TESTEM Gesellschaft für Mess- und Datentechnik mbH
Hoflach Nr.5 | D-82239 Hoflach bei Alling | Tel.: +49-8141-889970
mail@testem.de | www.testem.de | Fax: +49-8141-889971
Data acquisition conditioning transmission analysing

WIR LÖSEN MESSPROBLEME
seit 1980 | www.testem.de

FTRD - Flight Termination Receiver / Decoder

(IRIG 4-Tone Standard)

Description

The TESTEM Flight Termination Receiver/Decoder Model
FTR/D is designed to meet the demanding electrical, environmental and reliability requirements for range safety
flight termination purposes. It can be used as a replacement
for a number of existing flight termination receiver/decoder models used for missiles and targets, without the need for major modifications to existing applications.

The RF section of the FTR/D comprises a double conversion
super heterodyne design for excellent channel separation and high RF sensitivity, followed by a true FM demodulator. The operating frequency is factory preset in the range from 390 MHz to 510 MHz.

The tone decoder section is based on an analog and digital programmable logic design, combined with a microcontroller and non-volatile memory for all setup and logging data. A sophisticated self test capability is incorporated into the unit, hich continuously monitors and protects all vital decoder functions. The result of this test is included in the telemetry output data. The signal to noise ratio of the audio signal together with the RSSI level is continuously monitored and processed, which provides for an excellent tone detection performance under unfavorable signal conditions. All command outputs are galvanically isolated, fully protected and monitored high side solid state switches, which are designed to directly drive complex loads over a wide voltage range. A dedicated monitoring circuitry detects open or shorted command output lines, overvoltage and high temperature conditions and transmits this information via telemetry.

Monitoring and set up of the FTR/D is made simple with the built-in RS 422 asynchronous bi-directional serial interface. All relevant data of the FTR/D are encoded and packed into a serial data stream, which can be used for realtime telemetry with an adjustable update rate of up to 20 times per second. All FTR/D process data can be monitored by a PC with the FTR/D Adaptor and the dedicated FTR/D – CHAMP Check-Out GUI. Additionally, 9 dedicated outputs are available for comprehensive telemetry monitoring.

Due to the programmable logic design, numerous modifications and features can be incorporated upon request in order to meet specific customer requirements (up to 8 tones can be detected simultaneously).

Main Features

- High RF sensitivity
- High adjacent channel rejection
- Fully protected and galvanically isolated high side solid state 1A output switches
- No spurious outputs at switch on and with noise
- Highly stable tone filters with less than 1Hz drift over the full temperature range
- Standard IRIG command channels
- Complies to RCC-319-92 and MIL-STD-461-F
- Minimum size and weight
- Low power consumption

Quality Assurance

The TESTEM Flight Termination Receiver/Decoder Model FTR/D is manufactured under stringent quality
control procedures. Prior to shipment to the customer,
each unit is tested as required by the “Product Acceptance
Test Procedure for the Flight Termination Receiver/ Decoder Model FTR/D”. All units are accompanied by a comprehensive test report.

Availability & Contact

The FTR/D is currently in production. Please contact TESTEM for additional information and options. *(The information in this document is believed to be accurate and reliable. It is not guaranteed and can be changed without notice. No liability can be assumed by TESTEM for the use of the unit).*

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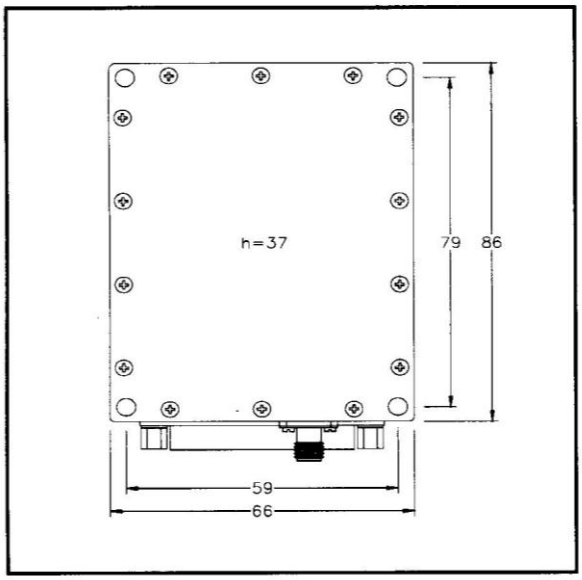
Outline Drawing (Sizes in mm)



Specifications of the FTR/D

Receiver Section

Frequency Range	390 – 510 MHz nominal
2nd IF Bandwidth	± 90 kHz minimum
Nominal Deviation	± 30 kHz per tone
Threshold Sensitivity	-116 to -107 dBm (factory adjusted)
Maximum Input Level	+13 dBm

Decoder Section

Decoder Channels	4
Simultaneously usable Tones	4
Decoder Outputs	4 (DMOS High-Side Driver)
Adjacent Channel Suppression	>35 dB minimum
Command Response Time	< 25 ms
OPTIONAL Command	B&C "ON"
ARM Command	A&C "ON"
TERMINATE Command	A&C "ON", C "OFF", B "ON"
CHECK Command	D "ON"
Communication	RS422 Interface, 9.6 to 38.4 kBaud
TM Monitoring Outputs	8 (Level or Common Collector)
TM RSSI Output	Analogue (0 – 4.5 VDC)

Power Interfaces

Primary Supply Voltage	12 – 32 VDC (28 VDC nominal) 10 – 36 VDC maximum
Primary Supply Current	100 mA maximum @28 V
DMOS Supply Voltage	12 – 32 VDC (28 VDC nominal) 10 – 35 VDC maximum
Decoder Output Drive Capability	0.5 A per output continuous 1.0 A per output peak
Output Leakage Current	50 µA maximum

Miscellaneous

Operating Life	> 2000 hours
Operating Temp. Range	-40 to +85 °C
Altitude	Unlimited
Shock	100 g, ½ sine, 11ms, 3 axis
Linear Acceleration	≥ 25 g, all axis
Random Vibration	20 grms, 3 axis, 90s 20Hz – 2000Hz
Volume	225 cm3
Dimensions	88.5 × 66 × 38.5 mm
Weight	280 grams maximum

Connectors

Connectors

J1	SMA	50 Ω RF input
J2	D-SUB 25P	Power and Decoder

J2 Contact functions (D-SUB 25P)

Pin number		Function	Description
1		RXD +	RS422 + Receive
	14	RXD -	RS422 – Receive
2		TXD +	RS422 + Transmit
	15	TXD -	RS422 – Tranmit
3		VIDEO	Video Monitor, R_{out} ~ 120 Ω
	16	AVRET	RSSI / Video Return
4		AGC	TM Monitor RSSI
	17	TMSAFE	TM Monitor OPTIONAL
5		TMIRIG1	TM Monitor IRIG tone A
	18	TMARM	TM Monitor ARM
6		TMIRIG2	TM Monitor IRIG tone B
	19	TMDEST	TM Monitor TERMINATE
7		TMIRIG5	TM Monitor IRIG Tone C
	20	TMIRIG4	TM Monitor CHECK (IRIG tone D)
8		TMSYSOK	TM Monitor System OK
	21	TPWR	TM Monitor Power
9		TPWRRET	TM Monitor Power Return
	22	SAFE	DMOS Switch Output OPTIONAL
10		ARM	DMOS Switch Output ARM
	23	DEST	DMOS Switch Output TERMINATE
11		IRIG4	DMOS Switch Output CHECK D
	24	DPWR	DMOS Switch Power
12		DWRRET	DMOS Switch Power Return
	25	PWR	Primary Power
13		PWRRET	Primary Power Return

Modifications

In the standard configuration, the FTR/D is programmed for IRIG Tones 1, 2, 4 and 5. Upon request, other tone frequencies can be programmed.

FTR/D Tone	IRIG Tone (standard)
A	IRIG 1 (7.50 kHz)
B	IRIG 2 (8.46 kHz)
C	IRIG 5 (12.14 kHz)
D	IRIG 4 (10.76 kHz)