TYNEMOUTH SOFTWARE VIC20 DIAGNOSTICS LOOPBACKS

LOOPBACK CONNECTORS

To assist the diagnostics software checking the various ports of the VIC20, a set of loopback plugs are used. These are assembled from a single PCB. The first step is to break out the 4 individual boards, and clean up the edges. Be aware fibre glass dust is not good, so use suitable protection in a well ventilated area.

JOYSTICK PORT LOOPBACK

PARTS

- Joystick Loopback PCB
- 9 way D female connector (solder bucket type)

ASSEMBLY

Push the PCB between the pins on the back of the connector. It may be a tight fit depending on the brand of socket. All the pins should line up with solder pads, 5 on the top, 4 below. Once aligned, solder the connector into place.

DATASETTE PORT LOOPBACK

PARTS

- Datasette Loopback PCB
- 12 way (2x6) 0.156" edge connector. Pin or solder tab version
- 2 x 27 Ω ½W resistors

ASSEMBLY

Solder the two resistors in place. Then push the PCB between the pins on the back of the connector. To hold this in place, it may be necessary to bend the pins inwards slightly so that they make contact with the PCB. All the pins should line up with solder pads, 6 on the top, 6 below. Once aligned, solder the connector into place.

KEYBOARD LOOPBACK

PARTS

- Keyboard Loopback PCB
- 20 way 0.1" header socket – right angled or straight

ASSEMBLY

Remove the second pin along in the connector, with will align with the missing pin on the keyboard connector and the gap on the PCB. Solder the connector in place so the board is vertical above the socket when completed. Right angled connectors will use the holes, straight connector could be soldered to the pads only.

USER PORT LOOPBACK

PARTS

- User port Loopback PCB
- 24 way (2x12) 0.156" edge connector. Pin or solder tab version

ASSEMBLY

Push the PCB between the pins on the back of the connector. To hold this in place, it may be necessary to bend the pins inwards slightly so that they make contact with the PCB. All the pins should line up with solder pads, 12 on the top, 12 below. Once aligned, solder the connector into place.
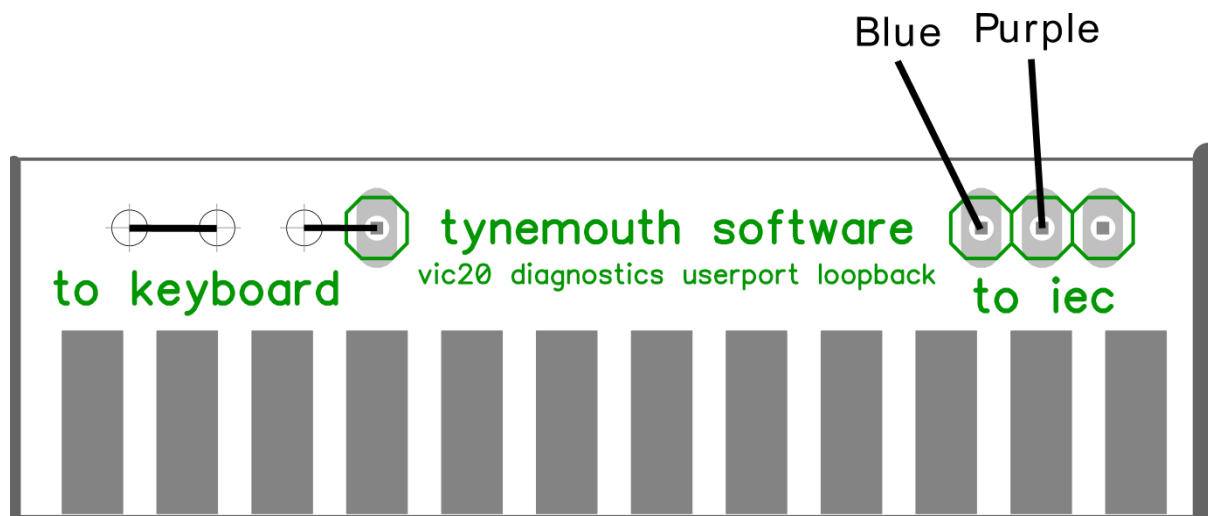
PARTS

- 6 pin DIN plug

ASSEMBLY

Solder a short length a wire (an offcut from one of the resistor leads is ideal) between pins 1 and 3 of the DIN connector, and attach a purple wire to pin 5 and a blue wire to pin 4 (or use whatever colours you find aesthetically pleasing or happen to have lying around). Leave pins 2 and 6 unconnected and make sure none of the other pins are touching.
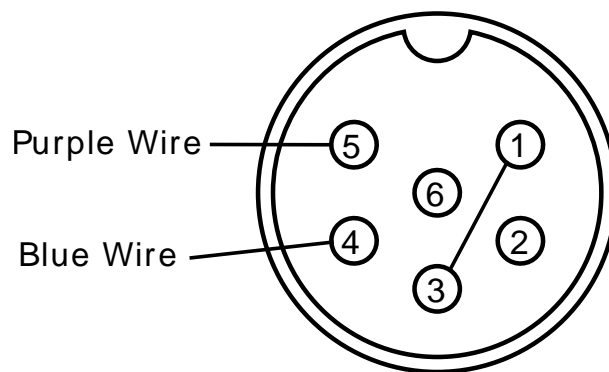
This view is looking into the socket on the back of the VIC20, and the back of the loopback connector.

These two wires attach to the userport loopback connector. The blue wire goes to the first of the three pins on the right hand side, and the purple to the middle. The pin closest to the edge is unused (it is 0V, and could be connected to pin 2 or used to attached a screened cable, neither of which are required).

The pin on the left is connected to the keyboard loopback, using another blue wire. The wire can be threaded through the extra holes on the PCB as a strain relief, if required.

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PARTS

- 2 x 100nF axial ceramic capacitor
- 8K or 32K RAM chip, 28 pin narrow, 300mil pitch e.g. 6264, 62256, 71256
- EPROM 27C64-27C512
- Optional IC sockets for ROM and RAM
- Optional right angled tactile switch for Reset

RAM

The board can accommodate an 8K or 32K RAM chip. Only 1K of the chip is actually used, the enable line is tied to the RAM1 signal from the VIC20, so 1K of RAM is provided in the address range 0400-07FF. The rest of the chip is unused. It could have been wired for more, but the diagnostics ROM only needs some of the first 1K, so this arrangement removes the need for additional decoding logic.

ROM

The ROM supplied with the kit and assembled units, is a 27C256 with both the PAL and NTSC versions pre-programmed. The socket can take a 27C64-27C512. Only a single ROM image can be fitted in a 27C64, so the jumper will not be used. For larger capacity ROM chips, the board has pins 1 and 27 tied to 5V, so if a chip larger than a 27C128 is used, the ROM will be at the top of the address range of the chip. Pin 26 is wired to the PAL / NTSC header, so this can be used to select the upper or lower 8K ROM in a 16K or larger ROM image.

Jumper	27C64	27C128	27C256	27C512
NTSC	0000-1FFF	0000-1FFF	4000-5FFF	C000-DFFF
PAL		2000-3FFF	6000-7FFF	E000-FFFF

The ROM is set as BLK5, so will appear in the VIC20 address range as A000-BFFF, and will be automatically started on boot.

ROM images can be downloaded from www.tynemouthsoftware.co.uk/vic20diag.zip

ASSEMBLY

Start with the two capacitors. Fit the IC sockets or solder the ROM and RAM chips directly. Fit a wire link (an offcut from the capacitor leads is ideal) to select PAL or NTSC with the jumper block, alternatively, fit a 3 way pin header and a jumper or slide switch to select the PAL or NTSC ROM.