

TDFM-7300

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



The TDFM-7300 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 five bands customized to meet your operational requirement
- Analog VHF Lo Band (30 to 50 MHz) is standard. Up to 4 other P25 digital RF Modules are available to cover VHF Hi (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. **Note:** The VHF Lo Band module supports analog operation only.
- 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-7300 Remote Control available. Allows for slaved operation of any TDFM-7300 transceiver.

Configurable Multi-band Airborne Transceivers.

Each transceiver can store 850 channels per P25 digital band and is capable of simultaneous operation on all available bands. The TDFM-7300 must be programmed with a laptop utilizing the Motorola Customer Programming Software (CPS)™ which ensures total compatibility with existing fleet deployment. The exception is the 200 channel analog VHF Lo Band module, which can be programmed from the front panel.

The TDFM-7300 series transceivers support the use of three, four or five modules from any of the following bands:

VHF Lo Band (30 to 50 MHz)	VHF Hi Band (136 to 174 MHz)	UHF Lo Band (380 to 470 MHz)
UHF Hi (450 to 520 MHz)	700/800 (764 to 870 MHz)	

The TDFM-7300 transceiver supports five band operation in all of the above bands. It is also possible to specify configurations using two or more of the same bands (except for VHF Lo). The TDFM-7300 provides digital or conventional analog communications on the Project 25 Common Air Interface (CAI) and supports 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-7300 series architecture provides for a 6 line, 144 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 five 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 (7 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-7300 – Available RF Modules

Operating Band	VHF Lo	VHF Hi	UHF Lo	UHF Hi	700/800 MHz
Frequency Range	30 – 50	136 - 174	380 - 470	450 - 520	764 - 870
RF Power Out	10W/1W	6W/1W	4W/1W	4W/1W	3W/1W
Channels Available	850 programmable channels per band except that the optional Front Panel Programming (FPP) feature restricts operation to 15 zones of 16 channels and pre-empt trunked operation. The VHF Lo Band module has 200 Channels				
Channel Spacing	25/12.5	12.5/20/25/30	12.5/20/25	12.5/20/25	2.5/20/25
Dimensions	5.75 " (W) x 4.5" (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	800 mA Minimum, 7.0A 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 pending				

Transmitter

FM Hum and Noise (wideband)	-48 dB	-45 dB	-45 dB	-45 dB	-40dB
Audio Distortion (at 1000 Hz)	< 2%	<2%	<2%	<2%	<5%
Frequency Stability	±2.5 ppm	±2.0 ppm	±2.0 ppm	±1.5 ppm	2.5 ppm
Modulation Limiting					
Wideband (20/30 kHz)	± 5.0 kHz	± 5.0 kHz	± 5.0 kHz	± 5.0 kHz	± 5.0 kHz
Narrowband (12.5 kHz)	± 2.5 kHz	± 2.5 kHz	± 2.5 kHz	± 2.5 kHz	± 2.5 kHz
Emissions					
Conducted *	-80 dBc	-70 dBc	-70 dBc	-70 dBc	-80 dBc
Radiated **	-80 dBc	-70 dBc	-70 dBc	-70 dBc	-80 dBc

Receiver

Sensitivity (P25 digital modules)					
*Digital 1% BER (12.5 kHz)		0.35 uV	0.35 uV	0.35 uV	0.40 uV
*Digital 5% BER (12.5 kHz)		0.25 uV	0.25 uV	0.35 uV	0.35 uV
** Analog 20dB quieting 25 kHz		0.40 uV	0.40 uV	0.40 uV	0.40 uV
** Analog with 12 dB SINAD		0.25 uV	0.25 uV	0.25 uV	0.25 uV
VHF Lo Band Module	0.35 uV				
Selectivity **					
25/30 kHz Channel	-75 dB	-78 dB	-78 dB	-78 dB	-75 dB
12.5 kHz Channel per EIA	-65 dB	-67 dB	-68 dB	-68 dB	-63 dB
Intermodulation * **	-70 dB	-78 dB	-77 dB	-77 dB	-74 dB
Spurious response * **	-80 dBc	-75 dBc	-75 dBc	-75 dBc	-75 dBc
Frequency Stability	±2.5 ppm	± 2 ppm	± 2 ppm	± 2 ppm	± 1.5 ppm
Audio Distortion	< 5%	< 2%	<2%	<2%	<2%

Note:

*measured in digital mode per TIA/EIA TSB102 CAAB

** measured in analog mode per TIA/EIA 603