RFOC Fibre Optic Interface Board

Optical Interface Board for NEXUS STAR Systems

- Designed for networking NEXUS Base Devices using standard duplex fibre-optic cables
- 1...4 ports, application-specific configuration (can be changed at any time)
- Up to 4 ports with an overall capacity of 256 inputs and 256 outputs plus control and sync information
- No additional cabling required for control and synchronisation
- Extensive error recognition
- Supports redundant lines (automatic changeover within one audio sample)

The **R**outer **F**ibre-**O**ptic **C**onnection board (RFOC) provides interconnectivity between NEXUS STAR routers and to the NEXUS system using duplex fibre-optic cables.

The board allows for four independent bidirectional connections transferring all audio and control data required for audio network operation; extra cabling is not required.

The ports available on the board are largely independent.

Fibre-Optical Connection

Using fibre-optic connections allows high data rates up to 1.25 Gbps and distances of up to 100 kilometres (>62 miles) between two Base Devices. Highly distributed audio networks are thus possible.

Depending on the mode used each fibre-optic connection can transmit up to 256 audio channels for each cable and direction plus control and sync data.

Thus the board is usable for a wide range of applications.

Audio Channels

Audio is transferred in uncompressed 24-bit resolution. The board routes the complete AES-3 frame width of 30-bits. This allows for complete and transparent AES/EBU-signal exchange between two Base Devices.

Control Data

The control data is transmitted in the form of a buffered transparent transmission channel asynchronous to audio and sync data. The maximum net data rate depends on factors such as the system clock, the operating mode, and the protocol used.

Control data is mainly used for communication between Base Devices (system control) but may also be utilised for distributing ancillary data on the NEXUS network.

Sync Information

Sync data includes the internal word clock of the transmitting Base Device. A Base Device can be synchronised to any fibre-optic connection and makes its internally synced wordclock available at the wordclock outputs of the RCX and XCPU controller boards. Therefore, one Base Device can act as a master device on the NEXUS network, and all other Base Devices will synchronise to it via their fibre-optic lines. There is no need for an extra wordclock connection between Base Devices.

Compatibility and Reliability

The protocol used by the RFOC board is compatible with the one used by the NEXUS XFOC 07 board. The data streams from and to the respective ports are subdivided into blocks and are marked with a signature to be verified by the receiver. In case of error, this allows the respective ports to be muted automatically after a timeout.

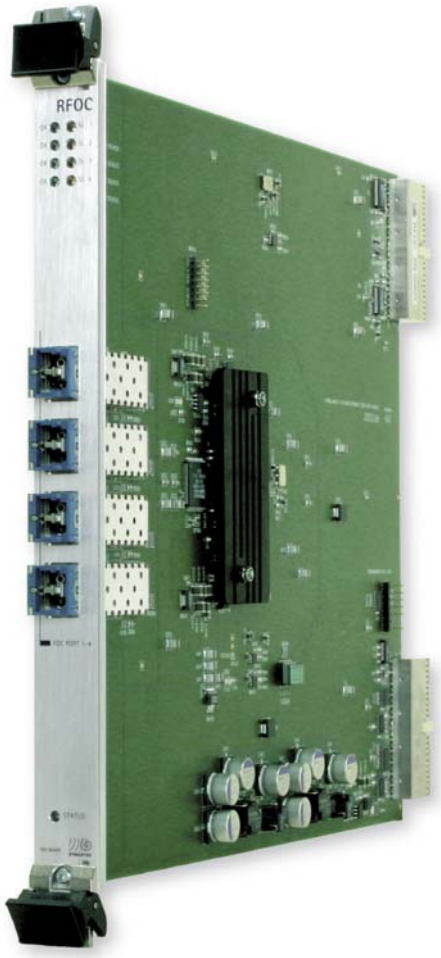
The communication-data pre-processing is performed using an extra signal processor monitored by a watchdog.

The largely independent nature of the ports provides for a high degree of resiliance against hardware errors in redundant operation via the same board. Data loss during changeover is prevented as the current audio sample is always memorised.

Options

On request, the following optical-transceiver options are available:

- For variable wavelengths
- For spanning distances of up to 100 km (>62 miles)
- With bidirectional modules (both transmission directions on a single fibre)
- CWDM



RFOC 02 Specifications		
	Unless otherwise specified, the following specifications relate to one RFOC port (transmitter/receiver unit).	
Connections	Audio channels	128 bidirectional channels per port, 30-bit, 48 KHz, clustering
	Communication channel	1 bidirectional channel per port
	Sync channel	1 bidirectional channel per port
Data rate	Per fibre-optic cable	1.25 Gbps (gross bit rate)
LWC transmitter (multimode)	Standard version for spanning distances of up to 500 m (>1,640 ft)	
	Optical power	-9.5 to -3 dBm @ 50/125-µm optical fibre
LWC transmitter (single-mode)	Special version for large spanning distances up to 100 km (>62 miles)	
	Optical power	-9.5 to -3 dBm @ 9/125-µm optical fibre
Note	The multimode and single-mode transmitters are classified as CLASS 1 LED/LASER PRODUCTS.	
LWC receiver (multimode)	Optical sensitivity	-20 to -3 dBm @ 50/125-µm optical fibre
LWC receiver (single-mode)	Optical sensitivity	-20 to -3 dBm @ 9/125-µm optical fibre
Recommended type	Multimode fibre	Graded-index fibre 50/125 µm or 62.5/125 µm
	Single-mode fibre	Single-mode fibre 9/125 µm
Port	Standard version	1 to 4 LC duplex ports
Power supply	Voltage	+4.75 to 5.25 V
	Current draw	approx. 1.3 A (4-port configuration)
Operating conditions	Temperature range	0 to +60 °C/32 to 140 °F
	Humidity	90 % (max.), non-condensing
Storage conditions	Temperature range	–35 to +70 °C/-31 to 158 °F
	Humidity	90 % (max.), non-condensing
Physical properties	Appearance	Board for 19'' mainframe , 4 HP/6 U
	Front panel	6 U (approx. 20 × 262 mm / 0.79 × 10.31")
	Slot requirements	1 slot