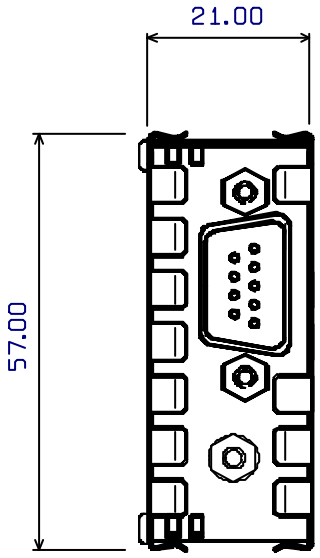
T200
TRANSCEIVER
OPERATING INSTRUCTIONS

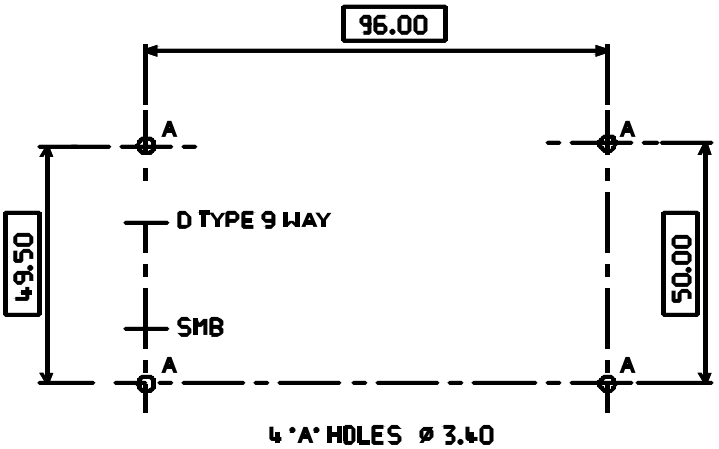
These operating instructions are intended to provide the user with sufficient information to install and operate the unit correctly.

The Tactical Electronics model T200 is a single channel synthesized transceiver which operates in the 216 to 219MHz frequency band. The unit is intended to fulfil the numerous OEM applications by virtue of its highly reliable design, miniature size and quality manufacture.

INSTALLATION

The T200 is intended to fit easily and with minimum space requirements into the user's own equipment housing. The complete module is housed within a tin-plated enclosure and is secured by means of four 10mm metal screws which locate in the four corners through the lower screening cover. DO NOT overtighten these screws during assembly.





CONNECTION

The radio antenna connects by means of a BNC miniature coaxial connector. All other connections to the T200 transceiver are made using a standard 9-way D type connector as detailed in the table below.

PIN	NAME	FUNCTION	REMARKS
1	MOD I/P	Data modulation input	To transmitter, TTL/CMOS compatible
2	DATA O/P	Receiver Output	5V CMOS levels, high (+5V) when no signal present
3	$\overline{\text{TXE}}$	transmit enable	HIGH >2.5V = receive LOW <0.8V = transmitter enabled
4	0V	0 volts	common DC and signal ground
5	+ Vin	positive supply	+10 to +14 V DC
6	SQF	Squelch flag output	HIGH (+5V, 10kΩ pull-up) = Signal present LOW (<0.8V) = Signal not present
7	CS	channel select	Serial channel select input (RS232 compatible)
8	RSSI	Received Signal Strength Indicator	+1 to +3V DC nominal, 50dB range
9	0V	0 volts	common DC and signal ground

PROGRAMMING

The software supplied with the T200 transmitter is the single channel TPRG.exe program. The software can be run on a PC with the serial port connected to pin 7 of the transmitter via a suitable adaptor as shown in Figure 1. The unit may be programmed in-situ provided that pin 7 is available. There is no feed-back facility with this circuit, and for this reason, the TPRG software repeats the programming three times to eliminate error.

This version of software is programmed by a series of 8 byte data packets at 1200 baud. Each packet includes a 16 bit sync code and an 11 bit checksum to eliminate the possibility of spurious programming.

RUNNING THE SOFTWARE

Please note that mouse operation is not supported with this program

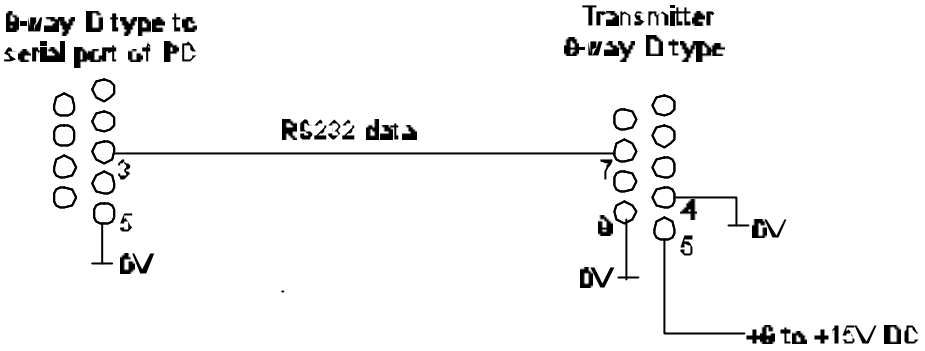


Figure 1 Programming adaptor

1. Connect TX00 to a suitable supply and to the PC using the programming adaptor.

2. Insert the TPRG disk into drive A and type:

   A:TPRG <return>

3. The user is then prompted to enter the serial port number of his PC which is used to communicate with the TX00 transmitter. Enter 1 or 2.

After the software has successfully loaded the screen displays the following prompts:

Enter frequency in MHz?

The user can then enter the required operating frequency and then ‘0' to quit.

RANGE INFORMATION

The following table gives an indication of the typical ranges to be expected between a transmitter and receiver that have simple end-fed dipole antennas.

The following assumptions have been made in the calculations:

line-of-sight between antennas
0dB gain for the transmitter and receiver antennas
0dB loss for connectors and cables between the antenna and the radio connector
20dB fade and environmental margin
-100dBm received signal strength, allowing for digital and analog signals

Range versus TX power			
Frequency (MHz)	**Power (mW)**	**Power (dBm)**	**Range (km)**
173	1mW	0	1.4
173	10mW	10	4.4
173	100mW	20	13.8
173	500mW	27	30.9

TECHNICAL SPECIFICATION

Frequency of operation	:	216 to 219MHz (other frequency bands available)
Channel spacing	:	12.5kHz (25kHz available as an option)
Number of RF channels	:	One, set by PIC micro controller (contact Sales Office for serial channel select option)
RF output power	:	2W nominal at 12V DC
Frequency stability	:	±2.5ppm over temperature range (12.5kHz version)
Supply voltage	:	+12V DC nominal (+10 to +14 volts possible)
Supply current		
Transmit	:	500mA typical at 2W
Receive	:	50mA typical
Size	:	119 x 57 x 21mm (l x w x h) including connectors
Weight	:	120 gms
Temperature (operating)	:	-30 to +55 °C standard
Temperature (storage)	:	-30 to +70 °C