

# Tactical Electronics Corporation

## T100 TRANSCEIVER OPERATING INSTRUCTIONS

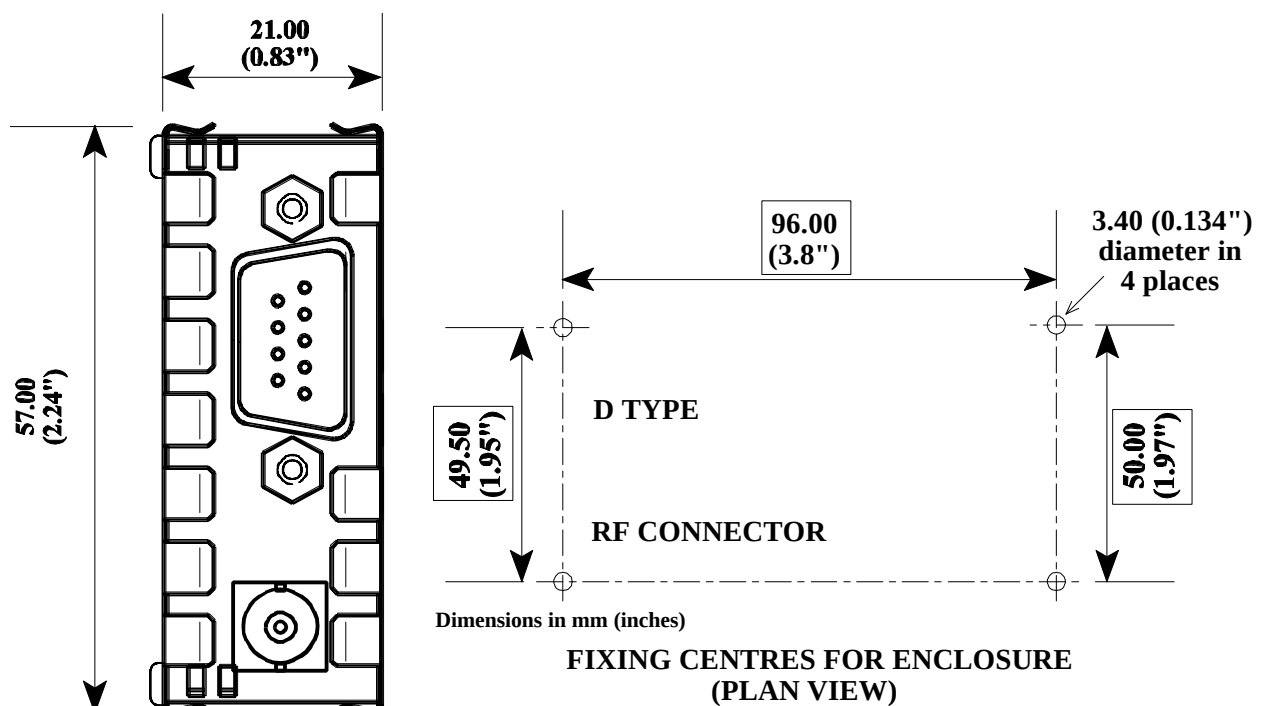
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These operating instructions are intended to provide the user with sufficient information to install and operate the unit correctly.

The Tactical Electronics T100 transceiver is intended to fulfil the numerous OEM applications by virtue of its highly reliable design, miniature size, and quality manufacture.

### MOUNTING DETAILS

The T100 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 self-tapping sheet 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 coaxial connector. All other connections to the T100 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 | Modulation input                   | To transmitter;<br>Analog (750mV p-p for nominal deviation) or<br>TTL/CMOS compatible (factory set) |
| 2   | RX O/P  | Receiver Output                    | Analog (350mV p-p) or<br>5V CMOS levels, high ( +5V) when no signal present (factory set)           |
| 3   | TXE     | transmit enable                    | HIGH >2.5V = receive<br>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, 10k $\Omega$ pull-up) = Signal present<br>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                                                                         |

## OPTIONS

### Frequency and Channel spacing

The T100 is available in both 12.5 and 25kHz channel spacing variants within the following frequency bands:

135 - 140 MHz  
150 - 180 MHz  
180 - 210 MHz

### RF connection

As well as the standard BNC coaxial connector, the T100 is also available with a SMB or flying lead RF connection. Contact Tactical Electronics Corporation for details.

### Transmit Power

The maximum transmit power of the unit is 2W. This can be adjusted down to 100mW if necessary for differing approved bands of operation.

## CHANNEL SELECTION & PROGRAMMING

The software supplied with the T100 transmitter is the TLSPRG.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 TLSPRG 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.

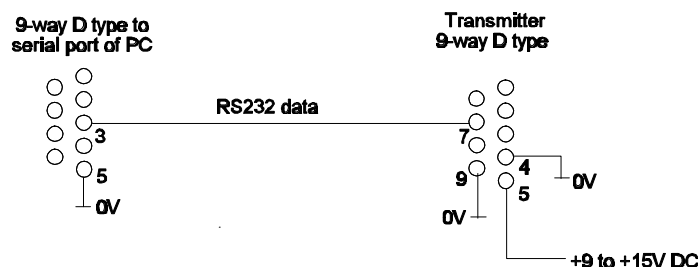


Figure 1 Programming adaptor

## RUNNING THE SOFTWARE

Please note that mouse operation is not supported with this program

1. Connect the T100 transceiver to a suitable supply and to the PC using the programming adaptor.
2. Insert the TLSPRG disk into drive A and type:

**A:TLSPRG <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.
4. Note: Do not select the port with the mouse connected as this will cause the program to run incorrectly.

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) | Range (miles) |
| 173                   | 100mW      | 20          | 13.8       | 8.5           |
| 173                   | 500mW      | 27          | 30.9       | 19.1          |
| 173                   | 1W         | 30          | 43.5       | 27.0          |
| 173                   | 2W         | 33          | 61.5       | 38.2          |

## TECHNICAL SPECIFICATION

|                         |   |                                                                                                             |
|-------------------------|---|-------------------------------------------------------------------------------------------------------------|
| Frequency of operation  | : | 135 to 210MHz (other frequency bands available)                                                             |
| Frequency bands         | : | 135 - 140 MHz<br>150 - 180 MHz<br>180 - 210 MHz                                                             |
| Switching bandwidth     | : | 3MHz within frequency bands                                                                                 |
| Channel spacing         | : | 12.5kHz (25kHz available as an option)                                                                      |
| Number of RF channels   | : | One, set by PIC micro controller changed by serial channel select                                           |
| 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 max. range)<br>50% duty cycle maximum                                     |
| Supply current          |   |                                                                                                             |
| Transmit                | : | 600mA typical at 2W<br>400mA typical at 1W                                                                  |
| Receive                 | : | 50mA typical                                                                                                |
| Size                    | : | 119 x 57 x 21 mm (l x w x h) including connectors<br>4.69" x 2.24" x 0.83" (l x w x h) including connectors |
| Weight                  | : | 120 gms (4.2 oz)                                                                                            |
| Temperature (operating) | : | -30 to +55 °C standard                                                                                      |
| Temperature (storage)   | : | -30 to +70 C°                                                                                               |