DESCRIPTION
The Ultra Electronics Herley MD400C-2 Radar Transponder is a general purpose augmentation device used to enhance the tracking capability of C-band radars. Utilizable primarily for range tracking and safety functions, the MD400C-2 is suitable for use on both manned and unmanned vehicles. The transponder is applicable to aircraft, missiles, space launch vehicles, sounding rockets, and drone targets, both sea and airborne.

The design of the MD400C-2 utilizes the latest in modern devices and circuitry. It is all solid-state, except for the magnetron, to provide a reliable product with extremely long operating life.

FEATURES
- 400 Watt minimum peak power output
- Long life magnetron transmitter
- Sensitive superheterodyne receiver
- Small, less than 43 cubic inches (705 cubic cms)
- Lightweight, less than 43 ounces (1220 grams)
- Tunable over 5.4 to 5.9 GHz
- Adjustable internal delay
- Reverse polarity power lead protection
- Single and double pulse interrogations
- Adjustable code spacing
- Built-in duplexer for single antenna operation and protection from high antenna reflections

Due to U.S. Export Control Reform Ultra Electronics Herley Lancaster’s Radar Transponders have transitioned from ITAR to Department of Commerce Export Administration Regulations (EAR) making them ITAR-free!
PHYSICAL

- Size: 5.0 x 4.65 x 2.5 inches (12.7 x 11.81 x 6.35 cms)
- Volume: 43 cubic inches (705 cubic cms) nominal displacement

PHYSICAL (CONTINUED)

- Weight: 43 ounces (1220 gms)
- Duplexer: Built-in circulator, 4-port ferrite
- Test Points: Internal test points are provided for alignment
- Antenna Connector: TNC Female
- Power Connector: MS3113H8-4P (mates with PT06 E-8-4S)
- Pin Connections: A, +28v; B and D 28V return; C, unused
- Sealed Chassis: Gasket seal for low pressure use

RECEIVER

- Design: Superheterodyne
- Sensitivity: -70 dBm minimum
- Frequency Tuning: One local oscillator and three preselector controls externally accessible upon removal of seal screws
- Tuning Range: 5.4 to 5.9 GHz
- Sensitivity Bandwidth: ±2 MHz (maintains -70 dBm)
- Dynamic Range: ±20 to -70 dBm
- Bandwidth (3dB): 11 ±3 MHz
- Image Rejection: 60 dB minimum
- Pulse Decoder: Single or double, internally selectable
- Pulse Width: 0.25 to 5.0 µsecs single; 0.25 to 0.5 µsecs double
- Pulse Rise Time: 0.1 µsec maximum, single or double

RECEIVER (CONTINUED)

- Double Pulse Coding: Spacing adjustable between 3.0 and 12.0 µsecs
- Second Pulse Spacing: Accepts ±0.15 µsecs. Rejects ±0.3 µsecs
- Random Triggering: 10 pps maximum averaged over 10 minute intervals

TRANSMITTER

- Power Output: 400 Watts peak min.
- Output Device: Magnetron
- Frequency Tuning: Single control externally accessible upon removal of seal screw
- Tuning Range: 5.4 to 5.9 GHz
- Frequency Stability: ±3.0 MHz under all operating conditions
- Pulse Width: 0.5 ±0.1 µsec
- Pulse Rise/Fall Time: 0.1/0.2 µsec.
- Pulse Width Jitter: 0.01 µsec. max.
- Pulse Rise/Fall Time: 0.1/0.2 µsec. maximum (10 to 90%)
- Spectrum: The reply pulse RF spectrum bandwidth (in MHz) will not exceed 3.0/pulse width (in µsecs) measured at the 1/4 power level points
- PRF: 2600 pps minimum
- Reply Delay: Adjustable from 1.5 to 6.0 µsec
- Delay Variation: 0.03 µsec maximum for input signal levels between 0 and -65 dBm
- Interrogation Replies: 99% minimum input signal levels between +20 and -70 dBm
- Over-Interrogation Protection: Limiting above 2600 pps

ENVIRONMENTAL

- The transponder meets the requirements of MIL-STD-810
- Vibration Sine: Up to 25.9 g’s
- Vibration Random: 18.8 gms, 225 seconds/axis
- Temperature, Operating: -40°F (-40°C) to +167°F (+75°C)
- Temperature, Storage: -80°F (-62.2°C) to +185°F (+85°C) for 3 days
- Shock: 1100g (0.5 milliseconds) 1/2 sine any axis
- Altitude: 760 mm (sea level) to 0.04 mm of mercury (320,000 feet altitude)
- Humidity: Any, up to 100% including condensation due to temperature changes
- Acceleration: 50g applied along any axis for 5 minutes
- RF/EMI: MIL-STD-461E
- Pressurization: Maintain 20 PSI ±1 pound for 8 hours

PRODUCT NUMBERS

- PIN 500002-23
- PIN 500002-25 - EWR127-1 Compliant
- PIN 500002-27 - Standard unit
- PIN 500002-28 - Ruggedized to withstand 35g sine vibration and 100 g Acceleration
- PIN 500002-29 - Code spacing selection switch on front panel
- PIN 500002-31 - Transient over-voltage surge protection

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