VA3TO v2.0 iLINK BOARD – Assembly Instructions

Assemble the board using these instructions with the aid of the parts list and schematic. All parts have designators labeled on the pc board. A drawing of the parts overlay is available which can be zoomed into using the Acrobat viewer.
Make sure to use a good hot iron to solder the components to the board. Let the iron heat up the pcb pad and the component lead then apply solder, allowing it to flow around the pad and form a nice fillet to the lead. Do not apply too little or too much solder.

Step 1.

Install the following **Jacks, Plugs and Sockets**:

Be sure to install the IC sockets with the pin-1 notch as shown on the silkscreen.

Qty	Part/Value	Location	(check)
1	2.1mm power jack	J1	( )
7	3.5mm phone jack	J2 – J8	( )
1	DB-9 female	P1	( )
2	18 pin DIP IC socket	U1,U2	( )
1	14 pin DIP IC socket	U3	( )
1	16 pin DIP IC socket	U4	( )

Step 2.

Install the following **Relays**:

Our v2.0 kits include 12v relays (unless otherwise specified) however the board is also capable of using 5v relays. LNK1 and LNK2 are pre-jumpered for 12v relays. When using 5v relays, cut the pcb jumpers between pins 2 and 3 under LK1 and LK2 and solder in wire jumpers between pins 1 and 2.

Qty	Part/Value	Location	(check)
2	Omron G5V (or equiv.)	K1, K2	( )

Step 3.

Install the following **Resistors**:

Qty	Part/Value	Location	(check)
1	4.7k ¼ watt (yellow-violet-red)	R1	( )
3	100k ¼ watt (brown-black-yellow)	R3,R4,R5	( )
3	680 ¼ watt (blue-grey-brown)	R6,R8,R15	( )
2	100 ¼ watt (brown-black-brown)	R7,R14	( )
3	1k ¼ watt (brown-black-red)	R10,R12*,R13*	( )
1	120k ¼ watt (brown-red-yellow)	R16	( )
2	50k trimpot	R9,R17	( )

Note: When using 5v Relays, use 680 ohm resistors at R12 and R13.

Step 4.

Install the following **Capacitors**:

Observe the polarity of the Electrolytic capacitors. The longer lead is positive and the body often has a marking indicating either the negative (-) or positive (+) lead.

Qty	Part/Value	Location	(check)
6	0.1uf (100n) (alt .01uf) Ceramic	C3,C13,C14, C15,C16,C17	( )
2	0.1uf (100n) Polyester	C2,C20	( )
4	33pf Ceramic	C8,C9,C10,C11	( )
1	.001uf (1n or 1000pf) Polyester	C21	( )
1	33uf (25v or higher) Electrolytic	C12	( )
4	1uf (25v or higher) Electrolytic	C4,C5,C6,C7	( )

Step 5.

Install the following **Crystals**:

Qty	Part/Value	Location	(check)
1	4.000 MHz	Y1	( )
1	3.579 MHz	Y2	( )

Step 6.

Install the following **Diodes**:

Install the four diodes in the correct polarity with the band (Cathode) matching that shown on the silkscreen.
Install the LEDs with the long (positive) lead into the hole with the square pad and the flat on the body to the right as shown on the silkscreen.

Qty	Part/Value	Location	(check)
1	1N4148 (alt 1N914)	D1	( )
3	1N4005 (alt 4001 to 4007)	D2,D3,D4	( )
5	LED (install colours as desired)	LED1,2,3,4,5	( )

Step 7.

Install the following **Transistors + Regulator**:

Metal can (TO-18) transistors drop into place as per the silkscreen marking. When using black plastic TO-92 parts, bend the centre lead (Base) forward and install them with the flat surface facing the line on the silksceen.
Bend the leads of U5 down 90 degrees to the body where the lead becomes narrower.

Qty	Part/Value	Location	(check)
3	2N2222A	Q1,Q2,Q3	( )
1	7805	U5	( )

Step 8.

Preliminary Check:

Most of the assembly is complete but **before installing the Intergrated Circuits**, perform the following checks:

1. Double check your work before proceeding. Give the board a visual inspection, observing the proper direction for polarized parts. Look over the soldering job and repair any cold or otherwise poor joints.

If you are using 5 volt relays, make sure you cut the pcb jumpers between pins 2 and 3 under LK1 and LK2 and soldered in wire jumpers between pins 1 and 2.

2. Once you are content with the assembly, plug the power connector from a 9 to 15 vdc source into J1. The Power LED (only) should illuminate.

Using a voltmeter, check for 9 to 15 vdc at pin 1 of U5 (relative to ground).
If no or very low voltage is present, check that J1 and D1 are installed and soldered correctly and measure the power source to verify that voltage really is present.

3. Check for 5vdc (+/- 0.25v) at:	U1 pin 14	ok ?	( )
	U2 pins 10 + 18	ok ?	( )
	U3 pin 14	ok ?	( )
	U4 pin 16	ok ?	( )

If any one of these pins does not have 5 volts present, check the quality of your soldering and look carefully for cold solder joints and shorts.

4. If the voltages check out okay, unplug the power connector and install the four Integrated Circuits in the correct direction with the notch corresponding to the socket and silkscreen. IC's often come with the leads spread out slightly for automatic insertion purposes. Carefully bend the leads slightly against a flat surface so that they end up 90 degrees to the component body. Do this for both sides of each part then install them into their corresponding sockets. Make sure none of the leads bend out and away from the socket nor curl underneath the part. Inspect the installed IC's to ensure that all leads are inserted properly into the socket.

5. Once all four IC's have been properly installed, plug the power connector back into J1. This time, the Power LED should illuminate and the PTT and DATA LEDs should illuminate for 1 second, then extinguish.

Congratulations ! Your iLINK interface is ready for use.