

12-190-530LP

CHELTON

V/UHF/L-Band Tuneable Antenna

The 12-190-530LP V/UHF/L-Band Tuneable Antenna is designed to provide communications in the frequency ranges 30 MHz to 88 MHz, 118 MHz to 174 MHz, 225 MHz to 512 MHz and 960 MHz to 1220 MHz. The antenna is intended for use in general subsonic airborne applications.

The antenna is provided with lightning protection.

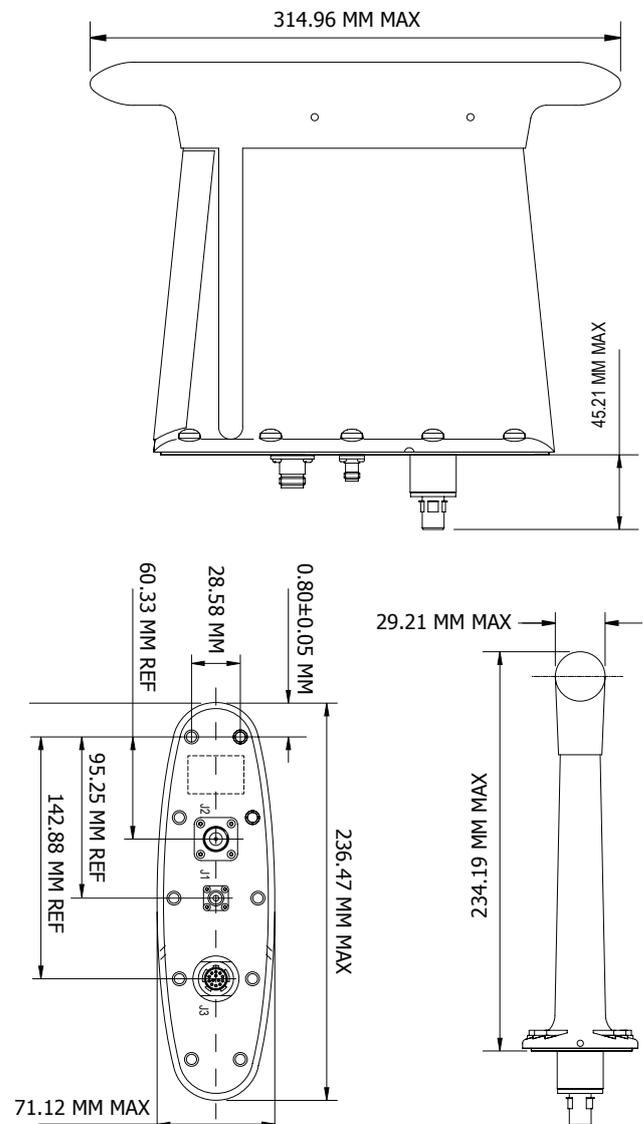
The 12-190-530LP meets the stringent requirements of our military customers and provides unrivalled RF, mechanical and environmental performance.

The 12-190-530LP comprises three separate radiating elements.

The VHF function is fulfilled by a PIN diode tuned structure wherein the capacitive reactance of the electrically small element is tuned out using a network of binarily related, PIN diode switched, lumped inductive elements. The remaining resistive component is then transformed using a reactive network to nominal 50 ohms impedance.

The UHF element comprises a separate essentially passive element, reactively matched. The VHF and UHF elements are then combined using a Tchebyscheff theory diplexer to a single RF connector.

The L-band antenna comprises a fan monopole, reactively matched and fed via a separate RF port.



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The 12-190-530LP comprises a pressure moulded composite radome of aerofoil section surmounted by a tube, which provides the top loading for the VHF element. Within the blade is housed the electrical assembly. The structure is enclosed at the base by an aluminium alloy baseplate which supports the two RF connectors and the DC control connector.

Lightning protection is achieved by use of a pair of external diverter strips that conduct any direct attachment lightning strikes down the outside of the blade to the antenna baseplate.

ELECTRICAL

Frequency Range	30 MHz - 88 MHz 118 MHz - 174 MHz 225 MHz - 512 MHz 960 MHz - 1220 MHz												
Gain	<table><thead><tr><th>dBi</th><th>Frequency (MHz)</th></tr></thead><tbody><tr><td>≥ -14</td><td>30</td></tr><tr><td>≥ -4.5</td><td>88</td></tr><tr><td>≥ -3 average</td><td>118 - 174</td></tr><tr><td>≥ 0 average</td><td>225 - 512</td></tr><tr><td>≥ 0 average</td><td>1000 - 1100</td></tr></tbody></table>	dBi	Frequency (MHz)	≥ -14	30	≥ -4.5	88	≥ -3 average	118 - 174	≥ 0 average	225 - 512	≥ 0 average	1000 - 1100
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Polarisation	Predominantly vertical when mounted vertically												
Radiation Pattern	Essentially omnidirectional in azimuth												
RF Power	<table><thead><tr><th>Power</th><th>Frequency (MHz)</th></tr></thead><tbody><tr><td>23 W CW max</td><td>30 - 88</td></tr><tr><td>23 W CW max</td><td>118 - 174</td></tr><tr><td>23 W CW max</td><td>225 - 512</td></tr><tr><td>1.5 kW peak</td><td>960 - 1220</td></tr><tr><td>0.04% duty cycle</td><td></td></tr></tbody></table>	Power	Frequency (MHz)	23 W CW max	30 - 88	23 W CW max	118 - 174	23 W CW max	225 - 512	1.5 kW peak	960 - 1220	0.04% duty cycle	
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Impedance	50 ohm nominal												
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ELECTRICAL CONTINUED

VSWR	VSWR	Frequency (MHz)
	≤ 2.0:1	960 - 1220
	≤ 1.8:1	1000 - 1100
Connectors	RF Type N female Type TNC female DC D38999 / 49WB35PN	960 MHz - 1220 MHz RF 30 MHz - 512 MHz

MECHANICAL

Aerodynamic Load	6300 kgf/m ² proof (9 psi) 9500 kgf/m ² minimum ultimate (13.5 psi)
Dimensions (LxWxH)	234.19 x 314.96 x 71.12 mm
Weight	1.59 (kg)
Mounting	Eight holes fixed location

ENVIRONMENTAL

Altitude	MIL-STD-810C, Method 504.1 Procedure I Operational: 70,000 feet Storage: 70,000 feet
High Temperature	MIL-STD-810C, Method 504.1, Procedure I Continuous Operation: +71°C Storage: +95°C
Low Temperature	MIL-STD-810C, Method 504.1, Procedure I Operational: -54°C Storage: -62°C
Shock	MIL-STD-810E, Method 516.4, Procedures I and V Functional: 20 g, 11 ms, sawtooth Crash Hazard: 40 g, 11 ms, sawtooth
Vibration	MIL-STD-810E, Method 514.4, Procedure I, Cat 4 0.01 g ² /Hz at 15 Hz to 2000 Hz L1 = 0.6 g ² /Hz at 68 Hz
Temperature Shock	MIL-STD-810E, Method 503.3
Rain	MIL-STD-810D, Method 506.2, Procedure I Normal operation when exposed to driving rain
Humidity	MIL-STD-810D, Method 507.2, Procedure III 95% relative humidity at 60°C
Salt Fog	MIL-STD-810D, Method 509.2, Procedure I 48 hours exposure to 5% salt solution
Magnetic Effect	DO-160D, Section 15, Class Z
Lightning	MIL-STD-1757, Zone 2B

