

FLIGHT TERMINATION TRANSPONDER

MODEL FTT4100



SUPPLYING HIGH PERFORMANCE FLIGHT INSTRUMENTATION, RF/MICROWAVE ASSEMBLIES, POWER AMPLIFIERS, IFF AND DATA ACQUISITION SYSTEMS FOR SEVERE ENVIRONMENTS.

DESCRIPTION

The Flight Termination Transponder (FTT) is a self-contained module that mounts within the WRTTM unit. It will receive, detect, and validate pulse-coded uplink GRDCUS waveform RF data transmissions (915 MHz) from the GRDCUS ground station. The FTT outputs a low voltage flight termination signal if the voltage at the FTT drops below a preset value for >1 msec after missile separation. It also provides a launch abort signal that prevents missile launch in the event that the Flight Termination System (FTS) battery or backup telemetry battery does not reach the specified voltage level.

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

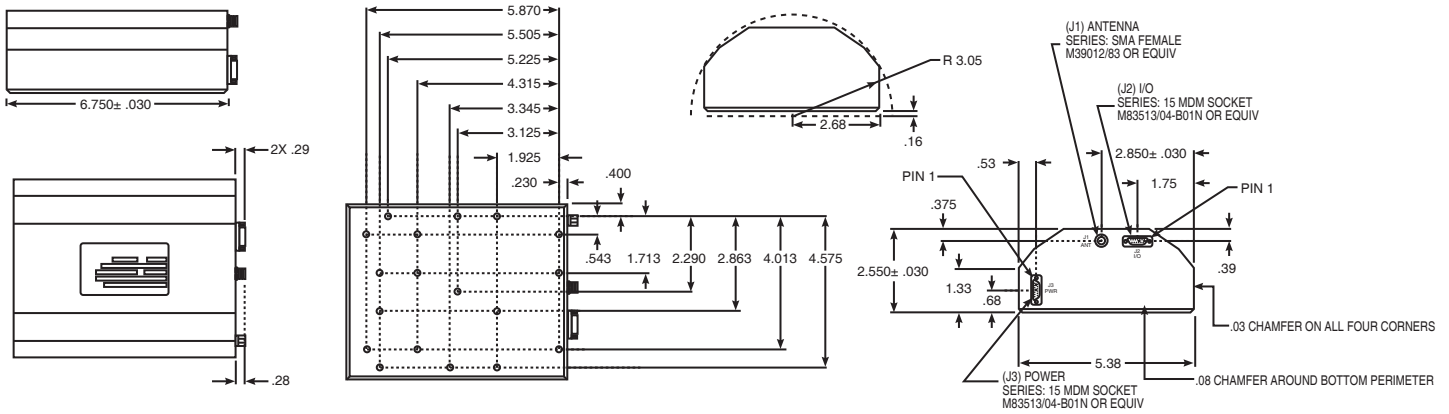
FEATURES

- 28 Volt nominal operating power
- Frequency of 915 MHz, ± 10 ppm
- Size, less than 93 cubic inches (21.9 cubic cms)
- Weight, 6.25 pounds (2.83 kgms)
- Decodes and processes validated uplink data messages
- Provides a downlink response
- Provides parity checks for uplink received messages and generate parity for downlink transmissions

FEATURES

- Senses LOVC, and provides a flight termination signal after a preset delay from LOVC detection and missile separation
- Generates a multistate indication of the destruct battery voltage for downlink transmission
- Flight termination prearm, arm and fire outputs along with an indication of status (safe, prearm, arm, and fire) in the downlink transmission





ELECTRICAL

- Frequency Range: 915 MHz, ± 10 ppm
- DC Power: 3 independent 22-32V sources
- Input Power: 40 Watts, maximum
- Protection: 40 dBm
- Operating Power: 28 Volts, nominal
- Output Transient: 300 nanoseconds minimum, reduce by 40 dB minimum
- Warm-up: 3 minutes, maximum

PHYSICAL

- Size: 6.75 x 5.38 x 2.55 inches (17.15 x 13.67 x 6.48 cms)
- Weight: 6.25 lbs. ± 0.1 lbs. (2.83 kgms)
- Antenna Connector: Single external for both reception and transmission, SMA female
- Power and I/O: Micro-miniature D

RECEIVER

- Type: Superheterodyne
- Frequency: 915 MHz, ± 14 ppm
- Receiver Bandwidth: 20 MHz, maximum @ -3 dB points (905 and 925 MHz respectively), and 80 MHz, max. @ -60 dB points
- Protection: 40 dBm
- Sensitivity: -96 dBm to -26 dBm during any combinations
- Dynamic Range: 70 dB
- Local Oscillator: All frequencies from single oscillator @ ± 2 ppm

RELIABILITY

- Percentage: 0.9997 at 95% confidence level
- MTBF: 1500 hrs
- Operational Life: Not less than 500 operating hours

TRANSMITTER

- Type: Solid-state
- Frequency: 915 MHz, ± 10 ppm
- Response Delay: 500 μ sec to 16.5 msec
- Delay Variation: ± 110 nsec over all operating conditions
- RF Power Output: 57.8 dBm peak, 2.0:1 or less referenced to 50 ohms
- Transmission Bandwidth: 20 MHz, maximum @ -3 dB points (905 and 925 MHz respectively), and 80 MHz, max. @ -60 dB points
- Antenna: Transmit / Receive through common port
- Impedance: 50 ohms nominal
- Power Droop: 1 dB maximum
- Duty Cycle: 0.13%
- Uplink: Once every 50 milliseconds maximum
- Downlink: 64.7 microseconds maximum
- Stability: ± 10 ppm over operating temperature

ENVIRONMENTAL

- Temperature: -54°C to $+80^\circ\text{C}$
- Range Safety: NRCE-361-001
- EMI: MIL-STD-462
- Temperature Shock: -54°C to 80°C in five minutes, while operating
- Vibration: 5.0 g peak
- Shock: Nominal peak level of 30g for 30 msec duration
- Acceleration: 50g in each of 3 axes, both directions per axis, 1 minute per direction

FLIGHT TERMINATION SIGNALS

- Destruct Interface: 21 to 32 Volts into a 2.5 ohm load
- Destruct Command: Sequenced from uplink
- LOVC Destruct: 9, ± 1 second
- Low Voltage Destruct: 23.25 Volts
- Launch Abort: 26 Volts
- Battery Voltage: Downlink status
- SAF Output Signals: Fire 1, Fire 2, SAF enable
- Missile/TMU Outputs: Launch abort, communication valid, prearm and arm

PRODUCT NUMBERS

- P/N 4100-1 - Standard unit



making a difference

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