M12

OPTICAL / COAXIAL MADI SWITCH
STANDALONE AND NETWORK DEVICE

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 four MADI input and four MADI output ports, offering 512 input and 512 output digital audio channels on coaxial or fiber MADI.

OVERVIEW

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 – four dual-port coaxial MADI board or four duplex optical MADI board. As a result M12 switch can be delivered in three different flavours – M12 OPT (eight duplex Optical MADI ports), M12 BNC (eight dual coaxial MADI ports) or M12 OPT/BNC (four duplex optical MADI and four 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 extremely 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. The M12 is also equipped also with two separate LAN ports for Ethernet switching transmission. The M12 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 number 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 an individual channel routing feature.

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

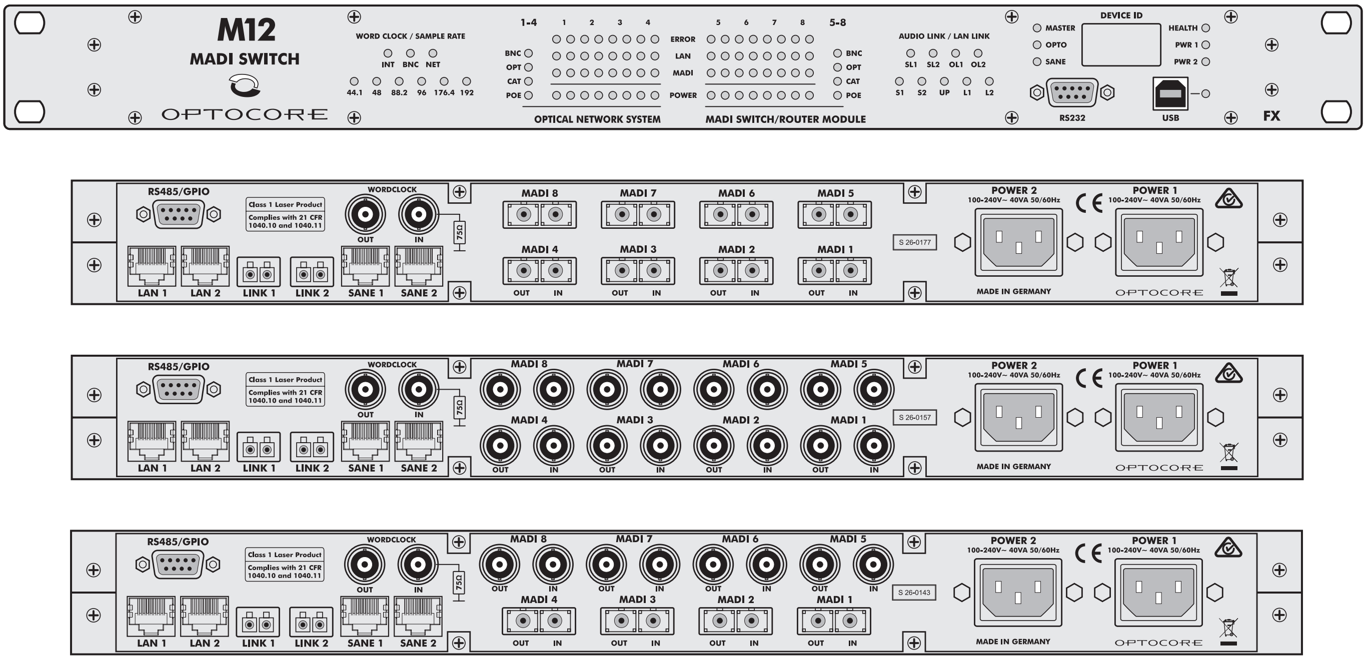
Redundant Optocore fiber connections can be established using the two provided optical LINK-interfaces. Depending on the fiber optic transceivers, distances from 700 m up to 120 km can be covered. The dual-redundant ring structure provides maximum safety in a network with an outstanding low latency.

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 provides easy access configuration and control 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 fulfils the requirement for 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.

SCHEMATICS



FEATURES

- Four coaxial bidirectional MADI ports OR
- Four optical bidirectional MADI ports OR
- Four coaxial bidirectional MADI ports and 4 optical bidirectional MADI ports
- Up to 512 input and 512 output MADI channels
- Up to 128 input and 128 output SANE channels
- Two 100 Mbit Ethernet ports
- Four RS485 interfaces for the exchange of control data.
  (e.g. RS422, RS485, DMX, MIDI)
- Word clock in- and output
- Two optical 2 Gbps LINK SFP with duplex LC-connectors
- Dual powersupply with automatic switchover
- One USB and one 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

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 Input
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 Input
Data rate / Wavelenght	**125 Mbps / 1310 nm (typical)**
Max. cable lenght	**50/125 µm:** 1500 m / 5000 ft.
M12 – FOUR BNC, FOUR OPTICAL SC	
Inputs	**Number / Connectors:** 4 / coaxial **MADI digital audio channels:** 56 or 64 per Input
Outputs	**Number / Connectors:** 4 / coaxial **MADI digital audio channels**: 56 or 64 per Input
Inputs	**Number / Connectors:** 4 / optical SC Multimode **MADI digital audio channels:** 56 or 64 per Input
Outputs	**Number / Connectors:** 4 / optical SC Multimode **MADI digital audio channels:** 56 or 64 per Input
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**

TECHNICAL SPECIFICATIONS

Data channels	**Digital control data:** 4
Data rate	**Up to 10 Mbps**
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 **Single mode fiber 9 µm:** ≤ 120 km (on request)
Power supply	**Two independent power supplies with function check and automatic switch-over**
Type	Switch-mode, universal input
Mains voltage, freqency	100 ... 240VAC, 50/60Hz, 10VA-typ
Frequency	50 ... 60 Hz
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	2.7 kg - 6.0 lbs

OPTOCORE

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