

125 W Solid State Antenna Tuning Unit



General Features

- Cabinet enclosure meets IP66 standards
- Exceeds FAA9782/1 performance specification
- Inherently stable astatic pair of coils
- Automatic fine tuning
- 50 ohm input impedance, install any distance from antenna
- Adjustable spark gap and direct ground return
- Flexibility in mounting via rear or bottom



ATU Series - ATU 500

Features/Specifications Issue 2.1
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FOR OUTDOOR WEATHER USE

The Automatic Antenna Tuning Unit is housed in a heavy-duty weatherproof cabinet with a protective finish suitable for outdoor land and offshore weather environments. A special gasket material made of closed-cell neoprene cord is used for the contact point of closure, providing excellent isolation from outside conditions and meeting IP66 standards.



TWO LOADING COILS

The ATU500 uses two identical loading coils connected in series or parallel but with windings in opposite directions so that the induced magnetic field flows around in a loop - minimizing shielding losses and detuning.

LIGHTNING PROTECTION

An adjustable spark gap and a direct ground return in the antenna circuit within the unit provide a high degree of protection against lightning transients.



Adjustable Spark Gap and Direct Ground

AUTOMATIC TUNING

The ATU500 eliminates detuning problems inherent in high "Q" LF/MF antennas that are encountered under varying climate conditions. The closed loop servo tuning system ensures that the antenna is maintained at series resonance providing a constant 50 ohm resistive load. This allows the transmitter to be installed at any distance from the antenna. The closed loop servo system operates by deriving an error signal proportional to the phase difference between the voltage and current in the antenna circuit. This signal is then amplified to drive a servo motor which adjusts the positioning of the coils relative to the ferrite slugs to maintain zero phase error and series resonance.

FREQUENCY/ANTENNA CAPACITANCE RANGES

Nautel can configure the ATU500 with loading coils to satisfy a wide range of frequencies and antenna capacitances.

Two sets of loading coils are available to accommodate a complete range of operating frequencies and antenna capacitances.



Specifications

Average Power

200 W

Maximum P.E.P

500 W

Frequency Range

190 khz - 1.8 MHz

Automatic Tuning Range

±5% antenna capacity variation

Input Impedance

50 ohm (VSWR <1.25:1 at carrier frequency)

Power Requirements

15 V dc at 0.5 A max.

Supplied from transmitter

Metering

Forward Power: 0 W - 200 W

Reflected Power: 0 W - 200 W

Forward Antenna Current: 0 A - 10 A

Matching Range Antenna System

Resistance

2-60 ohm

Maximum Series Loss Resistance of

Loading Coil

Not greater than 1/200 x antenna reactance

Dimensions

71. cm H x 48.3 cm W x 26 cm D

(28" H x 19" W x 10.3" D)

Weight (approximate)

18 kg (40 lb) unpacked

29 kg (86 lb) packed

Environmental Limits

-50°C to +55°C, 0 to 100% relative humidity

Meets IP66

Exceeds performance of FAA9782/1

Finish meets AAMA 603.8 and CGSB-

1-GP-300 specifications

Coil Selection Matrix

pF \ kHz	190	300	450	700	1000	1250	1800
125	-	A	A	A,B	A,B	B	B
250	A	A	A,B	A,B	B	B	B
500	A	A	A,B	B	B	B	-
1000	A	A,B	B	B	-	-	-
2000	A,B	B	B	-	-	-	-
3000	B	B	B	-	-	-	-

A - High Inductance set of coils with ferrite slugs

B - Low Inductance set of coils with ferrite slugs

Typical Antenna Capacitance

Height	35 ft	70 ft	100 ft
Fiberglass Whip with no coil loading	130 pF	270 pF	-
Insulated Tower without top loading guys	190 pF	370 pF	500 pF
Insulated Tower with top loading guys	250 pF	480 pF	650 pF
"T" Antenna (Note: span is twice height)	470 pF	700 pF	900 pF
Helipad Antenna	450 pF to 600 pF		

Specifications established at rated power unless otherwise noted.

All measurements at 50 ohms resistive load; ac input voltage at nominal level. Specifications subject to change without notice.

