The Complete Multi-Viewer

- Available as a single multi-viewer (up to 64 video inputs) or a dual multi-viewer (up to 2 x 32 video inputs)
- Analogue & digital video up to HD 1080p, 3 Gbps
- Extremely powerful audio monitoring capability
  - 2 x DVI-I outputs per multi-viewer
    - Fibre input capability
    - Easy browser set-up
Introduction

The MV-xx has been designed to provide a flexible and cost-effective way of combining and displaying multiple images (or “tiles”) on a single or dual video display device and is aimed specifically for use in control room and studio environments.

The MV-xx is extremely versatile providing considerable user set-up capability. Tile content, size, labels and positioning may be changed together with the background to suit any application. Clocks, timers, time-code readers, UMDs, tallys and event indicators may easily be displayed when required.

The browser interface has been designed to make the MV-xx really easy to use and enables all parameters to be quickly adjusted or pre-set configurations to be recalled, or played out as scheduled events. In addition there is an optional remote panel (REMOTE-mv) which has ten buttons to enable pre-set configurations to be instantly recalled.

The MV-xx may be used simply to increase the number of images that can be shown on one display device or it is equally suited as the hub of a sophisticated studio monitoring and control centre using several display devices. This provides the opportunity for immense creativity within the studio environment.

Of course, the MV-xx’s dual outputs will allow the chosen programme content to be viewed in different locations.

Video quality is maintained throughout and the unit can handle virtually any video format up to HD 1080p, 3 Gbps. Optional input cards for fibre connection are available for 270Mbs, 1.5Gbs and 3Gbs SDI/HD-SDI.

Differing frame rates can be displayed at the same time, so one input can be 50Hz and other 60Hz. To achieve this feature, frame "add and drop" is used and the system rate is controlled by the reference signal or selected input.

The MV-xx has drawn on Chromatec’s audio metering expertise by providing extensive audio metering and monitoring support as a standard feature of the unit. Up to 16 channels of audio may be displayed per tile, superimposed as bargraphs on the video or placed outside the video. The audio source may be embedded or external analogue, AES/EBU or Dolby® depending on the optional cards selected. Most international standard scales and ballistics (including Loudness) are supported and may be set by the user.

The MV-xx is physically simple to configure. There are two frame types; one uses the whole frame for one multi-viewer with up to 64 video inputs; the second has a split frame providing two separate multi-viewers, each with up to 32 video inputs. For each frame version, there are two types of video input card, HD or non-HD capable. These may be mixed if required and HD cards added at a later date, providing an easy upgrade path. There is a wide choice of rear connector modules, depending on the video and audio formats used.
Studio/OB Van

Display of channel or programme logo

Metering of embedded audio can be superimposed inside or outside the picture area

Time-code and other information can be displayed

Each tile is infinitely variable in size & can be positioned anywhere

Analogue or digital clock

Optional Second Display Device

Display Device

Safe area markers can be added to any picture

Coloured tile border may be used as on-air or system tally

External audio bargraph display from Chromatec AM-xx via DVI-I input

Under monitor display text can be within or outside of the picture area

3U Multi-viewer Single

Auto Cue Computer

Audio Mixer

Video Switcher

Programme

External Audio

Preview

Tally

Up to 14 Video Inputs

Time Code

Audio Monitor

Server

VTR

Camera

Graphics

Display DVH = Navy Blue

Video = Red

Audio = Yellow

Tally = Green

Time Code = Purple

Computer DVI = Dark Green
The MV-xx is ideal for use in transmission control rooms, studio galleries, OB vans, audio control rooms, and post production suites. In fact, any application that benefits from a single or multi-point display reference.

In addition to allowing high-quality video images to be viewed, the MV-xx will also:

- Generate safe area markers
- Generate real-time clocks or timers
- Read and display time-code
- Read and display analogue teletext for closed captioning
- Read and use WSS (wide screen signalling for aspect ratio control)
- Store and display bitmap graphics/images
- Generate audio bargraphs together with phase indication
- Generate alarm indicators

The MV-xx has full alarm functionality together with scheduling capabilities for both video and audio detection criteria, all of which may be individually set by the operator.

The MV-xx can be used as a multi-channel audio matrix and converter from analogue, AES digital or embedded audio to analogue or AES digital audio in any combination, depending on the audio I/O cards fitted.

The number of audio inputs is only limited by the number of audio input cards employed or embedded audio sources available in the system. The maximum number of outputs is 196 channels (using 6 x output cards). Any audio source may be routed to single or multiple outputs.
Television & Radio
Master Control (Transmission)

Monitoring of radio channels with alarm indication via a flashing tile border, or an indicator below the bargraph display.

Dual Multi-viewer
An alarm for audio, subtitles or other signal failure can be indicated by a flashing tile border.

Tiles can display video images in any aspect ratio.

Station Time Code/Clock
Audio Monitor
Off-Air Receivers TV
Off-Air Receivers Radio

Channel A
3U Multi-viewer Dual
Channel B

Station Scheduling Computer
Station Automation Computer
Main O/P
Backup O/P
TV Channel One
Main O/P
Backup O/P
TV Channel Two
Main O/P
Backup O/P
TV Channel Three
Main O/P
Backup O/P
Radio Channel One
Main O/P
Backup O/P
Radio Channel Two
Options

POWER-xx

This unit is an external backup power supply housed in a separate 1U frame. It provides power to the MV-xx if the internal power supply module fails. A failed internal power supply module can be hot swapped while the MV-xx is running from POWER-xx.

REMOTE-mv

This unit provides remote control of the MV-xx. It is housed in a 1U frame and may be connected via LAN or RS422. The front panel has six menu navigation buttons, ten illuminated configuration store/re-call buttons, a USB-2 port, MV-xx power and fan status indicators.

AM-xx

The Chromatec AM-xx is a networkable multi-channel audio metering device, housed in a 1U frame. It can be fitted with analogue, AES/EBU and Dolby Digital audio input cards and has capacity for 64 channels. The AM-xx may serve as an auxiliary audio interface for the MV-xx by either passing audio metering data via LAN to the MV-xx, or assigning the DVI-I bargraph output from the AM-xx to a tile on the MV-xx display. This is useful when other MV-xx configuration priorities leave insufficient space for direct audio interfacing.
Technical

Aspect ratio detection is via VBI flags. Picture switching is controlled via AFD and WSS flags. Safe area marker generation is available on all inputs.

Analogue teletext can be read for closed captioning.

Tile borders can be colour coded for tally and alarm indication. UMD text may be entered via an external keyboard, via the LAN using browser software, or via the RS232/422 port using TSL/Image Video protocols. GPI Tally inputs are also provided. Control protocol is supported for SeirraVideo routers. Clock/date display data can be derived from several sources. There is a set priority that determines which source is used.

When there is LTC present, this becomes the exclusive reference for the clocks, regardless of how much it differs from the RTC time. Should there be no LTC present, the frame will search the network for a NTP server in the nearby internet region (pool.ntp.org). If a server is found, the clock reference will be taken from it.

In the absence of any external clock reference, system time is used. A battery on the CPU board ensures that time data is retained should the unit be powered down.

For each video input, it is possible to display both LTC and VITC.

Bitmap BMP and PNG files can be uploaded via the LAN and stored for use as station idents, etc. At least 32Mb is available for this purpose.

Audio sources can be de-embedded from HD-SDI or SDI inputs, or derived separately from analogue, AES/EBU, Dolby Digital or Dolby E sources, depending on the optional cards selected. The comprehensive audio metering is accurate, flexible and in accordance with international industry standards.

External devices, such as the Chromatec AM-xx may be employed to increase the flexibility of the system when handling large numbers of external audio sources. Four pairs of analogue audio monitor outputs are provided, each pair having a selectable delay for lip-sync compensation.

Comprehensive alarms are included as standard for a wide range of signal fault conditions. These can be shown as static or flashing tile borders and are sent externally via the GPI I/O or the LAN. SNMP is also supported.

Alarm status received via LAN from external devices such as AM-xx can also be displayed.

An assignable GPI I/O provides external alarm signalling and also serves to recall preset video channels or screen configurations. Control can be via the LAN using Chromatec browser software, or via the optional REMOTE-mv control panel. For text insertion and additional functionality, a PC keyboard may be connected to the USB-2 socket on the front or rear of the frame. Genlocking is via the SDI colour black or HD tri-level sync input. Alternatively, any chosen video input may be assigned as the reference source.

System integration with a number of other manufacturers’ products is possible, including video switchers.

Please visit the MV-xx section of the Chromatec website for further details.
Configuration

Video Input Cards

Option 1:
Composite/S-Video/YUV/RGB/DVI-I/SDI
(any mix of 4 channels)

Option 2:
Composite/S-Video/YUV/RGB/DVI-I/
SDI/HD-SDI (any mix of 4 channels):

Option 3:
Fibre for SDI video at 270Mbs, 1.5Gbs
and 3Gbs SDI/HD-SDI (discrete fibre
inputs or single fibre with CWDM)

Single multi-viewer Up to 64 video inputs
Dual multi-viewer Up to 2x32 video inputs

Audio Inputs:
Embedded audio derived from SDI/HD-SDI
Optional input cards for:
Analogue (in multiples of 32 channels)
AES/EBU (in multiples of 16 pairs)
Dolby Digital (in multiples of 8 streams)
Dolby E (in multiples of 4 streams)

Audio Outputs:
Embedded audio may be demuxed
Optional output cards for:
Analogue (in multiples of 32 channels)
AES/EBU (in multiples of 16 pairs)

Analogue audio monitor outputs with delay com-
ensation. Any audio input sources may be
assigned to 4 Pairs of outputs.

Video Outputs (per multi-viewer)
2 x DVI-I (analogue & digital component)
## Specification

### Rack frame A:
One multi-viewer with up to 64 video inputs

### Rack frame B:
Two separate multi-viewers, each with up to 32 video inputs

### Video input card option 1:
- SDI: SMPTE 259M, S-Video (Y/C), Component video, RGB/YUV, Composite video PAL/NTSC, CVBS: 1Vpp, DVI-I: digital or analogue component, 1920 x 1080

<table>
<thead>
<tr>
<th>PAL</th>
<th>PAL-M</th>
<th>NTSC</th>
<th>NTSC-4.43</th>
<th>SECAM</th>
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<tr>
<td>SMPTE259M</td>
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<tr>
<td>Inputs using 2 BNCs:</td>
<td>S-Video 50Hz/60Hz</td>
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<tr>
<td>Inputs using 3 BNCs:</td>
<td>RGB/YUV 50Hz/60Hz</td>
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<tr>
<td>DVI input formats:</td>
<td>800x600 @ 60Hz</td>
<td>1024x768 @ 60Hz</td>
<td>1280x1024 @ 60Hz</td>
<td>1280x768 @ 60Hz</td>
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<tr>
<td></td>
<td>1280x768 @ 60Hz</td>
<td>1600x1200 @ 60Hz</td>
<td>1920x1080 @ 60Hz</td>
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</tbody>
</table>

### Video input card option 2:
- HD-SDI: SMPTE 259M, S-Video (Y/C), Component video, RGB/YUV, Composite video PAL/NTSC, CVBS: 1Vpp, DVI-I: digital or analogue component, 1920 x 1080

<table>
<thead>
<tr>
<th>Input formats and standards supported:</th>
<th>PAL</th>
<th>PAL-M</th>
<th>NTSC</th>
<th>NTSC-4.43</th>
<th>SECAM</th>
</tr>
</thead>
<tbody>
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<td>1920x1080i60, 1920x1080i59.94, 1920x1080i50, 1920x1080p30, 1920x1080p29.97, 1920x1080p25, 1920x1080p24, 1920x1080p23.98, 1280x720p60, 1280x720p59.94, 1280x720p50</td>
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<td>SMPTE292M -</td>
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<td>SMPTE424M -</td>
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<tr>
<td>Inputs using 2 BNCs:</td>
<td>S-Video 50Hz/60Hz</td>
<td>RGB/YUV 50Hz/60Hz</td>
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<tr>
<td>Inputs using 3 BNCs:</td>
<td>RGB/YUV 50Hz/60Hz</td>
<td>RGB/YUV 50Hz/60Hz</td>
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### Video input card option 3:
Fibre for SDI video at 270Mbs, 1.5Gbs and 3Gbs SDI/HD-SDI (discrete fibre inputs or single fibre with CWDM)

### Video input loop-through:
Optional on SDI and HD-SDI. These are provided on a rear connector panel that occupies two card slots.
Specification

Video outputs: 2 x DVI-I outputs (analogue and digital) per multi-viewer, supporting resolutions, XGA, 720p60, 720p50, SXGA, SXGA+, 1080p60, and 1080p50, 16:9 aspect ratio.

DVI output formats: 800x600 @ 60Hz, 1024x768 @ 60Hz, 1280x1024 @ 60Hz, 1280x768 @ 60Hz, 1600x1200 @ 60Hz, 1920x1080 @ 60Hz

Video processing delay: Delay is approximately one video frame but depends on the video input selected.

Image configuration: Images can be continuously varied in size and position on screen or may be displayed in pre-configured layouts, positions and sizes. When the outputs are configured to feed two display devices the tiles may be assigned to one or both outputs. The system menu can be displayed on one or both video outputs.

Audio metering standards: AES/EBU, BBC PPM, DIN PPM, Nordic PPM, VU and Extended VU. Loudness metering is available as an option.

Alarms: Video: loss of sync, loss of luminance, freeze frame or motion. Audio: loss of embedded or external audio, over level, out of phase. Other: loss of VITC, teletext, subtitles or V-chip, video non-sync detection.

Connectors: BNC, S-Video, 26 pin "D" HD male, 26 pin "D" HD female, 44 pole "D" HD male, 44 pole "D" HD female, LAN, RS422, USB-2, DVI-I, IEC Power, Low-voltage connector.

Mechanical: 3U frame with removable front panel. 20 card slots and rear connector modules. Heat sensitive, fan assisted ventilation with status LED. 2 power status LEDs.

Weight & dimensions: 420mm (W) x 132mm (H) x 483mm (D), 19Kgs (full frame, estimated).

Power requirements: 84-260 VAC, 50/60Hz, optional 12-24 VDC. Optional back-up external 1kW 1U power supply.

www.chromatec.com
Features and specifications subject to change without notice.
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