DATA SHEET

M12

OPTICAL / COAXIAL MADI SWITCH

STANDALONE AND NETWORK DEVICE

EIGHT MADI PORTS WITH OPTOCORE, SANE, DATA AND ETHERNET MODULES
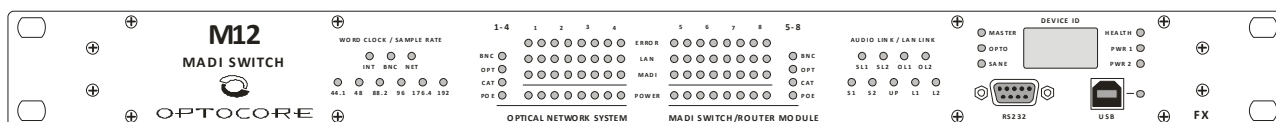
The M12 is a standalone MADI switch, which can be networked and integrated with the OPTICAL OPTOCORE and CAT5 SANE DIGITAL NETWORK SYSTEMs. The unit provides eight MADI input and eight MADI output ports, offering 512 input and 512 output digital audio channels on coaxial and/or fiber MADI. Each MADI port can be adjusted to handle different formats according to the AES standards (56 or 64-channel MADI).

The M12 can be equipped with any combination of MADI board types – 4 dual-port coaxial MADI board or 4 duplex optical MADI board. As a result M12 switch can be delivered in 3 different flavors – M12 OPT (8 duplex Optical MADI ports), M12 BNC (8 dual coaxial MADI ports) or M12 OPT/BNC (4 duplex optical MADI and 4 dual coaxial MADI ports).

The audio engine is equipped with a single channel router, enabling routing from/to any MADI stream, either within the same device or between the remote devices. M12 can be used either as an extremly powerful standalone MADI router as multi-channel MADI interface in the Optocore fiber ring network.

The M12 is additionally equipped with two SANE ports, which enable sending and receiving up to 256 audio channels via standard CAT5 cable. SANE ports can be used to send Ethernet data as well. M12 is equipped also with two separate LAN ports for Ethernet switching transmission. M12 unit can be used as a bridge between fiber Optocore and CAT5 SANE networks.

The M12 is the perfect main MADI hub unit for a wide range of professional audio devices with MADI inputs and outputs such as digital consoles, DAW, playback devices and professional broadcast units. The huge amount of channels exchanged by one M12 makes it the ideal and the most cost effective interface for digital console systems as well as a perfect central device offering individual channel routing feature.

In addition user can define the number of input channels received at each MADI port to be allocated in the high-bandwidth fiber Optocore network. M12 can be combined with any Optocore device, which enables generating MADI stream from analog or AES/EBU channels, but also splitting MADI streams into different output formats

Redundant Optocore fiber connections can be established using the two provided optical LINK-interfaces. Depending on the fiber optic transceivers, distances from 700 m up to 120 km can be covered. The dual redundant ring structure provides maximum safety in a network with an outstanding low latency.

The M12 is equipped with low-jitter Word Clock input and output, which is also transported to all MADI streams. Four RS485 ports allow the routing and transport of a wide range of standards such as RS422, DMX and MIDI. The dual power supply unit, with automatic switchover, permits a redundant power supply and safeguards against malfunctions of the unit if one power supply fails to run.

OPTOCORE CONTROL software provides easy access to all configuration and control tools, including single-channel or stream routing, channel naming, storage and recall of configurations on the computer, off- and online mode with real-time level display.

Due to SMD production, the M12 fulfills the demand of highest digital standards. The FPGA (field programmable gate array) based concept of the internal logic circuitry permits updating of the hardware, ensuring a continual state-of-the-art device.

Product Features

- **8 coaxial bidirectional MADI ports OR**
- **8 optical bidirectional MADI ports OR**
- **4 coaxial bidirectional MADI and 4 optical bidirectional MADI ports**
- **Up to 512 input and 512 output MADI channels**
- **Up to 128 input and 128 output SANE channels**
- **2 x 100 Mbit Ethernet ports**
- **Four RS485 interfaces for the exchange of control data. (e.g. RS422, RS485, DMX, MIDI)**
- **Word clock in- and output**
- **2 optical 2 Gbps LINK SFP with duplex LC-connectors**
- **Dual power supply with automatic switchover**
- **1 USB and 1 RS232 port for configuration and control**
- **Full remote access with OPTOCORE CONTROL software**
- **Upgradeable internal logic**
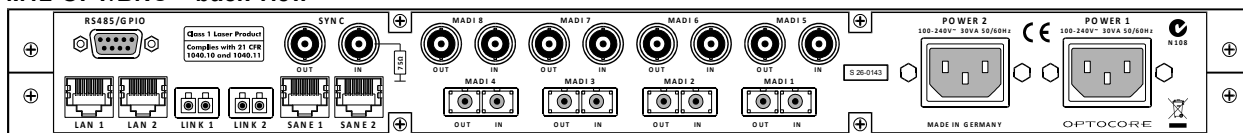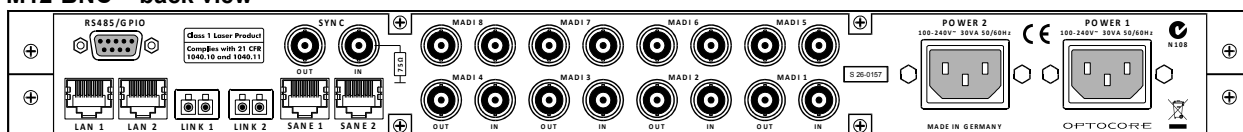- **Comprehensive status control via LED banks on the front**
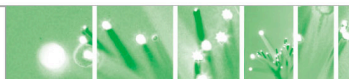
Line Drawings

M12-OPT – back view
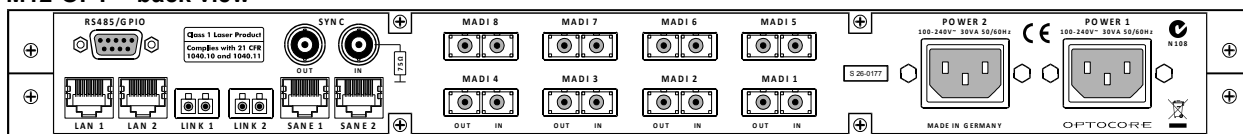
M12-OPT/BNC – back view

M12-BNC – back view

Technical Specifications

MADI Ports	Convention AES10-1991 / AES10-2003	
	M12 – EIGHT BNC	
Inputs	Number / Connectors	8 / coaxial
	MADI digital audio channels	56 or 64 per Input
Outputs	Number / Connectors	8 / coaxial
	MADI digital audio channels	56 or 64 per Output
Data rate		125 Mbps
Impedance	Termination	75 Ω
	M12 – EIGHT OPTICAL SC	
Inputs	Number / Connectors	8 / optical SC Multimode
	MADI digital audio channels	56 or 64 per Input
Outputs	Number / Connectors	8 / optical SC Multimode
	MADI digital audio channels	56 or 64 per Output
Data rate / Wave length		125 Mbps / 1310 nm (typical)
Max. cable length	50/125 µm	1500m / 5000 ft.
	M12 – FOUR OPTICAL SC / FOUR BNC	
Inputs	Number / Connectors	4 / coaxial | 4 / optical SC multimode
	MADI digital audio channels	56 or 64 per Input
Outputs	Number / Connectors	4 / coaxial | 4 / optical SC multimode
	MADI digital audio channels	56 or 64 per Output
SANE, LAN ports	Convention	
Audio	TIA - 568A/B, Optocore	200 Mbit/s
LAN	TIA - 568A/B, IEEE - 802.3	10/100 Mbit/s
Auxiliary Ports	Convention EIA / TIA-485	
Data channels	Digital control data	4
Data rate		Up to 10 Mbps
Impedance	Termination	330 Ω
	Source	≤ 10 Ω
Word clock	Hardware standard 75 Ω / BNC	
Data rate	Depending on used sample rate	44,1 / 48 / 88,2 / 96 / 176,4 / 192 kHz
Impedance	Output	75 Ω
	Input	1k / 75 Ω software switch
Optical Link	Input, Output, Dual – Full bandwidth	
Connection		Duplex LC (SFP MODULES)
Protocol		Optocore
Transmission		Full duplex
Data rate		2 x 2 Gbps
Optical wave guide cable lengths	Multimode fiber 50 µm	≤ 700 m
	Monomode fiber 9 µm	≤ 120 km (on request)
Power supply	2 independent power supplies with function check and automatic switch-over	
Type	Switch-mode, universal input	
Mains voltage	100...240VAC, 50/60Hz, 10VA-typ	
Remote Control		
RS232	Convention EIA / TIA-232	R x D, T x D / 57 600 Baud
USB Port		Interface to PC
Dimensions		1 RU / 19"
W x H x D	483 x 44 x 200 mm	19.2 x 1.73 x 7.87 inch
Weight	2.83 kg	6.2 lbs