XLINK-S AND XLINK-S TM / TC

S Band Transceiver with **SDR** for Small Satellites ⇢ Physical Layer according to **CCSDS**

HIGHLIGHTS

- SDR high-speed data links
- Micro, nano or pico satellite usage
- Bidirectional communication links
- XLink-S: DL 200 Mbps / UL 56 kbps
- XLink-S TM/TC: 2 Mbps / 112 kbps

XLink-S is an advanced transceiver system (Software Defined Radio – SDR) for S band communication links of small satellites in LEO environment. The mechanical dimensions fit a 1U CubeSat as well as larger satellites. The radio interface and radio protocol were developed according to standard CCSDS protocols.

Downlink data rates with very high net payload rates of up to 200 Mbps are possible. Supported modulation schemes include BPSK, QPSK and higher order types of modulation with appropriate FEC encoding schemes. Adaptive modulation and coding schemes (AMC) are applicable to maximize data throughput.

The satellite receiver (uplink) used for telecommand purposes of the satellites is designed for a standard CCSDS BPSK with BCH coding and net data rates of at least 56 kbps. Two separate usable S band uplink receivers are available.

Data interface is based on CCSDS transfer frames.

A special feature of the **XLink-S** transceiver is the optional application of two separate Tx and Rx channels. They can be used either for an increase of the transmit power or for redundancy purposes.

FEATURES

- Fully featured and transparent bidirectional S band transceiver (SDR)
- CCSDS compliant for physical and synchronisation layer
- Flight grade tested design
- Compact case and low power consumption
- Extra flat patch antenna design matched to customer specific frequencies
- Low-cost COTS design
- Short delivery time

KEY SPECIFICATIONS

S Band Tx operation
2.200 - 2.290 GHz

Data rate Sat2Ground
2 kbps … 200 Mbps

Automatic Doppler shift compensation in Rx
up to 200 kHz

Ultra-small volume
< 0.2U

S band Rx operation
2.025 - 2.110 GHz

Data rate Ground2Sat
56 kbps+

Low power consumption
max 15 W (Tx + Rx)
4 W (1 Rx channel)

Low mass
200 grams

Operational mode
FDD, Full duplex, Half Duplex

Linear RF output power
up to +33 dBm (2 x up to +30 dBm)

DC supply voltage
6 – 18 V / 28 V

Made in Germany

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	XLink-S	XLink-S TM/TC
Tx Frequency Band	2.200-2.290 GHz	
Data rate (Tx Payload Data)	2 kbps … 200 Mbps	2 Mbps
Tx RF Bandwidth	Depends on symbol rate Maximum 56 MSymbols/s	2048 kSymbols/s
RF Power Output (w/o aerial)	2 Tx channels up to +30 dBm (combined up to +33 dBm)	2 Tx channels up to +29 dBm
Tx Modulation Scheme	BPSK, QPSK, OQPSK, GMSK, 8PSK, 16APSK	BPSK, QPSK, OQPSK
FEC scheme	Convolutional code k = 7	Convolutional code k = 7, r =1/2
RF Connector Type	SMP, 50 Ω	
Rx Frequency Bands	2.025-2.110 GHz	
Data rate (Rx Payload Data)	3.5 kbps … 896 kbps	112 kbps
Doppler shift compensation	+/-200 kHz	
Rx Modulation Scheme	BPSK with BCH coding	
RF Connector Type	SMP, 50 Ω	
Data Interfaces	IEEE 802.3 1000BASE-T, SPI via RS422, UART via RS422	IEEE 802.3 1000 BASE-T, SPI via RS422
Connector Type	3 x Nano-D-Sub (Power, Ethernet, I/O)	
Applicable CCSDS Standards	CCSDS 231.0-B, 132.0-B, 131.0-B, 401.0-B, DVB S2 via CCSDS 131.3-B	CCSDS 231.0-B, 132.0-B, 131.0-B, 401.0-B
DC supply	6 – 18 V or 28 V	6 – 18 V
DC Power Consumption	<15 W Tx + Rx, <4 W Rx only	
Mechanical Dimensions	90 x 65 x 25.3 mm^3	
Mass	200 grams (incl. housing)	
Temperature Range	-20 … +60 °C (operating) -40 … +80 °C (non-operating)	
Case	Passivated aluminum	

Optional equipment

- Tx/Rx S band patch antennas for satellite transceiver applications
- Customer-specific designs and turn-key solutions

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