Tait® T2020 Series II

Rev 1.0 14-August-2002

RADIO:

Tait T2020 Series II with A2000-UIT Version 1.2 board

REQUIREMENTS:

Nexion universal radio cable (supplied) and 9-pin male D connector (not supplied), wired as follows…

Nexion NX1500 Cable End			
HDDB9	**Description**	**I/O**	**Cable Colour**
Pin 1	Receive Audio	In	Black
Pin 2	Transmit Audio	Out	Brown
Pin 6	Ground	-	Dark Green
Pin 8	Busy Connection	In	Violet
Pin 9	PTT	Out	White
Pin 10	Data Mute	Out	Grey
Pin 12	Power	In	Lite Green

Tait T2020 Series II Cable End			
DB9	**Description**	**I/O**	**Cable Colour**
Pin 1	Discriminator Audio	Out	Black
Pin 5	Transmit Audio	In	Brown
Pin 3	Ground	-	Dark Green
Pin 2	Radio Busy Indicator	Out	Violet
Pin 4	PTT	In	White
Pin 8	Data Mute	In	Grey
Pin 9	Power (Switched)	Out	Lite Green

T2020 TRANSCEIVER

Step 1 Program the T2020 as required, i.e. Tx/Rx frequencies, etc.

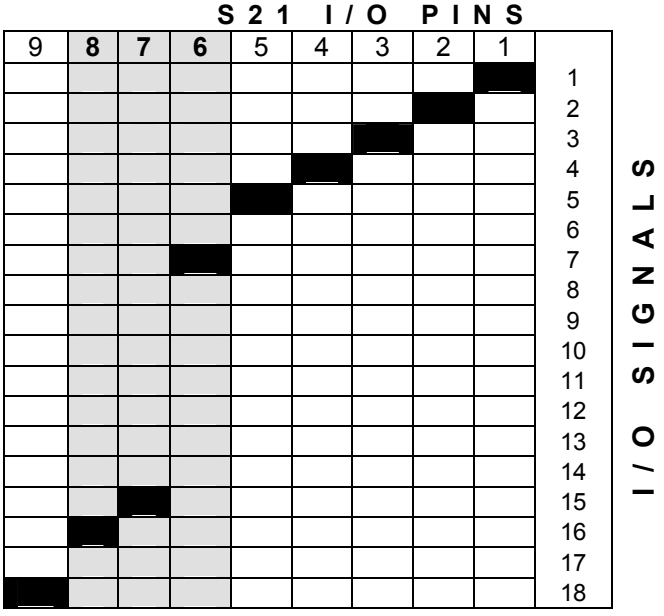
Step 2 Confirm the T2020 is fully functional (i.e. test Tx/Rx and adjust if required)

Step 3 If **no** CTCSS is required, adjust microphone deviation for 5Khz (on a 25Khz channel) or if using CTCSS, 4.5Khz (on a 25Khz channel)

Step 4 Adjust sub audio deviation (if used) for 500Hz (on a 25Khz channel)

Step 5 If fitted remove R513 (0 ohm resistor) on Logic PCB linking options connector S14 Pin 5 (PTT-TO-OPT) and S14 pin 6 (PTT-FRM-OPT)

Step 6 On the UIT board, modify the I/O signals and I/O Pins matrix (changes are highlighted) as follows. RSSI Output on Pin 7 is optional.



Step 7 Modify the Link Settings as follows (changes are highlighted)…

Link	Function	Options
LK1	LINE OUT Flat / De-emphasised	***1-2 Flat*** / 2-3 De-emphasised
LK2	LINE IN Flat / Pre- emphasized	***1-2 Flat*** / *2-3 Pre-emphasised*
LK3	LINE IN Input Impedance	IN = 600 Ohms / ***OUT = 50K Ohms***
LK4	RXD Output Phase	IN = Binary 1 a High / ***OUT = Binary 1 a Low***
LK5	TXD Output Phase	IN = Binary 1 a High / ***OUT = Binary 1 a Low***
LK6	+13.8 V OUT	IN = Active / ***OUT = Not Active***
LK7	**Power On Link**	**IN = Radio On / *OUT = Radio Not On***
LK8	**Volume Control Bypass**	**IN = Active / *OUT = Not Active***
LK9	Emergency Line to External Line	IN = YES / ***OUT = NO***
LK10	GATE OUT Line Source	***1 to 2 BUSY*** / 2-3 RX-GATE / 2-4 CALL-SW (Trunked)
LK11	MIC PTT out the /PTT IN line	IN = YES / ***OUT = NO***
LK12	RXD Input Pull Up/Dn Resistor	***1 to 2 Pulled to Ground*** / 2-3 Pulled to +5V
LK13	**LINE OUT Mute Control**	**IN = LINE OUT is muted / *OUT = Unmuted***
LK14	GATE OUT Phase	***1 to 2 Active Low*** / 2-3 Active High
LK15	**Spare 16 Pad Routing**	***IN = Spare 16 to P14/9 /Sig-Squlch*** **/ OUT = N/C**
LK16	Spare 16 Pad Routing	IN = Spare 16 to P15/3 N/U / ***OUT = N/C***
LK17	Spare 16 Pad Routing	IN = Spare 16 to P14/4 RX-Gate / ***OUT = N/C***
VR1	**LINE OUT Level**	**In dBm or Volts Peak to Peak *(-10dBm)***
VR2	**LINE IN Level**	**In dBm or Volts Peak to Peak *(-10dBm)***

Step 8 Connect / fit the A2000-UIT to the T2000 series II transceiver

NX1500 Modem

Step 9 Connect the T2020 (with UIT board fitted) to the Nexion modem using the universal radio cable (wired as above), connect to a suitable power source and switch on.

Step 10 Connect the PC to the Nexion modem. This serial cable can be purchased from Nexion or assembled using the instructions in the Nexion Modem Installation Guide. Using any terminal program, set the appropriate Com Port to 19,200bps, 8 Data, 1 Stop and No Parity (default). Also ensure Hardware hand shaking is enabled. To check if connected properly, type ATI, which will return the version and serial number of the attached modem

Step 11 Using the terminal program, set the TX modulation level by typing ATS115=1 <ENTER>, then type AT&W <ENTER>.

Step 12 Program the modem as required, in particular Fleet, Group and Individual addresses. See Nexion Modem Installation Guide for further programming information.

GENERAL:

Step 13 To confirm the changes made to the modem have been saved, switch the modem's power off (wait 2 seconds) and back on. Using the terminal program, type AT&V, which will display all the S register settings. If any settings differ, repeat steps 9 through 12.

Step 14 Key the transmitter by using the AT&T3 <ENTER> command on the PC terminal program (Modem will transmit a 1.5Khz test tone).

Step 15 Modem TX – Monitor the transmit frequency on a communications test set and note the TX signal purity. If there is any transmitted audio signal distortion, increase the value of register S115 (i.e. this increases the level of attenuation) until the transmitted signal is 'clean' and minimal audio distortion is observed.

Step 16 Modem RX – Using a communications test set, set to the appropriate receive frequency, inject a 1Khz test tone at 3.5Khz deviation (on a 25Khz channel) into the T2020. Using a CRO connected to Line Out 1 (DB9 Pin1 on A2000-UIT), adjust Line Out 1 (VR1 on A2000-UIT) for a signal level of approx 600mV p-p.

Step 17 Key the transmitter by using the AT&T2, AT&T4, etc command on the PC terminal program as this will key the transmitter with different test tones. Perform Step 15 again, making sure there is no signal distortion. Use AT&T to de-key the transmitter.

Step 18 Modem test – Using another modem to transmit data, use the AT%Q reading to determine level and quality as per the Nexion Modem Installation Guide.

Step 19 After all tests have been completed, reset the modem with an ATZ <ENTER> command.