

7-5001

CHELTON

Logic Converter Unit

High performance military aircraft need to maintain continuity for broadband, frequency hopping V/UHF secure communications. Radios need to integrate seamlessly with antennas to maximize the reliability and resilience of such communications. In conjunction with Chelton's range of tuneable antennas, the 7-5001 Logic Converter Unit (LCU) takes frequency information from the radio and matches the performance of the antenna to that frequency.

The 7-5001 has been developed specifically to maintain the interface between the ARC210 Gen 5 radio and the 12-5001 antenna from Chelton in a configuration which is compatible with legacy systems.

The 7-5001 is intended for use in systems using Chelton Antenna Systems frequency agile 12-5001 Series antennas in combination with ARC210 Gen 5 radios.

The LCU may be configured for up to 2 separate (compatible) antennas. The LCU terminates and validates the control signals from the ARC210 Gen 5 radio, extracts the frequency information, translates it to a tuning command, and provides the required drive signals to tune the antenna via the parallel bus at the output connector.

The LCU is powered from the 28 Volts dc aircraft supply.



The LCU contains extensive built in diagnostic facilities (BIT) which monitor the input data, PSU status, internal health monitor, in addition to monitoring each of the output drive lines. The BIT status of the unit is reported using a pair of LED indicators and an 'open-collector' switched ground output which is fed back to the transceiver.

The LCU is constructed from aluminium alloy with internal filter and protection PCBs to maximise EMC performance.

The 7-5001 and its associated antenna will 'drop in' replace the 7-151 LCU and antenna, using existing cabling, for ARC210 Gen 4 to Gen 5 upgrades.



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ELECTRICAL

DC Power Input Interface	Compatible with MIL-STD-704F, 28 Volts dc aircraft supply Normal Working Voltage: 22 to 29 Volts dc Emergency Working Voltage: 16 to 29 Volts dc Protection: Reverse polarity and transient protection are incorporated in the design. Power interrupts in accordance with MIL-STD-704F; the state of the antenna outputs will remain as set but may be reduced in level during the power interruption. Maximum current from aircraft supply: Current at 16 V dc 1.5 A max Current at 22 V dc 1.2 A max Current at 28 V dc 0.8 A max Current at 29 V dc 0.8 A max
Serial Control Interface	The frequency information is transmitted via a 1 MHz Manchester encoded differential serial bit stream.
Antenna Drive Interface	Each of the nine drive-lines gives either a high voltage reverse bias or a constant current source for the PIN diodes in the antenna. High Level Antenna segment, PIN diode reverse biased: +100 V \pm 25 V Low Level Antenna segment, PIN diode forward biased: 180 mA \pm 25 mA constant current source

ENVIRONMENTAL

Altitude	MIL-STD-810F, Method 500.4, Procedures I and II 70,000 feet, storage and operational	
High Temperature	MIL-STD-810F, Method 501.4, Procedures I and II, Diurnal Storage: 95°C Operational: 71°C	
Low Temperature	MIL-STD-810F, Method 501.4, Procedures I and II Storage: -62°C Operational: -54°C	
Shock	MIL-STD-810F, Method 516.5, Procedures I and V Functional: 20 g, 11 ms, sawtooth Crash Hazard: 40 g, 11 ms, sawtooth	
Vibration	MIL-STD-810F, Method 514.5, Procedure I	
Sine	Frequency (Hz)	Displacement double amplitude (inches)
	5 -20	\geq 0.1 inspk-pk
	20 -33	\geq 2 g
	33 -52	\geq 0.036 inspk-pk
	52 -2000	\geq 5 g
Random Vibration: Endurance	Frequency (Hz)	Acceleration Power Density
	15 -133	\geq 0.04 g ² /Hz
	133 -300	\geq +4 dB/Octave
	300 -1000	\geq 0.12 g ² /Hz
	1000 -2000	\geq -6 dB/Octave
Electromagnetic Interface Emissions Susceptibility	MIL-STD-461F Categories: CE101, CE102, CE106, RE101, RE102 Categories: CS101, CS106, CS114, RS101, RS103	

