

SAT-4d

DVB satellite receiver

Professional DVB-S/S2 audio receiver

Decodes up to 4 stereo channels



SAT-4d DVB satellite receiver



DVB transport stream input

- ▶ DVB-S/S2 (single and multiple channels per carrier)
Double satellite tuner supporting QPSK, 8PSK, 16APSK & 32APSK
- ▶ Optional low symbol rate tuner 128 kSym/s
- ▶ ASI input and output
- ▶ Gigabit IP
- ▶ Optional: BISS-1,E descrambling (SAT / ASI input)

Redundancy

- ▶ Option: Icecast / Shoutcast / HLS input
- ▶ Optional: Enhanced integrated memory as additional back-up solution

Audio output

- ▶ 4 balanced digital AES/EBU or 2 balanced analogue (integrated XLR connector)

Data output

- ▶ 4x DTE (Ancillary data & auxiliary (PID) data)
- ▶ Option: 8x DTE, per UDP up to 16

Transport stream output

- ▶ ASI input and output
- ▶ Gigabit IP (TS forwarding)

Audio decoding

High quality multi-format audio decoding

- ▶ 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/ELDv2, MPEG 4 HE-AAC v1&v2, Extended xHE-AAC
- ▶ Enhanced aptX (E-aptX)
- ▶ Optional: Dolby codecs

IP input

Rock solid network connection even in stress conditions according to standards RFC 3550, RFC 3551, RFC 3640, RFC 2250

- ▶ Professional audio IP reception using UDP, RTP
- ▶ PRO MPEG FEC, Dual streaming input
- ▶ Optional: SRT (Secure Reliable Transport) & RIST (Reliable Internet Stream Transport)
- ▶ Optional: TS RTP, UDP and SRT streaming input
- ▶ Optional: Livewire / Ravenna (SAP, AES67, PTPv2)

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 / HLS)
- ▶ Dual IP ports for data + 1 IP port for control interface
- ▶ Optional: redundant power supply 90 - 260 VAC or 48 VDC

Monitoring and control

- ▶ Remote control with various possibilities: HTTP/S, FTP, MS, SNMP
- ▶ Revised configuration via web user interface for easier setup
- ▶ SNMP v2c & V3, relays, inputs
- ▶ REST-API
- ▶ Ember+



SAT-4d DVB satellite receiver

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: synchronized FM transmission within FM SFN networks

Advanced control functionalities

High quality multi-format audio decoding:

- ▶ HTTP / HTTPS: via web interface
- ▶ Adjustable silence detection
- ▶ IP buffer and jitter check
- ▶ PLL control
- ▶ SNMP, alarm, source switch & event logging for control via centralized Network Management System (NMS)

Perfect audio & latency management

- ▶ Optional: GPS based 2wcom latency control solution usage in SFN FM networks
- ▶ Optional: ACIP compliant high audio quality and PTPv2 network synchronization)



Technical details 1/3



Inputs

RF	F-female
Frequency	950 .. 2.150 MHz, step 1 kHz All LNB oscillator frequencies possible
Input level, impedance	-75 .. -20 dBm, 75 Ω
LNB Control	13 V vertical, 18 V horizontal, off 0 kHz low band, 22kHz high band
Noise figure	Typical 6dB, max. 12 dB

ASI

Data	MPEG2 TS- 270 Mbps
Connector	BNC - 75 Ω configurable to be either ASI input or 1PPS SYNC input (Option)

Gigabit IP

Data	MPEG TS or RTP, UDP, audio
Type	Auto switching 10/100/1000 BASE-T Unicast, Multicast

Redundancy Input

IP

Data	Option: Icecast / Shoutcast / HLS audio
Type	Auto switching 10/100/1000 BASE-T

Satellite modulation

Satellite tuner

DVB-S (EN 300 421)	
Modulation/symbol rate	QPSK (1 .. 45 MSym/s)
FEC	Viterbi, Reed Solomon 1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2 (EN 302 307)

Modulation/symbol rate	QPSK, 8PSK, 16 APSK (1 .. 45 MSym/s) 32 APSK, 64 APSK (1.. 38 MSym/s)
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Modulation type

CCM

Frame type

Short, normal

Roll-off

0.20, 0.25, 0.35

FEC

LDPC, BCH
1/4, 1/3, 2/5, 1/2, 3/5,
2/3,
3/4, 4/5, 5/6, 8/9, 9/10

Transport Stream

Processing

Single and multiple
transport stream / Single
and multiple generic
stream

PL scrambling

ID 0... 262144

IF Filter bandwidth

Automatic selection

MPEG decoding

Acc. to ETSI TR 101 154

BISS-1,E descrambling

Optional

Tuner option (Low symbol rate)

DVB-S (EN 300 421)

Standard	QPSK (0.128 .. 45
modulation/symbol rate	MSym/s)
Roll-off	0.35
FEC	Viterbi, Reed Solomon 1/2, 2/3, 3/4, 5/6, 6/7, 7/8



Technical Details 2/3

DVB-S2 (EN 302 307)

Standard	QPSK (128 kSym/s ..
modulation/symbol rate	35 MSym/s)
FEC	LDPC, BCH
	1/2, 3/5, 2/3, 3/4, 4/5,
	5/6, 8/9, 9/10
Modulation/symbol rate	8PSK (128 kSym/s ..
	31 MSym/s)
FEC	LDPC, BCH
	3/5, 2/3, 3/4, 5/6,
	8/9,9/10
Roll-off	0.20, 0.25, 0.35

Outputs

Gigabit IP

Data	MPEG TS or MPE
Connector	RJ45
Type	Auto switching
	10/100/1000 BASE-T,
	Unicast, Multicast

ASI

Data	MPEG2 TS- 270 Mbps
Connector	BNC - 75 Ω

Audio decoder

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)
	Optional: Dolby codecs
Sample rates	kHz: 16, 22,05, 24, 32,
	44.1, 48 (On request: up
	to 192 kHz)
Sample rate converter	8:1 (with bypass modes)

Interfaces

Audio

Digital (out)	4x AES/EBU, 110 Ω
	bal., integrated XLR
Analog (out)	2x L/R, < 20 Ω bal.,
	integrated XLR
Headphone (out)	L/R, < 10 Ω, 6,3 mm
Analog reference level	+9 dBu (max.+18 dBu)
	(output)
Digital reference input	selectable by user
Digital reference level	-9 dBFS
Digital level	Max. 0 dBFS (output)
Digital Silence detection	-90 ... 0 dBFS
Adjustable gain	-9 ... +6 dB
Dynamic range	16 Bit, > 89 dB
	24 Bit, > 130 dB
Harmonic distortion	<0.05 % / <-66 dB (40
	Hz .. 10 kHz)
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
Type	Auto switching
	10/100/1000 BASE-T



Technical details 3/3

Serial

Interface	4x RS-232C (rear) / Optional: 8x RS232c via 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

Interfaces

Contact closure

Connector	26 pole sub-D male
Inputs	8 inputs
Outputs	7+1 floating relays 7 relays SPST (from A) 1 relay SPDT (from C) Optional: 24 relays DC: max. 30 V, 1 A, 10 W

Internal storage (option)

Data	internal audio files
Size	7 GB (optional 1000 GB)
Type	eMMC (optional SSD)

Time synchronization (optional)

PTPv2	Network synchronization according to IEEE 1588- 2008
SYNC/AUX 1	BNC – 75 Ω – 1PPS

Control & monitor

Ethernet

User interface	Integrated WebGUI, LCD display
Data	Control and setup functions
Optional	Private data, MPEG ancillary data (IRT)

USB

USB 2.0 interface for
service, configuration
and firmware updates
2wcom NMS, HTTPS,
SNMP, UDP, RTCP, SRT
Secure Reliable
Transport, SFTP IGMP,
ICMP, NTP, DHCP, SNMP,
SSH, PTPv2, TCP (Iccast,
HLS)

Protocol

Front panel

LCDisplay
Jog wheel
4 Duo LEDs

Graphical, 264x64 pixel
Impulse, enter button
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 (IEC power connector)
Optional version 1	Two internal redundant power supplies (90...260 VAC or 48 VDC), automatic switchover
Optional version 2	Two hot swappable redundant power supplies (90...260 VAC or 48 VDC), automatic switchover