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
- CubeSat and Small 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 are compatible with both CubeSats and larger satellites. The radio interface and radio protocol were developed according to standard CCSDS protocols.

The device supports very high downlink data rates of up to 200 Mbps. Supported modulation schemes include BPSK, QPSK and higher order modulations with appropriate FEC coding schemes. Adaptive Modulation and Coding (AMC) schemes are applicable to maximize data throughput.

The satellite receiver (uplink) for telecommand purposes is designed for standard CCSDS BPSK with BCH coding and net data rates of at 56 kbps minimum. Two alternatively usable S-Band uplink receivers are available.

The payload 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
- Low-cost COTS design
- Short delivery time
- Additionally available: Extra flat patch antennas tuneable to customer specific frequencies

KEY SPECIFICATIONS

S-Band Tx operation
2.200 - 2.290 GHz

Data rate Sat2Ground
2 kbps ... 200 Mbps

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

Operational mode
FDD, Full duplex, Half Duplex

S-Band Rx operation
2.025 - 2.110 GHz

Data rate Ground2Sat
56 kbps+

Automatic Doppler shift compensation in Rx
up to 200 kHz

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

DC supply voltage
6 – 18 V / 28 V

Low mass
200 grams

Ultra-small volume
< 0.2U

TRL 9

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	Depending on the symbol rate Maximum 56 MSymbols/s	2048 kSymbols/s
RF Power Output	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, Reed Solomon	Convolutional code k = 7, r =1/2
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)	
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, 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	<16 W 2xTx + Rx, <4 W Rx	
Mechanical Dimensions	90 x 65 x 25.3 mm³	
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

Product specifications may be subject to change without notification.

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