

## TDFM-7000

The configurable, multi-band TDFM-7000 Airborne FM transceiver from Technisonic is designed to meet the most demanding multi-band requirements of Law Enforcement, Public Safety and Air Medical operators.

This versatile addition to the Technisonic FM Communications Systems family delivers maximum performance and the most up to date technology as may be required by Federal, State or Local agencies. The TDFM-7000 can support any mix of up to four VHF (136 to 174 MHz) UHF Lo (380 to 470 MHz), UHF Hi (450 to 520 MHz) and both the 700 MHz and 800 MHz band (764 to 870 MHz) modules.

A 120 Character, 5 line bright LED display allows monitoring, with annunciation of receive and transmit operation, on four bands simultaneously plus display of the alpha numeric identifier of the four active channels. Additionally, the TDFM-7000 can be installed to support simultaneous communication from 4 different positions on the same airframe (subject to installation options). This very flexible radio also allows for cross band repeat and simulcast on any or all bands (selectable by the operator). Additionally, a RC-7000 is available as an extra cost option which will allow operation of the TDFM-7000 from a second position within the aircraft.

The TDFM-7000 is fully compliant with APCO/ TIA-102 P-25 (Phase I) and is capable of P-25 trunking, AES and P-25 OTAR on all bands. Other trunking and encryption options include SmartNet and SMARTZONE Trunking and DES, DES-XL, DES-OFB encryption as well as Multi-Key and OTAR Keying formats.

The TDFM-7000 must be programmed with Motorola CPS Software. Additional options can be ordered which would support operation within existing Motorola radio systems. Contact Technisonic Sales Department for further information.



TDFM-7000

[Download TDFM 7000 Brochure \(I.A.8.a, 51 KB\)](#)

[TDFM-7000 Installation and Operator's Manual \(I.A.8.b, 385 KB\)](#)

[TDFM-7000 Programming Information \(I.A.8.c, 44 KB\)](#)



TDFM-7000 Rear View

# 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 <sup>0</sup> C to +60 <sup>0</sup> 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)XXXXXXZBBXXXZ(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