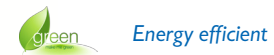
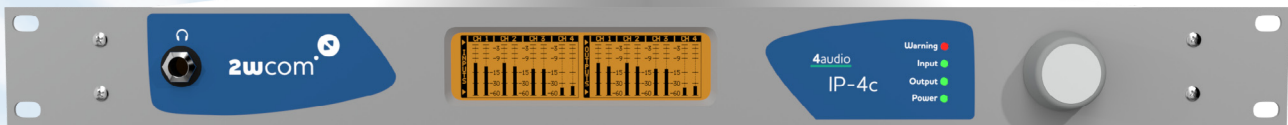


IP-4c - Audio over IP codec



Professional multi-format four channel
audio over IP coder / decoder / transcoder



Audio coding - fitting to your needs

High quality multi-format audio de/encoding/transcoding:

- MPEG 1/2 Layer 2, 3,
- G.711, G.722, Linear PCM
- Opus
- Ogg Vorbis
- MPEG 2/4 AAC LC
- MPEG 4 AAC LD/ELD/ELD v2
- MPEG 4 HE-AAC v1&v2
- Extended HE-AAC (xHE-AAC)
- Enhanced aptX (E-aptX)
- On request: Bit transparent transmission of digital audio and MPX signals (192 kHz)
- On request: Dolby Digital plus (AC3)

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)
- MPEG transport stream using RTP, UDP streaming
- SRT Secure Reliable Transport
- Pro MPEG FEC
- Dual streaming
- Optional: Livewire / Ravenna (SIP, SAP, RTSP, AES67, PTPv2)
- On request: Dante
- Optional: **Stream4Sure**: 2wcom Streaming Technology with different codecs/qualities and seamless switching

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 (Iccast / Shoutcast)
- Dual IP ports for data + 1 IP port for control interface
- Optional: (hot swappable) redundant power supply 230 VAC or 48VDC

Control

- Remote control with various possibilities – HTTP/S, SFTP, SSH, SNMP
- Revised configuration via web user interface for easier setup
- Relays, inputs
- On request: 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 and relay
- Headphone output

Perfect audio quality

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

Advanced IP robustness functionalities

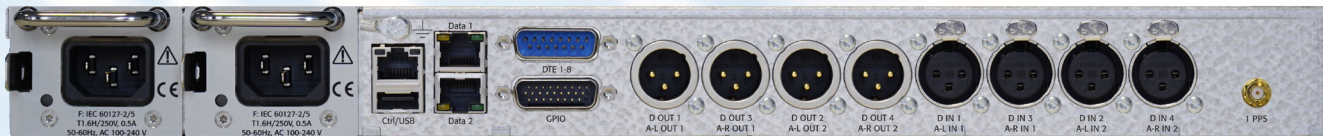
- Operation in standard IP networks possible
- SRT Secure Reliable Transport
- Pro MPEG FEC
- Management of buffers and QoS
- Optional: **Stream4Sure**: 2wcom Streaming Technology with different codecs/qualities and seamless switching

Perfect latency management

- 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 IP-4c - Audio over IP codec

IP-4c - Audio over IP codec – Technical Details

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/ELD v2 MPEG 4 HE-AAC v1&v2 Extended HE-AAC (xHE-AAC) Enhanced aptX (E-aptX) Dolby digital plus (AC3) ask for other codecs
On request:	Bit transparent transmission of AES/EBU input
On request:	ask for other codecs
Sample Rates	16 kHz, 22.05 kHz, 24 kHz 32 kHz, 44.1 kHz, 48 kHz On request: up to 192 kHz
Sample Rate Converter	8:1

Interfaces

Performance

Digital (in)	4x AES/EBU, 110 Ω bal., integrated XLR
Digital (out)	4x AES/EBU, 110 Ω bal., integrated XLR
Analogue (in)	max. 2x L/R, >10 kΩ bal., integrated XLR
Analogue (out)	max. 2x L/R, <20 Ω bal., integrated XLR
Headphone (out)	L/R, <10 Ω, 6.3 mm
Digital reference input	no dedicated input, selectable by user
Digital reference level	-9 dBFS (adjustable)
Gain	-9...+6 dB
Dynamic range	16 Bit, >89 dB 24 Bit >130 dB
Frequency response	depends on sample rate - e. g. 48 kHz: 0,1 dB; 20 Hz .. 22,5 kHz

Ethernet

Data	Audio, serial data and GPIO transmission, controlling and setup functions
Connector	3x RJ45 (2x data, 1x ctrl)
Type	Auto Switching 10/100/1000 BASE-T
Protocol	RTP/RTCP/UDP, SRT Secure Reliable Transport, IGMP, ICMP, DHCP, HTTPS, SFTP, SNMP, NTP, TCP (Iccast), PTPv2, SMPTE ST 2110

Serial

Interface	8x RS-232C (rear) Sub D-15
Data	Private data, MPEG ancillary data, UECP/RDS (acc. to TR 101 154)
Transmission rate	1200 to 115200 baud, asynchronous
USB	1x USB 2.0 Interface for service

Time Synchronization (optional)

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

Internal storage

Size	7 GB (optional 1000GB)
Type	eMMC (optional SSD)

Contact closure

Inputs	8x 26 pole sub-D male
Outputs	7+1 floating relays 7 Relays SPST (Form A) 1 Relay SPDT (Form C) (for DC: max. 30 V, 1 A, 10 W) 26 pole sub-D male

Control & Monitor

User interface	Integrated WebGUI, LCDisplay
Data	Control and setup functions
Optional	Private data, MPEG ancillary data (IRT)
USB	USB 2.0 Interface for service, configuration and firmware updates
Protocols	HTTPS, SNMP, UDP, RTCP, SRT Secure Reliable Transport, SFTP, ICMP, IGMP, NTP, SSH, PTPv2, TCP (Iccast)

Front panel

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

General data

Power consumption	< 20 W
Case dimensions	19", 1 HU, depth: 310 mm, width: 424 mm, front panel: 484 mm
Weight	<5 kg
Housing	steel plate (aluminum-zinc coated)
Operating temp. range	0...+45°C
Storage temp. range	-40...+70°C

Power supply options

Internal power supplies	1 - 2 (option) internal power supplies aut. switchover
Hot swap power supplies (optional - instead of internal PS)	2 hot swap power supplies aut. switchover
Power supply ranges (choosable)	90...260 VAC, 47...63 Hz 40...60 VDC (Neutrik power-CON)
Languages	English

Version 01.03.2019
These data are subject to modifications and amendments.
Errors excepted

