IFF Transponder Model MD500L

The Model MD500L IFF Transponder is an L-Band augmentation device ideally suited for use in aerial target drones, unmanned vehicles, and cruise missiles as a radar enhancement device to provide automatic radar identification in response to interrogations from L-Band IFF and Air Traffic Control (ATC) radars. It also supports Mode C (altitude reporting) operation.

It features a modern compact design with less than 90 cubic inches (1475 cubic centimeters) volume and weighs 4.25 pounds (1.9 kilograms) which is 35% smaller than previous versions. The transponder incorporates the latest in solid state electronics design and features a 500 watts nominal peak power output. It also features IFF/TACAN blanking and suppression, reverse polarity power lead protection, and has a built in duplexer for single antenna operation. Also, the transponder was designed with both front panel and remote reply code selection for greater convenience and ease of use. The L-Band IFF meets the requirements of MIL-STD-810 and is designed to operate over the temperature range of -54°C to +71°C.

Features

- Operates in 1, 2, 3/A, or C Modes
- 500 Watt Peak Power Output (typ.)
- 100% Solid State for High Reliability
- IFF/TACAN Blanking & Suppression
- Interrogation side lobe suppression for use in busy air corridors
- Front panel and remote reply code selection
- Weighs less than 4 pounds
- Built-in duplexer for single antenna operation

Applications

- Radar Identification
- Vehicle Tracking
Technical Specifications

**Electrical**
- **Frequency:** 1030 / 1090 MHz
- **Impedance, Input/Output:** 50 ohms nominal
- **Protection:** Built-in series diode protection against from DC input power reversal
- **Input Voltage:** 24 to 32 VDC, common GND
- **Quiescent Current:** 0.4 Amp nominal
- **Input Current:** 1.1 Amp typical @ 2500 prf
- **Input Power:** 40 Watts max, all conditions
- **Suppression Modes:**
  1. Decoding suppression during transmission
  2. Interrogation Side Lobe Suppression (ISLS)
  3. Over-interrogation reply limiting
  4. Suppression from an external IFF or TACAN system
  5. Provides suppression pulse to an IFF or TACAN system

**Receiver**
- **Type:** Direct RF detection & Logarithmic Amplification
- **Frequency (3dB):** 1027.5 MHz to 1032.5 MHz (or specify)
- **Sensitivity:** -69 dBm to -77 dBm, internally adjustable
- **Dynamic Range:** 50 dB min
- **Pulse Decoding:** Modes externally or remotely selected
  - Mode 1 pulse spacing: 3.0 +/- 0.1 µsecs
  - Mode 2 pulse spacing: 5.0 +/- 0.2 µsecs
  - Mode 3A pulse spacing: 8.0 +/- 0.2 µsecs
  - Mode 3C pulse spacing: 21.0 +/- 0.2 µsecs
- **Pulse Width (all modes):** 0.8 +/- 0.1 µsecs
- **Sidelobe Suppression Pulse:** Positioned 2.0 +/- 0.15 µsecs from first pulse. Suppression occurs when this pulse > in amplitude to first pulse.

**Environmental**
- **Temp, Operating:** -66 °F (-54 °C) to 160 °F (+71 °C)
- **Temp, Storage:** -80 °F (-62 °C) to 185 °F (+85 °C)
- **Altitude:** Sea Level to 100,000 feet
- **Humidity:** Any, up to 100% including condensation due to temperature change (all boards are conformal coated)
- **Leakage:** Water immersion to a depth of 1m for 2 hrs
- **Vibration:** Random, 9.3 G\text{rms} max from 10 to 2000 Hz
- **Acceleration:** 20 G in each of 6 direction for 1 min per axis while operating
- **Shock:** 20 G (11 ms), 3 shocks each axis
- **EMI/RFI:** MIL-STD-461, tested per MIL-STD-462

**Transmitter**
- **Type:** Solid-state, silicon bipolar transistors
- **Frequency (3dB):** 1090 +/- 3 MHz
- **Power Output:** 5 Bit encoded signal between 2 framing pulses spaced 20.3 +/- 0.1 µsecs
- **Pulse Width:** 0.45 +/- 0.1 µsecs
- **Reply Code Select:** Front panel switches or remote
- **Receive to Transmit Delay:** 3.5 µsecs nominal (jitter 0.1 µsecs max

**Physical**
- **Size:** 5.00" W x 2.52" T x 5.13" D (12.7 cm x 6.40 cm x 13.03 cm)
- **Weight:** 4 pounds
- **Antenna. Connector:** TNC Female
- **Pwr/Remote Connector:** MS27474E14B35P
- **IFF/TACAN Connector:** BNC Female
- **Installation:** Flange Mount Base Plate

**Contact us for custom modifications**

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Specifications subject to change without notice.