V__line

VIDEO BY LAWO

SMART
POWERFUL
ULTRA-COMPACT

V__line

INTRODUCTION

PROUDLY SUPPORTING

AIMS Alliance for IP Media Solutions

Media Networking Alliance

RAVENNA

V__line

INTRODUCTION

VIDEO DONE THE SMART WAY

The video broadcast tools of the V__line are designed to support your workflow and bring you previously unknown efficiency. Leaving the established path of modular systems, Lawo's video solutions do things differently and – more importantly – they do them in a smart way. Lawo's V__line products not only bring major reductions in space and weight, they also reduce cabling effort and the overall complexity of video broadcast installations. Despite the units' comprehensive feature set – which with standard technology would require a full rack of equipment – their browser-based GUI allows easy and intuitive operation. As a result, V__line devices represent significant savings in both CAPEX and OPEX costing. Designed and engineered by video experts, Lawo's V__line products provide excellent production quality – simply and in a smart package.

The Lawo V__line currently consists of

V__pro 8

THE COMPLETE 8 CHANNEL VIDEO PROCESSING TOOLKIT

V__pro 8

THE COMPLETE 8 CHANNEL VIDEO PROCESSING TOOLKIT

CLOSING THE GAP BETWEEN VIDEO AND AUDIO

Conceptually, the V__pro 8 resembles a bridge builder. It is a compact, fully digital, 8-channel video processor comprising all of the glue features usually needed in the broadcast production workflow. Combining video and audio management in a single tool guarantees maximum efficiency and greatest operating safety, with significantly reduced space, wiring and cost.

MAIN BENEFITS

- Increased ease-of-use
- Major space reduction
- Reduced cabling & system complexity
- Swiss-knife style processing toolkit
- Increased workflow efficiency
- Reduced costs

FOR PERFECT SYNCHRONIZATION: INTEGRATING DIFFERENT SIGNAL WORLDS

The V__pro 8 is the perfect tool to connect different video formats as well as to connect between audio and video. High quality format conversion, color correction as well as audio embedding and de-embedding make the V__pro 8 a compact and powerful video processor, building bridges between different worlds and formats. A high-density MADI audio connection provides efficient video-to-audio bridging within the studio infrastructure. The V__pro 8 works as a flexible matrix system: using its 8 x 8 video matrix and 384 x 384 audio matrix, it is possible to switch any signal to any other. A modern GUI based on HTML5 provides an ideal interface for easy handling of day-to-day work. Here's how it works: eight high quality 3G SDI de-embedders and a corresponding number of embedders are looped into the eight video signals according to your preferences. This enables any number of audio signals to be used from the video material, and new audio signals to be embedded into the video signal – a simple, reliable and efficient solution.

AT A GLANCE

- Frame synchronization for each of the 8 channels
- Frame Phaser and Line Phaser mode
- Variable audio and video delays for each channel
- Embedding and de-embedding incl. SRC for each channel
- RGB Color Correction & Proc Amp for each channel
- Up / Down / Cross Format & AR Conversion for two channels
- Two Surround-to-stereo Downmixer per Embedder
- Dolby® E Auto Aligner
- Dolby® E Encoding and Decoding
- Quadsplit Multiviewer
- Waveform and Vectorscope display
- Timecode Insertion, Test Pattern Generator and Video ID Generator for each channel
- Multi-Format Video Output
- Timecode Generator
- Sync Generator
- AV Sync Measurement (Vistek® VALID8 compatible)

HIGHLIGHTS

POWERFUL TOOLS FOR VIDEO PROCESSING

- VIDEO/AUDIO ROUTER provides an internal 8x8 video routing matrix and a 384x384 audio routing matrix.
- FRAME-SYNCHRONIZER for syncing incoming independent free running signals to the same reference (Blackburst or TriLevel).
- VARIABLE VIDEO & AUDIO DELAYS for compensating latencies and lip-sync matching between incoming or outgoing audio (up to 320 ms delay) and video (up to 8 frames delay) signals. AudioFollowVideo delay mode for automatic compensation of internal video latency.
- (DE-) EMBEDDING WITH SRC to embed, de-embed and shuffle any of the 16 audio channels within the 8 SDI input/output streams simultaneously. Audio interfacing to mixing consoles or external audio routers via MADI.
- DOLBY E® AUTO ALIGNER to automatically adjust the timing of Dolby® streams.
- SURROUND DOWNMIX for providing two automated Lawo-quality 5.1/7.1 to stereo downmixes per embedder.
- TIMECODE INSERTION provides selectable ATC LTC/VITC1/VITC2 insertion from an input signal or free run mode or from internal Timecode Generator.
- TEST PATTERN AND VIDEO ID GENERATOR provide video ID insertions (text, source, date, timecode, time of day) and color bar test pattern as well as a selection of audio test tones and AV Sync test pattern.
- THUMBNAIL PREVIEWING to provide motion previews of video signals. The thumbnails are available via IP and can be displayed on the V__pro 8 GUI, external master control systems or PCs.

Input/Output thumbnail overview for intuitive signal handling

Easy signal patching via drag and drop

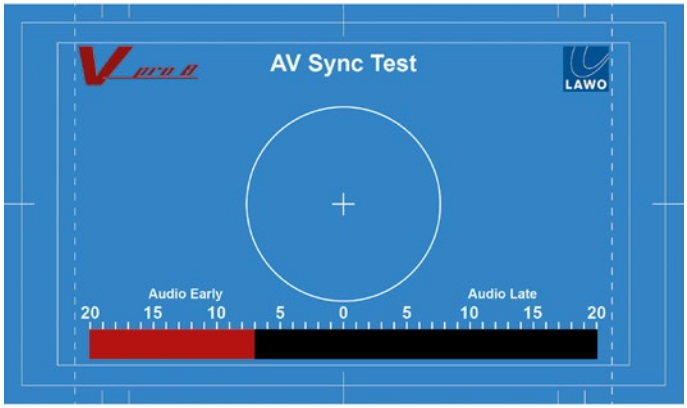
Timing measurement overview for easy timing adjustments

OPTIONAL FEATURES

- HIGH-QUALITY UP/DOWN/CROSS & AR FORMAT CONVERTER for 3G/HD/SD-SDI signals to any relevant broadcast format. Multi-format video output: an incoming 1080p signal can be converted to 1080i and 720p at the same time. The next generation motion-adaptive de-interlacing and scaling technology guarantees high image quality.
- QUADSPLIT MULTIVIEWER provides a high quality video and audio monitoring solution with true peak & peak metering, UMD and tally support via the unit's MV video outputs (BNC/Display Port), displaying up to four video sources at the same time. The tally lamps can be controlled via Ember+, offering the possibility to integrate the MV tally in the overall tally system of your studio control system. It supports multiple colors (RGB) for multi tally configurations in enhanced TV productions.
- WAVEFORM AND VECTORSCOPE DISPLAYS enable measuring and monitoring of video signals and evaluation of video adjustments processed within the V__pro 8.
- RGB & YUV COLOR-CORRECTION AND PROC-AMP to adjust the video signal to specific color requirements. High-quality algorithms guarantee perfect video signals.
- AV SYNC MEASUREMENT is a high-end measurement tool for managing the precise synchronization of audio and video signals. It can create a V__line sync pattern and read/analyse three types of sync patterns: V__line, EBU and the Vistek® VALID8 pattern. Each input of the V__pro8 can be used to read the incoming VALID signal.
- DOLBY E® ENCODING/DECODING provides up to four instances of fully compatible en/decoding of professional quality multi-channel audio on a single AES3 connection with Dolby E® metadata handling. In combination with the unit's Dolby E® Auto Aligner, the V__pro 8 becomes the perfect transmission path gateway for multi-channel productions.

Production quality RGB & YUV color correction

Waveform display and aspect ratio settings



AV sync test for easy AV sync measurement

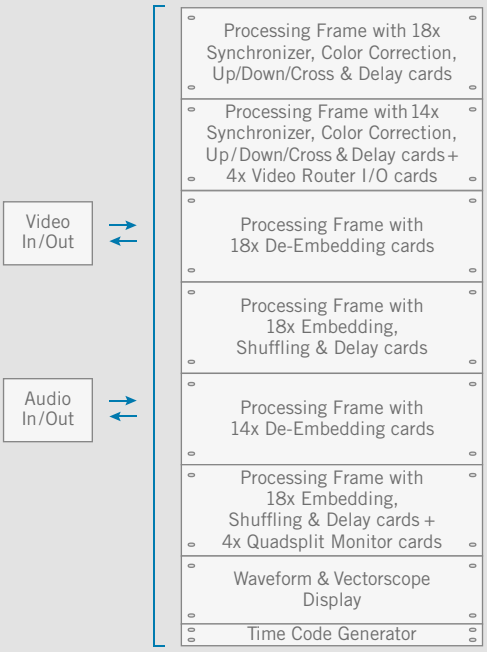
APPLICATIONS

THE V__pro 8 IN ACTION

SIGNAL PROCESSING/GLUE IN OB TRUCKS AND STUDIOS

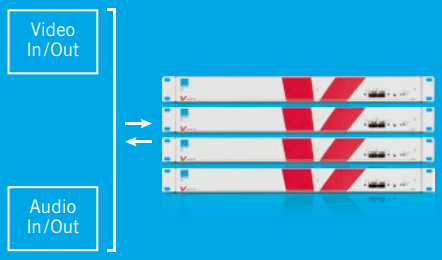
THE CLASSIC WAY

You can furnish signal processing needs like this ...



THE LAWO WAY

... or integrated like this.

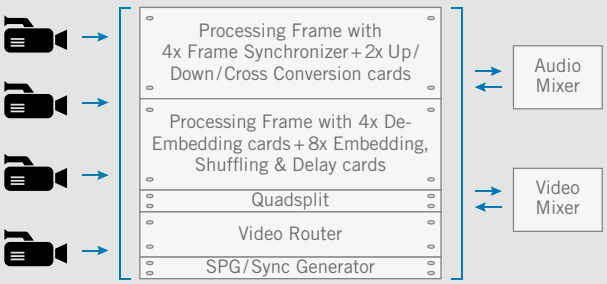


THE V__pro 8 IN ACTION

BUILDING A SMART ENG VEHICLE

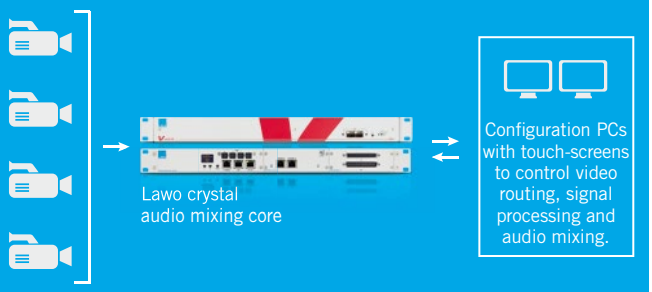
THE CLASSIC WAY

You can build an ENG like this ...



THE LAWO WAY

... or integrated like this.



INTERACTION

HIGH USABILITY, INTUITIVE CONTROLS

Innovative functions are only useful in combination with user-friendly controls. Consequently, the V__pro 8 provides three convenient ways to control the device:

WEB-GUI

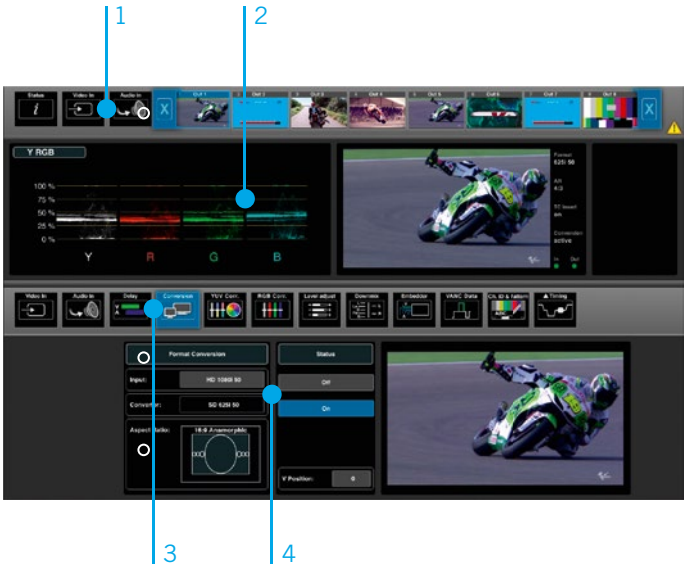
The V__pro 8 can be configured via an easy-to-understand HTML 5-based touch screen interface that runs directly within the web browser. No software installation is needed. As a result, you benefit not only from state-of-the-art user-guidance, but also from elegant animations and many, practical features such as the video channel preview on your GUI. In addition, the web-based approach enables the user to access all V__line devices from anywhere within the network — a feature especially useful in bigger set-ups or in outside broadcast productions with long-distance links.

Ember+ CONTROL

The V__pro 8 fully supports the Ember+ protocol, enabling the device to be controlled by external master control systems like BFE's KSC, Axon's Cerebrum or Lawo's Virtual Studio Manager. This allows operators to easily access multiple device parameters along with other routing parameters of the broadcast installation via a single, integrated interface. In addition, they get access to the V__pro 8's thumbnails and peak meters within the VSM desktop environment.

V__fp 1 FRONT PANEL

In addition to the Web GUI, the V__pro 8 can be equipped with an optional V__fp 1 hardware control panel for direct configuration and operation, including switch panel and shot box functionality. It features a high-res OLED color display for showing the configuration menu and real-time viewing of video sources. In combination with the large rotary encoder and a Return/Cancel button this allows quick and easy set-up on-site. Ten quick-selection buttons for switching sources, a front-panel headphones connector for audio monitoring and an USB port for saving and loading of configurations complete the V__fp 1 user interface.



1 Main Menu Bar
2 Monitoring area (e.g. audio metering & video monitoring)
3 Sub menu bar
4 Setup area

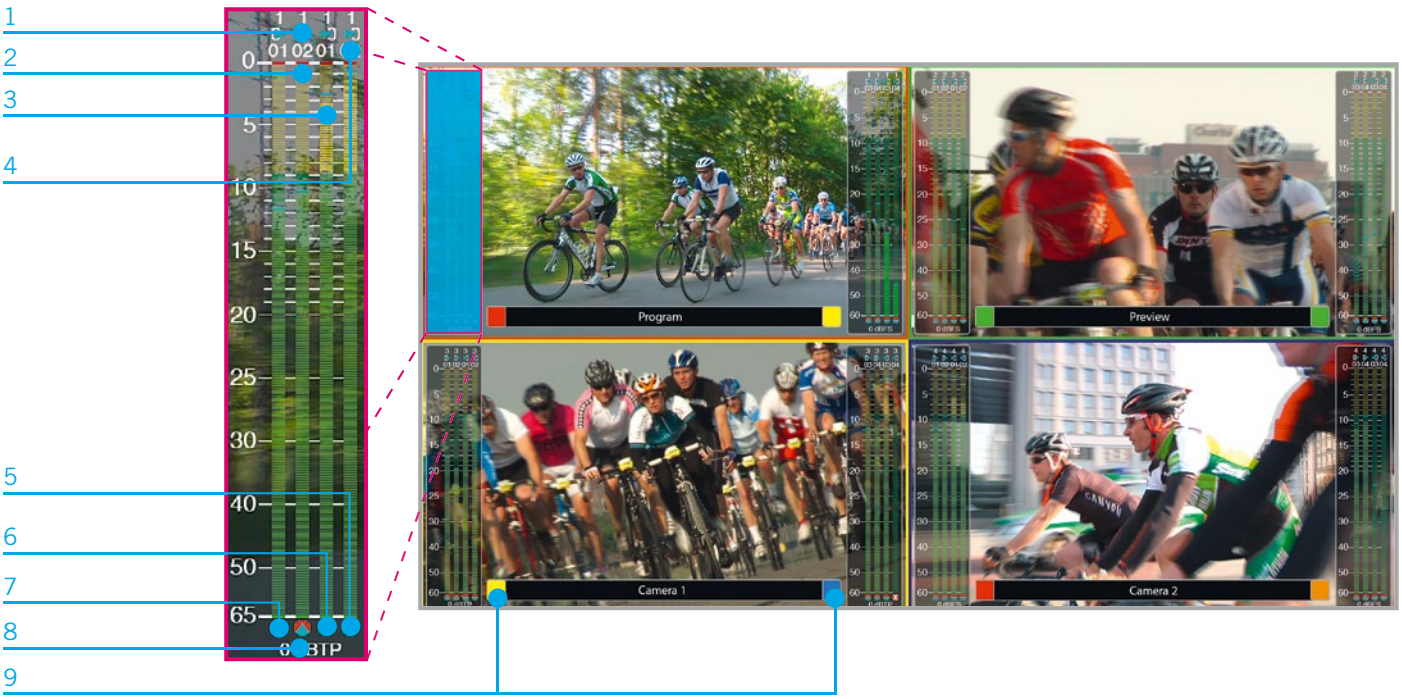
V__pro 8

INTERACTION

QUADSPLIT MULTIVIEWER

The integrated Quadsplit Multiviewer provides a high-quality video and audio monitoring solution via the V__pro 8's MV video output (BNC/DisplayPort), displaying up to four video sources at the same time. The audio meters feature absolutely precise PPM and true peak PPM metering and can be positioned as an overlay, inside or outside of the video windows. The configurable meter scales provide user-defined ballistics of the audio bargraphs and a user-defined safe operation area. Peak hold can be set to manual or auto mode. The audio scales can be defined as dBFS, BBC, Nordic or DIN. UMD and tally support complete the monitoring options of the V__pro 8's Quadsplit Multiviewer.

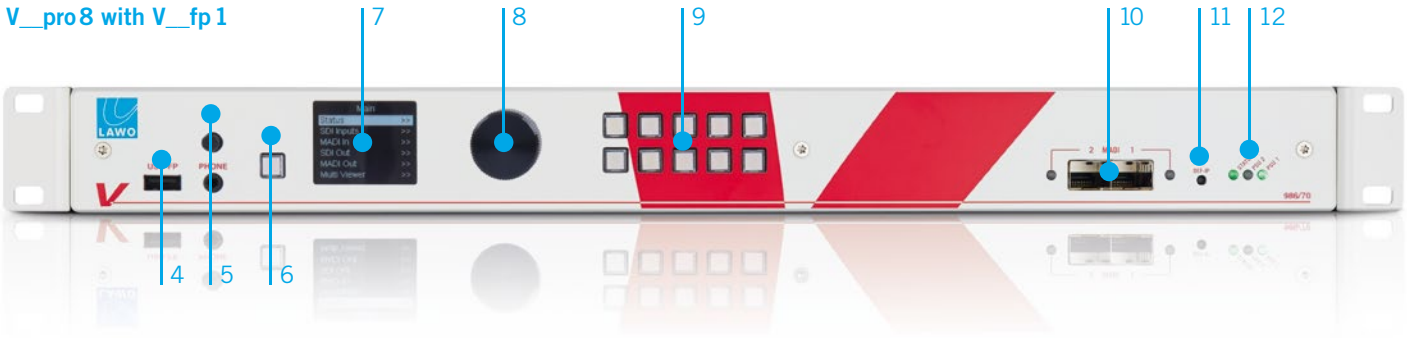
The tally lamps can be controlled via Ember+, offering the possibility to integrate the MV tally in the overall tally system of your studio control system. It supports multiple colors (RGB) for multi tally configurations in enhanced TV productions.



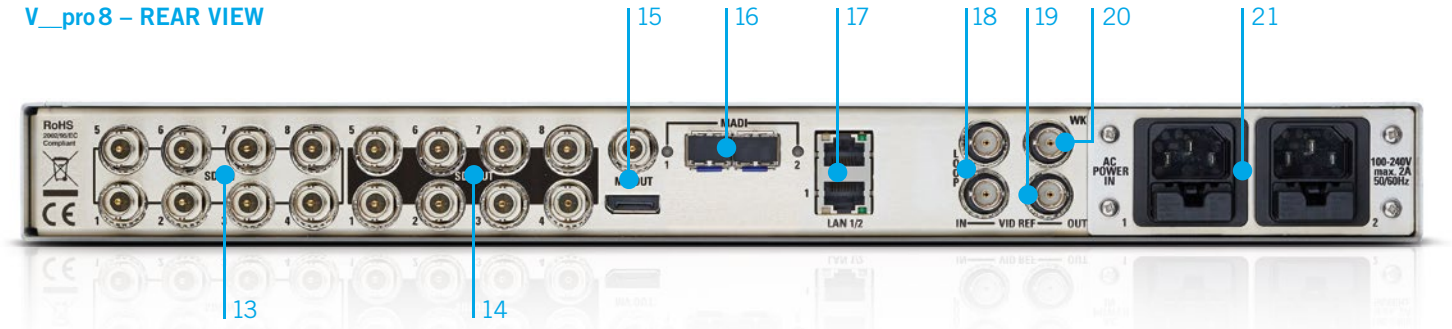
1 SDI I/Os depending on PPM assignment
2 Embedded audio channels
3 Peak hold
4 Icon for SDI audio source (Input/Output)
5 Icon Audio not assigned
6 Icon None Mode (PPM is in normal mode)
7 Icon True Peak (PPM is in True Peak Mode)
8 Audio Meter Type
9 Tally Lamps

V__pro 8 – FRONT VIEW

V__pro 8 with V__fp 1



V__pro 8 – REAR VIEW



1 Optical MADI ports (2x In/2x Out)
2 Default IP / Clear settings button
3 Status LEDs (Status, PSU 1/2)
4 USB Port (save & load config)
5 Headphones output (audio monitoring)
6 Return/Cancel button
7 OLED Display (setup & video monitoring)
8 Rotary control (selection & setup)
9 Quick select buttons (e.g. menu delegation & video monitoring)
10 Optical MADI ports (2x In/2x Out)
11 Default IP / Clear settings button
12 Status LEDs (Status, PSU 1/2)
13 8x SDI Inputs (3G/HD/SD)
14 8x SDI Outputs (3G/HD/SD)
15 Quadsplit MV Output (Display Port 3G & SDI 3G/1080i)
16 Optical MADI ports (2x In/2x Out)
17 2x 1 Gbit Ethernet (Control & Management)
18 Video Ref. Input & Loop Thru (BB or TriLevel)
19 Video Ref. Output (BB or TriLevel)
20 WordCLK I/O
21 Redundant Power Supplies

V__pro 8

SPECIFICATIONS

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VIDEO INTERFACES

- VIDEO SIGNAL INPUT/OUTPUT: 8x 3G/HD/SD-SDI inputs via BNC connector, 8x 3G/HD/SD-SDI outputs via BNC connector, 1x 3G/1080i MV/QS output via BNC, DisplayPort for local MV/QS monitoring
- VIDEO REFERENCE SIGNAL INPUT/OUTPUT: BB/Tri-Level, Loop thru, BB/Tri-Level output via BNC connector
- VIDEO STANDARDS:
  2.97Gbps Video Standards (1080p):
  1080p 60Hz SMPTE-424M, 425M Level A & Level B
  1080p 59.94Hz SMPTE-424M, 425M Level A & Level B
  1080p 50Hz SMPTE-424M, 425M Level A & Level B
  1.485Gbps Video Standards (HD):
  1080i 60Hz SMPTE-274M(4),-292M(D)
  1080i 59.94Hz SMPTE-274M(5),-292M(E)
  1080i 50Hz SMPTE-274M(6),-292M(F)
  1080p 30/29.97/25/24/23.976sf
  1080p 30Hz SMPTE-274M(7)-292M(G)
  1080p 29.97Hz SMPTE-274M(8)-292M(H)
  1080p 25Hz SMPTE-274M(9)-292M(I)
  1080p 24Hz SMPTE-274M(10)-292M(J)
  1080p 23.976Hz SMPTE-274M(11)-292M(K)
  720p 60Hz SMPTE-296M(1),-292M(L)
  720p 59.94Hz SMPTE-296M(2),-292M(M)
  720p 50Hz SMPTE-296M(2),-292M(M)
  270Mbps Video Standards (SD):
  576i 16:9 and 4:3 SMPTE-259M(C)
  480i 16:9 and 4:3 SMPTE-259M(C)
- VIDEO REFERENCE: Analog Genlock High definition tri-level sync SMPTE-274M/296M or SD 1V BB SMPTE-170M/318M or SDI
- RETURN LOSS: SD: > 15dB; HD: > 15dB; 3G-HD: >15dB 5MHz-1.485GHz, >10dB 1.485GHz-2.97GHz
- CABLE LENGTH: SD: >350m (using Belden1694A), HD: >180m (using Belden 1694A), 3G-HD: >120m (using Belden1694A)
- VIDEO RESOLUTION: 10 bit 4:2.2

AUDIO INTERFACES

- AUDIO SIGNAL INPUT/OUTPUT: 2x MADI/AES10 optical in/out via LC connector front/rear (redundant mode selectable); SDI embedded Audio via BNC connector, Ethernet
- AUDIO REFERENCE SIGNAL INPUT/OUTPUT: BB/Tri-Level, WordCLK input via BNC connectors (for audio phase alignment only), WordCLK output via BNC connectors
- AUDIO STANDARDS: SMPTE 299/48, MADI/AES10
- AUDIO RESOLUTION: 24 bit

METADATA

- ATC (LTC. VITC1, VITC2) SMPTE12M-2, Binary group data SMPTE 309, AFD SMPTE2016, Closed-Caption SMPTE334, VBI data services /DTV descr. SMPTE334, Source-ID OBS-special, Dolby E® Meta data SMPTE2020, ANSI/SCTE 104 SMPTE2010, DVB/SCTE VBI SMPTE2031, Teletext OP-47 (more on request)

IP INTERFACES

- GIGABIT ETHERNET: 2x RJ45 100/1000Base-T

PROCESSING

- THUMBNAILING & PPM: input/output JPEG thumbnails and PPM data
- AV SYNC (AUDIO/VIDEO): synchronous operation < 2 msec
- VIDEO/AUDIO OUTPUT SYNCHRONIZATION: Genlocked to external clock reference or SDI input
- LATENCY: video processing latency: max. 100 pixels; format conversion: 1 frame; QuadSplit monitoring: 1 frame; audio latency (SRC disabled, synchr. operation): < 2 ms
- OPTIONAL DOLBY E® ENCODING/DECODING: 16 bit/20bit incl. metadata generation according to Dolby® specifications. Flexible license management with up to four licenses per unit (each license can operate either as Encoder or Decoder)

MANAGEMENT AND MONITORING

- PROTOCOLS: HTTP, SNMPv1, Ember+
- USER INTERFACES: Embedded HTML 5 user interface, front LED status indication, optional V__fp 1 control panel, virtual GPIs (via Ember+)

ENVIRONMENTAL

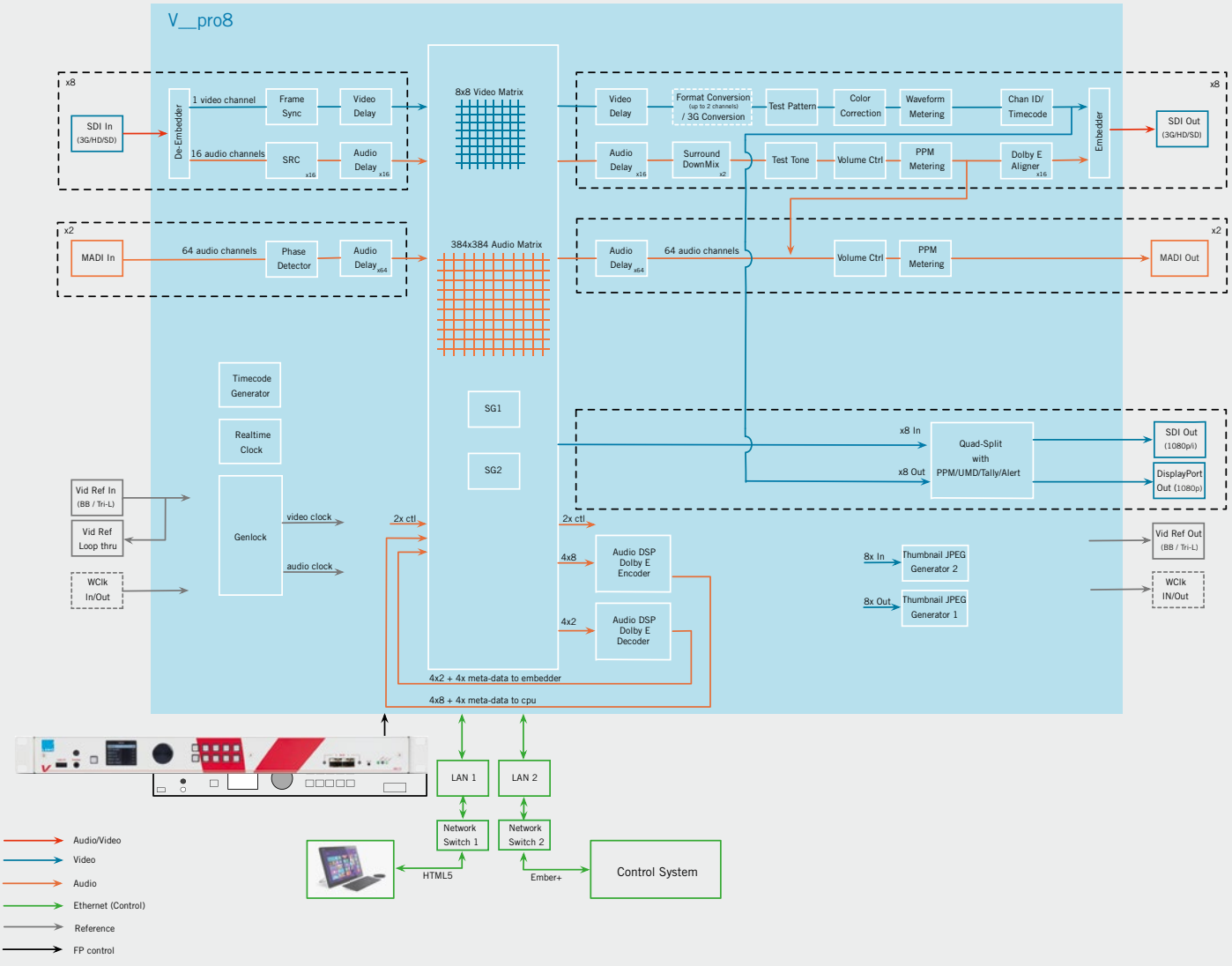
- STORAGE TEMPERATURE: -20°C to +70°C (-4°F to +158°F)
- OPERATING TEMPERATURE: 0°C to +40°C (+32°F to +104°F)
- RELATIVE HUMIDITY: < 90% non-condensing
- ELECTROMAGNETIC ENVIRONMENT: E2 (EN55103-1,-2)

POWER

- 2x Auto sensing 100 .. 240V VAC power supply 50/60 Hz nominal on IEC connector < 80 W

FRAME MECHANICS

- DIMENSIONS (H x W x D):
  44 mm (1 RU) x 481 mm (19“) x 458 mm (18“)
- WEIGHT: 4.6 kg (10.2 lb)



V__remote 4

THE IP REMOTE PRODUCTION SOLUTION

PROUDLY SUPPORTING

AIMS Alliance for IP Media Solutions

Media Networking Alliance

RAVENNA

V__remote 4

THE IP REMOTE PRODUCTION SOLUTION

LAWO V__remote 4 – THE ALL-IN-ONE SOLUTION FOR IP-BASED REMOTE PRODUCTIONS

Lawo's V__remote 4 is designed to provide a one-box-solution for all the requirements of video and audio signal transport and processing in WAN-based remote productions. It includes everything from Video-over-IP coding to various monitoring and processing tools. All designed for one purpose: to provide a tool that increases the flexibility of any broadcast application, while saving valuable rack-space, set-up time and production costs. With its virtual cabling capability, V__remote 4 immediately brings IP infrastructure advantages and cost savings, providing an unparalleled degree of flexibility and scalability.

MAIN BENEFITS

- Immediate cost savings by remote production
- New flexibility through IP infrastructure
- Unprecedented scalability
- Perfect tool for transition from SDI to the IP world
- Enables new and more efficient production workflows
- IP designed for video engineers, not for IT departments
- SMPTE2022-6/-7 compliant
- VSF TR-01/-03/-04 compliant*
- J2K compression on board
- VC-2 for mezzanine compression, allowing 4x 3G on a 10GE link (4k ready)
- Following AIMS roadmap

* full compatibility with future SW release

V__remote 4

HIGHLIGHTS

HIGHLIGHTS

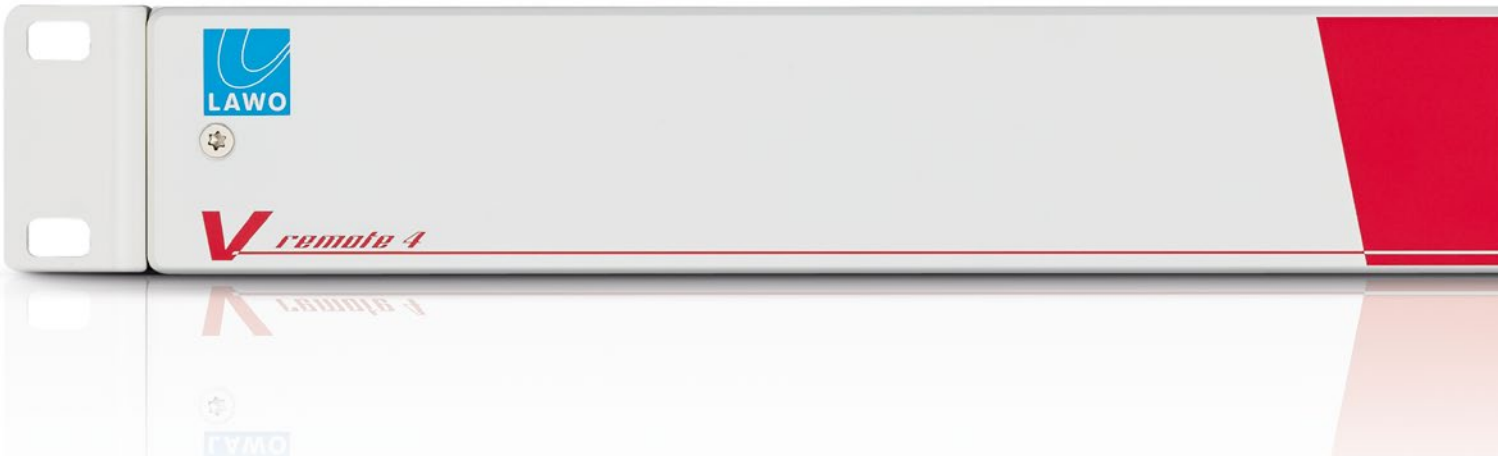
REMOTE PRODUCTION FOR REALIZING TOMORROW'S VISIONS ALREADY TODAY

With the performance and maturity of today's IP network technology, video-, audio- and control-over-IP are becoming the solution of choice for many applications. In remote live production, which is increasingly regarded as one of the next major steps in the evolution of broadcast production, IP is becoming a fundamental requirement. Getting reliable, low latency and high-quality video from venues back to studios at reasonable cost is an absolute necessity for this.

The Lawo V__remote 4 is the ideal tool for achieving this vision of IP-based remote broadcast production today. The device combines a bi-directional, four-channel Video-over-IP interface, four local SDI inputs and outputs, along with all the processing tools usually needed when contributing video and audio via WAN or LAN to a broadcast production.

AT A GLANCE

- Multiple Video-over-IP Encoding and Decoding: 4x/4x Raw/VC-2*; 4x/4x JPEG2000*/** (multicast/unicast); for monitoring applications 4x MJPEG* (multicast/encoding only); 1x H.264* (multicast/encoding only)
- Integrated switch fabric, switching capacity 40 Gbps, 2x 10 Gbit Ethernet and 4x 1 Gbit Ethernet (2x incl. PoE)
- Frame synchronization for each channel
- Frame Phasing, Line Phasing
- Variable audio and video delays for each channel
- Embedding and de-embedding incl. SRC for each channel
- RGB Color Correction & Proc Amp for each channel*
- Two Surround-to-stereo Downmixers per Embedder
- Dolby® E Auto Aligner*
- Quadsplit Multiviewer*
- Waveform and Vectorscope display*
- Timecode Insertion, Test Pattern Generator and Video ID Generator for each channel
- Timecode Generator
- Sync Generator, PTP Grandmaster with Ref GM function*
- AV Sync Measurement* (Vistek® VALID8 compatible)
- Network Sounding*



VIDEO-OVER-IP CONTRIBUTION VIA WAN

The Lawo V__remote4 provides four 3G/HD/SD SDI inputs and four 3G/HD/SD SDI outputs for interfacing to external video equipment. The device is designed to convert these signals into IP streams and vice versa. These streams can be transported via standard Layer 3 IP LANs or WANs. V__remote4 provides parallel encoding in multiple streaming formats, making the same signal available to different applications – e.g. RAW for local production, JPEG2000 for remote sites, MJPEG and H.264 for monitoring applications. The IP-based approach allows easy signal routing via Lawo's VSM control and monitoring system or via other external master control systems. No rewiring is needed as long as all devices are connected to the network. Since the device is based on a real network technology with multi-cast capability, it allows easy transmission of signals to multiple outputs within the network.

The V__remote4's coding engines are designed to meet the highest demands in video quality and signal transport reliability. The unit's extremely robust J2K codec (with a special protection algorithm for robust signal transport even on unreliable WAN connections) and its SMPTE2022-7 compatible port redundancy ensure signal availability and quality. Format and quality of the IP video streams can be configured individually to meet the optimal ratio between picture quality, latency and bandwidth. The 6 Ethernet ports are connected to an internal switch allowing to "tunnel" through the 10GBit any IP traffic such as camera control, RAVENNA streams or even office and internet IP traffic.

SUPPORTED VIDEO TRANSPORT MODES

- Raw mode for transparent transport of uncompressed, full production quality video with the lowest latency. SMPTE 2022-6*** compatible.
  Full code stream bit rates: HD 1.5 Gbps, 3G 2.97 Gbps
- Ultra low latency mode for transporting production quality video with ultra low latency VC-2 (DiracPro) Codec, end-to-end delay incl. encoding and de-coding <32 video lines
- Low latency mode** for transporting production quality video. JPEG2000 Codec, bit rates: 30 Mbps – 250 Mbps, end-to-end delay incl. encoding and de-coding <2.5 frames (4x/4x mode: <4 frames). 16 channels of embedded audio.
- MJPEG mode for monitoring and IP-TV applications. MJPEG Encoder, full code stream bit rates typ. 60 Mbps, end-to-end delay with V__view_app <3 frames
- H.264 mode for monitoring applications. H.264 Encoder, full code stream bit rate 8 Mbps, up to 10 stream subscribers
- Full support of source-timed frame-accurate switching of SMPTE2022-6 video
- Following AIMS roadmap

SUPPORTED AUDIO TRANSPORT MODES

- RAVENNA
- AES67
- Embedded SMPTE 2022-6
- Embedded JPEG2000

* optional feature ** 4x J2K Encoding/4x J2K Decoding; when working with 3G signals: 2x J2K Encoding/2x J2K Decoding/J2K not in parallel with VC-2 *** without FEC

V__remote 4

HIGHLIGHTS

POWERFUL TOOLS FOR VIDEO CONTRIBUTION

- VIDEO/AUDIO ROUTER provides an internal 8x8 video routing matrix (4x SDI + 4x IP) and a 384x384 audio routing matrix.
- INTERNAL SWITCH with 2x 10G Ethernet and 4x 1G Ethernet ports (2x PoE) for any network application.
- IP STREAMING ENGINE for video and audio signals with raw format video encapsulation (SMPTE 2022-6).
- CLEAN SWITCHING supports source-timed frame-accurate switching of SMPTE 2022-6 video
- SYNC-GENERATOR for precise clocking of broadcast infrastructures.
- VIRTUAL BLACKBURST for sync distribution via WAN/LAN.
- 3G CONVERSION down-converts 3G to 1080i for 10GE streaming applications.
- FRAME-SYNCHRONIZER for syncing incoming independent free running signals to the same reference.
- VARIABLE VIDEO & AUDIO DELAYS for compensating latencies and lip-sync matching between incoming or outgoing audio (up to 320 ms delay) and video (up to 8 frames delay) signals. In Delay Auto Mode the audio delay can be set to automatically follow the video delay.
- (DE-) EMBEDDING WITH SRC to embed, de-embed and shuffle any of the 16 audio channels within the 8 SDI input/output streams simultaneously. Audio interfacing to mixing consoles or external audio routers via MADI and AES67/RAVENNA.
- SURROUND DOWNMIX for providing two automated Lawo-quality 5.1/7.1 to stereo downmixes per embedder.
- TIMECODE INSERTION provides selectable ATC LTC/VITC1/VITC2 insertion from an input signal or free run mode or from internal Timecode Generator.
- TEST PATTERN AND VIDEO ID GENERATOR provide video ID insertions (text, source, date, timecode, time of day) and color bar test pattern as well as a selection of audio test tones and AV Sync test pattern.
- THUMBNAIL PREVIEWING to provide motion previews of video signals. The thumbnails are available via IP and can be displayed on the V__remote 4 GUI, external master control systems or PCs.

OPTIONAL FEATURES

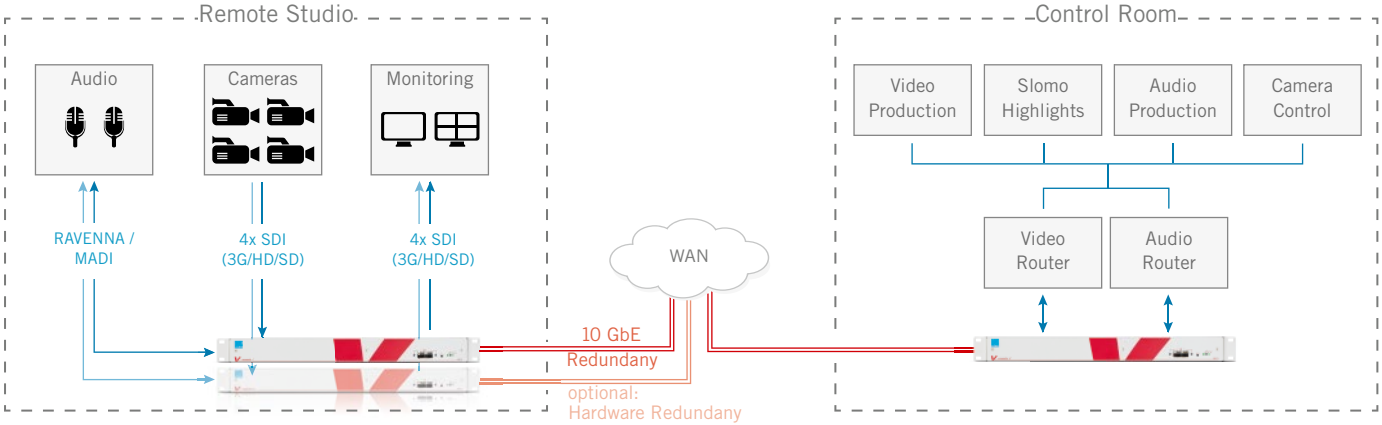
- VC-2 CODECS* mezzanine compression for production quality low-latency IP streaming (suitable for multiple coding generations).
- JPEG2000 CODECS* for production quality, bandwidth-reduced, low latency IP streaming incl. 16 channels of embedded audio (suitable for multiple coding generations).
- MJPEG AND H.264 ENCODER* for IP monitoring applications.
- WAN AUDIO TRANSPORT enables WAN-capable MADI-over-IP audio transport via RAVENNA/AES67 streaming.
- NETWORK SOUNDING for testing the WAN's network performance in order to provide metrics for trouble-shooting and monitoring, e.g. jitter management.
- REF GRANDMASTER generates a PTP for the complete network derived from an incoming video reference signal.
- QUADSPLIT MULTIVIEWER provides a high quality video and audio monitoring solution with true peak & peak metering, UMD and tally support via the unit's MV video outputs (BNC/Display Port), displaying up to four video sources at the same time. The tally lamps can be controlled via Ember+, offering the possibility to integrate the MV tally in the overall tally system of your studio control system. It supports multiple colors (RGB) for multi tally configurations in enhanced TV productions.
- WAVEFORM AND VECTORSCOPE DISPLAYS enable measuring and testing of video signals and evaluation of video adjustments processed within the V__remote 4.
- RGB & YUV COLOR-CORRECTION AND PROC-AMP to adjust the video signal to specific color requirements. High-quality algorithms guarantee perfect video signals.
- AV SYNC MEASUREMENT is a high-end measurement tool for managing the precise synchronization of audio and video signals. It can create a V__line sync pattern and read/analyse three types of sync patterns: V__line, EBU and the Vistek® VALID8 pattern. Each SDI and IP input of the V__remote4 can be used to read the incoming VALID signal.
- DOLBY E® AUTO ALIGNER to automatically adjust the timing of Dolby® streams.

* V__remote4 allows the activation of either the VC-2 or JPEG2000 option. No H.264 with VC-2.

APPLICATIONS

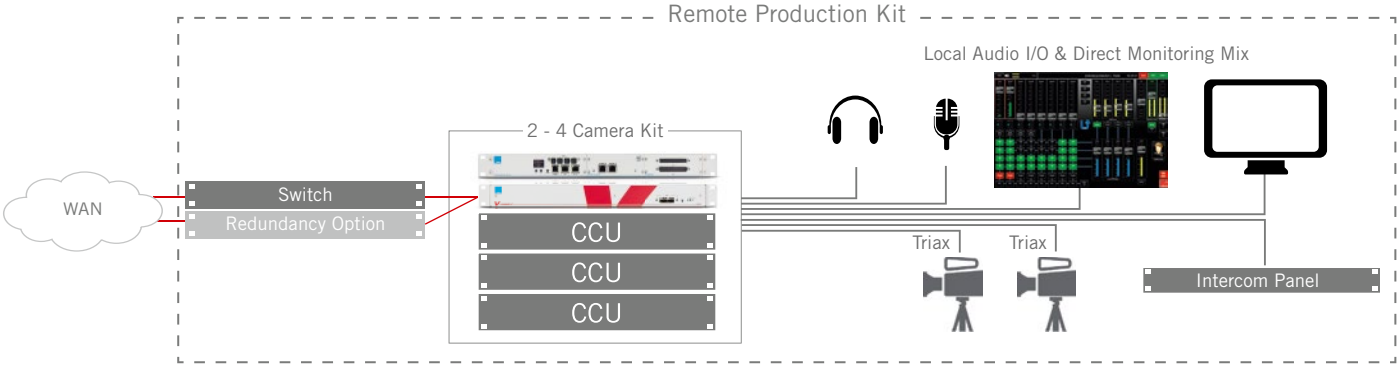
V__remote4 IN ACTION

REMOTE PRODUCTION



V__remote4 IN ACTION

PLUG & PLAY REMOTE PRODUCTION KIT



PLUG & PLAY REMOTE PRODUCTION KIT

Lawo V__remote4 is also available as a stand-alone Plug & Play Remote Production Kit, providing fully-integrated video, audio and intercom transport (via qualified IP WAN connections) for any third-party video and audio equipment. The kit connects up to four camera CCUs via SDI for video and TCP/IP for control, with audio mixers connected via MADI or RAVENNA/AES67. An IP-based Compact Engine with audio I/O and GPIO on the remote site provides no-latency audio monitor mixing, e.g. for IFBs. The unit is operated via Tablet or PC – in addition to the local operation it can be controlled from a remote studio (e.g. via a Lawo mc² console). Additional microphone inputs are furnished with A__mic8 Analog-to-IP interfaces. The kit is completely controllable via a VSM control system.

V__remote 4

INTERACTION

INTERACTION

UNIFIED CONTROL FOR IP SIGNAL ROUTING

V__link 4 and V__remote 4 devices are managed with the Lawo VSM broadcast control and monitoring system. This enables convenient management of all V__line video streams, as well as the audio streams from A__line Audio-to-IP interfaces from one unified control GUI. VSM provides intuitive video and audio stream setup with a routing function that operates just like a standard router control panel. The VSM system hides the complexity of the IP network from the user, and provides immediate advantages: Reconfigure without the need to touch any physical cables, setup streams, and control parameters all with the use of a mouse-click or touch-screen control. In addition, the VSM system also includes a comprehensive range of hardware control panels.

INTUITIVE DEVICE CONFIGURATION

Like the Lawo V__link 4, also the V__remote 4 provides three convenient ways to control the device:

WEB-GUI

Easy-to-understand HTML 5-based touch screen interface with live video monitoring that runs directly within the web browser. The GUI enables the operator to access all V__line devices from anywhere within the network.

Ember+ CONTROL

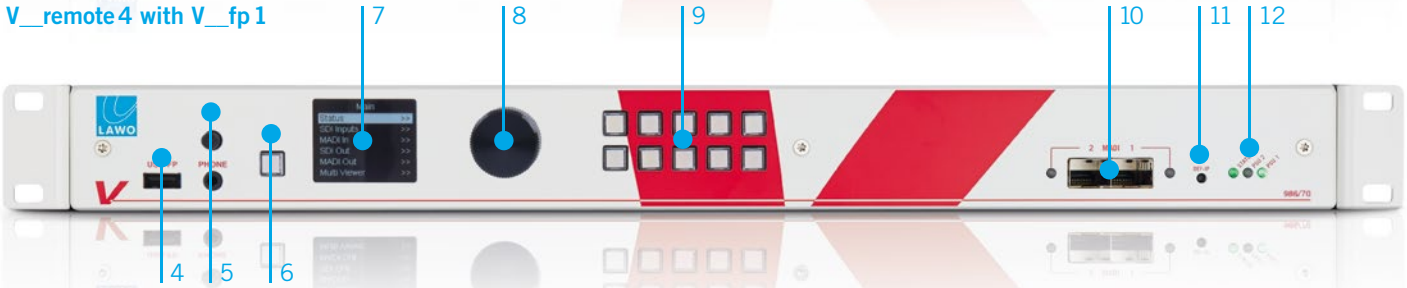
The Ember+ protocol support enables the device to be controlled by external master control systems like BFE's KSC, Axon's Cerebrum or Lawo's Virtual Studio Manager. This allows the building of broadcast installations with an integrated user interface.

V__fp 1 FRONT PANEL

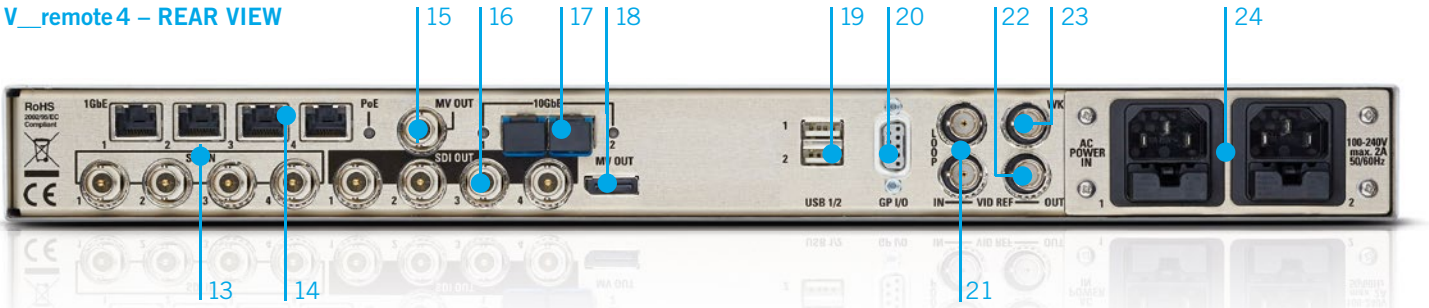
The optional V__fp 1 hardware control panel for direct configuration features a high-res OLED color display for showing the configuration menu and real-time viewing of video sources and audio metering, headphones output for audio pre-listen as well as ten quick selection buttons for direct source switching.

V__remote 4 – FRONT VIEW

V__remote 4 with V__fp 1



V__remote 4 – REAR VIEW



1 Optical MADI ports (2x In/2x Out)
2 Default IP button
3 Status LEDs (Status, PSU 1/2)
4 USB Port (save & load config)
5 Headphones output (audio monitoring)
6 Return/Cancel button
7 OLED Display (setup & video monitoring)
8 Rotary control (selection & setup)
9 Quick select buttons (e.g. menu delegation & video monitoring)
10 Optical MADI ports (2x In/2x Out)
11 Default IP button
12 Status LEDs (Status, PSU 1/2)
13 4x SDI Inputs (3G/HD/SD)
14 4x 1 Gbit Ethernet (2x PoE)
15 Quadsplit MV Output (SDI 3G/1080i)
16 4x SDI Outputs (3G/HD/SD)
17 2x 10 Gbit Ethernet (SFP+)
18 Quadsplit MV Output (Display Port 3G)
19 2x USB
20 GPI/O
21 Video Ref. Input & Loop Thru (BB or TriLevel)
22 Video Ref. Output (BB or TriLevel)
23 WordCLK I/O
24 Redundant Power Supplies

V__remote 4

SPECIFICATIONS

SPECIFICATIONS

VIDEO INTERFACES

- VIDEO SIGNAL INPUT/OUTPUT: 4x 3G/HD/SD-SDI inputs via BNC connector, 4x 3G/HD/SD-SDI outputs via BNC connector, 1x 3G/1080i MV/QS output via BNC, DisplayPort for local MV/QS monitoring
- VIDEO REFERENCE SIGNAL INPUT/OUTPUT: BB/Tri-Level, Loop thru, BB/Tri-Level output via BNC connector, IP
- VIDEO STANDARDS:
  2.97Gbps Video Standards (1080p):
  1080p 60Hz SMPTE-424M, 425M Level A & Level B
  1080p 59.94Hz SMPTE-424M, 425M Level A & Level B
  1080p 50Hz SMPTE-424M, 425M Level A & Level B
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  1080p 30/29.97/25/24/23.976sf
  1080p 30Hz SMPTE-274M(7)-292M(G)
  1080p 29.97Hz SMPTE-274M(8)-292M(H)
  1080p 25Hz SMPTE-274M(9)-292M(I)
  1080p 24Hz SMPTE-274M(10)-292M(J)
  1080p 23.976Hz SMPTE-274M(11)-292M(K)
  720p 60Hz SMPTE-296M(1),-292M(L)
  720p 59.94Hz SMPTE-296M(2),-292M(M)
  720p 50Hz SMPTE-296M(2),-292M(M)
  270Mbps Video Standards (SD):
  576i 16:9 and 4:3 SMPTE-259M(C)
  480i 16:9 and 4:3 SMPTE-259M(C)
- VIDEO REFERENCE: Analog Genlock High definition tri-level sync SMPTE-274M/296M or SD 1V BB SMPTE-170M/318M or SDI or IP-VideoStream, IEEE1588 PTPv2+RefMaster (SMPTE2059)
- RETURN LOSS: SD: > 15dB; HD: > 15dB; 3G-HD: >15dB 5MHz-1.485GHz, >10dB 1.485GHz-2.97GHz
- CABLE LENGTH: SD: >350m (using Belden1694A), HD: >180m (using Belden 1694A), 3G-HD: >120m (using Belden1694A)
- VIDEO RESOLUTION: 10 bit 4:2.2

AUDIO INTERFACES

- AUDIO SIGNAL INPUT/OUTPUT: 2x MADI/AES10 optical in/out via LC connector front (redundant mode selectable); SDI embedded Audio via BNC connector, Ethernet
- AUDIO REFERENCE SIGNAL INPUT/OUTPUT: BB/Tri-Level, WordCLK input via BNC connectors (for audio phase alignment only), WordCLK output via BNC connectors
- AUDIO STANDARDS: SMPTE 299/48, MADI/AES10, RAVENNA/AES67
- AUDIO RESOLUTION: 24 bit

METADATA

- ATC (LTC. VITC1, VITC2) SMPTE12M-2, Binary group data SMPTE 309, AFD SMPTE2016, Closed-Caption SMPTE334, VBI data services /DTV descr. SMPTE334, Source-ID OBS-special, Dolby E® Meta data SMPTE2020, ANSI/SCTE 104 SMPTE2010, DVB/SCTE VBI SMPTE2031, Teletext OP-47, User App ID DID C1&C4 (Y-HANC) (more on request)

IP INTERFACES

- GIGABIT ETHERNET: 4x RJ45 100/1000Base-T, 2x POE, 2+2 redundant operation selectable*
- 10G ETHERNET: 2x SFP+, redundant operation selectable
- PROTOCOLS: IPv4/UDP/TCP/RTP/RTCP, ARP, RSTP, LLD P, IGMPv2, DiffservTOS, IEEE1588 PTPv2 (transparent clock)
- VLAN: port-based VLAN1 & VLAN2; assignable management port
- SWITCHING CAPACITY: max. 40Gbps, video & audio content streaming max. 10Gbps

PROCESSING

- VIDEO ENCAPSULATION (10 BIT 4:2:2): Raw (uncompressed) encoding and decoding (SMPTE2022-6 vs. RV) or VC-2 (DiracPro-LL) compressed encoding and decoding; JPEG2000 encoding and decoding (VSF-TR01* vs. RV)
- SEAMLESS PROTECTION SWITCHING (Hitless Merge, compliant with SMPTE2022-7)
- RAW ENCODING & DECODING: 4x video encoding bitrates 2.5 Gbps, 1.25 Gbps; latency < 1 line
- JPEG2000 ENCODING & DECODING: 4x encoding / 4x decoding with HD/SD-SDI, 2x encoding / 2x decoding with 3G-SDI; video only encoding bitrates up to 250 Mbps; latency 1-2 frames at encoding, 0.5-1 frame at decoding
- MJPEG ENCODING (8 BIT 4:2:2): 4x video encoding with stereo audio; bitrates no constant bitrate, constant quality level; latency < 2 frames

- H264 ENCODING (8 BIT 4:2:0): 1x video encoding with stereo audio; encoding bitrate fixed 8 Mbps
- THUMBNAILING & PPM: input/output JPEG thumbnails and PPM data
- AUDIO ENCAPSULATION: AES67 and RAVENNA audio streams (encoding AM824, decoding L16, L24, AM824); Encoding bitrates stream dependant; Latency synchronous operation < 2msec
- AV SYNC (AUDIO/VIDEO): synchronous operation < 2msec
- VIDEO/AUDIO OUTPUT SYNCHRONIZATION: Genlocked to external clock reference, genlocked to IP PTP master clock-based reference, genlocked to SDI or IP input
- LATENCY: video processing latency: max. 100 pixels; QuadSplit monitoring: 1 frame; audio latency (SRC disabled, synchr. operation): <2 ms

MANAGEMENT AND MONITORING

- PROTOCOLS: HTTP, SNMPv1, Ember+, NMOS IS-04*, Syslog
- USER INTERFACES: Embedded HTML5 user interface; optional V__fp 1 control panel
- GPI: physical and virtual GPIs (via Ember+)

ENVIRONMENTAL

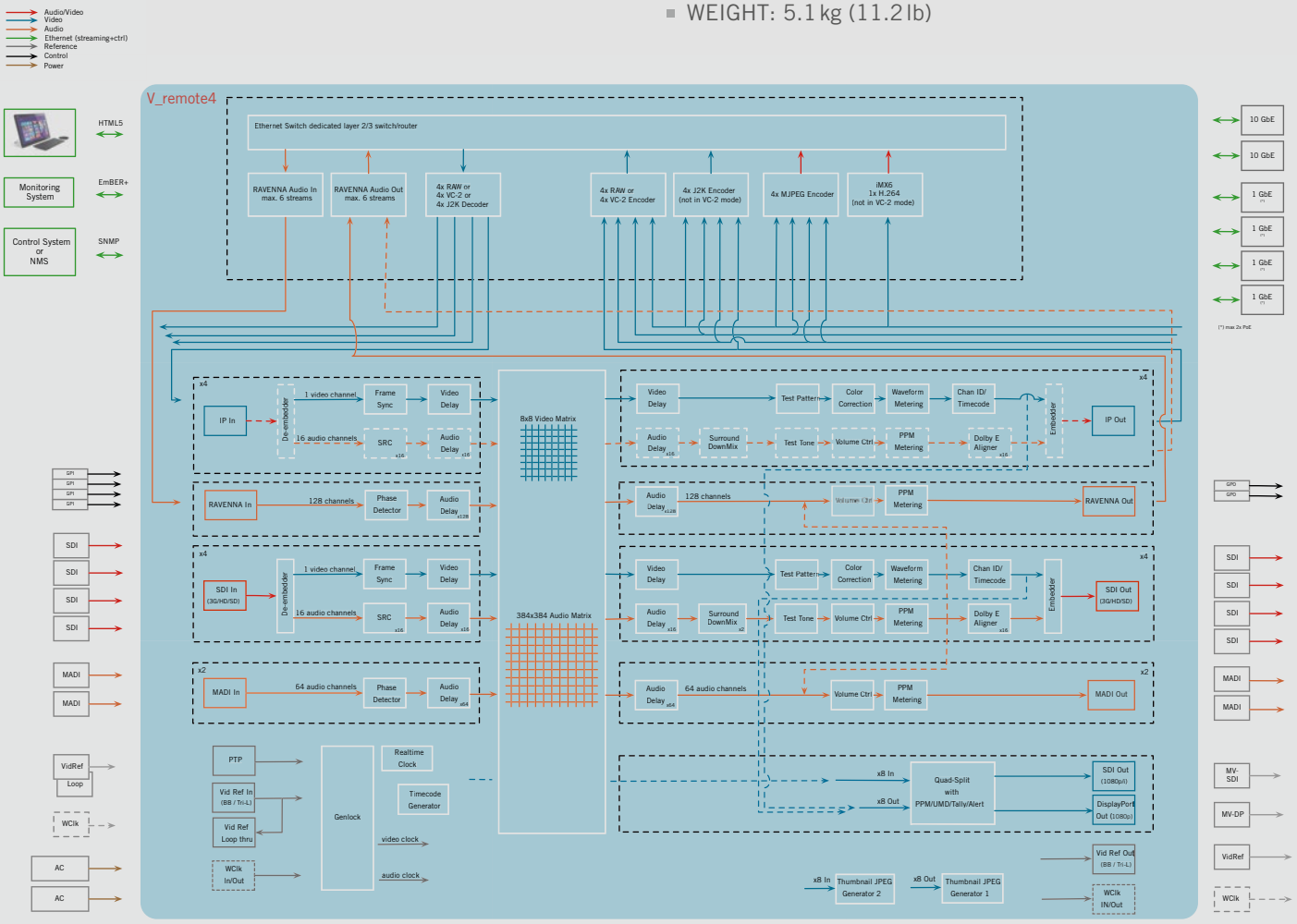
- STORAGE TEMPERATURE: -20°C to +70°C (-4°F to +158°F)
- OPERATING TEMPERATURE: 0°C to +40°C (+32°F to +104°F)
- RELATIVE HUMIDITY: < 90% non-condensing
- ELECTROMAGNETIC ENVIRONMENT: E2 (EN55103-1,-2)

POWER

- 2x Auto sensing 100 .. 240V VAC power supply 50/60 Hz nominal on IEC connector < 130 W incl. 30 W PoE

FRAME MECHANICS

- DIMENSIONS (H x W x D): 44 mm (1 RU) x 481 mm (19“) x 458 mm (18“)
- WEIGHT: 5.1 kg (11.2 lb)



* future SW release

V__link 4

THE ALL-IN-ONE VIDEO-OVER-IP STAGE BOX

PROUDLY SUPPORTING

AIMS Alliance for IP Media Solutions

Media Networking Alliance

RAVENNA

V__link 4

THE ALL-IN-ONE VIDEO-OVER-IP STAGE BOX

LAWO V__link 4 — THE WAY TO TRANSPORT PRODUCTION-QUALITY VIDEO OVER IP NETWORKS

Conceptually, the V__link 4 is designed to provide a one-box-solution for all the requirements of IP-based stage boxes including video and audio signal transport and processing. V__link 4 provides everything from Video-over-IP coding to various monitoring and processing tools. All designed for one purpose: to provide a tool that increases the flexibility of any broadcast application, while saving valuable rack-space, set-up time and production costs. With its virtual cabling capability, V__link 4 immediately brings IP infrastructure advantages and cost savings, providing an unparalleled degree of flexibility and scalability.

MAIN BENEFITS

- New flexibility through IP infrastructure
- Complexity reduction due to virtual cabling
- Unprecedented scalability
- Perfect tool for transition from SDI to the IP world
- Enables new and more efficient production workflows
- IP designed for video engineers, not for IT departments
- VSF TR-03/-04 compliant*
- SMPTE2022-6/-7 compliant
- Following AIMS roadmap

* full compatibility with future SW release

V__link 4

HIGHLIGHTS

HIGHLIGHTS

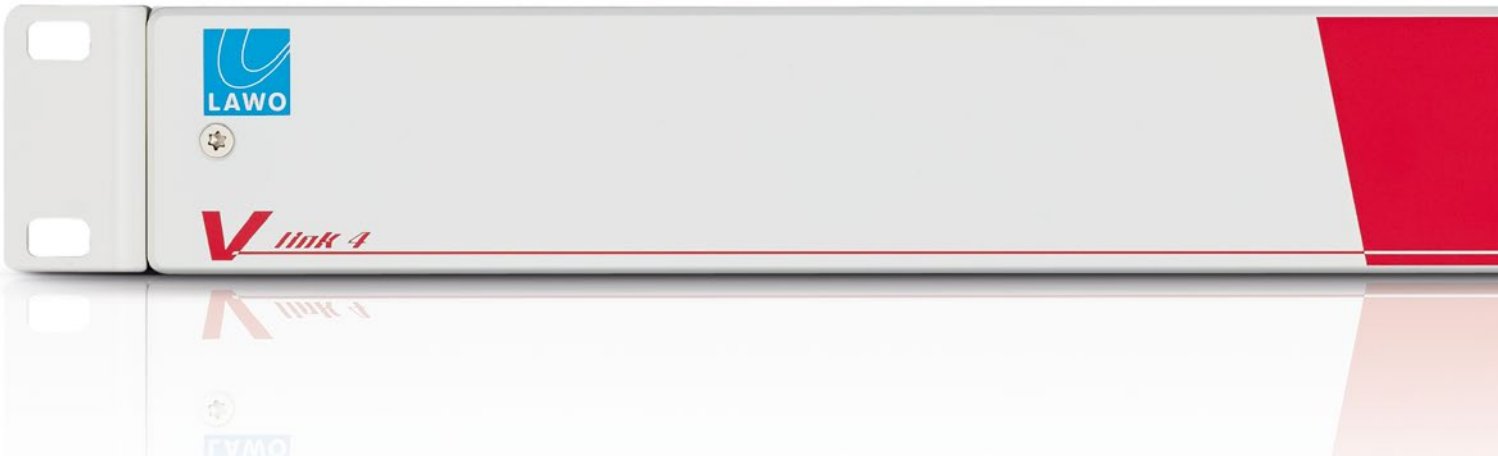
SIGNAL CONTRIBUTION FOR REALIZING TOMORROW'S VISIONS ALREADY TODAY

With the performance and maturity of today's IP network technology, video-, audio- and control-over-IP are becoming the solution of choice for many applications. Designed for "classic" applications like video contribution from a stage-box or a stadium to an OB truck or from a studio to a control room, IP technology provides economic and operational advantages.

The Lawo V__link 4 is the ideal tool for achieving this vision of IP-based broadcast production today, providing an easy and secure migration path from today's SDI-based infrastructures to IP. The device combines a fully bi-directional, four-channel Video-over-IP interface, four local SDI inputs and outputs, along with all the processing tools usually needed when contributing video and audio to a broadcast production.

AT A GLANCE

- Multiple Video-over-IP Encoding and Decoding: 4x Raw / VC-2* (DiracPro); in parallel 4x MJPEG* for monitoring applications (multicast / encoding only)
- Integrated switch fabric, switching capacity 40 Gbps, 2x 10 Gbit Ethernet and 4x 1 Gbit Ethernet (2x incl. PoE)
- Frame synchronization for each channel
- Frame Phasing, Line Phasing
- Variable audio and video delays for each channel
- Embedding and de-embedding incl. SRC for each channel
- RGB Color Correction & Proc Amp for each channel*
- Two Surround-to-stereo Downmixers per Embedder
- Dolby® E Auto Aligner*
- Quadsplit Multiviewer*
- Waveform and Vectorscope display*
- Timecode Insertion, Test Pattern Generator and Video ID Generator for each channel
- Timecode Generator
- Sync Generator, PTP Grandmaster with Ref GM function*
- AV Sync Measurement* (Vistek® VALID8 compatible)
- Network Sounding*



VIDEO-OVER-IP CONTRIBUTION

The Lawo V__link 4 provides four 3G/HD/SD SDI inputs and four 3G/HD/SD SDI outputs for interfacing to external video equipment. The device is designed to convert these signals into IP streams and vice versa. These streams can be transported via standard Layer 3 IP LAN environments. V__link 4 provides parallel encoding and de-coding in RAW or VC-2 (DiracPro) for local production and parallel encoding in MJPEG for low-latency monitoring applications. The IP-based approach allows easy signal routing via Lawo's VSM control and monitoring system or via other external master control systems. No rewiring is needed as long as all devices are connected to the network. Since the device is based on a real network technology with multi-cast capability, it allows easy transmission of signals to multiple outputs within the network.

The V__link 4's coding engines are designed to meet the highest demands in video quality and signal transport reliability. Port redundancy with SMPTE2022-7 compliant hitless merge switching ensures signal availability and quality. Format and quality of the IP video streams can be configured individually to meet the optimal ratio between picture quality, latency and bandwidth. The 6 Ethernet ports are connected to an internal switch allowing to "tunnel" through the 10GBit any IP traffic such as camera control, RAVENNA streams or even office and internet IP traffic.

SUPPORTED VIDEO TRANSPORT MODES

- Raw mode for transparent transport of uncompressed, full production quality video with the lowest latency. SMPTE 2022-6** compatible.
  Full code stream bit rates: HD 1.5 Gbps, 3G 2.97 Gbps
- Ultra low latency mode for transporting production quality video with ultra low latency VC-2 (DiracPro) Codec, end-to-end delay incl. encoding and de-coding < 32 video lines
- MJPEG mode for monitoring and IP-TV applications. MJPEG Encoder, full code stream bit rates typ. 60 Mbps, end-to-end delay with V__view_app < 3 frames
- Full support of source-timed frame-accurate switching of SMPTE2022-6 video*.
- Following AIMS roadmap

SUPPORTED AUDIO TRANSPORT MODES

- RAVENNA
- AES67
- Embedded SMPTE 2022-6

* optional feature ** without FEC

V__link 4

HIGHLIGHTS

POWERFUL TOOLS FOR VIDEO CONTRIBUTION

- VIDEO/AUDIO ROUTER provides an internal 8x8 video routing matrix (4x SDI + 4x IP) and a 384x384 audio routing matrix.
- INTERNAL SWITCH with 2x 10G Ethernet and 4x 1G Ethernet ports (2x PoE) for any network application.
- IP STREAMING ENGINE for video and audio signals with raw format video encapsulation (SMPTE 2022-6).
- MJPEG ENCODER for IP monitoring applications.
- SYNC-GENERATOR for precise clocking of broadcast infrastructures.
- VIRTUAL BLACKBURST for sync distribution via LAN.
- FRAME-SYNCHRONIZER for syncing incoming independent free running signals to the same reference.
- 3G CONVERSION down-converts 3G to 1080i for 10GE streaming applications.
- VARIABLE VIDEO & AUDIO DELAYS for compensating latencies and lip-sync matching between incoming or outgoing audio (up to 320 ms delay) and video (up to 8 frames delay) signals. In Delay Auto Mode the audio delay can be set to automatically follow the video delay.
- (DE-) EMBEDDING WITH SRC to embed, de-embed and shuffle any of the 16 audio channels within the 8 SDI input/output streams simultaneously. Audio interfacing to mixing consoles or external audio routers via MADI and AES67/RAVENNA.
- SURROUND DOWNMIX for providing two automated Lawo-quality 5.1/7.1 to stereo downmixes per embedder.
- TIMECODE INSERTION provides selectable ATC LTC/VITC1/VITC2 insertion from an input signal or free run mode or from internal Timecode Generator.
- TEST PATTERN AND VIDEO ID GENERATOR provide video ID insertions (text, source, date, timecode, time of day) and color bar test pattern as well as a selection of audio test tones.
- THUMBNAIL PREVIEWING to provide motion previews of video signals. The thumbnails are available via IP and can be displayed on the V__link 4 GUI, external master control systems or PCs.

OPTIONAL FEATURES

- VC-2 CODECS for production quality, bandwidth-reduced, low latency IP streaming (suitable for multiple coding generations).
- SEAMLESS PROTECTION SWITCHING for providing port and network redundancy with seamless protection switching (SMPTE2022-7 compliant)
- CLEAN SWITCHING OPTION for full support of source-timed frame-accurate switching of SMPTE2022-6 video.
- NETWORK SOUNDING for testing the WAN's network performance in order to provide metrics for trouble-shooting and monitoring.
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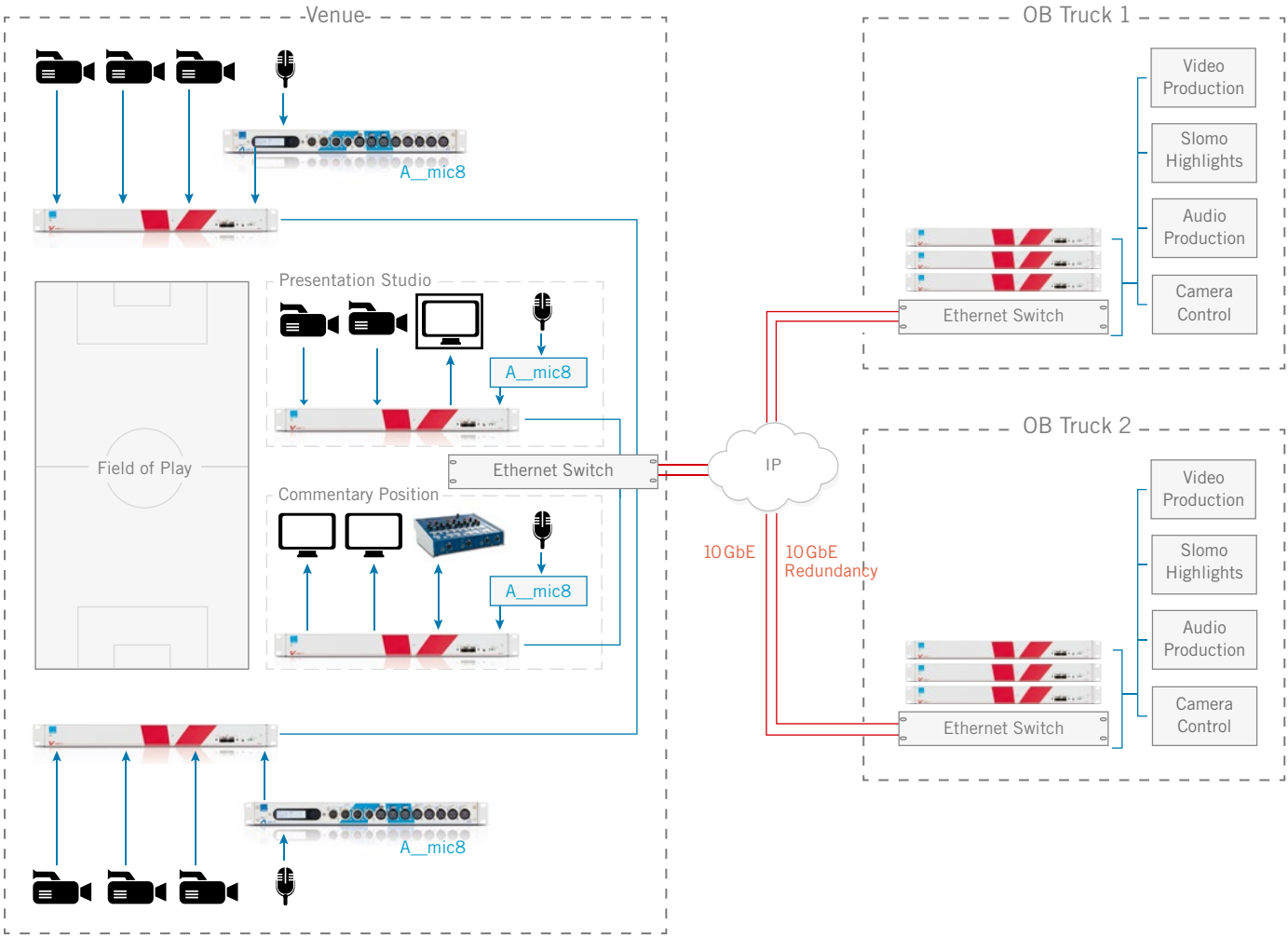
APPLICATIONS

V__link4 IN ACTION

IP A/V STAGEBOX FOR SIGNAL CONTRIBUTION & DISTRIBUTION



V__link 4

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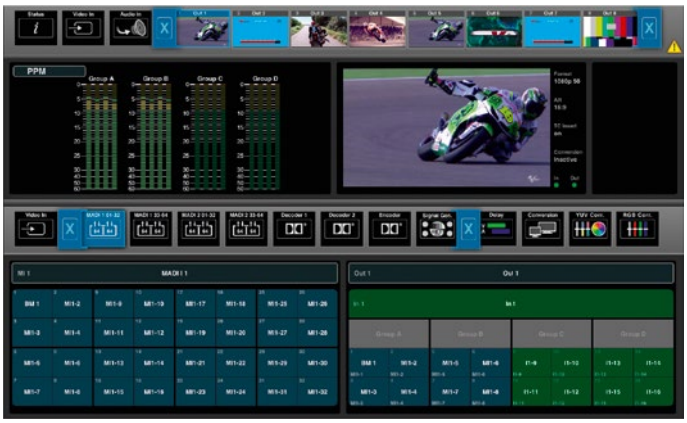

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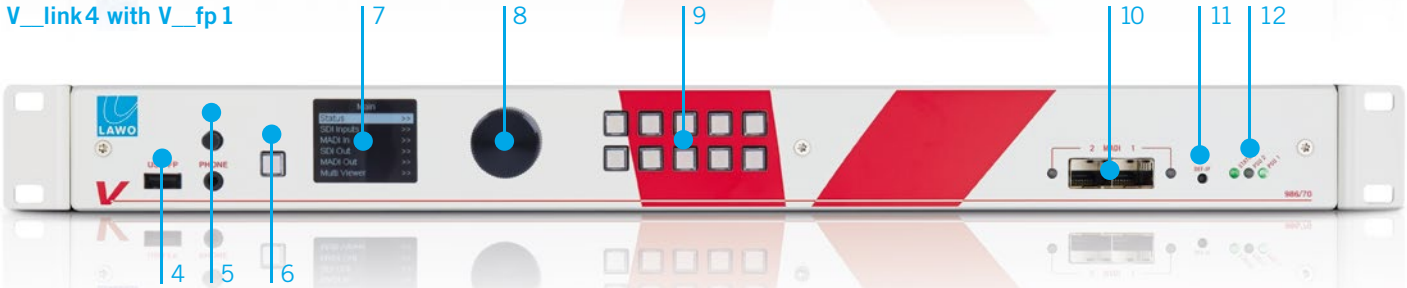
V__link 4 – FRONT VIEW

V__link 4 with V__fp 1



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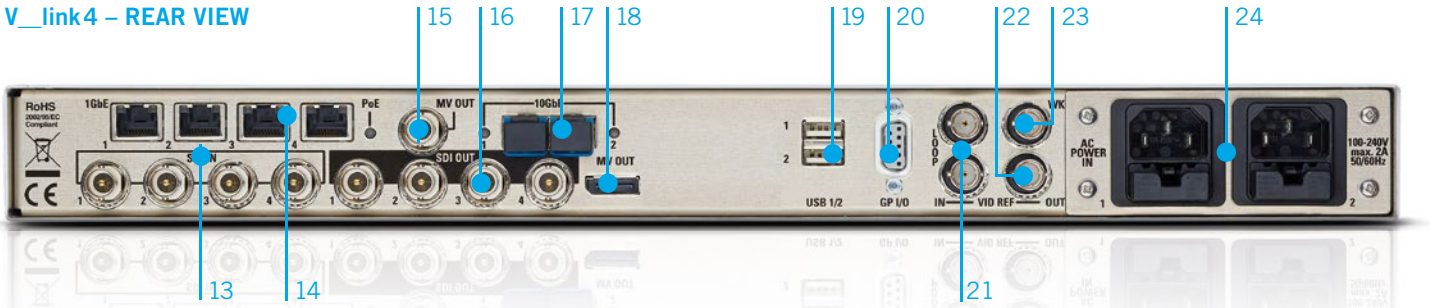

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  1080p 23.976Hz SMPTE-274M(11)-292M(K)
  720p 60Hz SMPTE-296M(1),-292M(L)
  720p 59.94Hz SMPTE-296M(2),-292M(M)
  720p 50Hz SMPTE-296M(2),-292M(M)
  270Mbps Video Standards (SD):
  576i 16:9 and 4:3 SMPTE-259M(C)
  480i 16:9 and 4:3 SMPTE-259M(C)
- VIDEO REFERENCE: Analog Genlock High definition tri-level sync SMPTE-274M/296M or SD 1V BB SMPTE-170M/318M or SDI or IP-VideoStream, IEEE1588 PTPv2+RefMaster (SMPTE2059)
- RETURN LOSS: SD: > 15dB; HD: > 15dB; 3G-HD: >15dB 5MHz-1.485GHz, >10dB 1.485GHz-2.97GHz
- CABLE LENGTH: SD: >350m (using Belden1694A), HD: >180m (using Belden 1694A), 3G-HD: >120m (using Belden1694A)
- VIDEO RESOLUTION: 10 bit 4:2.2

AUDIO INTERFACES

- AUDIO SIGNAL INPUT/OUTPUT: 2x MADI/AES10 optical in/out via LC connector front (redundant mode selectable); SDI embedded Audio via BNC connector, Ethernet
- AUDIO REFERENCE SIGNAL INPUT/OUTPUT: BB/Tri-Level, WordCLK input via BNC connectors (for audio phase alignment only), WordCLK output via BNC connectors
- AUDIO STANDARDS: SMPTE 299/48, MADI/AES10, RAVENNA/AES67
- AUDIO RESOLUTION: 24 bit

METADATA

- ATC (LTC. VITC1, VITC2) SMPTE12M-2, Binary group data SMPTE 309, AFD SMPTE2016, Closed-Caption SMPTE334, VBI data services /DTV descr. SMPTE334, Source-ID OBS-special, Dolby E® Meta data SMPTE2020, ANSI/SCTE 104 SMPTE2010, DVB/SCTE VBI SMPTE2031, Teletext OP-47, User App ID DID C1&C4 (Y-HANC) (more on request)

IP INTERFACES

- GIGABIT ETHERNET: 4x RJ45 100/1000Base-T, 2x POE, 2+2 redundant operation selectable*
- 10G ETHERNET: 2x SFP+, redundant operation selectable*
- PROTOCOLS: IPv4/UDP/TCP/RTP/RTCP, ARP, RSTP, LLD P, IGMPv2, DiffservTOS, IEEE1588 PTPv2 (transparent clock)
- VLAN: port-based VLAN1 & VLAN2; assignable management port
- SWITCHING CAPACITY: max. 40Gbps, video & audio content streaming max. 10Gbps

PROCESSING

- VIDEO ENCAPSULATION (10 BIT 4:2:2): Raw (uncompressed) encoding and decoding (SMPTE2022-6 vs. RV) or VC-2 (DiracPro-LL) compressed encoding and decoding
- SEAMLESS PROTECTION SWITCHING (Hitless Merge, compliant with SMPTE2022-7)
- RAW ENCODING & DECODING: 4x video encoding bitrates 2.5 Gbps, 1.25 Gbps; latency < 1 line
- VC-2 (DIRACPRO LL) ENCODING & DECODING: latency < 32 lines
- MJPEG ENCODING (8 BIT 4:2:2): 4x video encoding with stereo audio; bitrates no constant bitrate, constant quality level; latency < 2 frames
- THUMBNAILING & PPM: input/output JPEG thumbnails and PPM data

- AUDIO ENCAPSULATION: AES67 and RAVENNA audio streams (encoding AM824, decoding L16, L24, AM824); Encoding bitrates stream dependant; Latency synchronous operation < 2msec
- AV SYNC (AUDIO/VIDEO): synchronous operation < 2msec
- VIDEO/AUDIO OUTPUT SYNCHRONIZATION: Genlocked to external clock reference, genlocked to IP PTP master clock-based reference, genlocked to SDI or IP input
- LATENCY: video processing latency: max. 100 pixels; QuadSplit monitoring: 1 frame; audio latency (SRC disabled, synchr. operation): <2 ms

MANAGEMENT AND MONITORING

- PROTOCOLS: HTTP, SNMPv1, Ember+, NMOS IS-04*, Syslog
- USER INTERFACES: Embedded HTML5 user interface; optional V__fp 1 control panel
- GPI: physical and virtual GPIs (via Ember+)

ENVIRONMENTAL

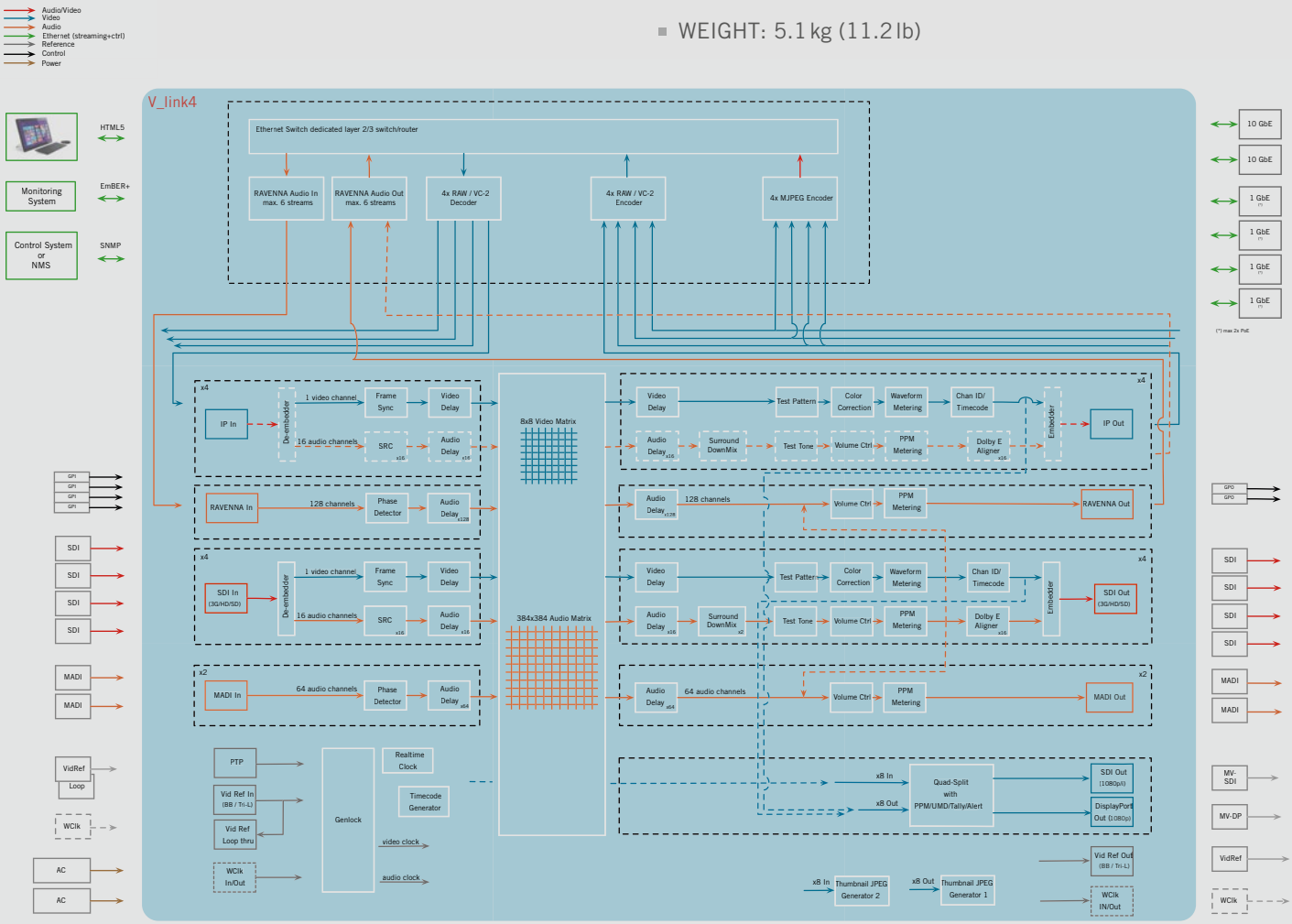
- STORAGE TEMPERATURE: -20°C to +70°C (-4°F to +158°F)
- OPERATING TEMPERATURE: 0°C to +40°C (+32°F to +104°F)
- RELATIVE HUMIDITY: < 90% non-condensing
- ELECTROMAGNETIC ENVIRONMENT: E2 (EN55103-1,-2)

POWER

- 2x Auto sensing 100 .. 240V VAC power supply 50/60 Hz nominal on IEC connector < 130 W incl. 30 W PoE

FRAME MECHANICS

- DIMENSIONS (H x W x D): 44 mm (1 RU) x 481 mm (19“) x 458 mm (18“)
- WEIGHT: 5.1 kg (11.2 lb)



* future SW release

V__view_app

LOW-LATENCY IP VIDEO MONITORING

V__view_app

LOW-LATENCY IP VIDEO MONITORING

LAWO V__view_app — CA-TV GOES PC

The Lawo V__view_app enables standard PCs to receive and show low-latency MJPEG streams from Lawo V__line devices, resulting in a convinient and cost-efficient monitoring solution for CA-TV applications with an end-to-end delay of fewer than three frames (e.g. at commentary positions or backstage). The V__view_app is a JAVA™-based software-only solution compatible with any computer using a Java™ Runtime environment such as Windows, Mac OS X or Linux. As signals are streamed via IP, COTS switches or an existing IP infrastructure can be used to distribute both video and audio signals. The V__view_app is an ideal addition to installations using Lawo's V__link 4 and V__remote 4 Video-to-IP interfaces, providing a very flexible monitoring solution in addition to production-quality streams. Via the software_s user interface users can conveniently select between several available streams.

MAIN BENEFITS

- Cost-efficient and flexible solution for monitoring applications
- Low-latency video streaming (end-to-end <3 frames)
- High-quality MJPEG codec
- Works with off-the-shelf IP infrastructure
- Easy operation for production crews
- Software-only – no need for additional hardware

SPECIFICATIONS

V__view_app

SYSTEM REQUIREMENTS

- HARDWARE REQUIREMENTS: min. PC with Intel i5 or higher (CPUBenchmark min. 1350 Points @ http://www.cpubenchmark.net/), min. 4GB RAM
- OPERATING SYSTEM: Java™ Runtime environment Version 7 or newer

MJPEG STREAM RECEIVER

- STREAM RECEIVING FORMAT: multicast MJPEG streams from Lawo V__ series products
- STREAM AUDIO: encapsulated stereo audio (playback via computer screen)
- STREAM BANDWIDTH: full code stream bit rates typ. 60 Mbps
- STREAM DELAY: end-to-end delay from encoding at V__link4 or V__remote4 to display via V__view_app <3 frames

V__line

V__pro 8
V__remote 4
V__link 4
V__view_app

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