

PAE T6T TRANSMITTER and T6R RECEIVER, VHF Multimode Digital Radio (MDR)

TECHNICAL INFORMATION

<b>GENERAL - T6T and T6R</b>		Ref oscillator adjust	From front panel rotary encoder
Frequency range	118 to 136.975 MHz	Duty cycle	100% continuous transmit
Channel spacing:		Operating temperature	-20 to +55°C
AM-voice	8.33 kHz and 25 kHz	Storage temperature	-30 to +70°C
AM data	25 kHz	Power consumption:	ac                   dc
Modes:	A3E AM-voice	T6T - transmit	330 VA           10 A
Options	AM-MSK	T6T - standby	20 VA            0.4 A
	VDL-2	T6R - receive	35 VA            1 A
	VDL-3	T6R - standby	20 VA            0.4 A
Mode memory slots	4	Supplies:	
Supported standards	ICAO Annex 10	ac	T6T: 110/120/220/230/240 V (±10%)
	EN 301 841-1		48 to 62 Hz
	EN 300 676		T6R: 99 to 264 V 48 to 62 Hz
Frequency stability:	<1 ppm	dc	21.6 to 32 V
Option 1	<0.3 ppm (T6T only)		
<b>CONTROL - T6T and T6R</b>			LED indicators for standby, ready, alarm, receive (on T6R) and transmit (on T6T)
Full control and monitoring of the T6T and T6R can be carried out locally using the front panel controls and display, from a computer connected to the front panel, or remotely via a RS422 serial port from PAE MARC or similar.			Mic/headset/diagnostic port for local operation and programming from computer via RS232 serial link
Pre-set channels	100		Coaxial connector for monitoring reference oscillator frequency
Channel settings	Frequency, channel spacing, memory assignment, frequency offset	Remote control ports:	
Front panel lock out	Prevents unauthorised adjustment	Facilities	Audio and control for AM operation
Local control facilities	Rotary encoder and backlit multifunction display provide menu driven control of all radio operating parameters and BIT functions	MARC	RS422 serial port for control of radio from MARC or other compatible system
		HDLC	Serial interface for VDL operation
<b>TRANSMIT - T6T</b>		Spurious outputs	<-46 dBm
Carrier power	5 to 50 W in 1 W steps	VOGAD	<10% change in modulation depth for 30 dB change in input level
Modulation	0 to 100% in 1% steps		5 dB below VOGAD threshold
VSWR mismatch	Full power into VSWR of 2.5:1	Tx mute	Off, or 2 s to 510 s in 2 s steps
	Infinite VSWR without damage	Time out	
Offset carrier:		Audio distortion	<5% THD
2-offset carrier	±5 kHz	Audio bandwidth:	
3-offset carrier	fc and ±7.3 kHz	8.33 kHz	350 Hz to 2500 Hz
4-offset carrier	±2.5 kHz and ±7.5 kHz	25 kHz	300 Hz to 3400 Hz
5-offset carrier	fc, ±4 kHz and ±8 kHz (Option 1 only)	Audio interface:	
Oscillator detect	Monitors installed oscillator. Inhibits offset programming if invalid oscillator fitted	Line input	-40 dBm to 0 dBm in 1 dB steps
		Tape output	-10 dBm
Harmonic outputs	<-36 dBm		
<b>RECEIVE - T6R</b>		AGC RF	<3 dB change in audio output for RF signals between -107 dBm and +10 dBm
Sensitivity	-107 dBm for 10 dB (S+N)/N	AGC audio	<1 dB change in audio output for modulation depth change between 90% and 30%. Automatically maintains audio at the 90% modulation equivalent level for maximum fidelity
Selectivity:			
8.33 kHz	<6 dB at ±3.5 kHz		
	>70 dB at ±8.33 kHz	Antenna radiation	<-73 dBm
	>80 dB at ±25 kHz	Audio distortion	<5% THD
25 kHz	<6 dB at ±11 kHz	Audio bandwidth:	
	>80 dB at ±25 kHz	8.33 kHz	350 Hz to 2500 Hz
Squelch	Threshold adjustable in 1 dB steps for RF input levels from -114 dBm to -60 dBm [equivalent to <6 to >30 dB (S+N)/N]. Incorporates Digital Coherent Mute (DCM) technology to dynamically filter on-channel interference. DCM automatically mitigates co-location interference to ensure the squelch opens whenever an input signal exceeds the set threshold and has a positive (S+N)/N ratio	25 kHz	300 Hz to 3400 Hz
		Audio interface:	
		Line output	-30 dBm to +10 dBm in 1 dB steps
		Loudspeaker	1 W
		Tape output	-10 dBm
<b>MECHANICAL - T6T and T6R</b>		Weight	T6T: 17 kg
Dimensions	T6T: 89(H) x 483(W) x 450(D) mm		T6R: 6 kg
	T6R: 89(H) x 483(W) x 430(D) mm	RF connectors	N-type socket
<b>ORDERING INFORMATION - T6T and T6R</b>		T6T transmitter user guide	Part No. 31-360000TX
T6T transmitter:	Part No. B6350	T6R receiver user guide	Part No. 31-360000RX
Option 1 (high stab oscillator)	Part No. B6350OPT1	Microphone	Part No. 24-11030301
T6R receiver	Part No. B6100	Headset	Part No. 24-12002801
		End-fed dipole antenna	Part No. B2080

Park Air Systems reserves the right to amend specifications in the light of continuing development - 012-1

PAE T6T TRANSMITTER and T6R RECEIVER, VHF Multimode Digital Radio (MDR)



The PAE T6T Transmitter and T6R Receiver  
*PAE T6 Series*  
 for advanced airspace communications

- VHF 118 to 137 MHz Multimode Digital Radio (MDR)
- 8.33 kHz and 25 kHz channel spacing
- 50 W RF transmit output power
- Digital Coherent Mute (DCM) technology
- Five-offset carrier capability
- Analogue and digital operation
- Extensive remote control facilities



# The PAE T6T Transmitter and T6R Receiver

## for advanced airspace communications

**The PAE T6T and T6R multimode digital radios** are designed to provide ground-to-air communications for professional applications in airport and en route centres. The radios will support both voice and ICAO defined data modes.

**The T6 series incorporates 8.33 kHz and 25 kHz channel spacing.** The radios recognize frequencies entered in ICAO format and automatically adjust to the correct channel spacing. For multichannel operation, any combination of 8.33 kHz and 25 kHz channel spacing can be programmed. A 100 channel memory allows immediate recall of stored frequencies. Front panel operation can be 'locked' to prevent unauthorised adjustment of radio parameters.

The T6T supports ICAO defined offset carrier operation. The standard master oscillator supports two, three and four-offset carrier operation, the optional high stability oscillator also allows five-offset carrier operation. The radio detects the oscillator fitted and will inhibit five-offset carrier operation if the high stability option is not detected.

**Careful implementation of DSP techniques** significantly reduces the component count within the radios. This leads to increased reliability and reduced logistic costs. All modulation and demodulation processes are carried out using DSP algorithms that provide consistent long-term performance to further enhance equipment reliability. All adjustable parameters within the radios can be modified using the front panel controls, or from a computer connected to the headset/diagnostics port, eliminating the need to remove equipment covers during the operational life of the radio.



The radios can be operated locally using the front panel controls, or remotely via flexible control interfaces. STANDBY mode allows the radios to be powered on and off remotely to ensure minimal current drain on local power supplies.

**The use of innovative RF engineering allied to sophisticated DSP technology provides class leading performance.** The advanced design of the T6 series transmitter and receiver allows operation in demanding co-site conditions, reducing the need for external filters. The T6T transmitter employs a sophisticated feedback technique that minimizes spectral noise and enhances signal purity. The power amplifier is designed for optimum performance and maximum reliability and will support continuous operation applications.

**The T6R receiver circuitry benefits from unique DSP implemented Digital Coherent Mute (DCM) technology.** DCM uses specially developed algorithms that monitor on-channel activity and dynamically filter unwanted interfering signals. The receiver front-end has exceptional signal handling properties that ensure rejection of unwanted off-channel signals while maintaining excellent low level wanted signal performance.

**Comprehensive Built-In Test (BIT) monitors both static and dynamic parameters.** Results can be viewed on the front panel LCD and summarized via READY and ALARM indicators. All BIT data is available for remote monitoring via serial ports, and transmitters and receivers can be readily networked for remote monitoring using the PAE Multi-Access Remote Control (MARC) or similar systems.