



**ON AIR 24**  
COMPACT BROADCAST SOLUTION

**ON AIR 24**

COMPACT BROADCAST SOLUTION

...THERE ARE MANY GOOD  
REASONS FOR CHOOSING  
THE STAGETEC ON AIR **24**

*STAGETEC DELIVERS ...*



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## MAIN FEATURES

- Easy operation, short learning curve
- Access to all resources in a shared **NEXUS** audio network
- Surface panels adaptable to user needs
- Modular desk
- Assignable push-buttons on the fader modules
- Router access through **NEXUS** configuration software with user rights
- Hot swappable modules/boards
- Silent - no hard disks or fans
- Full control of outboard and 3rd party systems through **NEXUS** logic control data (GPI, RS232, RS422, MIDI, 100MBit base)
- Can be controlled by scheduling/automation systems (BFE, VSM, Netia etc..)
- Configurable Windows GUI
- Full static automation and snapshots
- On-line PC editor (Virtual Surface)
- Configuration of surface GPI, faderstart, backstop PFL and GPO, user keys
- Extensive choice in I/O formats within the **NEXUS** router
- Monitor /TB circuits for control room and its studios
- Split /monitoring and talkback functions
- Full 5.1 and stereo with integrated downmix
- Remote monitoring/operation and servicing via LAN

## ON AIR CONSOLE

### Overview

The **ON AIR 24** is a high performance console with an almost infinite TDM backbone, the STAGETEC **NEXUS** modular router, which incorporates the highest level of resilience and redundancy. The system may be operated manually or controlled from a broadcast scheduling system.

The compact 4 way fader panels allow split fader console designs that can include desk space for scripts or paperwork.

The **ON AIR 24** is a modular, flexible and scalable system with control surfaces laid out to the broadcaster's specification. It offers easy configuration for self-ops, studio clusters or small workshops.



TV Studio



Radio



SNG Truck



## CONSOLE DESIGN

The **ON AIR 24** is simple and friendly to operate with six customisable buttons for each fader strip.

Clear and informative feedback is provided by OLED and TFT displays.

## CONSOLE OBJECTIVES

The **ON AIR 24** can be easily configured to present the right selection of functions and appropriate complexity for the operator or program. The configuration can be loaded manually or automatically by the broadcast scheduling system.



## CONSOLE REDUNDANCY

The **ON AIR 24** will ensure that in the event a fault occurs, recovery of normal operation is possible without the need for resetting after the fault is cleared.

Redundant power supplies and fiber-optic boards.

## 7 REASONS FOR CHOOSING ON AIR 24

### ▶ OUTSTANDING SONIC PERFORMANCE

STAGETEC TrueMatch<sup>®</sup> Mic-converters with 158 dB dynamic range and integrated 4-way splitter

### ▶ LOW LATENCY

Total system latency from Mic-input to analogue output less than 1ms!

### ▶ INTEGRATED ROUTER

256<sup>2</sup> STAGETEC **NEXUS** modular TDM router - expandable to 4096<sup>2</sup>

### ▶ MULTIFORMAT

Mono, stereo and 5.1 support with integrated downmix

### ▶ ADVANCED TECHNOLOGY

Unique DSP and control on a single **NEXUS** card

### ▶ REMOTE OPERATION

Online operation via LAN

### ▶ AUDIO & CONTROL INTERFACES

Analogue and digital microphones, Dolby E<sup>®</sup>, 3G HD and more...

# ON AIR 24

COMPACT BROADCAST SOLUTION

## FADER PANEL

Configurable channels, expandable to a maximum of 24 faders in banks of 4 give a modular, flexible and scalable system. The **ON AIR 24** gives the broadcaster total freedom over the layout of the control panels.

Self contained, hot swappable panels are easily interchanged. The **ON AIR 24** control surface provides tactile and visual feedback for each function with 100mm Penny&Giles® motorised faders renowned for their sharp response, high accuracy and reliability.

The control surface may also be remotely controlled and managed from a PC “virtual” surface or from a scheduling system.



### CONFIGURABLE BUTTONS

Button functionality can be configured and labelled. Different coloured button caps are available for easy recognition.

Fader Panel: OFAD



### DUAL ENCODER

Dual rotary encoders set mic- and channel-gain and LR and FB panning.

### CHANNEL OLED DISPLAY

Fader labels (with 8 characters) clearly identify the source being controlled and different language characters are supported.

### MOTORISED FADER

**ON AIR 24** uses 100mm Penny&Giles® touch sensitive motorised faders.

### ON/OFF - MUTE BUTTONS

Recessed push buttons prevent unintentional operation. All buttons have tactile feedback.

### CHANNEL METERING

Each channel features a meter indicating the level from the assigned source.

### MULTI FORMAT

Mono, stereo and 5.1 support with integrated downmixer.



## SOURCE AND MONITORING LEVEL CONTROLS

CR, headphone and CUE level controls with dual encoders.

## L/R SELECT AND TALKBACK

Separate LR source selections for CR and headphones.  
Dual PFL/AFL bus.

## MONITORING SOURCE SELECTION

Direct selection of console buses, user key for selecting more than 256 input sources.

## USER KEY PANEL

24 freely configurable user keys.



## MONITORING PANEL

Three types of the OMON monitoring panel are available to accurately meet the needs of each studio or application.

Systems can incorporate more than one monitor panel allowing for example, one fully equipped panel in the control room and a simpler version in the Studio for the presenter.

**OMON 1:** Fully equipped panel (as pictured).

**OMON 2:** Version without the CR Source section, (Source selection performed through logic control user keys).

**OMON 3:** Version without the logic control section

**OMON 4:** Version without the logic control and CR source section.

Monitoring Panel: OMON 1

# ON AIR 24

COMPACT BROADCAST SOLUTION

## TOUCH OPERATION



All the modules can be visualised and operated remotely on a PC controlled via a touch TFT-screen. Customised screens can be created to provide operator support, remote control and servicing. In addition to displaying installed panels, the software can emulate panels that are not physically installed.

Getting started is easy: The GUI-software runs on any state-of-the-art PC linked via Ethernet to the new TREM controller unit mounted in the system frame. Once setup and running, the GUI simulates all the control elements, so operators have full access to every control that is found on the hardware console's control surface including all metering, faders and encoders. The result is a new found freedom of choice regarding how big or small the physical control surface will be and how it will be populated. Even a minimum desktop layout with just four channel strips, two encoders and some buttons can have the full power of the **ON AIR 24** console in the background.



Monitoring & Snapshots



Fader Screen

## SYSTEM SOFTWARE

As no audio is processed in the PC, reliability and continuity is guaranteed. User sets are stored on an SD-card.

User setups (snapshots) can be loaded from the GUI.



Analog/Digital Clock Types

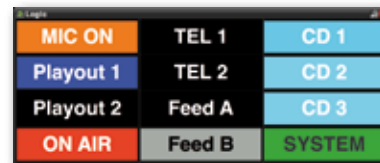


Layer & Source Select

# SYSTEM SOFTWARE

## LOGIC SOFTWARE

Configuring faderstarts, GPI's, timers, remote, MIDI etc. is straightforward. The **ON AIR 24** has 160 programmable logic control functions expandable by 160 logic functions for each additional base device in the **NEXUS** network.



Logic Functions



Customised Panels



Metering, Timers & User Keys

## SCHEDULING & AUTOMATION

The most critical time for any radio show is when it goes to air. For this a flawless integration of the play-out system and other on-air tools is essential. STAGETEC equipment connects to a wide range of automation systems using numerous control options: GPI; RS232; RS422 and Ethernet.

STAGETEC **ON AIR 24** and **NEXUS** systems incorporate comprehensive control functionality, designed to meet the needs of everything from a simple faderstart to a multi-studio broadcast centre.

As the STAGETEC **NEXUS** protocol that accesses cross points, gain, logic functions etc is open to 3rd party systems, it is the right tool for complex productions or daily talk-shows under manual or automated control.

ZENON PLAYOUT & SCHEDULER



XFRAME



RADIOLOGIK



## INPUT & BUS DSP CHANNELS

### INPUT CHANNEL FEATURES:

Input gain, insert & delay, 4-band full parametric EQ & HP/LP filters, gate and compressor with side chain input.

Multiformat panning and pre/post N-1, aux and direct out sends.

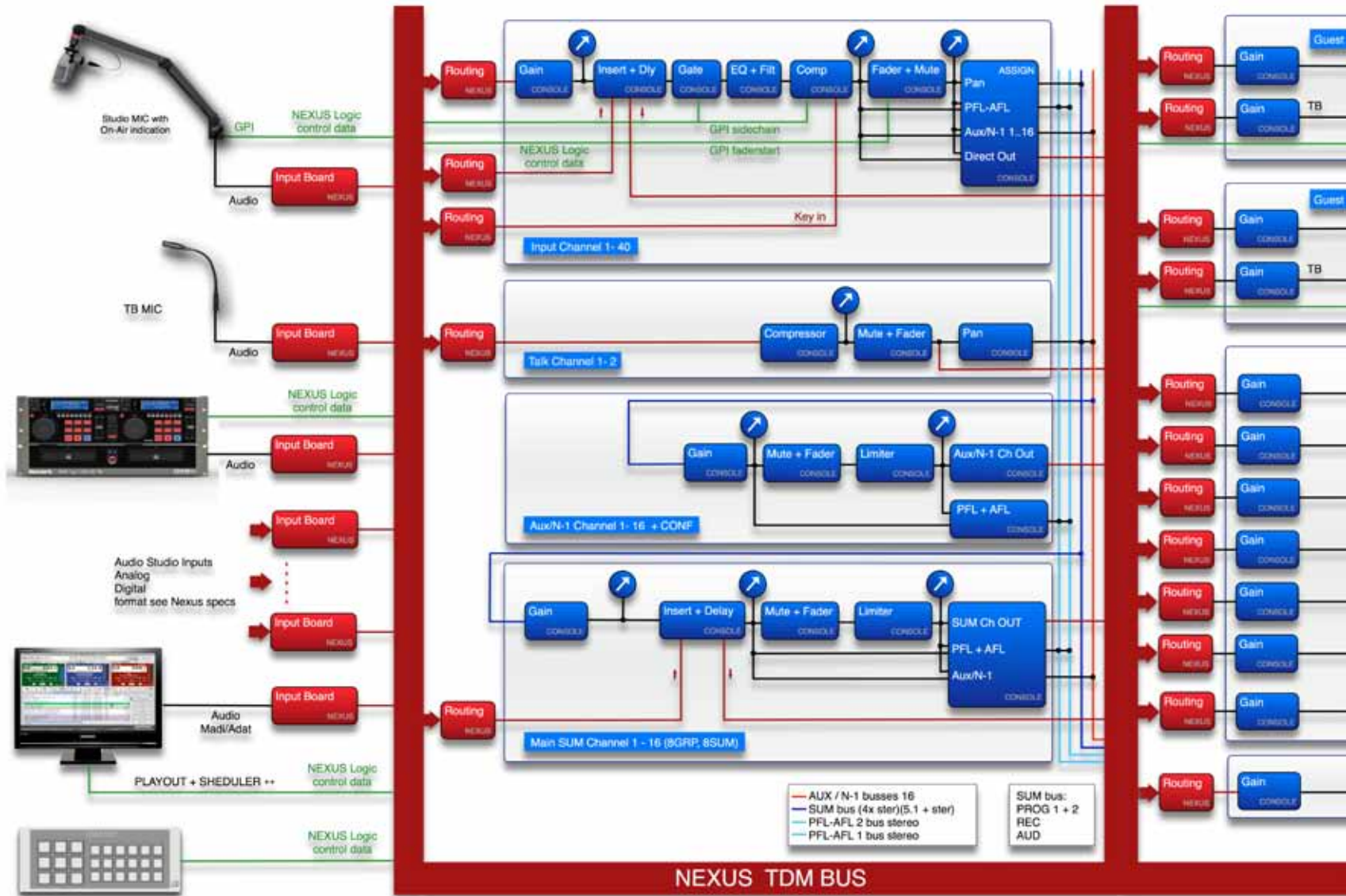
Channel inputs featuring a side chain key input for activating/deactivating the expander from a GPI/tally.

Talk channels 1&2 feature a built in compressor, gain and fader setting.

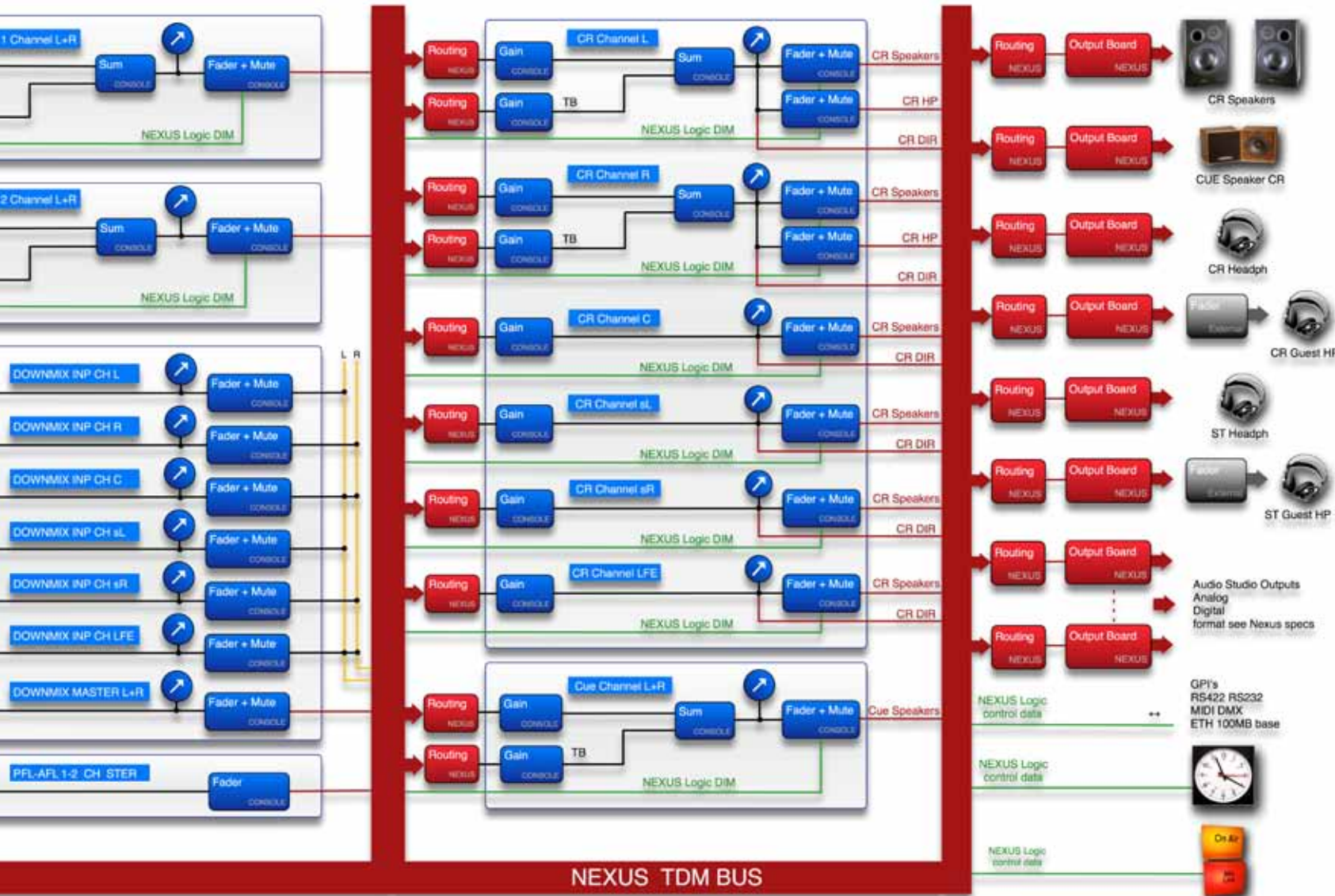
AUX - N-1 channels feature gain, fader and limiter.

The N-1 channels incorporate an Off-Air conferencing system (8x8 matrix).

The main and group channels feature a limiter, insert and delay.



# SIGNAL FLOW



## MONITORING & DOWNMIX CHANNELS

Two separate guest headphone channels with split input selection.

Stereo / 5.1 CR monitor output with split input selection for LR, separate headphone, main output faders and mute.

Cue monitor output with split input selection.

5.1 downmix with freely selectable inputs with gain and a stereo output with master gain.

All monitoring outputs are freely routable within the NEXUS to one or several simultaneous outputs.

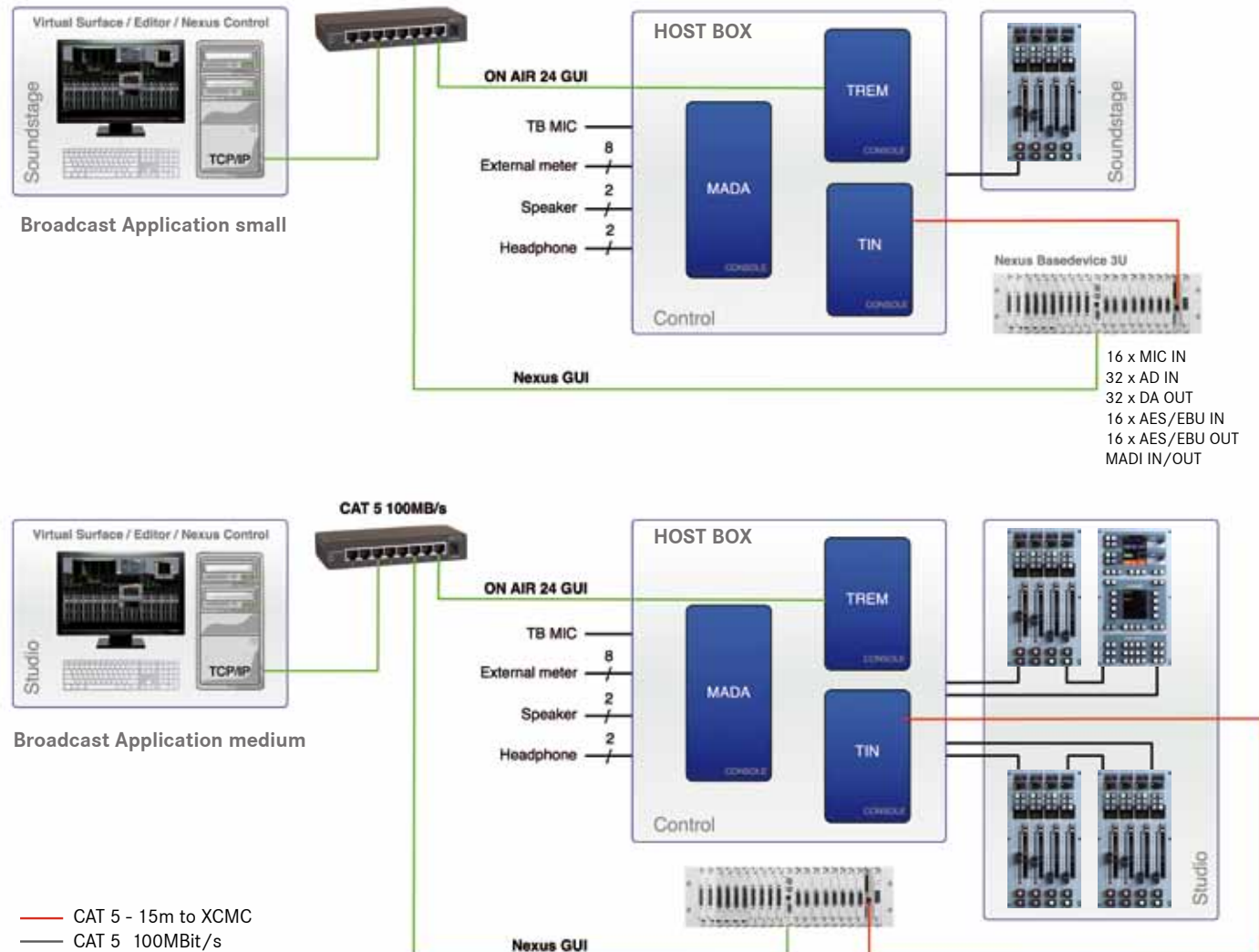
## CONFIGURATION

TA typical radio set-up has stereo/mono buses only. For TV 5.1 buses are required. The ON AIR 24 can easily be configured for both applications.

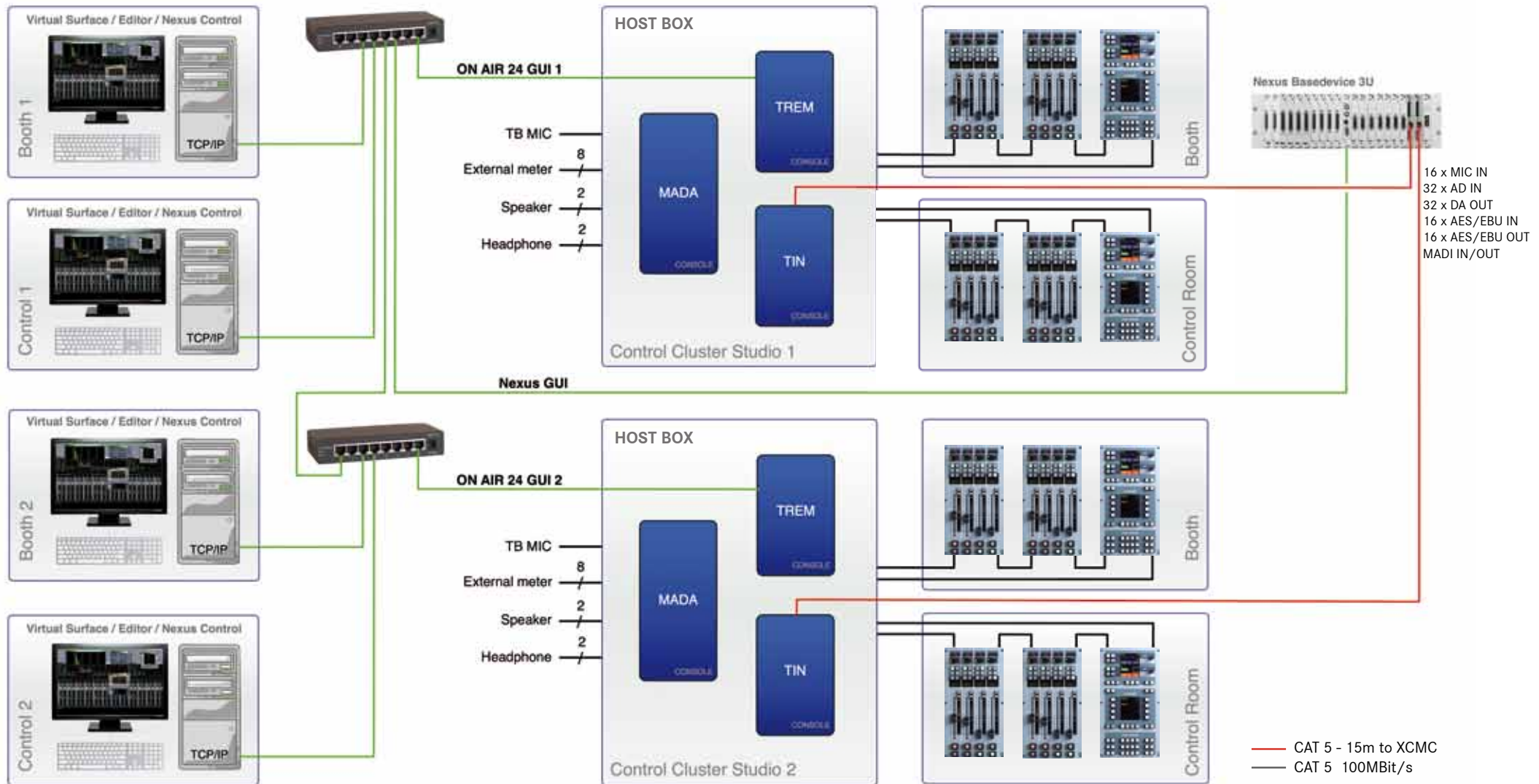
## CONSOLE ASSEMBLY

### Hardware components:

- XCMC card handles all audio processing and surface control data
- XCPU - NEXUS CPU interface
- Audio-interfaces are modular and configurable according to needs
- XFOC (optional) fiber-optic interface for networking additional NEXUS systems
- XPSU power supplies (redundant)
- **HOST BOX**
  - ◆ Interface unit between the XCMC card and up to two chains of control surface
  - ◆ MADA (optional) audio interface that connects directly to the interface and provides A/D and D/A converters as well as AES outputs. There is one mic A/D converter (including phantom power) 4 analogue and 4 AES outputs. (These signals are multiplexed in the signal stream between the interface and XCMC card)
  - ◆ TREM interface card provides PC access to the console and/or to the NEXUS routing system. For simultaneous connection to the desk and router a simple Ethernet switch can be used



# SYSTEM APPLICATIONS



Broadcast Application large

## NEXUS

**NEXUS** is a distributed audio network. Networking several **NEXUS** base devices with the help of fiber-optic connections or introducing the **NEXUS STAR** allows routing of up to 4096x4096 signals.

Cascading multiple STAR's results in an almost unlimited highly efficient routing capacity with minimal wiring and maximum redundancy. Full system start up and reboot after power failure within a few seconds = audio in network.

In addition to audio, the system distributes and generates various serial formats such as RS232, RS422, RS485, MIDI, DMX, LTC and machine control. This capability is especially valuable for simplifying installations and giving control connections same the protection of **NEXUS** resilience and redundancy as the audio.



**Awarded with  
The Engineering  
Emmy® 2010**

## NEXUS CONCEPT

Fiber-optic connections and power supplies are redundant. All module boards can be hot swapped.

Multiple control PC's can be connected to the **NEXUS** router and if needed, set up as an Admin/Users network with user rights. PC's only needed for configuration, no audio processing.

The system performs the required format conversion 'on the fly'.

## ON AIR 24 NEXUS COMPONENTS

The On Air 24 has a 19"/1U interface core that connects directly to the Nexus XCMC, a combined DSP and control card. Nexus provides the TDM routing and all the I/O in a single or fiber networked racks.



The interface core provides I/O at the desk position for headphones, nearfield speakers and metering. It also provides the interfacing hardware for the direct connection of a touchscreen interface.



## NEXUS BASE DEVICES

**NEXUS** base devices are 19" frames and range from 1 to 15 units in height. Each 3U row is equipped with an active **NEXUS** backplane and accommodates up to 20 plug-in boards while a 9U has a capacity of 60 boards.

Each base device is equipped with an XCPU controller board for complete autonomy. Thus, the availability of basic functionality is assured regardless of the presence or absence of optical lines and control computers.

The **NEXUS** can also be used as an I/O router for STAGETEC mixing-console systems. Multiple console systems can coexist on a single **NEXUS** network.

All **NEXUS** inputs, outputs, and processing channels can be accessed and operated from anywhere on the routing system. In the control program, a single crosspoint simply connects an input to an output – it is up to the system to establish the most effective connection on the base device network.

Adding the **NEXUS STAR** provides a routing capacity of 4096 x 4096. Also multiple STAR's are possible in one network.



## NEXUS INTERFACES

**XMIC:** Microphone input board featuring 32-bit TrueMatch<sup>®</sup> A/D Converters. XLR connectors with split functionality.

**XER-M:** Version for supplying, controlling, and processing digital microphones complying with AES-42 mode

**XHDI02:** 16 channel I/O board, audio embedder and de-embedder for SMPTE 259M (SD) and SMPTE 292M (HD) compliant signals, including 3G, offering an additional video delay

**DOLBY:** Decodes Dolby D<sup>®</sup> and Dolby E<sup>®</sup> signals. The board may be fitted with 1 or 2 Dolby decoders.

**XCMC:** The standard **NEXUS** XCMC accommodates the full console control and DSP, while consuming just 8 watts and, as with all STAGETEC equipment, up to +25°C, no extra cooling is needed. A fan-free system guarantees noiseless operation.

## NEXUS FACTS

- Short system latency
- 24 bit
- Crosspoint latency just 6 samples
- Typical overall latency 0,9ms (AD - mixer - DA)
- Fiber capacity 256 ch + control and sync data
- Combinations 128/128, 192/64, 64/192
- System sizes up to 31 base devices and 65536 I/O's

## TOTAL INTEGRATION

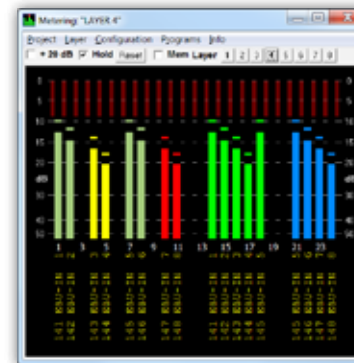
The whole **ON AIR 24** console is an integral part of the **NEXUS** TDM router system. All I/O sources, including router or mixing desk resources can be freely routed to any physical or virtual input or output. The **NEXUS** TDM bus allows simultaneous routing to unlimited multiple outputs free of additional latency.

Furthermore due to its unique TrueMatch© microphone card design no analogue pre-amps are required. Each microphone signal can be split in the card to provide 4 outputs, each with independent gain, lo-cut and limiter for connection to multiple consoles or other destinations.

Extra DSP is available as resources in the **NEXUS**: EQ, delay, gain, dynamics, crossfade, etc.

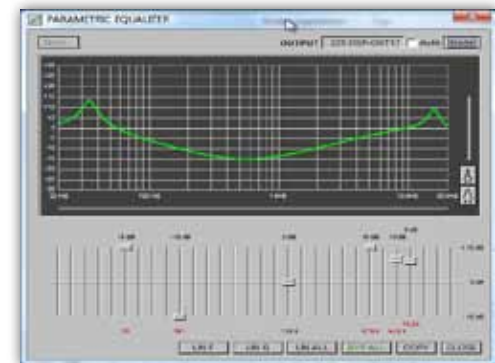
## NEXUS METERING

Monitoring of all **NEXUS** I/O resources in 8 pages of up to 48 meters.



## NEXUS DSP

Setup and recall of any gain, mix, delay, EQ, dynamics and others...



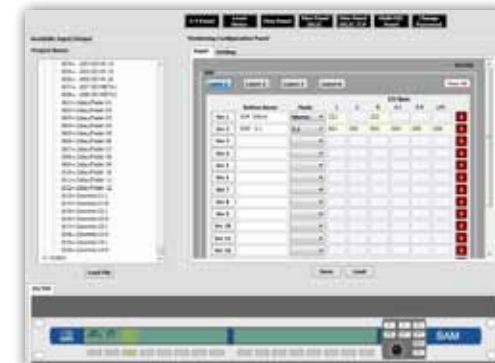
## SAM 16

The STAGETEC Audio Monitor or SAM is a 19" / 1U monitor panel interfacing to the XGUI software. It handles mono, stereo and surround signals with Spill, Solo and Mute functionality.



## XGUI

The XGUI server application allows for virtual monitor, XY and remote panels and interfaces directly to the Nexus system. Custom made interfacing can be provided.



## LOUDNESS METERING

**STAGETEC** now has integrated loudness metering according to ITU-R BS.1770-2, ITU-R BS.1771 and EBU R-128 and real time spectral analysis into **NEXUS**. This reduces the need for external measurement equipment.



## MASTER MONITOR

The metering component is implemented as True Peak Metering in accordance with ITU-R BS 1770-2.



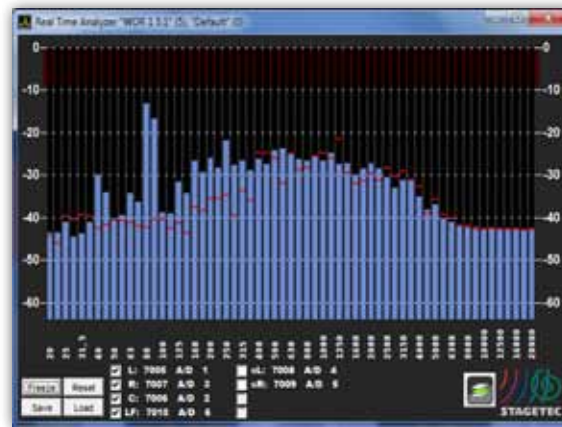
## LOUDNESS METERING

Three time scales are available: momentary (400ms), short-term (3s) and integrated with gating.

The measurement results can be directly fed into the meta data of the Dolby E® encoder boards (XDEE)

## REALTIME SPECTRAL ANALYSIS

Shows the spread of frequencies for the selected audio channels. 31 or 61 frequency bands are possible.



**Future development:** The Dante™ interface card for Nexus will provide multichannel audio over I/P. For detailed information on Dante™ please visit the Audinate website: [www.audinate.com](http://www.audinate.com)  
The Nexus interface card will be ready for the AVB (Audio Video Bridging Standard) when formalized. This will be achieved through a firmware update and the use of the AVB compliant network switching circuitry on the card.



**STAGETEC** is a founding member of the OCA alliance formed between 9 Pro-Audio manufacturers.

The OCA control protocol will provide an open control platform between the product lines of the Mediagroup as well as 3rd party products and external schedulers.

For detailed information on the OCA standard please visit the website from the alliance: [www.oca-alliance.com](http://www.oca-alliance.com)

## CONTROL SURFACE

The STAGETEC **ON AIR 24** is simply a control surface plus talkback, monitoring and metering. Audio processing is performed on the XCMC slide-in board accommodated in a **NEXUS** base device.

## PROJECTS AND AUTOMATION

The **ON AIR 24** is controlled by a global set of data, which is called a »project«. This project encompasses the entire working environment: all data to control the console surface, the switching status of the inputs and outputs, the input and output parameters, assignment of the audio channels to the console's fader channels, audio processing setup as well as 99 snapshots. Therefore a project contains all the data for a »ready-to-use-console configuration«. The project file can be stored on a memory card. This enables the project to be used for future sessions and also enables projects to be changed quickly and easily. Thanks to the reasonable price of SD cards it is also a good medium for archiving project data.

## ON AIR 24 COMPONENTS

- **OFAD** - 4 fader channel panel
- **OMON** - Monitoring panel
- **XCMC BOARD** - DSP fits into any **NEXUS** base device
- **HOST BOX**
  - TIN BOARD** - Interface XCMC and control surface
  - MADA** - Local audio interface LS and metering
  - TREM** - Interface to virtual surface

## ON AIR 24 SPECIFICATIONS

### GENERAL

Maximum 24 faders per XCMC. Max 2 XCMC per base device  
 Channel grid: 38mm  
 Dimensions of fader panel (W x H): 180mm x 340mm  
 Dimensions of monitor panel (W x H): 180mm x 340mm  
 OLED display for channel name and layer assignment  
 Headphones: 1/4" socket  
 Multichannel metering display (8 channels): D-Sub (15-pin)  
 Talkback microphone: XLR-3, female/RCA  
 Nearfield speakers: XLR-3, male  
 Link to processing unit: RJ45, max 15m  
 Main and redundant power supply  
 3U **NEXUS** plug-in XCMC processing board  
 Multichannel 5.1 or stereo capable, inc multichannel monitoring  
 Stereo cue and 2 guest monitoring  
 Freely usable downmix channel (6:2)  
 Use of **NEXUS** audio-network resources as I/O interfaces  
 Can be used as stand-alone or in multiple console systems  
 Interfaces installed as per customer's specifications  
 High-quality A/D and D/A convertors  
 TrueMatch© mic- and line-A/D convertor  
 Access to additional **NEXUS** functions

### DSP CONFIGURATION

40 x input channels  
 2 x talkback channels  
 8 x AUX, 8 x N-1 channels  
 8 summing bus (4 stereo or 5.1 + stereo)  
 6:2 downmix bus  
 1 x stereo or 5.1 monitoring channel  
 1 x Cue monitoring channel, 2 x headphones (Guest 1 + 2)  
 2 x stereo PFL/AFL bus

### INPUT CHANNEL

Channel gain (console internal DSP)  
 Input gain (on each **NEXUS** input)  
 Insert and delay (1365ms, extra delay in **NEXUS** DSP)  
 Equalizer and filters (4 parametric + LO-cut and HI-cut)  
 Direct out with level control (pre/post)  
 Gate/expander and compressor/limiter  
 Aux send (pre/post)  
 N-1 send (pre/post)  
 Fader and mute  
 Pan (multichannel)

## DIGITAL INNOVATIONS

Since its foundation in 1993, STAGETEC Entwicklungsgesellschaft für professionelle Audiotechnik mbH has been specialized in designing digital audio technology and has set new standards due to their constant research and development activities.

STAGETEC has become a world-leading vendor of professional audio systems. The company houses the R&D department as well as production facilities with multiple commissioning rooms and a dedicated recording studio. All 13 of the engineers who originally founded the enterprise as a kind of worker co-operative, are still active partners and carry responsibility for continuing innovation and efficiency.

## PERFECT TECHNOLOGY

Each STAGETEC product has been a trendsetter: NEXUS, the AURUS, the AURATUS, the CRESCENDO, the ON AIR 24, the TrueMatch RMC, the CINETRA, or the CANTUS.

The consistent separation between the mixing consoles and the I/O matrix (NEXUS) is amazing and allows for efficient distributed overall systems. The digital mixing consoles AURUS, AURATUS and CRESCENDO continue this concept; they are exceptional thanks to their unique control philosophy because they provide instant access to all key parameters – a novelty in the digital world!

All STAGETEC products excel in terms of audio performance and ultimate reliability in professional use. 40-bit floating-point arithmetic and 28-bit TrueMatch converters as well as hot-swap components, redundant power-supply units, fibre-optic lines, and automatic test routines are all standard features. Extra safety is provided by distributed intelligence which prevents an overall-system breakdown in case of failure.



## BRANCH OFFICES

### Belgium Office

Phone +32 2 300 07 80  
brussels@stagetec.com

### Moscow Office

Phone +7 495 621 3777  
moscow@stagetec.com

### Rome Office

Phone +39 06 35403552  
rome@stagetec.com

### Vienna Office

Phone +43 1 74040-270  
vienna@stagetec.com

**STAGETEC**  
Entwicklungsgesellschaft für  
professionelle Audiotechnik mbH  
Tabbertstraße 10  
D-12459 Berlin/Germany  
Phone +49 30 639902-0  
Fax +49 30 639902-32  
office@stagetec.com



## SALZBRENNER STAGETEC MEDIAGROUP HEADQUARTERS

Industriegebiet See  
D-96155 Buttenheim/Germany  
Phone +49 9545 440-0  
Fax +49 9545 440-111  
sales@stagetec.com

## BRANCH OFFICES

### Malaysia Office

Phone +60 3 8318 2820  
malaysia@stagetec.com

### China Office

Phone +8610-87 73 21 98  
china@stagetec.com

### USA Office (East-/West-Coast)

Phone +1-888-782-4391  
usa@stagetec.com

### Australia Office

Phone +61 419 607 644  
australia@stagetec.com

### Brazil Office

Phone +55 12 3923 4729  
brazil@stagetec.com

[WWW.STAGETEC.COM](http://WWW.STAGETEC.COM)