

MODEL TFM-500

Airborne VHF/ UHF FM Transceiver



Technisonic VHF/UHF FM Airborne Transceiver

The Technisonic TFM-500 airborne VHF/UHF FM transceiver utilizes state of the art frequency synthesis techniques to provide FM communications on every currently available channel within the General Radio Service VHF/FM High Band and UHF/FM Band. The VHF module covers from 138 to 174 MHz in 2.5 KHz increments while the UHF module covers from 403 to 512 MHz also in 2.5 KHz steps. Operating frequencies and other related data are presented on a 96 character, four line LED matrix display, which is available in either red or green. The TFM-500 can be installed as a single transceiver operating in VHF or UHF mode through a single audio controller FM input, or can be installed as FM1 and FM2 enabling simultaneous operation on both bands. Additionally, this transceiver can operate as a cross band repeater. The cross band function is front panel controlled and requires only 2 key strokes to enable or disable. All data entry and control commands are entered via an enhanced 12 button keypad conveniently situated on the face panel.

The TFM-500 can be operated in the Direct Entry or Simplex mode by simply keying in the desired operating frequency. It can also function without restriction on any split frequency pair within either band. This unit features 400 preset memory positions (200 VHF and 200 UHF) each capable of storing a receive frequency, a transmit frequency, a separate CTCSS tone for each receive and transmit frequency, an alpha numeric identifier for each channel and a DPL or DCS coded squelch identifier for each channel. The TFM-500 provides for either 25 kHz wide band or 12.5 kHz narrow band operation on any or all of its 400 preset channels. An upload/download function allows the operator to download channel information from a PC, or upload stored data from the transceiver to a PC. Supporting software is supplied with each unit. Information stored in the transceiver's memory is available for instant recall by keypad entry, or by pressing the UP or DOWN buttons which allows an operator to scroll through all preset channels. The TFM-500 transceiver features a synthesized two channel VHF or UHF guard receiver, a DTMF encoder for signaling during transmit, and a scan function which will scan any or all of the frequencies stored in up to five scan lists. A remote control head is offered (RC-500) which provides for slaved operation of the main transceiver from a remote location, allowing for a second position in the aircraft to exercise frequency control. Both UHF and VHF operating frequency as well as Guard selection and operating frequency can be controlled from the "remote" position. Active frequency is displayed on both remote and local displays.

The TFM-500 transceiver is panel mounted (Dzus) and completely self contained in a 8.0 x 3.75 x 5.75 inch chassis weighing just 4.7 pounds. Front panel controls are **UHF** for UHF main channel volume; **VHF** for VHF main channel volume, **GUARD** for guard channel volume; a **UHF/VHF** Band transmit select switch, a **MN/GD** switch for main or guard transmitter selection; a **G1/G2** switch for guard 1 or guard 2 receive and transmit select; and a **HI/LO** switch for control of transmitter power output. Hi power is 10 Watts output, low power is 1 Watt output. This transceiver offers 28 volt DC backlighting as standard, (5 Volt AC as an option) which is controlled by the aircraft dimmer bus. Display brightness is controlled from the front panel keypad. The "remote control" function is via a separate 9 pin Cannon D submin connector located on the rear panel of the TFM-500 transceiver. External access for mic gain and sidetone level adjust provide for easy installation and setup for optimum performance. The small size and light weight (4.7 lbs., 2.2 Kg) of the TFM-500 Dual Band transceiver makes this radio ideally suited to helicopter installations. Technisonic FM radios are compliant with RTCA DO-160C categories relating to Vibration, Overpressure, Humidity, Temperature and Altitude, Magnetic Effect, Power Input, Voltage Spike, Decompression, and RF Emission (including DO-160C, Section 21, Category Z).

TFM-500 General Specifications

	VHF Module	UHF Module
Frequency Range	138.000 MHz to 174.000 Mhz	403.000 MHz to 512.000 Mhz
Tuning increments	2.5 KHz	2.5 KHz
Operating Mode	F3E simplex or semi-duplex	F3E simplex or semi-duplex
Channel spacing	12.5 KHz, 25 KHz or 30 KHz as per applicable FCC and DOC spec.	12.5 KHz, 20 KHz or 25 KHz as per Applicable FCC and DOC spec
Memory positions	200 channels	200 channels
Dimensions	(Overall TFM-500 dual band transceiver)	Approx 8.0 in x 3.75 in x 5.75 in
Weight	4.7 Lbs (2.2 Kg) total	
Temperature range	-45°C to +70° C	-45°C to +70° C
Altitude	50,000 ft	50,000 ft.
Power requirement	28 VDC Receive - 600 mA 1 Watt transmit - 1.3 amps 10 Watts transmit - 2 amps	28 VDC Receive - 700 mA 1 Watt transmit - 1.3 amps 10 Watts transmit - 2.0 amps
Certification	FCC and DOC Type approved	FCC and DOC Type approved
RTCA DO-160C Env Cat	(B2,D1)XXX(B,M,N)XXXXXXABBXXXZXXX	
Guard receiver	2 channel synthesized	
CTCSS squelch capability	encodes/decodes all 64 available tones	encodes/decodes all 64 available tones
DPL/DCS capability	All available digital squelch codes	encodes/decodes all avail digital sq codes
DTMF encoder	All standard DTMF tones supported	All standard DTMF tones supported
Audio output	500 mW into 600 Ohms	500 mW into 600 Ohms
Speaker output	2.5 Watts into 4 ohms	2.5 Watts into 4 ohms
Back lighting	28V (standard) or 5V (specify)	28V (standard) or 5V (specify)
Display	Green (standard), red (optional)	Green (standard), red (optional)

Minimum Performance Specifications

Main receiver

Sensitivity at 12 dB SINAD	Better than 0.35 microvolts	Better than 0.35 microvolts
Adjacent channel	-78 dB for 25 KHz, -70 FOR 12.5 KHz	-70 dB for 25 KHz, -70 dB for 12.5 KHz
Spurious attenuation	-90 dB	-90 dB
Third order intermod	-70 dB	-70 dB
Image attenuation	-80 dB	-70 dB
FM acceptance	+ 6 KHz	+ 6 KHz
Hum and noise	Better than 50 dB	Better than 40 dB
Audio distortion	Less than 5%	Less than 5%
Ant conducted emission	Less than -70 dBm	Less than -70 dBm

Guard receiver

2 channel VHF Guard. All specifications identical to main VHF receiver.

Transmitter

RF power output	1 Watt or 10 Watts	1 Watt or 10 Watts
Output impedance	50 Ohms	50 Ohms
Maximum deviation	Limited to 2.5 KHz for 12.5 KHz channels and 5 KHz for 25 KHz & 30 KHz channels	Limited to 2.5 KHz for 12.5 KHz channels and 5 KHz for 25 KHz channels
Spurious attenuation	-90 dB below carrier level	- 90 dB below carrier level
Frequency stability	±0.0005%	±0.00025%
Microphone circuit	Carbon or equivalent	Carbon or equivalent
Sidetone output	500 mw (max) into 600 ohms	500 mw (max) into 600 ohms
Harmonic attenuation	-65 dB below carrier level	-65 dB below carrier level
FM hum and noise	-40 dB	-40 dB
Audio input	50 mV at 2.5 KHz into 200 ohm circuit for ±3.5 KHz deviation, (25 KHz mode). 50 mV AT 2.5 kHz into 200 ohm circuit for ±2.0 KHz (12.5 KHz mode), adjustable	50 mV at 2.5 KHz into 200 ohm circuit for ±3.5 KHz deviation (25 KHz mode). 50 mV AT 2.5 kHz into 200 ohm circuit for ±2.0 KHz (12.5 KHz mode), adjustable
Audio distortion	Less than 5%	Less than 5 %

Note: Specifications are subject to change without notice
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Technisonic Industries Ltd.

240 Traders Blvd, Mississauga, Ontario L4Z 1W7 Canada
Ph: 905 890-2113 Fax: 905 890-5338 www.til.ca