

NEXUS compact TrueMatch // 1.1

QUICK GUIDE NXCT

1. GENERAL INFORMATION

1.1 INTRODUCTION

NEXUS compact TrueMatch is a high quality product for professional use. In order to prevent material damage and personal injury, please read this manual carefully and follow the safety regulations noted below before powering up the device. Incorrect handling can lead to damage or compromised functionality.

1.1.1 MANUFACTURER

STAGETEC GmbH
Tabbertstrasse 10-11
12459 Berlin/Germany
Phone: +49 30 639902-0, Fax: +49 30 639902-32
E-Mail: office@stagetec.com, Web: http://www.stagetec.com

1.1.2 WARRANTY

Technical changes by the user are generally not permitted. There are no user serviceable parts inside the unit. Unauthorized opening will void the warranty.

1.1.3 SUPPORT

In case you have technical problems or any questions this documentation cannot answer, our support will be glad to help. You can reach us in different ways:

- Internet: http://www.stagetec.com
- E-Mail: office@stagetec.com
- Phone: +49 30 639902-0
- Fax: +49 30 639902-32

1.1.4 TARGET GROUP

NEXUS compact TrueMatch is a high quality device for professional sound processing. It should be operated by experienced sound engineers only.

1.2 SAFETY INSTRUCTIONS

To ensure a safe operation of the NEXUS compact TrueMatch, it is essential to observe the following safety instructions. Please read them carefully before use. Disregarding these safety instructions can lead to damage, operation failure or personal injury.

1.2.1 POWER SUPPLY

Inside the unit and the separate power supply there may be parts that carry high voltages and currents. The devices shall only be opened by qualified service personnel. Do not insert any objects through the openings of the housing. Power and network cables must not be bent or placed near sharp edges. Defective cables have to be replaced immediately.

1.2.2 OPERATIONAL CONDITIONS

The device may only be operated within the specified temperature range which reaches from 0° to 50° C. Do not expose the unit to direct heat from sunlight, stage spotlights or other sources. Don`t cover the top of the device with objects that could affect proper cooling. When installing the NEXUS compact TrueMatch in a rack, make sure to leave enough space for a sufficient airflow below and above the device. Do not expose the device to rain or moisture and make sure to operate it only in a dry state. In case of condensing moisture the unit must dry out adequately before being switched on. During operation, the air humidity should not exceed 90% (non-condensing). For a long lifetime the unit should only be operated in a smoke-free environment.

1.3 CLEANING

Please adhere the following rules when cleaning your NEXUS compact TrueMatch:

- Avoid using cleaners containing solvents, alcohol, petroleum ether or acetone since they can damage the surface of the device.
- Do not use oily substances or aggressive household cleaning agents.
- To clean the surface we recommend using a soft, clean brush or a soft cloth slightly dampened with water. In case of heavier soiling you can add a minimal amount of mild dishwashing detergent.
- Under normal conditions the inside of the unit doesn`t need cleaning. The device should not be opened by the user. If cleaning of the inside should become necessary, please send the unit to STAGETEC.

1.4 SOFTWARE

The NEXUS compact TrueMatch is controlled by a web-based user interface. The web GUI is compatible to every modern internet browser running on Windows or MacOS computers as well as Android or iOS mobile devices.

1.5 DECLARATION OF CONFORMITY

We hereby confirm that the NEXUS compact TrueMatch complies with the requirements in the following EC directives:

- 2014/30/EU, EMC Directive
- EN 55032:2015+A11:2020
- EN 55035:2017+A11:2020
- 2014/35/EU, Low Voltage Directive
- EN 62368-1:2014
- 2009/125/EC, ErP Directive
- 2001/95/EC, GPS Directive
- EN 62368-1:2014+A11:2017

NEXUS compact TrueMatch supports established, publicly available standards/protocols such as:

- EmBER+
- NMOS IS-04/05
- SMPTE:2110-30
- SMPTE:2110-31
- SMPTE:2022-7

2. SYSTEM DESCRIPTION

2.1 INTRODUCTION

Congratulations on the purchase of your NEXUS compact TrueMatch. For the first time this highly professional device makes the legendary STAGETEC audio quality available within a small, convenient footprint. With 8 TrueMatch 32 bit microphone inputs, 8 high quality analog outputs, 4 stereo AES3 I/Os, GPIO connections and a modern audio-over IP infrastructure sporting either Dante or AES67 protocols, the NEXUS compact TrueMatch defines a new standard in audio distribution. All control parameters are easily acccessible via an intuitive web interface, which runs on every computer or mobile device without the requirement of any software installation – a standard web browser is all you need.

NEXUS compact TrueMatch // Front panel



2.1.1 KEY FEATURES

The following key features make NEXUS compact TrueMatch perfectly suited for a wide range of applications: by experienced sound engineers only.

- 8 x TrueMatch 32 bit microphone inputs with 4 splits each.
- 4 x AES3 stereo inputs.
- 4 x AES3 stereo outputs.
- 8 x Analog outputs 24 bit.
- Stereo headphones.
- 64 x Dante / AES67 I/Os (option based on module configuration).
- 6 x GPI / 5 x GPO. GPIs in pairs are also usable as encoders.
- Basic DSP functionality is planned the future (MixMatrix with channel processing).

Possible applications include:

- Reference A/D and D/A converter for recording studios with highest sonic demands for both input (microphone/line) and output signals.
- Connecting camera-mounted microphones with simultaneous operation of monitor/comm/tally.
- Small stageboxes for rehearsal stages, foyer sound reinforcement, backstage.
- Small workstations deployment with local low latency monitor mixing*.
- On-site mixing for small remote productions with connection to local audio sources*.

** After expansion with planned DSP functionality.*

2.2 HARDWARE

2.2.1 FRONT PANEL

Since all parameters of the NEXUS compact TrueMatch are controlled via the web GUI, the front panel contains just a few elements. From left to right you will find:

- A 6,3mm TRS headphone jack with a high quality headphone amplifier which will easily fulfil most demanding requirements. Controlled by the web GUI, the headphone jack can monitor any signal source within the system.
- A power LED that indicates proper power distribution.
- A system LED that shows proper system performance.
- A Sync LED which indicates proper synchronization to the AES67 or Dante network.
- A volume control for the headphone output.

2.2.2 REAR PANEL

The rear panel gives you all the connectors you need to integrate NEXUS compact TrueMatch into your audio system:

- **D/A- Connector**
  This female Sub-D connector provides 8 balanced analog outputs in standard Tascam format. Maximum output level for 0 dB fs is + 24dBu (adjustable). Please make sure to use shielded breakout cables.
- **AES3 I/O - Connector**
  This female Sub-D connector provides 4 stereo AES3 in- and outputs in standard Tascam format.
- **MIC- Connector**
  This female Sub-D connector provides 8 balanced analog microphone inputs (32 bit TrueMatch) in standard Tascam format. Maximum input level for 0 dB fs is + 24 dBu (adjustable). Please make sure to use shielded breakout cables.
- **GPIO- Connector**
  This female Sub-D connector provides 6 GPIs and 5 GPOs in standard Tascam format. GPIs in pairs are useable as encoders.
- **DC 12-24V- Connector**
  Attach the optional PSU here and turn the connector slightly clockwise to lock it securely. You can run the NEXUS compact TrueMatch powered via PoE+ (Power over Ethernet) as well. If you use both options simultaneously a redundant power distribution is established automatically. In case of a power failure the unit will seamlessly switch to the other power source.

> Notice: Power distribution via PoE+ is possible on the Control Port only. Primary and Secondary AoIP Ports are not applicable. For a redundant operation, power supply via PoE and by an external PSU is required. Connecting more than one port to PoE will not provide power supply redundancy. The PoE power source as to fulfil at least the standards according to 802.3at Type2, PoE+ (30 Watt max., 600mA, 50-57V).

- **CTRL- Connector**
  RJ-45 port to connect the control-PC. Via the web GUI the control port can be mirrored to one of the AES67 / DANTE ports, so only one connection is needed for both control and audio transmission.
- **SEC- Connector**
  Dante / AES67 secondary port (option based on module configuration).
- **PRI- Connector**
  Dante / AES67 primary port (option based on module configuration).

NEXUS compact TrueMatch // Rear panel



3. WEB GUI

The Web GUI is a convenient and intuitive user interface using a standard web browser to access all parameters of the NEXUS compact TrueMatch.



3.1 WEB GUI CONNECTION

For the initial setup of the NEXUS compact TrueMatch follow the steps below:

3.1.1 WEB GUI CONNECTION WITHIN AN EXISTING DHCP / DNS INFRASTRUCTURE

1. Connect the Control-Port of the NXCT to a 1GbE switch within your network (control/management network)
2. Connect your computer to the same network
3. Open a web-browser and type "http:// nxct-<serial#>.local" to open the NXCT configuration page. Use the serial number of your NXCT. If the serial number is 000078, the URL would be „http://nxct-000078.local"
4. Proceed according to chapter 3.2

3.1.2 WEB GUI CONNECTION WITHIN A NETWORK ENVIRONMENT WITHOUT DHCP AND DNS

1. Connect the Control-Port of the NXCT directly to your computer or to a 1GbE switch
2. When using a switch, connect your computer to the same network
3. Make sure the IP-configuration of your computer is set to „DHCP/self assigned". Your computer and the NXCT will connect automatically using zeroconf/self assigned addresses
4. Open a web-browser and type "http:// nxct-<serial#>.local" to open the NXCT configuration page. Use the serial number of your NXCT. If the serial number is 000078, the URL would be „http://nxct-000078.local"
5. Proceed according to chapter 3.2

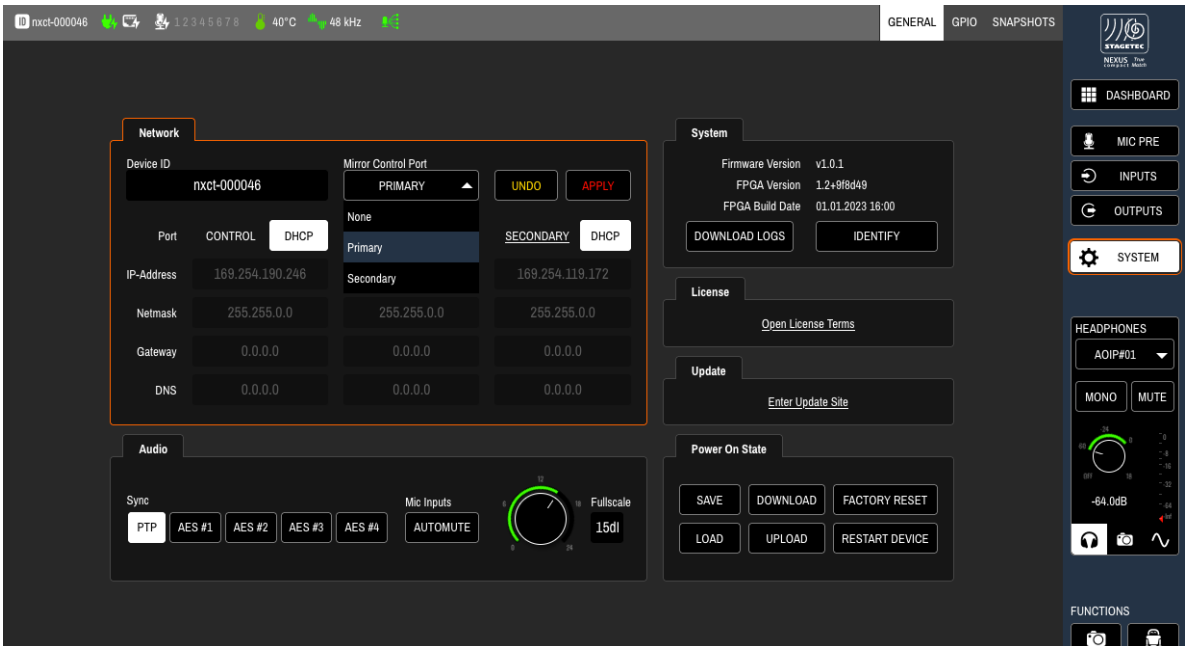
3.1.3 TROUBLESHOOTING

If it is not possible to access the web GUI, you can verify the connection by using the ping command. Within an existing DHCP infrastructure, type "ping nxct-<serial#>.<yourDomain>".
Use the serial number of your NXCT. If the serial number is 000078, your command would be "ping nxct-000078.sampledomain".
If no active DNS-server is running, use the ping command "ping nxct-<serial#>.local".
In both cases, if you get a timeout-message, refer to your network administrator for a proper network setup.

3.2 CONFIGURING AUDIO-OVER-IP-INTERFACES

3.2.1 OUT-OF-BAND MANAGEMENT, IN-BAND MANAGEMENT

By default, the control surface of NEXUS compact TrueMatch is configured for „Out-of-Band management". This results in the configuration page only being available on the "control port", while the AoIP setup has to be carried out on the primary or secondary Audio-over-IP ports respectively. To switch to In-Band management, open the Web GUI and navigate to the setup page by pressing [SYSTEM] on the right sidebar of the screen. On the NETWORK panel you will find a popup-menu called „MIRROR CONTROL PORT", where you can choose the AoIP-port you want to mirror the control port to. Finally you have to confirm your changes by pressing [APPLY]. Please be aware that this will reboot the NXCT and audio interruptions are likely to occur.



Mirror control port

3.2.2 CONFIGURING AES67 PORTS

The built-in AES67 module has to be configured via the primary or secondary Audio-over-IP ports respectively. To access the web interface of the AES67 module follow the steps below:

1. Navigate to the SYSTEM page of the NXCT Web GUI by pressing [SYSTEM] on the right sidebar of the screen.
2. On the NETWORK panel note the IP-address of the port you want to configure. (Hint: if you deactivate the [DHCP] button, you can copy the address. Make sure to activate the button again if necessary.)
3. Connect your computer or your network switch to the AoIP port you want to configure.
4. Open your web browser and navigate to „http://<IP-address of AoIP-Port>"
5. The web interface of the AES67 module opens. Here, all functions of the AES67 module can be controlled, including setting-up the AES67-streams.
6. For the operation manual of the AES module refer to „https://www.directout.eu/download/operating-instructions" and download the file „software-manual-rav2-oem.pdf".

3.2.3 CONFIGURING DANTE PORTS

DANTE ports are configured via the Dante Controller application. To proceed, follow the steps below:

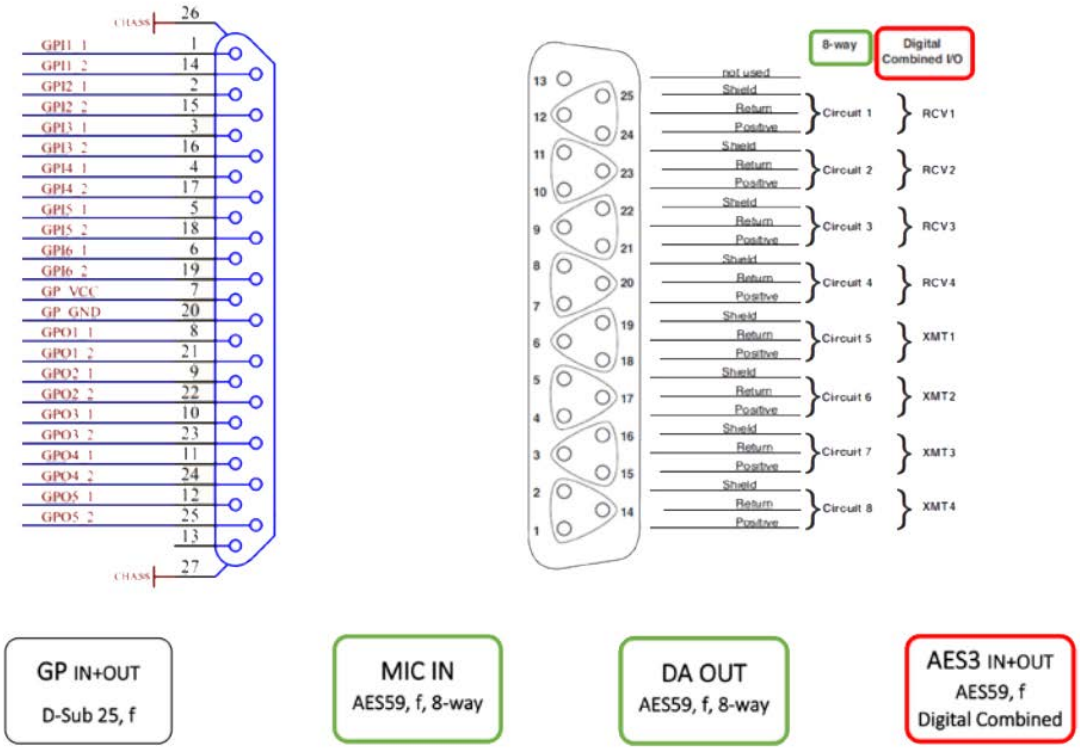
1. Go to https://www.audinate.com/products/software/dante-controller, download the Dante Controller application and install it.
2. Connect your computer or your network switch to the AoIP port you want to configure.
3. Start the Dante Controller application and set the network port parameters as needed for your environment.
4. Also use the Dante Controller application to set-up the required audio connections.

3.2 PRECAUTIONS

- Don`t use static IP-addresses with a netmask of 0.0.0.0 on any of the ports. This configuration can lead to a failure of the internal AoIP-module.
- In some cases the web GUI can already be accessible while the NXCT is still starting up and the AoIP-modules heaven`t been read out yet. Don`t press the [APPLY] button in the NETWORK panel of the SYSTEM screen, while you still see orange frames and no valid IP-addresses are available, since this also can cause the AoIP-modules to fail.
- For the DANTE version of the NEXUS compact TrueMatch, using the secondary port with gateway/DNS is only possible in DHCP configuration. With static IP-addresses no gateway or DNS can be defined or configured.

4. APPENDIX

4.1 SUB-D PINOUT SCHEMATICS



4.2 TECHNICAL DATA NXCT

Microphone Inputs	
Dynamic range	157.6 dB (A) Converter dynamic range > 144 dB (RMS) resp. 147 dB (A) empty channel noise
Distortion factor (THD+N)	typ. 0.003 % at 24 dBu gguaranteed < 0.004 % typ. 0.003 % in the range -50...0 dBu
Amplitude response	20...20.000 Hz: < 0,05 dB (typ. < ±0,1 dB) at 20 Hz: typ. -3 dB (below 18 dB/oct. drop according to IRT specifications)
Equivalent noise level in input	<- 129.5 dBu(A), at 200 Ohm source impedance <- 126 dBu(RMS), at 200 Ohm source impedance <- 133.6 dBu(A), at 0 Ohm source impedance <- - 115 dBqp CCIR1K, at 200 Ohm source impedance
Input level	max. 24 dBu balanced, with phantom power switched off, unbalanced sources also allowed
Signal delay	395 µs (at 48 kHz sample rate)
Crosstalk attenuation	> 140 dB (20...20.000 Hz) typ. > 170 dB at 1 kHz typ. > 150 dB at 20 kHz
Gain	digital up to 70 dB, continuously adjustable in 1 dB increments
Analog outputs	
D/A conversion	24 bit, 128-fold oversampling
Dynamic range	typ. 131 dB (A) typ. 128 dB RMS at 0 dBFS = 22 dBu
Output level	0...24 dBu at load > 600 Ohm (at 300 Ohm up to 15 dBu); adjustable in 1 dB steps
Distortion factor (THD+N)	typ. 0,003 % at 24 dBu typ. < 0.006 % in the range -20...+24 dBu, guaranteed < 0.02 % typ. < 0,0006 % at 4 dBu -68 dB bei -60 dBFS
Amplitude response	20...20,000 Hz (+0 dB, -0.2 dB), integrated DC filters
Output impedance	typ. 19 Ohm
Empty channel noise	typ. -124...-128 dBFS (RMS) typ. -93 dBqp (CCIR 1K) typ. -105 dBu (CCIR 2K RMS)
Unbalance attenuation (output impedance)	> 60 dB at 20...20.000 Hz typ. 120 dB at 50 Hz typ. 80 dB at 20 kHz
Offset voltage	< 1 mV, typ. 0,1 mV
Unbalance attenuation	> 40 dB at 20...20.000 Hz 90 dB at 50 Hz 50 dB at 20 kHz
Crosstalk attenuation	100 dB (20...20.000 Hz), typ. > 130 dB
Signal delay	< 230 µs (at 48 kHz sample rate)
Hardware	
Dimensions	222 mm x 40 mm x 222 mm (WxHxD)
Enclosure	Aluminum milled
Connectors	Mic In, Analog Out AES3 In/Out: each D-Sub 25 Tascam pinout GPIO: D-Sub 25 Network: 3- RJ45 (Control, AoIP Primary, AoIP Secondary)

STAGETEC GmbH

Tabbertstraße 10-11 | 12459 Berlin | Germany
T. +49 (0)30 / 63 99 02 0
sales@stagetec.com
www.stagetec.com

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