

PAE T6TR TRANSCEIVER, VHF Multimode Digital Radio (MDR)

TECHNICAL INFORMATION

| | | | |
|---|--|---|---|
| GENERAL | | Duty cycle | 100% continuous transmit |
| Frequency range: | 118 to 136.975 MHz | Operating temperature | -20 to +55°C |
| Option 1 | 118 to 143.975 MHz | Storage temperature | -30 to +70°C |
| Channel spacing - AM | 8.33 kHz and 25 kHz | Housing: | 19" cabinet |
| Modes: | A3E AM-voice | Option | Desk mount |
| Options | AM-MSK VDL-2 VDL-3 | Power consumption: | |
| Supported standards | ICAO Annex 10 EN 301 841-1 EN 300 676 | Transmit | ac dc |
| Frequency stability | <1 ppm | Receive | 330 VA 10 A |
| Ref oscillator adjust | From front panel rotary encoder | Standby | 70 VA 1.4 A |
| | | Supply | 45 VA 0.5 A |
| | | | ac: 99 to 264 V 48 to 62 Hz |
| | | | dc: 21.6 to 32 V |
| CONTROL | | LED indicators for standby, ready, alarm, receive and transmit | |
| Control and monitoring of the T6TR can be carried out locally from the front panel, or remotely via a RS422 serial port | | 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 | Facilities: Audio, control and BIT for AM operation | |
| Operation settings | Includes mode, TX power, modulation depth, squelch defeat/level, PTT time out | MARC: RS422 serial port for control of radio from MARC or other compatible system | |
| Installation settings | Includes audio line levels, PTT/mute level/polarity, reference oscillator frequency | HDLC: Serial interface for VDL operation | |
| Local control facilities | Rotary encoder and backlit multifunction display provide menu driven control of all transceiver operating parameters and BIT functions | T1: For connection to Remote Interface Unit for VDL operation | |
| RECEIVE RF | | interference to ensure the squelch opens whenever an input signal exceeds the set threshold and has a positive (S+N)/N ratio | |
| Sensitivity | -107 dBm for 10 dB (S+N)/N | <3 dB change in audio output for RF signals between -107 dBm and +10 dBm | |
| Selectivity: | | <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 >70 dB at ±8.33 kHz >80 dB at ±25 kHz | | |
| | | AGC RF | |
| 25 kHz | <6 dB at ±11 kHz >80 dB at ±25 kHz | AGC audio | |
| Squelch | Threshold adjustable in 1 dB steps for RF input levels from -114 dBm to -60 dBm (<6 to >30 dB (S+N)/N). Incorporates Digital Coherent Mute (DCM) technology to dynamically filter on-channel interference. DCM automatically mitigates co-location | Antenna radiation | <-73 dBm |
| TRANSMIT RF | | Harmonic outputs | <-36 dBm |
| 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 Infinite VSWR without damage | Tx mute | 5 dB below VOGAD threshold |
| | | Time out | Off, or 2 s to 510 s in 2 s steps |
| AUDIO CHARACTERISTICS | | Audio interface: | |
| Audio distortion | <5% THD | Line output | -30 dBm to +10 dBm in 1 dB steps |
| Audio bandwidth: | | Line input | -40 dBm to 0 dBm in 1 dB steps |
| 8.33 kHz | 350 Hz to 2500 Hz | Loudspeaker | 1 W |
| 25 kHz | 300 Hz to 3400 Hz | External speaker | 3 Vac peak-to-peak |
| | | Tape | -10 dBm |
| MECHANICAL | | RF connectors | N-type sockets |
| Dimensions (mm) | 89(H) x 483(W) x 450(D) | | |
| Weight | 14.5 kg | | |
| ORDERING INFORMATION | | User guide | Part No. 31-360000TR |
| T6TR | Part No. B6550 | Microphone | Part No. 24-11030301 |
| Option 1 (extended frequency range) | Part No. 6550OPT1 | Headset/microphone | Part No. 24-12002801 |
| Desk mount kit | Part No. 70-6550DESK | End-fed dipole antenna | Part No. B2080 |

Park Air Systems reserves the right to amend specifications in the light of continuing development - 042-2

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PAE T6TR TRANSCEIVER, VHF Multimode Digital Radio (MDR)



The PAE T6TR TRANSCEIVER
for advanced airspace communications

- VHF 118 to 144 MHz Multimode Digital Radio (MDR)
- 8.33 kHz and 25 kHz channel spacing
- 50 W RF output power
- Digital Coherent Mute (DCM) technology
- Compact 2U case
- Analogue and digital operation
- Extensive remote control facilities

The PAE T6TR TRANSCEIVER

for advanced airspace communications

The PAE T6TR multimode digital transceiver for ground-to-air communications is intended for use at low and medium density airports and air traffic control installations, emergency services and airline communications. The compact dimensions allow the T6TR to be conveniently used for both desk and rack mount operations. The radio supports both voice and ICAO defined data modes.

The radio can be operated locally using the front panel controls, or remotely via flexible control interfaces. STANDBY mode allows the radio to be powered on and off remotely to ensure minimal current drain on local power supplies. A 100 channel memory allows immediate recall of stored frequencies. Frequency change can be inhibited to prevent unauthorised tuning.

Both 8.33 kHz and 25 kHz channel spacing are incorporated. The T6TR recognises frequencies entered in ICAO format and automatically adjusts to the correct channel spacing. For multichannel operation, any combination of 8.33 kHz and 25 kHz channel spacing can be programmed.

Careful implementation of DSP techniques significantly reduces the component count within the radio. 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 radio 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 use of innovative RF engineering allied to sophisticated DSP technology provides class leading performance. The advanced design of the T6TR transceiver allows operation in demanding co-site conditions, reducing the need for external filters. The 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 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.

Two antenna ports are provided allowing maximum flexibility, these may be configured for separate receiver and transmitter antenna connections, or a single combined receive/transmit antenna. The use of separate antenna ports allows the T6TR to be used with filter multicouplers in larger system applications. A solid state T/R switching relay is used to provide both long-term reliability and the high speed necessary for VDL modes.

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