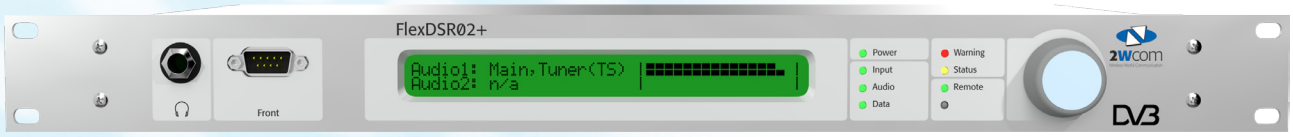
FlexDSR02+ DVB Satellite Receiver

Professional DVB-S/S2 Audio Receiver



Energy efficient, no moving parts, no fan

Transport stream inputs

- DVB-S/S2 (single and multiple channel per carrier)
  - 0.128 .. 45 MSym/s (QPSK, 8PSK)
  - 0.064 .. 45 MSym/s (Tuner modules 16 & 32 APSK optional)
  - 0.064 .. 45 MSym/s (*Full double tuner* modules 16 & 32 APSK optional)
- ASI
- Gigabit IP

Redundancy

- Optional: IP-audio streaming input as back-up solution
- Optional: Enhanced integrated memory as additional back-up solution

Audio output

- 1-2 balanced analogue and digital AES/EBU (**integrated** XLR-3 connector)

Data output (e.g. RDS, DRM)

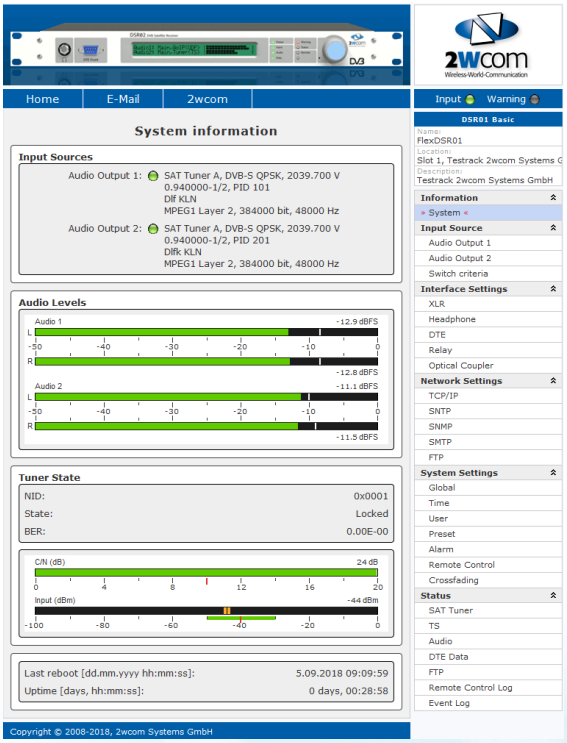
- Serial, IP (on request X.21 interface)
- up to 4 serial RS232 outputs
- up to 24 floating relay contacts
- Optional: High Speed IP Data (MPE)

Transport stream output

- ASI
- Gigabit IP

Decoding

- Audio decoding (professional MPEG decoder): MPEG 1/2 Layer 1, 2,3 (optional: MPEG 2/4 AAC LC/LD, HEv1&v2, linear PCM, E-aptX)
- RDS decoding (built in RDS/UECP decoder)
- Simultaneous decoding of 2 different transport streams (optional)



Control / local commercials

- Prepared for multiple users/customers on one physical device
- Via web interface
- Optional: Satellite In-Band Remote Control SIRC (PID switching for traffic information, relay switching, regional advertising, ..)
- SNMP v2c

Monitoring

- RF and MPEG parameters via SNMP v2c and relay
- Monitoring of up to eight audio programs via IP

Sync FM

- Prepared for synchronized FM transmission within FM SFN Networks

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	Feature List / Model	DSR0I Basic	FlexDSR02/04+
Standard	DVB-S/S2 tuner (0.256 .. 45 Msysm/s)	X	X
	Headphone output	X	X
	2x serial Output for RDS (+1 front: service)	X	X FlexDSR04+: 8x
	7x opto isolated in and 12x floating relays out	X	X
	1x Audio interface analogue or 1x digital AES/EBU	X	X FlexDSR04+: 4x
	15 kHz low passfilter	X	X
	Adjustable audio delay	X	X
	TCP/IP and Webinterface	X	X
	Display and Jogwheel	X	X
	SNMPv2c	X	X
	RDS/UECP monitor	X	X
	DVB-ASI (in- and output)		X
	Transport stream over Gigabit IP (in and out)		X
Options	**Transportstream input**		
	DVB-S/S2 Tuner incl. low symbol rates (min. 128 kSym/s)	X	X
	DVB-S/S2 Tuner module 16 APSK A/B switching and PL scrambling	X	X
	Redundancy Inputs		
	IP-audio streaming input as a back-up solution	X	X
	Enhanced integrated memory as additional back-up solution	X	X
	Audio output		
	2x X.21 interfaces	X[1)]	X[1)] FlexDSR04+: Not available
	Additional 1x audio interface analogue and 1x AES/EBU	X	X FlexDSR04+: Not available
	Data output		
	IP data output (e.g. RDS, DRM)	X	X
	up to 4 RS232 outputs and 24 relays (in- and output)	X[2)]	X[2)]
	2 additional RS232 outputs	X[2)]	X[2)]
	Monitoring		
	IP audio streaming for monitoring purpose	X	X
	Decoding		
	Audio decoding: MP2/4/AAC-LC/AAC+ HE v1 & v2	X	X
	Control		
	In-Band Control via Satellite (e.g. relay switching, regional advertising)	X	X
	Central server for satellite In-Band Control (generation of network control data) *only in combination with option In-Band Control via Satellite*	X	X
	Scrambling		
	2wcom encryption	X	X
	BISS decryption		FlexDSR04+ only

* limited upgradeability
1) X.21: possible development - on request only
2) RS232: cannot be combined with X.21 output

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Rear view FlexDSR02+ DVB Satellite Receiver
(For full double tuner: RF IN = RF A / RF Bypass = RF B)

FlexDSR02+ DVB Satellite Receiver – Technical Details

Inputs

RF

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
Connector	BNC 270 Mbps

Gigabit IP

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

Redundancy Input

IP

Data	Shoutcast ICY Audio
Type	Auto Switching 10/100 BASE-T

Internal Memory

Data	internal Audio Files
Size	1 GB .. 64 GB (other sizes on request)
Type	Professional FlashCard

Outputs

Gigabit IP

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

ASI

Data	MPEG2 TS
Connector	BNC 270 Mbps

Audio

Digital reference	-9 dBFS (adjustable)
Volume	-32 .. +6 dB
Filtering	Switchable 15 kHz Low-Pass
Harmonic distortion	<0.05 % / <-66 dB (40 Hz .. 10 kHz)
Frequency response	<0.2 dB (20 Hz .. 20 kHz)
Digital	AES/EBU, 110 Ω bal., 600 Ω comp. Integrated XLR-3, 1x Stereo (opt. 2x)
Analogue	L/R, <20 Ω bal., 600 Ω compatible, Integrated XLR-3, 1x Stereo (opt. 2x)
Headphone	L/R, <10 Ω, 6.3 mm

*X.21** (* possible development - may be changed for RS232 interfaces)

Data	MPEG Audio
Connector	15 pole sub-D male

Control & Monitor

Ethernet

Data	Controlling and Setup functions
optional:	Private data, MPEG ancillary data, UECP/RDS, MPEG audio (acc. to TR 101 154)
Connector	RJ45
Type	Auto Switching 10/100 BASE-T
Protocol	HTTP, SNMPv2c, SMTP, UDP

Contact closure

Inputs	7 opto isolated inputs (excludes option: 24 relay contacts) 15 pole sub-D female
Outputs	12 floating relays (10x SPST, 2x SPDT) (for DC: max. 30 V, 1 A, 10 W) 26 pole sub-D male
optional:	24 floating relays (excludes: 7 opto isolated inputs)

Serial

optional:	3x RS-232C (1 front, 2 rear) 2x additional RS-232C (rear)
Data	Private data, MPEG ancillary data, UECP/RDS (acc. to TR 101 154)e
Connector	9 pole sub-D male
Transmission rate	1200 to 115200 baud, asynchronous

Front panel

LCDisplay	2x 40 characters
Jog Wheel	Impulse, ENTER button
8 LEDs	Power, Signal, Warning, Status, Alarm, Remote

Satellite Modulation

Tuner option 1 (standard)

DVB-S (EN 300 421)

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

DVB-S2 (EN 302 307)

Standard Modulation/Symbol rate	QPSK (0.128 .. 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 (0.128 .. 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

Tuner option 2 (optional)

(High performance & Advanced DVB-S2 processing functions)

DVB-S (EN 300 421)

Modulation/Symbol rate	QPSK (0.064 .. 45 MSym/s)
Roll-off	0.35
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 (0.064 .. 45 MSym/s) 8PSK (0.064 .. 45 MSym/s) 16 APSK (0.064 .. 45 MSym/s)
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 Transport Stream
PL scrambling	ID 0 .. 262144
Input switching	loop through, A/B switch (optional)
Dual input tuning/decoding	Full dual tuner for parallel decoding of 2 transport streams (optional)

Advanced processing functions (optional)

Modulation/Symbol rate	32 APSK (0.064 .. 38 MSym/s)
Modulation Type	VCM, ACM
Transport stream processing	Single and Multiple Transport stream / Single and Multiple Generic stream

All tuners

IF filter bandwidth	automatic selection

MPEG decoding

	acc. to ETSI TR 101 154
No. of decoders	up to 2
adjustable Delay	10 .. 1000 ms
Codecs	MPEG 1&2 Layer 1, 2, 3
optional:	MPEG 2/4 AAC LC/LD, HEv1&v2, linear PCM, E-aptX, other codecs
Analogue & digital audio data rate	32 .. 384 kbps, selectable
Audio Performance	
Output Mode	Mono, Dual Mono, Stereo
Peak Output level	+18 dBu (optional +22 dBu) into 600Ω
Sampling rate	32, 44.1 or 48 kHz
Frequency response	0,2 dB; 20 Hz .. 20 kHz
Total harmonic distortion (THD)	< 0,05 %; 40 Hz .. 10 kHz
Cross Talk	1kHz: > 100 dB, L&R 20 Hz .. 20 kHz: > 75 dB, L&R
Signal to noise ratio (A-weighted)	Digital: > 105 dB Analogue: > 95 dB

General data

Power consumption	40 VA
Case dimensions	19“, 1 HU, 310/424/484 mm
Weight	<4 kg
Housing	steel plate (aluminum-zinc coated)
Operating temp. range	0 .. +45°C
Storage temp. range	-40 .. +70°C
Power supply	internal, 90 .. 260 V, 47 .. 63 Hz
Languages	English

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These data are subject to modifications and amendments.
Errors excepted

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