

# FlexDSR02+ DVB satellite receiver

Professional DVB-S/S2 audio receiver



# FlexDSR02+ DVB satellite receiver



## 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 or digital AES/EBU (integrated XLR-3 connector)

## Data output (e.g. RDS, DRM)

- ▶ Serial, IP
- ▶ 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: SIRC - Satellite In-Band Remote Control (PID switching for traffic information, relay switching, regional advertising, ..)
- ▶ New! SIRC's Google maps feature offers the possibility to distribute regionalized commands or actions and to receive e.g. health reports from satellite receivers of a certain region.
- ▶ 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



# Customize your digital satellite receiver

## Standard

Feature list	DSR01 Basic	FlexDSR02+/04+
DVB-S/S2 tuner (0.256 .. 45 Msym/s)	X	X
Headphone output	X	X
2x serial Output for RDS (+1 front: service)	X	X
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 pass filter	X	X
Adjustable audio delay	X	X
TCP/IP and web interface	X	X
Display and jogwheel	X	X
SNMPv2c	X	X
RDS/UECP monitor	X	X
DVB-ASI (in- and output)	X	X
Transport stream over Gigabit IP (in and out)	X	X

## Options

Feature list	DSR01 Basic	FlexDSR02+/04+
<b>Transportstream input</b>		
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
<b>Redundancy input</b>		
IP-audio streaming input as a back-up solution	X	X
Enhanced integrated memory as additional back-up solution	X	X
<b>Audio output</b>		
2x X.21 interfaces	...X1)	X1) not FlexDSR04+
Additional 1x audio interface Analogue and 1x AES/EBU	X	X→not FlexDSR04+
<b>Data output</b>		
IP data output (e.g. RDS, DRM)	X	X
Up to 4 RS232 outputs and 24 relays (in- and output)	X2)	X2)
2 additional RS232 outputs	X2)	X2)
<b>Monitoring</b>		
IP audio streaming for monitoring purpose	X	X
<b>Decoding</b>		
Audio decoding: MP2/4/AAC-LC/AAC+ HE v1 & v2	X	X
<b>Control</b>		
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
<b>Scrambling</b>		
2wcom encryption	X	X
BISS decryption		FlexDSR04+ only



# Technical details 1/3



## Inputs

<b>RF</b>	F-jack female tuner A (Tuner B optional)
<b>Frequency</b>	950 .. 2.150 MHz, step 1 kHz all LNB oscillator frequencies possible
<b>Input Level, impedance</b>	-75 .. -20 dBm, 75 Ω
<b>LNB control</b>	13 V vertical, 18 V horizontal, off 0 kHz low band, 22kHz high band
<b>Noise figure</b>	typical 6dB, max. 12 dB

<b>ASI</b>	
<b>Data</b>	MPEG2 TS
<b>Connector</b>	BNC 270 Mbps

<b>Gigabit IP</b>	
<b>Data</b>	MPEG TS or RTP, UDP, Audio
<b>Type</b>	Auto switching 10/100/1000 BASE-T Unicast, Multicast

## Redundancy input

<b>IP</b>	
<b>Data</b>	Shoutcast ICY Audio
<b>Type</b>	Auto switching 10/100 BASE-T

<b>Internal memory</b>	
<b>Data</b>	Internal audio files
<b>Size</b>	1 GB .. 64 GB (other sizes on request)
<b>Type</b>	Professional flashcard

## Outputs

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

<b>ASI</b>	
<b>Data</b>	MPEG2 TS
<b>Connector</b>	BNC 270 Mbps

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

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

<b>Data</b>	MPEG audio
<b>Connector</b>	15 pole sub-D male



## Technical details 2/3

### Control & monitor

#### Ethernet

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

#### Contact closure

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

**Serial** 3x RS-232C (1 front, 2 rear)

**Optional:** 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

<b>LCDisplay</b>	2x 40 characters
<b>Jog wheel</b>	Impulse, ENTER button
<b>8 LEDs</b>	Power, signal, warning, status, alarm, remote

### Satellite modulation

#### Tuner option 1 (standard)

DVB-S (EN 300 421)

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

DVB-S2 (EN 302 307)

<b>Standard</b>	QPSK (0.128 .. 35 MSym/s)
<b>modulation/symbol rate</b>	
<b>FEC</b>	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)

<b>Modulation/symbol rate</b>	QPSK (0.064 .. 45 MSym/s)
<b>Roll-off</b>	0.35
<b>FEC</b>	Viterbi, Reed Solomon 1/2, 2/3, 3/4, 5/6, 6/7, 7/8

DVB-S2 (EN 302 307)

<b>Modulation/symbol rate</b>	QPSK (0.064 .. 45 MSym/s)
	8PSK (0.064 .. 45 MSym/s)
	16 APSK (0.064 .. 45 MSym/s)



## Technical details 3/3

<b>Modulation type</b>	CCM
<b>Frame type</b>	Short, normal
<b>Roll-off</b>	0.20, 0.25, 0.35
<b>FEC</b>	LDPC, BCH 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
<b>Transport stream processing</b>	Single transport stream
<b>PL scrambling</b>	ID 0 .. 262144
<b>Input switching</b>	loop through, A/B switch (optional)
<b>Dual input tuning/decoding</b>	Full dual tuner for parallel decoding of 2 transport streams (optional)

### Advanced processing functions (optional)

<b>Modulation/symbol rate</b>	32 APSK (0.064 .. 38 MSym/s)
<b>Modulation type</b>	VCM, ACM
<b>Transport stream processing</b>	Single and multiple transport stream / single and multiple generic stream

### All tuners

<b>IF filter bandwidth</b>	Automatic selection
<b>MPEG decoding</b>	Acc. to ETSI TR 101 154
<b>No. of decoders adjustable delay</b>	Up to 2 10 .. 1000 ms
<b>Codecs</b>	MPEG 1&2 layer 1, 2, 3
<b>Optional:</b>	MPEG 2/4 AAC LC/LD, HEv1&v2, linear PCM, E-aptX, other codecs
<b>Analogue &amp; digital audio data rate</b>	32 .. 384 kbps, selectable

### Audio Performance

<b>Output mode</b>	Mono, dual mono, stereo
<b>Peak output level</b>	+18 dBu (optional +22 dBu) into 600Ω
<b>Sampling rate</b>	32, 44.1 or 48 kHz
<b>Frequency response</b>	0,2 dB; 20 Hz .. 20 kHz
<b>Total harmonic distortion (THD)</b>	< 0,05 %; 40 Hz .. 10 kHz
<b>Cross talk</b>	1kHz: > 100 dB, L&R 20 Hz .. 20 kHz: > 75 dB, L&R
<b>Signal to noise ratio (A-weighted)</b>	Digital: > 105 dB Analogue: > 95 dB

### General data

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