network. Alternatively the PC MVSetup utility can be run. This allows any audio meter with any IP address to be found on the network and have its network settings configured.

As shown below, select the unit that is to be configured from the list on the right and enter the new network settings on the left. Then press the **Set** button. This will ask for a password, which will be **smv**, unless the root password on the audio meter has been changed.



NOTE: Only the LAN port on the [RMP-MVC](#) rear card (or MVC derivatives [RMP-DV2SD2](#) and [RMP-MVC2](#)) can be used to access the browser control.

Uploading files

Graphics files

Graphics files may be uploaded to the frame and assigned as tile objects for display. They might be used for channel identification purposes. Approximately 200MB is available for bitmaps and any number of bitmaps may be uploaded as long as this limit is not exceeded.

Graphics files to be stored in the frame must be in the .png format. Uploading the files is performed using a PC connected to the RMP-MVC rear LAN port directly, or over a network.

- 1) Establish communication with the frame by using Windows Explorer to search for the IP address of the frame: <ftp://192.168.0.120>, or whatever the current IP address is set to.
- 2) Right click in the right hand side of the Windows Explorer page and select 'Login As...' from the menu. The FTP server Log On As window appears. Log in with the user name 'root', using the password 'smv'. The complete list of currently loaded files is revealed.
- 3) Copy the graphics file or files to the clipboard and paste them into the right hand side of the Windows Explorer page.
- 4) The file transfer will begin.
- 5) When the upload is complete, restart the browser to update the file list.

Configuration files

Configurations are saved as .xml files. Any that have been saved will appear within the list of files that are revealed when logging into the frame, in the layouts directory (as described above). From here, they may be copied and saved to a PC for upload to another audio meter. The upload procedure is identical to that used for uploading graphics files.

NOTE: The IP addresses of the frame and the PC must be in the same range. If necessary, the IP address of the frame can be changed using the setup utility, or within the on-screen configuration menu if using the REMOTE-mv.

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Specification

Main Frame (SMP-xx(-R) and MP-xx)

Signal Inputs	
Video	<p>VIP3 – 4 video inputs per card:</p> <p>SDI input standards supported:</p> <p>SD-SDI (SMPTE259M 270Mb): 525/60, 625/60</p> <p>HD-SDI (SMPTE292M 1.5Gbs).</p> <p>3G-SDI (SMPTE424M Level A Mapping 3Gbs)</p> <p>SD-Analogue: Composite (CBVS 1V P-P) available on certain rears (please see the Summary of rear connector modules table): PAL, PAL-M, NTSC, NTSC-4.43, SECAM</p> <p>HDMI input standards supported:</p> <p>SVGA (800x600 @ 60Hz)</p> <p>XGA (1024x768 @ 60Hz)</p> <p>SXGA (1280x1024 @ 60Hz)</p> <p>UXGA (1600x1200 @ 60Hz)</p> <p>1400x1050 @ 60Hz</p> <p>852x480 @ 60Hz</p> <p>1280x720 @ 50,60Hz</p> <p>1366x768 @ 60Hz</p> <p>960x540 @ 60Hz</p> <p>720x480 @ 60Hz</p> <p>1920x1080 @ 50,60Hz</p> <p>1920x1080 @ 25,30Hz (interlaced)</p> <p>In addition to the above, the HDMI receivers will handle any resolution with a clock frequency in the range of 25MHz to 165MHz.</p> <p>VIP4 – 8 video inputs per card:</p> <p>SDI input standards supported:</p> <p>SD-SDI (SMPTE259M 270Mb): 525/60, 625/60</p> <p>HD-SDI (SMPTE292M 1.5Gbs)</p> <p>3G-SDI (SMPTE424M Level A Mapping 3Gbs)</p> <p>6G-SDI (SMPTE ST-2081 6Gbs). Inputs 1, 3, 5 and 7.</p> <p>12G-SDI (SMPTE ST-2082 12Gbs) using quad-link or 12G direct using specific rears (please see the Summary of rear connector modules table). Up to two 12G inputs/VIP4.</p> <p>SD-Analogue: Composite (CBVS 1V P-P) available on certain rears (please see the</p>

[Summary of rear connector modules](#) table): PAL, PAL-M, NTSC, NTSC-4.43, SECAM

Additional rears:

Fibre rear for SDI video at 270Mbps, 1.5Gbs and 3Gbs, 6Gbs and 12Gbs SDI (discrete fibre inputs or single fibre with CWDM)

Embedded audio	Embedded audio derived from SDI (up to 16 channels per source) HDMI Dolby E meter segment metadata level metering (optional)
External audio	Via optional audio input cards: AIPxxA - Analogue (up to 32 channels/card) AIPxxD - AES/EBU (up to 32 pairs (64 channels)/card with SRC (32kHz-192kHz re-sampled to 48kHz) AIP32AD – Combined analogue and digital audio input card SMPTE-12M unbalanced. >0.5Vpp
LTC	
Signal Outputs	Note: This table is also available in a printer friendly version in Appendix H
Video	2 x independent HDMI/DVI each with slaved SDI outputs Processing delay varies from 2-3 fields for interlaced video inputs, 2-3 frames for progressive video inputs, depending on timing relationship between the input and output..

The following Standards are supported using the MPX-MVC output card with the VIP3 (please see the [Video outputs up to 4K](#) section for more details on card/rear combinations available)

Standards supported	HDMI output	With embedded audio	Slaved SDI output	With embedded audio
720p50 (1280x720@50Hz)	✓	✓	✓	✓
720p59.94 (1280x720@59.94Hz)	✓	✓	✓	✓
720p60 (1280x720@60Hz)	✓	✓	✓	✓
1080p50 (1920x1080@50Hz)	✓	✓	✓	✓
1080p59.94 (1920x1080@59.94Hz)	✓	✓	✓	✓
1080p60 (1920x1080@60Hz)	✓	✓	✓	✓
XGA (1024x768@60Hz)	✓			
SXGA+ (1400x1050@60Hz)	✓			
1600x1200@60Hz	✓			