mc²56

A GLOBAL STANDARD RE-DEFINED

LAWO

FUTURISTIC
FLEXIBLE
FORMIDABLE

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A GLOBAL STANDARD RE-DEFINED
FUTURISTIC. FLEXIBLE. FORMIDABLE.

This 3rd generation of the mc²56 represents the next step in the evolution of a console that has dominated the audio production industry with hundreds of units in operation around the world. Designed to deliver unrivaled innovation, it provides not just pure and simple access to ultimate performance – it's a global standard redefined.

Our newest version of the mc²56 incorporates several ground-breaking features from Lawo's mc²96 flagship console without sacrificing the identity of its predecessors – retaining virtues like compact size, flexibility and versatile design for applications ranging from broadcast trucks and studios to live performance and recording.

For optimized performance within IP video production environments, there is full support for native SMPTE ST2110, AES67, RAVENNA and DANTE, while Lawo's revolutionary LiveView™ feature enables thumbnail previews of video streams directly in the fader labeling displays. Best-in-class performance in networking applications has been taken to the next level with the addition of unique capabilities such as IP-Share™ gain compensation and DSCA™ Dynamic Surface to Core Allocation. All of this and more, simply reinforces this console's place as the number one choice within complex IP-based production infrastructures.

Push the envelope and take your audio production capabilities even further than you imagined with the new mc²56. Now more than ever, the global standard in audio production consoles.

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OVERVIEW

AT A GLANCE

– Frames with 16 to 144 faders
– Up to 8,192 x 8,192 crosspoints
– Up to 1,024 DSP channels
– Up to 192 summing buses
– Up to 128 aux buses
– 44.1 – 96 kHz operation
– Designed for IP-based infrastructures with native support for all relevant IP standards: SMPTE ST2110, AES67, RAVENNA and DANTE®

ENHANCED COLOR CODING

In addition to Button-Glow and colored touch-sensitive encoders, new color-TFTs allow for an even more obvious color-coding of the channel strips, resulting in enhanced visibility and faster access even in low light conditions.

HIGH PERFORMANCE FADERS

The mc²56 features the same dust-proof long-life performance faders as its MKII predecessor, providing smooth and precise fades for a lifetime.

THE POWER OF COMPACT

Perfect for outside broadcast vehicle dimensions: 64 faders fit across most standard installations. A 16 fader stand-alone extender may be added at any time for ubsequent expansion.

SUPER-PRECISE HD TOUCH-SCREENS

The mc²56 features state-of-the-art capacity sensing 21.5" full HD touch-screens, providing mechanical robustness and super-precise control.

A PERFECT SYMPHONY OF HARDWARE & SOFTWARE CONTROLS

The mc²56's unique design combines large screens with a low overbridge height to provide a more ergonomic profile without compromising an engineer's view. The console's super-precise 21.5" full HD touch-screens work hand-in-hand with the touch-sensitive color-illuminated rotary encoders. An equalizer window will automatically pop-up when touching the equalizer encoders, and after adjusting the parameters the auto-close function will close the window without additional user action to restore the full overview. Close positioning of the TFTs and encoders provides a constant and clear overview of parameters and graphs.

TOUCH-SENSITIVE COLOR-CODED ENCODERS

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INTERACTION

EXTENDED FREE CONTROLS

The new mc²56's extended free control section gives direct access to four parameters in addition to gain control. The result: A perfect balance between de-centralized and centralized control workflows. The console allows both global and individual parameter assignments to the free controls of each channel strip.

MULTI-USER OPERATION

In multi-user mode, 64 rotary encoders in each 16-fader bay give direct access to all important parameters to create an additional central control panel and allow for independent operation and monitoring of a second engineer.

LIVEVIEW™ VIDEO LABELS

In addition to standard channel labeling via channel numbers, individual text labels and static pictures or icons, the mc²56 inherited the mc²96's LiveView™ video thumbnails for even more intuitive channel identification. Simply touch a fader and the LiveView™ thumbnail changes to full-screen mode, providing a more detailed view of that channel's video source such as a camera or a replay machine.

COLOR CODING

CUSTOMIZABLE FADER USER BUTTONS

INPUT METERING
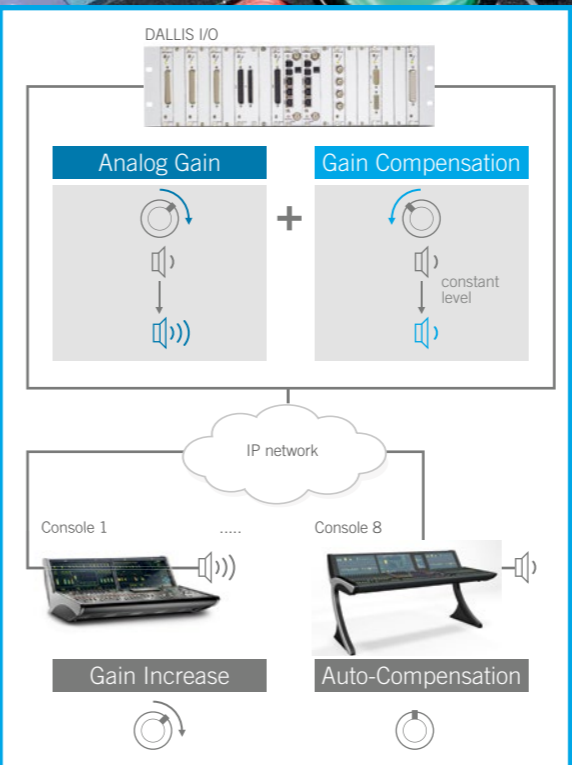
NETWORKING WITH IP-SHARE™ GAIN COMPENSATION

Lawo's mc²56 console is not just a stand-alone solution, but has been designed from the ground up for networking in complex production infrastructures via IP (SMPTE ST2110/RAVENNA/AES67/DANTE) or MADI. When using shared DALLIS I/Os, Lawo's unique IP-Share™ Network Gain Compensation prevents unexpected gain changes for up to eight networked consoles when individual users are adjusting their gain settings. The DALLIS I/O communicates with all networked consoles and its unique IP-Share™ algorithm sets the optimum analog gain for multi-client requirements. Furthermore, IP-Share™ ensures that the corresponding gain compensation is applied to the digital gain stages of all consoles when the analog gain of the preamp is being adjusted.

DALLIS I/O

Analog Gain | Gain Compensation

constant level

IP network

Console 1 ...... Console 8

Gain Increase | Auto-Compensation

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TECHNICAL DESIGN

LOW-NOISE DESIGN

The console is optimized for low power consumption, which allows the use of inaudible, low-spinning fans for cooling. This is especially important in environments such as quiet control rooms, where fan noise is obtrusive.

COMPREHENSIVE LOCAL I/O

The mc²56's comprehensive local I/O features 16 Lawo-grade Mic/Line inputs, 16 Line outputs, 8 AES3 inputs and outputs, 8 GPIOs plus a local MADI port (SFP).

DSCA™

Lawo's mc² consoles are enabled with DSCA™ Dynamic-Surface-to-Core Allocation. This unique feature works in combination with Lawo's VSM IP broadcast control system to allow the dynamic allocation of multiple mixing surfaces to any available processing cores when used in an IP-based LAN/WAN environment. As a result, DSP resources can be pooled and flexibly allocated to specific productions. DSCA™ allows for a higher availability of processing power throughout the network, with greater redundancy and more efficient resource utilization that can take your production workflows to the next level.

REDUNDANT LOCAL I/O CONNECTIVITY

The console's local I/O provides two IP network interfaces for redundant connection of the surface's local I/O to the Nova73 following the SMPTE2022-7 hitless merge principles of stream and port redundancy.

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mc²56 16+ 16C+16 with integrated RTW TM9 Goniometer

mc²56 32DF+ 16C with integrated RTW TM9 Goniometer

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CENTRAL CONTROL SECTION

MAKE IT YOUR WAY – USER PANELS

The mc²56's clearly structured central control section delivers an optimal workflow with maximum overview. In addition, the console's overbridge contains two slots for individual user panels, which can be filled with a choice of five options: additional 40 buttons, a TC automation panel, a dedicated Reveal Fader panel, a RTW TM7 Goniometer or a RTW TM9 Goniometer (occupying both slots) – the choice is yours.

INTUITIVE MONITORING

The monitoring section of the central GUI has been redesigned for easier access, enhanced flexibility and easy adaptation to user requirements.

PARALLEL COMPRESSION

Parallel compression, also known as New York compression, is a dynamic range compression technique achieved by blending a dry signal with a compressed version of the same signal. Rather than bringing down the highest peaks for the purpose of dynamic range reduction, it reduces the dynamic range by bringing up the softest sounds, which results in adding audible detail. Parallel compression can be applied in every channel, group, aux and sum of the mc²56.

IMMERSIVE BY NATURE

Reflecting today's requirements for 3D / immersive audio productions, the mc²56 provides not only superb tools for surround sound mixing, but also a dedicated elevation controller as standard.

AUDIO-FOLLOW-VIDEO

Automated transitions and the perfect coupling of image and sound – all of this is provided by the mc²56's Audio-follow-Video function. Each camera tally is assigned to an event, which can be selected in one or more channels with a total of 128 available events. The Rise-Time, On-Time, Hold-Time, Max-Time and Fall-Time parameters can be used to set the processing envelope, creating amazingly smooth and natural sounding transitions from camera to camera.

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FEATURES

AUTOMATED MIXING ASSISTANTS

The mc²56's automated mixing capabilities include an Automix function that can automatically adjust the levels of active and inactive microphones, while maintaining a constant, natural sounding ambient level. This feature provides unique functionality especially in live productions with multiple presenters or performers. Automix can be used for any signals, from mono and stereo to multiple surround channels to minimize background noise and crosstalk with reduced sound coloration. Truncated sentences and late fade-ins are things of the past, enabling the sound engineer to focus on overall balance and sound quality. The console also features a Downmix function and Lawo's highly acclaimed AMBIT Upmix function, which guarantees perfect conversion of stereo signals into amazingly authentic surround sound using very few parameters. Last but not least, the mc²56 is set for KICK 2.0, Lawo's automated close-ball mixing solution for sports such as football, hockey or basketball.

REMOTE DESKTOP

Lawo's integrated Remote Desktop function allows seamless integration into the console's user interface of multiple external PCs running third-party solutions. With the switch of a button, the external PC and its software applications are displayed in the console's screen while the console's keyboard, touchpad and touchscreen provide control. The seamless integration of external recording systems, effect engines, or other user interfaces, means less equipment – and the engineer has control over the complete set-up, conveniently from a single, central position.

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OVERBRIDGE
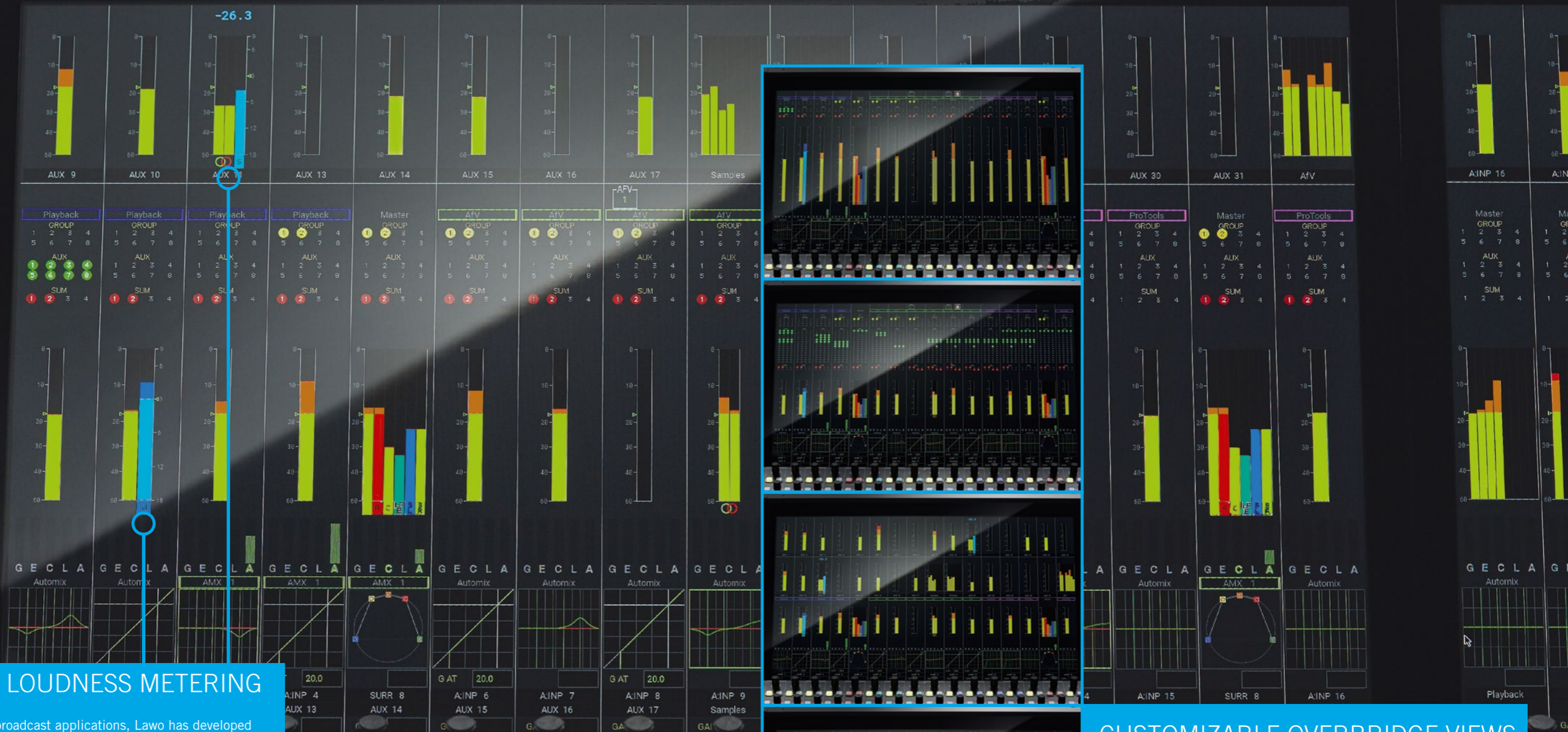
INTEGRATED LOUDNESS METERING

Originally requested for broadcast applications, Lawo has developed built-in loudness metering into a tool that is useful also in live, theater and house of worship applications. The feature provides full loudness control in accordance with ITU 1770 (EBU/R128 or ATSC/A85) and features peak and loudness metering either separately or in combination. In addition to the sums, Lawo Loudness Metering can also measure individual channels, which allows fast and convenient "visual" mixing for things like background singers or multiple-microphone setups for brass sections, strings and choirs.

CUSTOMIZABLE OVERBRIDGE VIEWS

The console's overbridge can be adapted to your requirements by adjusting the channel display accordingly – just choose and display those parameters that are important and hide any unnecessary or distracting elements. The metering shows all fader levels permanently on the HD display. In addition, multi-row metering allows for permanent metering of signals from other layers or banks.

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APPLICATIONS

HIGHLIGHTS FOR BROADCAST

- IP-based infrastructure with native support for all relevant IP standards: SMPTE ST2110, AES67, RAVENNA and DANTE®
- Optimized for multi-user operation
- Advanced mix assist systems (AutoMix, UpMix, DownMix, prepared for KICK)
- Networking and processing capacity with up to 8,192 x 8,192 crosspoints, 1,024 DSP channels, 192 summing buses and 128 aux buses
- 44.1 – 96 kHz operation
- Comprehensive Audio-Follow-Video functionality
- LiveView™ video thumbnails
- IP-Share™ Network Gain Compensation
- Integrated 3D/Immersive mixing tools
- Parallel compression
- Integrated loudness metering
- Enhanced signal management functions for large productions (including swap and relocate)

HIGHLIGHTS FOR RECORDING

- Dynamic timecode automation
- Lawo-grade microphone preamps and processing algorithms
- Machine/DAW remote control
- Fully customizable signal chain with four independent dynamic modules
- Clickless-delay adjustments
- Parallel compression
- Ultra low-noise console design

HIGHLIGHTS FOR PERFORMING ARTS

- Selective Recall
- Oversnaps (relative trim-sets)
- Comprehensive theater automation cue list including multiple triggers (MIDI, GPIO, LTC, …)
- Waves Soundgrid® Integration
- Neumann DMI-8® digital microphone integration
- Workflow-specific customization of functionality and features
- Clickless-delay adjustments
- Mirror-console operation
- A/B input switch
- Cascaded/nested VCAs
- IP-Share™ Network Gain Compensation
- Integrated loudness metering for "visual" mixing

COMPONENTS

AUDIO

AGGREGATION & PROCESSING

Nova 73 compact – Console and Router Core

- 19"/7 RU frame
- Redundant router cards
- Redundant power-supplies
- Full card and port redundancy
- 10 slots for DSP and I/O (MADI, AES3, SMPTE ST2110/AES67/RAVENNA and DANTE)
- up to 5,120 x 5,120 routing capacity
- up to 500 (with UHD Core: 1,024) fully equipped DSP channels

Nova 73 HD – Console and Router Core

- 19"/10 RU frame
- Redundant router cards
- Redundant power-supplies
- Full card and port redundancy
- 16 slots for DSP and I/O (MADI, AES3, SMPTE ST2110/AES67/RAVENNA and DANTE)
- up to 8,192 x 8,192 routing capacity
- up to 888 (with UHD Core: 1,024) fully equipped DSP channels

A__UHD Core – Ultra-high Density Network DSP Engine

- 19"/1 RU frame
- 1,024 DSP channels
- ST2110-30/-31, AES67, RAVENNA
- Full redundancy
- DSP resources shareable amongst up to four consoles
- Scalable DSP performance via licensing system
- Futureproof, software-defined hardware

I/O DEVICES

DALLIS – Modular I/O System

- 19"/3 RU frame
- Redundant master cards (RAVENNA/MADI)
- Redundant power supplies
- Full card and port redundancy
- 18 single-width slots for I/O (Mic/Line In, Line out, AES3, SDI, GPIO, Serial, ADAT, Intercom, Headphones)

mc² compact I/O – Stagebox

- 19"/5 RU
- RAVENNA IP connection to Core (CAT/Fiber)
- 32 Mic/Line in, 32 Line out, 8 AES3 in, 8 AES3 out, 8 GPIO, 1 MADI

A__line – WAN-capable Audio-to-IP Interfaces

- A__mic8: 8 Mic/Line in, 4 Line out, 8 GPIO
- A__digital8: 8 AES3 in, 4 AES3 out, 8 GPIO
- A__madi4: 4 MADI, 8 GPIO
- A__stage80: 32x Mic/Line in, 32x Line out, 8x AES3 in, 8x AES3 Out, 1x MADI (redundant pair), 8/8 GPIO
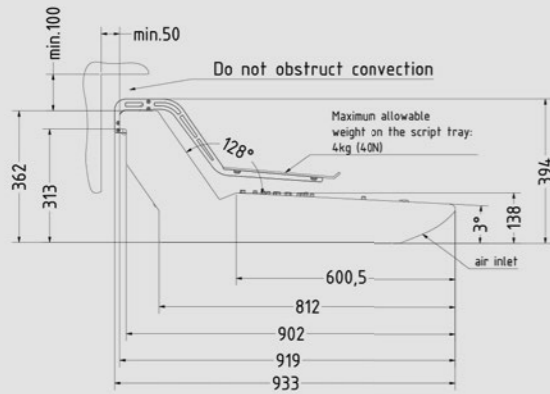
V__pro8 – 8-Channel Video Processing Toolkit

- 19"/1 RU frame
- Redundant power-supplies
- 8 SDI in, 8 SDI out, 2 MADI
- Embedder/De-Embedder, Frame sync, Audio & video delays, Dolby® E auto aligner, Dolby® E encoding and decoding, Thumbnail previewing, Sync generator, Timecode generator, AV sync measurement, Surround downmixer, …
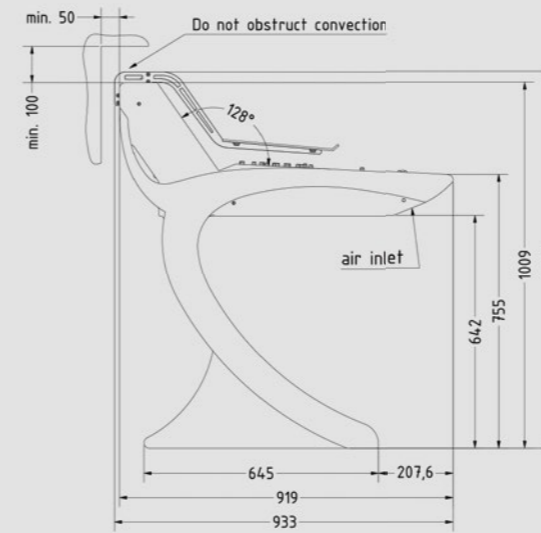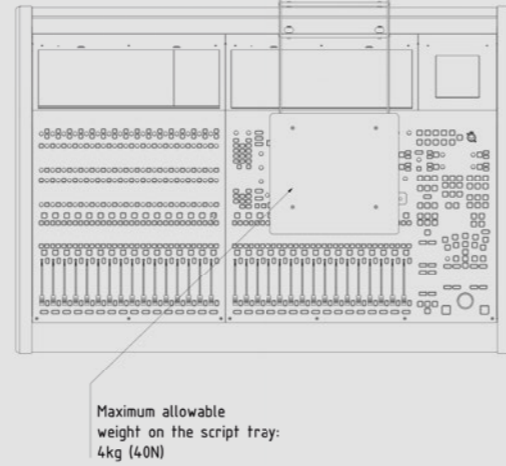
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SPECIFICATIONS

mc²56

Per 16 fader extension plus 510 mm width

mc²56	STUDIO VERSION	MOBILE VERSION
16C	▪ Width: 805 mm / 31.69 " ▪ Weight: 46 kg / 102 lb	▪ Width: 736 mm / 28.97 " ▪ Weight: 47 kg / 104 lb
16+16C	▪ Width: 1315 mm / 51.77 " ▪ Weight: 59 kg / 130 lb	▪ Width: 1246 mm / 49.05 " ▪ Weight: 60 kg / 132 lb
16+16C+16	▪ Width: 1825 mm / 71.85 " ▪ Weight: 76 kg / 168 lb	▪ Width: 1756 mm / 69.13 " ▪ Weight: 77 kg / 170 lb
32+16C+16	▪ Width: 2335 mm / 91.92 " ▪ Weight: 94 kg / 207 lb	▪ Width: 2266 mm / 89.21 " ▪ Weight: 95 kg / 209 lb
16 Fader Stand Alone	▪ Width: 597 mm / 23.50 " ▪ Weight: 28 kg / 62 lb	▪ Width: 528 mm / 20.79 " ▪ Weight: 30 kg / 66 lb

CONTROL PANEL

▪ Frames from 16 to 144 faders*
▪ Remote stand-alone frames of 16 faders
▪ 6 banks each with 2 layers
▪ 100 mm fader + 4 freely adjustable rotary knobs or 100 mm + 60 mm dual faders + Input-Gain controller + channel display for each fader with sense-triggered change of module display
▪ TFT metering: mono, stereo or up to 7.1 including bus assignment, gain reduction for dynamics, AfV status, VCA assignment, Mix-Minus, Signal Patching, Meter selection, Automix state
▪ GUI page output, e.g. metering, on an external monitor
▪ 8 user buttons, 4 talkback buttons and 4 user buttons per fader with 16 functions each
▪ Optional: two integrated user panels (TC automation panel, 40 user button panel, reveal fader panel, RTW TM7 or TM9 goniometer), script tray

SIGNAL PROCESSING

▪ 40-bit floating point
▪ 1,024 DSP channels (832 inputs and 192 summing buses)
▪ Up to 832 inputs with A/B input, up to 128 aux buses, up to 128 groups, up to 128 main sums, up to 96 track buses, 32 Automix groups
▪ Rapid switching of channel and bus to mono / stereo / surround
▪ Up to 96 surround channels, 128 VCA groups with metering, 256 GP channels
▪ Surround formats: DTS & Dolby® Digital 5.1, Dolby® Pro-logic 4.0, DTS ES & Dolby® EX 6.1, SDDS 7.1, DTS-HD 7.1, diverse panning characteristics, surround aux bus
▪ 2 AFL: 1 surround 8-channel, 1 stereo
▪ 2 PFL stereo
▪ Audio-follow-Video with 128 events, control via Remote MNOPL, GPI or matrix connection, envelope up to 10s fade time
▪ Solo In Place
▪ Permanent input meter at the fader, adjustable INPUT, PF, AF, DIROUT, TRACK meter point in channel display
▪ Loudness Metering according to EBU R128 and ATSC A/85, momentary or short term in every channel, integrated measurement on sum channels with display of integrated LUFS value in headline
▪ Modules: INMIX with MS decoder, digital amp, 2-band fully parametric filter, 4-band fully parametric EQ, 2-band fully parametric side chain filter, insert, delay up to 1800 ms – switchable units: meters, milliseconds, frames, 4 independent dynamic modules: expander, gate, compressor (incl. parallel compression), limiter, image, meter, direct out
▪ AMBIT Upmix, available on every 5.1 channel, fully Downmix compatible
▪ 32 Automix groups available for mono/stereo/surround channels with unlimited contributing channels each
▪ Inline configuration with send/return switching – per channel or global
▪ Fully-equipped surround channel with coupling of all channel parameters and hyper-panning

* with dual fader option

ROUTING MATRIX
- Up to 8,192 x 8,192 crosspoints, non-blocking
- 96 kHz, 24-bit
- Fully redundant signal path
- Level adjustment for all inputs and outputs
- Downmixing from surround (up to 7.1) to stereo
- Integrated monitoring devices for remote locations, e.g. director's room
- 1,016 internal loop-backs
- Full networking of up to 14 Nova73 Cores, share and import of sources and destinations, studio intervention
- Full snapshot and production portability independent of matrix and DSP size

WAVES SOUNDGRID® INTEGRATION
- Waves SoundGrid® integration with storage of plug-in parameters in snapshot and production data

INTERFACES
- Mic / Line, Line Out, AES3, 3G SDI, HD-SDI, MADI, ATM, GPIO, Serial, MIDI, ADAT®, RAVENNA / AES67 / SMPTE ST2110, DANTE® Audio-over-IP; for details see DALLIS product information
- Stereo and surround monitoring systems

SYNCHRONIZATION
- Blackburst, Wordclock, PTP, AES3, MADI, DANTE, 3 redundant inputs with automatic detection

REDUNDANCY
- PSUs, DSP board, router board
- Fully redundant signal path
- Redundant control system, exchangeable during run time, full data redundancy

CONTROL UNIT
- Bay ISO with separate layer and bank switching, plus second PFL / AFL bus
- Global A / B input switching
- Enhanced mix-minus control with independent off-air conference
- Fader control of all level parameters
- Diverse tally and fader start modes
- Program switch
- Machine control
- Audio-follow-Video, up to 128 camera tallies, Ethernet or GPI controlled
- Camera mic remote via GPI or voltage control

REMOTE MAINTENANCE
- Connection via Internet remote software
- Software updates, error diagnostics, remote assistance

EXTERNAL CONTROL SYSTEMS
- Remote control of all routing parameters via network
- Ember+ control protocol integrated
- Remote control of integrated matrix monitoring units
- Online configuration with AdminHD, graphical configuration of Nova73 components
- External matrix controllers: Lawo VSM, Evertz Magnum, GV Ignite, Ross Overdrive, Vizrt Viz Mosart, Imagine Magellan, BFE KSC, Pharos, and others

Features	mc² 96	mc² 56 MKIII	mc² 56 MKII
Frame sizes	24 - 200˚	16 - 144˚	16 - 112˚
Faders	Lawo high-quality faders	Lawo high-performance faders	Lawo high-performance faders
Touchscreens	HD with PCT precision capacity sensing technology	HD with PCT precision capacity sensing technology	HD with standard touch technology
Free controls per strip	6	4	2 (XC version: 4)
Multi-user operation	Yes	Yes	Yes
– No. of rotaries per fader bay	96	64	32 (XC version: 64)
– Local safe & recall	Yes	No	No
LiveView™	Yes	Yes	No
Local I/O	16 Lawo-grade Mic/Line inputs 16 Line outputs 8 AES3 inputs and outputs 8 GPIOs MADI port (SFP) 2x RAVENNA/AES67 connection (SFP + Copper)	16 Lawo-grade Mic/Line inputs 16 Line outputs 8 AES3 inputs and outputs 8 GPIOs MADI port (SFP) 2x RAVENNA/AES67 connection (SFP + Copper)	16 Line inputs 16 Line outputs 8 AES3 inputs and outputs 8 GPIOs 1x RAVENNA/AES67 or MADI connection (SFP or Copper)
– Local I/O connectors	XLR	Sub-D	Sub-D
– SMPTE2022-7 local I/O redundancy	Yes	Yes	No
No. of user panels	2 + RTW TM9	2 (without RTW) 1 (with RTW TM7) 0 (with RTW TM9)	1 (with RTW TM7) 0 (with RTW TM9)
Native 3D audio controls	Yes	Yes	No
Direct access to Parallel Compression	Yes	Yes	No (access via GUI only)

˚ with dual fader option

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