7-163PIN160

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 **7-163PIN160 Logic Converter Unit (LCU)** takes frequency information from the radio and matches the performance of the antenna to that frequency.

The **7-163PIN160** can be configured to operate with one of up to seven radio types (such as the **ARC210** and **ARC231**) and with one of up to four antenna types (such as the **12-190-160**, **12-190-310** or **12-190-530LP**).

For the latest available radio and antenna support, please contact Chelton.

A selectively screened LCU, the **7-163PIN160HT**, is available for operation over an extended temperature range.

The **7-163PIN160** is powered from the 28 Volts dc aircraft supply.

The LCU terminates and validates the control signals from the 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.



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DC Power Input Interface16 V to 32 VInterfaceNormal Working Voltage:22 to 29 Volts dcEmergency Working Voltage:16 to 29 Volts dcProtection: Reverse polarity and transient protectionProtection in accordancePower interrupts:Protection in accordanceWith MIL-STD-704DMaximum current from aircraft supply:1.4 A at 18 V dcSerial Control InterfaceRadio dependent:Differential Manchester Encoded serial bit stream Serial data and separate synchronous clockAntenna Drive InterfaceEach 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 Low LevelAntenna segment, PIN diode reverse biased: +100 V ± 25 VLow LevelAntenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current sourceConnectorsType MS3112E 14-19P			
InterfaceNormal Working Voltage:22 to 29 Volts dcEmergency Working Voltage:16 to 29 Volts dcProtection:Reverse polarity and transientprotectionPower interrupts:Power interrupts:Protection in accordancewith MIL-STD-704DMaximum current from aircraft supply:1.4 A at 18 V dcSerial ControlRadio dependent:InterfaceDifferential Manchester Encoded serial bit streamSerial data and separate synchronous clockAntenna DriveEach 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 LevelAntenna segment, PIN diode forward biased: +100 V ± 25 VLow LevelAntenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current source		16 V to 32 V	
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InterfaceDifferential Manchester Encoded serial bit stream Serial data and separate synchronous clockAntenna DriveEach 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 LevelAntenna segment, PIN diode reverse biased: +100 V ± 25 VLow LevelAntenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current source		1.4 A at 18 V dc	
Antenna Drive InterfaceEach 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 LevelAntenna segment, PIN diode reverse biased: +100 V ± 25 VLow LevelAntenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current source		Radio dependent:	
Antenna Drive InterfaceEach 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 LevelAntenna segment, PIN diode reverse biased: $\pm 100 V \pm 25 V$ Low LevelAntenna segment, PIN diode forward biased: $\pm 180 \text{ mA} \pm 25 \text{ mA constant current source}$	Interface		
Drive Interfacevoltage reverse bias or a constant current source for the PIN diodes in the antenna.High LevelAntenna segment, PIN diode reverse biased: +100 V ± 25 VLow LevelAntenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current source		Serial data and separate synchronous clock	
+100 V ± 25 V Low Level Antenna segment, PIN diode forward biased: -180 mA ± 25 mA constant current source	Drive	voltage reverse bias or a constant current	
-180 mA ± 25 mA constant current source	High Level		
Connectors Type MS3112E 14-19P	Low Level		
	Connectors	Туре MS3112E 14-19Р	
Type MS3112E 8-33P		Type MS3112E 8-33P	
Type MS3112E 12-10S		T	

MECHANICAL

Dimensions (deployed)	67.7 x 159.7 x 77.8 max
Weight	1.0 kg maximum
Mounting	Four holes fixed location

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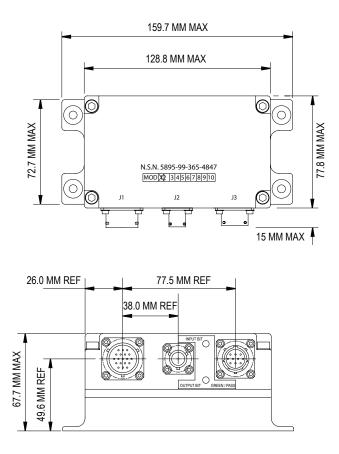
7-163PIN160

CHELTON

Logic Converter Unit

The **7-163PIN160** 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 fed back to the radio using an 'open-collector' switched ground output. In addition, two LED lamps on the front face of the unit will notify the maintenance crew of operational faults in the antenna system.

The LCU housing is constructed from aluminium alloy with internal filter plates to maximise EMC performance. The base of the unit is flanged with mounting holes for mounting to the airframe.



ENVIRONMENTAL

Temperature/ Altitude	MIL-STD-810C, Metho Category 6, modified (d 501.4, Procedure l, Step 5 omitted)
	7-163PIN160	7-163PIN160HT
Normal Operational:	-40°C to +71°C	-54°C to +71°C
Occasional Operational:	-40°C to +85°C	-54°C to +85°C
Survival: Altitude	-55°C to +95°C 70,000 feet	-55°C to +95°C
Temperature/ Altitude/ Humidity	MIL-STD-810F, Method	d 520.2, Procedure I
Temperature	Operational:	-54°C to +71°C
Altitude	Survival: 25,000 feet	-55°C
Humidity	MIL-STD-810D, Metho	d 507.2. Procedure III
Acceleration		
Acceleration	MIL-STD-810E, Methoo 13.5 g	
Shock	MIL-STD-810C, Metho III and V	d 516.2, Procedures I,
	20 g 11 ms terminal sa	awtooth basic design
	40 g 11 ms terminal sa	awtooth crash safety
	40 g 11 ms terminal sa	awtooth crash hazard
Sine on Random Vibration	MIL-STD-810F, Method 514.5 Procedure I, Category 14, Functional Endurance	
	Frequency	Displacement
	(Hz)	Amplitude (g peak)
	(Hz)	Amplitude (g peak)
	(Hz) 4.3	Amplitude (g peak) 0.11
	(Hz) 4.3 17.2	Amplitude (g peak) 0.11 1.72
	(Hz) 4.3 17.2 34.4	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g ² /Hz)
	(Hz) 4.3 17.2 34.4 51.6 Frequency	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power
	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz)	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g ² /Hz)
	<pre>(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10</pre>	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g ² /Hz) @ 0.001 @ 0.01 @ 0.01
	<pre>(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100</pre>	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @0.01
Explosive Atmosphere	<pre>(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300</pre>	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012
	<pre>(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500</pre>	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012 d 511.4, Procedure I
Atmosphere Temperature	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012 d 511.4, Procedure I d 503.2, Procedure I
Atmosphere Temperature Shock	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Method	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.012 d 501.2, Procedure I d 509.2, Procedure I
Atmosphere Temperature Shock Salt Fog	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Method	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012 d 511.4, Procedure I d 503.2, Procedure I d 509.2, Procedure I tion 3:3.3
Atmosphere Temperature Shock Salt Fog Fungus	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Metho BS 3G 100, Part 2, Sec MIL-STD-810D, Metho	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.012 d 501.2, Procedure I d 509.2, Procedure I tion 3:3.3 d 506.2, Procedure II
Atmosphere Temperature Shock Salt Fog Fungus Rain Sand and Dust Fluid	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Metho BS 3G 100, Part 2, Sec MIL-STD-810D, Metho MIL-STD-810D, Metho and II EUROCAE ED-14C/RTC	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.012 d 501.2, Procedure I d 509.2, Procedure I tion 3:3.3 d 506.2, Procedure II
Atmosphere Temperature Shock Salt Fog Fungus Rain Sand and Dust Fluid Susceptibility Magnetic	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Method BS 3G 100, Part 2, Sec MIL-STD-810D, Method MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-8100 MEHOD MIL-STD-810 MEHOD MIL-STD-810 MEHOD MIL-STD-810 MEH	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012 d 511.4, Procedure I d 509.2, Procedure I tion 3:3.3 d 506.2, Procedure II d 510.2, Procedure I
Atmosphere Temperature Shock Salt Fog Fungus Rain Sand and Dust Fluid Susceptibility	(Hz) 4.3 17.2 34.4 51.6 Frequency (Hz) 10 100 300 500 MIL-STD-810F, Method MIL-STD-810D, Method BS 3G 100, Part 2, Sect MIL-STD-810D, Method MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-810D, MEHOD MIL-STD-8100 MEHOD MIL-STD-810 MEHOD MIL-STD-810 MEHOD MIL-STD-810 MEH	Amplitude (g peak) 0.11 1.72 2.50 0.11 Acceleration Power Density (g²/Hz) @ 0.001 @ 0.01 @ 0.012 d 511.4, Procedure I d 509.2, Procedure I d 509.2, Procedure I d 500.2, Procedure I d 510.2, Procedure I d 510.2, Procedure I d 510.2, Procedure I d 510.2, Procedure I d 500.2, Procedure I

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