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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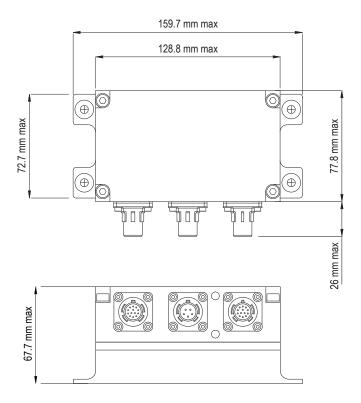
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ELECTRICAL

| 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 dc1.5 A maxCurrent at 22 V dc1.2 A maxCurrent at 28 V dc0.8 A maxCurrent at 29 V dc0.8 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 ± 25 mA constant current source | | |



ENVIRONMENTAL

| Altitude | MIL-STD-810F, Method 500.4, Procedures I and II | | |
|--|---|--|--|
| | 70,000 feet, sto | rage 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, N I and V | Method 516.5, Procedures | |
| | Functional: | 20 g, 11 ms, sawtooth | |
| | Crash Hazard: | 40 g, 11 ms, sawtooth | |
| Vibration | MIL-STD-810F, N | Method 514.5, Procedure I | |
| Sine | Frequency (Hz) | Displacement double amplitude (inches) | |
| | 5 -20 | ≥@ 0.1 inspk-pk | |
| | 20 -33 | ≥@ 2 g | |
| | 33 -52 | ≥@ 0.036 inspk-pk | |
| | 52 -2000 | ≥@ 5 g | |
| Random Vibration: | Frequency (Hz) | Acceleration Power Density | |
| Endurance | 15 100 | | |
| | 15 -133 | ≥@ 0.04 g²/Hz | |
| | 133 -300 | $\geq @ +4 dB/Octave$ | |
| | 300 -1000 | ≥@ 0.12 g²/Hz | |
| | 1000 -2000 | ≥@ -6 dB/Octave | |
| Electromagnetic | MIL-STD-461F | | |
| Interface Emissions Susceptibility | Categories: CE101, CE102, CE106, RE101, RE102 | | |
| Susceptionity | Categorles: CS101, CS106, CS114, RS101, RS103 | | |
| | | | |

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