



## Digital tone based, EFTS I/O compatible Flight termination receiver/decoder - Model HFTR60-4

Supplying high performance flight instrumentation, RF/microwave assemblies, power amplifiers, IFF and data acquisition Systems for severe environments.



### Key features

- Tailored RCC 319-14 Functionally Compliant
- 420 to 450 MHz band, 370 to 390 MHz (optional)
- Programmable 3 or 4 tone decoders
- Capable of storing up to 32 factory or field user programmed configurations
- All solid-state design
- Over 2 Amp dc, 7.5 Amp pulsed command output current capability
- High sensitivity receiver
- Small, less than 3.7 cubic inches
- Lightweight, less than 5 ounces
- No RF/IF tuning elements
- Standard tone-based command logic
- Reverse polarity power protection
- Telemetry output protection
- Designed for extreme environments

### Overview

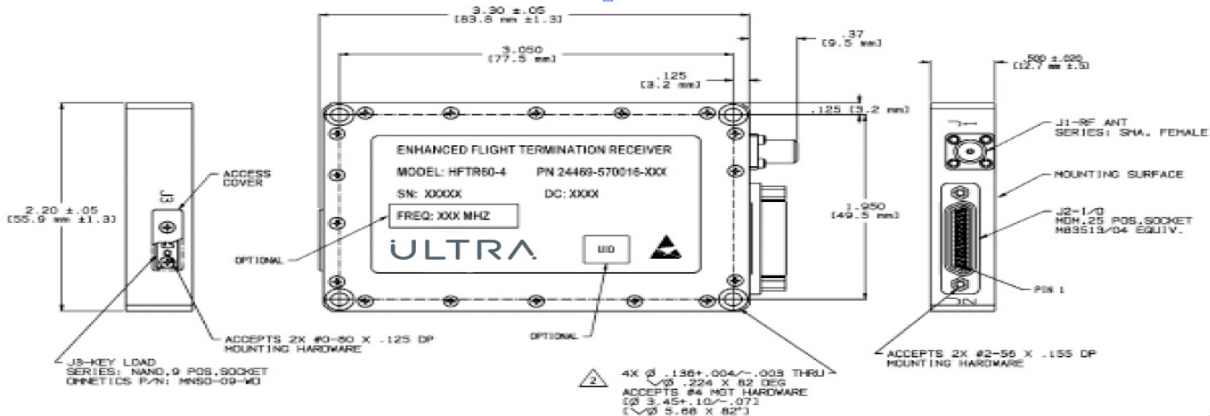
The Ultra HFTR60-4 is the next generation programmable FTR that uses Advanced Digital Signal Processing techniques to process the standard FTR tones. The HFTR60-4 permits Missile, Target and Unmanned Aerial Vehicle (UAV) platform growth and mission flexibility of integrating either the HFTR60-4 Tone-Based FTR or Enhanced Flight Termination Receiver (EFTR) HFTR80-1 since it was designed for functional and I/O compatibility with the EFTR. The HFTR60-4 is designed for RCC 319-14 Tone Based Command Logic compliance while providing its tone monitor telemetry status on the EFTR equivalent RS232 output connection.

The HFTR60-4 is a compact unit, capable of handling the harshest environments and is designed to meet Military environments and EMI. The design of the HFTR60-4 employs the latest design technologies and manufacturing processes to provide a high performance, highly reliable and long life product.



Due to U.S. Export Control Reform this product has transitioned from ITAR to Department of Commerce Export Administration Regulations (EAR) making it ITAR-free.

# ULTRA



Pin	Function
1	DC Input Voltage A
2	Configuration TX
3	DC Return A
4	DC Return B
5	N/C
6	Failsafe Enable (FSE)
7	Failsafe Input
8	TERMINATE Command
9	Tone Monitor Telemetry (RS232)
10	OPTIONAL Command
11	Low Voltage Sense (Input)
12	POST
13	Case Ground
14	DC Input Voltage B
15	Failsafe Telemetry
16	Tone D Telemetry
17	Tone A Telemetry
18	DC Return C
19	Failsafe Output
20	TERMINATE Command
21	Configuration RX
22	MONITOR Command
23	ARM Command
24	Signal Strength Telemetry
25	Signal Strength TM Return

## ELECTRICAL

- Frequency Range: 420 to 450 MHz (factory preset to customer specified frequency)
- Impedance: 50 ohms nominal
- VSWR: Less than 2:1
- Reverse Polarity Protection: Built-in
- DC Input Voltage: +22 to +36 Vdc, ±45Vdc over voltage protected
- Input Power: 4.5 W max.
- Low Voltage Sense: isolated input
- Telemetry Outputs: Signal Strength, Tone A, Power-On Self Test (POST), Failsafe, ±45 Vdc over voltage protected
- Command Outputs: 4 solid-state outputs
- Command Outputs, Voltage Drop Under Load: Terminate, ARM, MONITOR, OPTIONAL: 2 Vdc maximum at 1 AMP 3.5Vdc maximum at 2 AMPS TERMINATE: 4Vdc maximum at 7.5 AMPS, 100 msec
- Output Leakage Current: 50 microAMPS maximum
- Isolated Returns: Signal strength output isolated from DC return and chassis ground
- RFI/EMI: Meets MIL-STD-461F, tests; CE102, CE106, CS101, CS103, CS104, CS105, CS114, CS115, CS116, RE102 and RS103

## PHYSICAL

- Size: 3.3 X 2.2 X .5 INCHES (8.4 X 5.6 X 1.3 CM), less connectors
- Weight: 5 ounces maximum
- Antenna Connector (J1): RF input SMA - Female
- Power and Signal Connector (J2): 25-pin micro-D socket M83513/04-D05N

## ENVIRONMENTAL (1)

- Random Vibration (ATP): 0.04 g2/Hz (6.1 grms)
- Random Vibration (Qual): 29.7 grms
- Temperature, Operating (ATP): -40°C TO +71°C standard
- Temperature, Operating (Qual): -54°C TO +85°C
- Temperature, Storage (Qual): -62°C TO +95°C
- Shock (Qual): 1300g SRS
- Altitude (Qual): 150,000 ft
- Humidity (Qual): 95%
- Acceleration (Qual): Up to 125 g's

(1) Contact Ultra for current qualification levels.

## RECEIVER

- Design: Double conversion superheterodyne
- Sensitivity: -107 to -116 dBm
- Frequency Band: 420 to 450 MHz
- Frequency Tuning: programmable, 100 kHz steps
- Tuning Accuracy: 0.005%
- Dynamic Range: -107 dBm to +13 dBm
- Operating Bandwidth: ±45 kHz minimum
- IF Bandwidth: 3dB @ ±90 kHz minimum
- Selectivity: 60 dB @ ±180 kHz maximum
- Image Rejection: Greater than 60 dB
- Capture Ratio: Greater than 0.8
- AM Rejection: 100% at 100µV input
- Frequency Deviation: ±30 kHz per tone, nominal
- Signal Strength Monitor Output: No RF 0.5Vdc ± 0.25Vdc monotonically increases to 4.5Vdc minimum at -60 to -50dBm input. Maximum voltage 4.75Vdc ± 0.25Vdc

## OPTIONS

- 370 MHz to 400 MHz, 406 to 420 MHz band
- No Failsafe, STD Failsafe, Commanded Failsafe
- Operating Temperature to -54° and +85°

- Common Returns: Signal strength and command returns

## DECODER

- Command Response Time: 4 to 25 msec
- Number of Tone Decoders: 3 or 4, programmable, IRIG tones 1-13
- Simultaneous Usable Tones: 3 Activated 4.5Vdc ±0.5Vdc, Unactivated 0.0Vdc ±0.5 Vdc
- Tone Decoder Bandwidth: ±1% minimum at 2dB, ±4% max at 14 dB
- Adjacent Tone Rejection: Rejects simultaneous adjacent tones at up to ±50 kHz deviation
- Decoder Threshold Deviation: ±10 to ±18 kHz
- Power Dropout Recovery: 50 msec power dropout, Command, FS Enable restore
- Failsafe: Loss of Tone A (programmable, 1 to 60 sec +/- 0.5 sec)
- Low Voltage Failsafe Sense: programmable, >21 Vdc in 0.5 V steps +/-0.5Vdc
- Failsafe Event: Arm/Terminate latch "On", power down to reset
- Failsafe: RCC319-14, Dual receiver cross strap operation compliant

## PRODUCT NUMBERS

- P/N 570016-XXX - (see Options)



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