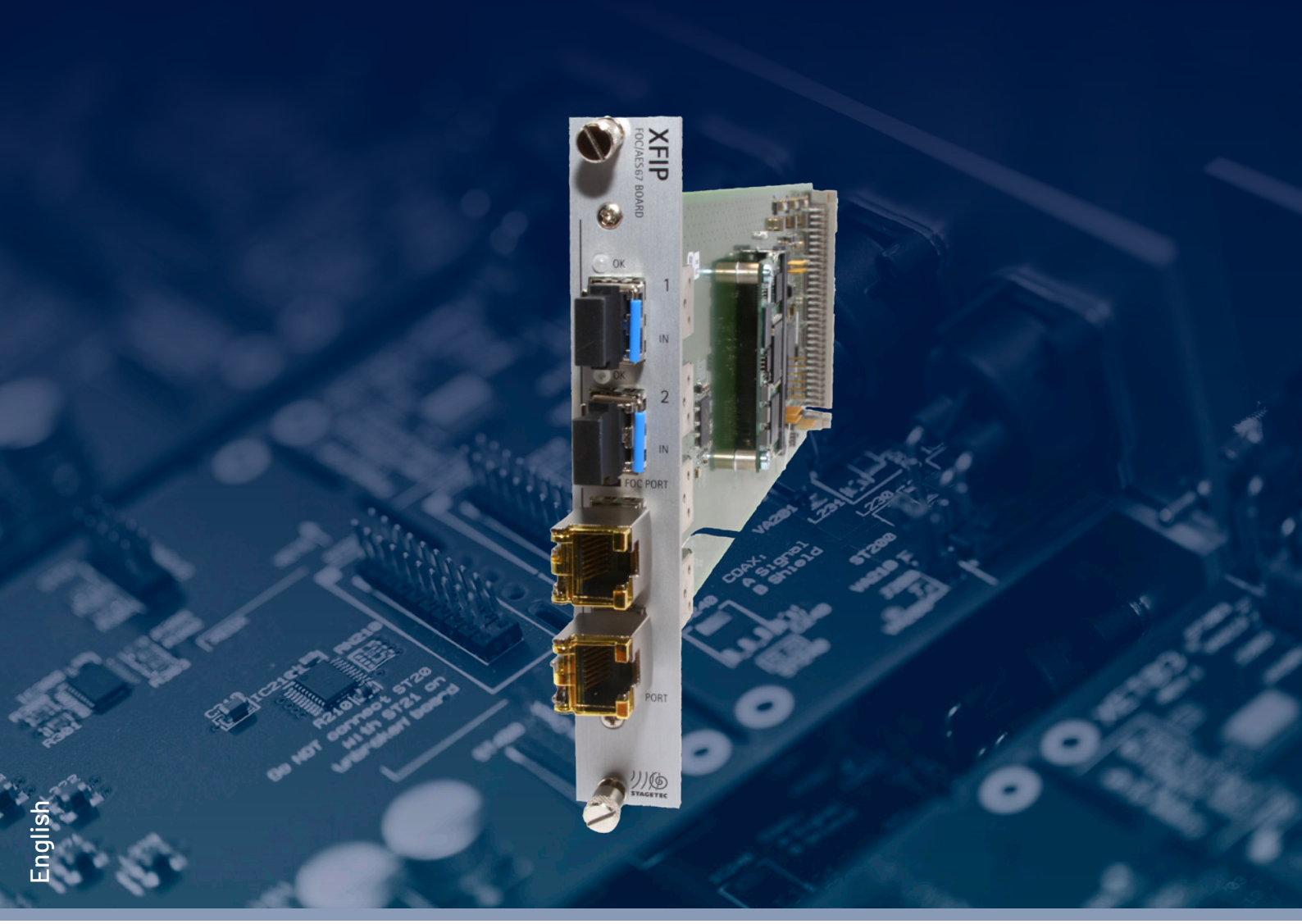


English

XFIP

Integration of AoIP networks

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AUDIO. VIDEO. IP.
SIGNALMANAGEMENT

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Uncompromising integration of NEXUS into AoIP networks

Thanks to the XFIP card, it is possible to connect AoIP networks to the NEXUS system. AES67 and RAVENNA are supported and managed via a user-friendly web interface. With two active ports, 256 audio channels can be received and transmitted redundantly in up to 32 IP streams.

XFIP is the most effective solution for connecting a single base device or the entire NEXUS system to an AoIP network. The open standard for audio-over IP transmissions is AES67. Common formats like Dante, RAVENNA, and Livewire+ find a common denominator and become interoperable.

Not only synchronization and network transport, but also clock identification and transmission setup are standardized in this norm. To ensure maximum compliance with future standards, subsequent extensions, and various AoIP protocols such as AES67 and RAVENNA, STAGETEC uses DirectOut's RAV2 modules to communicate with the IP world. The configuration via a web interface is particularly user-friendly.

Status monitoring is performed via the NEXUS operating program. A single XFIP card can convert a total of up to 256 incoming channels or output channels. With 32 input and 32 output streams each, all 256 audio channels of a base device can be converted. These can come from any source in the entire NEXUS network and can also be processed, mixed, and output in any conceivable format within the system.

Redundancy according to SMPTE 2022-7 (Seamless Protection Switching)
Equipped with complete redundancy according to the SMPTE 2022-7 standard (Seamless Protection Switching), the XFIP is up to the special requirements of real-time audio. For this purpose, a stream can be effortlessly sent and received on two physically separated networks via the two integrated RJ45 ports. Additional redundancy can be realized by logic programming with alternative streams. In addition, all information about the status of the active connections is available for transfer to external control software, i.e. fully automatic monitoring of the AoIP streams can be performed using the NEXUS system.

PTP synchronization
As is typical for NEXUS boards, precise synchronization in both networks is of course ensured. When the NEXUS system is configured as the PTPv2 master for the connected AoIP networks, the high-precision internal clock is used. Alternatively, the clock of the PTP grandmaster can be used as the synchronous source for the NEXUS system.

Standardized Discovery & Registration via NMOS IS04/05
XFIPv2 supports the industry-standard NMOS's interface specifications IS04 (Device Discovery & Registration) and IS05 (Connection Management). Control systems may use those with no device-specific protocols.

WAN capability for Remote productions
With the large buffer time of 500 ms, it is possible to use XFIP for transmissions in the WAN area. For remote productions, one or more base devices can add IOs to the system from far.

IP link
XFIP also offers a unique expansion to the interconnection capabilities of the NEXUS audio network: The STAGETEC IP link technology connects point-to-point NEXUS Base Devices by IP streams (a bi-directional SMPTE 2110-31 stream pair). This adds to the NEXUS system architecture an IP-based option of interconnecting Devices via an existing customer IP infrastructure.

In the duplex stream pair of an IP-Link, XFIPs or their Star-frame version RIF67 transport between the base devices not only real-time audio but also control data, thus functioning like XFOC boards via a duplex dark fiber. The IP links are synchronized by PTPv2 in the IP infrastructure as defined for SMPTE 2110 streaming.

Backup streams
For redundancy beyond the ST2022-7 standard, it is possible to work with content-equivalent alternative streams, which are automatically switched between in the event of a failure.

Saving and loading configurations
For easy configuration changes, presets containing all or selected parameters can be saved and loaded.

Adjustable digital gain at inputs
A digital gain (+/-20 dB) is available on all input and output channels.

Automated status monitoring
The RAV2 module of the XFIP provides NEXUS with all information about the status of each stream. Thus, fully automatic monitoring of the AoIP streams can be performed via a logic circuit.

When NEXUS is integrated into an SNMP environment, e-mails or SMS can be sent in the event of an error. In case of an emergency, the precise evaluation provides clear feedback, e.g., which network has failed, and thus helps decisively to contain sources of error.

CONNECTIONS	1 x 4DU		
SFP	2x	AES67	bidirectional
SFP	2x	NEXUS format	bidirectional

TECHNICAL SPECIFICATIONS	
Data Formats	
Standards	SMPTE ST 2110-30/31, AES67, RAVENNA, Dante compatible
Channels	
Amount	256 channels in and 256 channels out are available on the NEXUS side
Availability	Each RAV2 module can use all 256 NEXUS channels
Stream Transmission	
Stream count	Up to 32 streams bidirectional
Stream capacity	1 to 256 audio channels
Transmission types	Unicast and multicast support
Connection protocols	SIP (unicast), RTSP (multicast), SAP (multicast), manual configuration of the stream parameters for multicast streams
Discovery	Bonjour for device discovery , NMOS IS-04 / IS-05
Stream delay (offset)	8 to 32768 Samples
Traffic	In redundant mode the combined network traffic must not exceed 1 Gbit/s.
Redundancy	
Audio	Redundant audio streaming ST2022-7 class A-D
Stream	Automatic switch to a backup stream at stream lost
Clocking	PTP redundancy
Sample Rates	
NEXUS	44,1 kHz; 48 kHz; 88,2 kHz; 96 kHz
Audio Data	
RAV2 module	L16 (16 Bit), L24 (24 Bit), L32 (raw 32 Bit, non-standard for bit transparent transmission), AM824 (ST2110-31)
NEXUS	24 Bit
IP Interface	
Connector	2 x SFP 1000BASE-X, Pri+Sec
Data rate	1000 Mbit
IP address	DHCP, Zeroconf or manual configuration of the IP addresses
IGMP	v1, v2, v3
MTU	1500 (no Jumbo Frames supported)
Audio Clocking	
PTP	PTPv2 (IEEE1588) with IP4 and multicast
PTP sync intervals	31.25 ms; 62.5 ms; 125 ms; 250 ms; 500 ms; 1 s; 2 s; 4 s; 8 s; 16 s
PTP delay mechanism	E2E, P2P
PTP profile	Media profile as per AES67-2018, Default profile
PTP clock mode: slave	Nexus is synchronized to the PTP clock of the network grandmaster; the sensitivity of the internal clock source can be configured. With PTP aware switches AES11 compliant clock quality is achievable.
PTP clock mode: grandmaster	The internal clock can serve as a clock source for the network
PTP delay request / response	Multicast
Operation conditions	
Temperature range	0 °C to +50 °C
Max humidity	max. 90 %, non-condensing

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Storage conditions	
Temperature range	0 °C to +70 °C
Max humidity	max. 90 %, non-condensing
Power supply	
Voltage	+4,75...5,25 V
Currrent	max. 1,3 A
Mechanical data	
Weight	280g

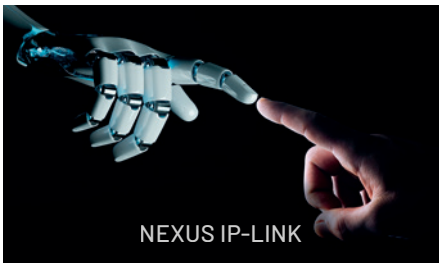
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YOUR INTERFACE TO THE PROFESSIONAL AUDIO WORLD


NEXUS


NEXUS IP-LINK


NEXUS COMPACT TRUEMATCH



AUDIO/VIDEO OVER IP

simple · reliable · flexible

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IP made simple

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