XLink-S

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

DVB-S2 & CCSDS

Highlights

- **SDR high-speed data links**
- **Micro, nano or pico satellite usage**
- **Bidirectional communication links**
- **Downlink/TM & Payload up to 200 Mbps**
- **Uplink/Telecommand   56 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
- S band Rx operation: 2.025-2.110 GHz
- Operational mode: FDD/Full duplex/ Half duplex

- Data rate Sat2Ground: 2 kbps … 200 Mbps
- Data rate Ground2Sat: 56 kbps+
- Linear RF output power: up to +33 dBm (2 x up to +30 dBm)

- 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
- Ultra-small volume: < 0.2U
- Low mass: 200 grams

	Default Configuration	Optional Configuration
Tx Frequency Band	2.200-2.290 GHz	on request
Data rate (Tx Payload Data)	500 kbps … 100 Mbps	2 kbps … 200 Mbps
Tx RF Bandwidth	Depends on symbol rate	Maximum 56 MSymbols/s
RF Power Output (w/o aerial)	2 Tx channels up to +30 dBm (combined up to +33 dBm)	
Tx Modulation Scheme	BPSK, QPSK, OQPSK	GMSK, 8PSK, 16APSK
FEC scheme	Convolutional code k = 7	
RF Connector Type	SMP, 50 Ω	
Rx Frequency Bands	2.025-2.110 GHz	on request
Data rate (Rx Payload Data)	56 kbps	3.5 kbps … 896 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 (LVDS, 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
DC supply	6 – 18 V	28 V – other on request
DC Power Consumption	<15 W Tx + Rx, <4 W Rx only	
Mechanical Dimensions	90 x 65 x 25.3 mm³	High Radiation Tolerance: 96 x 71 x 32 mm³
Mass	200 grams (incl. housing)	High Radiation Tolerance: 365 grams (incl. housing)
Antenna Configuration	Separate Tx & Rx antenna	Custom-specific antenna
Temperature Range	-30°C … +60°C	
Case	Passivated aluminum	

Optional equipment

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

Product specification may be subject to change without notification.