
Installation / Configuration Guide
Q82 Radio Interface for
Tait TM81xx radios



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1.0 Document Revision History

Rev	Description	Date	Author
1.00	Original	10/04/2005	Dave Maccoll
1.1	Updated Logo and contact details	10/4/2012	AM

1.1 Change Control

This document is maintained under change control. Any requests for change should go to:

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1.2 Confidentiality and Copyright

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2.0 Introduction

This guide provides details of how to install the Q82 interface, how to program the TM81xx radio and how to setup the interface levels to operate with a DATRAN RTU

The Q82 interface has been designed to utilise the internal options connector in the TM81xx radio to provide direct connection for a DATRAN RTU fitted with an onboard FSK modem. (300 or 1200 baud)

Note the external interface connector is of the same type as is used by other interface boards that fit the TM81xx. Care should be taken to ensure the correct interface is installed as the DATRAN pin assignments are not compatible with other Tait interfaces.

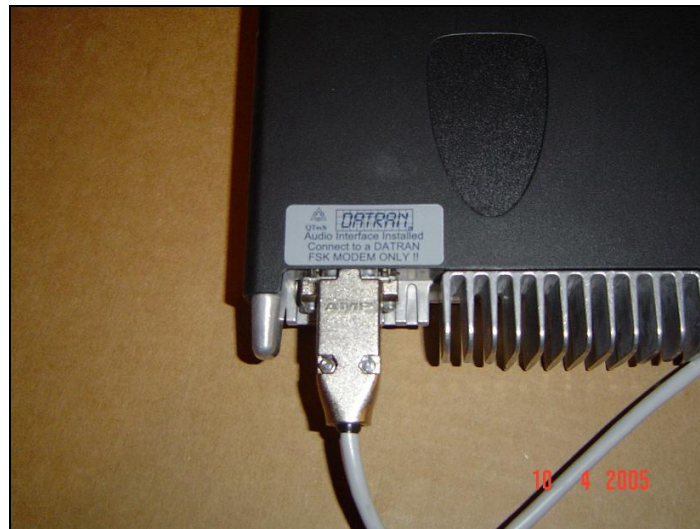


Figure 1: Interface fitted to TM81xx.

The interface kit is supplied with the following parts.

- 1x Q82 interface board Rev A
- 1x Internal interconnection cable
- 1x External cable to connect to the DATRAN RTU
- 4x Taptite screws and 2x jack studs to mount the interface
- 1x Warning label for the outside of the radio

3.0 Physical Installation

Fit the interface to the inside of the radio case as shown in the photos below.

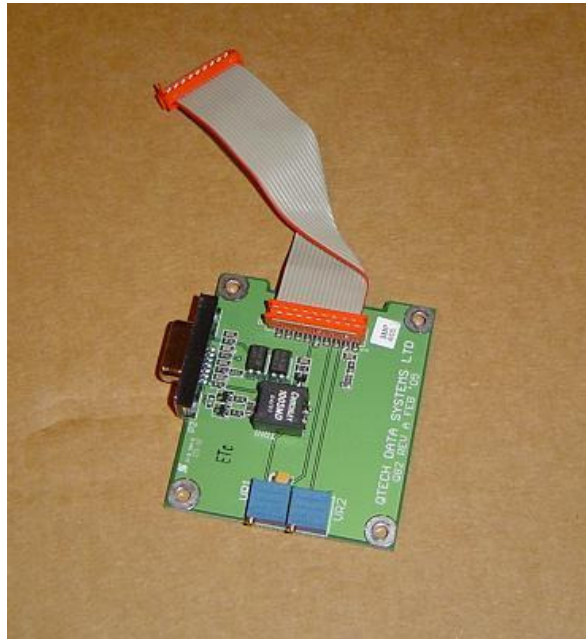


Figure 2: Q82 interface board

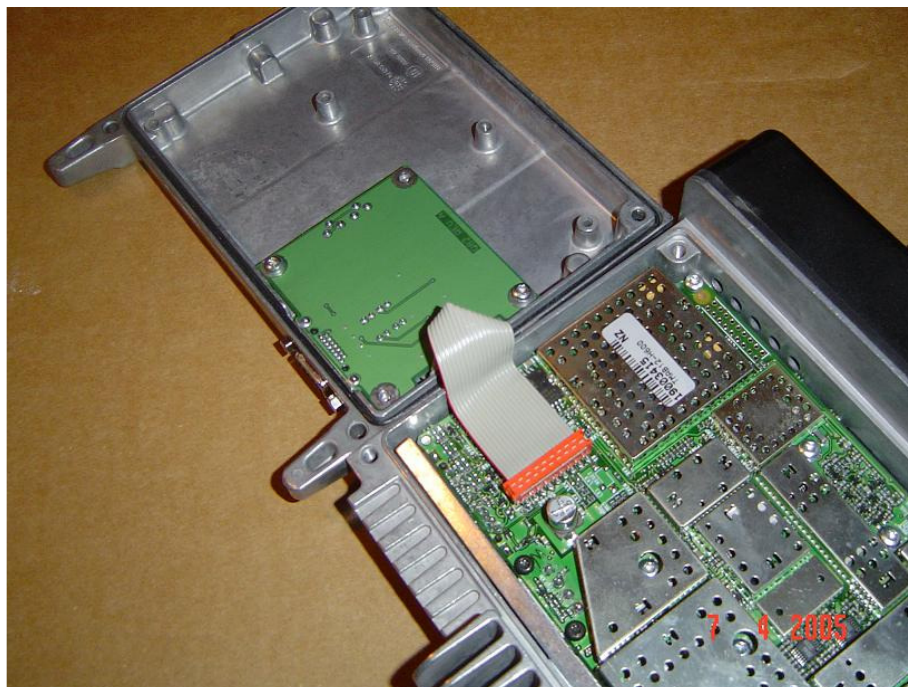


Figure 3: Q82 interface fitted inside TM81xx

Note the interface cable requires a twist in it to align the connectors. The twist must be as close to the side of the radio as possible so pins protruding through the bottom of the interface board cannot pierce the ribbon cable when the radio is closed up.

(This will be changed in Rev B of the interface)

4.0 Radio Programming

The Q82 interface uses the radios internal options connector. The I/O lines and audio ports on this connector are programmable.

The following screen shots show the configuration required specific to the Q82 interface. For more detail about radio programming refer to Taits documentation

Transmit key configuration occurs in two separate places, here in the PTT screen (see Advanced EPTT1 pane) and

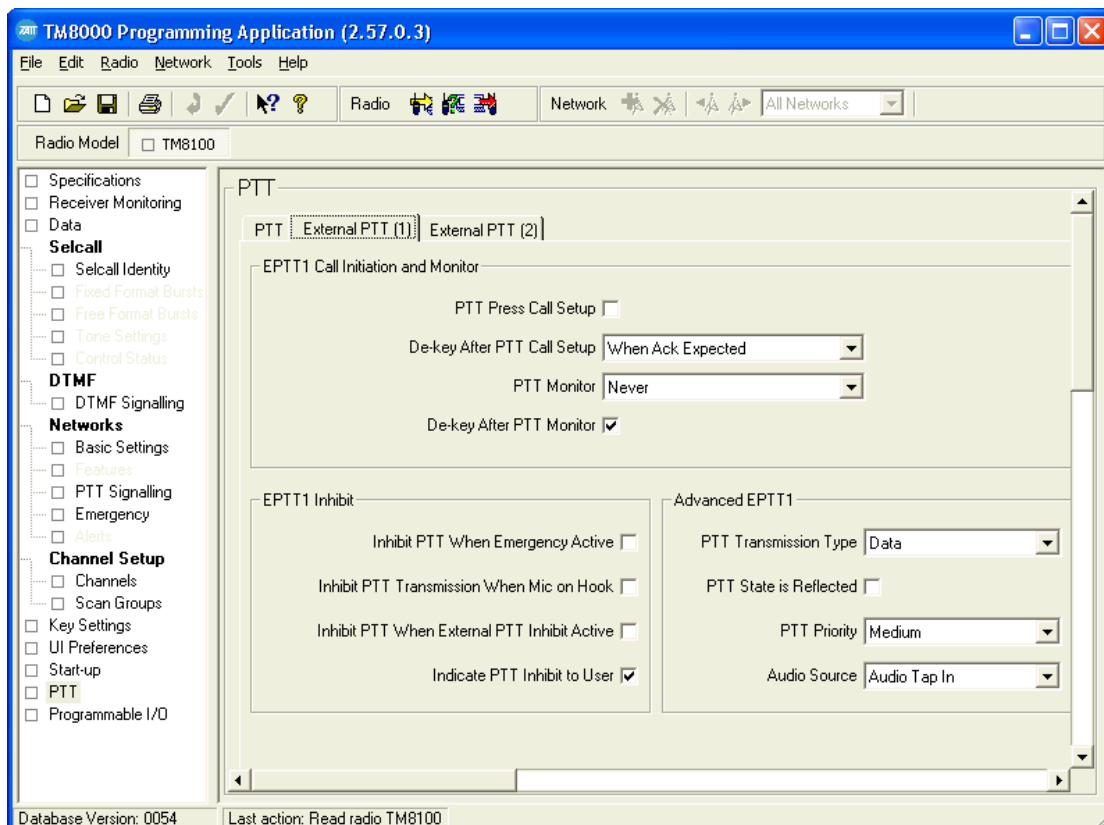


Figure 4: PTT Configuration 1

on the following page in the Programmable I/O digital tab. GPIO1 is used for transmit key.

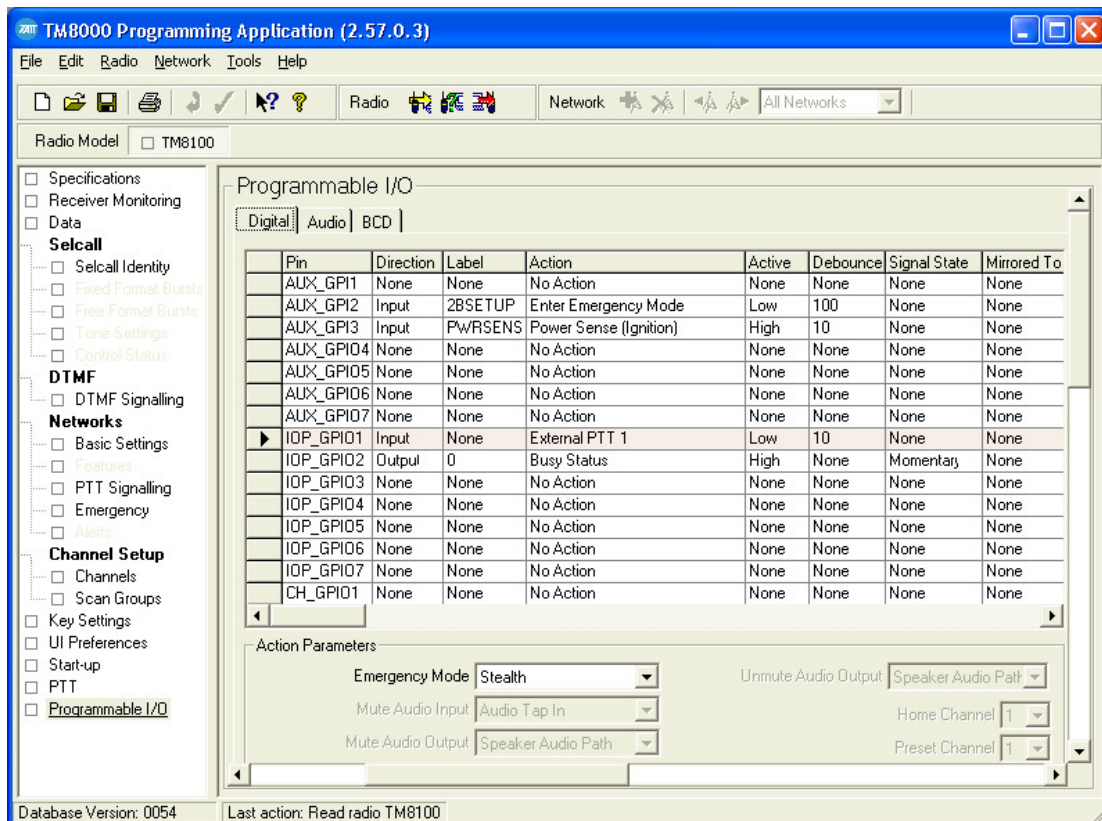


Figure 5: PTT Configuration 2

The “busy” signal is assigned to GPIO2 as shown below in the Programmable I/O digital tab

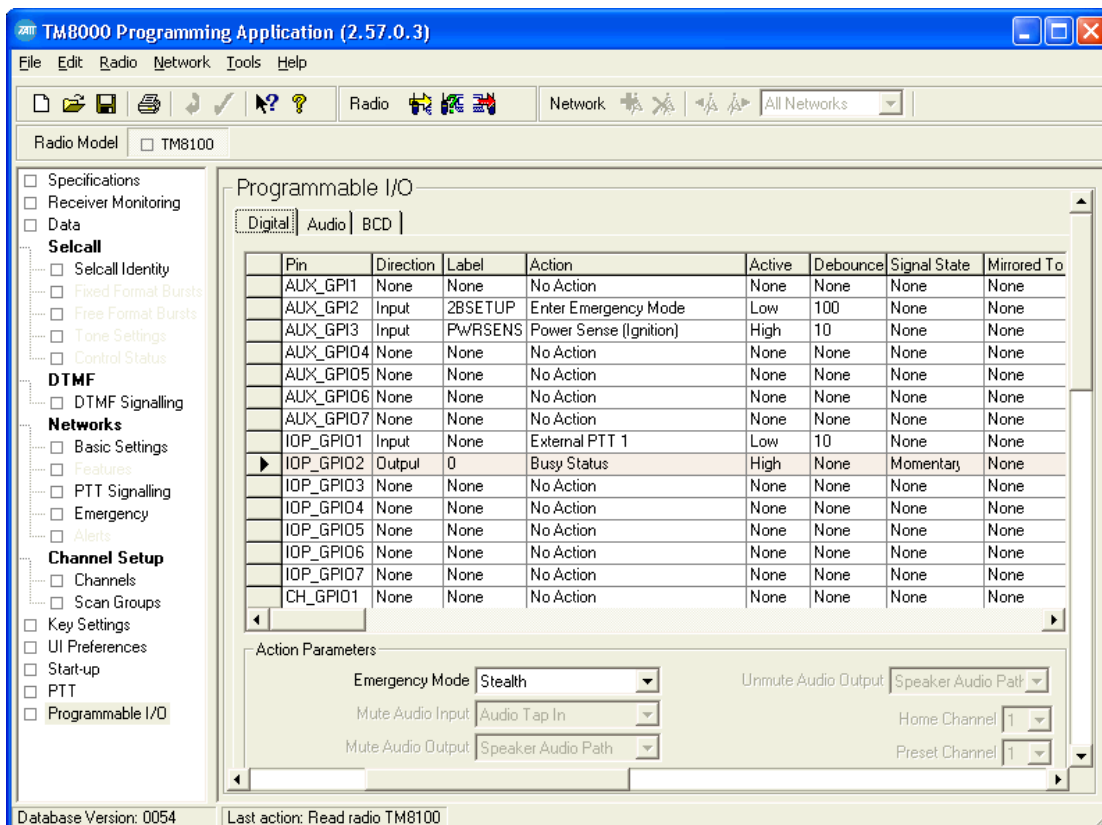


Figure 6: Busy output configuration

Audio configuration is done in the Programmable I/O audio tab as shown below for transmit and receive.

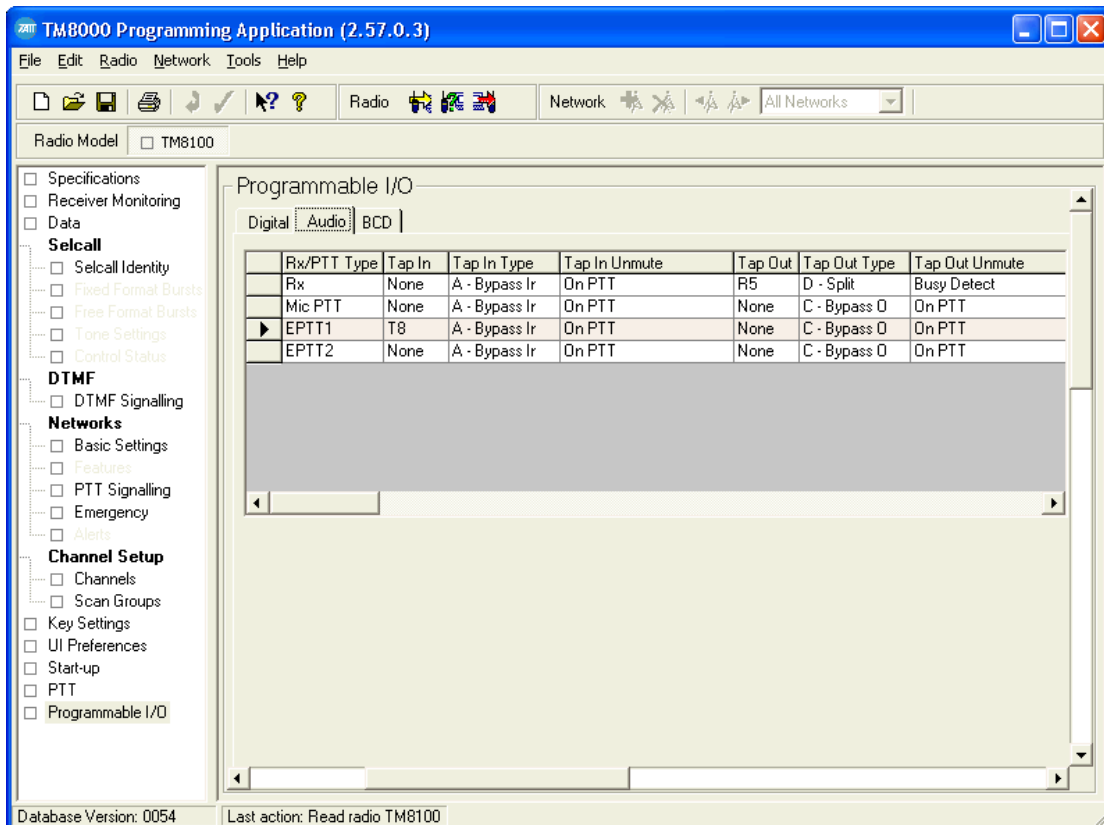


Figure 7: Transmit audio configuration

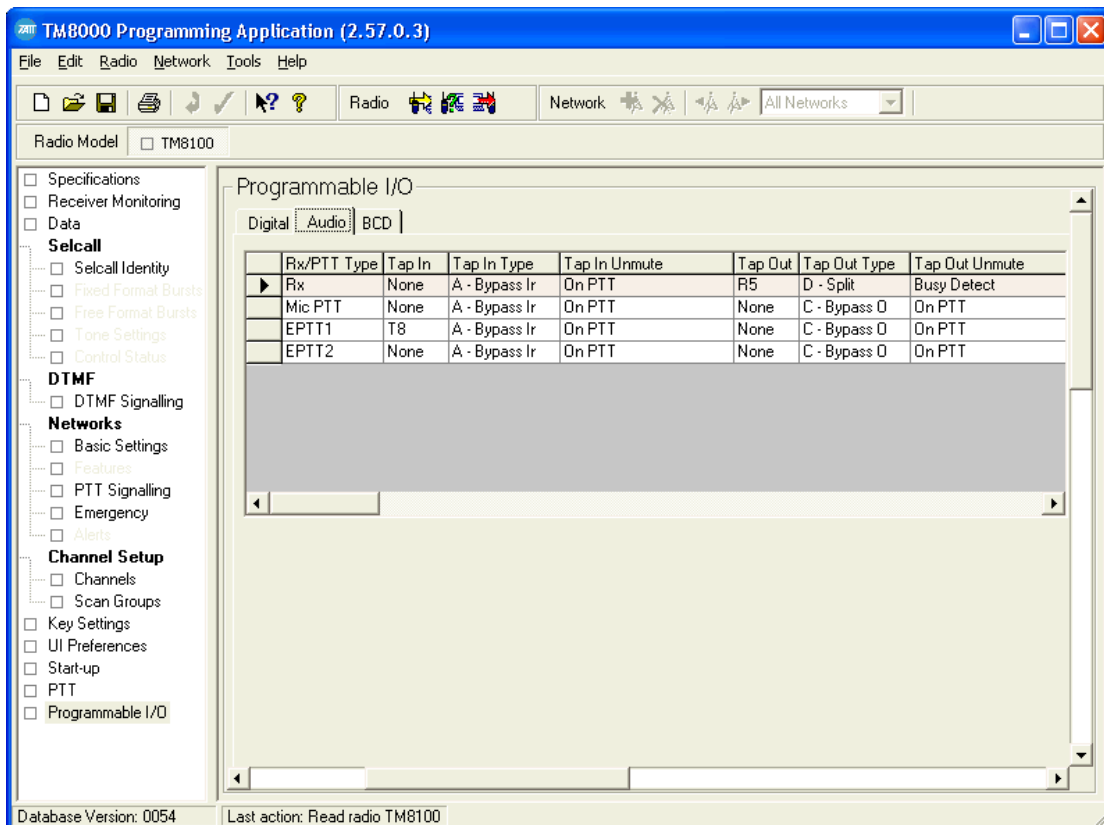


Figure 8: Receive audio configuration

5.0 Q82 Interface Audio Levels.

Audio interface levels within the TM81xx are set at -10dBm for 60% of maximum deviation. Level adjustment to suit the DATRAN RTU is done via two trimpots on the Q82 board. (In Revision B we will label them on the PCB)

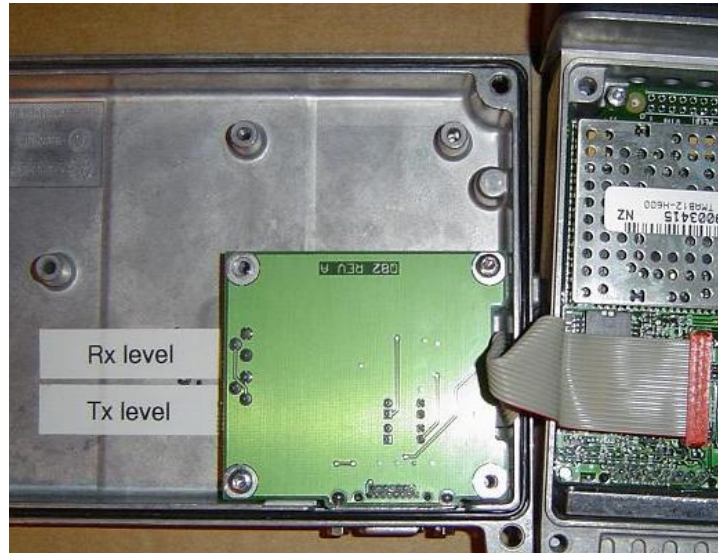


Figure 9: Location of TX and Rx level trimpots

Transmit Audio level adjustment is done as follows

- Apply a 1700 Hz tone to pins 1 and 2 of the D15 external connector at a level of -3dBm
- Apply $+12\text{ VDC}$ to pin 3 and ground to pin 4 to key the transmitter on
- Adjust the TX Level pot to give $\pm 3000\text{ Hz}$ deviation for a 25 KHz channel spacing or $\pm 1800\text{ Hz}$ deviation for a 12.5 KHz channel spacing (turn the pot anticlockwise to increase the level, this will be changed on Rev B)
- Remove the tone and TX Key signal.

Receiver Audio level adjustment is done as follows

- Apply $\pm 3000\text{ Hz}$ deviation for a 25 KHz channel spacing or $\pm 1800\text{ Hz}$ deviation for a 12.5 KHz channel spacing modulation to the receiver at a 1700 Hz tone
- Adjust the RX level pot for -15dBm at pins 1 and 2 of the D15 connector. (turn the pot anticlockwise to increase the level, this will be changed on Rev B)
- Check the opto coupler output between pins 5 (ground) and 6 (Busy) of the D15 is closed.

6.0 Connection to a DATRAN RTU.

Ensure the 600 ohm audio termination jumper is OUT on the RTU IO board.

Once the radio interface is connected to a DATRAN RTU the transmit level out of the RTU will be approx 2dB low. This is due to neither the Q82 nor the RTU being exactly 600 ohms impedance.

The result is the TX deviation of the radio will be approx 200Hz low. It makes no difference to the RX level from the radio.

To setup the DATRAN RTU and radio as a pair for operation use the “Set Transmit level” feature from the Q90 Diagnostic software to key on the radio. Either set the RTU transmit level back up to -3dBm or adjust the TX level pot to get the correct TX modulation.

7.0 Pin Assignments.

The table below shows pin assignments for the D15 plug on the interface and the 6 pin circular DIN plug for the DATRAN RTU.

D15 plug on Q82	6 pin DIN plug	Pin Function
1	1	TX and RX audio line
2	2	TX and RX audio line
3	3	+VSW from DATRAN for TX optocoupler
4	4	TX Key from DATRAN
5	5	Ground from DATRAN
6	6	Busy (Mute) signal to DATRAN
14	-	RSSI Output (see Tait Manual for details)
15	-	Radio Ground