XLINK-L

L Band Transceiver with SDR for Small Satellites ⇢ **InCommand Service** (via Inmarsat ELERA NW)
⇢ **CCSDS TM/TC and Payload Data Transfer**

HIGHLIGHTS

- Flexible data links by powerful SDR platform
- Configurable data rates starting at a few kbps
- Fast link acquisition and allocation
- Application for high link budget requirements
- Micro, nano or pico satellite usage
- Bidirectional communication links

XLink-L is an advanced transceiver system (Software Defined Radio – SDR) for L band communication links of small satellites in LEO environment. The mechanical dimensions fit a 1U CubeSat as well as larger satellites. The interfaces and radio protocols for physical and synchronization/coding layers could be configured for various applications:

- TM/TC data transfer based on InCommand service for instant tasking via Inmarsat ELERA GEO-Sat network
- Data transfer of payload as well as TM/TC data according to standard CCSDS protocols

Typical full-duplex data transfer capabilities for these services include net rates up to 128 kbps in downlink (sat2ground) as well as in uplink (ground2sat) in 200kHz wide RF channels with optionally even higher rates depending on available RF bandwidths. Supported schemes include BPSK and (O)QPSK types of modulation with appropriate FEC data encoding.

Instant tasking with InCommand service is initiated by ground station request and enables world-wide access via Inmarsat's ELERA GEO-Sat network. Channel access procedure operates fully autonomously in real-time with a proprietary and adaptive modulation / coding scheme (AMC) to maximize data throughput.

Lowest symbol rates for all radio protocols are 4kSymbols/s. The satellite receiver performs all procedures and steps for link establishing automatically.

A special feature of the **XLink-L** transceiver is the optional application of two separate Tx and Rx channels. They can be used for redundancy purposes. Furthermore, the two Tx channels could be combined for an increase of transmit power.

FEATURES

- Fully featured and transparent bidirectional L band transceiver (SDR)
- Configurable radio protocols
- Flexible data rate settings down to few kbps
- Flight grade tested design
- Compact case and low power consumption
- Low-cost COTS design
- Short delivery time

KEY SPECIFICATIONS

L Band Tx operation 1.6265–1.675 GHz	**L band Rx operation** 1.518-1.559 GHz	**Operational mode** FDD, Full duplex, Half Duplex
Data rate Tx 2 kbps … 128 kbps	**Data rate Rx** 2 kbps … 128 kbps	**Linear RF output power** 2 x up to +30 dBm
Automatic Doppler shift compensation in Rx up to +/-50 kHz	**Low power consumption** max 15 W (Tx + Rx) 3 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	1.6265–1.675 GHz	on request
Symbol rate (Tx Data)	4 kSymbols/s … 128 kSymbols/s	> 128 kSymbols/s
Tx RF Bandwidth	Depends on symbol rate	
RF Power Output	2 Tx channels up to +30 dBm each	combined up to +33 dBm
Tx Modulation Scheme	BPSK, QPSK, OQPSK	GMSK
FEC scheme	Convolutional code k = 7 with r = 1/2, 2/3, 3/4, 5/6, 7/8	Reed Solomon
RF Connector Type	SMP, 50 Ω	
Rx Frequency Bands	1.518-1.559 GHz	on request
Symbol rate (Rx Data)	4 kSymbols/s … 128 kSymbols/s	> 128 kSymbols/s
Doppler shift compensation	+/-50 kHz	specific settings
Rx Modulation Scheme	BPSK / QPSK with convolutional code k=7, r=0.5 (InCommand)	BPSK with BCH decoding (CCSDS)
RF Connector Type	SMP, 50 Ω	
Data Interfaces	IEEE 802.3 1000BASE-T	UART, SPI (RS422)
Connector Type	3 x Nano-D-Sub (Power, Ethernet, I/O)	
Applicable Standards	CCSDS 231, 132, 131, 401	On request
DC supply	6 – 18 V	28 V – other on request
DC Power Consumption	<15 W Tx + Rx, <3 W Rx only	
Mechanical Dimensions	90 x 65 x 25.3 mm³	
Mass	200 grams (incl. housing)	
Antenna Configuration	Separate Tx & Rx antenna	Custom-specific antenna
Temperature Range	-20 … +60 °C (operating) -40 … +80 °C (non-operating)	
Case	Passivated aluminum	Specific radhard housing

Optional equipment

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

Product specification may be subject to change without notification.

Made in Germany