# MoIN
# Multimedia over IP Network

Professional multi-format, multi-channel
multimedia over IP server (hardware, software, cloud)

# MoIN – Multimedia over IP Network



## Audio networks based on different protocols

▶ Broadcast based on EBU TECH 3326, SMPTE ST 2110
▶ AES67 based on RAVENNA, Livewire or Dante
▶ Server based on Icecast, Shoutcast, Wowza

## Audio coding – fitting to your needs

High quality multi-format Audio de/encoding

▶ MPEG ½ layer 2, 3
▶ G.711, G.722, linear PCM
▶ Opus
▶ Ogg Vorbis
▶ MPEG 2/4 AAC LC
▶ MPEG 4 AAC LD/ELD
▶ MPEG 4 HE-AAC v1&v2
▶ Extended HE-AAC (xHE-AAC)
▶ Enhanced aptX (E-aptX)
▶ Optional: Bit transparent transmission of digital audio and MPX signals
▶ Dolby codecs

## IP streaming

(Unicast, Multiple Unicast & Multicast)
Rock solid network connection even in stress conditions according to standards RFC 3550, RFC 3551, RFC 3640, RFC 2250

▶ Professional elementary audio IP streaming using UDP, RTP/RTCP (standardized by EBU N/ACIP Tech 3326, SMPTE ST 2110)
▶ TS RTP, UDP and SRT streaming
▶ SRT Secure Reliable Transport
▶ Pro MPEG FEC
▶ Dual streaming
▶ Optional: Livewire/Ravenna (SIP, SAP, RTSP, AES67, PTPv2)

▶ Optional: Stream4Sure: 2wcom streaming technology with different codecs/qualities and seamless switching off up to 4 streams
▶ HLS, Icecast source client

## 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 / Shouthast)

## Control

▶ Remote control with various possibilities – HTTP/S, FTP, SSH, NMS, SNMP
▶ Revised configuration via web user interface for easier setup
▶ Ember+

## Special

▶ Energy efficient 24/7 broadcast quality
▶ RDS decoding (built in RDS/UECP decoder)
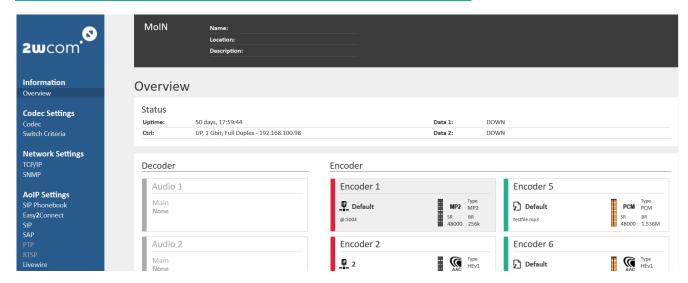▶ Embedded auxiliary data (RBDS/RDS or PAD) and GPIO forwarding

## Monitoring

▶ IP and MPEG parameters via SNMP
▶ Icecast Live Listening

## Perfect audio & latency management

▶ ACIP compliant high audio quality and extremely low latency (PTPv2 network synchronization)

Your audio. Our solution.

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## Advanced IP robustness functionalities

- Even to be operated in standard IP networks
- SRT Secure Reliable Transport
- 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

## Highly sophisticated monitoring and alarm concept

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

## Connect all known AoIP network devices

- MoIN can be used for audio routing, managing, levelling, loudness, monitoring and mixing between different protocols and environments
- The mixing and routing of different channels between different networks in synchronized manner is possible
- The integrated mixer can handle all audio signals also based on different clocks
- Audio streams can be combined to multichannel streams
- By supporting distribution services architecture (DS), the server allows for purpose-built products and services (i.e. DSLinks) to interact with one another in a decentralized manner. This

architecture enables a network architect to distribute functionality between discrete computing resources
- Easy integration of third party applications

## Audio matrix

- The audio inputs and audio outputs are available for IP data streams based on elementary and MPEG-TS streams via RTP and UDP
- The audio matrix functions control the routing, bridging and mixing of all audio signals
- Combining of different audio stream sources for a multichannel stream destination
- Sample rate converter (SRC) to combine different connections with different sample rates or different clocks
- Optional: functions for audio processing – e.g. loudness, limiter
- Optional: Analog, MADI or AES / EBU interfaces

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## Audio

### Codecs

| | |
|---|---|
| **Standard** | MPEG 1/2 Layer 2, 3 |
| | Linear PCM |
| | G.711, G.722 |
| | Opus |
| | Ogg Vorbis |
| | MPEG 2/4 AAC LC |
| | MPEG 4 AAC LD/ELD |
| | MPEG 4 HE-AAC v1&v2 |
| | Extended HE-AAC (xHE-AAC) |
| | Enhanced aptX (E-aptX) |
| | Dolby codecs |
| **Optional:** | Bit transparent transmission of AES/EBU input |
| **Sample Rates** | kHz: 16, 22,05, 24, 32, 44.1, 48 (On request: up to 192 kHz) |
| **Sample rate converter** | 8:1 |

## Interfaces

### Performance

| | |
|---|---|
| **Encoder instances** | Up to 512x AES/EBU, 110 Ω bal, (hardware server: connectors are depending on the chosen model) |
| **Decoder instances** | Up to 512x AES/EBU, 110 Ω bal, (hardware server: connectors are depending on the chosen model) |
| **Data streams (in)** | Up to 512 |
| **Data streams (out)** | Up to 3.096 |

### Ethernet

| | |
|---|---|
| **Data** | Audio, serial data and GPIO transmission, controlling and setup functions |
| **Connector (hardware server)** | Depending on the model in use |
| **Type (hardware server)** | Depending on the model in use |
| **Streaming protocol** | EBU Tech 3326, 3368, AES 67, Ravenna, Livewire+, SMPTE ST 2110, SRT Secure Reliable Transport, RTP/RTCP/UDP, IGMP, ICMP, DHCP, HTTPS, FTPS, SNMP, NTP, PTPv2, TCP (Icecast), HLS |

### Serial (hardware server)

| | |
|---|---|
| **Interface** | Depends on the model in use |
| **Data** | Private data, MPEG ancillary data, UECP/RDS (acc.to TR 101 154) |
| **Transmission rate** | Depends on the model in use |
| **USB** | 1x USB 2.0 interface for service, configuration and firmware |

### Time synchronization (optional)

| | |
|---|---|
| **PTPv2** | Network synchronization according to IEEE 1588-2008 |
| **1PPS** | SMA connector |

### Internal storage (optional)

| | |
|---|---|
| **Size** | 7 GB (optional 1000 GB) |
| **Type** | eMMC (optional SSD) |

### Contact closure

| | |
|---|---|
| **Inputs (hardware server)** | Depends on the model in use |
| **Outputs (hardware server)** | Depends on the model in use |

## Control & monitor

| | |
|---|---|
| **User interface** | Integrated WebGUI |

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# Technical details 2/2

| | |
|---|---|
| **Data** | Control and setup functions, private data, MPEG ancillary data (IRT) |
| **USB (hardware server)** | Depends on the model in use |
| **Protocols** | HTTP, SNMP, UDP, RTCP, SRT Secure Reliable Transport, Ember+, FTP, ICMP, IGMP, NTP, SSH, PTPv2, TCP (Icecast) |

## General data (hardware server)

| | |
|---|---|
| **Power consumption** | Depends on the model in use |
| **Case dimensions** | See above |
| **Weight** | See above |
| **Material** | See above |
| **Operating temp. range** | See above |
| **Storage temp. range** | See above |

### Power supply options

| | |
|---|---|
| **Internal power supplies** | See above |
| **Hot swap power supplies (optional – instead of internal PS)** | See above |
| **Power supply ranges (choosable)** | See above |

**Datasheet version 25.03.2020**
These data are subject to modifications and amendments. Errors excepted.

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