L3HARRIS™
FAST. FORWARD.

CXS-1000 MULTIFUNCTION, SOFTWARE-DEFINED TRANSPONDERS

Multi waveform and multi band capabilities with a compact footprint

L3Harris brings over 50 years of telemetry, tracking and control (TT&C) experience to offer a suite of affordable software-defined transponders.

FLEXIBLE AND RELIABLE

Perfect for low-cost satellites and constellation missions, CXS-1000 software-defined transponders offer breakthroughs in price and performance from a trusted, long-term TT&C supplier.

The multi waveform receiver provides flexibility in demodulation, decoding and channel selection for both narrowband or wideband operation. Customers can select different waveforms and program the frequency on orbit.

The baseline receiver comes standard with the L-/S-band configuration (CXS-1000), with options to select either of the Ka-band (CXK-1000) and X-band (CXX-1000) variations.

HIGH PERFORMANCE SOLUTION

Digital and analog data interfaces are provided via a serial control and status interface. The unit can be provided as a single integrated unit or as separate transmitters and receivers for full duplex multi-role and multi-band missions.

The engineering analyses, manufacturing and quality processes used for production are consistent with the highest industry reliability standards. Currently in production, the CXS-1000 is a high-performance solution with standard pricing and delivery for evolving lower cost satellites and constellations.

BENEFITS

- Radiation tested for geostationary environments
- Small form factor scaling with desired functions
- Flexibility through agile, scalable design
- Low cost for small satellites and constellations
- High reliability using on orbit proven processes

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CXS-1000 PRODUCT LINE SPECIFCIATIONS

	CXS-1000	CXX-1000	CXK-1000
RECEIVER	**L/S-BAND**	**S-BAND**	**KA-BAND**
Center frequency	1.76 – 1.84 GHz, 2.025 – 2.120 GHz	2.025 – 2.120 GHz	30.0 – 31.0 GHz
Data rate	2 – 128 Kbps, 3 Mbps capable	2 – 128 Kbps, 3 Mbps capable	1 – 40 Mbps, > 500 Mbps capable
Modulation	BPSK, SGLS, USB/STDN, ranging, TDRSS, coherency, user defined	BPSK, QPSK, ranging, coherency, user defined	BPSK, DVB-S2 QPSK
Tracking rate/range	10 kHz/sec, ±100 kHz; TDRSS 75 Hz/sec, ±160 kHz 10kHz/sec, +- 1 MHz		
Input RF signal	-30 dBm to -120 dBm -50 to -120 dBm		
TRANSMITTER	**S-BAND**	**X-BAND**	**KA-BAND**
Center frequency	2.2 GHz – 2.3 GHz	8.0 – 8.5 GHz	20.2 – 21.2 GHz
Frequency stability	± 10 ppm over life	Locks to 10 MHz external ref	Locks to 10 MHz external ref
Phase noise	10 kHz/sec, ±100 kHz; TDRSS 75 Hz/sec, ±160 kHz		
EVM	< 10% RMS		
Data rate	2K – 2 Mbps, 20 Mbps capable	1 – 400 Mbps	1 – 500 Mbps, > 1 Gbps capable
Modulation	LPM 1.024 MHz s/c, ranging, BPSK, QPSK, OQPSK, UQPSK, DVB-S2, user defined		
RF output power	10 mW to 20 W	10 mW to 10 W	10 mW to 2 W
TRANSCEIVER			
Outline dimension	4.0 in x 4.2 in x 4.0 in (core configuration)	9.6 in x 8.8 in x 3.55 in	9.6 in x 8.8 in x 3.55 in
Mass	2.5 lbs (Al), 3.6 lbs (Cu)	11.4 lbs	11.4 lbs
Mission life	1 to 5 years		
Duty cycle	TX: 15%, RX: 100% (typical)		
Radiation	50 krad (chassis), tested to GEO levels for destructive SEE, LET > 43 MeV, 26 krad (parts level), ELDRS tested to 52 krads		
Bus voltage	28 V ± 6 V, 9.5 – 12.3 V (isolated power)		
EMC/EMI	MIL-STD-461F (tailored)		
Data/clock interface	RS-422, single-ended, SpW	Ethernet	SpW, Ethernet
Control/status interface	RS-422, SpW	RS-422	SpW
Compatible with several NSA certified and commercial cryptographic products. These include KI-700, KI-55, MCU-110C and MRA-706 crypto solutions.			

CXS-1000 Multifunction, Software-Defined Transponder

L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end solutions that meet customers' mission-critical needs. The company provides advanced defense and commercial technologies across air, land, sea, space and cyber domains.

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