

TDFM-7000

Analog/Digital/Encrypted/Trunked/Multi-band Airborne FM Transceiver



The TDFM-7000 transceiver offers the most up-to-date, FM communications technology including P25 CAI, P25 Trunking and AES with P25 OTAR. Note: Some features are extra cost options.

- Supports up to four bands customized to meet your requirement.
- RF Modules available to cover VHF (136-174 MHz), UHF Lo (380-470 MHz), UHF Hi (450-520 MHz) and 700 & 800 bands (764-870 MHz).
- APCO (TIA102) Project 25 compliant – Conventional or Trunked operation
- Supports Project 25, SmartNet™ and SMARTZONE™ Trunking protocols (optional, standard on 700/800 MHz Band).
- Supports optional DES, DES-XL, DVI, DVP, DVP-XL, DES-OFB, and AES encryption standards with Multi-key and OTAR.
- P25 CAI allows digital communications with backward compatibility to both narrow and wide band analog operation.
- Flash upgradeable architecture allows new features and options to be subsequently implemented on the existing transceiver platform.
- Built-in audio switching capability allows operation of multiple RF modules in either “combined” or “separate” transceiver configuration. Also supports simulcast and cross-band repeat.
- Optional RC-7000 Remote Control available. Allows for slaved operation of any TDFM-7000 transceiver.

Configurable Multi-band Airborne Transceivers.

Each transceiver can store 510 channels per band and is capable of simultaneous operation on all available bands. The TDFM-7000 must be programmed with a laptop utilizing the Motorola Customer Programming Software (CPS)™ which ensures total compatibility with existing fleet deployment.

The TDFM-7000 series transceivers support the use of three or four modules from any of the following bands:

VHF (136 to 174 MHz)	UHF Lo (380 to 470 MHz)
700/800 (764 to 870 MHz)	UHF Hi (450 to 520 MHz)

The TDFM-7000 transceiver supports four band operation in all of the above bands. It is also possible to specify configurations using two or more of the same bands. The TDFM-7000 provides digital or conventional analog communications on the Project 25 Common Air Interface (CAI) and support P25 conventional and trunked communications as well as Motorola ASTRO™ trunking. SmartNet II and SMARTZONE trunking protocols along with encrypted communications including Project 25 DES-OFB, AES, DES, DES-XL and Multi-key or OTAR keying formats.

TDFM-7000 series architecture provides for a 5 line, 120 Character display and a multi-function front panel keypad. The display will simultaneously annunciate the alpha-numeric label, channel number and receive or transmit status of each of up to four bands plus one status line. A Night Vision compatible display is offered as an extra cost option. The small size (no remote box) and light weight (6 pounds) of this compact panel mount multi-band airborne FM transceiver makes it ideal for helicopter installation.

Protocols Supported

Conventional Analog
Conventional P25
SmartNet II
SMARTZONE
P25 Trunking

Optional Encryption Formats Supported

DES, DES-XL, DVP, DVP-XL DVI
AES (includes DES Formats)
Multiple Encryption keys (16)
Conventional OTAR
P25 OTAR (Over the air re-keying)

SPECIFICATIONS

TDFM-7000 – Available RF Modules

Operating Band	VHF	UHF Lo	UHF Hi	700/800 MHz
Frequency Range	136 - 174	380 - 470	450 - 520	764 - 870
RF Power Out	6W/1W	4W/1W	4W/1W	3W/1W
Channels Available	510 programmable channels per band except that the optional Front Panel Programming (FPP) feature restricts operation to 15 zones of 16 channels and pre-empts trunked operation.			
Channel Spacing	12.5/20/25/30	12.5/20/25	12.5/20/25	12.5/20/25
Dimensions	5.75 " (W) x 3.75" (H) x 7.5" (D) – add 1.5" for connectors			
Temperature Range	-30 ⁰ C to +60 ⁰ C Operating temp +70 C Short Term Operating temp			
Altitude	50,000 Feet			
Input Voltage	+28.0Vdc ± 15%			
Current requirement	500 mA Minimum, 5.0A Maximum			
Environmental Categories	RTCA DO-160C [C4D1-XXX(BMN)XXXXXXXXZBBXXXZ(XXXX)XX			
Airworthiness Approvals	FAA and TC Aviation Fixed Wing and Rotor Craft STC approvals granted			

Transmitter

FM Hum and Noise (wideband)	-48 dB	-45 dB	-45 dB	-45 dB
Audio Distortion (at 1000 Hz)	< 2%			
Frequency Stability	±2.0 ppm	±2.0 ppm	±2.0 ppm	±1.5 ppm
Modulation Limiting				
Wideband (20/30 KHz)	± 5.0 kHz			
Narrowband (12.5 KHz)	± 2.5 kHz			
Emissions				
Conducted *	-70 dBC			
Radiated **	-70 dBC			

Receiver

Sensitivity				
*Digital 1% BER (12.5 KHz)	0.35 uV (0.4 uV for 800 MHz)			
*Digital 5% BER (12.5 KHz)	0.25 uV			
** Analog 20dB quieting 25 KHz	0.40 uV			
** Analog with 12 dB SINAD	0.25 uV			
Selectivity **				
25/30 KHz Channel	-78dB	-78 dB	-78 dB	-75 dB
12.5 Khz Channel per EIA	-67 dB	-68 dB	-68 dB	-63 dB
Intermodulation * **	-78 dB	-77 dB	-77 dB	-74 dB
Spurious response * **	-75 dBC			
Frequency Stability	± 2 ppm	± 2ppm	± 2ppm	± 1.5 ppm
Audio Distortion	< 2%			

Note:

- *measured in digital mode per TIA/EIA TSB102 CAAB
- ** measured in analog mode per TIA/EIA 603