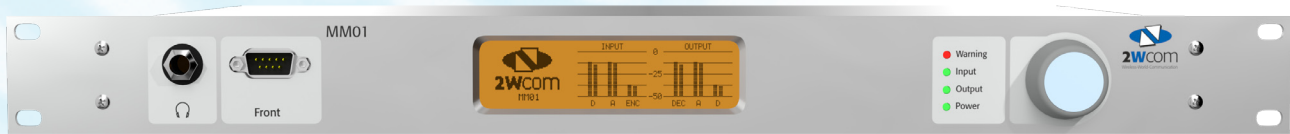


MM01 - Audio over IP Codec

Professional multi-format Duplex Audio Coder/Decoder



 Energy efficient,
no moving parts, no fan

Audio coding - fitting to your needs

High quality multi-format audio de/encoding:

- MPEG 1/2 Layer 1, 2, 3,
- G.711, G.722, PCM
- Optional: MPEG 2/4 AAC LC, HEv1&v2
- Optional: AAC-LD
- Optional: Enhanced aptX (E-aptX)
- Optional: Bit transparent transmission of digital audio and MPX signals (AES/EBU input at 32 - 192 kHz)

IP streaming

Rock solid network connection even in stress conditions according to standards RFC 3550, RFC, 3551, RFC 3640, RFC 2250

- Professional Audio IP streaming using UDP, RTP and SIP/SDP (standardized by EBU N/ACIP Tech 3326)
- Unicast, Multiple Unicast & Multicast
- Pro MPEG FEC
- Dual streaming / Optional: **Stream4Sure**: 2wcom streaming technology with different codecs/qualities and seamless switching of up to 4 streams

Backup / advanced redundancy management

- Flexible automatic switch over concept with free definition of alternative input sources as a redundancy solution in case of failures
- Playing files from internal storage or using alternative streams (Icecast / Shoutcast)
- Dual IP ports for data + 1 IP port for control interface
- Optional: redundant power supply 230 VAC or 48VDC

Control

- Remote control with various possibilities – HTTP/S, FTP, Telnet, NMS, SNMP
- Revised configuration via web user interface for easier setup
- Insertion of localized advertisement
- SNMP v2c, relays, inputs

Special

- Energy efficient DSP based 24/7 broadcast quality
- RDS decoding (built in RDS/UECP decoder)
- Embedded Auxiliary data (RBDS/RDS or PAD) and GPIO forwarding
- Optional: Perfect network synchronization for SFN applications

Monitoring

- IP and MPEG parameters via SNMP v2c and relay
- Headphone output

Advanced Control functionalities

High quality multi-format audio de/encoding:

- HTTP/HTTPS: via web interface
- FTP: XML file control
- NMS: Control via centralized Network Management System

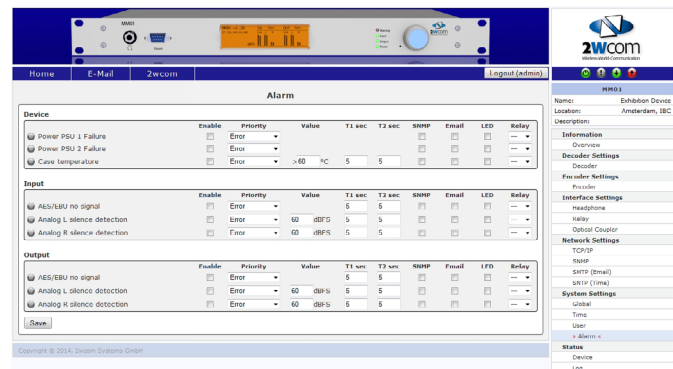


Perfect audio quality

- Balanced analog and digital AES/EBU (**integrated XLR connector**)

Advanced IP robustness functionalities

- Even to be operated in standard IP networks
- Pro MPEG FEC
- Management of packet size, buffers and QoS
- Optional: **Stream4Sure**: 2wcom streaming technology with different codecs/qualities and seamless switching of up to 4 streams

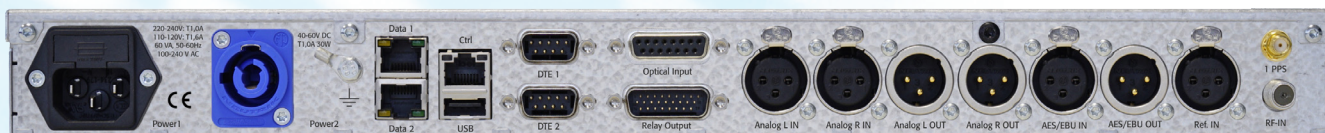


Perfect latency management

- Optional: GPS based 2wcom latency control solution for usage in SFN FM networks

Highly sophisticated monitoring and alarm concept

- Adjustable silence detection
- IP buffer and jitter check
- PLL control
- SNMP, alarm, source switch & event logging



Rear view MM01 - Audio over IP Codec

MM01 - Audio over IP Codec – Technical Details

Audio (encoder / decoder)

Codecs

Standard	MPEG 1/2 Layer 2, 3 Linear PCM
Optional:	MPEG 2/4 AAC LC/LD, HEv1&v2 E-aptX ask for other codecs
Optional:	Bit transparent transmission of AES/EBU input (Audio and MPX)
Sample Rates	32 kHz, 44.1 kHz, 48 kHz optional: up to 192 kHz
Digital Audio Bandwidth	10 Hz through to 22.5 kHz mono & stereo
Sample Rate Converter	8:1 (with bypass modes)

Performance

Digital (in/out)	AES/EBU, 110 Ω bal., integrated XLR
Analog (in)	L/R, >10 kΩ bal., integrated XLR
Analog (out)	L/R, <20 Ω bal., integrated XLR
Headphone (out)	L/R, <10 Ω, 6.3 mm
Digital Reference Input	AES/EBU, 110 Ω bal., integrated XLR
Digital reference level	9 dBFS (adjustable)
Volume	-32...+6 dB
Dynamic Range	16 Bit, >89 dB 24 Bit >130dB
Frequency Response	0,1 dB; 20 Hz .. 20 kHz

Interfaces

Ethernet

Data	Audio, serial data and GPIO transmis- sion, Controlling and Setup functions
Connector	3x RJ45
Type	Auto Switching 10/100/1000 BASE-T
Protocol	RTP/RTCP/UDP, IGMP, ICMP, DHCP, HTTP, FTP, SNMPv2c, NTP, SMTP (Mail), TCP (Iccast)

Serial

Interface	3x RS-232 (1 front, 2 rear) Sub D-9
Function	Front: Control, Rear: Data transmission
Data transmission format	MPEG ancillary data embedded in audio (IRT) Own IP link
Transmission rate	1200 to 115200 baud, asynchronous
USB	1x USB 2.0 Interface for service, configuration and firmware

Contact closure

Inputs	7 inputs (excludes option: 24 relay contacts) 15 pole sub-D female
Outputs	12 floating relays (10x SPST, 2x SPDT) (for DC: max. 30 V, 0.5 A) 26 pole sub-D male
Optional:	24 floating relays (excludes: 7 nputs)

Internal Storage

Data	internal Audio Files
Size	4 GB

Time synchronization (optional)

PTP	Network synchronization according to IEEE 1588-2008
1PPS	BNC - 75 Ω
10MHz	BNC - 75 Ω

Control & Monitor

Ethernet

Data	Controlling and Setup functions
Optional	Private data, MPEG ancillary data (IRT),
Protocol	2wcom NMS, Telnet, HTTP/HTTPS, SNMPv2c, UDP, IGMP, ICMP, DHCP, FTP, SNMPv2c, NTP, TCP (Iccast), PTP

Front panel

LCDisplay	Graphical, 264x64 pixel
Jog Wheel	Impulse, ENTER button
4 Duo LEDs	Power, Input, Output, Warning

General data

Power consumption	<40 VA (<20 W)
Case dimensions	19", 1 HU, depth: 310 mm, width: 424 mm, front panel: 484 mm
Weight	<6 kg
Housing	steel plate (aluminum-zinc coated)
Operating temp. range	0...+45°C
Storage temp. range	-40...+70°C
Power supply	1x internal, 90...260 VAC, 47...63 Hz 1x power port (rubber connector)
Optional:	
Redundant power supply 230 VAC	1x internal, 90...260 VAC, 47...63 Hz 1x power port (rubber connector), aut. switchover
Redundant power supply 48 VDC	1x internal 40...60 VDC 1x power port (Neutrik powerCON), aut. switchover
Languages	English

Version 06.09.2018
These data are subject to
modifications and amendments.
Errors excepted

