Tait Electronics (Aust) Pty Ltd

A2000-UIS Ver 1.0

T2000 Universal

Interface Standard

(AM2K-UIS)

Contents

1.0 Introduction

Please read through this instruction in its entirety prior to installing this product.

Tait has developed the A2000-UIS Universal Interface Standard to suit the Tait T2000 range of mobile radios'. The A2000-UIS is suited to most audio interfacing applications. It is intended to provide control over audio and signals which pass to and from the T2000 and the externally connected equipment.

The A2000-UIS provides buffering and control over the radios' control board signals, which helps to protect external equipment and the radio. The audio amplifier stages provide a wide range of audio level adjustment. Muting of the audio paths in sympathy with its associated gate or PTT signal is carried out automatically, and does not need to be setup. Switching of the LINE OUT, GATE OUT, LINE IN, and PTT IN can be link selected to be controlled from the radios' front panel AUX switch, allowing simple and convenient user control. The GATE OUT and PTT IN lines have the facility to control their phase of operation, i.e. Active High or Active Low.

The A2000-UIS board also has an I/O Signals matrix to enable the 9 way D-range I/O connector to have its pins re-arranged. This enables the I/O connectors pin configuration to be rearranged to match existing or special requirements.

All of the parts used on the A2000-UIS board are commonly available. The parts list has details of the supplier for each part and the suppliers part number. For external connection, a 9 Way D-range Male connector and cover are provided with each A2000-UIS board.

As standard, the A2000-UIS has available two LINE OUT lines, two LINE IN lines, two GATE OUT lines, and two PTT IN lines. The reason for two of each is that the A2000-UIS board has the capability of being setup as a full 4 Wire E & M port, by fitting the kit A2000-UIK-01. When fitted you have fully isolated, 600 Ohm transformer balanced audio lines, opto coupled PTT input and voltage free relay contact GATE output. The A2000-UIS is not Austel Approved.

The A2000-UIS does not support the BCD channel control lines of the T201X radio.

2.0 Specifications

Supply Voltage	10.8V dc to 16V dc
Supply Current	100 mA Max, 10 mA Nominal
Operating Temp	-10 °C to +60 °C ambient
LINE OUT 1 & 2 Level	-30 dBm to +4 dBm
LINE OUT 1 & 2 Impedance	600 Ohms
LINE IN 1 & 2 Level	-30 dBm to +10 dBm
LINE IN 1 & 2 Impedance	600 Ohms or 100K Ohms (see LK9 & LK10)
PTT IN 1 & 2	Active Low (Pull to Ground) or Active High Optional Opto Coupled, Non Polarised, 10 to 50 Volt input
GATE OUT 1 & 2	Active Low or High, Transistor Collector, 10K Pull Up to 13.8 Volts. Optional Voltage Free N.O. Relay Contacts, rated 1A @ 24V dc, or 400mA @ 50V dc
Austel Approval	The A2000-UIS is *Not* Austel Approved

3.0 Components Required

The A2000-UIS kit should contain the components shown here in Table 1. For more details on these components, please refer to the parts list in section 6.0.

Table 1 A2000-UIS Packaged Parts

Qty	Description
1	A2000-UIS Service Manual (AM2K-UIS). This document.
3	M3 x 8mm Pan Pozi Drive Taptite Screw
2	4/40 x 8mm Pan Pozi Taptite Screw
1	DB9 Male Connector Solder Pot
1	DB9 Male Cover
1	12 Way Micro-MaTch™ Socket, SMD. For T2000 Control PCB, S13
1	16 Way Micro-MaTch™ Socket, SMD. For T2000 Control PCB, S14

4.0 Fitting

The A2000-UIS mounts inside a T2000 mobile radio, at the rear, in the space provided for option board's. The board has two Micro-MaTch™ connectors, P13A and P14A, that plug into connectors S13 and S14 on the T2000 radio control board.

4.1 Installation

1. Remove the top cover of the radio by unscrewing the 4 bottom cover screws, unscrew the radio control board and fold it out. Remover the D-range blanking plate in the rear of the T2000 radio.

2. If the control board is missing the Micro-MaTch™ connectors S13 and S14, fit the two spare Micro-MaTch™ connectors supplied with the A2000-UIS to these positions.
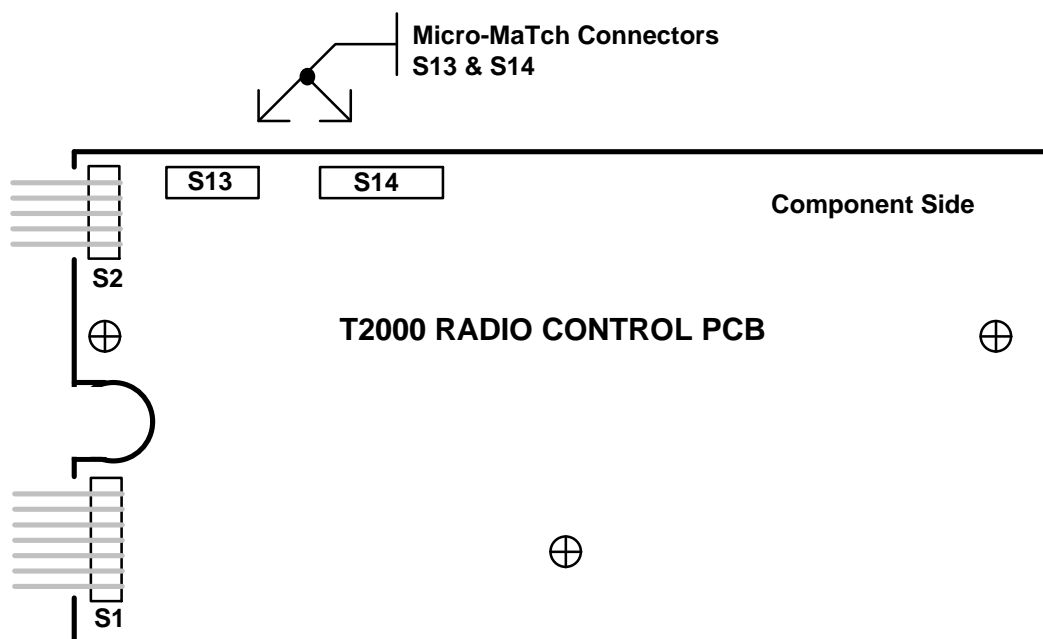

Figure 1.

3. Position the A2000-UIS board behind the radio control board, and connect the Micro-MaTch™ connectors P13, P14 onto the radio control board.

4. On the radio control board, remove the 0 Ohm resistor R513 (if fitted).   Refer to the appropriate T2000 service manual to locate R513.

5. On the A2000-UIS, remove the two screw locks from the D-range connector S21 and keep for Step 6.a.

T2000 Series II Chassis (longer rear heat sink fins)

6. a. Carefully fold the radio control board and the A2000-UIS back into position, guiding the 9 way D-range connector S21 through the hole provided in the rear of the T2000 chassis. Screw the radio control board and the A2000-UIS down with the M3 x 8 mm Taptite screws. Fit the two screw locks from Step 5. Back into the connector S21 but from the outside of the radio. Refer to Figure 2. below.

T2000 Series I Chassis (shorter rear heat sink fins)

6. b. Using a 4x40 tap tool or the two 4x40 screws provided in the A2000-UIS kit, tap the two holes on the rear of the T2000 chassis adjacent to the larger hole for D-range plug. Discard the two 4x40 screws once the holes are tapped.   Discard the two screw locks from Step 5. Carefully fold the radio control board and the A2000-UIS back into position, guiding the 9 way D-range S21 through the hole provided in the rear of the T2000 chassis. Screw the radio control board and the A2000-UIS down with the M3 x 8 mm Taptite screws. Refer to Figure 2. below.
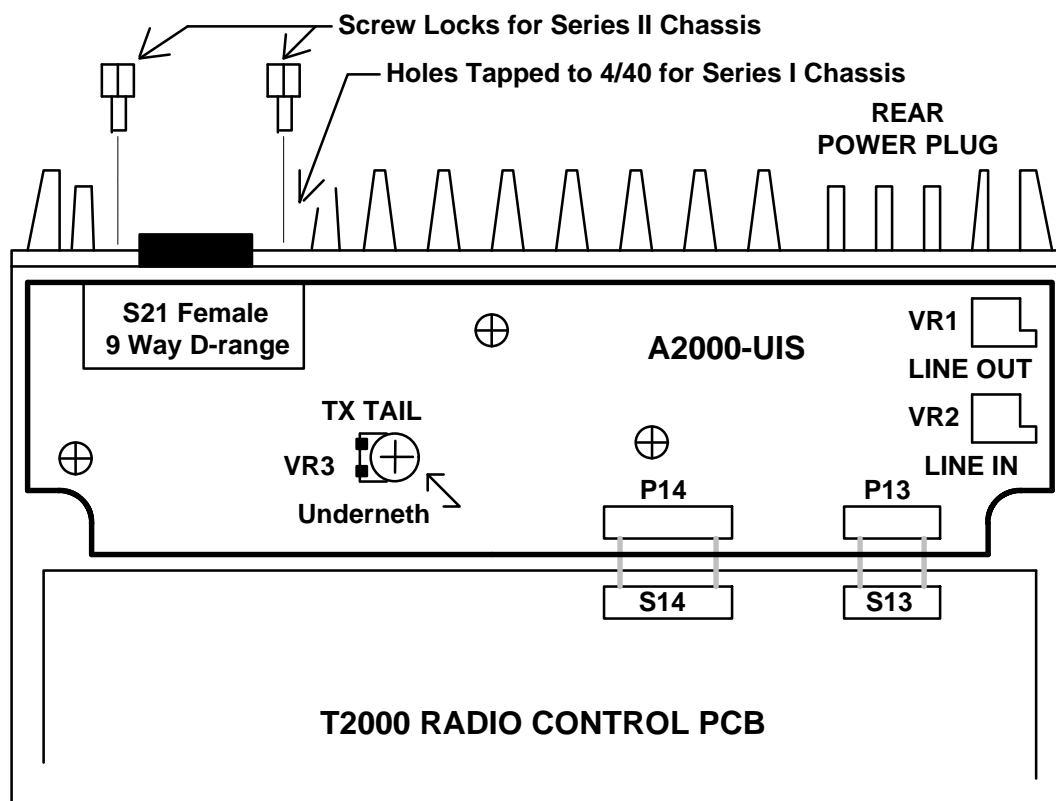

Figure 2.

7. For details on how to setup the line levels, consult section 4.2. Setup. For details on how to make external connections, consult section 4.3 External Connections. For details on how to choose the link settings, consult section 4.4 Link Settings.

4.2 Setup

The setup of the A2000-UIS should be simple in most cases. All of the boards links are on the bottom of the board, and can be accessed while the board is screwed down. The line level adjusting trim pots can be accessed at the side of the board, near the rear power connector. Refer to the diagram Figure 3. below.

Included with each of copy of this manual is the **A2000-UIS Setup Sheet**. Use this to record the setup information for each application of the A2000-UIS board. There is space on the sheet to record all the relevant job details, level settings, link settings, and modifications made

LINE OUT Level

Apply an on channel RF carrier, modulated with a 1KHz tone to the receiver, at the required nominal system deviation (normally 60%). Normally 1.5 kHz for 12.5KHz Narrow band, or 3 kHz for 25KHz Wide band.

Terminate the LINE OUT into equipment the radio is being used with, or terminate the line with the same impedance. The default impedance for alignment is 600 Ohms.

Set VR1 for the required line level out. The default level for alignment is -10dBm.

LINE IN Level

Inject a 1KHz tone into the LINE IN pin of the I/O connector S21, at the required line level. The default level for alignment is -10dBm.

Connect a suitable modulation meter to the radio.

Set VR2 for the required nominal system deviation (normally 60%). Normally 1.5 kHz for 12.5KHz Narrow band, or 3 kHz for 25KHz Wide band.

TX TAIL TIME

LK20 must be fitted for the TX Tail Timer to function.

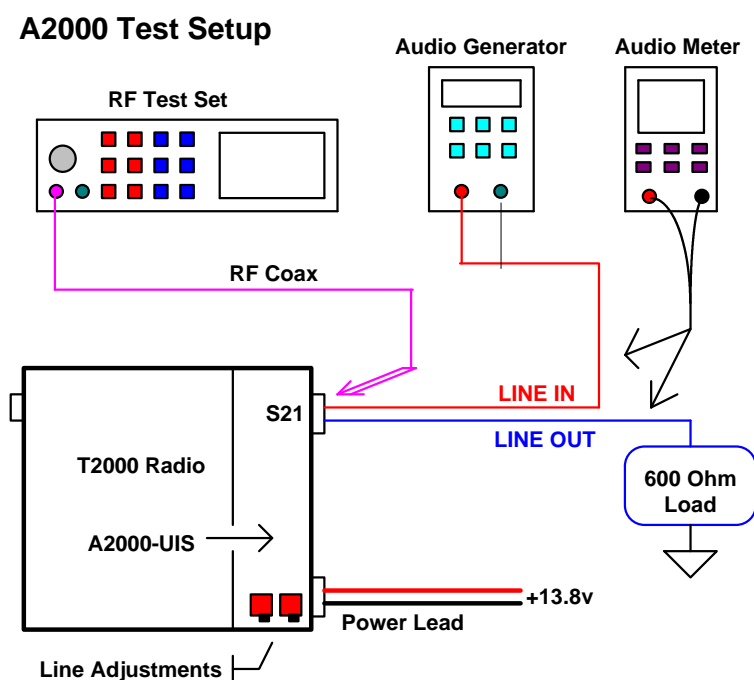Adjust the trim pot VR3 to the required TX tail time.

Figure 3.

4.3 External Connections

The external connections on the A2000-UIS board are via a 9 way D-range female connector S21. A 9 way D-range male connector and cover are supplied with each A2000-UIS kit to facilitate external connection.

The default S21 DB9F I/O Signals can be seen on Table 2, and the default I/O Signals matrix setup can be seen on Table 4. below. The actual connection of the A2000-UIS to the outside world depends somewhat on its particular application. If required, the S21 pin out can be rearranged, using the I/O Signals matrix. The signals which are available on the I/O Signals matrix can be seen on Table 3 below. Remember, don't rearrange the I/O Signals matrix unless you really need to, as you will have to be doing it every time you setup a radio for the same application every time.

Being able to rearrange the signals on the I/O connectors allows the pin out to be setup to match other equipment if required.

Table 2 S21 DB9F Default Pin Out

Pin	Signal
1	LINE OUT 1
2	/GATE OUT 1
3	GROUND
4	/PTT IN 1
5	LINE IN 1
6	LINE IN 2
7	/PTT IN 2
8	/GATE OUT 2
9	LINE OUT 2

Table 3 I/O Signals Matrix Lines

Pin	Signal
1	LINE OUT 1
2	/GATE OUT 1
3	GROUND
4	/PTT IN 1
5	LINE IN 1
6	LINE IN 2
7	/PTT IN 1
8	/GATE OUT 1
9	LINE OUT 2
10	RX/TX Disabling
11	+13.8V (250mA max)
12	Spare
13	Spare

Table 4   I/O Signals Matrix Default Setup

S21	I/O Signals Matrix
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9

4.4 Link Settings

The A2000-UIS's available link setting can be seen on Table 5 below.

Table 5 Links   The default link settings are shown in ***Italic & Underlined***

Link	Function	Options
LK1	LINE OUT Flat / De-emphasised	1-2 Flat / ***2-3 De-emphasised***
LK2	MIC AUDIO to LINE OUT	***IN = YES*** / OUT = NO
LK3	BEEP to LINE OUT	IN = YES / ***OUT = NO***
LK4	LINE IN to LINE OUT Side Tone	IN = YES / ***OUT = NO***
LK5	GATE OUT Source	***1-2 BUSY + RX GATE*** 2-3 BUSY ONLY 2-4 TRUNKED BUSY
LK6	LINE IN Flat / Pre- emphasised	1-2 Flat / ***2-3 Pre-emphasised***
LK7	LINE IN to Volume & Speaker	***IN = YES*** / OUT = NO
LK8	LINE IN Flat / Pre- emphasised	***IN= Pre-emphasised*** / OUT = Flat
LK9	LINE IN 1 600 Terminated	***IN = YES*** / OUT = NO
LK10	LINE IN 2 600 Terminated	***IN = YES*** / OUT = NO
LK11	LINE OUT, LINE IN, GATE OUT and PTT IN Control	***OUT = NONE*** 1-2 AUX SW 2-3 CALL SW
LK12	RX/TX Disabling	IN = YES / ***OUT = NO***
LK13	RX Disable	IN = TX ONLY/ ***OUT = NO***
LK14	GATE OUT Phase	***OUT = Active Lo*** / IN = Active Hi
LK15	PTT IN Phase	***OUT = Active Lo*** / IN = Active Hi
LK16	GATE OUT Relay Phase	***1-2 N.C.*** / 2-3 N.O.
LK17	GATE OUT Common to Ground	IN = GROUNDED / ***OUT = NOT***
LK18	I/O Signals matrix line 11 - Volts Source	***1-2 +13.8V SW*** / 2-3 +13.8V UNSW or OUT = NONE
LK19	OPTO Coupler Option	IN = Yes / ***OUT = NO***
LK20	TX Tail Timer	IN = Yes / ***OUT = NO***
LK21	External Line Source	1-2 /Emrgncy / ***2-3 RX/TX Disabling***
LK22	LINE OUT 1 output impedance	IN = Very Low / ***OUT = 600 OHMS***

4.5 Link Descriptions

LK1 If set to 1-2, the LINE OUT 1 & 2 will output flat audio, if set to 2-3, LINE OUT 1 & 2 will output de-emphasised audio. Also see LK6 and LK8.

LK2 enables the microphone audio to be sent out along with the LINE OUT 1 & 2 audio (receive audio). Mic audio will only be sent out the LINE OUT while the microphones PTT is being pressed. The GATE OUT line will also be activated while the microphones PTT is being pressed.

LK3 selects whether beep tones generated by the radio micro will also be sent out with the LINE OUT 1 & 2 audio (receive audio). Note that the GATE OUT line is not activated while beeps are being sent out.

LK4 provides a side tone path for audio coming into the radio via LINE IN 1 or 2 and sends it back out the LINE OUT. If selected, audio side tone will be permanently active.

LK5 sets the GATE OUT 1 & 2 to operate with either Busy & Gate (RF carrier & CTCSS Decode, if programmed), or Busy (RF carrier only), or Trunked Busy. Trunked Busy is when a Trunked call is in progress.

LK6 If set to 1-2, the LINE IN 1 & 2 will produce flat audio on the transmitters deviation, if set to 2-3, LINE IN 1 & 2 will produce pre-emphasised audio. Also see LK1 and LK8.

LK7 allows the LINE IN 1 & 2 audio to also be sent to the radios' volume control and then to the speaker. This allows the LINE IN audio to be monitored at the radios' speaker, even if the radio is transmitting at the time.

LK8 varies the level of LINE IN 1 & 2 audio that is sent to the radios' volume control, to come out the radios' speaker. If flat audio is being used, the TX audio level on the A2000-UIS is some five times greater. This link reduces that audio signal going to the volume control. Also see LK1 and LK6.

LK9 & LK10 terminate LINE IN 1 & LINE IN 2 to 600 Ohms, respectively. If removed, the input impedance of approximately 50K Ohms.

LK11 If set to 1-2, this link enables the AUX Switch to control the LINE IN, LINE OUT, PTT IN and GATE OUT. When selected, the AUX Switch must be 'On' for the audio and signals to pass. If set to 2-3, the CALL Switch is used to perform the control. If the link is left out, there is no control and all path are always active. Note, this may not work on all models of T2000 radio.

LK12 If fitted, a single line, the RX/TX Disabling line, will switch either the RX or TX side of the A2000-UIS off and on. This is useful if you wish a radio to operate as only a receiver or a transmitter. The RX/TX Disabling line is low for transmit only and high for receive only. The RX/TX Disabling line is pull high. Also see LK13 and LK21.

LK13 This link is on the RX/TX Disabling line. It is an internal setting to lock the A2000-UIS into TX mode only. This link is an alternative to using the RX/TX Disabling line externally. The RX/TX Disabling line can be accessed externally on the 'External' pin on the rear power connector, or it can be routed out one of the pins on the A2000-UIS's S21 connector using the I/O Signals matrix. Note that link LK12 must be in for LK13 to operate.. Also see LK12 and LK21.

LK14 reverses the phase of the GATE OUT 1 & 2 lines. Link LK14 is out for Active Low and in for Active High.

LK15 reverses the phase of the PTT IN 1 & 2 lines. Link LK15 is out for Active Low and in for Active High. Note that the PTT IN line has a pull up resistor on it, so if LK14 is set to Active High, the radio will transmit whenever the PTT IN line is not terminated or pulled low.

LK16 If set to 2-3, this link sets the GATE OUT lines from the GATE OUT Relay to the normally open contacts, and if set to 1-2, to the normally closed contacts. The A2000-UIK-01 kit (4W E & M) must be fitted for this link to have any effect.

LK17 connects the GATE OUT relay common line (I/O Signals matrix line 8) to the ground of the radio. The A2000-UIK-01 kit (4W E & M) must be fitted for this link to have any effect.

LK18 selects whether the I/O Signals matrix line number 18 (+13.8V) has +13.8V Switched or +13.8V Un-Switched on it.

LK19 connects the opto coupler IC6 into circuit. The A2000-UIK-01 kit (4W E & M) must be fitted for this link to have any effect.

LK20 connects the TX Tail Timer into circuit. The trim pot VR3 can then be used to adjust the TX Tail time. Also see VR3.

LK21 is the External Line to Emergency Line or RX/TX Disabling link. If set to 1-2, the External line (which goes to the radio rear power connector) will connect to the radio control boards Emergency Line. If set to 2-3, the External line will connect to the A2000-UIS boards RX/TX Disabling line. Also see LK12 and LK13.

LK100 is the radio power on link. If the radio does not have a control head, or it is necessary for the radio to remain on permanently, then this link can be fitted.

0 Ohm resistor links are also used on various lines on the A2000-UIS board to allow certain signals to be permanently disabled.

   R59 - when removed, disables the muting of the LINE OUT audio.

   R100 - when removed, disables the local microphone PTT. Removing this link will only have any affect if the control board has R513 removed, in conjunction with the diode which sits across R513. This diode is D500 in T201X's, D503 on all other models. Normally this diode does not need to be removed, but it must be removed to totally disable the microphone PTT.

   R101 - when removed, disables the Mic Mute line that goes to S14 pin 8. Removing this resistor then leaves the radios' local microphone permanently live.

5.0 Circuit Description

The A2000-UIS's main function is to provide easy external, buffering and control over the available signals from the T2000 radio. The A2000-UIS's interface to the outside world is via the 9 way D-range connector **S21**. All of the lines on S21 are de-coupled to chassis ground via capacitors C1 to C9. Connector S21 pins 1 to 9 go to the I/O Signals matrix (**S21 I.O PINS**) lines 1 to 9 respectively.

The I/O Signals matrix has links placed onto it which determine which I/O Signal go to which S21 pin. The default settings and the available signals for the I/O Signal matrix can be found in section 4.3 External Connections.

LINE IN audio comes from I/O Signal matrix lines 5 & 6, through 0 Ohm resistors R30 & R31. R33 & R36 sits across these lines to ground and provides them with an input impedance of approximately 50K Ohms. Links LK9 & LK10 also sits across these lines. If LK9 & LK10 are installed, 560 Ohm resistors R32 & R35 provides these lines with an input impedance of approximately 600 Ohms. LINE IN audio is then presented to IC2d pins 12 and 13, which acts as a impedance stabilising buffer stage, with a gain of 1. LINE IN audio then goes to IC2c which provides audio level control with VR2. The output of IC2c goes via DC blocking capacitor C34, to IC1c quad switch, which switches the audio in sympathy with the PTT IN signal. The output of IC1c is then feed to LK6/2. LK6 selects whether the LINE IN audio is feed to the flat audio input of the radio, S13 pin 8, or to the pre-emphasised audio input, S13 pin 6.

LINE IN audio at IC2c pin 8 is also fed to IC2b pin 6, via R44 (& R45 & LK8). IC2b amplifies the LINE IN audio and feeds it to IC1d via impedance matching resistor R48 and DC blocking capacitor C36. IC1d then switches the LINE IN audio in sympathy with the PTT IN signal, and feed it to P13 pin 7 (S13 pin 7) via LK7. Although S13 pin 7 is the RX-GTD-AF line, and normally associated with the receiver audio sections of the T2000 mobile, this line is used to inject audio into the receiver audio section, so it can feed to the speaker amplifier via the volume control.

The bias voltage for all four of IC2's op-amps is provided by 100K Ohm resistor R110, and filtered by capacitors C113, C200 and C201, and should be approximately 5 volts.

LINE OUT audio first begins at LK1. LK1 selects whether the LINE OUT audio comes from the flat audio output of the radio, S13 pin 1, or from the de-emphasised audio output, S13 pin 3. LINE OUT audio then goes to IC1a quad switch, which switches the audio in sympathy with the radios' GATE OUT signal. Audio then goes via DC blocking capacitor C10 to IC2a buffer amplifier. IC2a provides the function of a buffer which balances all the different audio level coming into it. The audio is then fed via R9 to IC3a pin 2. IC3a provides the function of a wide gain control amplifier. Trim pot resistor VR1 sits across IC3a and adjusts its gain. The LINE OUT then goes via DC blocking capacitor C18 to resistor R15. R15 sets the LINE OUT 1 output impedance to approximately 600 Ohms. Audio is then fed to I/O Signal matrix line 1. Audio from IC3a is also feed to IC3b pin 6. IC3b preforms the function of a inverting buffer. Audio then goes via DC blocking capacitor C18 to resistor R16. R16 sets the LINE OUT 2 output impedance to approximately 600 Ohms. This audio is then fed to I/O Signal matrix lines 9. The LINE OUT audio on I/O Signals matrix line 1 & 9 can be used as independent audio lines out, but they can also be used as a single electrically balance audio output.

PTT IN line comes in via I/O Signals matrix lines 4 & 7 to diode D4. Diode D4 blocks DC levels which are above 5 volts. The PTT IN signal then goes to the inverting buffer transistor Q2. Q2 collector then drives IC5e inverting buffer. IC5e has link LK15 sitting across it which can reverse the phase of the PTT IN signal if required. IC5e drives IC5f which then drives IC5d via D6. The input to IC5d at pin 9 also has an RC circuit across it, consisting of VR3, R92, and C80. Link LK20 connects C80 into circuit if required. This RC circuit provides the function of a TX tail timer. IC5d then drives IC5c. IC5c drives Q3 base, and S14 pin 8 mic mute via R99 and R101. Q3 collector then drives S14 pin 6 PTT-FRM-OPT (PTT from options) which keys the transmitter. The diode D9b provides a path for the radios' local microphone PTT signal. Diode D9a pulls the Mic Mute line low (off) when the local microphone PTT is active.

GATE OUT signal first begins at S14 pin 4 RX GATE line or S14 pin 3 Busy line. These two signals go to link LK5 which selects the required signal. GATE OUT then goes to D1a via R60. D1a feeds IC4b and then IC4c. IC4c has link LK14 across it which can change the phase of the GATE OUT signal. IC4c then drives Q1 base. The output from Q1 collector goes to I/O Signals matrix lines 2 and 8 via 0 Ohm resistors R66 and R77, respectively. Q1 collector also has resistor R65 10K across it, to pull this line up to +13.8 volts.

SPARE I/O Signals matrix lines 12 and 13 are routed from the I/O Signals matrix via pie filters C24, R26, C23 and C26, R27, C25 to PCB pads marked '12' and '13'. These spare lines can be hard wired to the pads provided adjacent to connectors P13, P14. This allows signals to be used externally, other than the standard signals already available on the I/O Signals matrix. The pie filter should provide some form of RF protection. These line will not necessarily provide any protection against spikes and surges.

6.0 PCB Information

6.1 Parts List   A2000-UIS-01.PCB

Ref. No.	Description	Part No.	Supplier	Qty
A2000-UIS PCB	PCB Board	A2K-UIS1.pcb	Oz Elec.	1
C1, 2, 3, 4, 5, 6, 7, 8, 9, 23, 24, 25, 26	1nF Ceramic Chip Cap, 0805	499-201	Farnell	13
C10, 11, 12, 20, 21, 30, 31, 34, 36, 109, 113, 114, 200, 201	100nF Ceramic Chip Cap, 0805	499-687	Farnell	14
C13, 16, 32, 33, 35, 115	100pF Ceramic Chip Cap, 0805	499-171	Farnell	6
C14, 17, 18, 19, 80, 110, 111	10uF Tant 16V, SMD, TAJ Series case B	498-737	Farnell	7
D1, 2, 5, 9, 10	BAV70 Diode, SOT-23	743-150	Farnell	5
D4, 6	BAW56 Diode, SOT-23	741-863	Farnell	2
F1	Fuse, 500mA, Slow Blow, 1206			1
IC1	CD4066BCM, SMD, SO-14	505-353	Farnell	1
IC2	TL074CD, SMD, SO-14	401-365	Farnell	1
IC3	TL072CD, SMD, SO-8	401-134	Farnell	1
IC4, 5	MM74C04, SMD, SO-14	379-220	Farnell	1
IC7	MC78L05ACD, SMD, SO-8	702-031	Farnell	1
P13	12 Way Micro-MaTch™ Paddle Board Skt.	8-215570-2	AMP	1
P14	16 Way Micro-MaTch™ Paddle Board Skt.	8-215570-6	AMP	1
Q1, 3	BC817-40 NPN Transistor, SMD, SOT-23	506-308	Farnell	2
Q2	BC857B PNP Transistor, SMD, SOT-23	506-229	Farnell	1
R61, 62, 69, 74	1M Resistor 0805 5%	109-330	Farnell	4
R2, 6, 11, 33, 34, 36, 37, 38, 46, 70, 71, 75, 89, 90, 99, 110	100K Resistor 0805 5%	109-324	Farnell	16
R4	68K Chip Resistor 0805 5%.	109-323	Farnell	1
R5, 39, 44	150K Chip Resistor 0805 5%.	109-325	Farnell	3
R7	220K Chip Resistor 0805 5%.	109-326	Farnell	1
R9, 10, 12, 13, 40, 41, 60, 63, 64, 68, 73, 85, 86, 88, 92, 94	10K Chip Resistor 0805 5%.	109-318	Farnell	16
R15, 16, 32, 35	560E Chip Resistor 0805 5%.	515-152	Farnell	4
R17, 18, 30, 31, 59, 66, 67, 80, 100, 101, 102	0E Chip Resistor 0805 5%.	109-299	Farnell	11
R26, 27	470E Chip Resistor 0805 5%.	109-310	Farnell	2
R45	27K Chip Resistor 0805 5%.	515-255	Farnell	1
R48	1K5 Chip Resistor 0805 5%.	109-313	Farnell	1
R81, 82, 83	33K Chip Resistor 1206 5% 0.25W	512-916	Farnell	3
R84	4K7 Chip Resistor 0805 5%.	109-316	Farnell	1
R109	10E Chip Resistor 1206 5%.	419-904	Farnell	1
S21	9 Way D Range R/A Female, PCB mount	892-452	Farnell	1
VR1, VR2	100K Multi Turn Trim Pot, SMD	514-860	Farnell	2
VR3	1M Trim Pot	108-255	Farnell	1

Cables and Connectors

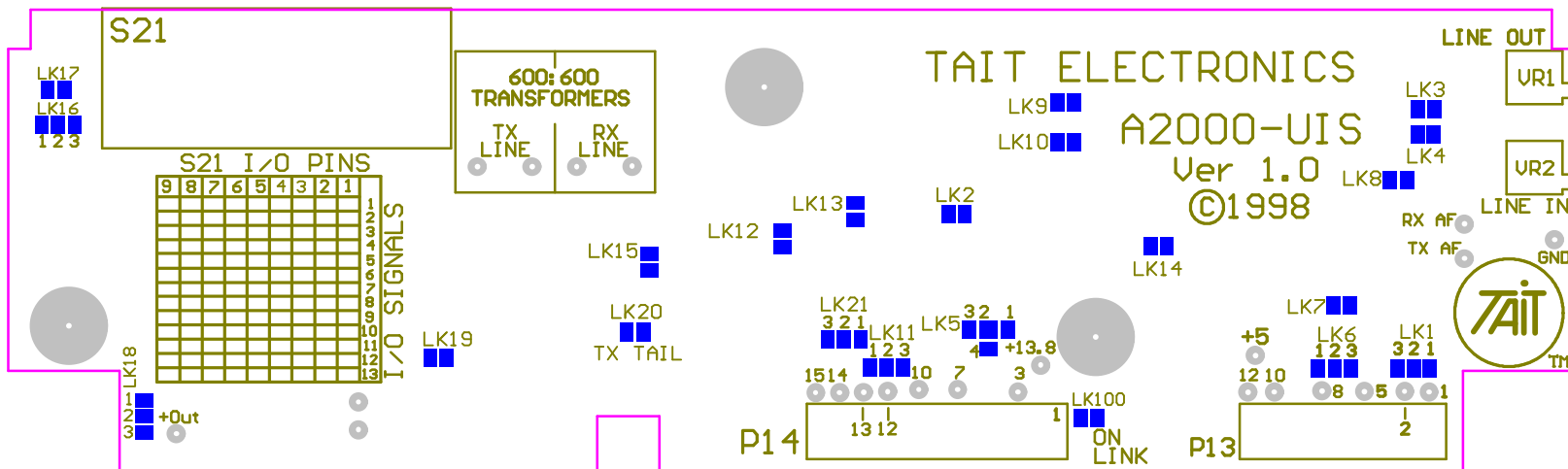| Ref. No.	Description	Part No.	Supplier	Qty
Ribbon Cable	16 Way Ribbon Cable. For Micro-MaTch™ connector looms. Two looms, P13 to P13A and P14 to P14A	-	Oz Elec.	2 x 30mm
P13A	12 Way Micro-MaTch™ Male on Wire Connector (for P13 to P13A Loom)	8-215083-2	AMP	1
P14A	16 Way Micro-MaTch™ Male on Wire Connector (for P14 to P14A Loom)	8-215083-6	AMP	1

Parts Packaged with A2000-UIS Board

Description	Part No.	Supplier	Qty
A2000-UIS Service Manual	AM2K-UIS.pdf	Oz Elec.	1
Screw Taptite M3 x 8mm Pan Pozi Bright Zinc	349-00020-32	Tait	3
Screw Taptite 4/40 x 8mm Pan Pozi Black	349-00020-09	Tait	2
DB9 Male Connector Solder Pot	-	Oz Elec.	1
DB9 Male Cover	-	Oz Elec.	1
12 Way Micro-MaTch™ Socket, SMD. For T2000 Control PCB, S13	8-188275-2 (240-10000-06)	AMP (Tait)	1
16 Way Micro-MaTch™ Socket, SMD. For T2000 Control PCB, S14	8-188275-6 (240-10000-07)	AMP (Tait)	1

Parts not populated on the A20000-UIS PCB

Ref. No.	Description	Part No.	Supplier	Qty
#D3	BAW56 Diode, SOT-23	741-863	Farnell	1
#IC6	SHF628A-2. Bi-directional Opto Coupler	464-582	Farnell	1
#R65	10K Chip Resistor 0805 5%.	109-318	Farnell	1
#R91, #R112	0E Chip Resistor 0805 5%.	109-299	Farnell	2
#RL1	SPDT Relay 12 Volt PCB mount	466-890	Farnell	1
#T1 & #T2	ETAL P2781 Transformer 600:600 Ohms, SMD	523-100	Farnell	2
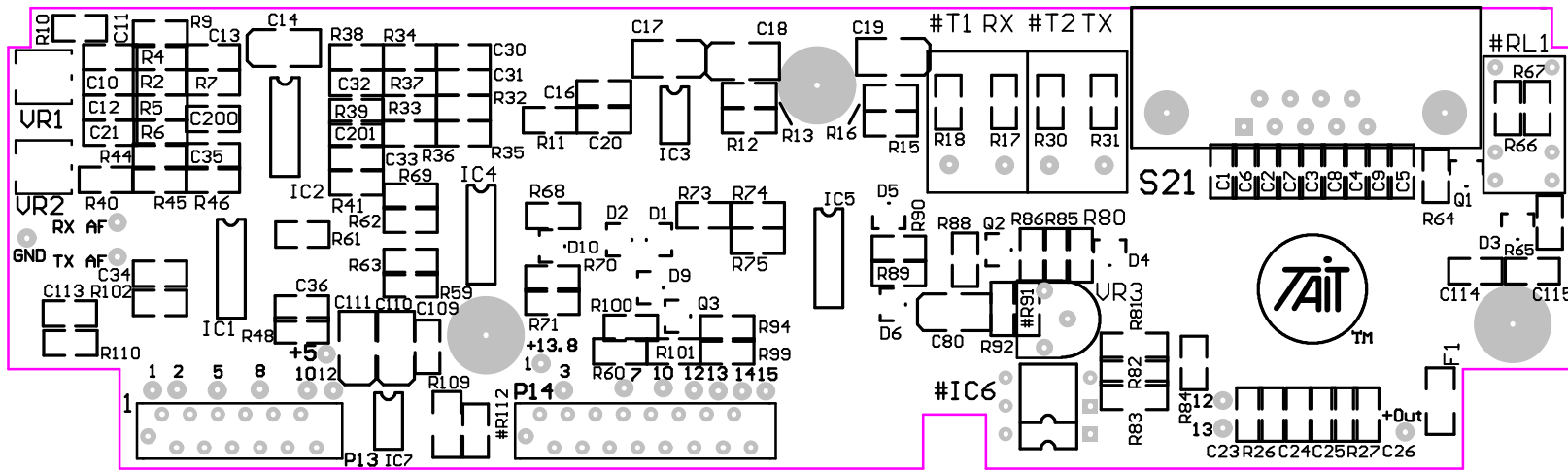
A2000-UIS Ver 1.0 PCB Top Overlay

A2000-UIS Ver 1.0 PCB Bottom Overlay

TAIT ELECTRONICS
A2000-UIS
Ver 1.0
©1998

Tait Electronics (Aust) Pty Ltd

Title: T2000 Universal Interface Standard

Size:	Number:	Revision:
A3	A2000-UIS	1.0

Drawn By: M.O'B.	Checked By: M.O'B.

Date: 17-09-98
Sheet 1 of 1
File: A2K-UIS1.SCH

CONNECTS TO:
T2000
CONTROL PCB

NOTE:
1. Components marked # are not normally fitted.
2. All links are shown in their default positions.
3. ● = Test Point

S21 DB9F
LINE OUT1
LINE IN 2
/GATE OUT1
/PTT IN 2
GND
/GATE OUT2
/PTT IN 1
LINE OUT2
LINE IN 1

I/O Signals Matrix
1 LINE OUT
2 /GATE OUT1
3 GROUND
4 /PTT IN1
5 LINE IN1
6 LINE IN2
7 /PTT IN2
8 /GATE OUT2
9 LINE OUT2
10 RX/TX DISABLING
11 +13.8V
12 SPARE
13 SPARE

P13 MICRO12W
DET-AF-OUT
ALC-IN
RX-LINE-OUT
TX-LINE-OUT
RX-LINE-IN
TX-LINE-IN
RX-GTD-AF
TX-SIG-IN
RX-BEEP
TX-LF-SIG
OPTIONS GND
+13.8V-UNSW

P14 MICRO16W
+13.8V-SW
+5V
BUSY
RX-GATE
PTT-TO-OPT
PTT-FRM-OPT
/IN-LOCK
MIC-MUTE
/SIG-SQULCH
/EMRGNCY
CALL-SW
HUSH
AUX-ON/OFF
HORN
RSSI
EXTERNAL

Chassis Ground

Power On Link

RX/TX Disabling

Tait Electronics (Aust) Pty Ltd

Australia
Head Office
Brisbane

Tait Electronics (Aust) Pty Ltd
186 Granite St.,
Geebung, Qld., 4043
P.O. Box 679,
Virginia, Qld., 4014

Phone:	07 3865 7799	
Fax:	07 3865 7990	
BBS:	07 3865 6392	(Access Restricted)

Email:
Sales   sales@tait.com.au
Help Desk   helpdesk@tait.com.au

Internet Home   http://www.taitworld.com

Branches

Perth
Phone: 1300 304 344
Fax: 08 9321 7338

Melbourne
Phone: 1300 304 344
Fax: 03 9690 7988

Sydney
Phone: 1300 304 344
Fax: 02 9634 7835

Tait Electronics (Aust) Pty Ltd

A2000-UIS Setup Sheet

Customer	
Job No	
Date	
T2000 Model No	
T2000 Serial No's	
Use? E.g. Link, Base, RF Control, Omnitronics Interface, etc.	
Application Note Used? App. Note No	

A2000-UIS Setup:

Function	Setup	Choices	Default	Setting
A2000-UIK-01 Kit Fitted?	-	Yes / No	No	
LINE OUT Level	VR1	In dBm or Volts Peak to Peak	-10dBm	
LINE IN Level	VR2	In dBm or Volts Peak to Peak	-10dBm	
LINE OUT Flat / De-emp	LK1	1-2 Flat / 2-3 De-emphasised	2-3	
MIC AUDIO to LINE OUT	LK2	IN = YES / OUT = NO	IN	
BEEP to LINE OUT	LK3	IN = YES / OUT = NO	OUT	
LINE IN to LINE OUT Side Tone	LK4	IN = YES / OUT = NO	OUT	
GATE OUT Source	LK5	1-2 BUSY + RX GATE 2-3 BUSY ONLY 2-4 TRUNKED BUSY	1-2	
LINE IN Flat / Pre-emp	LK6	1-2 Flat / 2-3 Pre-emphasised	2-3	
LINE IN to Volume & Speaker	LK7	IN = YES / OUT = NO	IN	
LINE IN Flat / Pre-emp	LK8	IN= Pre-emphasised / OUT = Flat	IN	
LINE IN 1 600 Terminated	LK9	IN = YES / OUT = NO	IN	
LINE IN 2 600 Terminated	LK10	IN = YES / OUT = NO	IN	
LINE OUT, LINE IN, GATE OUT and PTT IN Control	LK11	OUT = NONE 1-2 AUX SW 2-3 CALL SW	OUT	
RX/TX Disabling	LK12	IN = YES / OUT = NO	OUT	
RX Disable	LK13	IN = TX ONLY/ OUT = NO	OUT	
GATE OUT Phase	LK14	OUT = Active Lo / IN = Active Hi	OUT	
PTT IN Phase	LK15	OUT = Active Lo / IN = Active Hi	OUT	
GATE OUT RELAY Phase	LK16	1-2 N.C. / 2-3 N.O.	2-3	
GATE OUT Common to Ground	LK17	IN = GROUNDED / OUT = NOT	OUT	
I/O Matrix Line 11 - Volts Source	LK18	1-2 +13.8V SW / 2-3 +13.8V UNSW OUT = NONE	1-2	
OPTO Coupler Option	LK19	IN = Yes / OUT = NO	OUT	
TX Tail Timer	LK20	IN = Yes / OUT = NO	OUT	
External Line Source	LK21	1-2 /Emrgncy / 2-3 RX/TX Disabling	2-3	

S21 I/O Matrix
Check Mark the boxes to denote setting

S21 I/O Pins								
	1	2	3	4	5	6	7	8	9
1	■								
2		■							
3			■						
4				■					
5					■				
6						■			
7							■		
8								■	
9									■
10									
11									
12									
13									

Setup Details / Modifications Carried Out, Detail Below:

Cont. PTO

DEFAULT =

Technician: _____   QA Inspection (If Req.): _____