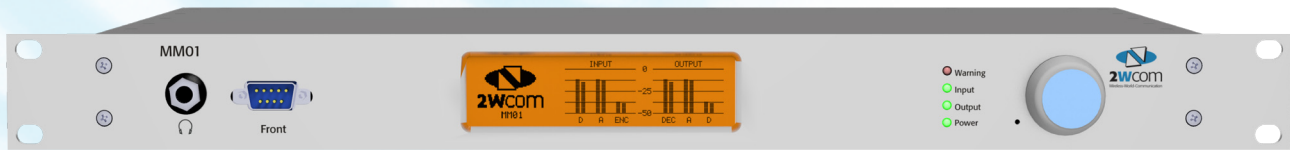


MM01 - Audio over IP Codec

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 SD-Card 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, 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 (no fans, no HDD)
- 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: via web interface / GUI
- FTP: XML file control
- NMS: Control via centralized Network Management System
- Telnet: Control via simple ASCII based command interface

Perfect audio quality

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

Advanced IP robustness functionalities

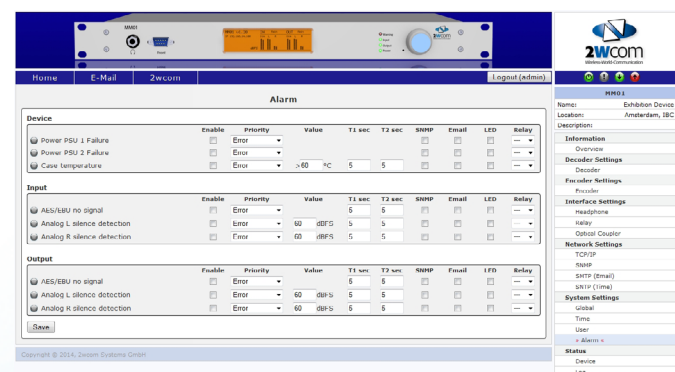
- Even to be operated in standard IP networks
- Pro MPEG FEC
- Management of packet size, buffers and QoS
- Optional: **Stream4Sure**: 2wcom Streaming Technology with different codecs/qualities and seamless switching of up to 4 streams

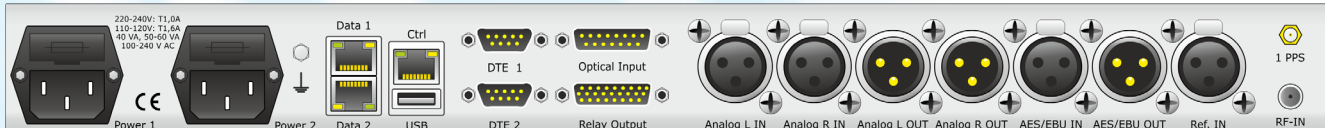
Perfect Latency management

- Optional: GPS based 2wcom latency control solution for usage in SFN FM networks
- optional: PTPv2 network synchronization

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 |
| Analogue (in) | L/R, >10 kΩ bal., integrated XLR |
| Analogue (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 trans- mission, 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, 1 A, 10 W) 26 pole sub-D male 24 floating relays (excludes: 7 opto isolated inputs) |
| Optional: | |

Internal Storage

| | |
|------|--|
| Data | internal Audio Files |
| Size | 1 GB - 32 GB |
| Type | Professional industrial grade Flash- Card |

Time synchronization (optional)

| | |
|-------|--|
| PTPv2 | 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 (ASCII), HTTP, SNMPv2c, SMTP, UDP, IGMP, ICMP, DHCP, HTTP, FTP, SNMPv2c, NTP, SMTP (Mail), TCP (Iccast), PTPv2 |

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 31.10.2016
These data are subject to
modifications and amendments.
Errors excepted

