

IP-8e

Audio over IP encoder

Professional multi-format 8-channel audio encoder



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Audio coding fitting to your needs

High quality multi-format audio encoding

- ▶ MPEG 1 / 2 layer 1, 2, 3
- ▶ G.711, G.722, PCM
- ▶ Opus
- ▶ Ogg Vorbis
- ▶ MPEG 2 / 4 AAC LC, HEv1 & v2
- ▶ MPEG 4 AAC-LD/ELD/ELD v2
- ▶ Extended HE-AAC (xHE-AAC)
- ▶ Enhanced aptX (E-aptX)
- ▶ Optional: Bit transparent transmission of digital audio and MPX
- ▶ Optional: Dolby Digital Pro / E encoder supporting AC3, Dolby E, Dolby Digital (DD) and Dolby Digital Plus (DD+)

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 audio IP streaming using UDP, RTP and SIP/SDP (standardized by EBU N/ACIP Tech 3326)
- ▶ PRO MPEG FEC, Dual streaming
- ▶ Optional: Livewire/ Ravenna (SIP, SAP, RTSP, AES67)
- ▶ TS RTP, UDP and SRT streaming
- ▶ SRT Secure Reliable Transport
- ▶ Optional Stream4Sure: 2wcom streaming technology with different codecs/qualities and seamless switching of up to 4 Streams
- ▶ HLS, Icecast

Backup / advanced redundancy management

- ▶ Flexible automatic switch over concept with free definition of alternative input sources as 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 48 VDC

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 24/7 broadcast quality
- ▶ RDS decoding (built in RDS/UECP decoder)
- ▶ The device provides 2x RS232 IN per channel and four GPIOs per channel
- ▶ 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
- ▶ Icecast live listening



IP-8e – Audio over IP encoder

Advanced control functionalities

- ▶ 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

- ▶ Operates under stressful network conditions
- ▶ PRO MPEG FEC
- ▶ Management of packet size, buffer and QoS
- ▶ Optional: Stream4Sure – 2wcom streaming technology with different codes / qualities and seamless switching of up to 4 streams

Perfect latency management

- ▶ Optional: GPS/1PPS based 2wcom latency control solution 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



Technical details 1/2



Audio (encoder)

Codecs

Standard

MPEG 1 / 2 Layer 1, 2, 3
G.711, G.722, PCM
Opus, Ogg Vorbis, MPEG
2 / 4 AAC LC, HEv1 & v2,
MPEG 4 AAC-LD/ELD/ELD
v2, extended HE-AAC
(xHE-AAC), enhanced
aptX (E-aptX)

On request

Optional: Dolby Digital
Pro / E encoder
supporting AC 3, Dolby E,
Dolby Digital (DD) and
Dolby Digital Plus (DD+),
Optional: MPX

Sample rates

Bit transparent
transmission of AES/EBU
input (Audio)

32 kHz, 44.1 kHz, 48 kHz

Digital audio bandwidth

10 Hz through to 22.5
kHz mono & stereo
@48kHz sample rate

Sample rate converter

8:1 (up) and 1:7,5 (down)
with bypass modes

Interfaces

Audio

Digital (in)

8x AES/EBU, 110 Ω bal.,
integrated XLR

Analog (in)

4x L/R, > 10k Ω bal.,
integrated XLR

Headphone (out)

L/R, < 10 Ω, 6,3 mm

Analog reference level

+9dBu (max. +18dBu)

Digital reference level

-9 dBFS (adjustable)

Dynamic range

16 Bit, > 89 dB

24 Bit, > 130 dB

Frequency response

0,1 dB; 20 Hz...20 kHz

Ethernet

Data

Audio, serial data and
GPIO transmission,
controlling and setup
functions

Optional:

Private data, MPEG
ancillary data (IRT)

Connector Type

3x RJ45
Auto switching

Protocol

10/100/1000 BASE-T
RTP/RTCP/UDP, IGMP,
ICMP, DHCP, HTTP, FTP,
SNMPv2c, NTP, SMTP
(mail), TCP (Icecast), HLS

Serial

Interface

16x RS-232 Sub D-9 using
break-out cable

Data transmission format

MPEG ancillary data
embedded in audio (IRT)
own IP link

Transmission rate

1200 to 115200 baud,
asynchronous

Transport stream

ASI IN

BNC – 75 Ω

ASI OUT 1

BNC – 75 Ω

ASI OUT 2

BNC – 75 Ω -

configurable to be either
ASI OUT or SYNC OUT
(e.g. 1PPS)



Technical details 2/2

Interfaces

Contact closure

| | |
|------------------|---|
| Inputs | 32 inputs |
| Outputs | 8 floating relays (7x SPST, 1x SPDT) (for DC: max. 30 V, 0.5 A) 26 pole sub-D male |
| Optional: | 24 floating relays (replaces: 8x serial inputs) |

Internal storage

| | |
|-------------|----------------------|
| Data | internal audio files |
| Size | 7 GB |

Time synchronization (optional)

| | |
|-----------------|--|
| PTP | Network synchronization according to IEEE 1588-2008 |
| SYNC IN | BNC – 75 Ω - 1PPS / 10MHz |
| SYNC OUT | BNC – 75 Ω - 1PPS / 10MHz configurable to be either ASI OUT or SYNC OUT |

Control & monitor

Ethernet

| | |
|-----------------|---|
| Data | Controlling and setup functions |
| Protocol | 2wcom NMS, Telnet, HTTP/HTTPS, SNMPv2c, UDP, IGMP, ICMP, DHCP, FTP, SNMPv2c |

Front panel

| | |
|-------------------|-------------------------------|
| LCDisplay | Graphical, 264x64 pixel |
| Jog wheel | Impulse, enter button |
| 4 duo LEDs | Power, input, output, warning |

General data

| | |
|------------------------------|---|
| Power consumption | <20W |
| Case dimensions | 19", 1 HU, Depth: 310 mm, Width: 424 mm, Front panel: 484 mm |
| Weight | < 5 kg |
| Material | Steel plate (aluminium-zinc coated) |
| Operating temp. range | 0...+45°C |
| Storage temp. range | -40...+70°C |
| Languages | English |

Power supply

| | |
|---------------------------|--|
| Standard | 1x internal, 90...260 VAC, 47...63 Hz, 1x power port (rubber connector) |
| Optional version 1 | Two internal redundant power supplies (230 VAC or 48 VDC), aut. switchover |
| Optional version 2 | Two external hot swappable redundant power supplies (230 VAC or 48 VDC), aut. switchover |