The Nova series
Routers at their best.

Networking Audio Systems

LAWO
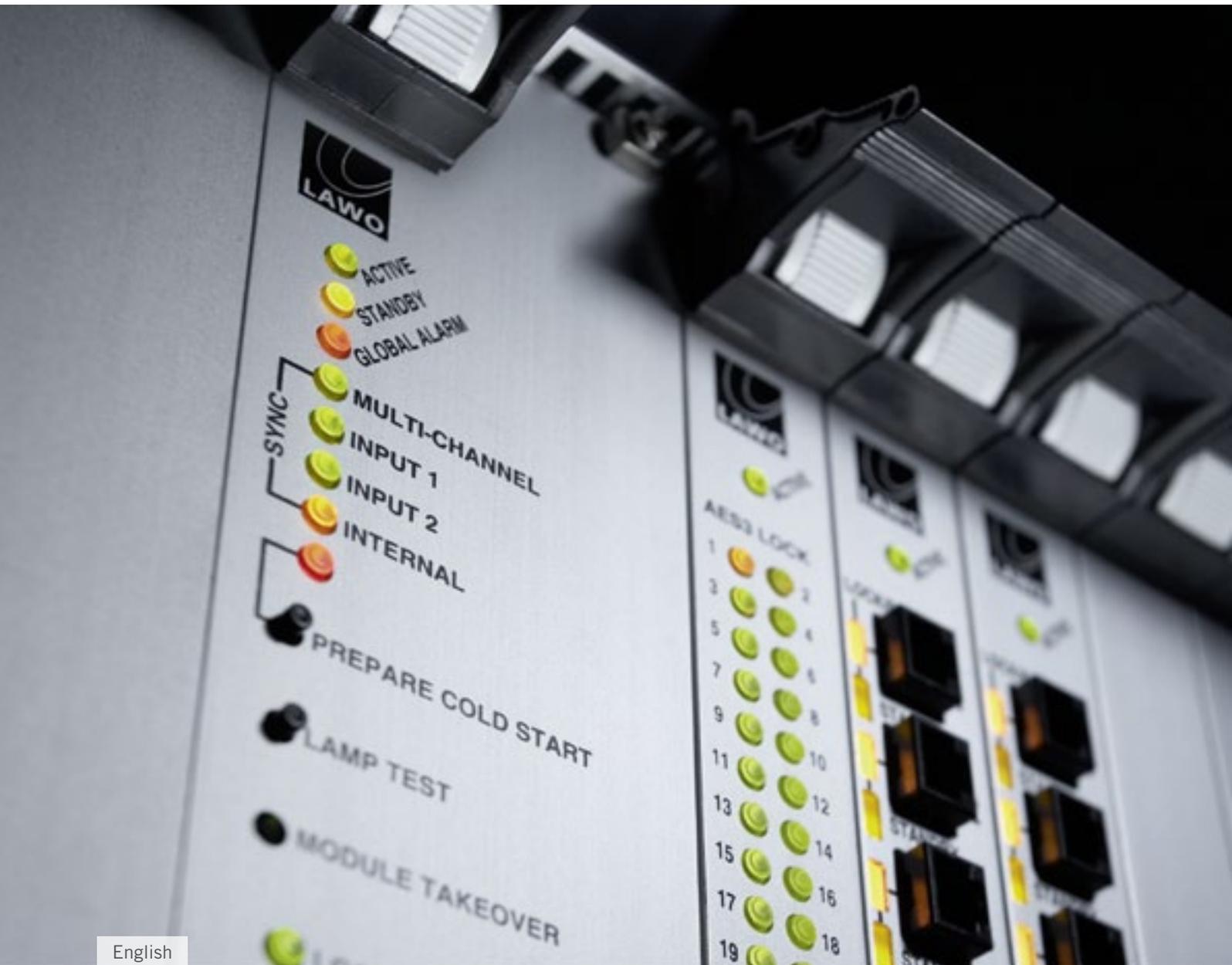
Routers are not all, but without routers, all is nothing.

Creating connections and moving data packets from A to B — these are the basic tasks of a router. It all sounds rather simple and unspectacular, yet routers fulfil a vital function in everyday broadcasting. This is because they form the central network of every single broadcast centre. Broadcasts and programs are not possible without them. This is why we have used all our know-how, to bring the standard of routers to an entirely new level, through innovative features and the highest practical suitability. At the same time, our routers prove themselves with absolute reliability. For what applies to every means of transport equally applies to the transmission of audio data: the destination must be reached – efficiently, quickly, and safely.

Nova73 HD — page 5

Nova29 — page 16

Nova17 — page 22

More than simply a tool:
Lawo's compelling router philosophy.

Routers are important, and they are an investment that needs to prove itself in daily use for years to come. With Lawo you always profit from outstanding quality — whether you choose a single product or an entire complex routing system.

This exemplary Lawo quality not only applies to single components. On the contrary, it starts at the first stage of the product development process: the design. This is what makes our routers exceptional; we don't assemble arbitrary components in any old box. We create integrated systems, perfectly tailored to your specific requirements. In short, we develop solutions — solutions that distinguish themselves through maximum efficiency and reliability. And solutions that will give you the reassurance tomorrow that you chose the right system today.

Advantage 1: Superb reliability.
A routing system's most important features are failure safety and reliability. For this reason, we put an emphasis not only on the quality of all components, but also offer a wide range of redundancy options. Any of a system's central components can be duplicated — from redundant power supplies and the STAR² architecture to the design of a "Dual Self-Healing Star" topology of the Nova73 HD. The level of failure safety thus possible is without equal.

Advantage 2: Maximum flexibility.
Lawo's routers will impress you with their superb flexibility, multiple potential upgrades, and a broad portfolio of complementary products. It starts with comprehensive configuration options and their flexible design: with 19" control panels, included appropriate software applications, and complete with intuitive touch screen control. Everything from small supplementary consoles up to high-performance consoles can be networked. The result is almost infinite scalability.

Advantage 3: Conclusive serviceability.
The serviceability of Lawo's routers, guaranteeing high practicality with reliable system diagnosis via a browser, and sophisticated alarm management, is another plus point.
An important fact: Should the replacement of single components become necessary, we guarantee the long-term availability of spare parts; new hardware is continually being developed to be compatible with existing systems.

Advantage 4: Reassuring sustainability.
Your needs evolve — and so must your routing system. On one hand, it can develop through effortless hardware expandability, even during runtime. On the other hand, you can keep your system fully up-to-date with the latest developments, thanks to free software updates. This leaves you perfectly equipped for future challenges — a crucial argument when it comes to value preservation and investment security.

Nova73 HD:
Reliability and availability in perfection.

The Nova73 HD was developed as central router for broadcast facilities. For that reason the Nova73 HD will impress you with a scope of performance that adapts to the requirements of any demanding broadcast situation — ranging from standalone systems with the highest security standards to particularly complex installations where the elements to be networked are located remotely. This is made possible through up to 8192 inputs and outputs, all of which can be switched simultaneously, if required.

Reliability as a principle.

Maximum availability — a crucial requirement for large-scale broadcast facilities and critical transfer applications. A requirement that is reliably fulfilled by the Nova73 HD — and around the clock. You can choose from a number of levels of security, thanks to the modular design. This begins with the internal, star-shaped connection of single modules, guaranteeing complete functionality for elements not affected by the failure of a single component. This reliability culminates in the redundant structure of the DSHS ("Dual Self-Healing Star"), providing a superb level of security. The result: having successfully proven its dependability at numerous major international events, the Nova73 HD is deemed to be one of the most reliable routing systems available today.
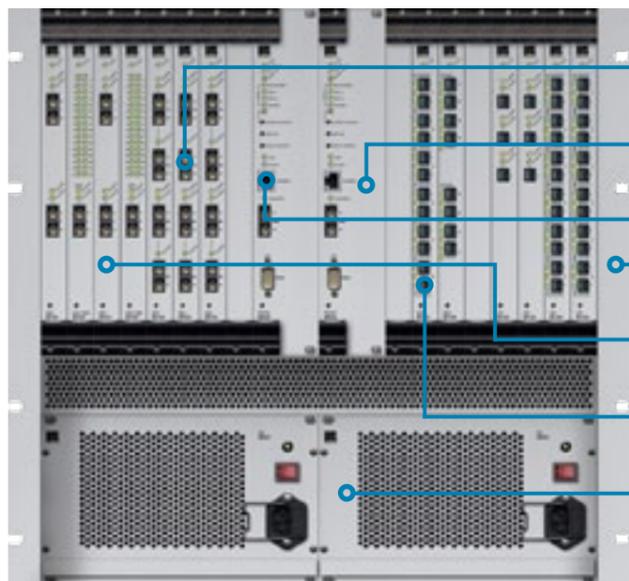
- Star connections between modules and master card
- Optional redundant master card — "Dual Self-Healing Star Topology"
- Control via Ethernet TCP/IP
- Compact frame, modules can be changed during runtime
- Up to 16 I/O boards with AES3/MADI/ATM and DSP
- Integration of I/O satellite units, ie. Lawo DALLIS
- Optional redundant power supplies
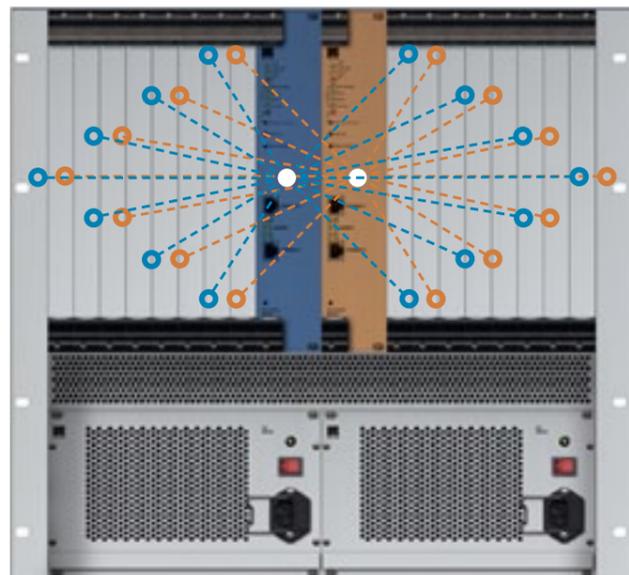
- Visualisation of the STAR² architecture with its point-to-point connections
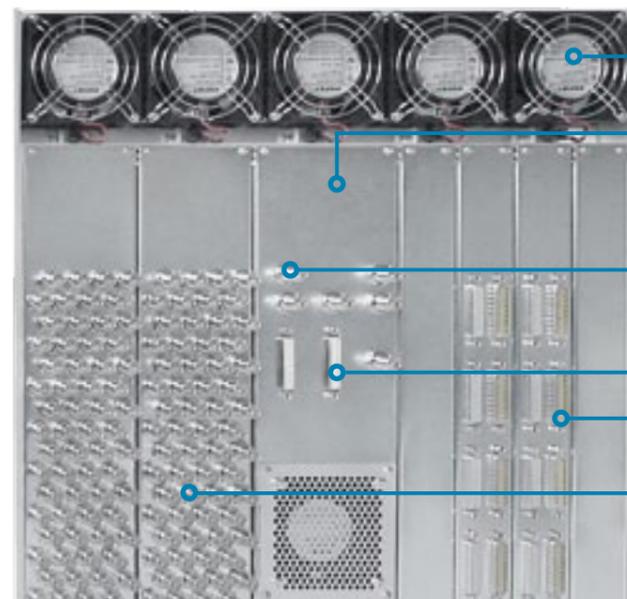
- Hot-pluggable fans, externally accessible
- Passive rear panel design (active units accessible from the front)
- Synchronisation with wordclock/video/AES3/multi-channel (via front panel)
- Contacts for alarm
- Up to 256 AES3 inputs and outputs via D-Sub (balanced)
- Up to 128 AES3 inputs and outputs via BNC (unbalanced)

Seamless integration of additional interfaces into Nova73 HD.

With the DALLIS interface cards, a multitude of options are available for your breakout boxes. Furthermore, the options are constantly expanded.

- Analogue mic/line cards
- Headphone ports
- AES/EBU (AES3), SRC optional
- 3G/HD/SD SDI (embedded audio) with SRC
- ADAT® with SRC
- Serial interfaces (RS232, RS422, MIDI)
- GPIO (opto coupler, relays, VCA)
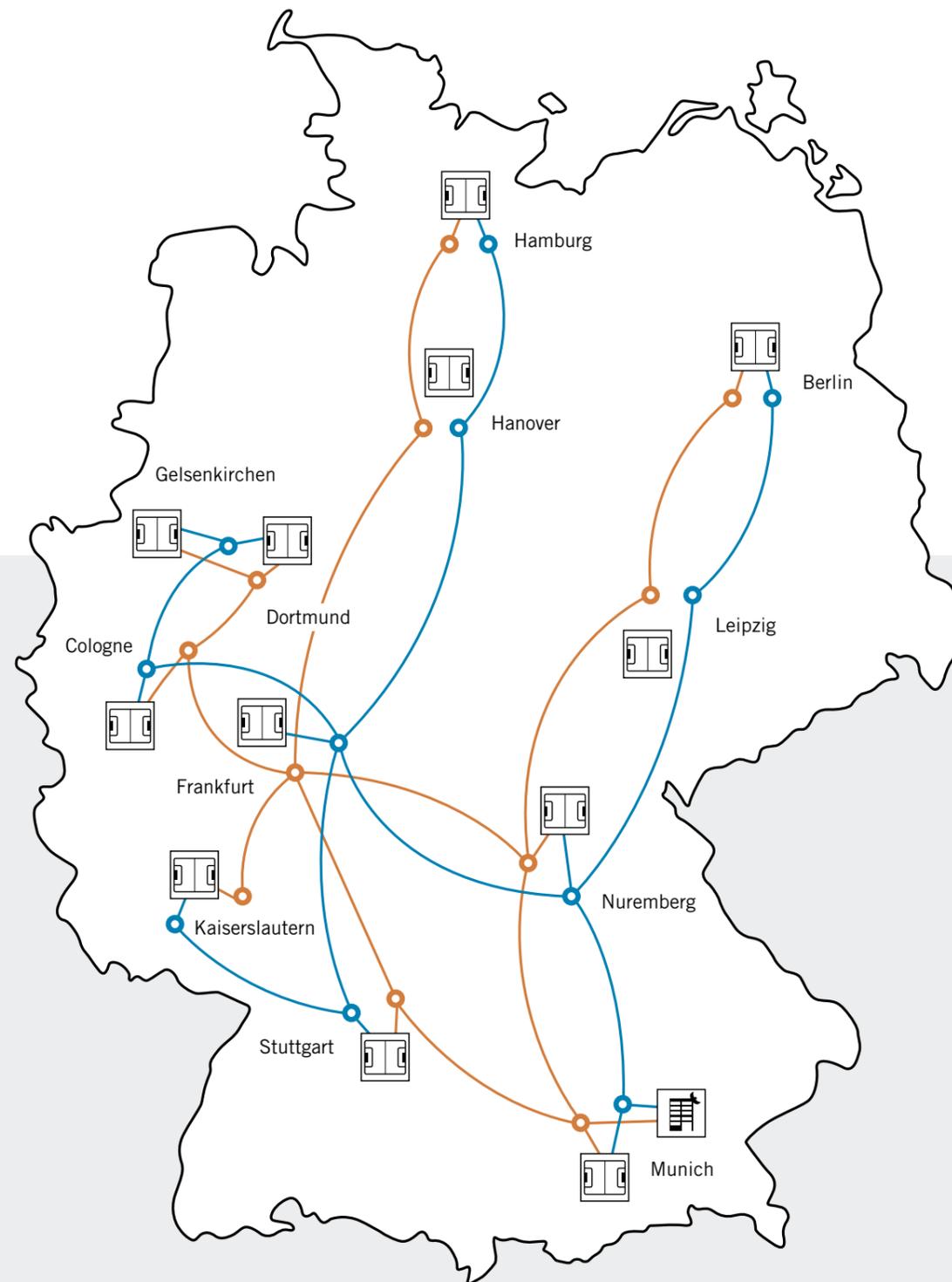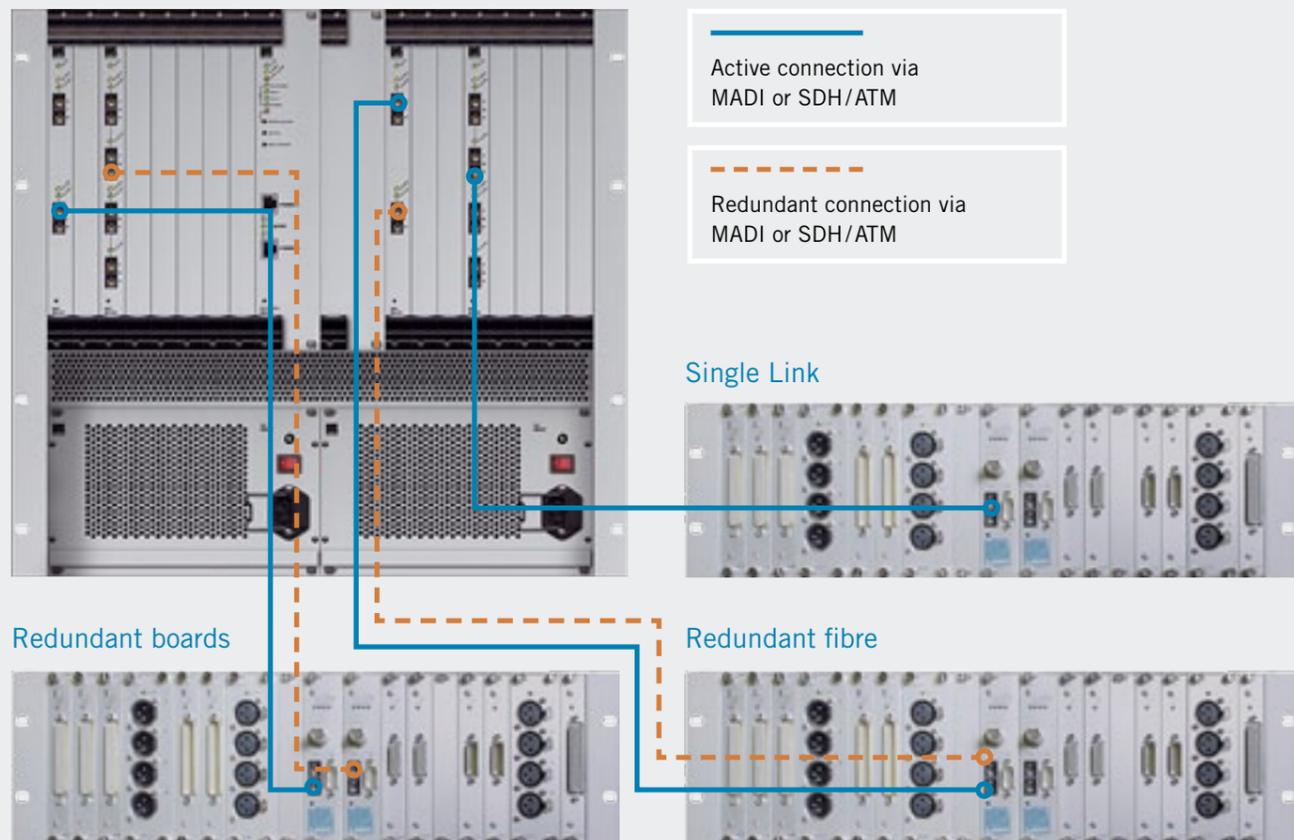- IP codec
- RAVENNA   Audio-over-IP option (available soon)

* ADAT® is a registered trademark of Alesis, LLC and is used here under license.

Open infrastructure for maximum flexibility.

Every major project is different – and the Nova73 HD has all the qualifications required to handle any situation. Thus, extensive structures can be flexibly created, due to a decentralized network structure and connection via MADI, SDH/ATM or AES/EBU, even within wide area applications (WAN). Network partners can be other routers or consoles, or even the wide range of Lawo DALLIS audio interfaces, which provide a comprehensive variety of different inputs and outputs. This flexibility is, however, not limited to the nature of the possible connections. It also applies to the number of ways the audio routing system can be integrated with other environments: third party equipment and software can communicate with the Nova73 HD via the Lawo RemoteMNOPL protocol – an open protocol. This allows access to virtually all of the system's parameters, can be freely implemented, and is already supported by many well-known manufacturers. You therefore benefit from an unprecedented level of integration into your existing infrastructure.

Nova73 HD — different ways of connecting breakout-boxes.

Active connection via
MADI or SDH/ATM

Redundant connection via
MADI or SDH/ATM

Single Link

Redundant boards

Redundant fibre

Hamburg

Hanover

Berlin

Gelsenkirchen

Dortmund

Leipzig

Cologne

Frankfurt

Nuremberg

Kaiserslautern

Stuttgart

Munich

Stadium

International Broadcast Centre

Fibre connection
Redundant fibre connection

Compelling ease-of-use.

When it comes to such a powerful and highly accessible router, simple operation and easy maintenance are of particular importance. Here too, the Nova73 HD offers convincing features.

The router is set up via the AdminHD software's graphic interface. It is even possible to connect to a router while broadcasting, and carry out adjustments and system upgrades during runtime.

AdminHD also enables system diagnosis to be carried out conveniently via a web interface using a regular browser, while the router is in use. In addition, the simple integration of a superordinate error management system is possible via SNMP.
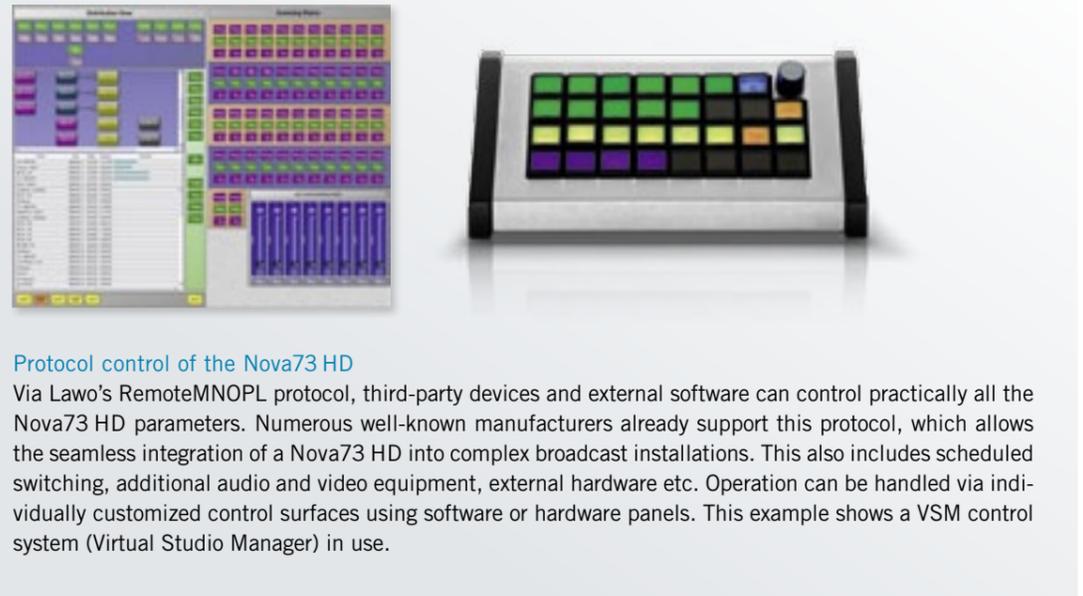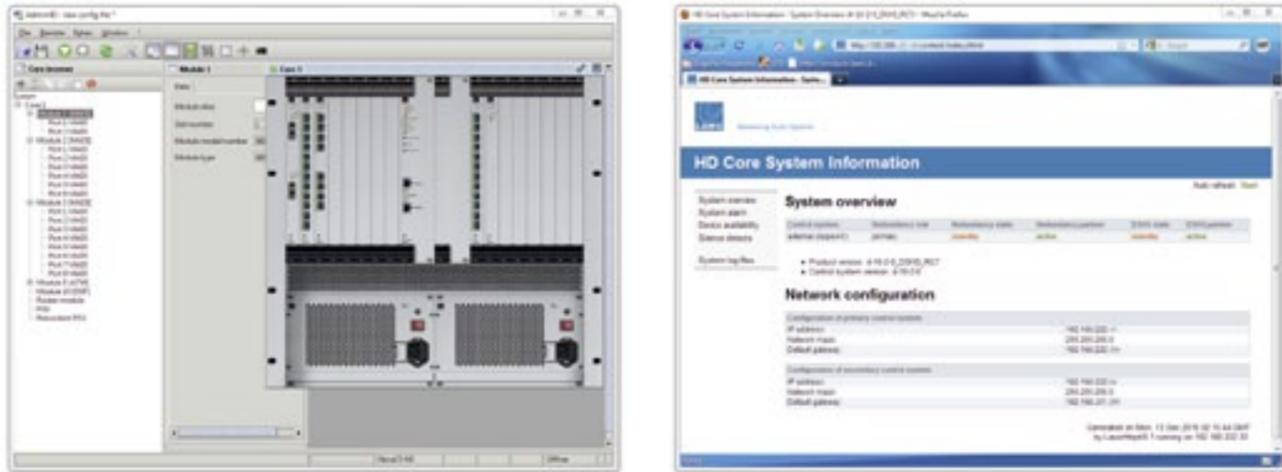
Protocol control of the Nova73 HD

Via Lawo's RemoteMNOPL protocol, third-party devices and external software can control practically all the Nova73 HD parameters. Numerous well-known manufacturers already support this protocol, which allows the seamless integration of a Nova73 HD into complex broadcast installations. This also includes scheduled switching, additional audio and video equipment, external hardware etc. Operation can be handled via individually customized control surfaces using software or hardware panels. This example shows a VSM control system (Virtual Studio Manager) in use.

mxGUI — for an outstanding overview.

During day-to-day operations, the control of crosspoints and recall of snapshots, etc. takes place via the "mxGUI" standalone software that enables both online control and offline production preparation.

The controls for complex systems need to be transparent; mxGUI, Nova73 HD's user interface, guarantees just that. Having proved itself in use with the mc²-series consoles, this trusted application offers simple and intuitive user guidance.

Want to set up your production in advance, prepare crosspoints, and label signals? No problem — with the mxGUI, all these steps can be carried out faster than you might ever expect. Thanks to a search function, plus a graphic representation of the router, signals can be located quickly and, using the innovative "Container" feature, the bidirectional, flexible switching of signal groups — in the past an extremely time-consuming process — is achieved far easier and safer than ever before.

Once set up, current crosspoints can be saved in a snapshot, and retrieved at a later date, either separately or in a snapshot sequence. In short, your operators will benefit from less stress during those high-pressure moments as a result of improved procedures and flawless preparation.

Integrated signal processing.

All channels feature DSP signal processing, and the Nova73 HD offers level adjustment, silence detect, and balance on each channel. With the installation of an additional DSP card, your router can be upgraded with further sound shaping and system analysis modules. If you want to change the signal paths in your installation, you can do so directly via the audio router, possibly even without additional external equipment.
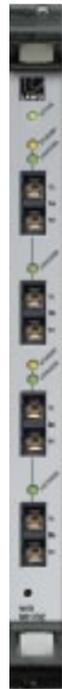
Standard — DSP

- Silence detect
- Phase reverse
- Level
- Balance
- Mono mixer
- Summing matrix

Additional — DSP (optional)

- EQ (parametrical / graphical)
- Dynamics (AGC, Comp, Gate, Limiter)
- Delay (up to 10s)
- Summing matrix (64 x 64)
- Timed fader
- Signal condition monitoring

The parameters of the optional mxDSP card can be simply adjusted on a dedicated mxGUI page.

Example: mxDSP "Universal" variant, with several DSP module chains.

154 Channels

The Dual Self-Healing Star.

With its various security features, a single Nova73 HD is already a remarkably safe piece of equipment. Yet no one is totally immune from external influences. The "Dual Self-Healing Star" (DSHS) allows you to protect your system against fire, flood and other such risks in a unique way. This guarantees the availability of your system in an emergency. With a DSHS system, a second router, which won't concern an operator in the slightest, can be installed in a separate location. It is intelligently connected to the first router, thus keeping the controls practically identical — smart, innovative, and safe.

Here's how it works.

Both routers share the DALLIS frames equipped with the appropriate card interfaces. Starting with the I/O interfaces, all central units, such as the DALLIS frames' master cards, are duplicated. Maximum independence of the redundant routers is achieved through sophisticated interconnection. The advantage: in an emergency situation, each router first uses its own safety mechanisms before resorting to the resources of the other systems.

For example, if a minor disruption occurs, such as a defective fibre optic link between the active system core and a DALLIS frame, it is not necessary to switch the entire system, which may comprise hundreds of active crosspoints, to the redundant system. Instead, the active star retains its status and simply uses an equivalent, alternative route via the second Nova73 HD, in place of the affected line. The active system core itself remedies the line disruption.
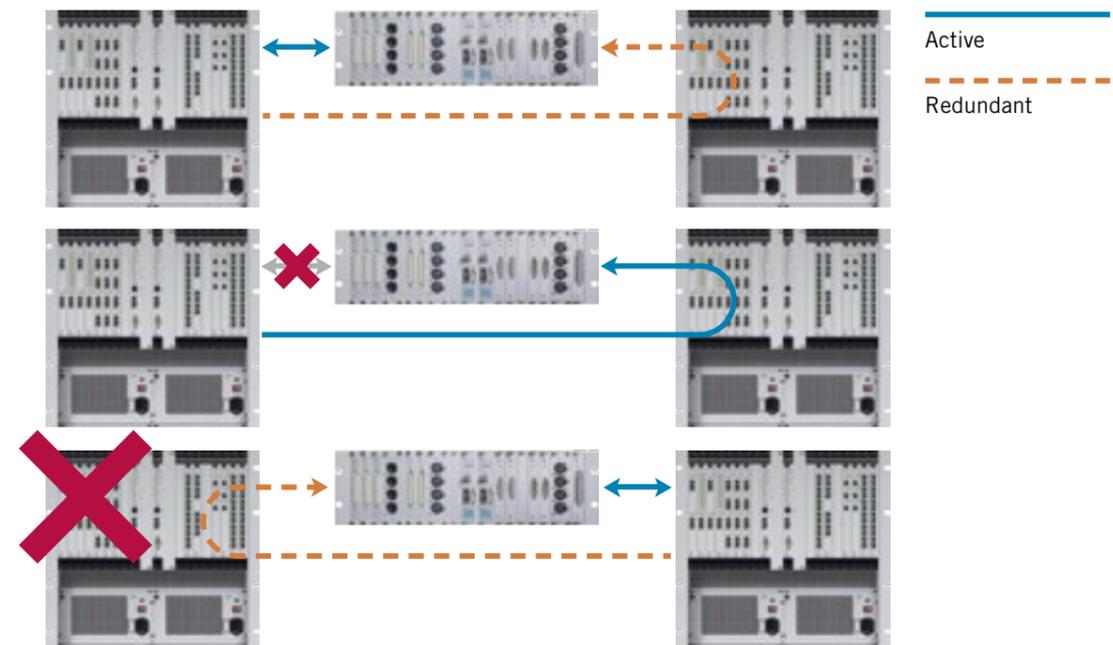
Active

Redundant

Perfect Redundancy.

A complete switch to the redundant system will only take place should core components of the active star fail. As soon as the first Nova73 HD is operational again, it will function as a backup — with all the features described. This is redundancy in perfection, and maximum security that you can rely on!

Key facts at a glance:

- 19" 10 U frame

- 16 slots for I/O modules (MADI, SDH/STM-1, AES/EBU)

- DALLIS breakout boxes for decentralised structures and additional interfaces

- Available interfaces:
  – Analogue Mic/Line (transformer or electronically balanced)
  – Headphones (including VCA interface)
  – AES/EBU (AES3), optional sample rate converter (SRC)
  – MADI (AES10)
  – SDH/STM-1
  – 3G/HD/SD SDI (embedded audio) with SRC
  – ADAT®* with SRC
  – Serial data transfer (RS422, RS232, MIDI)
  – GPIO (opto-couplers, relays, VCA)
  - IP codec
  – RAVENNA Audio-over-IP option (available soon)

- Transparent transfer (Dolby® E compatible)

- Integral signal processing (DSP) with gain/phase, balance,
  mono mixing and silence detect. Optionally also with:
  – EQ (parametric or graphic)
  – Dynamics (Gate, AGC, Compressor, Limiter)
  – Delays (up to 10 s)
  – Mixing matrix (64 x 64 channels)
  – Timed fader
  – Signal condition monitoring

- Sample rates: 48/44.1 kHz and 96/88.2 kHz

- Synchronisation via Wordclock, AES3, Video, MADI, SDH/STM-1 or internal generator

- Control via Ethernet TCP/IP

- Basic operation and configuration software included

- Integral web server and SNMP for system diagnosis

- Remote maintenance via VPN (ISDN as an option)

- Optional redundant master module

- Optional redundant power supply

- Operating voltage 85 V to 265 V AC, 47 Hz to 63 Hz

* ADAT® is a registered trademark of Alesis, LLC and is used here under license.

Nova29:
The compact MADI router for mid-sized networks.

There are some tasks that require the complete works, a comprehensive solution, the full program. Yet there are other challenges where complete modularity or hardware variants are not necessary — challenges centred around one specific task. That's the principle behind the Nova29 — the Lawo router that gets straight to the point with MADI networking. Specifically, this means that the Nova29 is the perfect router for up to a maximum of 16 clients. A routing centre, based on MADI technology, universally applicable, and at a very attractive price.
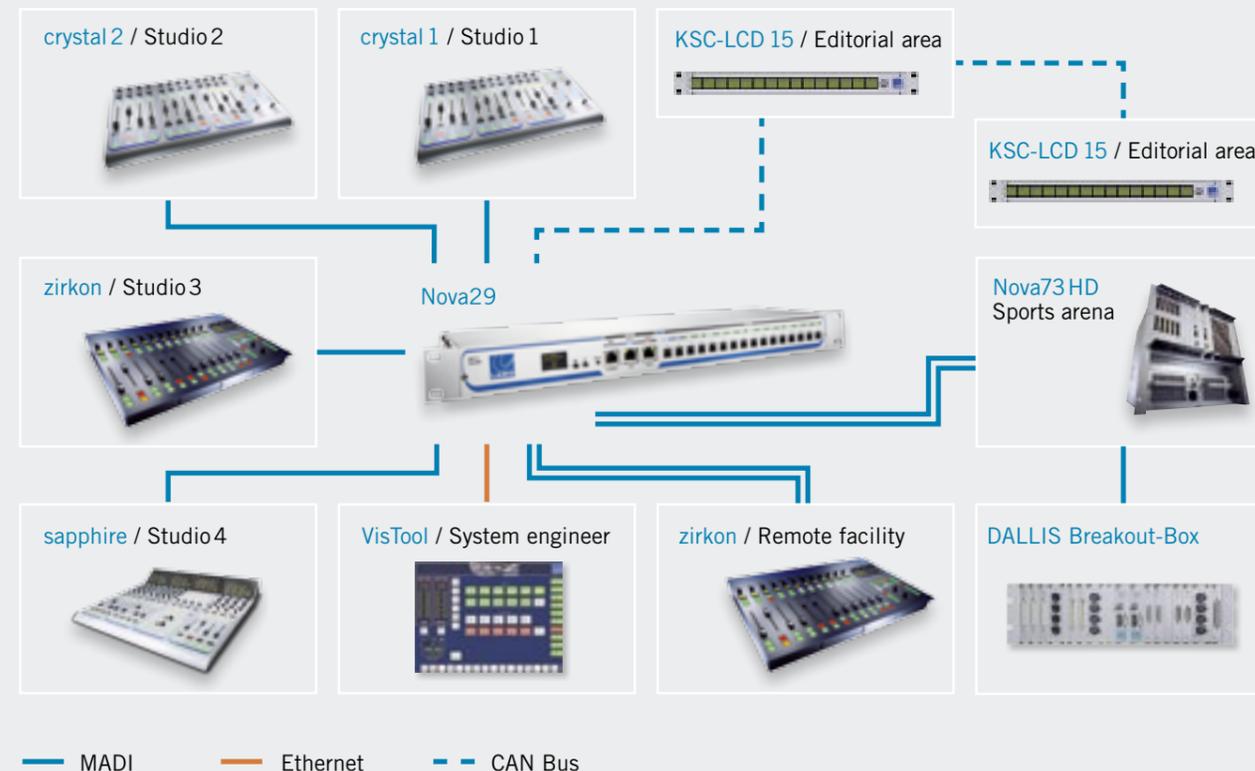
Up to 16 consoles on one router.
Do you have multiple broadcast studios and want to be able to react flexibly to future challenges? In that case the Nova29 is the perfect solution for you. It enables the connection of up to 16 MADI clients within a broadcast centre, be it mixing consoles or external equipment. The Nova29 is the ideal standalone solution, whose 1024 x 1024 I/Os can be switched individually as well as transparently, making the router perfect for the transfer of non-audio formats, such as Dolby E. Thus, the Nova29 is a universal router, adapting perfectly to the requirements of modern, mid-sized broadcast facilities.

Homogenous broadcasting facilities — with the seamless interconnection of all elements.
Today, the focus lies not only on individual products, but also on comprehensive, networkable solutions that create perfectly integrated systems. The Nova29 makes this requirement a reality. Used together with Lawo's broadcast consoles, you can create an exemplary networking homogeneity for up to 16 participants. The result is a broadcast facility in which every component relies on the same logical elements, thereby guaranteeing the best possible integration. The advantage: many highlights of Lawo's mixing consoles can now be used across all products. You are no longer working with single components but on a comprehensive, fully compatible platform.

crystal 2 / Studio 2   crystal 1 / Studio 1   KSC-LCD 15 / Editorial area

KSC-LCD 15 / Editorial area

zirkon / Studio 3   Nova29   Nova73 HD
Sports arena

sapphire / Studio 4   VisTool / System engineer   zirkon / Remote facility   DALLIS Breakout-Box

— MADI   — Ethernet   - - CAN Bus

Further highlights of the Nova29.

InterCom.

Broadcast studio facilities often require the purchase of an extra talkback system. This is not the case with the Nova29. It features an integrated talkback matrix that enables you to communicate between various studios at any time, without having to rely on traditional talkback systems.

It is configured using dedicated software called "InterCom", which allows control of up to 42 talkback stations, each of which can be equipped with up to 32 buttons.

Push-button panels.

The Nova29 can be conveniently upgraded with up to 30 KS and KS-ETH series panels. This allows different workstations to be flexibly equipped, to accommodate announcers, producers, guests, or even additional editing stations.

The compact push-button panels can be seamlessly integrated into a system, and are connected to each other either via CAN bus (KS series) or Ethernet (KS-ETH series).
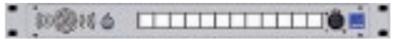
TB-12
19"/1 RU panel with 12 backlit buttons, talkback microphone and loudspeaker

KSC.T20
19"/1 RU panel with 20 backlit buttons

KSC.LCD16
19"/1 RU panel with 16 LCD buttons

KSC.LCD15P1
19"/1 RU panel with 15 LCD buttons, and one rotary control (eg. for level control)

KSC.LCD14P2
19"/1 RU panel with 14 LCD buttons, and two rotary controls (eg. for level control)

KSC.GPIO32
19"/1 RU panel with 32 GPIO contacts and 8 VCA inputs

Operation and maintenance of the Nova29.

Visual configuration software, that has already proved its worth with Lawo's broadcast consoles, is used to set up and configure the Nova29. This software offers extensive possibilities to adapt the router perfectly to your working environment. Two additional tools are provided to assist with system diagnosis and maintenance, both of which can be run on a computer connected to the Nova29 via Ethernet.

To keep your Nova29 up-to-date, software updates are facilitated using SOP Explorer. Remarkably, existing crosspoints are re-applied after the update. This allows you to import software updates even during runtime.
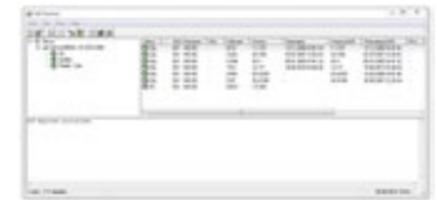
An integrated web server enables you to verify the current status of a Nova29. This is not just limited to general system information but extends to specific status information relating to MADI ports or the sync status of the system. To access the relevant page, all you need to do is to enter the IP address located on the Nova29's front display into your browser.

Once set up, assigning crosspoints is easily carried out using the included NovaConnect software. This software allows the simple setting of crosspoints and pre-definition of crosspoint groups, or the locking of crosspoints against unintended use.
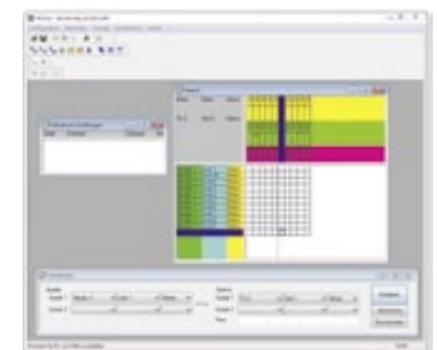
The optional VisTool touch screen software provides another method of operation. VisTool offers a visual user interface that enables additional functions such as signal metering, as well as the setting of crosspoints.

Key facts at a glance:

- 16 MADI ports
- 1024 x 1024 I/O (in addition to internal signals)
- Compact 1 RU design
- Simple port redundancy, configurable with other Lawo products (sapphire, zirkon, crystal, Nova17)
- Fast visual feedback with coloured LED indicators above each MADI port: "Redundancy", "MADI present", "Port configured", "Port not configured"
- Powered AC adaptor (included) or optional redundant power supply (951/25)
- Configuration/maintenance via zirkon.exe software and SOP Explorer with graphical user interfaces
- Currently set crosspoints are retained if a new configuration is loaded
- Sample rate switchable between 44.1 and 48 kHz
- Up to 30 panels (switch panels or GPIO) can be connected
- MADI ports in 56 or 64 channel mode
- 256 loopbacks
- 128 x 8 GPIO via MADI (GPIO tunnel), GPIO network 10 x 32 + 10 x 10 VCAs
- 40 x 40 talkback matrix
- 64 mini mixers (stereo), each with one individual talkback input
- 128 PPMs (mono), each including Silence Detect, loopback available
- Integration of different protocols (DMS, KPF, NTP)
- NovaConnect included
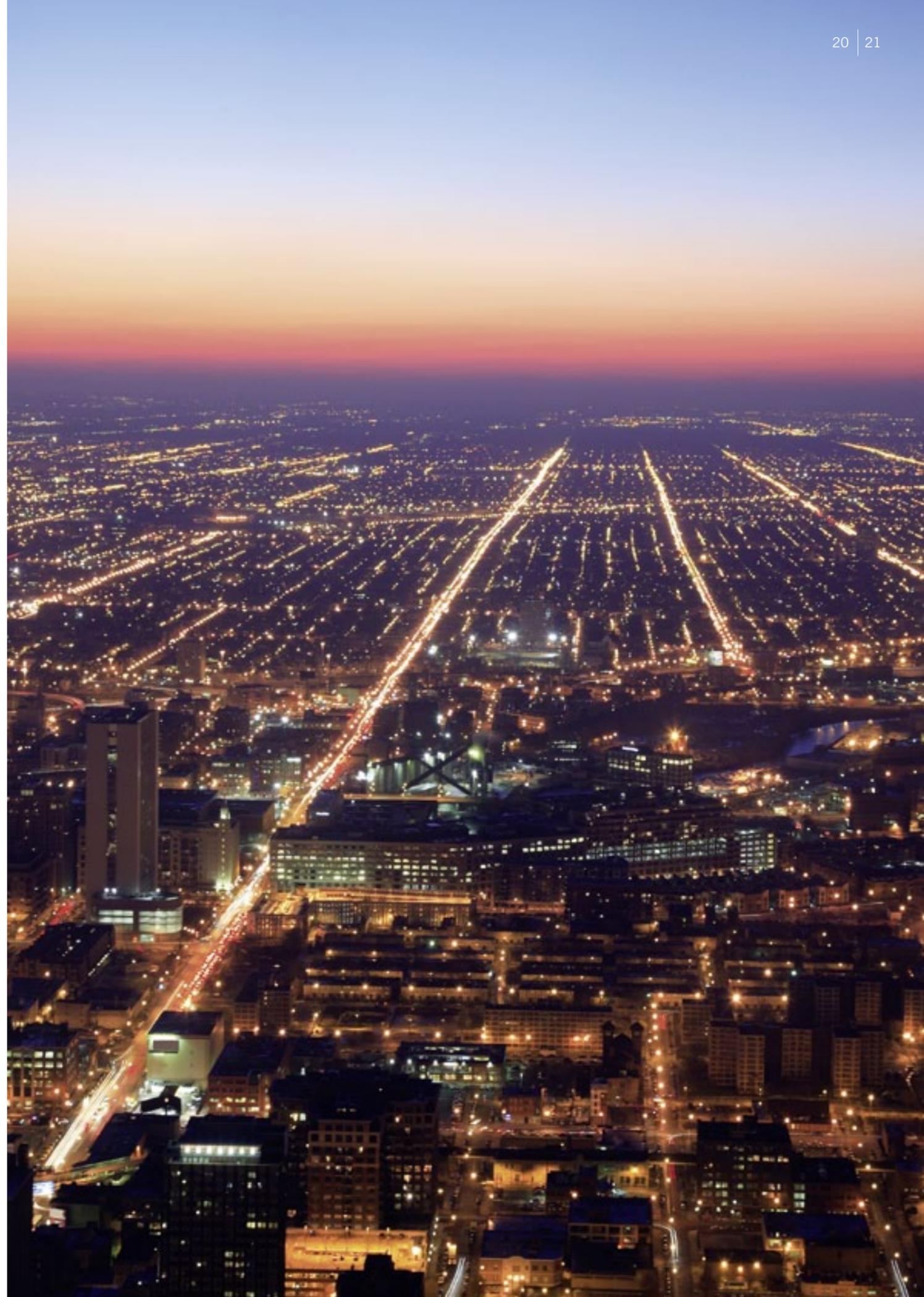
Nova17:
The versatile all-rounder with modular technology.

A Nova17 is the perfect solution when flexibility and versatility are required in small to mid-size networks. This compact router is designed with absolutely stunning quality and many practical features, making professionalism possible even in smaller facilities. Nova17 can be used for signal processing, as a format converter, or as a MADI breakout — whether in broadcast, production or theatre situations. Through direct integration of the DALLIS I/O modules, the Nova17 shines with a great variety of high-quality interfaces — thus preparing you for the future; there is also a continually growing range of DALLIS I/O modules available.

Comprehensive performance spectrum.
Thanks to its compact design, the Nova17 offers everything one would expect from a modern router. It has a capacity of 384 x 384 signals, with crosspoints that can be switched simultaneously on mono-level, transparently and non-blocking. DALLIS cards can access up to 128 I/O directly via the integral card slots. Depending on the master card used, access to an additional 256 signals is possible via MADI for use, for example, to provide connections to mixing consoles, other routers, or breakout boxes.

Powerful system core and a variety of interfaces.
Starting with the central master card — the heart of a Nova17 — the system can be tailored to your requirements. The choice ranges from a version with integrated MADI ports, to a redundant master card configuration.

In terms of interface cards, a comprehensive selection is available. The Nova17 is based on the proven DALLIS system, providing top-level reliability, and allowing you to choose from a range of DALLIS cards already in use with Lawo's large-scale production consoles:

- Analogue mic/line cards
- Headphone ports
- AES/EBU (AES3), optionally with SRC
- 3G/HD/SD SDI (embedded audio) with SRC
- ADAT® with SRC
- Serial interfaces (RS232, RS422, MIDI)
- GPIO (opto coupler, relays, VCA)
- IP codec
- RAVENNA Audio-over-IP option (available soon)

The list of available interface cards continues to grow, and most cards are available in different versions.

* ADAT® is a registered trademark of Alesis, LLC and is used here under license.

Freely configurable switch panels.

Are you planning to expand your commentators' or editors' workplaces? In this case, the freely configurable KSC or KS-ETH series user panels are the perfect match for your requirements, allowing you to easily upgrade your Nova17. With every panel designed as a compact 19"/1 RU unit, up to 30 push-button panels can be integrated into your system simultaneously. With these units connected via CAN-Bus or Ethernet, you can benefit from a cost efficient way to equip additional workplaces – whether required for announcers, producers, guests, or simply other interfaces.

Greater usability with InterCom software.

InterCom software provides a solution that makes inter-studio communication even easier. This practical tool meets your requirements for a communications solution between all studios, using the resources of a Nova17. Setup is carried out using the Nova17's installation software, with the configuration of the announcers' workplaces running on separate software. This enables up to 42 remote stations to be set up, each with up to 32 buttons. The InterCom application is therefore a real alternative, which not only significantly increases the usability of a Nova17, but also makes costly, external communication systems unnecessary.

Operation and maintenance.

Visual configuration software, that has already proven its worth with Lawo's broadcast consoles, is also used to set up and configure the Nova17. This software offers you extensive possibilities to adapt the router perfectly to your work environment.

Both "SoP Explorer" and an integrated web server application are available for system diagnosis and maintenance, and are run on a PC connected to the Nova17 via Ethernet – this can therefore be carried out, for multiple separate installations, from a distant, central facility.

To ensure that a Nova17 is always up-to-date, software updates take place using the SoP Explorer application. The current status of a Nova17 can be monitored via the integrated web server.

Once set up, assigning crosspoints is easily carried out using the included NovaConnect software. This software allows the simple setting of crosspoints and pre-definition of crosspoint groups, or the locking of crosspoints against unintended use.

VisTool touch screen software.
A Nova17 can optionally be controlled via the VisTool touch screen software. VisTool guarantees a perfect overview, and provides direct access to even more functions. Whether it is signal metering, DSP parameters or timers, VisTool allows you to check everything directly, and all the important parameters of a selected source are displayed particularly clearly. The direct setting of crosspoints is, of course, possible – intuitively and quickly. Optionally, the various control functions can be freely defined during installation, while clearly laid out screen displays provide intuitive user guidance. So you see, VisTool is not only cost-effective, it also excels in terms of convenience.

Future proofing included.
In terms of future proofing, the Nova17 is a true star, allowing modular upgrades that enable you to react flexibly to any new requirements, at any time. Possibilities range from interface upgrades with the continually growing variety of DALLIS cards, to the integration of talkback, use as a MADI breakout, or the Nova17's potential integration into existing broadcast complex systems. These are just a few examples of why today's Nova17 is the perfect solution for tomorrow.
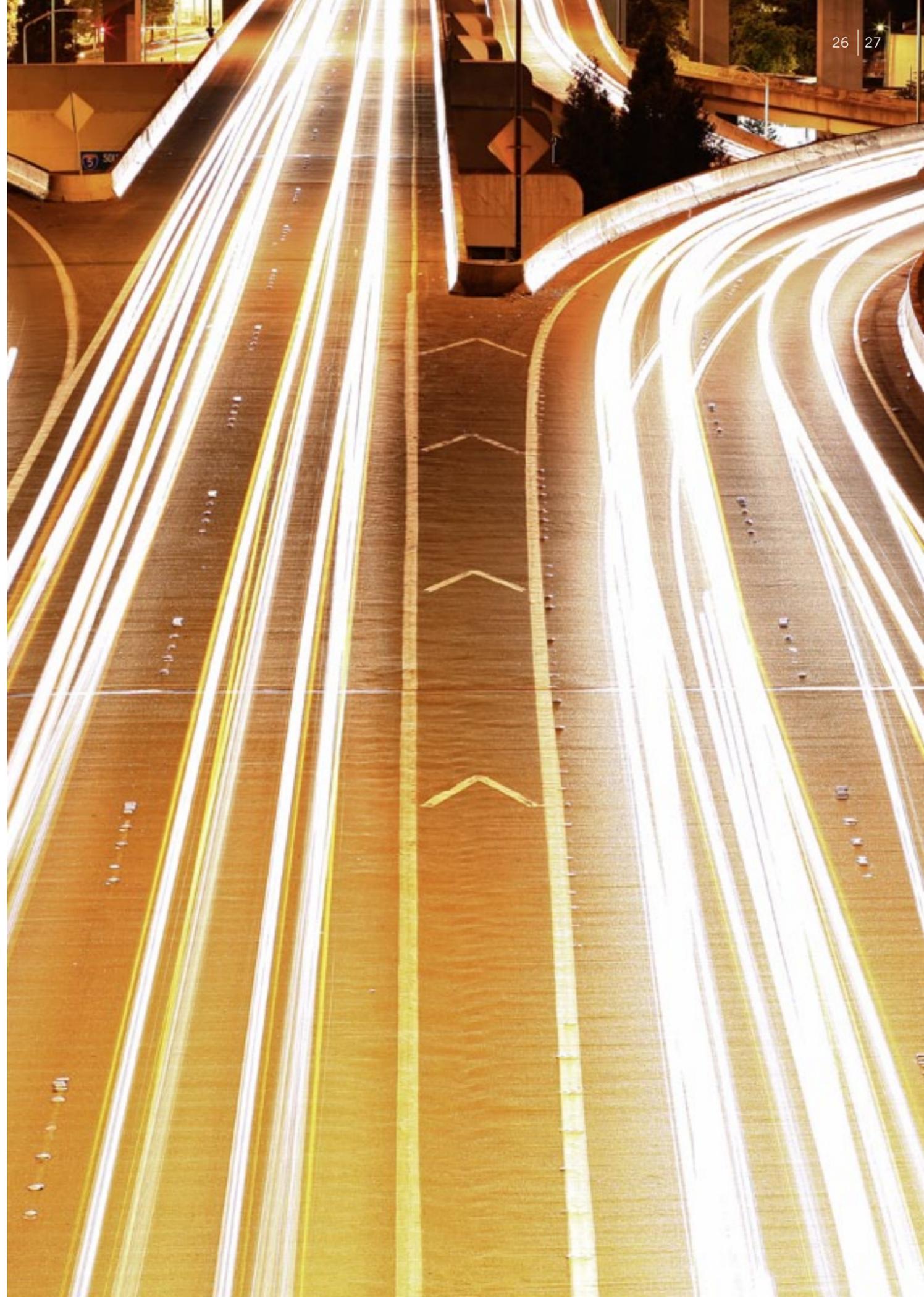
Flexible connections.
While VisTool and NovaConnect allow direct control of a Nova17, it is also possible to set crosspoints using external applications and controllers. The ability to control a Nova17 via a remote protocol allows for the flexible integration of Nova17 into a variety of different work environments.
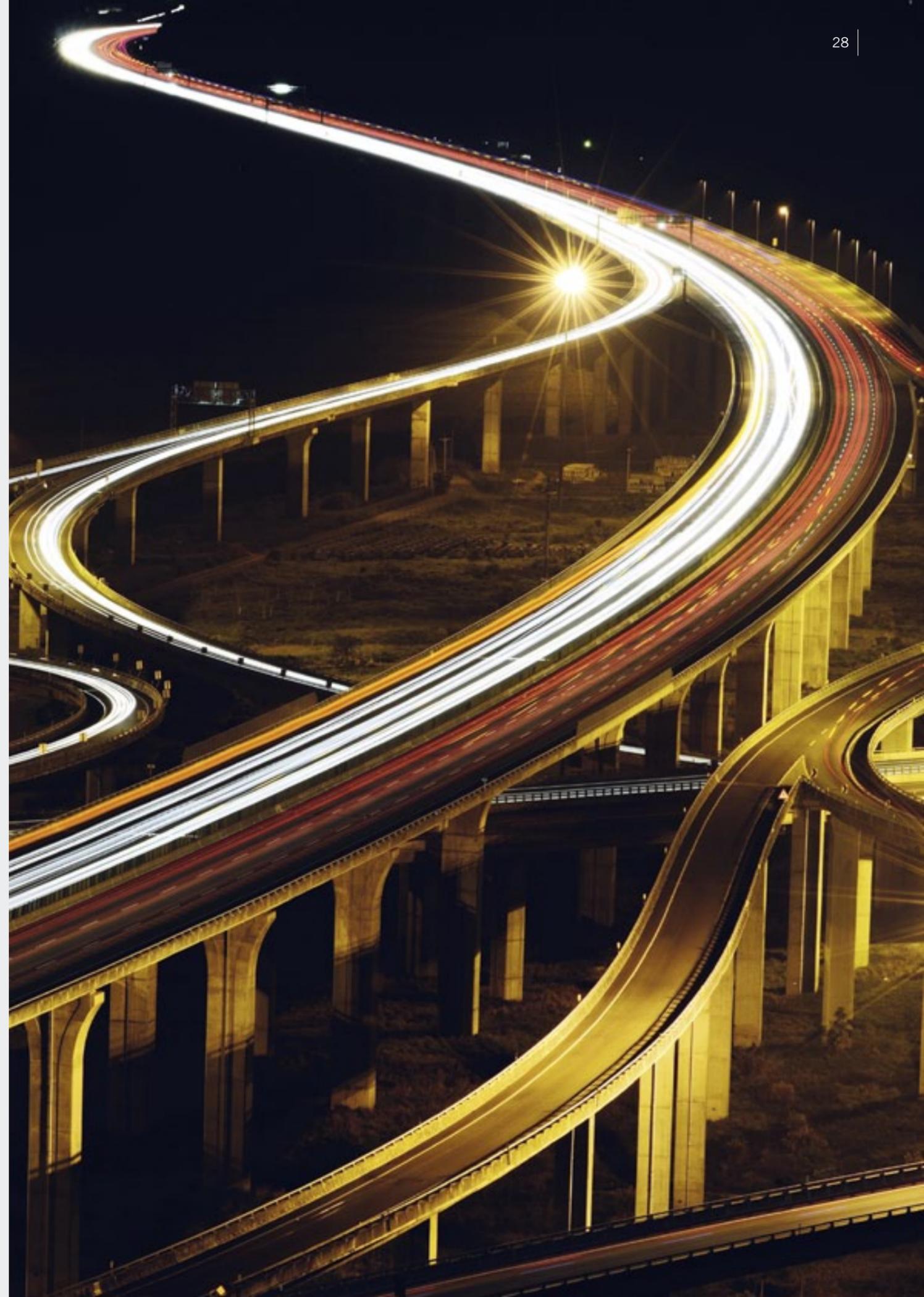
Key facts at a glance:

- 19" 3 U or 6 U frame

- Central masterboard with integral control system and signal processing, optionally providing:
  – 1 MADI interface (optical MMF 62.5 / 125 μm)
  – 4 MADI interfaces (optical MMF 62.5 / 125 μm)

- 18 slots for I/O cards (16 for use as audio I/O)

- Wide range of plug-in cards:
  – Analogue Mic / Line
  – Headphones
  – AESBU (AES3), optionally with sample rate converter (SRC)
  – 3G / HD / SD SDI (embedded audio) with SRC
  – ADAT® * with SRC
  – Serial data transfer (RS232, RS422, MIDI)
  – GPIO (opto-couplers, relays, VCA)
  - IP Codec
  – RAVENNA Audio-over-IP option (available soon)

- Internal matrix with up to 384 inputs and outputs (non-blocking)

- Transparent transfer (Dolby®E compatible)

- Integral signal processing (eg. Gain, EQ, Dynamics, Delay)

- Sampling rate of 48 kHz or 44.1 kHz (dependent on mastercard type)

- Synchronisation via Wordclock, MADI or internal generator

- Control via Ethernet TCP/IP, RS422 and CAN bus

- Software for operation and configuration included (system requirements: IBM compatible PC with Windows 2000/XP®, Ethernet connection)

- Integral web server for system diagnosis

- Optional redundant masterboard

- Optional redundant power supply

- Operating voltage 100 V to 240 V AC, 48 Hz to 62 Hz

- PC-independent and fan-free operation

* ADAT® is a registered trademark of Alesis, LLC and is used here under license.

Nova series overview	Nova17	Nova29	Nova73 HD
Signals/connects	384 x 384 (plus internal signals)	1024 x 1024 (plus internal signals)	8192 x 8192
Non-blocking design	Yes	Yes	Yes
Interfaces	16 slots for DALLIS I/O-cards, up to four additional MADI-Ports	16 MADI-Ports	16 slots for up to 128 MADI-Ports, 96 SDH/ATM-Ports, 256 AES3 (stereo)
DALLIS I/O card product line	Can be used directly or integrated via MADI	Can be integrated via MADI	Can be integrated via MADI or SDH/ATM
Redundancy	Optional: MADI-Ports, master cards, PSU	Optional: Port redundancy, redundant units (double star) possible with subordinate control system, PSU	Optional: Redundant master cards, PSU, Double Star with Self-Healing Feature (DSHS)
Transparent transmission	Yes	Yes	Yes
Synchronisation	WCLK, MADI, internal generator	WCLK, MADI, internal generator	WCLK, AES3, Video, MADI, SDH/STM-1, internal generator
Expandable with Panels of KS/KS-Eth series	Yes	Yes	—
Controllable via protocol	DMS, KPF, NTP	DMS, KPF, NTP	RemoteMNOPL
Sampling rates	44.1 or 48 kHz, depending on master card, switchable	44.1 or 48 kHz, switchable	48/44.1 kHz and 96/88.2 kHz
Integral DSP	Gain, EQ, dynamics, delay, summing matrix/InterCom	Gain, summing matrix/InterCom	Gain/phase, balance, silence detects, summing matrix
Optional DSP	—	—	EQ (graphic and parametric), dynamics (gate, AGC, compressor, limiter), delay, 64 x 64 summing matrix, timed fader, signal condition monitoring
Configurable during runtime	—	Yes	Yes
System management	Integral web server for system diagnosis, remote maintenance	Integral web server for system diagnosis, remote maintenance	Integral web server for system diagnosis, remote maintenance, SNMP
Cooling	Passive, fanless operation	System-controlled fan	Fans directly accessible; change during runtime possible
Measurements	19", 3 or 6 RU, Depth: 433 mm (plus cabling)	19", 1 RU, Depth: 130 mm (plus cabling)	19", 10 RU, Depth: 440 mm (plus cabling)
Operating voltage	100 – 240 V AC, 48 – 62 Hz	100 – 240 V AC, 47 – 63 Hz	85 – 265 V AC, 47 – 63 Hz

Networking Audio Systems