

mc²96



GRAND
PRODUCTION
CONSOLE



PURE
PRECISE
PEERLESS

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PURE. PRECISE. PEERLESS.

With experience gathered over more than 40 years, German audio innovator Lawo is distinguished by its engineering and manufacturing of the most reliable and most advanced audio mixing consoles available. Originally developed for mobile and studio broadcast environments with zero tolerance for failure, Lawo consoles are also widely chosen for their audio quality in theater, studio and live performance applications.

With the mc²96, the mc² platform is pushed beyond limitations, culminating in a pure, unparalleled audio production tool dedicated to those who can tell the difference. Whether it's intended to be used in broadcast, theater or recording – in each of these applications it stands out with a unique set of features. The mc²96 provides optimized performance within IP video production environments with native SMPTE 2110 support. In addition, the revolutionary LiveView™ feature enables thumbnail previews of video streams directly in the fader labeling displays.

AT A GLANCE

- Frames with 24 to 200 faders (Xtra fader version: 208)
- 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 2110, 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 QUALITY FADERS

The mc²96 features the same legendary quality faders known from Lawo's mc²90 series, providing extremely smooth and precise fades.

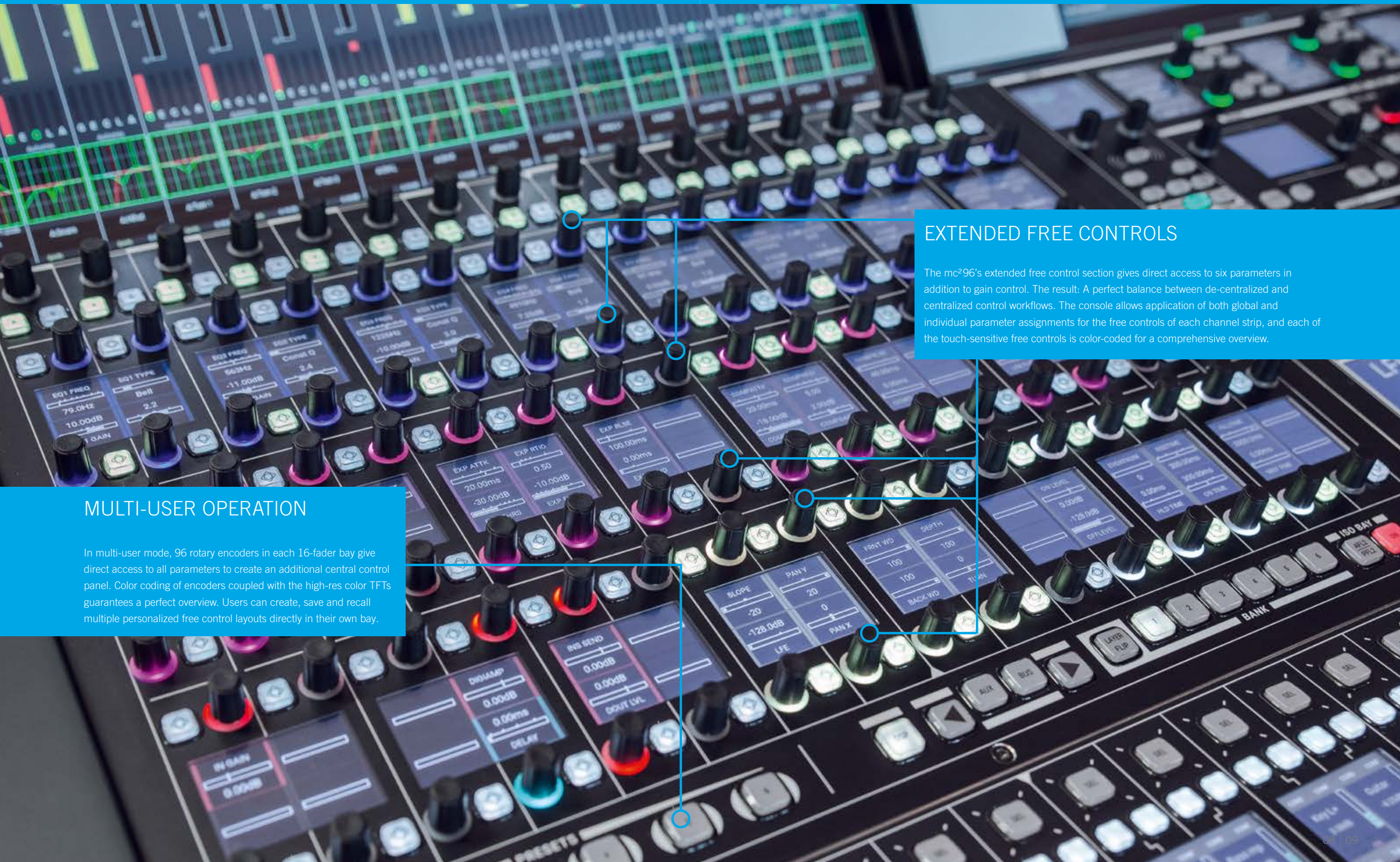
21.5" FULL HD TOUCH-SCREENS

A PERFECT SYMPHONY OF HARDWARE & SOFTWARE CONTROLS

The mc²96'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 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

COLOR TFT MONITORS



MULTI-USER OPERATION

In multi-user mode, 96 rotary encoders in each 16-fader bay give direct access to all parameters to create an additional central control panel. Color coding of encoders coupled with the high-res color TFTs guarantees a perfect overview. Users can create, save and recall multiple personalized free control layouts directly in their own bay.

EXTENDED FREE CONTROLS

The mc²96's extended free control section gives direct access to six parameters in addition to gain control. The result: A perfect balance between de-centralized and centralized control workflows. The console allows application of both global and individual parameter assignments for the free controls of each channel strip, and each of the touch-sensitive free controls is color-coded for a comprehensive overview.

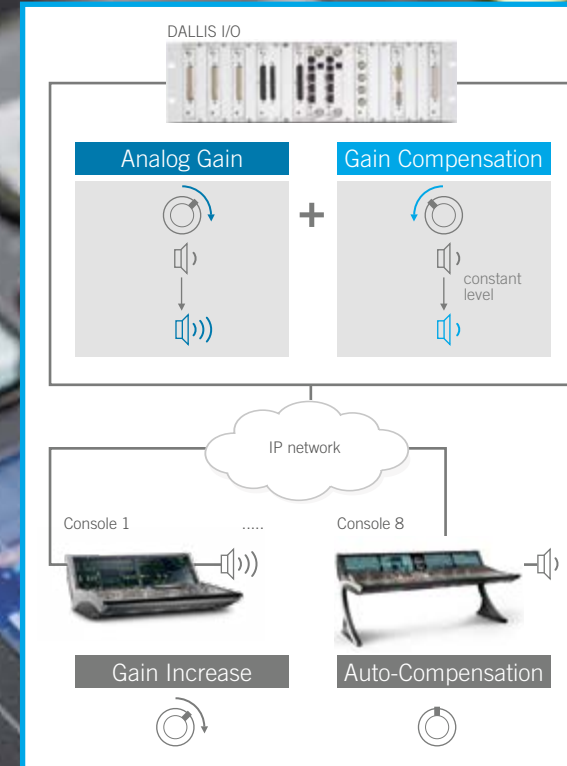
COLOR CODING

INPUT METERING

CUSTOMIZABLE FADER USER BUTTONS

LIVEVIEW™ VIDEO LABELS

In addition to standard channel labeling via channel numbers, individual text labels and static pictures or icons, the mc²96 also features 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.



NETWORKING WITH IP-SHARE™ GAIN COMPENSATION

Lawo's mc² 96 console is not just a stand-alone solution, but has been designed from the ground up for networking in complex production infrastructures via IP (SMPTE2110/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.



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 mc²96.

FANLESS DESIGN

An optimized thermal concept results in an absolutely quiet console, fulfilling a key requirement for concert halls and studio environments.

COMPREHENSIVE LOCAL I/O

The mc²96'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). The built-in switch provides 4 Ethernet ports, and network connectivity is furnished via two redundant SMPTE2110/AES67/RAVENNA ports with seamless protection switching.

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mc²96 24c+32 with integrated RTW TM9 Goniometer



DESIGNED FOR THOSE WHO CAN TELL THE DIFFERENCE.

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CENTRAL CONTROL SECTION

INTEGRATED RTW TM9 GONIOMETER

INTUITIVE MONITORING

The newly designed monitoring section features a dedicated touch-screen, allowing for enhanced flexibility and easy adaptation to user requirements.

AUDIO-FOLLOW-VIDEO

Automated transitions and the perfect coupling of image and sound – all of this is provided by the mc²96'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.

IMMERSIVE BY NATURE

Reflecting today's requirements for 3D/immersive audio productions, the mc²96 provides not only superb tools for surround sound mixing, but also a dedicated elevation controller as standard.

MAKE IT YOUR WAY – USER PANELS

The mc²96's clearly structured central control section delivers an optimal workflow with maximum overview. In addition, it contains two slots for individual user panels, which can be filled with a choice of three options: an additional 40 buttons, a TC automation panel, or a dedicated Reveal Fader panel – the choice is yours.



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XTRA FADER VERSION & DUAL FADER OPTION

USER PANEL SLOT

The mc² 96 Xtra fader version contains one slots for individual user panels, which in this case is filled with a dedicated Reveal Fader panel. There's also an additional 40 buttons or a TC automation panel available.

Features	mc ² 96	mc ² 96 Xtra
Number of faders in Central Control Section	8	16
Max. number of faders (Standard panels)	88	96
Max. number of faders (Dual fader panels)	200	208
Number of User Panel Slots	2	1

DUAL FADER OPTION

The dual-fader operating surface increases the console's fader count while keeping its size small. The dual fader option features also a total of two free controls and also incorporates Lawo's revolutionary LiveView™ thumbnail previews of associated video streams directly in the fader strips, enhancing user accuracy in fast-paced production situations.

XTRA FADERS

The mc² 96's Xtra fader version features an alternative layout for the central control section, resulting in 16 instead of eight faders in the Sweet Spot.

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FEATURES

AUTOMATED MIXING ASSISTANTS

The mc²96'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 mc²96 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.



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.

HIGHLIGHTS FOR BROADCAST

- IP-based infrastructure with native support for all relevant IP standards: SMPTE 2110, 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
- Fanless 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
- iPad and Windows Tablet remote control software
- Integrated loudness metering for “visual” mixing

AUDIO

AGGREGATION & PROCESSING

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

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 5,120x5,120 routing capacity
- up to 500 (with UHD Core: 1,024) fully equipped DSP channels

Nova 73 HD – Console and Router Core



- 19” / 10RU 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 8,192x8,192 routing capacity
- up to 888 (with UHD Core: 1,024) fully equipped DSP channels

I/O DEVICES

Power Core^{RP/Gateway} – IP Audio I/O & DSP for Remote Production*



- All-in-one remote production solution with 8 slot modular I/O and WAN-capability
- Low-latency on-site DSP*
- Full remote control of all relevant channel parameters

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_madi6: 6 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



DALLIS – Modular IP/MADI 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)

V_pro8 – 8-Channel Video Processing Toolkit

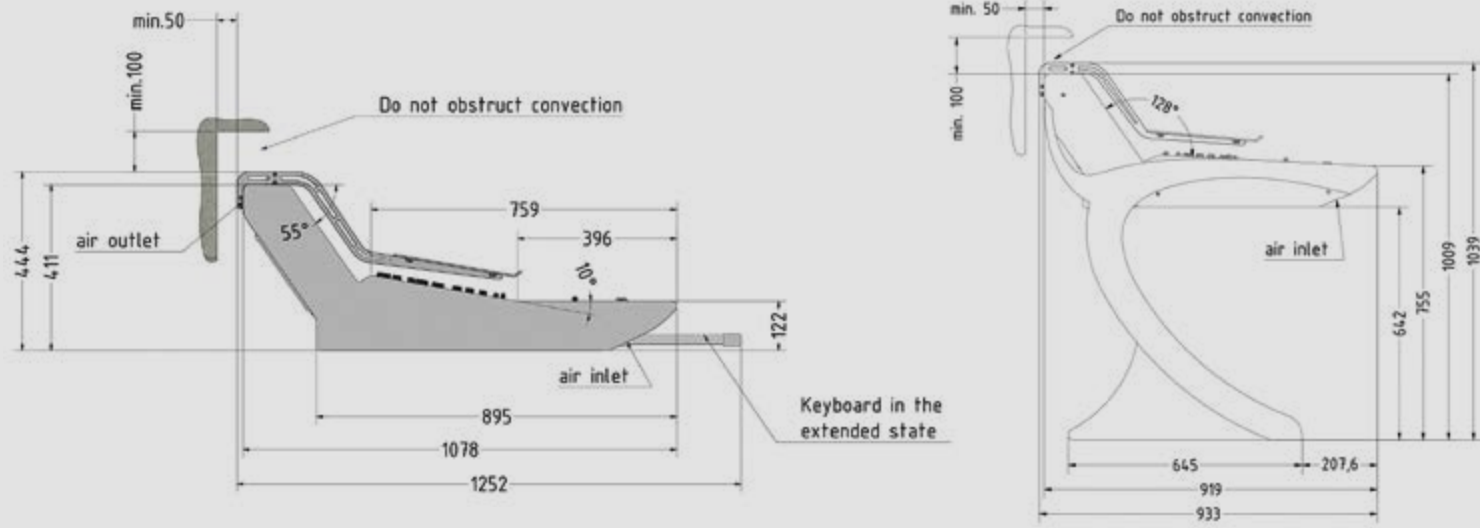


- 19” / 1 RU frame
- Redundant power-supplies
- 8 SDI in, 8 SDI out, 2 MADI
- Embedder/De-Embedder, Frame sync, Audio & video delays, Dolby® E auto aligner, Dolby® E encoding and decoding, Thumbnail previewing, Sync generator, Timecode generator, AV sync measurement, Surround downmixer, ...

* only with Power Core^{RP} license

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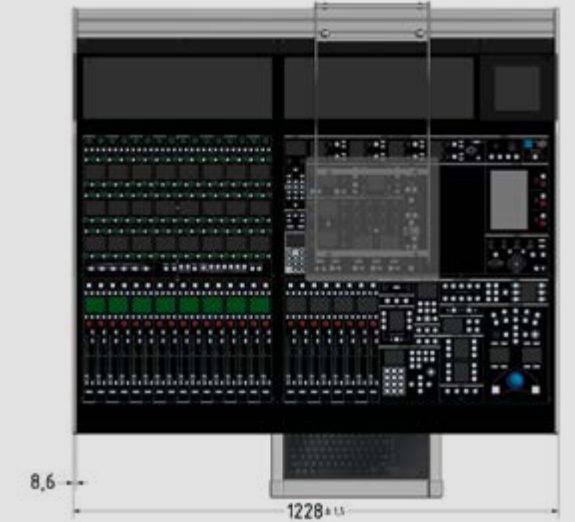
SPECIFICATIONS



Per 16 fader extension plus 510mm width



Xtra Fader Version (with Dual Fader Panel)



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mc ² 96	STUDIO VERSION	MOBILE VERSION	
24C	<ul style="list-style-type: none"> Width: 1333mm/52.48" Weight: 102kg/224.9lb 	<ul style="list-style-type: none"> Width: 1228mm/48.35" Weight: 79kg/174.2lb 	
24C+16	<ul style="list-style-type: none"> Width: 1843mm/72.56" Weight: 128kg/282.2lb 	<ul style="list-style-type: none"> Width: 1738mm/68.43" Weight: 105kg/231.5lb 	
16+24C+16	<ul style="list-style-type: none"> Width: 2353mm/92.64" Weight: 152kg/335.1lb 	<ul style="list-style-type: none"> Width: 2248mm/88.50" Weight: 129kg/284.4lb 	
16+24C+32	<ul style="list-style-type: none"> Width: 2863mm/112.72" Weight: 183kg/403.5lb 	<ul style="list-style-type: none"> Width: 2758mm/108.58" Weight: 160kg/352.7lb 	
32+24C+32	<ul style="list-style-type: none"> Width: 3373mm/132.80" Weight: 214kg/471.8lb 	<ul style="list-style-type: none"> Width: 3268mm/128.66" Weight: 191kg/421.1lb 	
16 Fader Stand Alone	<ul style="list-style-type: none"> Width: 633mm/24.92" Weight: 60kg/132.3lb 	<ul style="list-style-type: none"> Width: 528mm/20.8" Weight: 37kg/81.6lb 	

Surface module arrangement can be freely adjusted, allowing also for asymmetrical layouts.

mc²96 Xtra Fader Version

mc ² 96	STUDIO VERSION	MOBILE VERSION	
32C	<ul style="list-style-type: none"> Width: 1333mm/52.48" Weight: 102kg/224.9lb 	<ul style="list-style-type: none"> Width: 1228mm/48.35" Weight: 79kg/174.2lb 	
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SPECIFICATIONS

CONTROL PANEL

- Frames from 24 to 200 faders* (Xtra fader version: 208)
- Remote stand-alone frames of 16 faders
- 6 banks each with 2 layers
- 100mm fader + 6 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
- 12 user buttons**, 4 talkback buttons and 4 user buttons per fader with 16 functions each
- Optional: two integrated user panels (Xtra fader version: one integrated user panel): TC automation panel, 40 user button panel, reveal fader panel, script tray

SIGNAL PROCESSING

- 40-bit floating point
- 1,024 DSP channels (up to 192 buses)
- Up to 800 inputs with A/B input, up to 128 aux buses, up to 192 groups, up to 192 main sums, up to 96 track buses.
- 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

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 by 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

* with dual fader option

** Xtra Fader Version: 8 User buttons

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SPECIFICATIONS

AMBIENT LIGHTING

The console's bottom features RGB colored LED lighting, allowing the console to perfectly match with its environment.

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