

User's Guide

The VT-3A130 Transmitter is a synthesized multichannel AM transmitter designed to interface with the MT-3 Repeater Systems, while still maintaining MT-2 system compatibility. Both MT-3 systems are characterized by dependable low maintenance performance under the most severe environmental conditions. In addition, all units are burnt-in for 24 hours and are accompanied by a complete test report.

The VT-3A130 Transmitter operates in the 118 - 137 MHz aviation band. The transmitter's frequency stability is controlled by an OST-3A138 AM Enhanced Synthesizer. The Synthesizer module can be programmed for up to 16 channels. A channel programmer can preprogram the first 15 channels; channel 16 can be programmed from the front panel and channel 1 can be programmed by the four BCD switches located on the MT-3 AM Transmitter Main Board.

The VT-3A130 modular transmitter family is compatible with all Daniel's subrack and base station enclosures.

Transmitter Features

Compatibility	MT-2 Series and MT-3 Series Radio Systems
Frequency Generation	Synthesized (internal plug-in module)
Channel Selection	In 25 kHz increments selected by four BCD switches Preset capability for 16 channels selectable through external control
Front Panel Control	One 3 position switch: - NORM (repeat mode) - OFF - KEY TX PTT Activation: - Active to ground with time-out timer - Active to ground without time-out timer - Microphone activated without time-out timer - Front Panel switch (KEYED) without time-out timer, (NORM) with or without time-out-timer.
Amplifier Enable	Active to ground

Performance Specifications

Overall Transmitter Specifications

Parameter	Specification	Reference
Operating Temperature Range	-30°C to +60°C Optional -40°C to +60°C Optional -50°C to +40°C	
Type	MT-3 Series Transmitter	
Family	VT-3A130	
Frequency Range	118 - 137 MHz	
System Impedance	50 Ω Type N	
RF Power Output	1.0 – 3.0 Watts adjustable (carrier only)	RTCA DO-186A Paragraph 2.3.1
Emission of Radio Freq. Energy	More than 50 dB below carrier	RTCA DO-186A Paragraph 2.3.7(b)
Carrier Noise Level	More than 45 dB below carrier	RTCA DO-186A Paragraph 2.3.6
Duty Cycle	100%; Continuous operation from -30°C to +60°C Optional -40°C or -60°C	
Channel Spacing	25 KHz	
Emission Identifier	6K00A3E and 5K6A3E Amplitude Modulation	
Operating Humidity	95% Relative Humidity (Non-condensing) at +25°C	
Operating Voltage	+13.8 VDC Nominal +9.5 VDC regulated	
Active Current	+13.8 VDC supply < 2A @ 25°C, at 3 Watts RF output <2.5A -40°C to +60°C	
Channel Selection	In 25 kHz increments selected by four BCD switches. Preset capability for 16 channels selectable through external control.	
Frequency Stability	Standard: ±1 ppm -40°C to +60°C ± 2 ppm, -50°C to -40°C	RTCA DO-186A Paragraph 2.3.11
FCC Type Approval	H4JVT-3A130-F	
Industry Canada Certification	142A-VT3A130F	
PTT Time-Out-Timer	Selectable 1 seconds to 8 hours.(factory set 5 min)	
Standby Current (9.5 VDC) and Rise time	Refer to Transmitter Standby Modes in Theory of Operation	

Audio Specifications

Parameter	Specification	Reference
Audio Input	-30 to 0 dBm into a 600Ω balanced load	
Audio Frequency Response	Flat audio; +1/-5 dB: 350 Hz - 2.5 kHz	RTCA DO-186A Paragraph 2.3.5.1
Audio Frequency Distortion	1 kHz tone, 50kHz Low Pass Filter Less than 5%+25°C at 85% modulation Less than 10% -40°C to +60°C at 85% modulation Less than 15% >+40°C to +60°C	RTCA DO-186A Paragraph 2.3.4

Synthesizer Specifications

RF Power Output:	+3 dBm Nominal
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Physical Specifications

Physical Dimensions:	Width: 7.1 cm (2.8 in)	Height: 12.8 cm (5.05 in)	Depth: 19 cm (7.5 in)
Module Weight:	1.4 kg (3.0 lb.)		
Corrosion Prevention:	Anodized aluminum construction. Stainless steel hardware. Selectively conformal coated glass epoxy 2 and 4 layer printed circuit boards. Gold plated module connectors.		
Module Design:	Compact Eurostandard modular design. Plug-in modules mate with Daniels standard MT-3 repeater subrack. Subracks and modules comply with IEEE 1101, DIN 41494 and IEC 297-3 (mechanical size / modular arrangement).		
External Connections:	RF Connection: Type N connector located on the transmitter module front panel. Motherboard Connections (Audio, Power, and Control) are made through a 48 pin, gold plated, type F connector on the rear of the transmitter module. User connection is made through a mated "mother board" assembly of the repeater subrack. Type F standard connector complies with DIN 41612 Level 2 (200 mating cycles, 4 day 10 ppm SO2 gas test with no functional impairment and no change in contact resistance).		

Frequency Select Handle Performance Specifications

Temperature Range:	-30°C to +60°C.(Optional -40°C to +60°C)
Supply Voltage:	+9.5 VDC
Supply Current:	Less than 35 mA operate; less than 4.0 mA standby mode