



# AVATUS

The Distributed Remote Console



A U D I O   E X C E L L E N C E



AVATUS

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## The Distributed Remote Console

AVATUS is the future in audio consoles. This innovative concept makes full use of the benefits offered by IP technology. The console controller provides TCP/IP connectivity for integration into a network. The surface consists of one large or several smaller modules. This design allows, for example, for separate installation of the metering displays. The system supports remote network connections and even browser-based mixing that requires no specific hardware. With AVATUS, all hardware modules are created equal. Every touchscreen gives full access to all configuration settings and central desk functions. - The ultimately flexible and limitless concept!

The console integrates seamlessly into a NEXUS audio network that offers virtually unlimited audio-I/O resources in all common formats. The built-in macro controller allows for easy integration of external systems in any environment and for smooth day-to-day operations.

Stage Tec has made quality a matter of principle.  
AVATUS is just one example.



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## The Distributed Remote Console

### The Surface

AVATUS, Stage Tec's IP-based Distributed Remote Console, was designed to be highly flexible in order to meet the numerous requirements of the modern audio world. The unique combination of dedicated hardware controls with the modern adaptability of large, easy to operate touchscreens allows every sound engineer to follow his intuition. It invites you to individualize any workflow.

In detail, each control channel makes use of two touchscreens, four multi-function encoders, seven industry-grade buttons and a smooth-running, motorized fader.

The four touch-sensitive, concentric double encoders allow to control the audio parameters with the tactile feedback that Stage Tec's encoders are so well known for. With two separate control elements on one axis and the integrated pushbutton of the upper rotary knob, up to 3 parameters can be set with a single encoder. The function assignment follows the selected audio module on the screen below and can be easily identified at a glance thanks to the consistently imple-

mented design making use of clear color-coding throughout the user interface. The RGB LED lighting of the encoders not only provides instant information about the selected function but also gives the AVATUS its unmistakable appearance.

Upon the touch of an encoder, a parameter window appears on the screen above that provides clear numeric and graphic feedback on the set values. In addition, dual LED arc indicators directly adjacent to the encoder offer the same information through color, angle information, and bars or dot displays. This even allows the operation of parameters not currently displayed on the screen.

The illuminated short-stroke keys of each channel have a nicely perceptible pressure point. They allow the channel-related control of various functions. Common settings such as Mute and Solo are preconfigured and can be changed by the user. In general, the behavior of many control elements can be customized to suit each user's likings and workflow.

Special attention has been given to the faders of the AVATUS consoles as they are the main interface between user and desk. Precise operation is made possible by 100 mm of travel along with a very smooth feel. The motorization is nearly imperceptible whilst providing ultra-fast response on all recalls and layer changes. The true added value of the faders comes with the patented LED illumination in combination with the touch-sensitive coating of the fader head. Colored backlighting ensures a quick and easy identification of the channel type and can be individually defined for each channel if required. Various other functions operate in conjunction upon the touch of each fader.



## The Concept

Based on the operating philosophy of today's mobile devices and professional audio software, AVATUS has been designed for an intuitive, easy to learn and fast way of working. The whole console makes a clean, simple, approachable impression. Stage Tec's ingenious coup to completely eliminate the central section offers three big, undeniable advantages:

1. Nothing distracts the tidy, elegant, highly overseable looks of the console, no matter how large it may be. This makes it easy, even inviting for new users to indulge in the user interface and start working quickly. In addition, the design features a clear grid-type design of all touchscreen "pages" with extra large buttons and simple controls to support flawless operation under any condition.
2. More experienced engineers enjoy that the AVATUS harnesses 100% of the surface for actual channels, groups and sums. No fixed, bulky center section is in the way. Instead, all central functions can immediately be accessed via touchscreen at any position of the desk making them available directly in front of the user – upon the push of a button only.
3. The uniform design of the console also is the foundation for it's limitless configurability. Any fader strip can be assigned with any channel, group, bus master etc. Up to 16 layers plus various instant-access tricks make the AVATUS the most adaptable console in the market.

### Multi-User Operation

This concept perfects Stage Tec's multi-user approach to the design of audio mixers. Since each element of the console, due to the underlying TCP/IP technology, can be placed separately, it can also be operated separately. Multiple engineers can join forces in mixing large productions. AVATUS even supports two fully independent PFL/Solo/Control Room infrastructures. Monitoring, source listening and talk/talkback functions are as comprehensive and flexible as the console itself. Within the touchscreen pages that represent the functionalities formerly found in the center section of a mixer, a separate page

has been dedicated to the control room settings. Again, this can be accessed directly from any position on the surface. Additionally, headphones / control room volume can easily be pegged to a dedicated row of encoders, if desired.

### Full Integration

As a part of the Stage Tec family of products, AVATUS is fully integrated with the world's most encompassing audio network NEXUS. Perfected over decades, the interaction between the console and the network is reflected in the many freely configurable user buttons that allow direct access to almost any system function and control of any external device. This, of course, includes logical links, conditions, processes, and access to the full routing matrix straight from the desk.

On top of the regular integration, AVATUS offers the most complete and innovative cue automation in a mixing console with fast, simple workflows tailored for everyday production. Here, settings and actions within the NEXUS network can easily be included with each cue.

# AVATUS

## The Distributed Remote Console

### Operating Concept

- Highest flexibility; all functions available in every module
- Context-based operation using touchscreens
- Smooth-action encoders and faders maintain the analogue feel
- Efficient operation thanks to intuitive workflows
- Obvious function assignments defined by clear color coding
- Unconfined support for operation by multiple engineers
- Supports simultaneous control from any browser

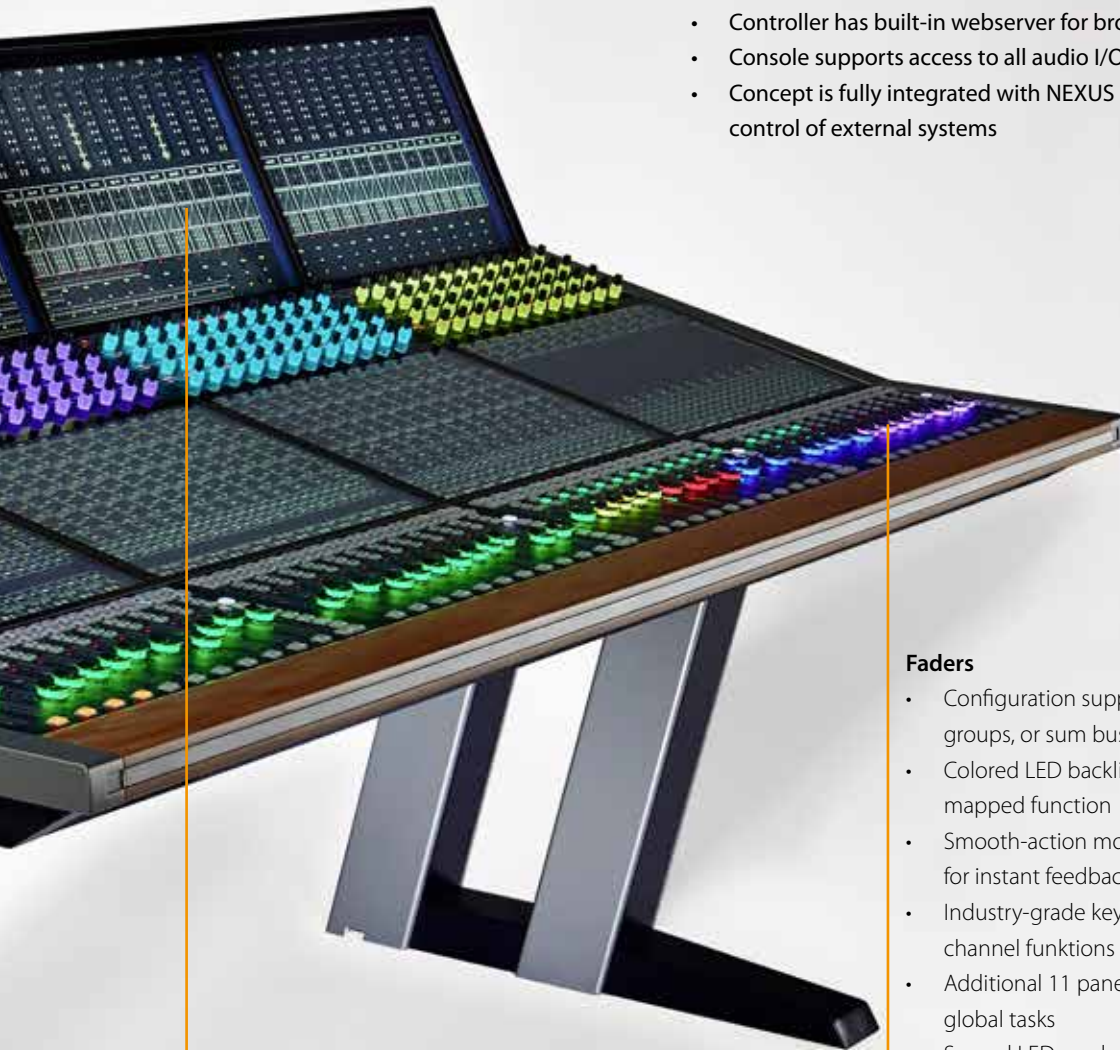
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### Encoders

- Encoder and fader panels internally form one IP module per bay
- Dual concentric encoders are touch-sensitive
- add up to a total of 8 encoders per strip
- Upper encoder offers an additional push-button
- Encoders derive function from context per channel or per bay
- Dual LED arc displays allow fast, precise adjustments
- Ultra-fast refresh rate constantly displays actual values
- Multicolored LED backlight always indicates selected function



- Frames available in sizes from 1 to 8 bays
- 12 faders per panel allow up to 96 faders per console
- Consoles available as desktop or standing versions
- Every console built according to user specifications
- Flat “theater version” to be had with detachable displays
- Modules and bays may be split into separate units
- Units can be distributed to different locations
- Console designed as a TCP/IP-based control surface
- Every surface module receives a dedicated IP address
- Network connects all modules, even when located remotely
- Small units can be powered by PoE
- Connections through the internet are supported
- Surface-controller and DSP-boards hosted in NEXUS Star Router
- Controller has built-in webserver for browser-based operation
- Console supports access to all audio I/Os on the NEXUS network
- Concept is fully integrated with NEXUS Logic Control for complex control of external systems



#### Touchscreens

- Super-coated 21" anti-glare displays for hours of relaxed work
- Premium, slim-seam mounting for maximum use of space
- Each screen can access all functions
- Typical usage: meters at the top, console operation at the bottom
- Top screen is optional or can be ordered as a separate unit
- Screen-based workflow for easy overview at all times
- Console settings and higher-level functions always available on every screen
- Fast, easy, and error-free operation through large touch buttons
- Intuitive workflows with swipe and on-screen editing

#### Faders

- Configuration supports free assignment of channels, groups, or sum buses to each fader strip
- Colored LED backlight clearly indicates currently mapped function
- Smooth-action motorized faders are touch-sensitive for instant feedback
- Industry-grade keys provide direct access to critical channel functions
- Additional 11 panel keys expose layer settings and global tasks
- Several LEDs and a level indicator give permanent insight on channel status

## The modular AVATUS Channel Strip at a glance

The metering screen gives not only a good impression of the current level conditions, but also an excerpt of the audio modules and the routing.

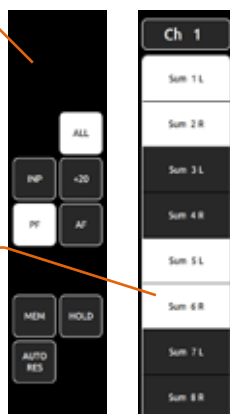
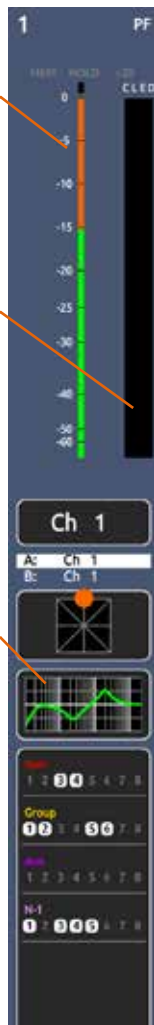
Next to the level bar, the gain reduction of the dynamic units is shown. Under the channel name, the names of the NEXUS sources appearing at the two inputs are displayed.



As a thumbnail panning equalizer and dynamics modules appear depending on the selected function.

The touch technology allows changing the metering settings directly in the screen.

After touching the routing, the channel can be switched to buses via a scrollable selection list.



The four touch-sensitive, soft-locking double encoders with LED illumination serve for the haptic operation of all audio parameters. The color depends on the currently selected audio module. When touched, the upper screen displays the parameter set assigned to the respective encoder. Furthermore, the approximate value can also be read off the assigned double-sheet displays.







With a short tap on the name of the audio module, another one can be selected via a drop-down menu. Holding the button switches the strip to the detail view.

Each box is assigned an encoder that can be used to operate up to 3 values. With a vertical sweep, further parameter sets can be achieved, e.g. other EQ bands or additional AUX paths.

The touch (soft) buttons are used to operate the switchable functions of the audio module.

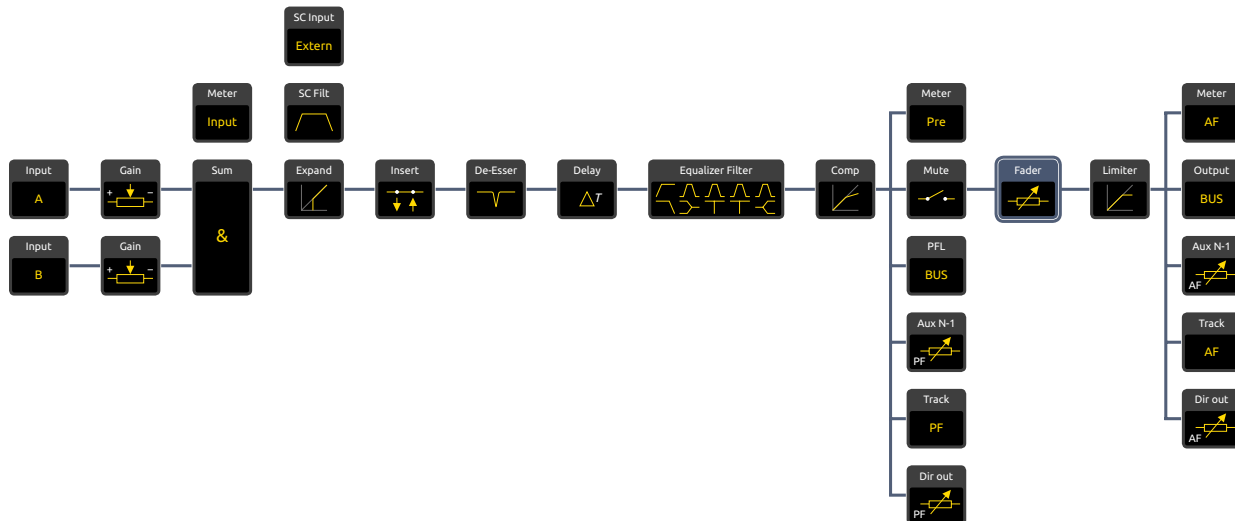


By tapping on a box, special switches for e.g. Pre / Post switching or Mute of an AUX path. Touching the channel name allows you to toggle between the two channels in each channel strip, and holding calls the keyboard to label. Freely assignable user buttons give you the control of almost any switchable function right at your fingertips e.g. talk function, logic control or SRC modules.



In addition to the LED illuminated faders, there is an LED bar graph for additional metering such as input or gain reduction as well as 7 freely configurable keys pre-assigned with standard functions such as Mute, Solo, or Isolate.

Two are of particular importance for highly efficient work: the "Spill" key is used to directly access the otherwise hidden channels of any group; the "Access" button switches the respective channel into the detail view and defines together with another the area of the temporary link group.



### Channel Functions and Configuration

Using the AVATUS Channel Configurator, each individual audio module can be arranged effortlessly by drag & drop. The configuration, which includes not only the processing, but also the metering and monitoring taps as well as all playout paths, can be adapted for each channel individually or for all channels of a type at once.

#### Inputs

Thanks to the AVATUS' A/B input stage, each channel has two separate inputs for connecting completely independent signals from the NEXUS network. All routing and format conversion is automatically taken care of by NEXUS. Selecting the desired input or, optionally, summing both is just the tap of a button. In addition to the mixer's internal, solely digital "gain" of each input, the operator can also control the gain and phantom power of the NEXUS microphone converters directly from the console. With a M/S decoder module integrated in the input section of each channel, AVATUS handles well all kind of input formats. These inputs are unique not only in their amazing 158 dB of input dynamics. On top, they can be ordered with an internal 1:4 split giving up to four individual consoles, recording workstations or other destinations independent control of all input parameters.

#### Delay

The scalable RMDQ DSP cards used by AVATUS offer an extraordinary 2,700 milliseconds of delay per channel. Activation is by a simple press of a button. Settings can be adjusted with sample accuracy.

#### Dynamics

With AVATUS, the placement of the three dynamics modules limiter, compressor, and expander/gate within the signal chain can be freely configured on a per-channel basis. Per channel, the user can also choose for which of the modules the external

sidechain input and the additional high/low pass filter should be used. The modules themselves provide all imaginable parameters for signal processing. Immediate information about all settings and their influence on the gain is displayed on the screens and the LED arc displays of the corresponding rotary encoders. For each of the Input Channels, Groups and Sums a True Peak Limiter is available.

In general, the configuration options of Stage Tec's dynamics units in the AVATUS are all-encompassing whilst the audio quality and ultra-low distortion level are praised by highly regarded, experienced sound engineers from both broadcast and theater.

#### Equalizers and Filters

Thanks to an elaborate, digital circuit design, Stage Tec has succeeded in developing filters with a very neutral sound for which we have received accolades over and over again. The gain of all parametric EQs can be as high as  $\pm 24$  dB and is adjustable precisely to  $\frac{1}{4}$  dB. All high/low passes and shelving filters can be set in 6 dB increments up to 24 dB/octave.

A total of ten filters are available in each channel: 4 fully parametric filters ("EQs"), 2 shelving filters (high/low), 2 pass filters (high/low), and 2 notch filters. All filters can be set over the entire listening range from 20 Hz to 20 kHz without exception.

#### Buses / Output Channels

AVATUS' projects may have up to 128 buses at the same time, each with the full signal processing functionality of a channel strip. For each project, the available buses can be configured as desired. AVATUS then automatically adapts the handling and assignment of the buses to the selected audio formats. Thus, the user can conveniently operate mono, stereo and surround buses in a similar fashion. Of course, all AUX and N-1 buses can effortlessly be reached directly from the channel strip. Beyond the outputs of the mixer, the NEXUS network will take care of all routing and signal conversion according to the destinations selected by the operator.

## Fader and Mute

Seen from the Channel Configuration, the fader is the “anchor point” in each channel. Around it, the other elements are structured. Even the mute point can be placed freely.

An interesting feature of all Stage Tec consoles is the software “back stop” of the faders. It can be configured in the global project settings and offers the functionality of an additional button activated when pulling the fader all the way down below its lower end position.

## Metering and Monitoring

Each AVATUS channel offers three points in the signal path where metering may be applied: directly behind the input, before the fader and after the fader. The setting may be different for every channel and can be changed instantaneously if desired. True Peak Metering After Fader is possible for all Input Channels, Groups and Sums. What really distinguishes AVATUS from other manufacturers’ consoles are the extensive metering options that reach far beyond the actual mixer: On the so-called Free Meter pages the engineer can configure meterings for any signal from the entire NEXUS audio network to be displayed on the console, even if they are not routed into the mixer itself. Above that, by linking the freely assignable AVATUS User Buttons with the influential NEXUS Logic Control, any signal from the network can be routed to the console’s monitoring paths by simply tapping the button. Thanks to the flexibility of the touchscreens, it is possible to define meaningful, system-wide monitoring points directly on the Metering Screen of the desk. This even provides a degree of context-sensitivity, making this amazing function still more useful.

## Group and Sum Channels

In addition to the standard channel functions described above, AVATUS reserves a dedicated part of the DSP resources for each bus configured in the project. These “bus channels” provide all of the described functions for the summed signals on the bus. This impressive performance is one of many that make AVATUS the leading mixer in its class.

## Crosspoint Concept

Since AVATUS is fully integrated into the NEXUS audio network, the user interface of the desk gives access to two groups of inputs and outputs that users can combine as they wish: the I/Os of the mixer itself and all I/Os of the entire NEXUS system. In effect, the operator is not limited to routing signals into and out of the mixer but has full control of all crosspoints throughout the whole NEXUS network. In addition, NEXUS’ routing is not static but can be re-assigned manually or automatically in various ways. This allows not only to fully re-think the usage of inserts and side chain signals but the full signal structure of a production.

Another specialty of NEXUS, and thus AVATUS, is Equipment Routing. Any number of audio inputs and outputs can be configured to work together as a “Device”. Devices are displayed and routed only as a single crosspoint making overview and operation fast, intuitive and flawless. This feature provides an enormous remedy for the interconnection of a large number of signals and provides the user with an unprecedented overview of the signal flow in the system. All the time, NEXUS makes sure that the linking of sources and destinations is consistent.

## Customizable Projects

Depending on the type and scope of each production, the engineer will favor certain basic settings of the desk and usage-scenarios of the DSP. The AVATUS Project Generator provides a plethora of options to set according to the individual wishes and requirements, thus optimizing console and DSP specifically for each use case. The following can be seen as an excerpt only.

### Global Settings

In the Global Settings, project-wide decisions are made that can greatly simplify later work. For example, routing groups to other groups may be allowed or dis-allowed or the automatic downmix of 5.1 sources to 2.0 buses can be engaged. Also, the size of the off-air matrix and specialized features such as encoder sensitivity and other general options may be configured. If, with certain productions, the demand for input channels should be particularly high, AVATUS projects support so-called “short channels”, a channel type configured without inserts and side-chain inputs. Short channels make DSP resource assignments more flexible, thus increasing the total number of available input channels. With Stage Tec’s DSP being highly scalable (from 1 to 7 “RMDQ” DSP cards are supported), Short Channels can be considered just one more option users have to fully exploit the full powers of their system.

### Monitor Settings

The bus formats used for the two independent Control Rooms, Solo and PFL buses are defined in the Monitor Settings. AVATUS supports mono, stereo, 3.1, 5.1, 7.1 buses within its project settings. In addition, the user may select the number of alternate stereo Control Room signals needed for each project.

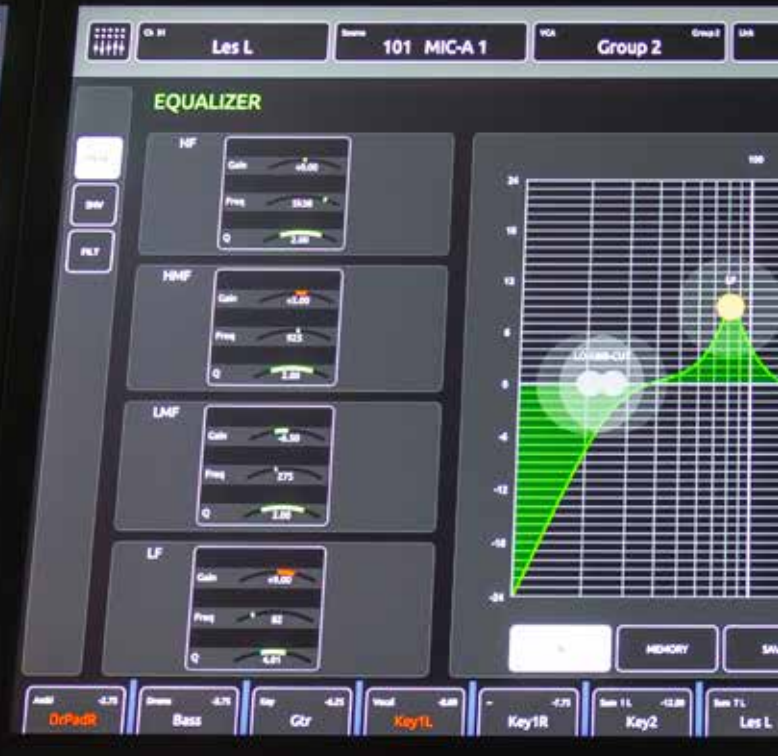
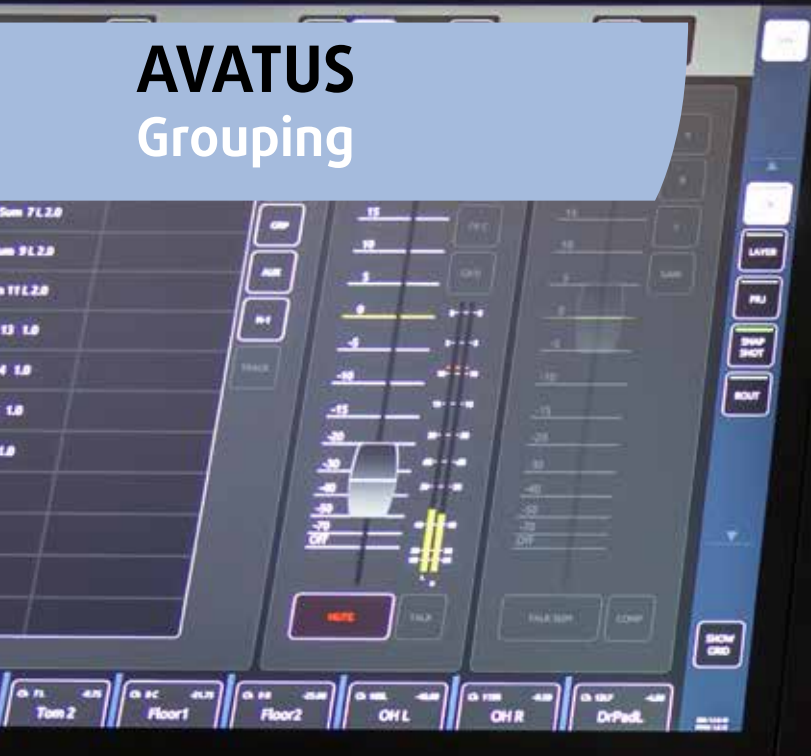
### Mixer Settings

Configuration of all further buses such as groups, sums, AUX and N-1 buses is done in the Mixer Settings tab. A channel count provides information on the total number of channels used per bus type and in total, giving the engineer a perfect overview of the basic project resources.

In addition, the Start Layer offers drag & drop ordering of both input channels and buses to easily prepare efficient later workflows.



# AVATUS Grouping



## Grouping and Multi-Channel Control

AVATUS' versatile grouping options leave nothing to be desired. In addition to simple mute, stereo and surround groups, the user can set up the most complex VCA hierarchies and tailor link groups precisely to his requirements. If useful, the channels can be participants of several groups.

## Stereo and Surround Groups

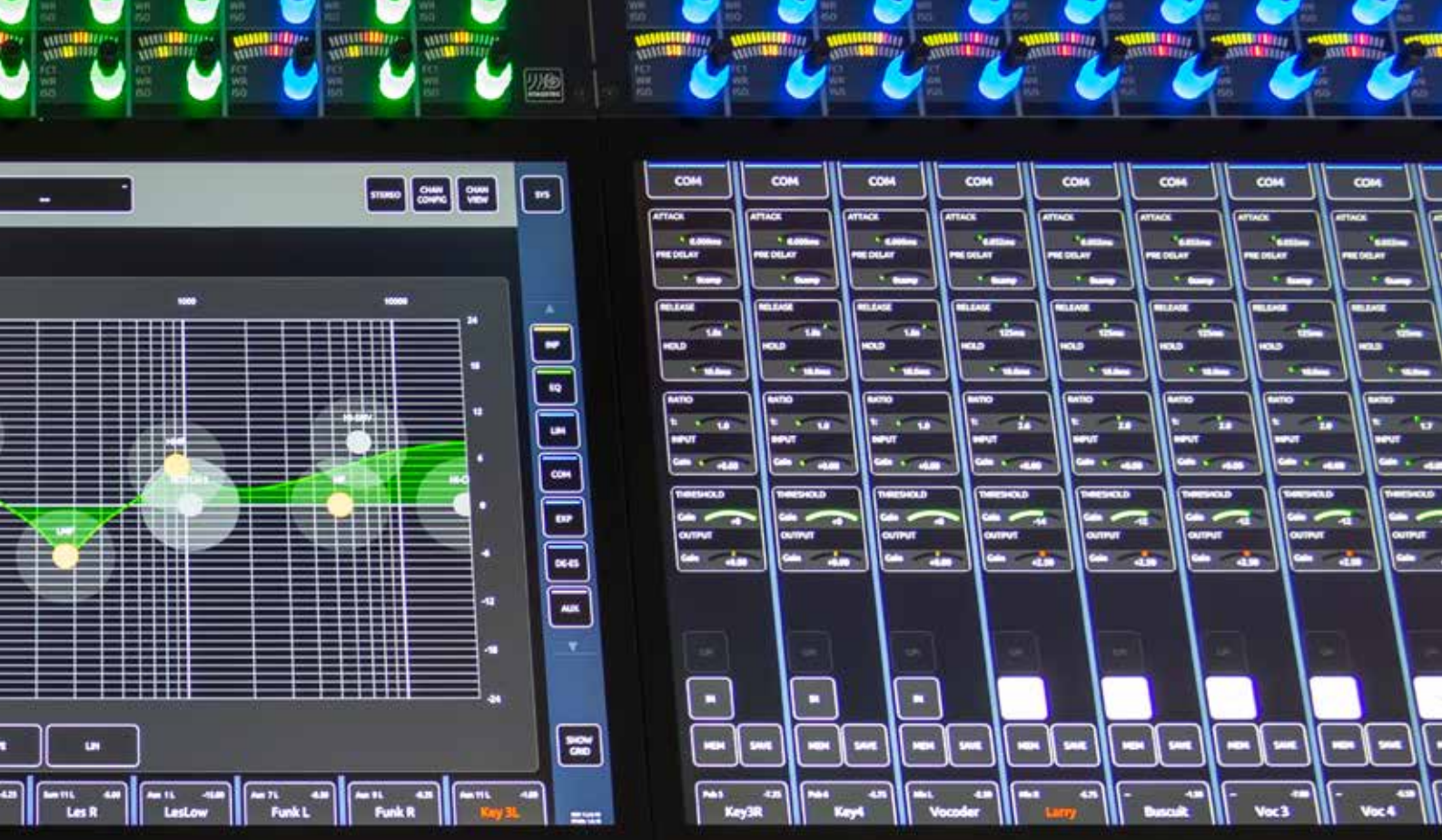
For industry-standard stereo or surround sources, channels can be automatically coupled when a project is set up. Even during operation, stereo channels can be created at any time via the input section of a channel. Also, the user can freely define the parameters to be linked.

Of course, AVATUS automatically adapts logically dependent settings to the selected signal format. Such are, for instance, the metering display format and the handling of the pan/balance modes.

## Link Groups

The higher-level Link Groups in AVATUS allow the same level of granularity in parameter configuration. There is no dedicated "master" in a Link Group. Any channel that is operated becomes the master. All linked parameters of the other channels will follow, which is especially useful if these channels are not assigned to the active layer on the surface. Even the pure linking of processing modules, explicitly excluding the fader, is possible.





The number of channels involved in a group is not limited. An intuitive matrix view makes it child's play to define which parameters are linked together for each group. This way, any user can easily handle a wide variety of sources, even with the largest number of channels. Groups of ambience microphones, large choirs or entire orchestras can be configured flexibly and quickly.

### VCA Groups

In contrast to Link Groups, VCA Groups have exactly one channel which is assigned the function of the master. This makes the handling of offset settings particularly easy. Depending on requirements, a real signal-carrying channel can be defined as the master or, for better logical separation, an uninvolved, silent channel can be used.

AVATUS allows global switching between "VCA behavior" and "Master/Slave behavior" of the groups. While the faders of all controlled channels retain their position when VCA mode is activated, the faders of all linked channels move proportionally in Master/Slave mode.

A special feature of AVATUS is the VCA Bypass function, which allows individual faders to be temporarily released from the VCA group, that is, the control function of the master to be overridden. Of course, it is possible to use PFL and Solo functions on the virtually summed signal of each VCA Group. This includes scaling to the correct level when listening after-fader.

### Spill and Offset Setting

For a space-saving configuration of the console, subchannels of the various groups can be placed on layers that are not actively used. In fact, they would not necessarily need to be assigned to any layer at all. With the Spill button in each AVATUS Channel Strip, the hidden channels can be brought to the surface with a single press of the button whenever direct access to these channels is required. If the channel belongs to several groups, then AVATUS can display these hierarchically and remembers the user's selection.

Setting offsets of coupled parameters is always the same, regardless of the type of grouping: While any fader or encoder of a grouped channel is touched, this parameter can simultaneously be adjusted as an offset in all other channels of the group. When released, AVATUS returns to the set coupling, but retains the offset.

In order to extend the possibilities of grouping even further, AVATUS allows groups and their settings to be saved per cue and recalled automatically.

# AVATUS Specifications

## Specifications NEXUS Star Router

Build	19" module frame, 6 RU
Dimensions	265 mm × 482 mm × 410 mm (H × W × D, approx., without ports and handles)
Slots	21, w. 14 DSP-card slots
Latency	< 1.5 ms @ 48 kHz/s < 1 ms @ 96 kHz/s (incl. A/D and D/A conversion on the NEXUS network)
DSP cards	1 to 7 per console
Power-supply units	110–240 V, 50–60 Hz, 30 A each, single-phase, phase redundancy supported
Redundancy options	Power supplies, matrix, controller cards, DSP (user-configurable), optical links on the NEXUS network, links to the console
Cards	Hot-swap-enabled, fully operable 2–3 seconds after installation

## Audio and Console Performance

Channel strips with 2 inputs (A/B)	Panels each have 12 operating strips (12–96 strips in total per console)
Summing buses	Up to 128 freely programmable buses (dependent upon number of DSP cards and configured channels)
Input channels	Approx. 800 (dependent upon number of DSP cards and configured buses)
Algorithms	40-bit floating-point, minimum latency, all channels summed with single-sample accuracy, identical latency across all DSP channels guaranteed
Sample rates	44.1, 48, 88.2, 96 kHz
Interfaces	All audio I/Os on the NEXUS network – access to all GPIOs, serial, and Ethernet links
Microphone and line A/D converters	TrueMatch®, 32-bit resolution, 158 dB(A) dynamics
Line A/D converters	TrueMatch®, 32-bit resolution, 135 dB(A) dynamics
D/A converters	24-bit resolution, 131 dB(A) dynamics
GPIO card in the console	Optional component: GPIO feat. 16 optocoupler inputs plus 16 semiconductor-relay outputs (max.) on 25-pin D-Sub port, common-potential or floating-pair configurations supported, input and output filters for noise suppression
Star Router connectivity	Optical LC and RJ45 Ethernet (optional redundancy) LC duplex ports: 1 Gbps over 50/125-µm fiber, 800 meters range

Dimensions	12-fader console	24-fader console	36-fader console	48-fader console	60-fader console	72-fader console
Number of panels	1	2	3	4	5	6
Operating depth (approx.)	700 mm	700 mm	700 mm	700 mm	700 mm	700 mm
Depth (total)	913 mm	913 mm	913 mm	913 mm	913 mm	913 mm
Console height	406 mm	406 mm	406 mm	406 mm	406 mm	406 mm
Height incl. legs	1.066 mm	1.066 mm	1.066 mm	1.066 mm	1.066 mm	1.066 mm
Width (incl. standard side panels)	593 mm	1.095 mm	1.597 mm	2.099 mm	2.601 mm	3.103 mm



It has been the passion for audio and a prophetic vision of what could be made possible with the upcoming digital technologies which made us establish Stage Tec in 1993: Thirteen experienced engineers set out to develop the first fully digital audio systems; one thing firmly in mind. - Quality.

The wisely thought-out integration of audio routing, powerful control features, and versatile mixing desks has convinced international pro users right from the start. Nowadays, many leading theaters and broadcasting centers around the world would not go without a Stage Tec system.



## Stage Tec Leading Digital Audio Innovation

### Our History

In 1993, we founded Stage Tec as a German limited liability company to design and produce digital audio crossbars and audio mixing consoles. Since then, we have ever again set new standards through continuous innovation. Our success story started with the NEXUS digital routing system and CANTUS, Stage Tec's first large-scale audio console. Since then, we have broadened our product portfolio with the AVATUS, AURUS platinum, CRESCENDO platinum, AURATUS, and ON AIR flex mixing systems. Today, Stage Tec offers the right system for any use case and size .

### Highest Standards

We have committed to the highest standards. To satisfy this aspiration every day, only the best qualified engineers with

many years of experience develop and manufacture our products. This is to ensure our systems offer maximum quality and meet our customers' individual requirements.

### Customer Focus

Interaction with our customers is key to us: We have kept in touch closely over many years to learn and understand the needs of users in each market segment in detail. From the beginning, it has been both a challenge and highly rewarding to familiarize with their demands and expectations and to translate these into new and exciting products. Many intelligent software functions, tailored to the use in theater, broadcast, recording, or live applications, have arisen from the ideas of our customers. This customer focus is a cornerstone of Stage Tec's

international recognition as a pro-audio manufacturer and we are deeply thankful to our friends and partners for many years of innovating companionship.

### An Undisputed Forerunner

Thanks to our vision and experience, we have always enjoyed the reputation of pioneering in digital audio throughout the years. Stage Tec products are the ultimate systems available in the pro-audio marketplace – and will remain to be so in the future!

Supported by:



on the basis of a decision  
by the German Bundestag

# Stage Tec mixing consoles: A global reference!\*



\*This map shows the locations of selected reference installations. All in all, more than 500 Stage Tec mixing consoles have been delivered and installed so far.

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