

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

TECHNICAL INFORMATION

GENERAL - T6T and T6R		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
Modes:	A3E AM-voice	T6T - transmit	330 VA
Options	AM-MSK	T6T - standby	20 VA
	VDL-2	T6R - receive	35 VA
	VDL-3	T6R - standby	20 VA
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)		
CONTROL - T6T and T6R			
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.			LED indicators for standby, ready, alarm, receive (on T6R) and transmit (on T6T)
Pre-set channels	100		Mic/headset/diagnostic port for local operation and programming from computer via RS232 serial link
Channel settings	Frequency, channel spacing, memory assignment, frequency offset	Remote control ports:	Coaxial connector for monitoring reference oscillator frequency
Front panel lock out	Prevents unauthorised adjustment	Facilities	
Local control facilities	Rotary encoder and backlit multifunction display provide menu driven control of all radio operating parameters and BIT functions	MARC	Audio and control for AM operation
		HDLC	RS422 serial port for control of radio from MARC or other compatible system
			Serial interface for VDL operation
TRANSMIT - T6T			
Carrier power	5 to 50 W in 1 W steps	Spurious outputs	<-46 dBm
Modulation	0 to 100% in 1% steps	VOGAD	<10% change in modulation depth for 30 dB change in input level
VSWR mismatch	Full power into VSWR of 2.5:1		5 dB below VOGAD threshold
	Infinite VSWR without damage		Off, or 2 s to 510 s in 2 s steps
Offset carrier:		Tx mute	<5% THD
2-offset carrier	±5 kHz	Time out	
3-offset carrier	fc and ±7.3 kHz	Audio distortion	
4-offset carrier	±2.5 kHz and ±7.5 kHz	Audio bandwidth:	
5-offset carrier	fc, ±4 kHz and ±8 kHz (Option 1 only)	8.33 kHz	350 Hz to 2500 Hz
Oscillator detect	Monitors installed oscillator. Inhibits offset programming if invalid oscillator fitted	25 kHz	300 Hz to 3400 Hz
Harmonic outputs	<-36 dBm	Audio interface:	
		Line input	-40 dBm to 0 dBm in 1 dB steps
		Tape output	-10 dBm
RECEIVE - T6R			
Sensitivity	-107 dBm for 10 dB (S+N)/N	AGC RF	<3 dB change in audio output for RF signals between -107 dBm and +10 dBm
Selectivity:		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
8.33 kHz	<6 dB at ±3.5 kHz		<-73 dBm
	>70 dB at ±8.33 kHz		<5% THD
	>80 dB at ±25 kHz		
25 kHz	<6 dB at ±11 kHz	Antenna radiation	
	>80 dB at ±25 kHz	Audio distortion	
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	Audio bandwidth:	
		8.33 kHz	350 Hz to 2500 Hz
		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
MECHANICAL - T6T and T6R			
Dimensions	T6T: 89(H) x 483(W) x 450(D) mm	Weight	T6T: 17 kg
	T6R: 89(H) x 483(W) x 430(D) mm		T6R: 6 kg
		RF connectors	N-type socket
ORDERING INFORMATION - T6T and T6R			
T6T transmitter:	Part No. B6350	T6T transmitter user guide	Part No. 31-360000TX
Option 1 (high stab oscillator)	Part No. B6350OPT1	T6R receiver user guide	Part No. 31-360000RX
T6R receiver	Part No. B6100	Microphone	Part No. 24-11030301
		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

Park Air Systems

Park Air Systems Ltd, Northfields, Market Deeping, Peterborough, England, PE6 8UE
Tel: +44 1778 345434 Fax: +44 1778 342877 Email: sales@parkairsystems.com

A subsidiary of Northrop Grumman Corporation

www.parkairsystems.com

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

Park Air Systems

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.

