

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)
- ▶ Dolby codecs
- ▶ MPX, μMPX

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 studio 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)
- ▶ 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



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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)

Codex

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) Dolby Codex MPX / μ MPX
Optional:	Bit transparent transmission of AES/EBU input (Audio)
Sample rates	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 (Iccast), HLS

Serial

Interface

8x 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	8 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	<40 VA (<20W)
Case dimensions	19", 1 HU, Depth: 310 mm, Width: 424 mm, Front panel: 484 mm
Weight	< 6 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	Redundant power supply 230 VAC: 1x internal 90...260 VAC 47...63 Hz, 1x power port (rubber connector), aut. switchover
Optional	Redundant power supply 48 VDC: 1x internal 40...60 VDC, 1x power port (Neutrik powerCON), aut. switchover