

MODEL TFM-550

Airborne UHF and VHF High/Low band FM Transceiver



Technisonic Multi-Band VHF Lo/VHF Hi and UHF Airborne Transceiver

The Technisonic TFM-550 Multi-Band 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 Low Band, VHF/FM High Band and UHF/FM Band. This transceiver covers VHF Low Band from 30 to 50 MHz in 2.5 KHz steps, VHF High Band from 138 to 174 MHz in 2.5 KHz increments and UHF 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-550 can be installed to operate in “**Single Mode**” to function as a multi-band transceiver operating in VHF Lo, VHF Hi or UHF bands with combined audio run through a single audio controller FM input. In this mode, the band select switch is positioned by the operator to select one of the three bands which are accessed one at a time. Combined audio and transmit control are available at J101 (15 pin connector) at the rear of the transceiver. Alternately, the TFM-550 can function in “**Dual Mode**” and be installed to two FM positions (typically FM1 and FM2) on the audio controller, allowing for simultaneous operation on UHF and either VHF Low or VHF High Band. In this mode, VHF Hi and VHF Lo audio are combined and output to a single audio controller FM input. The front panel band select switch provides for VHF-Hi or VHF Lo transmitter selection. VHF Hi and VHF Lo audio and transmit control functions are available at J102 (9 pin connector) at the rear of the transceiver. UHF receive and transmit functions are totally independent and controlled via the second audio controller position allowing for simultaneous VHF (Hi or Lo) and UHF operation. Additionally, the TFM-550 can operate as a VHF/UHF 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 situated on the face panel.

The TFM-550 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 any of its three bands. This unit features 600 preset memory positions (200 VHF Lo, 200 VHF Hi 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-550 provides for either 25 kHz wide band or 12.5 kHz narrow band operation on any or all of its 600 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 M.UP or M.DOWN button which allows the operator to scroll through all preset channels. The TFM-550 transceiver also features 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. Additionally, a remote control head is offered (RC-550) 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. VHF Low band, VHF High Band and UHF operating frequencies as well as the Direct/Repeat function can be controlled from the “remote” position. Active frequency for all three bands is displayed on both remote and local displays.

The TFM-550 transceiver is panel mounted (Dzus) and completely self contained in a 8.0 x 3.75 x 5.75 inch chassis weighing just 5.0 pounds. Front panel controls are **UHF** for UHF audio level; **VHF** for VHF High Band audio level and **VHFLO** for VHF Low Band audio level. The **VHF/UHF/VLO** band switch enables selection of the desired band as well as providing for manual programming, a **VHF/PRI** select switch provides for a VHF priority channel, and a **HI/LO** switch controls transmitter power output. Twenty eight (28) volt DC backlighting is standard, (5 Volt AC is optional) and controlled by the aircraft dimmer bus. Display brightness is controlled from the front panel keypad. RC-550 “remote control” access is via a 9 pin connector (J102) located on the rear panel of the TFM-550 transceiver. External access for mic level adjust (sidetone is software controlled and operator adjustable) provides for easy installation and setup for optimum performance. The small size and light weight (5.0 lbs., 2.3 Kg) of the TFM-550 Multi- 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-550 General Specifications

General

Active frequency coverage	30.000 to 50.00 MHz, 138.000 to 174.000 MHz and 403.000 to 512.000 MHz
Tuning increments	2.5 KHz, all three bands
Operating mode	F3E Simplex or Semi-Duplex
Memory positions	600 Channels total (200 each band)
Dimensions	Approx. 8.0 in.D. x 3.75 in H. x 5.75 in W.
Weight	5.1 Lbs, 2.3 Kg.
Temperature range	-45 deg C to +70 deg C
Altitude	50,000 feet
Power requirement	28 VDC 850 mA receive 3.4 Amps, two transmitters, 10 Watts 1.8 Amps, two transmitters, 1.0 Watt 1.4 Amps, 1 transmitter, 1 Watt 2.2 Amps, 1 transmitter, 10 Watts
Certification	FCC and DOC Type approved
RTCA DO-160C Env. Categories	(B2,D1)XXX(B,M,N)XXXXXXABBXXXZXXX
CTCSS squelch capability	Encodes/decodes all 64 available tones
DPL/DCS capability	Encodes/decodes all available digital squelch codes
DTMF encoder	All standard DTMF tones supported
Audio output	500 mW into 600 ohms
Audio distortion	Less than 5%
Speaker output	2.5 Watts into 4 ohms
Back lighting	28 VDC (standard) or 5 Volts (specify)
Display	(Green (standard), red optional (specify))

Transmitters

Transmit RF power output	1 Watt or 10 Watts, front panel selectable, all bands
Maximum deviation	Limited to 2.5 KHz for 12.5 KHz channels and 5 KHz for 25 KHz and 30 KHz channels
Spurious attenuation	-90 dB below carrier level
Frequency stability	± 0.00025%
Microphone circuit	Carbon or equivalent
Sidetone output	500 mW (max) into 600 Ohms
Harmonic attenuation	-65 dB below carrier level
FM hum and noise	-40 dB
Audio input	50 mV at 2.5 KHz into a 200 Ohm circuit for ± 3.5 KHz (25 KHz mode), adjustable 50 mV at 2.5 KHz into a 200 Ohm circuit for ± 2.0 KHz (12.5 KHz mode), adjustable
Audio distortion	Less than 5%
Transmitter output impedance	50 Ohms
Maximum deviation	Limited to 2.5 KHz for 12.5 KHz channels and 5.0 KHz for 25 KHz channels

Receivers

	<u>VHF Low Band</u>	<u>VHF High Band</u>	<u>UHF Band</u>
Frequency Range	30.000 MHz to 50.000 Mhz	138.000 MHz to 174.000 MHz	403.000 MHz to 512.000 Mhz
Tuning increments	2.5 KHz	2.5 KHz	2.5 KHz
Operating Mode	F3E simplex or semi-duplex	F3E simplex or semi-duplex	F3E simplex or semi-duplex
Channel spacing	12.5 KHz or 25 KHz	12.5 KHz, 25 KHz or 30 KHz	12.5 KHz, 20 KHz or 25 KHz
	As per applicable FCC and IC Type Approvals		
Memory positions	200 channels	200 channels	200 channels
Sensitivity at 12 dB SINAD	Better than 0.35 microvolts	Better than 0.35 microvolts	Better than 0.35 microvolts
Adjacent channel	-70 dB (25 KHz)	-78 dB for 25 KHz, -70 dB for 12.5 KHz	-70 dB for 25 KHz, -70 dB for 12.5 KHz
Spurious attenuation	-80 dB	-90 dB	-90 dB
Third order intermod	-70 dB	70 dB	-70 dB
Image attenuation	-80 dB	-80 dB	-70 dB
FM acceptance	± 6KHz	± 6 KHz	± 6 KHz
Hum and noise	Better than 40 dB	Better than 50 dB	Better than 40 dB
Audio distortion	Less than 5%	Less than 5%	Less than 5%
Ant conducted emission	Less than -80 dBm	Less than -70 dBm	Less than -70 dBm

Note: Specifications are subject to change without notice
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